Appendix A

Notice of Preparation and NOP Comments

CITY OF MANTECA

COMMUNITY DEVELOPMENT DEPARTMENT

DATE: **January 22, 2021**

TO: Interested Parties

SUBJECT: **Notice of Preparation of an Environmental Impact Report (EIR) for the Proposed Lumina Project**

LEAD AGENCY CONTACT:
Mark Niskanen, Contract Planner
Community Development Department
City of Manteca
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Manteca, CA 95337
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REVIEW PERIOD: **January 22, 2021 – February 23, 2021**

Notice is hereby given that the City of Manteca is the lead agency for the preparation of a project-level Environmental Impact Report (EIR) for the proposed Lumina Ranch Project (proposed project), in accordance with the California Environmental Quality Act (CEQA), Section 15050. The purpose of this Notice of Preparation (NOP) is to provide responsible agencies and interested persons with sufficient information in order to provide meaningful input on the scope and content of the EIR. Your timely comments will ensure an appropriate level of environmental review for the project.

Scoping Meeting: The Lead Agency will hold a public scoping meeting to receive verbal comments on the scope of the EIR on February 10, 2021 at 6:00 pm.

Pursuant to Governor Newsom's Executive Order N-29-20, the meeting will be held via video- and teleconference. Members of the public are invited to participate in the Scoping Meeting via Zoom, which will be used to share information during the meeting. The City is requesting that you RSVP to Mark Niskanen, Contract Planner mark@jbandersonplanning.com to obtain the link and/or telephone call-in instructions/information for the Zoom meeting.

A copy of this NOP is available for review at the City of Manteca Community Development Department and on the City of Manteca website:

https://www.ci.manteca.ca.us/CommunityDevelopment/Planning%20Division/Pages/default.aspx

PROJECT DESCRIPTION

Project Location and Setting

The Project site is located in the southwestern portion of the City of Manteca directly adjacent to the to the city limits. The Project site is immediately southwest of the intersection of Airport Way and Woodward Avenue. The Project site is bounded on the north by Woodward Avenue, on the east by Airport Way, on the south by an existing Reclamation District #2094 (RD2094) dry levee and existing agricultural fields, and on the west by the existing Terra Ranch Subdivision. Figures 1 and 2 show the Project's regional location and vicinity. The Project site is located within Sections 12 of Township 2 South, Range 6 East Mount Diablo Base and Meridian (MDBM). Figure 3 illustrates the project location on the USGS Manteca, California, 7.5-minute series quadrangle map.

Project Site Defined

The Project site includes several distinct planning boundaries defined below. The following terms are used throughout this DEIR to describe planning area boundaries within the Project site:

- Annexation Area – includes the whole of the project, including the proposed 157.53-acre Development Area, 19.11-acre Non-development area on 15 inhabited residential lots, and 6.82 acres of existing right-of-way.
- Development Area - includes a 157.53-acre parcel (APN 241-32-018) that is intended for the development of up to 827 residential units, two parks, and public infrastructure.
- Non-development Area 1 - includes six 1.0 acre lots with existing residential homes. Access to these homes is directly onto Woodward Avenue.
- Non-development Area 2 - includes nine lots ranging in size from 1.3 to 1.8 acres totaling 13.11 acres with existing residential homes. Access to three of these homes is directly onto Woodward Avenue, five are onto Airport Way, and one has access onto both Woodward Avenue and Airport Way.
- Right-of-Way Annexation Area - includes 6.82 acres of existing right-of-way owned by San Joaquin County, and intended to be annexed into the City of Manteca.

Existing Site Conditions

The Project site is 183.46 acres within 16 Assessor parcels (APNs). This includes the Development Area (157.53-acre parcel, APN 241-32-018), Non-development Area 1 (an inhabited annexation of 6 parcels on 6 acres), Non-development Area 2 (an inhabited annexation of 9 parcels on 13.11 acres), and the Right-of-Way Annexation Area (6.82 acres of existing County right-of-way). Table 1 lists each parcel included in the Project site. Figure 4 illustrates the APNs.

TABLE 1: PARCELS WITHIN THE PROJECT SITE

APN / RIGHT OF WAY	ACREAGE
Development Area	
241-32-018 (Project)	157.53
Non-development Area 1	
241-32-005	1.00
241-32-006	1.00
241-32-007	1.00
241-32-021	1.00
241-32-008	1.00
241-32-009	1.00
Non-development Area 2	
241-32-011	1.86
241-32-012	1.37
241-32-013	1.35
241-32-014	1.35
241-32-015	1.35
241-32-029	1.49
241-32-028	1.51
241-32-027	1.49
241-32-023	1.34
Right-of-Way Annexation Area	
Public Right-of-Way	6.82
Total	**183.46**

Site Topography

The Project site is relatively flat with natural gentle slope from south to north. The Project site topography ranges in elevation from approximately 19 to 24 feet above sea level.

Existing Site Uses

The Development Area has some existing improvements including two existing houses and barns and/or sheds with associated equipment, dirt and gravel roadways. The house and barn structures are located in the northeastern portions of the Development Area. The majority of the Development Area is in active agricultural use. Woodward Avenue is along the north, and Airport Way is along the east. A South San Joaquin Irrigation District (SSJID) pipeline exists within the Development Area. An RD 2094 dry levee makes up a portion of the southern property line. This dryland levee is not intended to hold floodwaters from the south (upstream), instead it is intended to contain flows on RD 2094 and RD 2096 in the event of a levee breach of levees along RD 2094, RD 2096, or RD 17. It is noted that the Annexation Area is located within the RD 17 boundary.

Non-development Area 1 includes six existing residential homes just north of the Development Area and Woodward Avenue.

Non-development Area 2 includes nine existing residential homes just north of Woodward Avenue, and West of Airport Way.

Figure 5 shows aerial imagery of the existing site uses within the Project site.

Existing Surrounding Uses

Uses immediately adjacent to the east and south of the Project site include agricultural and residential uses, including ranchettes and large estates lots. Existing uses north of the Project site are residential uses which includes a residential subdivision. Existing uses west of the Project site are residential uses.

General Plan Land Use Designations

The Development Area is designated as Low Density Residential (LDR, 2.1 to 8 du/ac) with a Park designation under the current General Plan. The Draft General Plan Update currently being prepared by the City shows the same land use designation for this area when compared to the existing General Plan.

Non-development Area 1 is designated Low Density Residential (LDR, 2.1 to 8 du/ac) under the current General Plan. The General Plan Update shows the same land use designation for this area when compared to the existing General Plan.

Non-development Area 2 is designated Commercial Mixed Use (CMU), Neighborhood Commercial (NC), and General Commercial (GC) under the current General Plan. It is noted that these parcels are currently inhabited as residential. The General Plan Update includes some modifications to the land uses in this area. The Neighborhood Commercial designation was eliminated as a land use category in the General Plan Update, and General Commercial (GC) was changed to Commercial (C). In the General Plan Update the parcel currently designated as NC is changed to C, five parcels that were CMU changed to C, and two parcels remained CMU.

Figure 6 depicts the Manteca General Plan 2023 land use designations for the Project site and the surrounding areas.

The General Plan contains the following standards to guide development for these land uses. It is noted that the currently adopted General Plan is the 2023 General Plan; however, the City is currently undergoing an Update to the General Plan. Both are noted below:

2023 General Plan

LDR (Low Density Residential): The LDR land use will establish a mix of dwelling unit types and character determined by the individual site and market conditions. The density range allows substantial flexibility in selecting dwelling unit types and parcel configurations to suit particular site conditions and housing needs. The type of dwelling units anticipated in this density range include small lots and clustered lots as well as conventional large lot detached residences.

CMU (Commercial Mixed Use): The CMU designation will accommodate a variety of purposes including high density residential, employment centers, retail commercial, and professional offices.

NC (Neighborhood Commercial): This designation provides for locally oriented retail and service uses, offices, restaurants, and service stations, public and quasi-public uses and similar and compatible uses. The mix of uses anticipated in these centers includes supermarket/drug store configuration including associated smaller retail stores and services. Pad sites will provide restaurant and service station opportunities.

GC (General Commercial): The General Commercial category provides for wholesale, warehousing, and heavy commercial uses, highway oriented commercial retail, public and quasi-public uses, and similar and compatible uses. The designation is also intended to accommodate visitor commercial, lodging, commercial recreation and public gathering facilities, such as amphitheaters, or public gardens.

General Plan Update

LDR (Low Density Residential): This designation provides for a mix of single-family housing, including small lots, clustered lots, attached homes, and conventional large lot detached residences. Density ranges from 2.1 to 8 dwelling units per acre.

CMU (Commercial Mixed Use): This designation provides for high density residential, employment centers, retail commercial, and professional offices. A mix of compatible uses is encouraged to provide neighborhood-serving sales, services, and activities, as well as employment opportunities, including offices.

Developments shall include community-serving amenities and connections that distinguish them from conventional multifamily, neighborhood commercial, or office development, with the intent that a recreational area and neighborhood serving uses will provide a local gathering place for recreation and socializing much as does a small-town square. For example, a residential development could include a work center that provides on-site facilities that encourage telecommuting and entrepreneurship.

Mixed uses may be integrated vertically or horizontally and shall be linked together through common walkways, plazas and parking areas, as well as linkages to the adjoining bicycle and pedestrian system. Where required, open space, detention facilities, and parks, will be designed as an amenity within the site. Public facilities, such as a post office, library, fire station, or satellite government office, shall be included where feasible.

Developments shall have a shared parking program with the objective of reducing the parking required for each individual use.

C (Commercial): This designation provides for neighborhood, community, and regional-serving retail and service uses; offices; restaurants; service stations; highway-oriented and visitor commercial and lodging; auto-serving and heavy commercial uses; wholesale; warehousing; public and quasi-public uses; commercial recreation and public gathering facilities, such as amphitheaters or public gardens; and similar and compatible uses. Uses that are incompatible with residential uses due to noise, vibration, or other characteristics are not permitted in locations that may impact existing or future residential development.

PROJECT GOALS AND OBJECTIVES

Consistent with CEQA Guidelines Section 15124(b), a clear statement of objectives and the underlying purpose of the proposed Project shall be discussed.

Project Objectives

The principal objective of the proposed Project is the annexation of the Project site into the City of Manteca, and approval and subsequent development of the Development Area for residential and park uses.

The quantifiable objectives of the proposed Project include annexation of 183.46 acres, including the proposed 157.53-acre Development Area, 19.11-acre Non-development area on 15 inhabited residential lots, and 6.82 acres of existing right-of-way. The quantifiable objectives include the development of 827 single family detached units, two parks totaling 9.62 acres (Lot E 4.22 acres and Lot F 5.40 acres).

The goals of the proposed Development are as follows:

- Provide residential housing opportunities that are visually attractive and accommodate the future housing demand in Manteca.
- Establish a mixture of Low-Density Residential project types that collectively provide for local and regional housing and that take advantage of the area's high level of accessibility.
- Provide infrastructure and park space that meets City standards, is integrated with existing and planned facilities and connections, and increases recreation opportunities for existing and future residents of the City.
- Establish a logical phasing plan designed to ensure that each phase of development would include necessary public improvements required to meet City standards.

PROJECT ENTITLEMENTS

General Plan Amendment

The proposed Project would require a minor General Plan Land Use Amendment to adjust the exact location and shape of the Park land use designation within Development Area. No changes are proposed for the Non-development Area 1. It is noted that the General Plan Update proposed changes to the land use in Non-development Area 2, and the proposed Land Uses under this General Plan Amendment are consistent with the General Plan Update. The proposed General Plan land uses are shown on Figure 7.

Prezoning

The Project site is currently outside of the jurisdiction of the City of Manteca, and therefore does not have zoning. The proposed project includes a request for pre-zoning of the Development Area, Non-development Area 1, and Non-development Area 2.

Development Area: The pre-zoning request is for a Planned Development (PD) zoning over this area.

Non-development Area 1: The pre-zoning request is for an R-1 District over these existing lots. The R-1 is defined as follows:

- **R-1 One-Family Dwelling Zoning District**. This designation allows for substantial flexibility in selecting dwelling unit types and parcel configurations to suit site conditions and housing needs. The types of dwelling units include small lots and clustered lots as well as conventional large-lot detached residences.

Non-development Area 2: The pre-zoning request is for a Commercial Mixed Use (CMU), and General Commercial (GC) District over these lots. The CMU and GC are defined as follows:

- **Mixed Use Commercial Zoning District**. This designation will accommodate a variety of uses including high-density residential, employment centers, retail commercial, and professional offices.
- **General Commercial Zoning District**. This category provides for wholesale, warehousing, and heavy commercial uses, highway-oriented commercial retail, public and quasi-public uses, and similar and compatible uses. The designation is also intended to accommodate visitor lodging, commercial recreation and public gathering facilities, such as amphitheaters, or public gardens. It also allows most neighborhood and mixed commercial uses.

The proposed zoning for the Project site is shown on Figure 8.

Tentative Subdivision Map

The proposed Project includes a Tentative Subdivision Map for the Development Area that would ultimately be divided into four phases on single tentative subdivision map. The tentative map would result in the subdivision of 157.53 acres into 827 residential lots and two park parcels totaling 9.62 acres. Figure 9 illustrates the Site Plan, and the full Tentative Map is included as Attachment A.

Annexation

The proposed Project includes an Annexation of 16 APNs totaling 183.46 acres. This includes the Development Area (157.53-acre parcel, APN 241-32-018), Non-development Area 1 (an inhabited annexation of 6 parcels on 6 acres), Non-development Area 2 (an inhabited annexation of 9 parcels on 13.11 acres), and the Right-of-Way Annexation Area (6.82 acres of existing County right-of-way). Figure 10 illustrates the Annexation Area. The annexation will also include detachment from the Lathrop Manteca Fire District.

Development Agreement

The proposed Project anticipates a Development Agreement that will be negotiated between the City and Applicant. Terms of the Development Agreement are not available at this early stage of review, but will be required to be consistent with the environmental analysis, including any mitigation measures that are created to reduce impacts.

DEVELOPMENT PROJECT CHARACTERISTICS

The proposed Project is primarily a residential development anticipated to provide up to 827 units. The Development Project would provide approximately 9.62 acres of parkland. Other uses to support and compliment the proposed residential development include underground wet and dry utility infrastructure, roadways, curb/gutters/sidewalks, bicycle/pedestrian facilities, street lighting, and street signage. As shown in Table 2 provides a land use summary of the Development Project.

TABLE 2: LAND USE SUMMARY

PROPOSED LAND USE DESIGNATIONS	APPROXIMATE ACRES	ALLOWABLE DENSITY (OR FAR)	PROPOSED AVERAGE DENSITY (OR FAR)	PROJECTED NUMBER OF UNITS (OR SQUARE FEET)
LDR	146.63	2.1 to 8.0	5.1	827 units
OS	10.90	--	--	--
Total	**157.53**	**--**	**--**	**827 units**

Development of housing will depend on market conditions and demand. The plan for infrastructure allows for development to occur in phases to respond to the market conditions and demand.

Residential Development

The proposed Project will provide a variety of housing types and lot sizes that will accommodate a range of housing objectives and buyer needs with a goal to ensure housing for a variety of families and lifestyles. As shown in Table 2 above, at full build-out, the Development Area will accommodate up to 827 residential units.

The residential neighborhoods are divided into four phases (quadrants) as part of one tentative subdivision map. Phase One (northwestern quadrant) will subdivide the Development Area into 193 single family residential lots. Lot sizes within this phase would range from 4,000 square feet to 11,145 square feet. The northern portion of the central park (4.22-acres) will begin construction during this phase of the project and will be completed during the development of Phase Two of the project. Phase Two (northeastern quadrant) will subdivide the Development Area into 239 single family residential lots. Lot sizes within this phase would range from 2,746 square feet to 12,315 square feet. A southern portion of the central park/basin will be constructed with this phase, but that area will only be utilized for extra stormwater storage and treatment. Phase Three (southwestern quadrant) will subdivide the Development Area into 250 single family residential lots. Lot sizes within this phase would range from 3,245 square feet to 9,904 square feet. The remaining portion of the central park/basin (5.40-acre) will be constructed in this phase Additionally, a 1.28-acre open space area will be constructed in this phase in the vicinity of the proposed RD 2094 dry levee. Phase Four (southeastern quadrant) will subdivide the Development Area into 145 single family residential lots. Lot sizes within this phase would range from 3,375 square feet to 20,182 square feet. Figure 9 illustrates the Site Plan, and the full Tentative Map is included as Attachment A.

Parks

As shown in Figure 9, approximately 9.62 acres of park and recreation facilities will be provided within the Project site in a variety of forms, consistent with the City's General Plan. After dedication to the City, the parks, parkways, and recreation facilities will be under the jurisdiction of the City, and will be operated and maintained by the City for the enjoyment of the residents of Manteca. Maintenance will be funded through a community facilities district. The park sites shown on Figure 9 indicate conceptual park locations. Actual locations of parks and dual use basins may change as the Development Area is developed. Parks and parkways are shown for reference only, but will be finalized during the development of Improvement Plans and Final Maps. Parks may include community or neighborhood parks with active and passive components as approved by the City. Park acreage and facilities shall occur within the Development Area in a variety of forms as determined by the City during the mapping and improvement plan process. Parks may feature play fields, children play areas, picnic areas, ball courts, open lawn areas, or other amenities. Park areas will be designed in conjunction with storm water basins.

Circulation

The proposed Project will participate with and expand the existing circulation system in the City of Manteca. Additionally, the proposed Project will provide sidewalks and bike lanes to offer additional bicycling and walking facilities for all of Manteca's residents. The Development Area is a natural progression of the existing housing areas and street network on the south side of the City and ties directly to the existing roadway network. The Development Area is bounded on the north by Woodward Avenue, on the east by Airport Way, on the south by an existing Reclamation District #2094 (RD 2094) dry levee and existing agricultural fields, and on the west by the existing Terra Ranch Subdivision.

The proposed Project includes a hierarchy of roadways to accommodate the capacity needs of the existing street network as well as provide additional vehicular access to the Development Area that will also benefit the vehicular circulation for the entire City. Woodward Avenue and Airport Way are the main arterial roadways providing access to the Development Area. The proposed project includes annexation of right-of-way along Woodward Avenue and Airport Way, which will be improved to a City of Manteca standard.

The neighborhoods within the Development Area will include a network of minor collectors, and residential streets to provide an efficient flow of traffic through the area. Additionally, sidewalks and bicycle lanes will be included per the City standards.

Utilities and Planned Infrastructure Improvements

The construction of on-site infrastructure improvements would be required to accommodate development of the Development Area, as described below.

Potable Water System: The Development Area would be served by a new potable water distribution system. Development of the proposed potable water system will require the installation of additional water mains within the proposed roadways to comply with the 2005 City of Manteca Master Water Plan. Additionally, a potable well site would be installed within the subdivision adjacent to Airport Way. The proposed on-site water distribution system will have various points-of-connection to the City mains. The Development Project will connect to the existing water main lines in Woodward Avenue, Airport Way, and at various stub streets from the existing Terra Ranch Subdivision to the west. Additionally, an internally looped system of water lines will be installed within the Development Area. A water system analysis will be prepared during future design of Improvement Plans to ensure that the final design is compliant with City of Manteca fire flow and pressure standards.

The proposed water distribution system may utilize Best Management Practices (BMP) and design control features, including the following Low Impact Development (LID) measures:

1. Implementation of the City of Manteca water recycling program for irrigation of public areas.
2. Irrigation system designs may include “purple pipe” for distribution of recycled water.
3. Reduction of turf areas on lots.
4. Use of rain gardens on lots and in public areas.
5. Use of drought-resistant vegetation in landscaping on lots and public areas.
6. Use of native trees and vegetation for landscaping on lots and in public areas.
7. Lot designs may include features that receive roof runoff from downspouts and provide for reuse of rainwater for irrigation.

Non-Potable Water: The Development Area would include the development of an on-site non-potable water distribution system that would eventually provide irrigation water to planned parks, open space, and landscaped areas. All landscape irrigation is to be installed with non-potable components.

Connection from all irrigation systems to the non-potable water service will be provided in the proposed streets. This connection is to be provided per the requirements of the City Water Division with a valve whether the irrigation is provided by a well or not. In the future, when the non-potable system is charged by the City, the irrigation will be provided by the non-potable water system with the irrigation well remaining as a back-up only. Irrigation shall be designed to maximize efficiency and meet the requirements of the City Parks Maintenance Division.

Wastewater System: The Development Area would be served by a new wastewater distribution system. The proposed wastewater conveyance facilities would connect to the existing 36” sewer main in Woodward Avenue as part of the City of Manteca collection and treatment system. The proposed Project will also construct a new 12” sewer main in Airport Way to extend the existing City of Manteca collection and treatment system.

Wastewater treatment would be provided at the City’s existing Wastewater Quality Control Facility (WQCF) at 2450 West Yosemite Avenue in western Manteca. The Development Area is located within the South Manteca Collection Shed (SMCS). The backbone of the SMCS is the South Manteca Trunk Sewer (SMTS) along Woodward Avenue. Existing facilities for conveying effluent from the South Manteca Collection Area include:

1. The existing 36-inch trunk sewer facility in Woodward Avenue which extends to Galleria Drive.
2. The existing 54-inch and 60-inch truck sewer facilities that extend north form Woodward Avenue and traverses the existing Dutra Estates Subdivision, highway 120, and the future Family Entertainment Zone eventually connecting to the existing WQCF.

Storm Drainage: The Development Area would include construction of a new storm drainage system, including a drainage collection system, storm drain pump stations, and detention basins. It is noted that the locations of the proposed detention basins are conceptual and will be finalized during the design of Improvement Plans.

Installation of the proposed Project's storm drainage system will be subject to current City of Manteca Design Specifications and Standards. The proposed storm drainage collection and detention system will be subject to the State Water Resources Control Board Requirements (SWRCB) and City of Manteca regulations, including: Manteca Storm Drain Master Plan, 2013; Phase II, National Pollutant Discharge Elimination System (NPDES) Permit Requirements; NPDES-MS4 Permit Requirements; and LID Guidelines.

Stormwater quality standards imposed and monitored by the Environmental Protection Agency (EPA) and the SWRCB through the City's NPDES permit require treatment of stormwater runoff prior to its release into natural drainage features or dual use South San Joaquin Irrigation District (SSJID) and City Laterals. Stormwater quality is an integral part of the City's stormwater management system. Most existing stormwater is pumped into the dual use SSJID and City laterals and drains.

The City requires detention basins to help attenuate peak flows before drainage discharge is pumped into SSJID's facilities. Delaying the release of water over longer periods of time further reduces the potential of downstream flooding. The proposed detention basins are joint-use facilities providing recreation and other uses when not being used for stormwater detention.

Regulated Public Utilities: Electrical, gas, phone, cable and related internet services would be extended to all portions of the Project site from existing facilities located along Woodward Avenue and Airport Way adjacent to the Project site. Proposed utilities would be located within public utility easements to be dedicated along street frontages. Utility improvements would be installed in conjunction with planned street improvements.

USES OF THE EIR AND REQUIRED AGENCY APPROVALS

This EIR may be used for the following direct and indirect approvals and permits associated with adoption and implementation of the proposed Project.

City of Manteca

The City of Manteca will be the Lead Agency for the proposed Project, pursuant to the State Guidelines for Implementation of CEQA, Section 15050. Actions that would be required from the City include, but are not limited to the following:

- Certification of the EIR;
- Adoption of the Mitigation Monitoring and Reporting Program;
- Approval of City of Manteca General Plan Amendment (Land Use Element);
- Approval of City of Manteca Zoning Pre-zoning;
- Approval of Annexation of the Development Area and Inhabited Area and Authorization to submit Annexation request to San Joaquin LAFCo;
- Approval of Development Agreement;
- Approval of Vesting Tentative Maps;
- Approval of future Final Maps;
- Approval of future Improvement Plans;
- Approval of future Grading Plans;
- Approval of future Site Plan and Design Review;
- City review, approval, and construction and utility plans;
- Approval of future Building Permits;
- Approval of future Conditional Use Permits.

Other Governmental Agency Approvals

The following agencies may be required to issue permits or approve certain aspects of the proposed Project. Other governmental agencies that may require approval include, but are not limited to, the following:

- San Joaquin Local Agency Formation Commission (LAFCo) – Annexation and Detachment from Lathrop Manteca Fire District;
- Central Valley Regional Water Quality Control Board (CVRWQCB) - Storm Water Pollution Prevention Plan (SWPPP) approval prior to construction activities pursuant to the Clean Water Act;
- San Joaquin Valley Air Pollution Control District (SJVAPCD) - Approval of construction-related air quality permits;
- SJVAPCD - Authority to Construct, Permit to Operate for stationary sources of air pollution; and
- San Joaquin Council of Governments - SJCOG, Inc. (SJCOG) - Issuance of incidental take permit under the San Joaquin Multi-Species Habitat Conservation and Open Space Plan (SJMSCP).
- South San Joaquin Irrigation District - Irrigation Service Abandonment Agreements, Improvement Plan review and Board of Directors consideration.

PROBABLE ENVIRONMENTAL EFFECTS AND SCOPE OF THE EIR

The City has reviewed the proposed project application and has determined that an EIR should be prepared for the proposed project because it may have a significant effect on the environment. All environmental topics identified in Appendix G of the State CEQA Guidelines require analysis within an EIR. The Draft EIR will examine the following: Aesthetics, Agricultural and Forest Resources, Air Quality, Biological Resources, Cultural Resources, Energy, Geology/Soils, Greenhouse Gases/Climate Change, Hazards and Hazardous Materials, Hydrology/Water Quality, Land Use/Planning, Mineral Resources, Noise, Population/Housing, Public Services, Recreation, Transportation/Circulation, Tribal Resources, Utilities, Cumulative Impacts, and Growth Inducing Impacts.

Each chapter of this EIR will include a discussion of the existing setting, thresholds of significance, evaluation of potential impacts, and if necessary, feasible mitigation measures to reduce or eliminate potentially significant impacts to the applicable resource. Additionally, the EIR will include cumulative impacts analyses, as well as analyses of alternatives to the proposed project.

An Initial Study has not been prepared for this Project. As noted above, each environmental topic identified in Appendix G of the State CEQA Guidelines requires analysis in an EIR.

SUBMITTING COMMENTS

To ensure that all significant issues related to the proposed project are identified and addressed, written comments are invited from all interested parties. To be considered, all comments must be in writing and clearly legible. Written comments concerning the proposed CEQA analysis for the Lumina Ranch project should be directed to the name and address below:

Mark Niskanen, Contract Planner
Community Development Department
City of Manteca
1001 West Center Street
Manteca, CA 95337
Office: (209) 599-8377
Email: mark@jbandersonplanning.com
Written comments are due to the City of Manteca at the location addressed above by 5:00 p.m. on February 23, 2021.

Figure 1: Regional Location

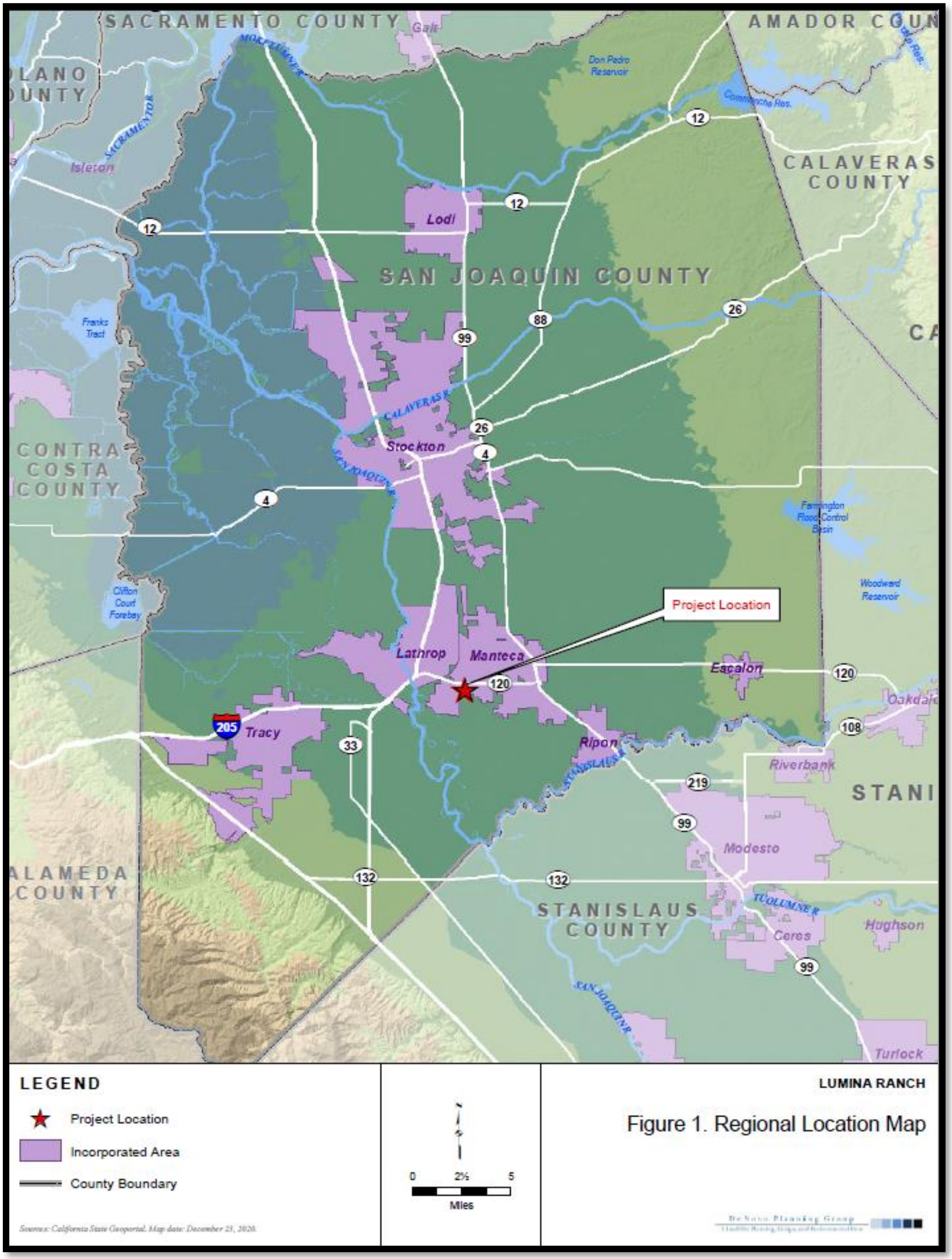


Figure 2: Project Vicinity

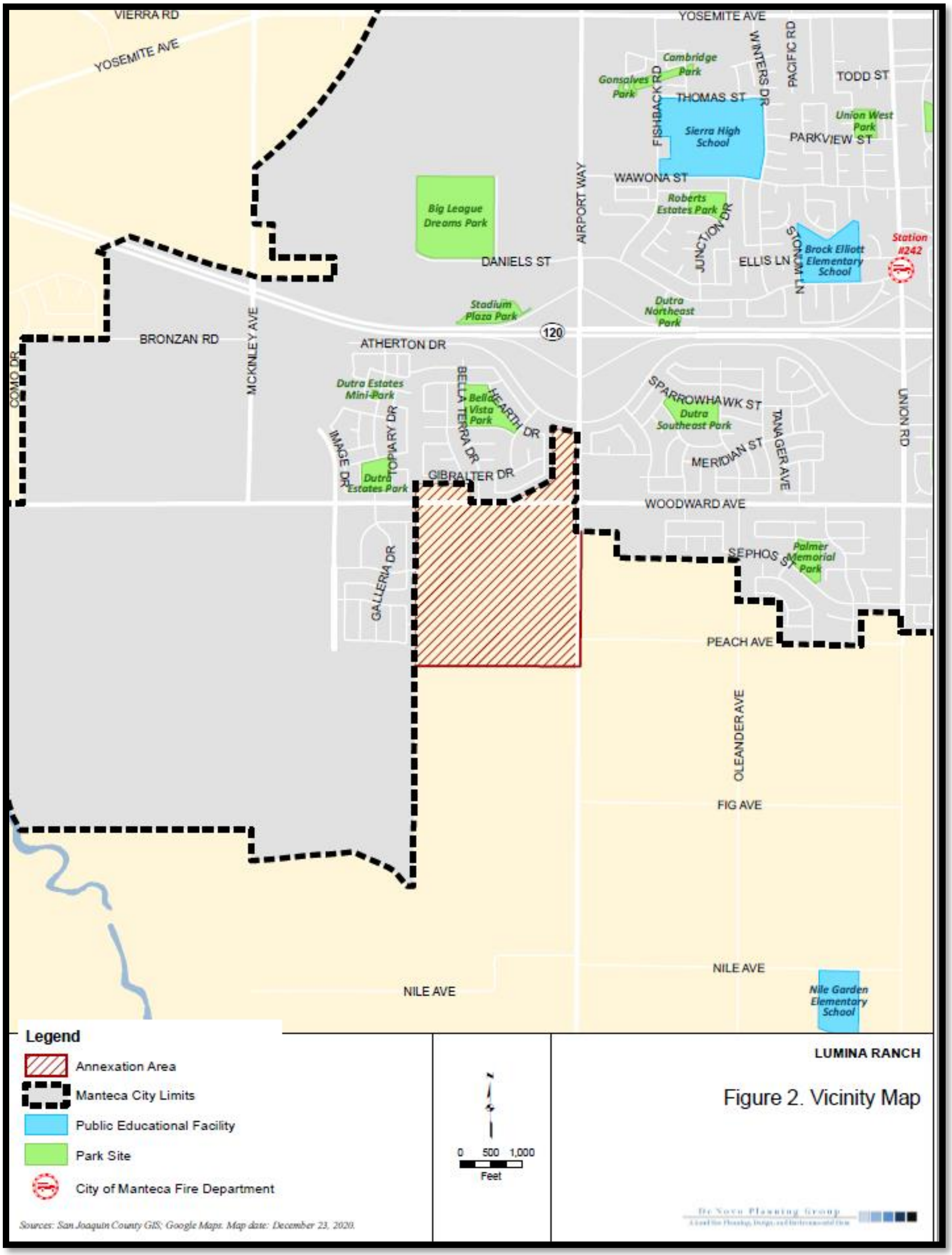


Figure 3: USGS Map

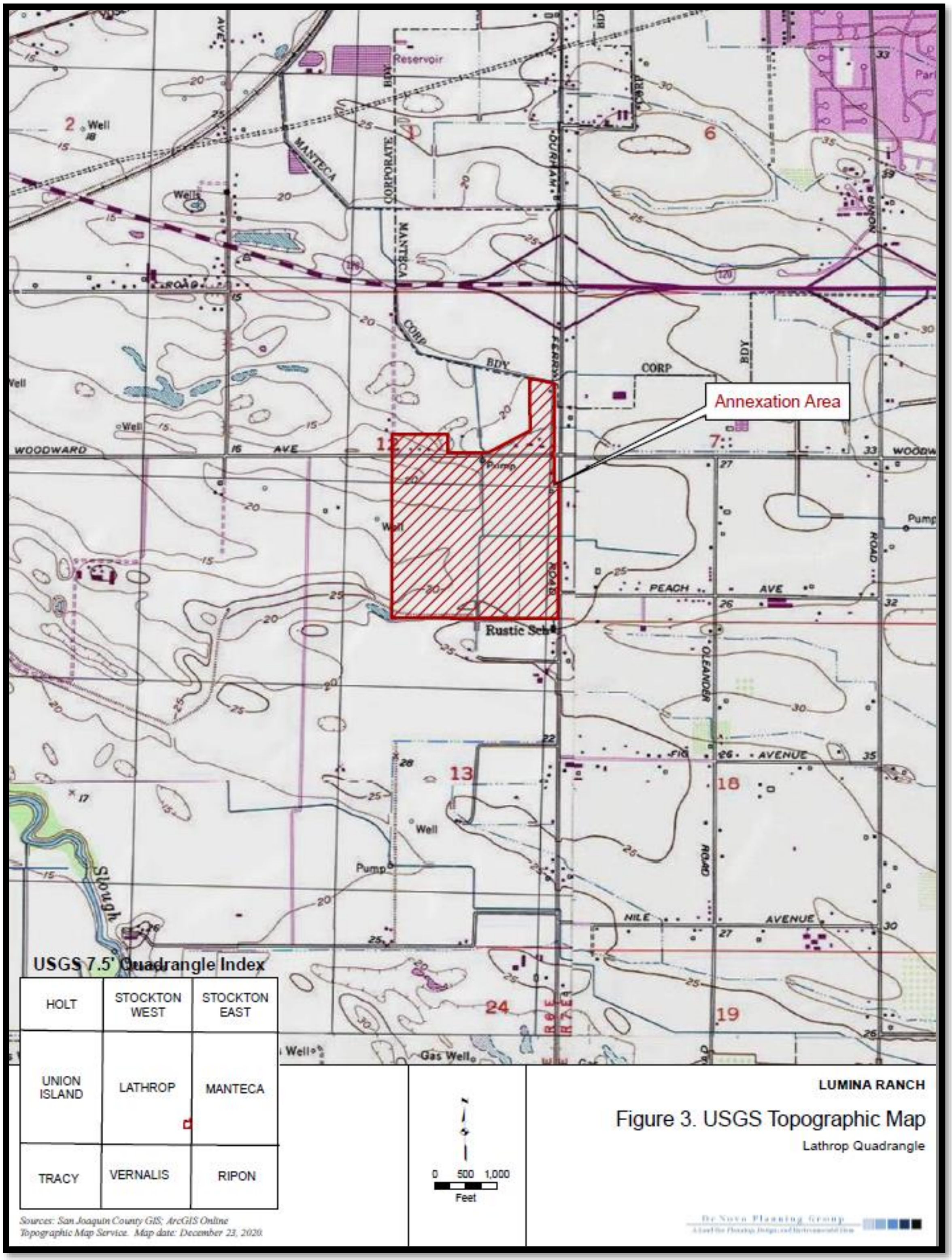


Figure 4: Assessor Parcel Map

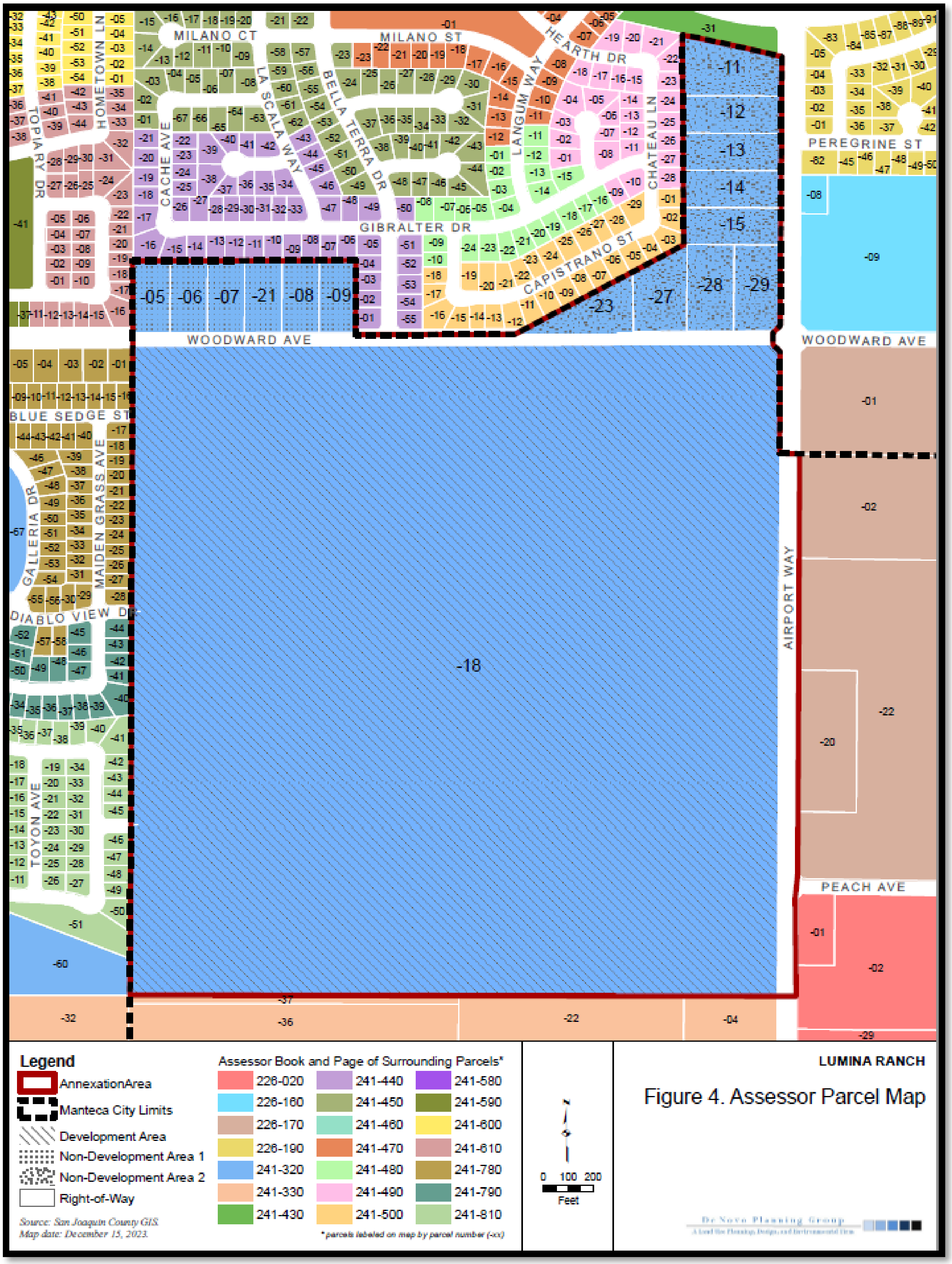


Figure 5: Aerial View Photo

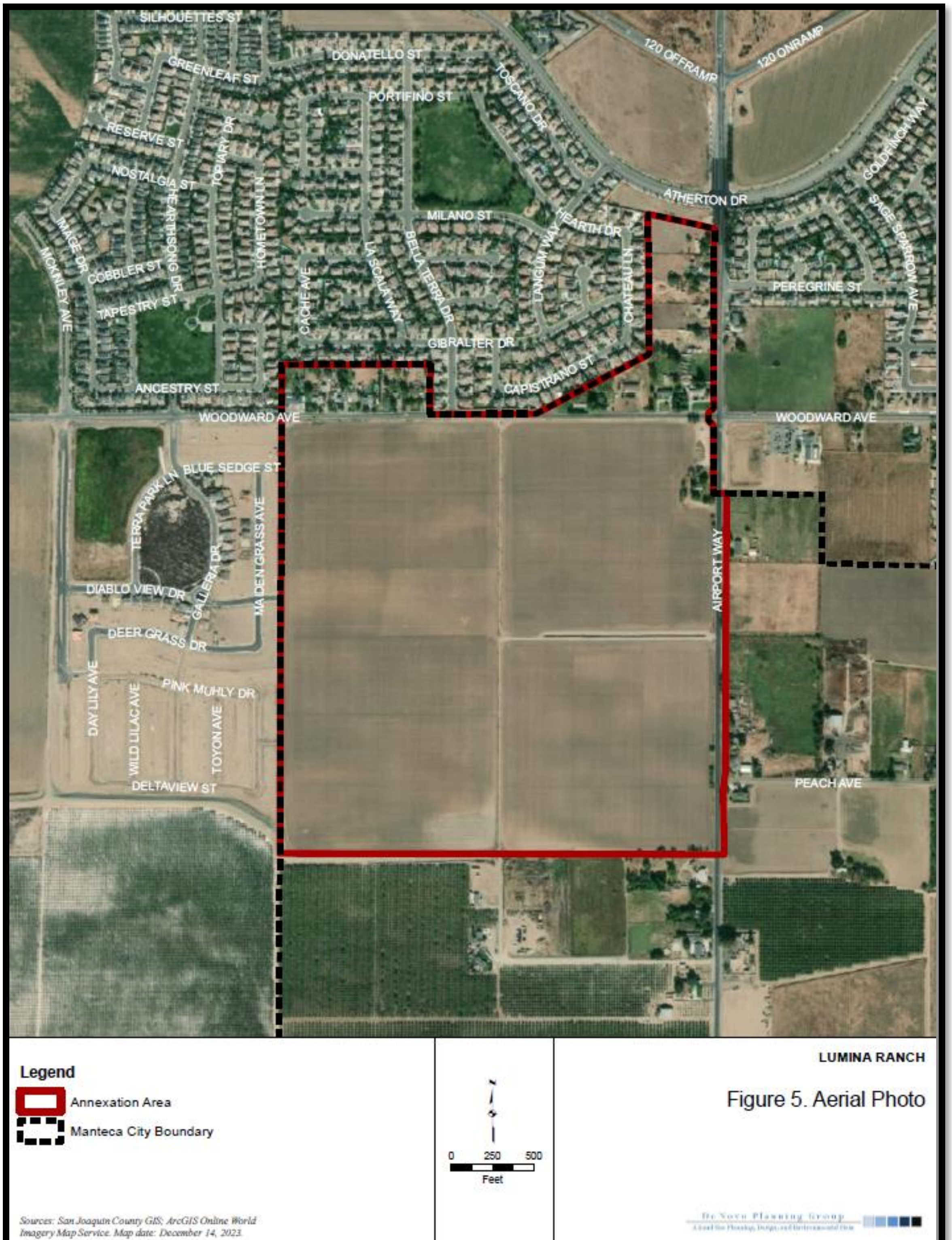


Figure 6: Existing General Plan Land Use Designations

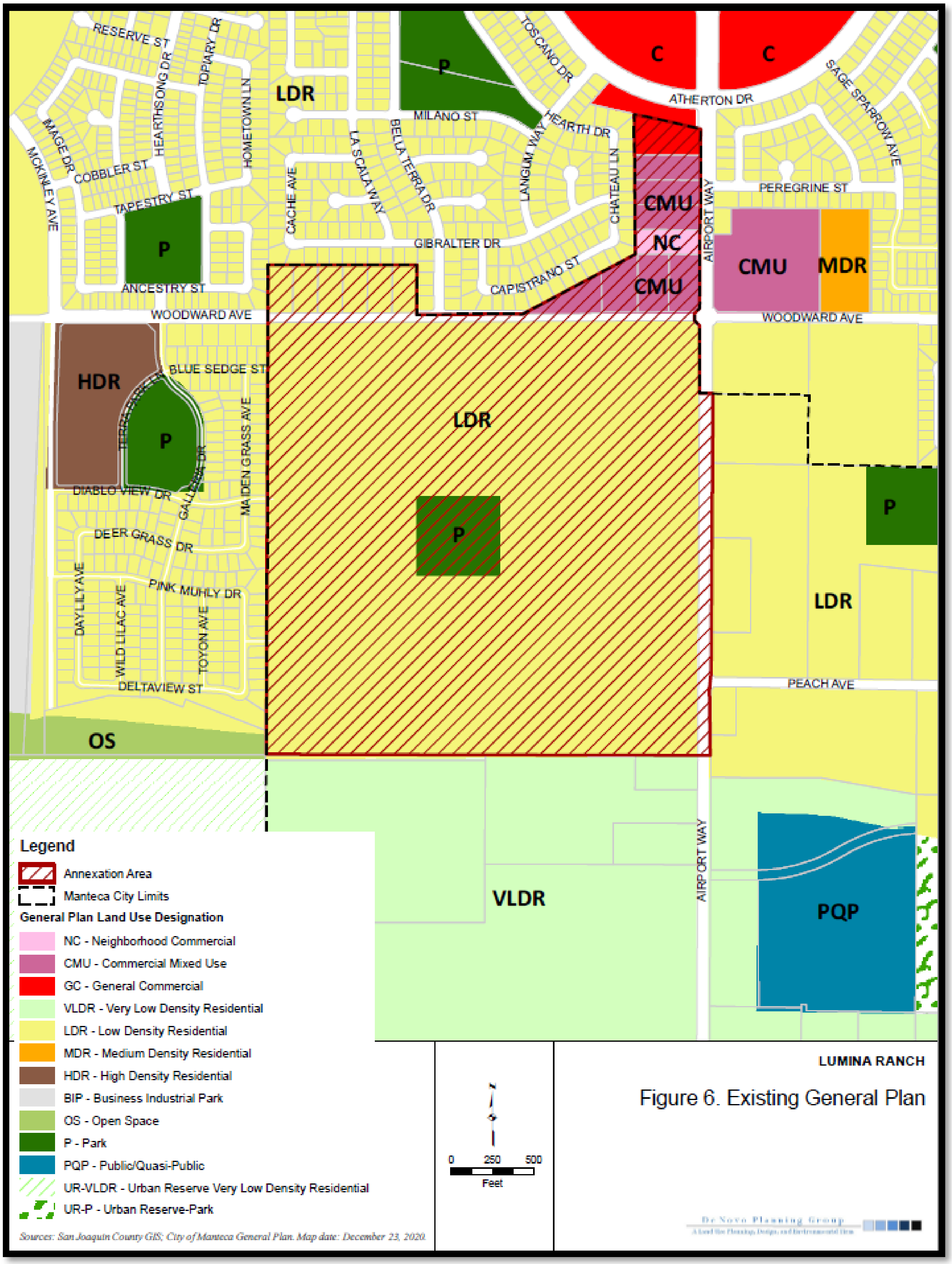


Figure 7: Proposed General Plan Land Use Designations

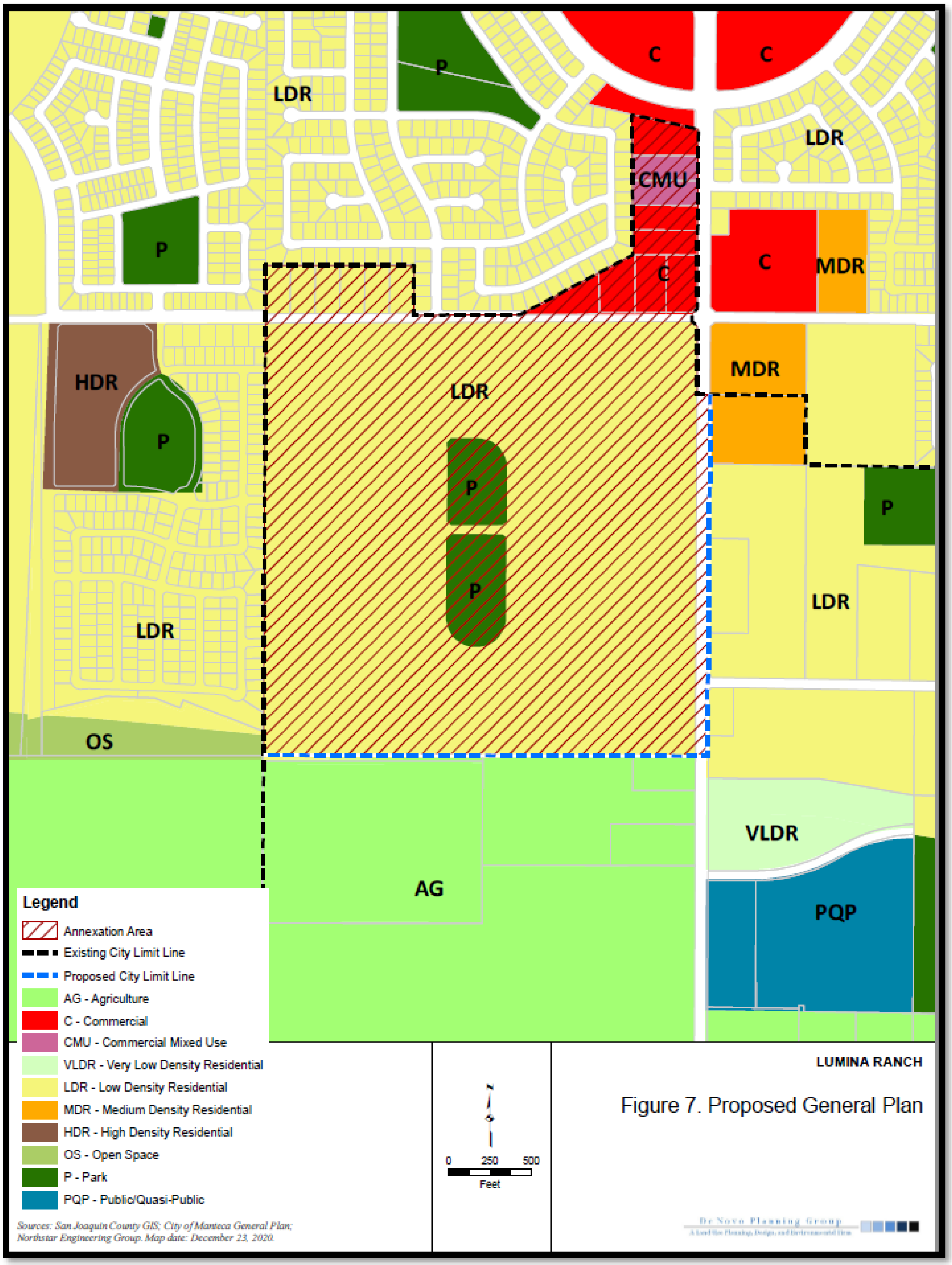


Figure 8: Proposed Zoning

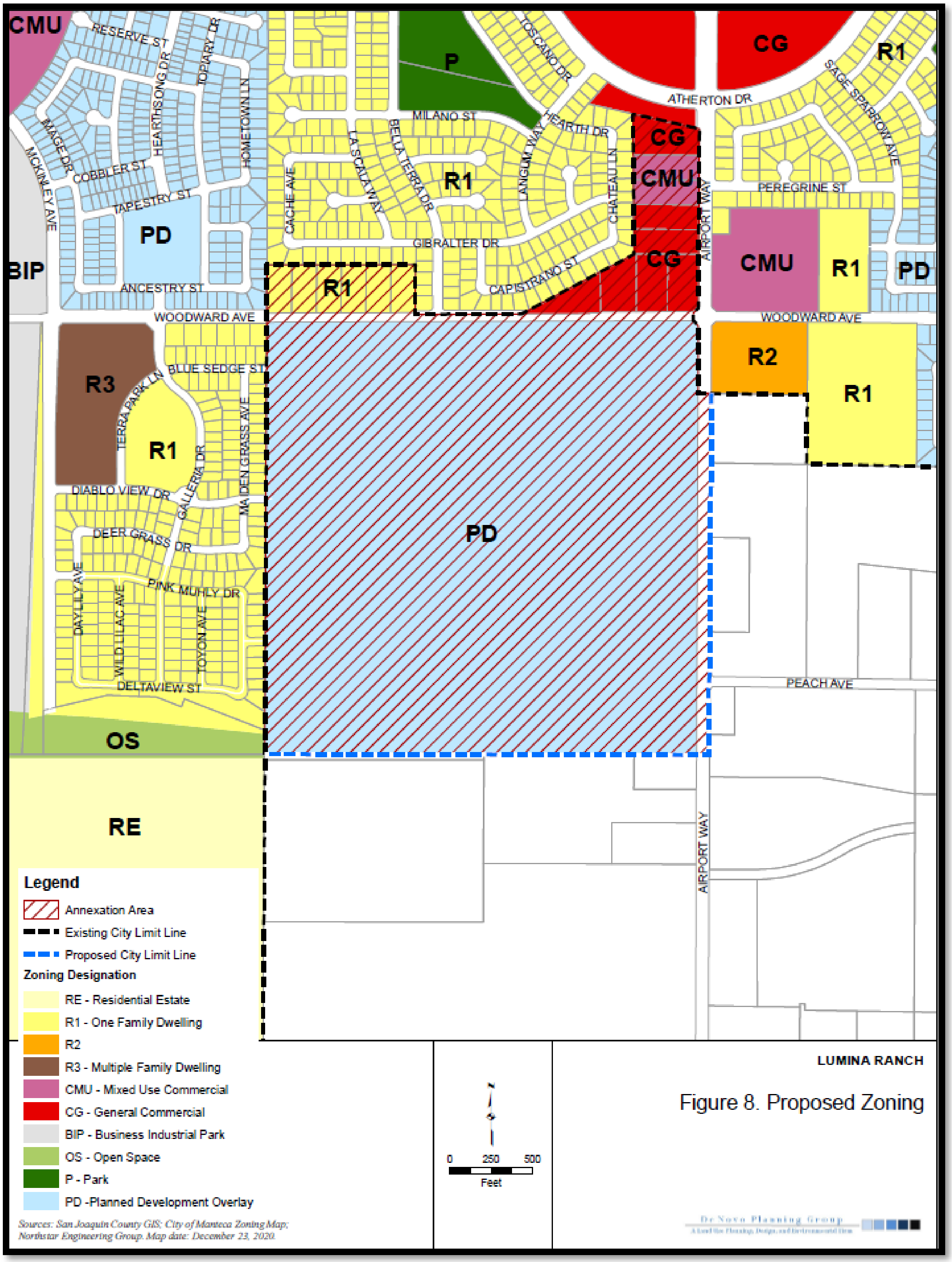


Figure 9: Site Plan of Development Area

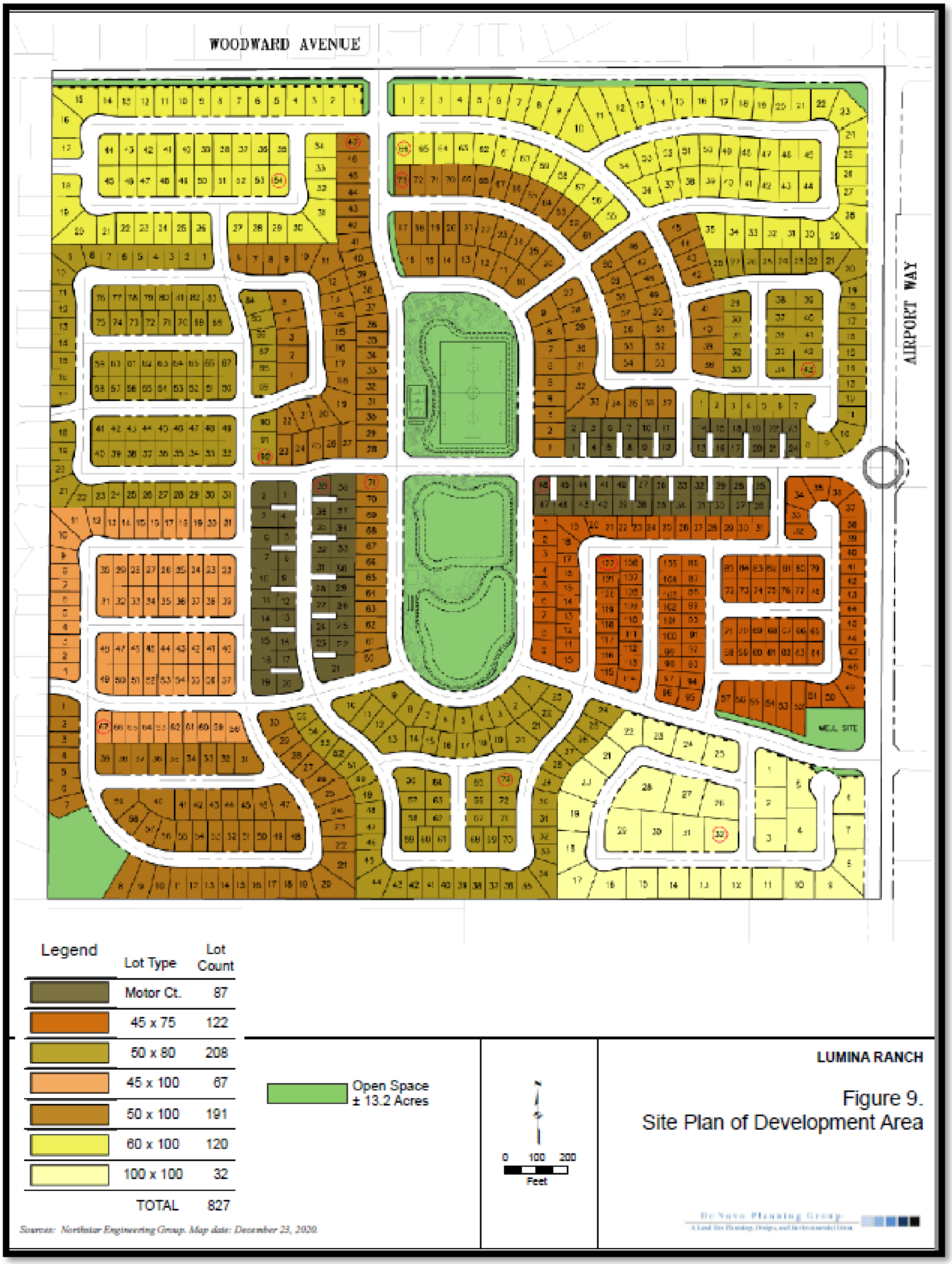
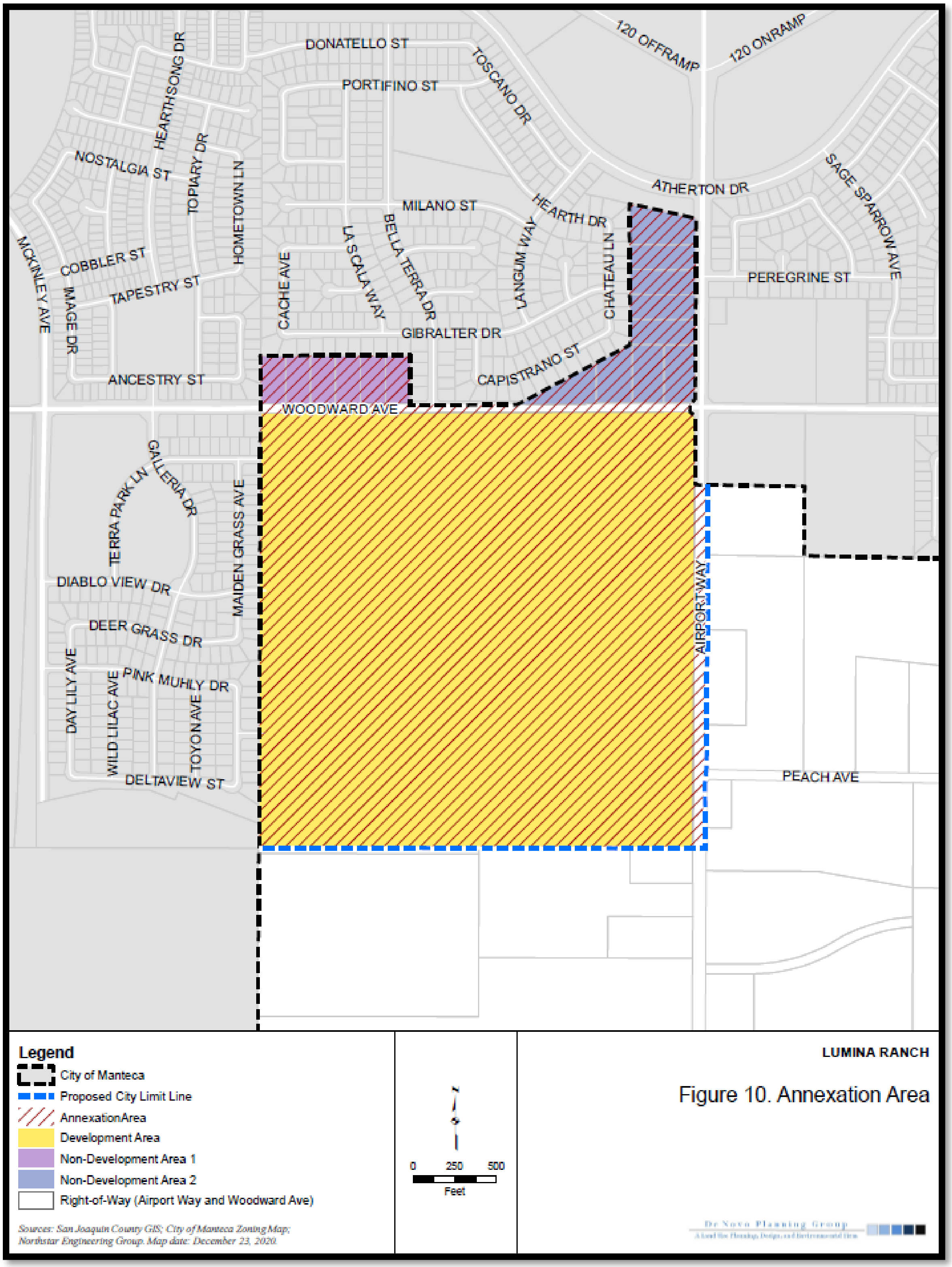
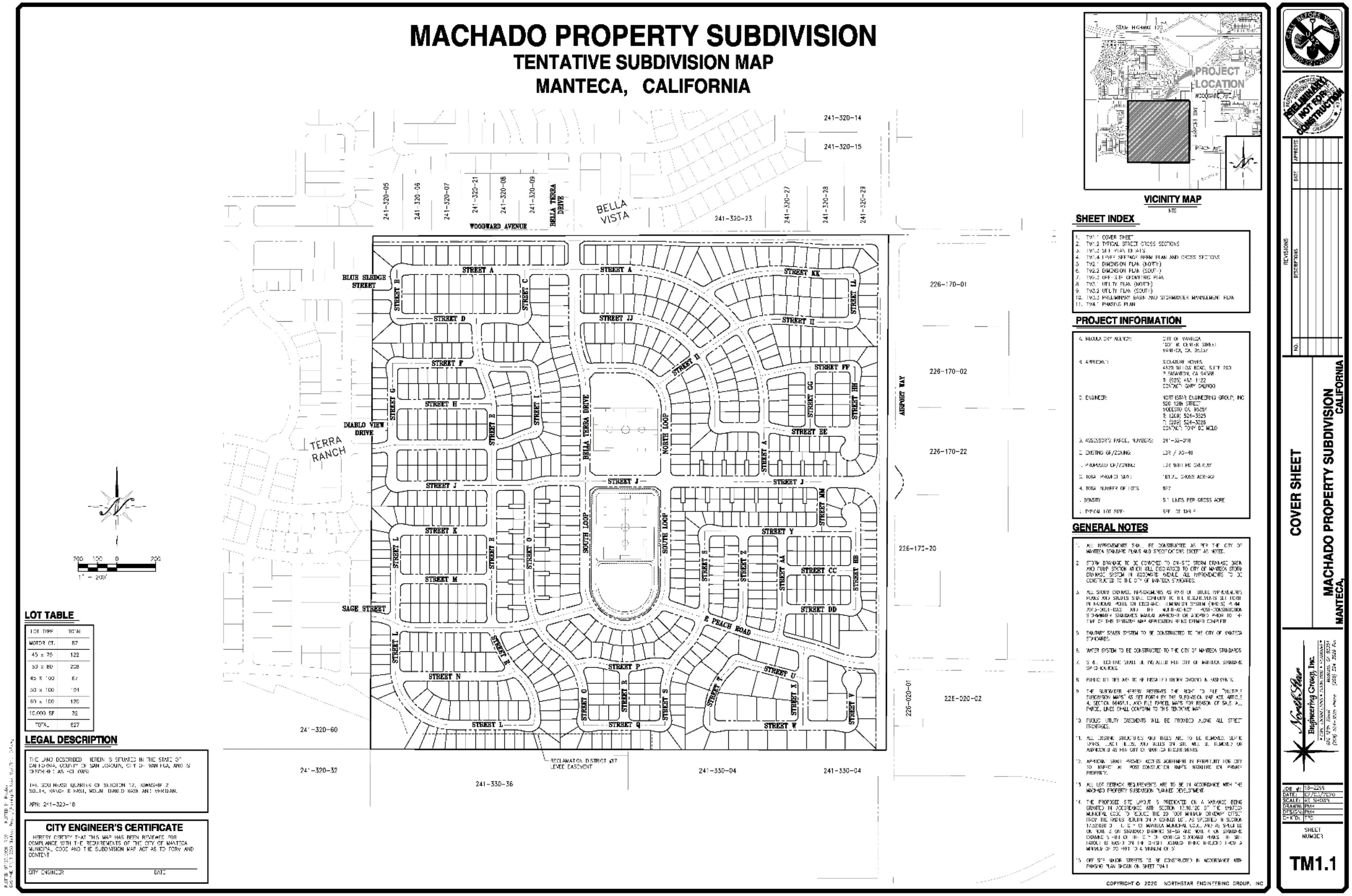
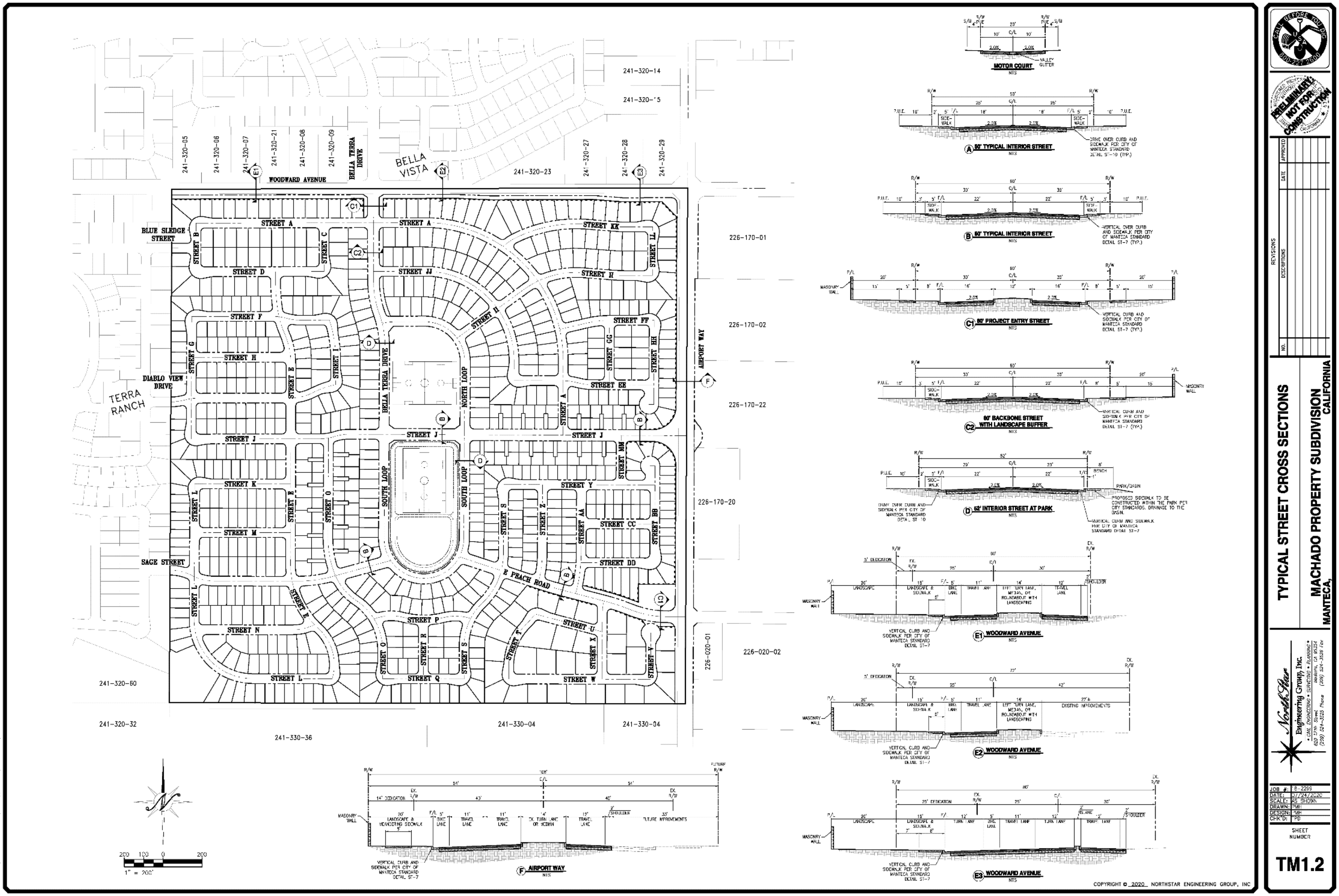


Figure 10: Annexation Map



Attachment A Tentative Subdivision Map




TYPICAL STREET CROSS SECTIONS
MACHADO PROPERTY SUBDIVISION
MANTECA, CALIFORNIA
TM1.2
SHEET NUMBER
PRELIMINARY NOT FOR CONSTRUCTION
REVISIONS
NO.
DESCRIPTIONS
DATE
APPROVED
WOODWARD AVENUE
BELLA VISTA
BELLA TERRA DRIVE
BLUE SLEDGE STREET
DIABLO VIEW DRIVE
TERRA RANCH
SAGE STREET
AIRPORT WAY
E PEACH ROAD
NORTH LOOP
SOUTH LOOP
STREET A
STREET J
241-320-14
241-320-15
241-320-23
241-320-60
241-320-32
241-330-36
241-330-04
226-170-01
226-170-02
226-170-22
226-170-20
226-020-01
226-020-02
MOTOR COURT
NTS
A 50' TYPICAL INTERIOR STREET
B 60' TYPICAL INTERIOR STREET
C1 80' PROJECT ENTRY STREET
C2 60' BACKBONE STREET WITH LANDSCAPE BUFFER
D 52' INTERIOR STREET AT PARK
E1 WOODWARD AVENUE
E2 WOODWARD AVENUE
E3 WOODWARD AVENUE
F AIRPORT WAY
VERTICAL CURB AND SIDEWALK PER CITY OF MANTECA STANDARD DETAIL ST-7
1" = 200'
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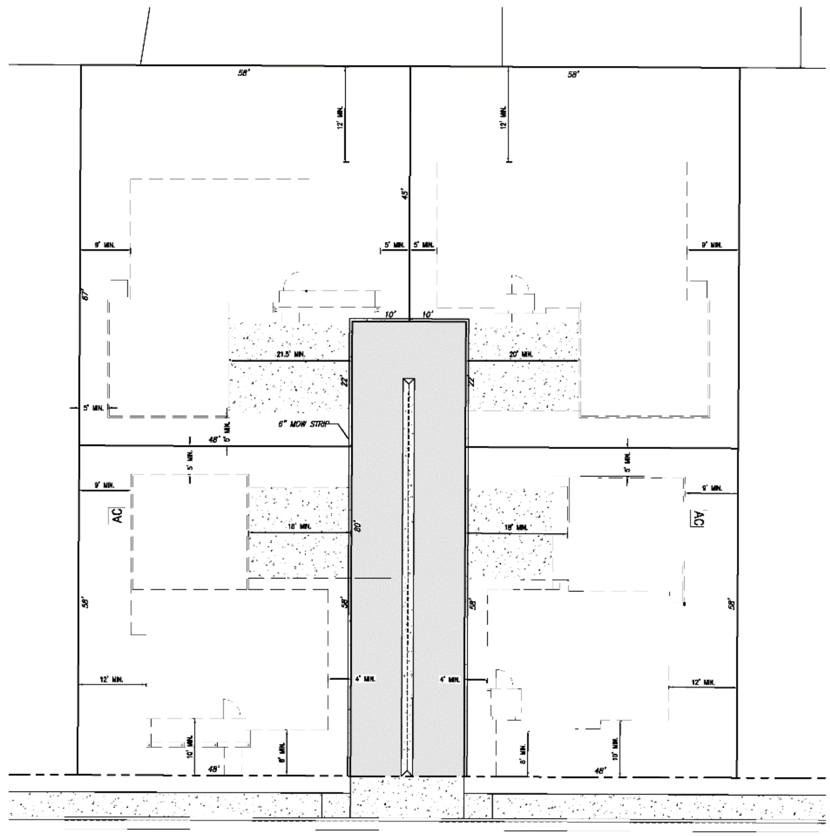
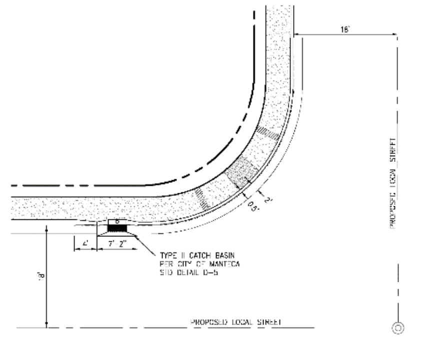
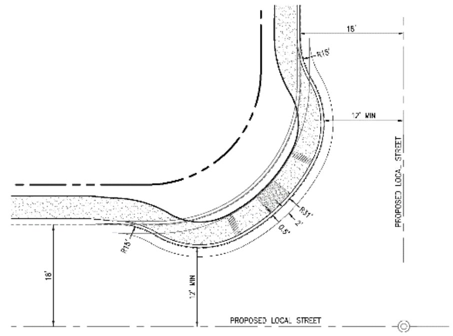


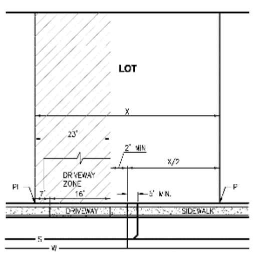
① CLUSTER MINIMUM LOT SIZE AND SETBACKS
SCALE: 1" = 10'



④ TYPICAL CURB RETURN
NTS

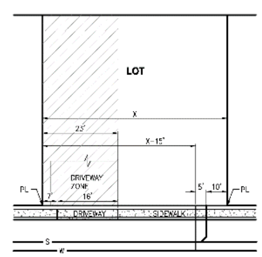


⑤ TYPICAL TRAFFIC CALMING CURB RETURN
NTS



NOTES:
1. SEWER LATERALS MAY BE INSTALLED ON EITHER SIDE OF THE WATER CONNECTION.
2. SEWER AND WATER SERVICES AT THE END OF A CUL-DE-SAC MAY BE LOCATED NO CLOSER THAN 2 ½ FEET FROM THE SIDE LOT LINE.

② LOT UTILITY LAYOUT (PER CITY OF MANTECA STANDARD DETAIL E-8)
NTS



NOTES:
1. SEWER LATERALS MAY BE INSTALLED ON EITHER SIDE OF THE WATER CONNECTION.
2. SEWER AND WATER SERVICES AT THE END OF A CUL-DE-SAC MAY BE LOCATED NO CLOSER THAN 2 ½ FEET FROM THE SIDE LOT LINE.

③ ALTERNATE UTILITY LAYOUT FOR SMALL LOTS (50' AND LESS)
NTS

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SITE PLAN DETAILS

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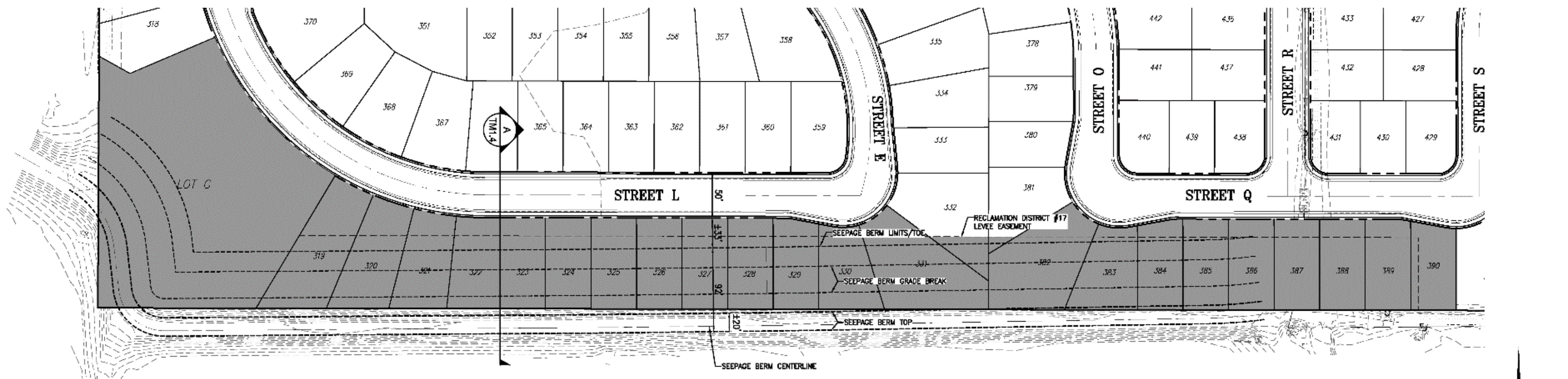
620 12th Street Modesto, CA 95354
(209) 524-3525 Phone (209) 524-3526 Fax

JOB #:	18-2299
DATE:	07/24/2020
SCALE:	AS SHOWN
DRAWN:	PMH
DESIGN:	PMH
CHK'D:	TPD

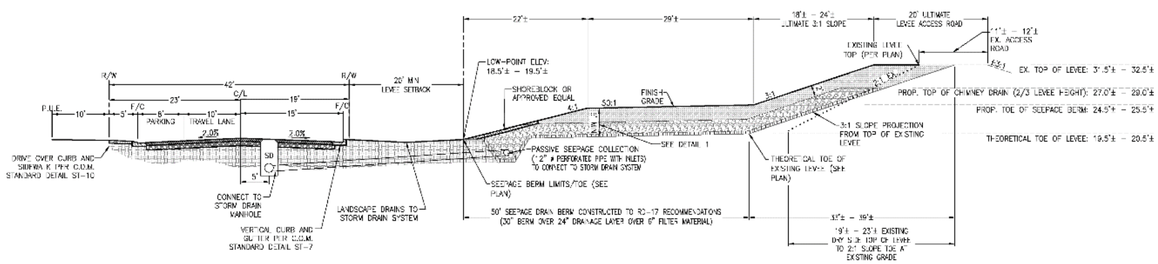
SHEET NUMBER

TM1.3

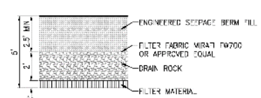


PROPOSED LOTS AT SEEPAGE BERM

LOTS SHOWN WITHIN THE LIMITS OF THE PROPOSED SEEPAGE BERM ARE SHOWN AS A CONTIGENCY IN THE EVENT THAT THE PROPOSED RD-17 LEVEE IS RELOCATED SOUTH OF THE PROJECT SITE IN THE FUTURE. IF IT IS DETERMINED BY RD-17 THAT THE LEVEE IS TO REMAIN IN THE CURRENT ALIGNMENT, LOTS G, 319–332 & 351–390 ARE TO BE REMOVED FROM THE PROJECT.



A TYPICAL LEVEE SECTION
NTS



1 SEEPAGE BERM FILL DETAIL
NTS

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LEVEE SEEPAGE BERM PLAN AND CROSS SECTIONS

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DATE:	07/24/2020
SCALE:	AS SHOWN
DRAWN:	FMH
DESIGN:	FMH
CHK'D:	TFD

SHEET NUMBER
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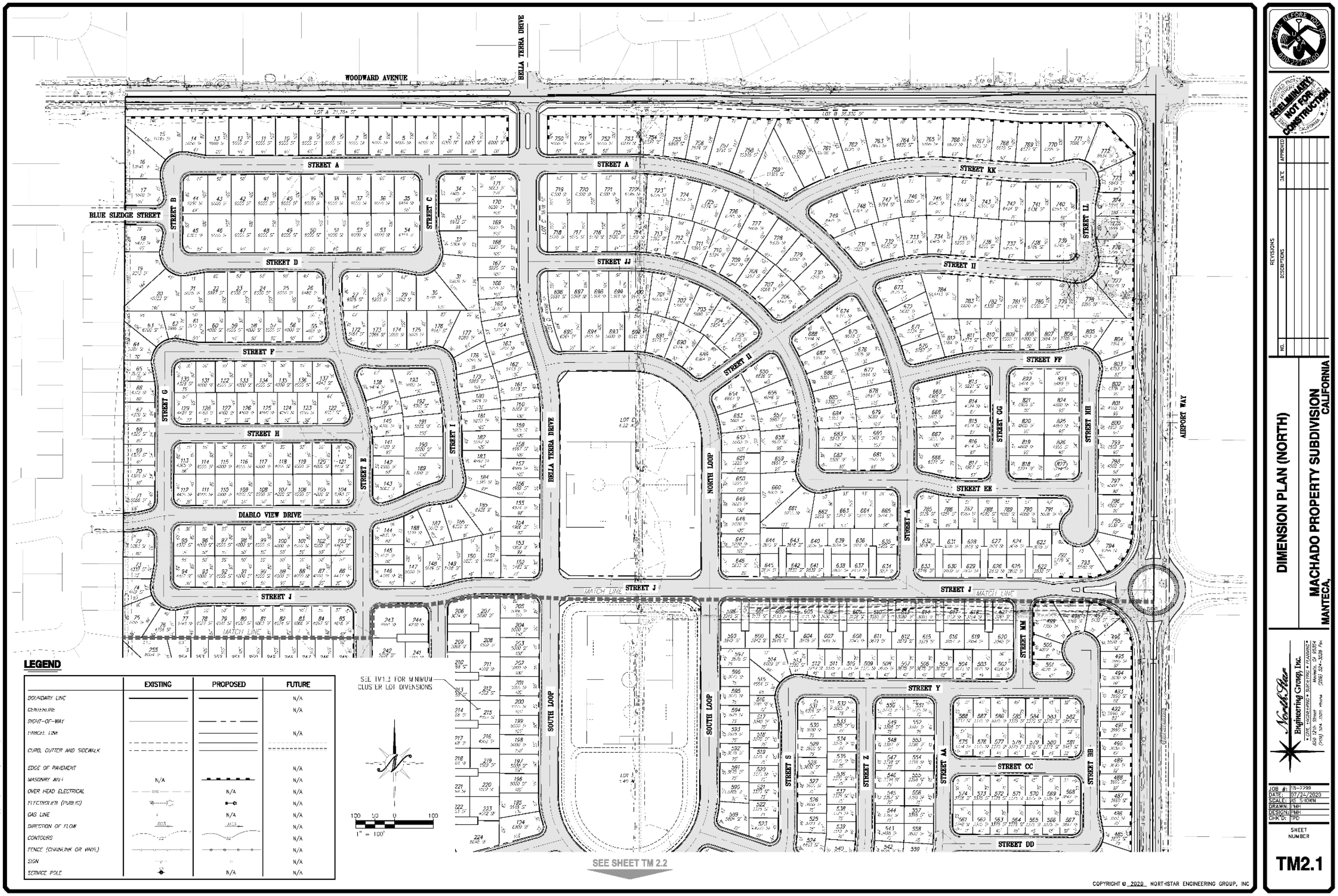
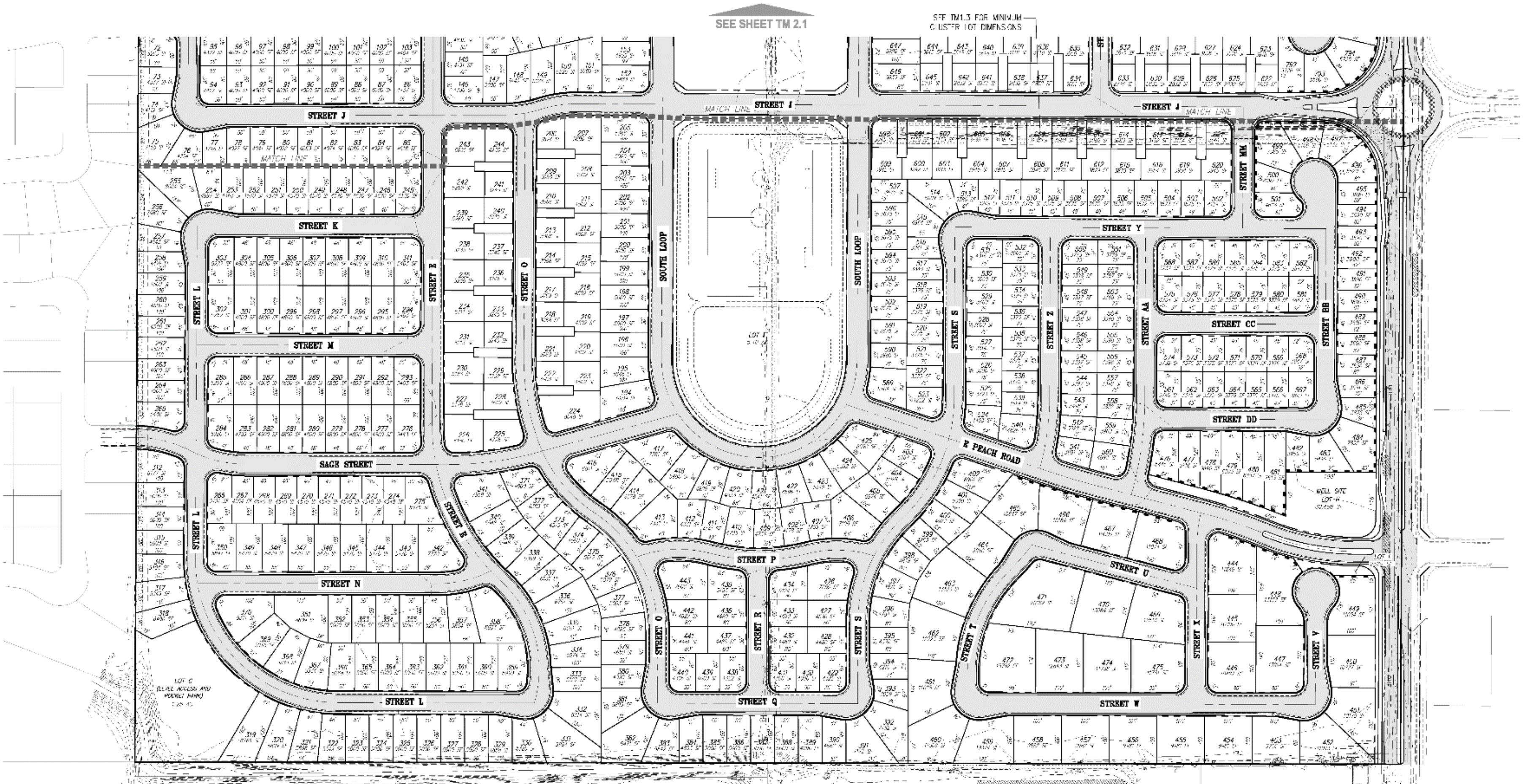
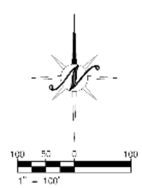


	EXISTING	PROPOSED	FUTURE
BOUNDARY LINE			N/A
CENTERLINE			N/A
RIGHT-OF-WAY			
PARCEL LINE			N/A
CURB, GUTTER AND SIDEWALK			
EDGE OF PAVEMENT			N/A
MASONRY WALL	N/A		N/A
OVER HEAD ELECTRICAL		N/A	N/A
STREETLIGHTS (PUBLIC)			N/A
GAS LINE		N/A	N/A
DIRECTION OF FLOW			N/A
CONTOURS			N/A
FENCE (CHAINLINK OR VINYL)			N/A
SIGN			N/A
SERVICE POLE		N/A	N/A





LEGEND

	EXISTING	PROPOSED	FUTURE
BOUNDARY LINE			N/A
CENTERLINE			N/A
RIGHT-OF-WAY			
PARCEL LINE			N/A
CURB, GUTTER AND SIDEWALK			
EDGE OF PAVEMENT			N/A
MASONRY WALL	N/A		N/A
OVER HEAD ELECTRICAL		N/A	N/A
STREETLIGHT (PUBLIC)			N/A
GAS LINE		N/A	N/A
DIRECTION OF FLOW			N/A
CONTOURS			N/A
FENCE (CHAINLINK OR VINYL)			N/A
SIGN			N/A
SEWER MH		N/A	N/A

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DIMENSION PLAN (SOUTH)

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DATE:	07/24/2020
SCALE:	AS SHOWN
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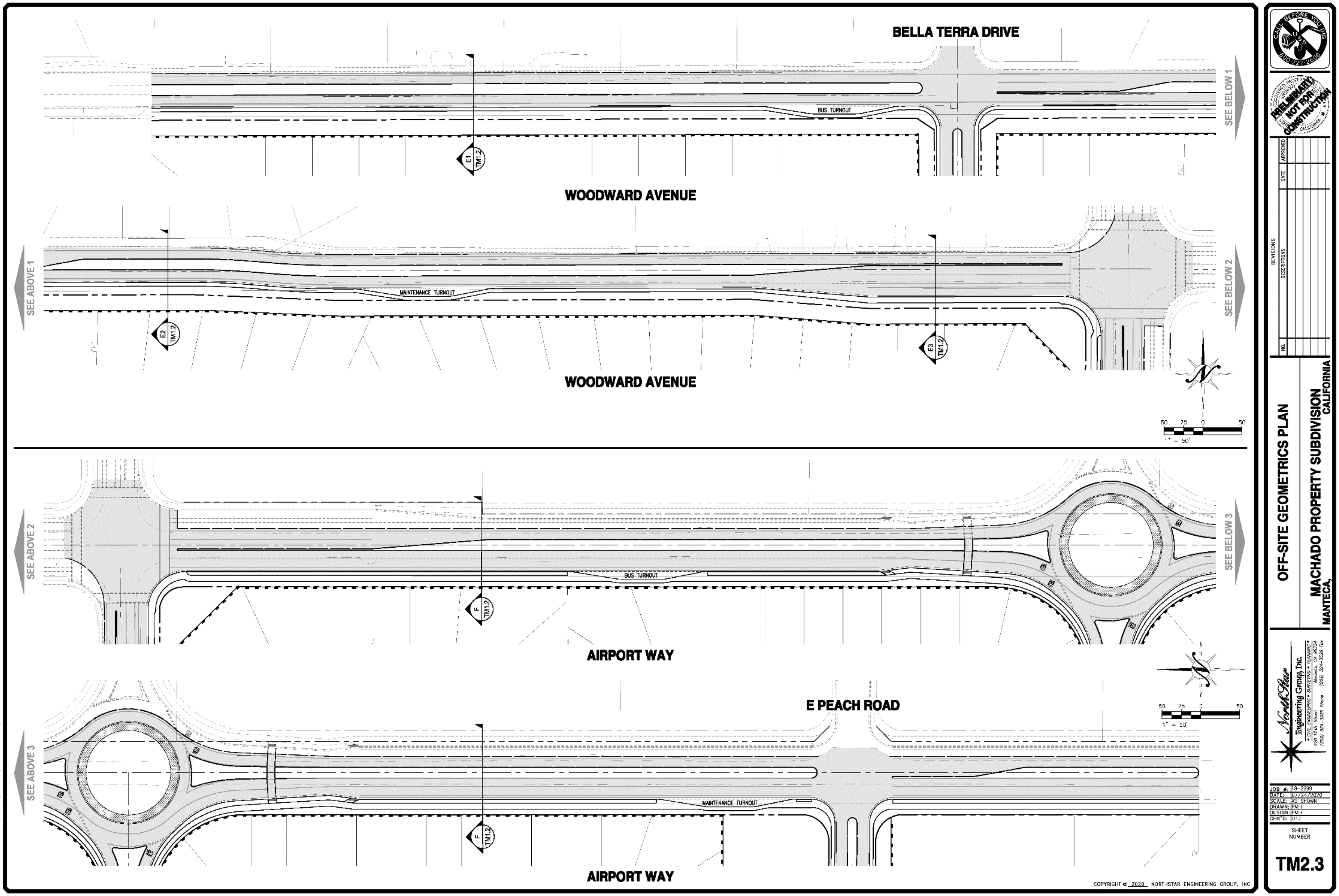
DESIGN:	PM-
CHK'D:	TPD

SHEET NUMBER
TM2.2


BELLA TERRA DRIVE
WOODWARD AVENUE
WOODWARD AVENUE
AIRPORT WAY
E PEACH ROAD
AIRPORT WAY
BUS TURNOUT
MAINTENANCE TURNOUT
BUS TURNOUT
MAINTENANCE TURNOUT
SEE BELOW 1
SEE ABOVE 1
SEE BELOW 2
SEE ABOVE 2
SEE BELOW 3
SEE ABOVE 3
E1 TM1.2
E2 TM1.2
E3 TM1.2
F TM1.2
F TM1.2
1" = 50'
OFF-SITE GEOMETRICS PLAN
MACHADO PROPERTY SUBDIVISION
MANTECA, CALIFORNIA
PRELIMINARY NOT FOR CONSTRUCTION
REVISIONS
NO. DESCRIPTIONS DATE APPROVED
JOB #: 18-2299
DATE: 07/24/2020
SCALE: AS SHOWN
SHEET NUMBER
TM2.3
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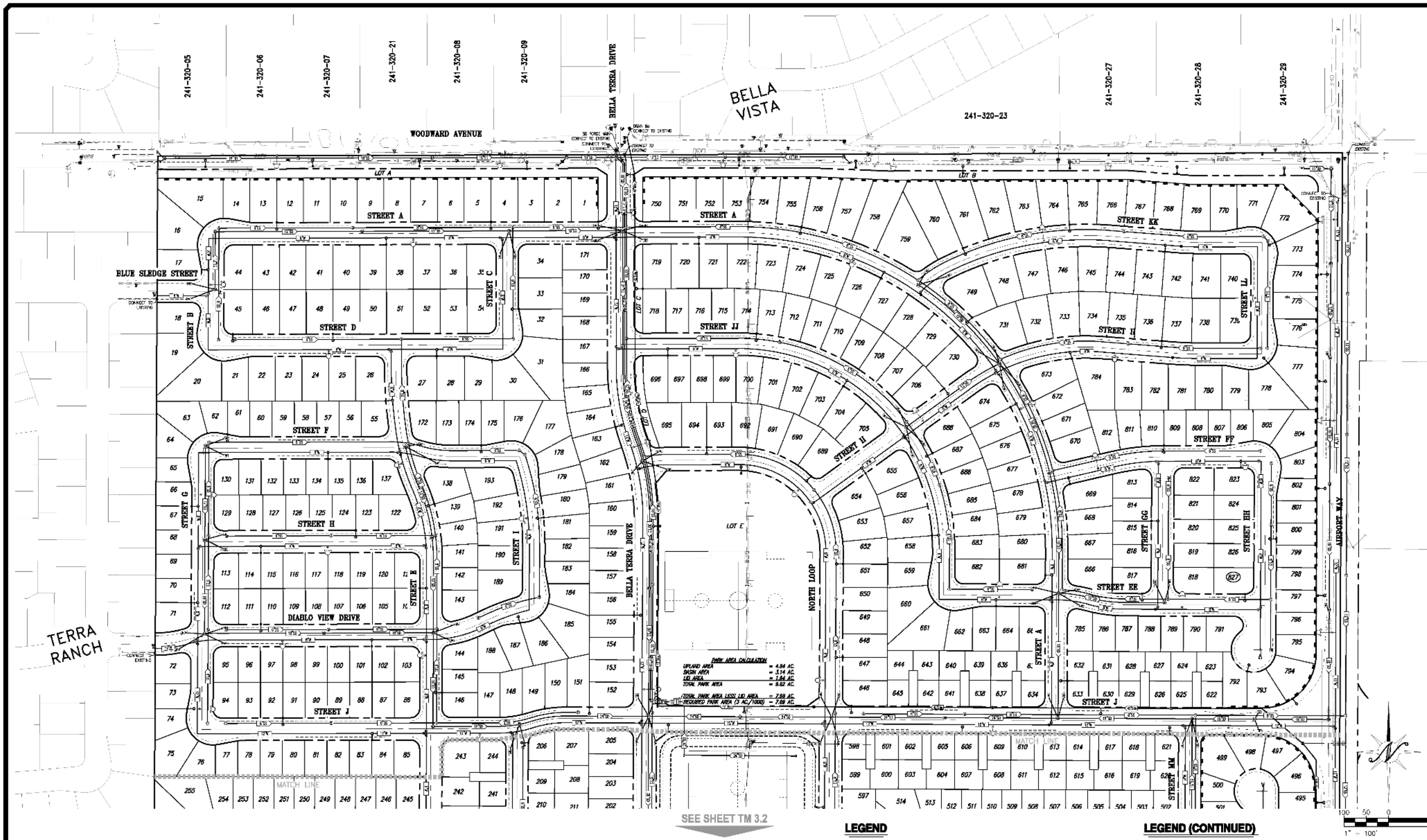
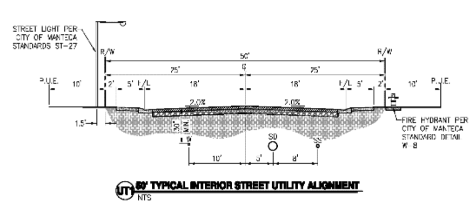
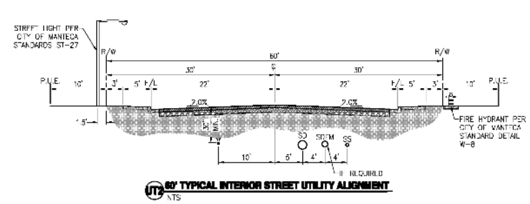




UT1 50' TYPICAL INTERIOR STREET UTILITY ALIGNMENT
NTS



UT2 60' TYPICAL INTERIOR STREET UTILITY ALIGNMENT
NTS

LEGEND

	EXISTING	PROPOSED
BOUNDARY LINE		
CENTERLINE		
RIGHT-OF-WAY		
PARCEL LINE		
CURB, GUTTER AND SIDEWALK		
EDGE OF PAVEMENT		
STORM DRAIN (MAIN)		
FORCE MAIN		
DRAINAGE SWALE		
STORM DRAIN MAINTENANCE HOLE		

LEGEND (CONTINUED)

	EXISTING	PROPOSED
CURB INLET		
WATER (POTABLE)		
WATER (NON-POTABLE)		
WATER VALVE		
WATER BLOW-OFF VALVE	N/A	
FIRE HYDRANT		
SEWER MAINTENANCE HOLE		
SEWER (MAIN)		
IRRIGATION LINE		
IRRIGATION VALVE		N/A
IRRIGATION STRUCTURE		

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UTILITY PLAN (NORTH)

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JOB #: 18-2299
DATE: 07/24/2020
SCALE: AS SHOWN
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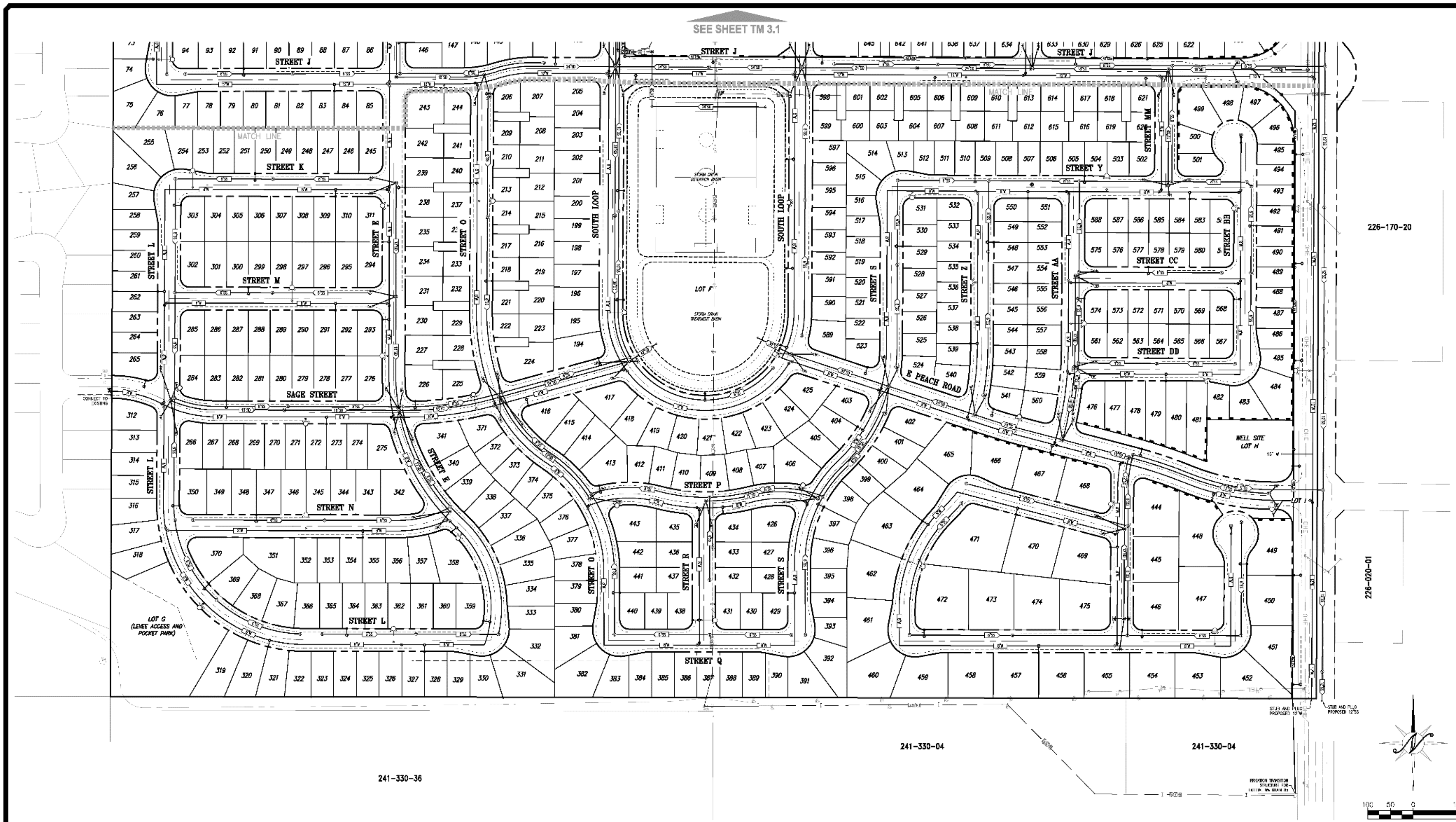
DESIGN: PMH
CHK'D: TPD

SHEET NUMBER
TM3.1



LEGEND

	EXISTING	PROPOSED
BOUNDARY LINE		
CENTERLINE		
RIGHT-OF-WAY		
PARCEL LINE		
CURB, GUTTER AND SIDEWALK		
EDGE OF PAVEMENT		
STORM DRAIN (MAIN)		
FORCE MAIN		
DRAINAGE SWALE		
STORM DRAIN MAINTENANCE HOLE		

LEGEND (CONTINUED)

	EXISTING	PROPOSED
CURB INLET		
WATER (POTABLE)		
WATER (NON-POTABLE)		
WATER VALVE		
WATER BLOW-OFF VALVE	N/A	
FIRE HYDRANT		
SEWER MAINTENANCE HOLE		
SEWER (MAIN)		
IRRIGATION LINE		
IRRIGATION VALVE		N/A
IRRIGATION STRUCTURE		

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REVISIONS

NO.	DESCRIPTIONS	DATE	APPROVED

UTILITY PLAN (SOUTH)

MACHADO PROPERTY SUBDIVISION
MANTECA, CALIFORNIA

NorthStar Engineering Group, Inc.

JOB #:	18-2299
DATE:	07/24/2020
SCALE:	AS SHOWN
DRAWN:	PMH
DESIGN:	PMH
CHK'D:	

SHEET NUMBER

TM3.2

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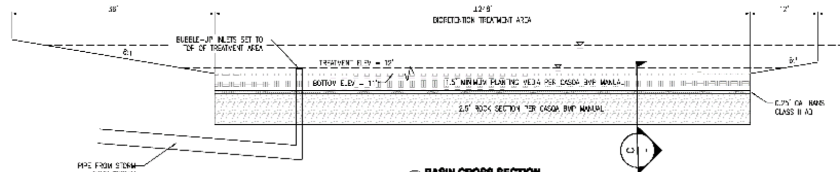
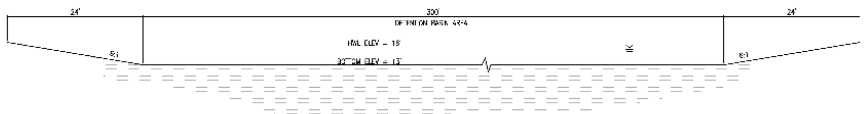
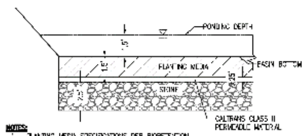


A **BASIN CROSS-SECTION**
NTS



B **BASIN CROSS-SECTION**
NTS



NOTES:
1. PLANTING MEDIA SPECIFICATIONS PER BIORETENTION TECHNICAL SPECIFICATIONS OF CITY OF MANTECA POST CONSTRUCTION STORMWATER STANDARDS MANUAL
2. STONE TO BE 1"-2.5" DIAMETER STONE

C **BIORETENTION BASIN SECTION**
NTS

BASIN VOLUME CALCULATIONS

DESCRIPTION	UNIT	QUANTITY
BIORETENTION BOTTOM	ELEVATION	11.0'
BIORETENTION BOTTOM	AREA	60,299 SF
BIORETENTION TOP	ELEVATION	13.0'
BIORETENTION TOP	AREA	71,717 SF
BIORETENTION AREA	VOLUME	2.03 AC-FT
STORAGE BASIN BOTTOM	ELEVATION	13.0'
STORAGE BASIN BOTTOM	AREA	178,985 SF
STORAGE BASIN HWL	ELEVATION	16.0'
STORAGE BASIN HWL	AREA	208,554 SF
STORAGE BASIN AREA	VOLUME	13.26 AC-FT
TOTAL BASIN	VOLUME	16.29 AC-FT

BASIN - Design Calculations - Permanent Basin
Per City of Manteca Design Standards

Volume Requirements:
Design Frequency = 10 Year
Runoff, R = 3.56 inches 0.30 ft Urbanized Areas

	C	R (ft)	A (ac)	V (ac-ft)	C*A	Comp C
Off Site Roadways*	0.70	0.30	6.63	1.38	4.64	
Single Family Residential	0.30	0.30	144.00	12.52	43.20	
Park / Open Space	0.15	0.30	5.77	0.26	0.87	
Stormwater Basin	1.00	0.30	4.79	1.42	4.79	
Total			161.19	15.87	53.50	0.33

Required Volume of Storage (100%) = 15.87 ac-ft 691,325 cf

*C value of 0.70 for off site roadways is based on a composite C value calculated using 0.15 for landscaping areas and 0.90 for concrete and asphalt areas

Stormwater Design Volume (SDV) Requirements:

DMA Impervious Ratio 0.33
P_6 = 0.37 in

	C	A (ac)	C*A
Off-Site Roadways	0.70	6.63	4.64
On-Site Single Family Residentia	0.30	144.00	43.20
Park / Open Space	0.15	5.77	0.87
Stormwater Basin	1.00	4.79	4.79
		Composite C =	0.33

$P_0 = (a \times C) \times P_6$

a = 1.963
C = 0.33
P_6 = 0.37 in

P_0 = 0.24 in

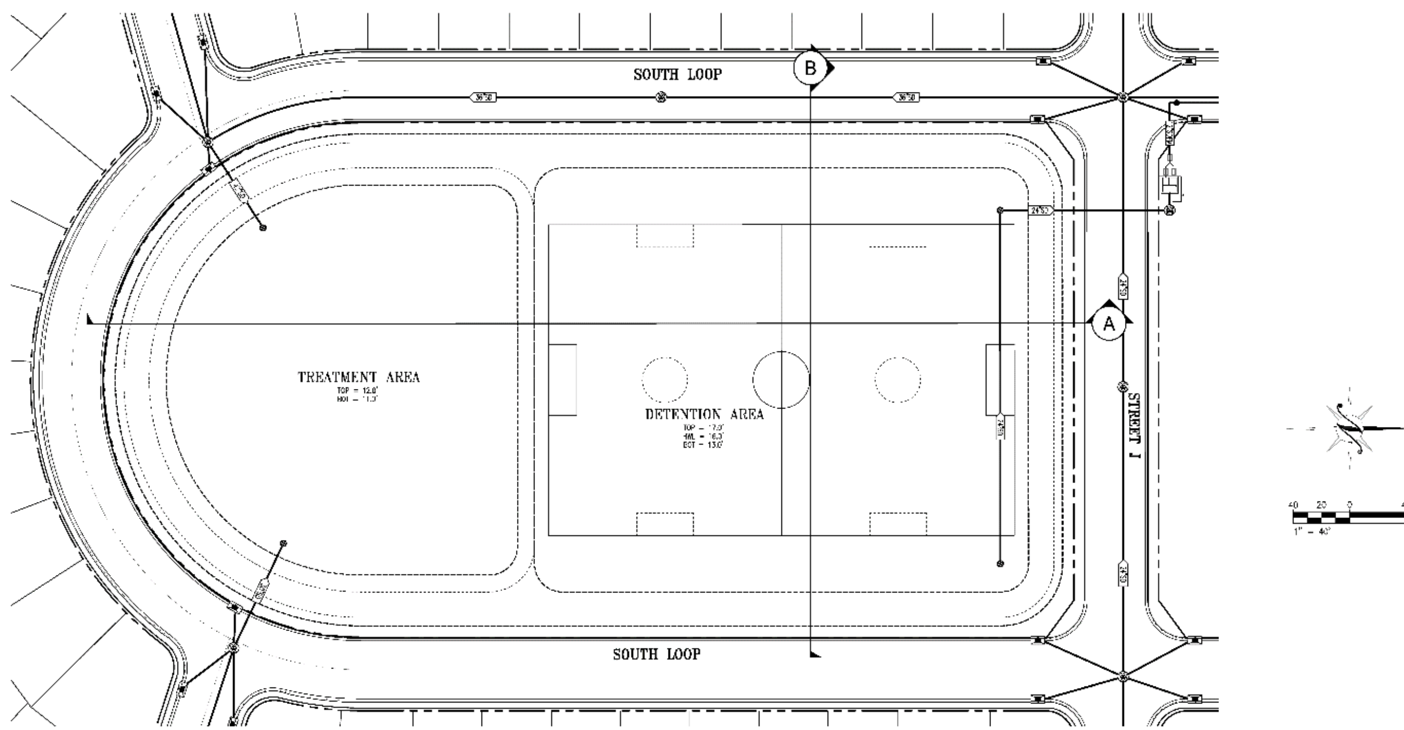
$SDV = A \times P_0 / 12$

A = 161.19 ac
P_0 = 0.24 in

SDV = 3.24 ac-ft

Bioretention Area Requirements:

SDV =	3.24	ac-ft	
d_{pz} =	1.00	ft	Depth of Ponding Zone
n_{pm} =	0.1	-	Porosity of planting media
d_{pm} =	1.5	ft	Depth of planting media
n_{gl} =	0.35	-	Porosity of gravel layer
d_{gl} =	2.5	ft	Depth of gravel layer
A =	1.00	ac	Bioretention Area Required



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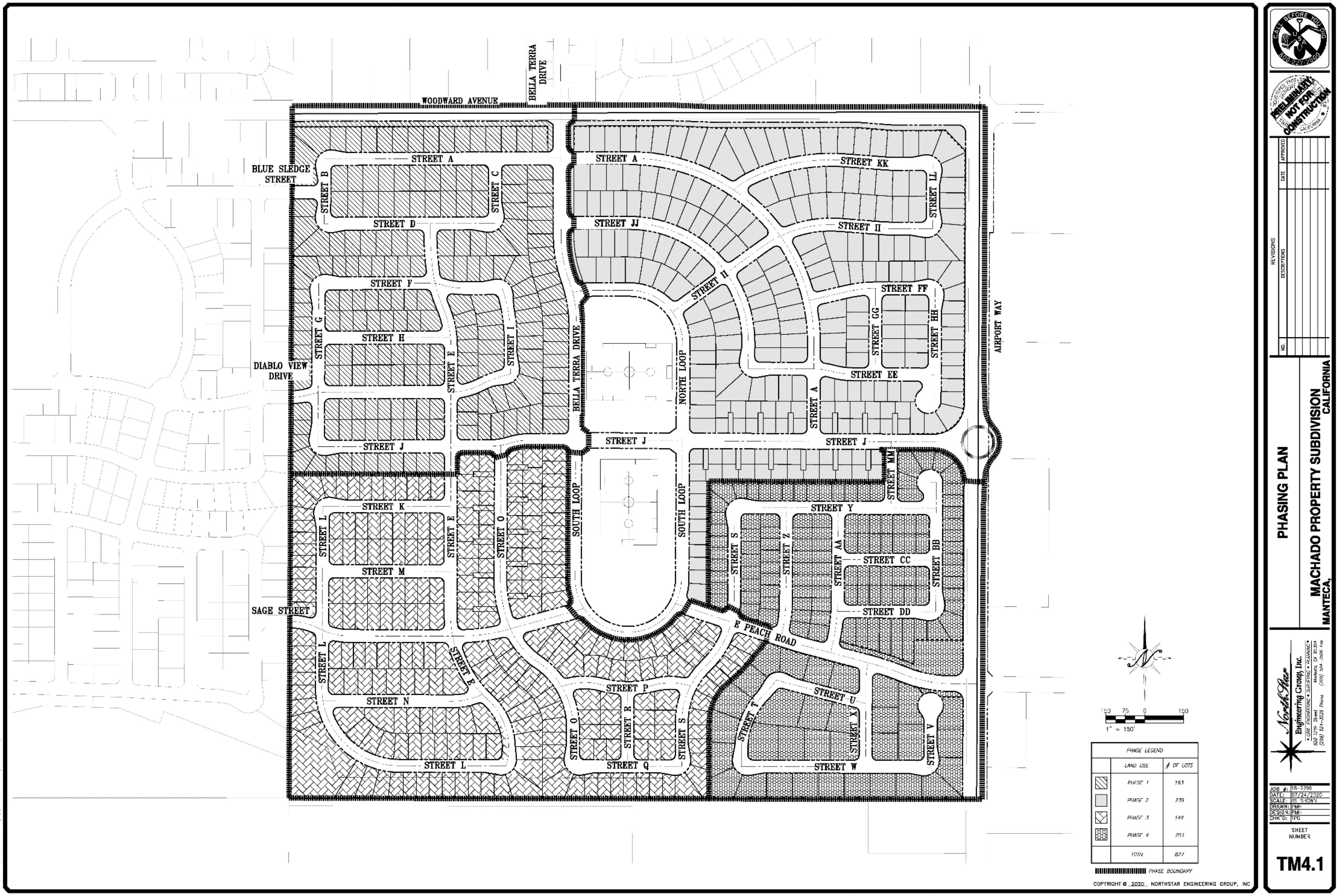
PRELIMINARY BASIN AND STORMWATER MANAGEMENT PLAN
MACHADO PROPERTY SUBDIVISION
MANTECA, CALIFORNIA

NorthStar Engineering Group, Inc.

JOB #: 18-2299
DATE: 07/24/2020
SCALE: AS SHOWN
DRAWN: PM
DESIGN: PM
CHK'D: TPD

SHEET NUMBER
TM3.3


PHASING PLAN
MACHADO PROPERTY SUBDIVISION
MANTECA, CALIFORNIA
WOODWARD AVENUE
BELLA TERRA DRIVE
BLUE SLEDGE STREET
DIABLO VIEW DRIVE
SAGE STREET
AIRPORT WAY
E PEACH ROAD
NORTH LOOP
SOUTH LOOP
STREET A
STREET B
STREET C
STREET D
STREET E
STREET F
STREET G
STREET H
STREET I
STREET J
STREET K
STREET L
STREET M
STREET N
STREET O
STREET P
STREET Q
STREET R
STREET S
STREET T
STREET U
STREET V
STREET W
STREET X
STREET Y
STREET Z
STREET AA
STREET BB
STREET CC
STREET DD
STREET EE
STREET FF
STREET GG
STREET HH
STREET II
STREET JJ
STREET KK
STREET LL
STREET MM
1" = 150'
PHASE LEGEND
LAND USE
OF LOTS
PHASE 1 193
PHASE 2 239
PHASE 3 144
PHASE 4 251
TOTAL 827
PHASE BOUNDARY
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DATE: 07/24/2020
SCALE: AS SHOWN
DRAWN: PMH
DESIGN: PMH
CHK'D: TPD
SHEET NUMBER
TM4.1

February 1, 2021

VIA EMAIL

Mark Niskanen
Contract Planner
(mark@jbandersonplanning.com)

RE: LETTER # 1: Public Comments on the Notice of Preparation of an Environmental Impact Report (EIR) and Scoping Meeting for the Proposed Lumina Ranch Project.

Dear Project Team Members,

My name is Martin Harris and I am an authorized representative for Terra Land Group, LLC ("TLG"). TLG owns several properties located in Manteca and Lathrop, and as an organization dedicates a significant amount of its efforts to ensure the safety of our communities by soliciting local, state, and federal agencies to protect our area from the effects of flooding.

Over the past few years, TLG representative Martin Harris has: (i) attended many public and private meetings; and (ii) reviewed thousands of pages of environmental documents; and (iii) written over eight hundred letters to local and state authorities expressing concerns related to the effects of development on flooding in our area. (Letters provided on request)

TLG is submitting this letter to make the Lumina Ranch project team and other local authorities aware of important new information which recognizes and describes the potential cumulative effects of the current and future planned rates of development and urbanization in Lathrop, Manteca, and Ripon. This letter also describes the associated flood water, storm water, and waste water drainage impacts on the rural areas of south Manteca, especially the drainage areas in and along Walthall Slough and the SSJID drainage canals (and pipelines). This includes but is not limited to the area that has been designated as SSJID Drains #10 and 11 which drain water into City of Manteca stormwater drainage Zone #39, as projected by the City of Manteca to be included in a portion of Reclamation District 2094.

This is especially important when you consider the following historical facts.

1. Reclamation Districts 2064, 2075, and 2094 primarily depended upon flood water and storm water to exit their properties by means of Walthall Slough and into Weatherbee Lake.
2. SSJID utilizes a drainage canal system that appears to rely on a series of drainage canals located between the cities of Ripon and Manteca. This system appears to rely on flood water, storm water, waste water, and other forms of excess potable water delivery water passing through the SSJID system to be collected in and along a series of SSJID drains (including but not limited to SSJID Drains #10 and 11) which drains into Walthall Slough and then Weatherbee Lake. (**See Enclosure 34** for a dredger cut map)

With that in mind, TLG has concluded that for any right bank Stanislaus River or San Joaquin River levee breach in the areas between Ripon and Manteca, all flood water, storm water, waste water, and excess potable water passing through either the RD 2075, RD 2064, RD 2094, RD 2096 or SSJID delivery and drainage systems has no place to go but directly to the areas in and around Weatherbee Lake. The water has no choice. It is affected by land mass and elevations that directly control the direction it will flow into and where it will accumulate. TLG believes that recent development project approvals in South Manteca will significantly affect the direction and flow volumes to be expected.

Please consider this background information and the potential backwater effects as you read through the remainder of this letter.

For some time now, TLG has expressed concerns that the developing areas may not be paying their fair share towards the total floodwater, stormwater, wastewater drainage, and other water delivery and groundwater sustainability impacts that may be created to the non-developing rural areas south of Manteca. (ie: Reclamation Districts 17, 2094, 2096, 2075, 2064 and SSJID) (**See Enclosures 1-35**)

This becomes especially important when it is considered that any and all total drainage flows and water conveyance flows to be expected in and along the South Delta may not have been adequately determined and may be different than what the narrow scope of existing flood models indicate. (**See Enclosures 10-12**) In addition, TLG believes that the non-developing rural areas south of Manteca (ie: Reclamation Districts 17, 2094, 2096, 2075, 2064 and SSJID) must be included in any flood protection or drainage plan to be considered.

As more and more people move into California and as more land is being developed or farmed, there needs to be more water storage and reuse opportunities to accommodate those increased needs. This is especially important as local city, county, state, and federal authorities take various actions to divert or hold back an increasing amount of water (from all sources) to make more water available to the public they serve. However, there also needs to be safe ways of storing, delivering, conveying, draining, and discharging that water to avoid flood and other hydrology-related impacts for the people who live in the areas that may be affected.

In addition, TLG believes that any and all new water conveyance, drainage, storage, discharge, recharge, and delivery infrastructure to be considered needs to ensure that both private and public access to private properties (especially in the former swamp and overflow areas of southwest Manteca) is protected and provided for. This is especially important to properties located west of Airport Way and south of Woodward Avenue (ie. Township 2, South Range 6 East MDB & M, Sections 11, 12, 13 and 14).

On January 22, 2021, the CIty of Manteca Development Services Department released a “Notice of Preparation of an Environmental Impact Report” (“NOP”) and Scoping Meeting for the proposed Lumina Ranch Project. I am presenting this initial public comment letter prior to the scoping meeting with the hope that these comments will be carefully reviewed and responded to as part of the general information to be presented at the scoping meeting scheduled for February 10, 2021.

<u>SB5 200-Year Levee Modification Concerns</u>:

For each and every RD 17 dryland levee alignment alternative to be considered,

> **<u>QUESTION:</u>** Will any flood modeling be considered for events with peak flows similar to those experienced in 1997?

QUESTION: Will any flood modeling be considered for future peak flows anticipated to occur due to climate change?

QUESTION: Will the soil type for the ground that any RD 17 levee alternative to be considered for the levee to rest on be tested and approved as adequate for soil type and compaction to ensure that no levee breach is likely to occur, which could allow water to pass through the subsurface areas and beneath the base grade ground level surface that the levee rests upon?

QUESTION: Will all drainage areas on the water side of any RD 17 dryland levee alternative to be considered be set at elevations that allow for proper down gradient drainage flows to occur that ensure that all drainage water and sedimentation traveling through those down gradient water side drainage areas have enough slope to drain (and move sedimentation) quickly and efficiently?

QUESTION: Is the Lumina Ranch project team aware that the current elevation of the existing RD 17 levee was surveyed and found to be set at a total elevated height of as much as 34.73'? (**See Enclosures 25 & 26**) When considering that many South Manteca residents, businesses, and property owners believe that the current height may be less than that in accordance with the 28'-6" flood plain designation, what flood impacts may be expected to the areas south of Manteca (ie: Reclamation Districts 17, 2094, 2096, 2075, 2064 and SSJID)?

TLG believes that it is critical that any SB5 200 year RD 17 dryland levee alignment alternative to be selected must provide mitigation measures to offset any and all increases to flood and drainage impacts resulting from:

(i) Impediments due to modifications to structure or placing new structures in drainages channels,
(ii) Back water effects,
(iii) Changes in flow patterns,
(iv) Unaddressed flood water drainage cross flow and other structural and non-structural impediments that may be magnified due to climate change and other factors,
(v) Sedimentation buildup in the San Joaquin River channel, and
(vi) Erosion.

In addition, TLG is writing this letter to make the Lumina Ranch team members and other authorities aware of what appears to be a joint effort by both local, state, and federal authorities to pursue a phased strategy of flood protection and other federally-assisted improvements both inside and outside of the South Delta to meet California Senate Bill No. 5 ("SB5") requirements as well as provide improved efficiencies in the ways we currently are storing, delivering, reusing, and draining water. (**See Enclosure 1**)

TLG believes that storing, delivering, reusing, and draining water in and along the South Delta becomes complicated when it is considered that the January 2018 San Joaquin River Basin Lower San Joaquin River, CA Final Integrated Interim Feasibility Report/EIR/EIS: ("LSJRFS") includes the following:

1. Page ES-1 of the LSJRFS states: *The study area also includes the distributary channels of the San Joaquin River in the southernmost reaches of the Delta; Paradise Cut and Old River as far north as Tracy Boulevard, and Middle River as far north as Victoria Canal.*

2. Page 3-31 of the LSJRFS states: *Currently, the levee safety program has defined the levee system that incorporates RD 17 as bounded on the north by Walker Slough, west by the San Joaquin River and south by the Stanislaus River. This includes RD 17, RD 2096, RD 2094, RD 2075 and RD 2064.*
3. Page 5-17 of the LSJRFS states: ***Stanislaus River to Paradise Cut.*** *The confluence of the San Joaquin and Stanislaus Rivers defines the upstream extent of the hydraulic model used for this study.*
4. Page ES-2 of the LSJRFS states:
Analysis of the study area is challenged by the presence of three sources of flooding, the Delta Front, Calaveras River and San Joaquin River. This results in commingled floodplains for the North and Central Stockton areas. The distributary nature of the Delta also affects Delta water levels, because high flows from the Sacramento River may "fill" the Delta prior to a peak inflow on the San Joaquin River as occurred in 1997, raising water levels on the Delta front levees.
5. Page 5-27 of the LSJRFS states: *2.1.1 FLOODING Problem:* ***There is significant risk to public health, safety and property in the study area associated with flooding.*** *The study area is located in the Central Valley of California which has very little topographic relief, resulting in potential flooding of areas far from water courses…* (**See Enclosure 1**)

Potential Impacts to Consider:

TLG believes that all Mossdale Tract Flood modeling and Adequate Progress reports that have been publicly released to date have failed to fully consider and provide mitigation measures for:

(i) Unresolved and continuing sedimentation issues that continue to reduce channel flow capacity in and along the South Delta Lower San Joaquin River System.

(ii) Climate change and continued uncertainty relating to its effect on increasing the total potential volumes of channel flows to be expected in and along the South Delta Lower San Joaquin River System.

COMMENT: Martin Harris and several other South Manteca rural neighbors attended a Central Valley Flood Protection Board Workshop on February 14, 2020. Although a number of climate change presentations were made by staff, flood models and associated drainage flow volumes related to climate change do not appear to have been fully determined.

QUESTION: What effect will this have on determining the total amount of reservoir storage water that can be safely stored in higher elevations throughout the Sacramento and San Joaquin River Reservoir System(s)?

COMMENT: The Paradise Cut Expansion project, in the form presented in the "Conceptual Design Technical Memo/Paradise Cut Expansion Project/April 9, 2019," may or may not prove adequate in offsetting the full range of development and other hydrology-related impacts that may be created. Also, TLG believes that the Paradise Cut Expansion Stage reductions called for between the Paradise Weir and the Airport Way (Vernalis Bridge) may not fully address the potential for additional drainage impacts to be created. (**See Enclosures 1-35**)

This is especially concerning when considering pages 4 and 5 of the Mossdale Tract Program: 2019 Annual Adequate Progress Report Update for Urban Level of Protection-Final Report (included as Attachment 2 to the 8/20/2019 MCC Meeting Agenda Item B.3), which states that, *"the Urban Flood Risk Reduction Study remains incomplete and the Climate Adoption Policy is underway. As such, a new determination that the project meets the appropriate Standard of Protection will need to be made in conjunction with the 2020 Annual Report."*

Most concerning, the Mossdale Tract Program: 2020 Annual Adequate Progress Report Update for Urban Level of Protection, Final Report (Included as Attachment 2, Exhibit "A" to the 7/21/2020 MCC Meeting Agenda Item B.2 (20-292)) includes a number of important statements that must be factored into any flood protection plan that may be considered. Some of these statements include:

(i) Page A-4: *"In terms of watershed hydrology, the CVFPP [2017 Central Valley Flood Protection Plan] also predicts a tripling of 200-year flood flows by the year 2067."*

(ii) Page A-5: *"...it is not expected that SJAFCA use the 2017 CVFPP Update as a basis for design and investment-level decisions. However, the trend of the 2017 CVFPP Update demonstrates that climate change will increase both the flows projected to flow down the San Joaquin River and increase the tailwater stages."*

(iii) Page A-6: *"Coordination with relevant land-use agencies in and around current and future levee alignments to ensure approved development can accommodate expanded levee footprints and extended levee alignments."*

<u>**QUESTION**</u>**:** How will what appears to be a very real potential for unresolved and continuing sedimentation and climate change issues in and along the South Delta be considered and allowed for in any future or continuing Mossdale Tract Drainage Plans? (**See Enclosures 1-35**)

<u>**QUESTION**</u>**:** What drainage and increased back-water effects may be created to the areas south of Manteca (ie. Reclamation Districts 17, 2094, 2075, 2096, 2064 and the SSJID)?

(iii) These potential events:

a) A Stanislaus River right bank levee breach in the areas west of Caswell Park with the potential to drain into the SSJID drain No. 11 drainage canal system and continue to flow downstream into Weatherbee Lake.
b) A San Joaquin River right bank levee breach in the areas located within Reclamation District Nos. 2064, 2075, 2094, and/or 2096.
    i) <u>**COMMENT:**</u> The NOP states the following on page 3:
    "Existing Surrounding Uses: Uses immediately adjacent to the east and south of the project site include agricultural and residential uses."
    The NOP also states the following on Page 1 under "Project Description": *"Project Location & Setting: The Project site is located in the southwestern portion of the City of Manteca directly adjacent to the city limits. The Project is immediately southwest of the intersection of Airport Way and Woodward Ave. The Project site is bounded on the north by Woodward Ave on the east by Airport Way, on the south by an existing Reclamation*

District #2094 (RD2094) dry levee and existing agricultural fields, and on the west by the existing Terra Ranch Subdivision."

ii) **<u>QUESTION:</u>** How is it that the Lumina Ranch Project levee is stated to be a RD2094 levee when past reclamation district maps and other documents clearly indicate that the Manteca Dryland Levee is a Reclamation District 17 levee? (**See Enclosures 30, 31, 34 & 35**)

iii) The NOP further states on page 2 that "Annexation Area - includes the whole of the project, including the proposed 157.53-acre Development Area, 19.11-acre Non-development area on 15 inhabited residential lots, and 6.82 acres of existing right-of-way."

iv) The NOP also states on page 3 that "the dryland levee is not intended to hold floodwaters from the south (upstream). Instead, it is intended to contain flows on RD 2094 and RD 2096 in the event of a levee breach along RD 2094, RD 2096, or RD 17. It is noted that the Annexation Area is located within the RD 17 boundary.

v) **<u>COMMENT</u>:** This statement seems odd to me and does not appear to line up with RD 17's responsibility for the maintenance and improvement costs for the south Manteca dryland levee based on flood fight and levee maintenance repairs as historically conducted. This seems to be especially true when considering the RD 17's past actions taken in preparation for and during the flood and emergency response actions taken by RD 17 for the times leading up to and during the 1997 and 2017 high water flood actions. (**See Enclosures 30, 31, 34 & 35**)

vi) TLG does not believe that the so-called RD 2094 Walthall Spur levee extension (as identified in the USACE PL 84-99 levee inspection disqualification report) is an RD 2094 levee. (**See Enclosures 30, 31, 34 & 35**) The location of the RD 17 South Manteca dryland levee located at the southern end of the Lumina Ranch project appears to be not only located in the SSJID drainage district, but also appears to have SSJID district facilities consisting of an SSJID irrigation water delivery junction box and an associated open trench irrigation water delivery and gated canal existing in the area running along and adjacent to and encroaching into the levee easement area. (See SSJID irrigation facility photos as presented in **Enclosure 35**)

1) **<u>QUESTION:</u>** Does this mean that the levee is actually and should be designated as an SSJID flood protection levee that is meant to protect the urbanizing areas from floodwater and other conveyance and drainage flows traveling in, along, and through the entire SSJID South Manteca water delivery and drainage systems (including SSJID drains 10 & 11) which currently serve both the urbanizing and non-urbanizing areas of South Manteca?
2) **<u>QUESTION:</u>** How do current flood models separate and determine the total drainage effects from Walhall Slough (RDs 2094, 2096, 2075, and 2064) drainage flows as compared to those resulting from the South County Water Supply Project as well as other drainage flow contributions that originate with SSJID?

vii) TLG believes that there appears to be a critical and immediate need to identify and provide mapping for the entire South Manteca water delivery and drainage area (with clear boundaries). This map can be utilized to create the flood modeling necessary to identify the separate and individual drainage volumes to be considered for both SSJID and any and all other South Manteca reclamation districts located in the areas east of the San Joaquin River (ie. RDs 17, 2094, 2096, 2075, and 2064). (**See Enclosures 1-35**) TLG believes this is the only way flood modeling and associated drainage impacts can accurately be determined.

viii) **QUESTION:** For any San Joaquin River right bank levee breach in the areas along Reclamation Districts 2064, 2075, 2094, or 2096, what mitigation measures will be required to offset any flood water, storm water, waste water, and other hydrology-related backwater and impedance impacts to the SSJID and other areas south of Manteca (ie. RDs 17, 2096, 2075, 2094, and 2064)?

ix) **QUESTION:** What mitigation measures will be taken to offset the total flow volume(s) of any and all flood water and other drainage flows to be expected resulting from either a south Manteca Stanislaus River or San Joaquin River right bank levee breach? TLG believes either or both of these events could result in flows traveling to, in, and along Walthall Slough, SSJID Drain #11, and SSJID Drain #10 and other SSJID drainage and water delivery pipelines in the direction of Mossdale Tract at the time of a future flood event.

(iv) Limited topographic relief to ground surface areas in and along the South Delta.

QUESTION: Will limited topographic relief to ground surface areas in and along the South Delta slow down San Joaquin River (and Paradise Cut) channel flows and promote continuing sedimentation?

(v) Flood and other drainage impacts that may occur in conjunction with anticipated changes to the way Old River enters and drains into what appears to be a modified Franks Tract (as detailed in the draft report "Franks Tract Futures 2020 Reimagined" published by the California Department of Fish and Wildlife).

QUESTION: Will mitigation measures be included to prevent any potential for reverse channel flows and associated backwater effects that may impede the natural flow of Old River as identified on pages 3A-28 and 3A-29 of the Bay Delta Conservation Plan California WaterFix Final EIR/EIS (December 2016)?

(vi) Various federal and state-funded Manteca and Lathrop area highway construction and other state, federal, and/or county transportation improvement projects as presented in (a) the 2014 San Joaquin Council of Governments Sustainable Communities Strategy, Draft EIR and 2015 FTIP Conformity Document amd August 2020 City of Manteca Active Transportation Plan. (See the 9/1/20 MCC Meeting Agenda Item C.4)

QUESTION: Have all roadway-related floodwater and other hydrology-related drainage impacts to the areas south of Manteca been properly considered (ie: Reclamation Districts 17, 2094, 2096, 2075, 2064, and the South San Joaquin Irrigation District ("SSJID"))?

QUESTION: What mitigation measures will be provided for in the Programmatic Environmental Impact Report for the 2022 San Joaquin Council of Governments Regional Transportation Plan & Sustainable Communities Strategy?

TLG believes that any new roadway construction as well as any and all new water conveyance, drainage, storage, discharge, recharge, and delivery infrastructure to be considered needs to ensure that both private and public access to private properties (especially in the former swamp and overflow areas southwest of Manteca) is protected and provided for. This is especially important to properties located west of Airport Way and south of Woodward Ave (ie. Township 2, South Range 6 East MDB & M, Sections 11, 12, 13 and 14). (**See Enclosures 32 & 33**)

(vii) Unresolved plans as to how the cities of Manteca and Lathrop can reasonably drain what appears to be ever-increasing amounts of stormwater and effluent wastewater from the residential , commercial, and industrial-zoned developing areas into non-developing areas that flooded in 1997.

> **COMMENT:** TLG believes that any and all total drainage flow volumes and drainage flow patterns to be expected in and along the South Delta have not been adequately determined and may be different than what the narrow scope of existing flood models may indicate. (**See Enclosures 1-35**)
>
> **QUESTION:** What potential increased flood water, stormwater, and effluent wastewater, irrigation water, potable water delivery, traffic circulation, emergency vehicle services response and private property road access impacts and changes to drainage patterns may be created due to the construction (and/or expansion) of 100-year flood protection infrastructure as appears to be called for due to a recent May 21, 2019 San Joaquin County Board of Supervisors approval of Morning Hearing item #1: Development Title Text Amendment No. PA 1900067 allowing revisions to the Definition of Structure?
>
> **QUESTION:** What increased flood and back-water impacts may occur when that same 100-year infrastructure (as referenced in the previous question) is subjected to a 200-year flood event?

(viii) Flood and other hydrology-related drainage impacts anticipated to occur in conjunction with the ACE train and Valley Link rail expansions.

> **COMMENT:** TLG believes that decisions related to rail system at-grade and grade separation (aerial, embankment, tunnel, or trench) track modifications in and along the areas crossing the South Delta (Mossdale) may affect both 100-year and 200-year California Senate Bill No. 5 ("SB5") flood water drainage and other hydrology-related impacts in the areas around the Manteca and Lathrop communities.

(ix) Flood and other hydrology-related drainage impacts anticipated to occur in conjunction with RD 17 planned improvements associated with any and all Phase II, Phase III, and California Senate Bill No. 5 200-year projects to be considered.

> **QUESTION:** Is the Lumina Ranch project team aware that the current position of the RD 17 levee is different (as positioned south) of its original position as installed by RD 17?
>
> **QUESTION:** Is the Lumina Ranch project team aware that the RD 17 levee as it currently rests along the southern edges of the Cerri, Terra Ranch, and Lumina Ranch development projects appears to be supported and resting on soil of sandy composition (ie, like beach sand)?

(x) Flood and other hydrology-related impacts that may occur in conjunction with anticipated changes to the Tri-Dam Project, the South San Joaquin Irrigation District, South San Joaquin

Groundwater Sustainability Agency ("SSJGSA"), South Delta Water Agency ("SDWA"), and the Eastern San Joaquin Groundwater Authority water master plans.

> **<u>COMMENT</u>:** TLG believes that any Tri-Dam Project, SSJID, SSJGSA, SDWA, or Eastern San Joaquin Groundwater Authority water master plan needs to consider flood and other hydrology-related impacts associated with SSJID drain #11 (and SSJID drain #10) for all areas extending to their origin.

(xi) Short-term and long-range flood and other hydrology-related impacts that may occur in conjunction with what is anticipated to be a continuing series of approvals of water transfer agreements between the SDWA and SSJID (or SSJGSA). (For an example, see SSJID 5/12/2020 meeting agenda items 9 and 10).

> **<u>QUESTION</u>:** When considering the potential water supply needs in the areas of southwest Manteca and Lathrop, isn't it likely that a combination of one or more future SDWA and SSJID (or SSJGSA) water transfer agreements will eventually over time result in water supply, conveyance, conservation, and drainage infrastructure being modified or constructed to transfer water to southwest Manteca as well as other SDWA users located downstream?
>
> **<u>QUESTION</u>:** If so, what drainage and other hydrology-related impacts should be considered? (**See Enclosures 1-35**)

(xii) Flood and other hydrology-related impacts that may occur in conjunction with the anticipated expansion of River Islands as proposed in the Notice of Preparation for the River Islands Phase 1 or 2 Project/Update for the West Lathrop Specific Plan.

(xiii) Flood and other hydrology-related impacts that may occur in conjunction with the adoption of the City of Lathrop's Integrated Water Resources Master Plan (See LCC 12/9/19 meeting agenda item 5.1 and associated project description figures 2.0-7 and 2.0-8).

(xiv) What appears to be undetermined flood and other hydrology-related groundwater sustainability and drainage impacts associated with the City of Manteca's continued reliance on a 2005 City of Manteca Water Master Plan (EIR was certified in 2007). This master plan appears to be outdated and fails to properly allow for the protections that CEQA (Section 15164) was meant to provide. (See MCC 8/18/2020 meeting agenda items B.4 (20-340), B.5 (20-341), and B.7 (20-342)) (**See Enclosure 15**)

> **<u>QUESTION</u>:** In relation to the City of Manteca's continued reliance on its 2005 Water Master Plan, have all flood and other hydrology-related impacts been properly considered?
>
> **<u>QUESTION</u>:** In regards to the information as presented in the MCC October 20, 2020 meeting agenda item C.7: what mitigation measures will be provided as part of the City of Manteca's 2020 Urban Water Management Plan to offset any floodwater and other hydrology-related drainage and water delivery, conservation, and supply impacts that may be created to the areas south of Manteca (ie. RD 17, 2096, 2075, 2094, 2064, and the SSJID)?

<u>QUESTION</u>: SSJID appears to plan to prepare a 2020 Urban Water Management Plan Update (as presented in the SSJID November 17, 2020 Board Meeting Agenda/Action Calendar Item #6). What mitigation measures will be provided to offset any floodwater and other hydrology-related drainage and water delivery, conservation, and supply impacts that may be created to the areas south of Manteca (ie. RD 17, 2096, 2075, 2094, 2064, and SSJID)?

<u>QUESTION</u>: SSJID appears to be considering planned infrastructure that will allow SSJID to move forward with a Water Supply and Operating Agreement with South County Water Supply Project city participants. (This was presented in the SSJID November 17, 2020 board meeting agenda as action calendar item #8.) What mitigation measures will be provided to offset any floodwater and other hydrology-related drainage and water delivery, conservation, and supply impacts that may be created to the areas south of Manteca and the rural areas outside of the city limits (ie. RD 17, 2096, 2075, 2094, 2064, and SSJID)?

<u>QUESTION</u>: Can the affected public count on adequate funding being provided to offset any floodwater and other hydrology-related drainage impacts to be created (ie. RD 17, 2096, 2075, 2094, 2064, and the SSJID)? (**See Enclosures 21-23**)

<u>QUESTION</u>: Have local residents, businesses, and voters lost trust in the City of Manteca's ability to manage its affairs? (**See Enclosure 24**)

(xv) Flood and other hydrology-related impacts that may occur in conjunction with the San Joaquin Area Flood Control Agency's ("SJAFCA") Lower San Joaquin River Project. TLG has been informed that this project has won a coveted "New Start" designation in Fiscal Year 2020 along with $27.225 million in federal funding for preconstruction, engineering, design, and construction of the project's first increment. SJAFCA's Lower San Joaquin River Project will include Phase II of the Lower San Joaquin River Feasibility Study and Mossdale Tract.

(xvi) Potentially catastrophic flood risks associated with continuing delays as evidenced in SJAFCA's proposed time extension amendment to SB5 in order to achieve 200-year flood protection for the Mossdale Tract and Manteca area Airport Way corridor.

(xvii) South Manteca flood and other drainage impacts resulting from the proposed planning evaluation and concept development and anticipated improvements to the Manteca Dry Land Levee as presented at the SJAFCA July 16, 2020 board meeting. (**See Enclosure 14**)

An informational briefing was conducted in association with the April 24, 2020 Central Valley Flood Protection Board meeting agenda item 8D: San Joaquin Area Flood Control Agency Projects Update.

<u>QUESTION</u>: What mitigation measures will be provided as part of SJAFCA's Lower San Joaquin River Project to offset any floodwater and other hydrology-related drainage and water delivery, conservation, and supply impacts to the areas south of Manteca (ie: Reclamation Districts 17, 2094, 2096, 2075, 2064 and the SSJID)?

<u>QUESTION</u>: When considering the anticipated economic downturn that many are expecting to occur due to the COVID-19 health crisis, will sufficient drainage district maintenance assessments and other flood protection and drainage infrastructure construction funding be made available to construct (in a timely manner) all phases of the SJAFCA Lower San Joaquin River Project? This includes the Paradise Cut Expansion Project and other flood drainage protection project phases deemed necessary to protect the high-risk areas south of Manteca (ie. Reclamation Districts 17, 2094, 2096, 2075, 2064 and the SSJID). What potential impacts may occur if funding is either suspended or exhausted? (**See Enclosures 1-35**)

(xviii) On or about July 29, 2020, Governor Gavin Newsom released the final version of the California Water Resilience Portfolio. The portfolio includes 142 actions to help build a climate-resilient water system in the face of climate change.

<u>QUESTION</u>: What mitigation measures will be provided as part of the California Water Resilience Portfolio to offset any floodwater and other hydrology-related drainage and water delivery, conservation, and supply impacts to the areas south of Manteca (ie. Reclamation Districts 17, 2094, 2096, 2075, 2064 and the SSJID)?

<u>QUESTION</u>: What part (if any) will the (i) Delta Conveyance Project and (ii) the California Water Resilience Portfolio Initiative and (iii) changes to the way Old River enters and drains into Franks Tract (as detailed in the draft report "Franks Tract Futures 2020 Reimagined" published by the California Department of Fish and Wildlife) play in mitigating any and all drainage and water delivery, conservation, and supply impacts that need to be considered? (**See Enclosures 1-35**)

(ixx) On September 28, 2020, Governor Gavin Newsom signed into law Assembly Bill No. 838 ("AB 838"), Chapter 208. According to the Legislative Counsel's Digest (included as the preface to the text of AB 838), this bill would:

"Require the Mossdale Tract, as defined, to achieve the urban level of flood protection by 2028. The bill would authorize the Department of Water Resources to require the San Joaquin Area Flood Control Agency to contribute its fair and reasonable share of any property damage caused by a flood, as specified. This bill would make legislative findings and declarations as to the necessity of a special statute for the Mossdale Tract." (**See Enclosure 20**)

<u>QUESTION</u>: What mitigation measures will be required to offset any floodwater and other hydrology-related drainage impacts to the areas south of Manteca (ie. RD 17, 2096, 2075, 2094, 2064, and the SSJID)?

<u>QUESTION</u>: What part (if any) will the following projects, developments, reports, and disqualifications and possible mitigation measures play in mitigating any and all drainage and water delivery, conservation, and supply impacts that need to be considered?

(i) Delta Conveyance Project
(ii) the California Water Resilience Portfolio Initiative

(iii) changes to the way Old River enters and drains into Franks Tract (as detailed in the draft report "Franks Tract Futures 2020 Reimagined," published by the California Department of Fish and Wildlife)
(iv) San Joaquin River Project
(v) Any RD 17 200-year levee improvements
(vi) The SSJID 2020 Urban Water Management Plan (including possible expansion and other changes to Dredger Cut)
(vii) South County Water Supply Project
(viii) Changes to the Lumina Ranch Project southern boundary dryland levee alignment as affected by SSJID water delivery pipe and open trench conveyance lines encroaching into the water side (south side) of the dryland levee
(ix) Basis for the USACE disqualification of Reclamation Districts along the San Joaquin River for PL84-99 restoration after a flood emergency
(x) 2022 San Joaquin Council of Governments Regional Transportation Plan and Sustainable Communities Strategy
(xi) City of Manteca's 2020 Urban Water Management Plan (including possible expansion and other changes to Dredger Cut) (**See Enclosure 34**)

With these concerns in mind, TLG urges the Lumina Ranch project team members to consider the comments and concerns stated in this letter while drafting the EIR.

Thank you for your attention to this very important matter.

Respectfully,

Martin Harris
for Terra Land Group, LLC.

MH/cm

Enclosures:

These Enclosures can be downloaded as needed via Dropbox through the provided hyperlinks.

1. 2018-02-26 letter from TLG to the San Joaquin Area Flood Control Agency (https://www.dropbox.com/s/8scnhemfwexbkr9/2018-02-26_LTR_SJAFCA_LSJR%20EIR_Public Comm_wEncl.pdf?dl=0)
2. 2018-03-05 letter from TLG to the San Joaquin Area Flood Control Agency (https://www.dropbox.com/s/tl0ir7soookd6ze/2018-03-05_LTR_SJAFCA_Letter2.pdf?dl=0)
3. 2017-04-20 letter from TLG to the San Joaquin County Board of Supervisors (https://www.dropbox.com/s/7dy40jzlqeotw56/2017-04-20_LTR_SJCBS_Re04-25-17MtgPubComm_MHcm.pdf?dl=0)
4. 2019-03-04 letter from TLG to the Manteca City Council (https://www.dropbox.com/s/a8ldad6e6or9c6p/2019-03-04_LTR_MCC_AgItD3.pdf?dl=0)
5. 2019-03-18 letter from TLG to the City of Lathrop Public Works Department (https://www.dropbox.com/s/musf61jmz7azjvy/2019-03-18_LTR_LPW_EIRWaterResPlan.pdf?dl=0)

6. 2019-08-21 letter from TLG to the Eastern San Joaquin Groundwater Agency (https://www.dropbox.com/s/srnfonfc2rbj1j1/2019-08-21_LTR_ESJGA_GSP.pdf?dl=0)
7. 2019-10-07 letter from TLG to the San Joaquin Local Agency Formation Commission (https://www.dropbox.com/s/snktcx3dvn8obbz/2019-10-07_LTR_LAFCo_AgIts4.pdf?dl=0)
8. 2020-05-11 letter from TLG to the South San Joaquin Irrigation District (https://www.dropbox.com/s/c7plzfsw56gvf1b/2020-05-11_LTR_SSJID_AgIts9.pdf?dl=0)
9. 2020-06-01 letter from TLG to the Manteca City Council (https://www.dropbox.com/s/dxbuqnlscqp9p2r/2020-06-01_LTR_MCC_AgItsB3.pdf?dl=0)
10. 2020-05-16 Manteca Bulletin news article "California Budget Cutbacks Threaten Environmental Spending Plans"
11. 2020-05-30 Manteca Bulletin news article "SJ River flows may triple in 45 years due to climate shift"
12. 2020-06-02 Manteca Bulletin news article "2065: Sediment builds up in SJ River while state inaction helps cue up major flooding"
13. 2020-05-19 letter from the City of Lathrop to the Honorable Susan Talamantes Eggman, California State Assembly
14. 2020-07-13 letter from TLG to the San Joaquin Area Flood Control Agency (https://www.dropbox.com/s/2l7sefnk5l0ub9o/2020-07-13_LTR_SJAFCA_AgIts4.2.pdf?dl=0)
15. 2020-08-17 letter from TLG to the Manteca City Council (https://www.dropbox.com/s/m6au05tt1va2jvf/2020-08-17_LTR_MCC_AgItsB.4.pdf?dl=0)
16. 2020-08-31 letter from TLG to UC Davis and the California Department of Fish and Wildlife (https://www.dropbox.com/s/h9y92glho2leetj/2020-08-31_LTR_Franks_PubComm.pdf?dl=0)
17. 2020-09-02 letter from TLG to the US Army Corps of Engineers (https://www.dropbox.com/s/sb5eak1rx4w32j9/2020-09-02_LTR_USACE_PubComm.pdf?dl=0)
18. 2020-09-15 letter from TLG to the Manteca Community Development Department (https://www.dropbox.com/s/eaxpmn1jcehpk65/2020-09-15_LTR_MCCD_IntermodalWay.pdf?dl=0)
19. Farmers' Almanac Extended Forecast for Winter 2020-2021
20. 2020-10-12 letter from TLG to the San Joaquin Area Flood Control Agency (https://www.dropbox.com/s/67p0g2v7fq2257d/2020-10-12_LTR_SJAFCA_AgIt5.1.pdf?dl=0)
21. 2020-10-19 letter from TLG to the Manteca City Council (https://www.dropbox.com/s/pfiw5216pl2e068/2020-10-19_LTR_MCC_AgItsC.2.pdf?dl=0)
22. 2020-10-21 Manteca Bulletin news article "City Repeatedly Ignored Auditor Warnings Back To At Least 2009"
23. 2020-11-04 Manteca Bulletin letter to the editor "Manteca City Council ignores flood concerns development is creating for rural residents"
24. 2020-11-06 Manteca Bulletin news article "Chik-fil-A, City of Manteca accounting mess and accountability"
25. Survey map of TLG property and RD 17 dry land levee crown elevations
26. 2018-01-16 letter from TLG to the Manteca City Council with survey maps attached (https://www.dropbox.com/s/tqpubo6bg9stknh/2018-01-16_LTR_MCC_AgItC7_SurveyPictures_Received.pdf?dl=0)
27. 2021-01-19 Manteca Bulletin article "More homes being built in flood zone"
28. 2021-01-21 Manteca Bulletin article "Manteca plans key road on 'wrong' side of dry levee"
29. 2021-01-19 Manteca Bulletin article "Manteca Flooding: River Junction one of SJC's most flood prone areas"
30. Reclamation District no. 17 Mossdale Tract Dryland Levee Pipe Improvements Site Map

31. Collection of emails and letters sent to RD 17 regarding the 2017 levee breach (https://www.dropbox.com/s/28l38dyvqzyxxod/2021-01-27%20CVFPB%20ENCL%2026.pdf?dl=0)
32. 2021-01-18 letter from TLG to the Manteca City Council (https://www.dropbox.com/s/qm5nyxtv0h0hjcb/2021-01-18_LTR_MCC_AgItsB5.pdf?dl=0)
33. 2021-01-19 letter from TLG to the Manteca City Council (https://www.dropbox.com/s/bnzg6jlfijnhouw/2021-01-19_LTR_MCC_AgItsB5.pdf?dl=0)
34. Dredger Cut Map, as included in the RD 17 levee easement (as recorded on Nov. 6, 1912 in Book A, Vol 211 of Deeds, Page 570, San Joaquin County Records)
35. Lumina Ranch southern boundary SSJID junction box and irrigation water delivery facility photos and encroachment upon RD 17 dryland levee

cc:

Manteca City Council, ℅ Cassandra Candini-Tilton
City of Manteca General Plan Advisory Committee, ℅ De Novo Planning Group, Beth Thompson
Manteca Community Development Department, ℅ Lisa Schimmelfennig
San Joaquin County Board of Supervisors, Attn: Rachél DeBord
San Joaquin Council of Governments, ℅ Diane Nguyen
San Joaquin County Planning Commission, ℅ Stephanie Stowers, Senior Planner
Dr. Clark Burke, District Superintendent, Manteca Unified School District
Panos Kokkas, Director, City of Manteca Public Works
Miranda Lutzow, City of Manteca, City Manager
Chris Erias, City of Manteca Community Development Director
Mark Meissner, City of Lathrop, Director of Community Development
Reclamation District No. 2075 Board of Directors, ℅ Pam Forbus
Reclamation District No. 2094 Board of Directors, ℅ Pam Forbus
Reclamation District No. 17 Board of Directors, ℅ Nomellini, Grilli & McDaniel PLC
Lathrop-Manteca Fire District Board of Directors, Attn: Gene Neely, Fire Chief
San Joaquin Area Flood Control Agency Board of Directors, Attn: Chris Elias
De Novo Planning Group, Attn: Ben Ritchie
South San Joaquin Irrigation District Board of Directors, Attn: Danielle Barney
Lathrop City Council, ℅ Teresa Vargas, City Clerk
San Joaquin Flood Control and Water Conservation District, ℅ Fritz Buchman
California Department of Transportation, District 10, Attn: Jes Padda
San Joaquin Local Agency Formation Commission, Attn: James Glaser
Eastern San Joaquin Groundwater Authority Board of Directors
South San Joaquin Groundwater Sustainability Agency Board of Directors, ℅ Danielle Barney
South Delta Water Agency, ℅ John Herrick
American Rivers, Attn: Aysha Massell, Associate Director
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San Joaquin County Surveyor, Attn: James Hart
Ripon City Council
Manteca Planning Commission
Bob Williams, WMD
Lee Del Deon, WMD
Jennifer Cozart, WMD
Josh Harris, Tuff Boy Sales

Marcia Perkins, Tuff Boy Sales
Melissa King, Tuff Boy Sales

ENCLOSURE 10

California budget cutbacks threaten environmental spending plans

SACRAMENTO (AP) — California Gov. Gavin Newsom's proposed budget cuts include canceling billions of dollars in climate change spending, a blow to environmental advocates who look to the state as a stopgap for the Trump administration's weakening of federal protections.

In January, Newsom proposed a $12 billion "climate budget" that, over the next five years, would offer incentives for companies to convert to electric vehicles, give low-interest loans to businesses to clean up their practices and spend billions on projects preparing for floods, droughts and wildfires.

But Thursday, Newsom proposed eliminating most of the foundation for those programs to balance a budget that will have an estimated $54.3 billion deficit. The economic downturn has been brought by a statewide stayat- home order to limit the spread of the coronavirus. The order has closed most businesses for two months, putting more than 4.5 million people out of work and sending state tax collections plummeting.

The proposed cuts come as the state is battling the Trump administration over water quality and auto emissions, among other environmental issues.

"At a time when the Trump administration is mounting an unprecedented assault on environmental and public health protection, it's absolutely devastating and horrifying," said Kassie Siegel, director of the Climate Law Institute at the Center for Biological Diversity.

The Newsom administration says the cuts represent "unprecedented times" that have forced the state to "make sacrifices that we didn't think six months ago we would have to do." The administration chose to protect programs to clean up the air in disadvantaged communities and to provide safe drinking water.

"All the leaders around the world from Germany to Denmark to Japan are all suffering similar economic fates," said Jared Blumenfeld, secretary of the California Environmental Protection Agency. "What California is doing is prioritizing and making sure, as the governor said, our values come first."

The biggest cut was scrapping a proposal to borrow $4.75 billion to prepare the state for climate-change disasters like sea level rise that threatens the coastal cities and devastating wildfires that have destroyed to convince Newsom not to veto it over cost concerns.

Newsom canceled a $250 million contribution to the "climate catalyst fund," aimed at jump starting investment in technology to help clean up private sector polluters.

But the most ironic impact is on the state's "cap and trade" program, which requires big businesses to purchase credits that allow them to pollute. Coronavirus-related closures since mid-March have shut down most businesses and kept cars off the road, leading to a dramatic improvement in air quality. But it's also reduced the demand for credits, meaning the state is likely to make less money when it sells them.

That means less money for a host of programs offering incentives for companies to convert their diesel-powered fleets — one of the largest sources of air pollution — to electric vehicles.

"The good news is emissions are decreasing. However, there is a lot of funding that has occurred in the past that may not occur in the future as a result of that," Blumenfeld said.

The Newsom administration canceled a plan to hire 53 more people to regulate the state's oil and gas industry. The cut surprised environmental advocates because the new employees would have been paid for not by state income tax collections, but by fees paid from the oil and gas industry itself.

California Department of Natural Resources Secretary Wade Crowfoot said the new hires were withdrawn because of "COVID-related economic issues impacting that sector."

"Oil and gas won," said Kathryn Phillips, director of Sierra Club California. "But people who breathe and live near ports are losing."

Western States Petroleum Association President Cathy Reheis-Boyd said "there are no 'winners' when the state or businesses have to make tough budget decisions."

"Even without these new positions, California will continue to have the toughest regulatory standards for oil production in the world," she said.

tens of thousands of buildings and killed more than 100 people.

That proposal could be revived in the Legislature, where lawmakers view it as a type of economic stimulus to create jobs during a coronavirus-induced economic downturn. But they would first have

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ENCLOSURE 11

SJ River flows may triple in 45 years due to climate shift

F LOOD P ROT ECTI O N

By DENNIS WYATT

The Bulletin

Climate modeling by the Department of Water Resources that assumes that within 45 years water flow may triple in the San Joaquin River.

If that is the case plans and designs for state-mandated protection against a 200-year flood — a reference to a 1 in 200 chance of an event of such a magnitude in a given year and not the frequency — could be woefully inadequate.

It also would mean the envisioned $180 million project now being pursue to protect all of Lathrop outside of River Islands, southwest Manteca, the Airport Way corridor north to French Camp, and Weston Ranch may cost significantly more.

In addition to the 200-year flood protection complication the new river flow projections on the San Joaquin River will have on efforts to protect urban areas, it also

SEE **FLOW,** PAGE **A10**

FLOOD

PROTECTION

FLOW

FROM PAGE A1

means flooding frequency could increase significantly in rural South Manteca in the 5,000acre River Junction Reclamation District. The area at the confluence of the Stanislaus and San Joaquin rivers has flooded 11 times in the 93 years since 11 miles of levees were built in 1927 to protect the farm area. A 12th major flood was barely averted two years ago when an alert farmer noticed a boil growing and was able to rally nears to stop a breach before state re-enforcement arrived.

The Manteca City Council when they meet Tuesday at 7 p.m. with the public being able to attend for the first time since the pandemic started in early March is being asked to join the cities of Lathrop and Stockton as well as San Joaquin County to ask the state for an extension for a 2025 mandate that construction start on upgraded flood protection.

Senate Bill 5 that put the mandate in place allows for one justified 5-year extension to 2030.

If work is not started on actual levee improvements as things sit now by 2025, no new construction will be allowed in the identified 200-year floodplain. That runs the gamut from new commercial, residential, and but also existing homes, businesses, and schools.

What would impacts of 200-year flood be Should a 200-year flood occur with multiple levee failures along the Stanislaus and San Joaquin rivers south of the Interstate 5 bridge before the merger with the 120 Bypass, engineers have indicated it would:

uflood 5,200 existing homes with 3 feet or more of water.

uendanger and force the overall evacuation of 50,000 residents in Lathrop outside of River islands, Weston Ranch in Stockton, southwest Manteca, and rural areas

uforce the evacuation of San Joaquin Hospital — the county's major trauma center — as well as the county jail.

uforce first responders at five fire stations, the Lathrop Police Department and the county sheriff to abandon their stations and key communication centers in the middle of a major emergency.

uLathrop High and Weston Ranch High would have water flowing through their campuses as would six other Manteca Unified elementary schools.

industrial to improvements that increase square footage such as home additions as well as new outbuildings such as barns.

While the extension could be justified simply based on having to re-adjust the project to take into account by new Department of Water Resources projected river water flows, the San Joaquin Area Flood Control Agency's (SJAFCA) is also arguing the COVID-19 pandemic will create economic impacts making it difficult to raise the needed funds to do the work.

New construction taking place in the 200year flood plain is already paying fees toward the work. The fear is construction may slow down and reduce the funds flowing to the agency to perform the work. In addition a property assessment of some type on all new and existing development is needed.

The SJAFCA project would also protects a portion of Stockton, French Camp, and the rural area between Weston Ranch and Lathrop.

River Islands at Lathrop — with 300-foot wide super levees — isn't expected to have issues if water flows in the San Joaquin River triple by 2065.

Ironically a project River Islands has been seeking federal and state approval for — widening the Paradise Cut that bypasses the problematic elbows on the San Joaquin River at Mossdale and connects with the Old River between Tracy and Lathrop — has been tied up by federal agencies for more than 15 years. When plans for the project that will take pressure off levees protecting Lathrop and parts of Manteca was first submitted, federal officials said it would be an 18-month approval process.

SJAFCA officials estimate the five-year time extension will enable construction of more than 7,000 housing units, thousands of square feet of commercial and industrial space, and create almost 22,000 jobs. Most importantly, it will ensure residents and properties in the Mossdale Tract area are fully protected from a 200-year flood event.

That construction will not only generate funds to build better flood protection for growth

uforce the closure of portion of Interstate 5 — the major West Coast freeway running from Mexico to Canada — and the 120 Bypass.

uwater would swamp the wastewater treatment plant serving 84,500 existing Manteca residents and more than 13,000 of Lathrop's nearly 26,000 residents.

udisrupt Union Pacific Railroad train movements as well as damage tracks that Altamont Corridor Express relies on.

u182 commercial and industrial properties from Costco to the Lathrop Target and Tesla Motors to Simplot would be flooded.

And that's just for starters. Modeling shows a number of existing homes would likely suffer water damage in fringe areas that could receive upwards of three feet of flood water.

Manteca, Lathrop, and Stockton aren't the only communities impacted by the Senate Bill 5 mandate. There are 85 cities in 33 Central Valley counties that have to comply.

To contact Dennis Wyatt, email dwyatt@mantecabulletin.com

This dry levee south of Woodward Avenue is part of the plan to enhance 200-year-flood protection. The levee is expected to be extended and made more robust.

Bulletin file photo

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ENCLOSURE 12

2065: Sediment builds up in SJ River while state inaction helps cue up major flooding

If we can take snippets of science in a rapidly evolving situation at face value during an evolving threat to public health and safety and suspend all sorts of rules that protect fish from single use plastic bags to suspending the right to peaceful assembly as we have during the COVID-19 pandemic why can't we do the same when it comes to climate change?

The science offered up by the state Department of Water Resources contends water flow will triple in the San Joaquin River over the next 45 years due to climate change.

This has led to an upending of plans moving forward to spend $180 million for 200-year flood protection — a reference to the chances of a certain size of flooding event happening in a given year as opposed to frequency — for most of Lathrop as well as parts of Manteca and Stockton.

The new flow numbers the state wants used will require going back to the drawing board and likely spending closer to a half billion dollars.

Senate Bill 5 that mandates 200year flood protection was devised in the aftermath of Hurricane Katrina when the Mississippi River laid waste to New Orleans due to insufficient levee flood protection.

If climate change is indeed a major threat to public health and safety then why does the state keep insisting that local jurisdictions pursue mandated solutions after putting cities and counties in proverbial strait jackets?

The modeling of the Department of Water Resources that underscores the fears that have been whipped up by climate change is a challenge on par with COVID-19. As such we need to pull the plug on any behavior that doesn't stem the threat climate change imposes including successful environmental challenges to dredging the San Joaquin River after it passes Vernalis.

You will find Vernalis about 10 miles south of Manteca where the Stanislaus River joins up with the San Joaquin River. Driving across the Airport Way bridge looking south toward Vernalis you can see evidence of a major impediment to the San Joaquin River being able to handle increasing levels of water flow due to climate change or any other reason. It is sediment build up that could easily be dredged to deepen and increase the river's ability to carry larger water flows.

Memorial Day weekend when water flows had kicked up due to late spring releases, dozens of people walked across the submerged part of the sand bar to the sediment island created almost in the center of the channel.

Crossing to the exposed sand bar from the rural Tracy side of the river is suicidal given not just the cold water but the swiftness of the river.

Proposition 13 — the 2000 water bond measure approved by voters — included funding to study sediment build-up much to the objection of some environmentalists as well as cubicle jockeys at the Department of Water Resources.

The provision to fund a dredging study was the result of a hard-fought effort by then State Senator Mike Machado to get it included in the bond measure. The study, and a lot of other work voters were promised that would happen if they passed the bond, never happened.

That's because then Gov. Gray Davis — with the concurrence of the California Legislature — "borrowed" $1 billion in Prop. 13 bond money to plug a hole in the state budget. The money, of course, was never paid back so projects including the dredging study could be done.

By the way, Gov. Gavin Newsom wants to rip a page from Gray Davis' playbook and once again "borrow" money from special funds such as bonds to plug Titanic-sizes holes he blasted in the state budget over multiple years with his COVID-19 response. Newsom, just like Davis, promises the state will pay back what it "borrows."

The issue of silt build up being a potential major contributing factor to flooding on the Lower San Joaquin River Vernalis to a point west of Mossdale — the critical area for the needed 200-year flood protection — has been brought up in the years by various government papers.

Longtime farmers have always said that there has been at least six feet of sediment build up since the 1960s when the Central Valley Water Project re-plumbed the West Side of the San Joaquin Valley.

There is arguably tons of anecdotal evidence the farmers are right that can be seen in drought years measured against the early 1960s. You can see the evidence between Vernalis and Mossdale. The study was either supposed to be able to dispel that anecdotal evidence or confirm its existence.

The reason environmental groups fought its inclusion in the water bond project and shed no tears when Gray Davis essentially killed the study is their working contention that anything in place that is part of a habitat is part of the environment even if it was the result of misdirected decisions by man. In this case "man" is actually the State of California acting in concert with the United States government.

If the Department of Water Resources is so sure of modeling that San Joaquin River flow could triple by 2065 then why doesn't it justify a COVID-19-style approach?

Not only should the Lower San Joaquin River should be dredged but it should happen without a time consuming environmental impact report.

The same holds true for efforts to create a bypass of the problematic Mossdale bend where much of the flooding concerns for Lathrop, Manteca, and Stockton can be found. The application to widen Paradise Cut to create a bypass south of Manteca to connect with the Old River east of Lathrop has languished in the federal environmental review process for 15 years. When it was submitted to the Army Corps of Engineers, it was supposed to be an 18-month process.

Dredging the river would also take pressure off the highly vulnerable levees along the Stanislaus and San Joaquin rivers that have failed 11 times in 93 years. The threat those levees pose to Lathrop and Manteca is why the dry of cross levee south of Woodward Avenue is so critical to the 200-year flood protection plan for 50,000 existing residents, their homes, public infrastructure including the 120 Bypass and Interstate 5, businesses, schools, and more.

Unlike COVID-19 that did not exist as a threat 10 months ago, the state and federal bureaucracy has been acutely aware of the ticking time bomb better known as the San Joaquin River. Yet a definite solution such as dredging that could reduce death and other carnage has been ignored and buried by the state bureaucracy in complicity with the environmental perfection movement.

To contact Dennis Wyatt, email dwyatt@mantecabulletin.com

DENNIS WYATT

Editor **Department of Water of Resources employees take water depth readings of the San Joaquin River from the Airport Way bridge several years ago.**

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ENCLOSURE 13

City of Lathrop

From the Desk of Mayor Sonny Dhaliwal
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Email: sdhaliwal@ci.lathrop.ca.us

May 19, 2020

Honorable Susan Talamantes Eggman
California State Assembly
State Capitol, Room 4117
Sacramento, CA 95814

Re: Flood Control Legislation

Dear Assembly Member Eggman,

I am writing to request your support and assistance in helping our San Joaquin County communities achieve a 200-year event flood control standard to protect life and property in Mossdale Tract in San Joaquin County.

The Mossdale Tract is a 22,000-acre area located in central San Joaquin County and bordered on the west by the San Joaquin River. One third of the Mossdale Tract is within the city boundaries of Lathrop, Manteca, and Stockton. The levees along the Mossdale Tract do not currently provide 200-year flood protection. This poses a significant risk to public health, safety, and property.

Pursuant to SB 5 (2007), by 2025, the San Joaquin Area Flood Control Agency (SJAFCA) must complete construction of a flood control system to achieve an Urban Level of Protection (ULOP), which is a project designed to protect the Mossdale Tract from a 200-year event flood event. SJAFCA must annually issue an adequate progress report and then communities relying on that report must make annual findings. If SJAFCA cannot issue the annual report, then housing, commercial, and industrial development planned for Mossdale Tract in the near and far term must cease, and the jobs associated with those developments will not be created.

SJAFCA's inability to make an adequate progress report will also put an end to implementation of development fees and other local assessments needed to raise the funding necessary to move forward with the ULOP. This will eliminate SJAFCA's ability to obtain hundreds of millions of dollars of federal funds to complete the needed project.

Prior to 2018, other local agencies in San Joaquin County were responsible for complying with SB 5 and its 2025 deadline. Progress was inconsistent during this period. However, on January 1, 2018, SJAFCA took over the role of Local Flood Management Agency (LFMA) responsible for complying with SB 5.

Since assuming that responsibility, SJAFCA has made great progress in bringing the process back on track. Nonetheless, several factors have intervened to make it clear that we are close to the point at which SJAFCA will not be able to issue the annual report demonstrating adequate progress. Among others, these factors include:

- As a result of climate change, recent studies by the Department of Water Resources predict that by 2065 there may be three times the flow in the San Joaquin River than was originally planned for when designing the ULOP project. This increased flow will require significant changes to the original project alternatives at substantial cost and delay in both design and construction.

- With the arrival of COVID-19 and the resulting economic calamity, it is now highly unlikely that over the next year SJAFCA will be able to raise the local funds needed, and if unsuccessful that will assure that SJAFCA will no longer be able to make the 2025 deadline set forth in SB 5. Again, continued adequate progress is necessary for development to occur at Mossdale Tract. In turn, development is required to raise the local funds to both fund a project as well as to obtain matching Federal funds for an infusion of hundreds of millions of dollars. Moreover, the ravaged economy has undermined confidence and delayed most development plans by a year or two. All this is enough to sidetrack project-financing assessments, the foundation of the plan to raise necessary funds to complete the flood control system.

To address these challenges, SJAFCA **must** obtain a one-time extension of the 2025 deadline set forth in SB 5 to 2030. Without this extension, it is very likely that SJAFCA and the other local agencies will never have the funding to complete a 200-year ULOP project, thereby assuring eventual physical harm to people living in Mossdale Tract and damage to property in Mossdale Tract.

On the other hand, if the SB 5 deadline is extended by just five years, in a year or two SJAFCA will be able to take advantage of renewed development impact fees as well as implement local assessments to move forward on the 200-year ULOP project, which will also generate the local funds necessary to qualify for hundreds of millions of federal matching funds to complete the project. The extension will also enable construction of more than 7000 housing units and thousands of square feet of commercial space by 2030 and create almost 22,000 jobs in the meantime. Most importantly, it will ensure residents and property alike in Mossdale Tract are fully protected from a 200-year flood event.

All of this can be accomplished without new state spending, as there is no new state spending associated with extending the SB 5 deadline by five years.

For these reasons, I respectfully request your support and assistance to obtain the necessary amendment to SB 5 this year.

Thank you for your consideration. I would be pleased to provide you with any additional information you may require.

Sincerely,

Mayor Dhaliwal

cc: Chris Elias, Executive Director, San Joaquin Area Flood Control Agency

Farmers' Almanac Extended Forecast for Winter 2020-2021

Winter of Great Divide

Cold and snowy in the north. Drought in the west.

And everything crazy in between!

"Based on our time-tested weather formula, the forecast for the upcoming winter looks a lot different from last year, quite divided with some very intense cold snaps and snowfall," states editor Peter Geiger, Philom.

Peter Geiger - Winter Forecast 2020

THE COLD AND SNOWY SIDE

If you love the cold of winter, you're going to love our forecast if you live in the northern half of the country. Our long-range forecast is calling for a cold winter with normal to below-normal temperatures in areas from the Great Lakes and Midwest, westward through the Northern and Central Plains, and Rockies.

SNOWY COMEBACK

Remember last year's almost snow-free winter in the Northeast? Well, this year our prediction is very different, with the possibility of a blizzard hitting the Mid-Atlantic and Northeast states during the second week of February. This storm may bring up to 1-2 feet of snow to cities from Washington, D.C. to Boston, Massachusetts!

The Great Lakes region will get its fair share of snow but expect above-normal snowfall if you live in the western Dakotas, northern portions of Colorado and Utah, as well as Wyoming, Montana, Idaho, and central and eastern sections of Washington and Oregon.

Eastern Ohio and Kentucky can expect a significant snowfall in the beginning of February, and the Southern Plains are on target to receive copious amounts of snow, sleet, and rain later on that same month.

And for those living in the eastern half of the country, you may get clobbered during the final week of March, but what falls from the sky will depend on where you live—this storm will track from the nation's midsection to central New England and bring a significant late-season snowfall to the north of its track, and showers and thunderstorms to the south.

CHILLY FRINGE

The Southeastern part of the country, excluding the Tennessee Valley, will experience average precipitation levels with temperatures chillier than normal overall. Get those sweaters and parkas out of storage!

https://www.farmersalmanac.com/extended-forecast

THE DRY SIDE

Areas across the Desert Southwest, (Arizona and southern California), are predicted to experience a dry and generally mild winter. Not good news considering signs that drought conditions were beginning to ramp up in these regions at the close of the winter of 2020.

THE CRAZY IN-BETWEEN

Right along the Pacific Coastal Plain, from northern California and points north through western portions of Oregon and Washington, rainy and wet weather will be the rule for the winter ahead.

In New Mexico, Texas, Oklahoma east into Arkansas, and Louisiana, Mother Nature will mix intervals of tranquil weather with occasional shots of cold and wintry precipitation but overall may seem to be a bit "temperamental."

WILD CARD

Winter's "wild card" will be the region covering the Tennessee and lower Ohio River valleys, north and east up through New England, where we can expect a rather intense weather system. This weather system will keep the storms active, delivering a wintry mix of rainy, icy and/or snowy weather throughout the season. Learn how the Farmers' Almanac makes its predictions.

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rmersalmanac.com/long-range-weather-forecast/

ENCLOSURE 22

CITY REPEATEDLY IGNORED AUDITOR WARNINGS BACK TO AT LEAST 2009

Caltrans places Manteca on 'do not fund list' over auditing issues

By DENNIS WYATT

The Bulletin

It's now a matter of trust.

Meeting days after city management made public auditing issues that essentially question the validity of municipal budget assumptions and the accuracy of various accounts, the Manteca City Council on Tuesday made it clear the public's trust has been broken and that the trust must be regained.

The council meeting resulted in another bombshell— Caltrans has placed Manteca on a "do not fund list". That designation jeopardizes funding the state may have committed — or may — toward municipal projects such as the McKinley Avenue interchange.

Many of the 20 observations and concerns that are the basis of the accounting mess the City of Manteca finds itself in were among 43 significant deficiencies Maze & Associates — the city's auditors — noted in annual reports from 2009 through 2018 that were either ignored or not implemented by the finance department and senior city management.

Of those, 22 deficiencies were reoc-

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MANTECA

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curring points made in audit reports for more than one year. Eight deficiencies were repeated for five years or more.

"I put my trust in city staff," Councilman Gary Singh said in explaining how his reaction finding about the disarray of City of Manteca financial accounting prompted him initially to be angry and disappointed. ". . . They get paid real well to do their job. I expect them to do the job."

Singh said it was a violation not just of his trust and the rest of the council but "all of the residents in the community. It is their money."

Stephanie Beauchaine, who has spent the last six weeks wading through numerous accounting irregularities since starting work as the interim city finance director, agreed trust had been broken with the council and the community. She added by uncovering problems, correcting them and putting in a system that Beauchaine repeatedly emphasized Manteca's reserves — which no exact dollar amount was provided since the city called its accounting of the public's money into doubt — are ample enough to cover the identified cash deficits in various accounts at least for the current fiscal year.

"There are deficits but we can cover them from (the reserves)," Councilwoman Debby Moorhead noted.

The accounting deficiencies — and money not being in the right accounts — could call into question numerous assumptions about the financial status of accounts that impact everything from sewer, water, and solid waste rates to funding of general fund services such as public safety. As such once everything is corrected that Beauchaine expects the bulk to be after about two years, it could impact utility service rates and service levels.

The discussion about the city's accounting issues that Beauchaine said could change as deeper drilling takes place is occurring just weeks before the Nov. 3 election follows accounting standards and laws restricting the use of certain funds as well as creating transparency through monthly and quarterly reporting to the council and public that the trust can be earned back.

Beauchaine summed it up as "an accounting problem not a financial problem."

That does not mean necessarily that Manteca has as much money on hand that it thinks it does. The reason is simple, as Beauchaine pointed out in response to a council question. If accounting information is erroneous going back several or more years and wasn't corrected, that mistake is rolled into subsequent budgets.

It could mean Manteca counted on money it never had or failed to deposit and withdraw money from the right accounts when posting revenue and expenditures.

The $67 million in cash deficits identified in various accounts includes a $40 million cash deficit that accrued over three years. That involved work financed by a bond where the city never accessed the bond holding to draw down the account.

In order for construction costs of major projects the bond funded to have been paid, the city had to use cash — of which they have more than $200 million on hand with most of it legally restricted for specific purposes — from somewhere.

It is that borrowing between accounts that created the $67 million cash deficit.

The city is essentially trying to untangle such inter-fund borrowing as well as address the general ledger not being reconciled, various departments working from off-the-book spreadsheets to track expenditure and revenue decisions, and not following stipulations that grants have attached to them.

when voters will decide the fate of a one cent sales tax plan.

Measure Z, based on projections by city staff, and would raise $12 million annually it is passed by a simple majority.

It has been billed as a way to maintain service levels and add amenities to the city.

Mayor Ben Cantu attributed the problems to "starvation funding" over the years in reference to city efforts not to add staff to various departments — including police and finance — as Manteca has grown.

At one point City Manager Miranda Lutzow noted that historically Manteca city leadership took pride in being "lean" when it came to staffing.

She also emphasized the city can't yet determine how things went haywire over the years whether it was lack of training, insufficient staff, simple mistakes, malice, or other reasons.

Lutzow added the city has "a lot of hard workers" that are eager not just to correct the problems in finance and do things correctly going forward but other municipal workers who do everything from providing public safety and picking up garbage to making sure water comes out of the tap when they are turned on.

The issues started coming to light after top employees in the finance department departed. That underscores Beachauine's point in noting the answer is to put a system in place instead of relying on people for institutional knowledge.

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ENCLOSURE 23

Manteca City Council ignores flood concerns development is creating for rural residents

Editor, Manteca Bulletin, This is about the longstanding misrepresentation of facts and bias by the Manteca City Council.

The council does not represent everyone, certainly not those outside city limits to the south of Peach Avenue. It has exhibited unyielding favoritism towards "developers."

Rural landowners to the south of Peach Avenue have fought to keep the City of Manteca out of its area for over 30 years. With the passage of State Senate Bill 5 in 2007, landowners became aware of the City's quest to encroach on their rural farms and neighborhoods. The City of Manteca, together with developers, is vehemently determined to intrude into this area with the "Antone Raymus Expressway" (formerly known as the McKinley Expressway Homes are being built right up to the Reclamation District 17's levee on the San Joaquin River (south of Airport Way and Woodward Avenue).

This location is well into the 200-year flood plain. In 2007, with the passage of State Senate Bill 5, home construction could not be done without the addition of a levee. This applied to homes built in city limits only. State Senate Bill 5 stated that after July 2016 home building in the 200-year flood plain required levee protection. State Senate Bill 5 was not enacted to promote building but to insure that the building was done in a limited and safe manner. Cities were not mandated to build a levee; only in building occurred in the 200year flood plain would it be obligated to have a levee, with a mandatory completion date of 2025.

Previous Manteca City Councils as well as the current ones are all proceeding down the same path. Keep in mind that rural landowners do not have a vote from City Council members yet they are and have been adversely affected by decisions councils have made.

Despite objections of farmers and landowners in the area, some who have lived through several foods, the City of Manteca continued their monumental efforts to continue to permit building in this area. A number of vital issues have yet to be resolved.

There will be increased flooding to rural landowners, when and if the dry land levee is put in place.

17 Dry Land Levee Extension and the location of the Antone Raymus Expressway, the answer is always the same: "No Answer." The levee has not been built. Yet the City of Manteca continues to authorize homes in this area. This expressway and levee will divide properties, farms, and homes in this rural area. There is a history of families being affected, going back three and four generations. In some cases, it destroys their means of livelihood and will surely impact everyone's property values negatively.

The City Council's meeting of June 6, 2020, in regard to extending the Five Years for the Dry Land Levee Extension, was a perfect example of how disingenuous this Council and the SJAFCA board are. The board is made up of 11 members — two council members from Manteca, Lathrop and Stockton, two from San Joaquin County, and one member of the public and two alternatives (Gary Singh is the chair, Jose Nuño is the director, and former council member Mike Morowit is the member of the public, all from Manteca).

When the organization (SJAFCA) is able to propose making changes and extending a deadline on a project that has been initiated by its own members, and then enables those very members proposing changes to vote on the proposed changes. How can you in good conscience vote for yourself? This is a terrible conflict of interest and not part of the Democratic process.

The actions of Councilman Singh and the Manteca Community Planning Director are one of two things — they're either ill-informed or were playing out a scenario (questions-andanswers segment) to present misleading information in order to assert a good faith basis for the extension of five years for the completion of Reclamation District 17 Dry Land Levee Extension.

This approved delay allows thousands of more homes to be built and sold in a dangerous flood zone that at the present time would not be able to be protected.

Councilman Singh does not seem to mind putting homes now at risk and then adding additional homes in the future. This is all to collect more tax revenue in the hopes of being able to meet the cost of the dry land levee extension in the future. This is all due to climate change and their lack of foreseeability, which had been pointed out to them years ago, and has been repeated numerous times since.

A petition was presented to then-Mayor Steve DeBrum and other council members at a Council meeting to halt further development in the 200-year floodplain until such time flooding issues and backwater effects to the rural areas south of Manteca could be resolved. The Council soundly rejected such.

There remains at this time no adequate plan for drainage, infrastructure, surface water and roadways. They continued to approve other home construction, ignoring the dangers in the area.

The City of Manteca has additional concerns now with Climate Change and a lack of funding.

The San Joaquin Area Flooding Control Agency (SJAFCA) has asked for an extension of five years (2030) to complete this project. Perhaps taking the advice and expertise of local farmers, who they dismissed and mocked, would have prevented this problem. Developers as well as the City of Manteca seem to have a lack of respect for agriculture, nature's gift of soil, water and weather in this fertile valley that we are so fortunate to live and prosper in. It is best "Not to Fool with Mother Nature."

The current Council and previous ones have not been cooperative with disclosing information to concerned landowners when they were asked. In a number of misleading statements, Council members presently serving and those who have served previously have stated that the dry land levee is mandated by State Senate Bill 5 to protect those homes built and structures built in the 200-year flood plain. Levees are only appropriate if Cities choose to allow building in the 200-year flood plain.

The City of Manteca has turned a blind eye and continues to allow homes to be built deep into the floodplain located near Reclamation District 17's levee. Those homes built prior to July 2016 were grandfathered in. Homes built after July 2016 would have to meet standards to conform to State Senate Bill 5.

When Council was asked on numerous occasions about the locations of the Reclamation District

The City of Manteca's lack of foreseeability, integrity, and accountability should not come at the expense of its rural neighbors to the south. The rural property owners to the south are in the way of the City of Manteca's ploy for increased tax revenues and the developers' profit-motive to build as many homes as they can.

Three classic examples of the City's poor planning are:
1. Woodward Avenue. The City allowed developers to have homes facing Woodward with driveways exiting onto this busy thoroughfare (Woodward Avenue) rather than stonewall securing the subdivision. This is an accident waiting to happen.

2. Lest we forget the fiasco of the traffic blockage to get into Chick-fil-A.

3. The fact that the City of Manteca has not updated its Water Master Plan since what appears to be 2005 (overdue by 15 years).

The City of Manteca needs to be held responsible for such self-serving actions.

That includes council members in 2020 — Mayor Benjamin Cantu, Gary Singh, David Breitenbucher, Debby Moorhead, Jose Nuño as well as council members in 2018: Mayor Steve DeBrum, Rick Silverman, Mike Morowit, Debby Moorhead, Gary Singh.

Raymond Quaresma John Cardoza Ed Cardoza Marian Rawlins

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ENCLOSURE 24

Chik-fil-A, City of Manteca accounting mess & accountability

Accountability is a concept foreign to government – from local to national. Much has been made lately of the financial accounting pickle Manteca finds itself in, and in reading the social media posts, by God heads are going to roll. There just one problem – the heads that caused this mess are all but gone.

The city is about to spend tens of thousands of dollars to remove the insipid bulbs and planters that were installed at an astronomical cost more than a decade ago. I said then what a ridiculous waste of money it was, and in 2008 I said that the bulbs had to go. It's only taken 12 years.

I have no idea who was on the City Council then. And more recently, heads should roll for the ridiculous approval of the Chik-fil-A restaurant in its current location. With McDonalds on one corner and In-N-Out, what were the planners and the council thinking? Good lord, some days it takes three light cycles to get off of the freeway!

And if anyone thinks it will get better once the pandemic is over, think again. With no dining-room service, Chik-fil-A has doubled up the to-go lines by expanding the line off the street into two lines around the parking lot and then back to one at the window. That cannot happen if the parking lot is in use.

I think what has happened with Great Wolf is criminal, but again, those who engineered that debacle are long gone. What was sold as a funding vehicle for police and fire has ended up being lucky to fund paper clips for a year, and the Great Wolf folk laughing all the way to the bank.

What will the latest victim be in this ongoing financial mess? The proposed Measure Z tax increase. While it is always tough to get a tax increase, the recent revelations have given the anti-tax crusaders fuel for their self-serving fire.

Tax crusaders have cousins, and they are urban saviors. Many years ago – maybe 20 or more – Mantecans had a $2.65 monthly surcharge on their utility bills for storm drain maintenance. But some urban saviors got together and got that surcharge ruled to be an illegal tax, saving the taxpayers less than the cost of a gallon of milk a month.

P E RS P E CT I V E

Democratic states and their finances have been mismanaged, this Democratic state had a massive surplus just six months ago. But with first COVID and then the fires, California is broke and then some. And unless we get help, there will be a day of reckoning next year the likes of which this state has not seen in my lifetime.

This is why Measure Z was so important, and why it will be a shame if it ultimately fails. There is a Manteca business that sponsored ads against Measure Z on Facebook, and should it fail I hope they will be proud when we get out of this pandemic we will not have the funds to pay police and fire.

But like I said earlier, lack of accountability is not limited to the local level. Nearly 60,000 Americans died in Vietnam, with hundreds of thousands of casualties. And it was all because of a lie.

The attack in the Gulf of Tonkin that got us into that war never happened, and those in power knew so at the time and did it anyway. By the time the truth came out, they had all rode off into the sunset.

To this day we are stuck in the desert halfway around the world because of the weapons-of-mass-destruction lie. But the architects of that debacle have also rode off into the sunset.

Lies and the liars who tell them. It was known from the jump how deadly COVID was, yet how many times did we hear it was a hoax, it was just like the flu, or it was going to go away on its own – by Easter.

Well here we are, eight months into it and by the end of November we will have lost more than four times the amount of Americans we did in Vietnam. Think of that – to put the names of all the COVID victims on a wall would require four Vietnam walls. And counting.

Elections have consequences, and one of them can be accountability.

DAVE CAMPBELL

But a little can go a long ways, and in the few years since then that we have had copious amounts of rainfall, streets have flooded due to backed-up storm drains. But by golly, we can celebrate with a gallon of milk.

In case anyone has had their head in the sand recently, COVID has decimated the national economy. Despite the alleged justification for not bailing out the states because the states that are in trouble are

Local columnist

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BASIS OF ELEVATIONS:

ELEVATIONS IN THIS DRAWING ARE BASED UPON NGS MONUMENT HS0630, BRASS DISK IN THE TOP OF A CONCRETE BASE FOR AN IRRIGATION WATER VALVE, ON THE EAST SIDE OF AIRPORT WAY, 260'± SOUTH OF NILES ROAD, WITH A PUBLISHED ELEVATION OF 29.9 (NAVD88).

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SCALE: 1" = 200'

VVH CONSULTING ENGINEERS
430 10th Street
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HARRIS PROPERTIES SAN JOAQUIN COUNTY CALIFORNIA	LEVEE TOPOGRAPHY		EXHIBIT A

01/12/2018 Terra Land Group property and RD 17 dry land levee topograpical survey map

ENCLOSURE 25

Manteca • Ripon • Lathrop
Bulletin
Vol. 112, No. 12 TUESDAY, JANUARY 19, 2021

MORE HOMES BEING BUILT IN FLOOD ZONE

New homes fees will cover part of cost of $180M levee upgrades 10-12 years away

GROWTH

By DENNIS WYATT
The Bulletin

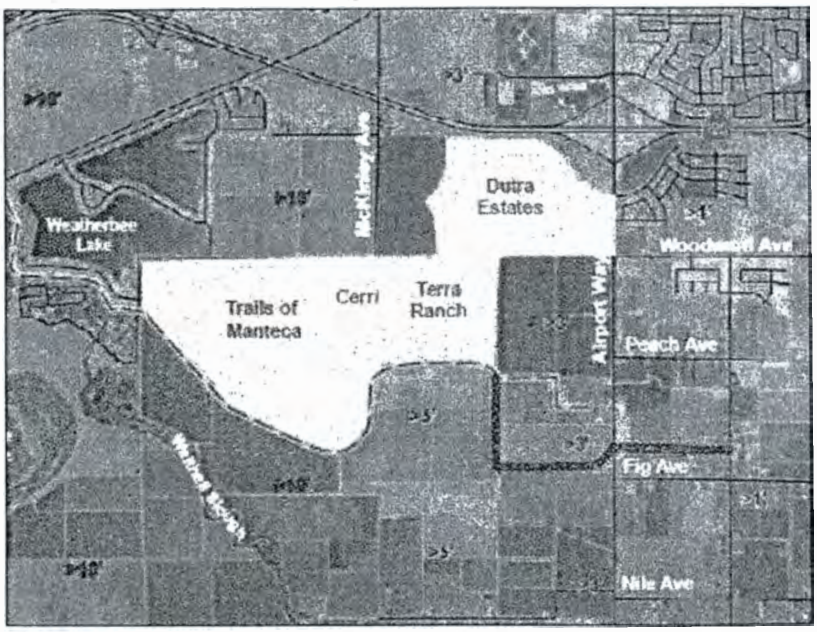
Twenty-four years ago today Manteca was breathing a collective sigh of relief that the flood that devastated 70 square miles along the San Joaquin River forcing 2,000 rural residents to flee left the city intact.

Emergency crews at one point had plugged the McKinley Avenue undercrossing to convert the 120 Bypass into an emergency levee. The reason was simple: The dry levee south of Woodward Avenue was touch and go for several days as to whether it would fail.

Tonight the Manteca City Council is posed to approve the final map for the first unit of 655 homes in the Cerri development south of Woodward Avenue at its intersection with McKinkey Avenue.

It is part of 3,099 single family homes approved

SEE HOMES, PAGE A10



This overlay on a flood map shows much of southwest Manteca would be covered with 3 to 5 feet of water in the event of a 200-year flood — larger than the 100-year event in 1997. The orange line is the existing dry levee and the red line is its proposed extension.

HOMES

FROM PAGE A1

in the 100-year floodplain long after the 1997 flood receded in most people's memories. The other projects include the 1,237-home Manteca Trails breaking ground this year south of the gated Oakwood Shores community that is just outside the city limits.

The city along with Lathrop, Stockton, and San Joaquin County are working toward enhancing the river levees and cross levees — also known as dry levees — to withstand not a 100-year flood but a 200-year flood as now required by the state.

Homes — and other new construction in the 200-year floodplain that in Manteca includes areas west of Airport Way north of the 120 Bypass and to the west and roughly as far east as midway to Union Road south of the freeway — will pay fees toward what is expected to be a $180 million levee project.

The state mandated that physical work start by no later than 2025.

The levee upgrade authority, that includes Manteca and Lathrop, has asked for a 5-year extension until 2030. Senate Bill 5 allows for one such extension.

That means, if approved, more robust levee protection won't be in place for 10 to 12 years from now.

Mayor Ben Cantu is the only elected official to consistently vote against approving the building of new homes in the floodplain before an upgraded levee is in place. He'll have another chance to express his concern about what he has described as "the folly" of gambling with people's safety and property when the City Council meets at 7 p.m. tonight during a Zoom meeting.

On the agenda is approving the final map for the first unit of the Cerri project. The council last year — following adopted polices — allowed the developer to start infrastructure improvements before the final map was adopted. Based on previous advice from legal counsel, elected officials are likely to be advised that they have no choice but to approve the map.

Cantu's concerns are legitimate. The rating of an area as being in a "100-year floodplain" does not mean there is a likelihood of a flood on such a scale every 100 years. Instead it references the odds of it happening in any given year. That means in any given year there is a 1 in a 100 chance of the 1997 flooding event occurring.

Given when that rating was made and changes on the watershed upstream from Manteca as well as within the city, the likelihood is probably higher. That's because every time soil is covered by streets, sidewalks, and roof tops there is more impervious surfaces. When that is combined with events such as in 1997 — an unusual mid-December snowfall in the Sierra followed by rain and then sustained above average temperatures melted the snowpack and nearly overwhelmed various reservoirs — the flooding will be worse. The heavy flow punched no less than 11 holes in the levees south of Manteca along the Stanislaus and San Joaquin rivers.

When the 1997 floods occurred, there were no homes south of the 120 Bypass threatened save for a handful of rural estates. There have been more than 1,000 homes built on both sides of Airport Way south of the 120 Bypass since then that — based on concerns expressed by state emergency officials in 1997 — could be flooded with one to three feet of water based on the 1997 event.

Southwest Manteca was originally seen as a tech-style business park

There was a time 20 years ago that Manteca's leaders saw the southwest segment of the city as the Northern San Joaquin Valley "Promised Land" for a Pleasanton-style Hacienda Business Park.

It was to feature tech firms and large-scale Class "A" office operations mixed in with retail and restaurants surrounded by high density housing. A tram system was envisioned to run between what dubbed Tara Business Park and the Altamont Corridor Express station 1½ miles away.

It was what originally prompted the city toward planning to create an interchange where McKinley Avenue passes under the 120 Bypass.

When there were no takers, the next "big thing" was to create a six-lane expressway from the future McKinley Avenue interchange to serve the proposed Austin Road Business Park in southeast Manteca.

The business park concept has gone nowhere and rural residents irked about a six-lane expressway with heavy truck traffic possibly slicing up their rural lifestyle succeeded in getting the city to scale back the proposed thoroughfare although they would have preferred it had been killed off.

Today Tara Business Park has been scrapped for years and the Austin Road Business Park is dead in the water. Meanwhile both the interchange and expressway — now repackaged as a parkway with just four lanes and lots of roundabouts in lieu of traffic signals at its various intersections — are both moving forward.

And the primary purpose of both the interchange and parkway when it comes to areas south of the 120 Bypass is to accommodate more housing. More precisely, it will continue the housing development pattern that started in 1999 when the foundation was poured for the first tract home south of the 120 Bypass across from what is now Woodward Park.

There have been 3,099 more single family homes — and conceptual parcels for 502 apartments — approved so far within a mile of that interchange. There is available land south of the 120 Bypass in southwest Manteca that has yet to be subdivided for tract homes to accommodate more housing.

To contact Dennis Wyatt, email dwyatt@mantecabulletin.com

ENCLOSURE 28

SACRAMENTO DROPS SINGLE FAMILY Z

Manteca • Ripon • Lathrop

Bulletin

Vol. 112, No. 14 THURSDAY, JANUARY 21, 2021

BOYS ON BIKE

Let's keep thin in perspecti

▶ See WYATT, Page

MANTECA PLANS KEY ROAD ON 'WRONG' SIDE OF DRY LEEVEE

Raymus Parkway being designed as Trojan horse for future conversion to expressway

By DENNIS WYATT
THE BULLETIN

Apparently Manteca plans to build what could be a growth-inducing "parkway" in a 100-year floodplain where levees have failed 11 times since 1929.

That means if the levees fail along the Stanislaus and San Joaquin rivers south of Manteca as they have an average of once every 8½ years it would be at risk of being covered by floodwaters. The area in question was underwater in the 1997 floods.

The controversial Antone Ray-

SEE ROADS, PAGE A10

Bulletin file photo

Raymus Parkway could go through the area between Peach Avenue (shown) and Fig Avenue east of Airport Way south of Manteca.

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ROADS

FROM PAGE A1

mus Expressway — now being marketed as a parkway — would infringe on fertile farmland south of Manteca that is not within the city limits.

That was made clear during Tuesday's city council meeting by City Engineer Leigh Ann Sutton in response to questions from Manteca Mayor Ben Cantu regarding the alignment.

Cantu, a longtime proponent of the expressway, said he asked Sutton to research the issue when she joined the city after it created its own engineering department last year.

Sutton noted the new general plan update that the City Council has yet to adopt has the Antone Raymus Parkway going from the McKinkey Avenue/120 Bypass the city expects to break ground on in the next few years and swinging in a southeasterly direction to connect with a proposed $100 million interchange on Highway 99 midway between Austin Road and Jack Tone Road interchange.

Raymus Expressway would go over levee

The roadway will go over the cross-levee that is part of a $180 million project to upgrade flood protection from 100-year to 200-year as mandated by the state. It will then go south enough to apparently avoid a concentration of small rural country estates along Fig Avenue and Peach Avenue and across farmland to head east. All of this area is not in the city limits nor is it supposedly on the city's radar for future annexation.

The actual roadway is supposed to be six lanes for a brief stretch near the interchanges, then four lanes for a while and two lanes in the middle. Sutton said in lieu of traffic signals at intersections the plan calls for roundabouts in a bid to keep traffic moving but to slow it down as it passes through neighborhoods.

Antone Raymus Parkway, however, is advancing as a Trojan horse for an eventual expressway. That's because the city is requiring enough right-of-way through new subdivisions as they are approved to possibly go back in the future and make it four lanes instead of two and replacing roundabouts with traffic signals.

That makes it appear the city's plan is to simply silence expressway critics by appearing to address their worst fears that the proposed roadway could one day become a truck route to connect an approved 1,050-acre business park in southeast Manteca with the 120 Bypass at McKinley Avenue.

flood zone that won't have such protection?

▶How will the city pay for the segment south of the city that cuts through the flood zone? City policy has been to make developers build segments of such major streets as growth occurs. But since growth can't occur there due to the floodplain, how will the city pay for the road?

▶If the intention of city planners — or whoever is assuming responsibility for general growth blueprint decisions in the area — is to eventually see the area urbanized, how will that happen since it is all outside the area being upgraded for 200-year flood protection?

▶Does the city still need an Antone Raymus interchange on Highway 99 now that Caltrans is working on a three-phase $157 million 120 Bypass/99 interchange that breaks ground in the fall that includes a replacement of the Austin Road interchange with a much more muscular footprint that also clears the railroad tracks that wasn't even on the radar when the city started looking at the Raymus interchange?

▶How will the city pay for a Raymus interchange that essentially would serve future Ripon growth east of Highway 99 given land all the way north to Graves Road is part of that city's sphere of influence which represents areas that are targeted for possible annexation? A previous city council dropped funding for that interchange and the Roth Road interchange that is part of the proposed general plan yet to be adopted because they were too costly and seen as repetitious. On either side of the proposed Roth Road interchange north of Manteca are two recently upgraded interchanges at French Camp and Lathrop roads.

▶Exactly what are the city's interchange priorities and how are they going to pay for them? The state is no longer funding interchange work that "induces growth" per se. The Raymus interchange has a $100 million price tag because it not only has to clear the railroad tracks but Highway 99 freeway lanes need to be shifted to the east to make it work. The city's current major road fee for interchange work includes absolutely no funding to upgrade the Airport Way and Main Street interchanges along the 120 Bypass. Based on upgrades to a diverging diamond configuration at Union Road, such work will require at least $56 million.

Cantu has espoused a loop road to ease traffic congestion

From Cantu's perspective, the city backing off publically on what he believes is a textbook planning issue of building a roadway that will move traffic quickly based on the projected growth was simply to appease opponents. That then, based on the mayor's

The expressway was first proposed as a key traffic flow element for that business park that is envisioned to include large distribution centers.

In past years the county residents were joined by those in the city questioning the wisdom of building the expressway.

The under-the-radar approach to creating the Antone Raymus Parkway/Expressway is underscored by the fact the mayor had to ask if an alignment of some sort existed.

Parkway alignment raises questions

The fairly short exchange that occurred while the council was approving final maps for a large portion of the 655-home Cerri development that abuts the parkway/expressway raises a number of policy and financing questions that city leadership has sidestepped or not addressed:

▶Is it legal under Senate Bill 5 that mandates 200-year flood protection to be in place — or in process of being designed, funded and built — by 2030 to build major infrastructure such as a key city roadway in a observations, puts future councils in the awkward position of remedying traffic problems that infuriate residents.

Cantu 20 months ago gave a glimpse of his vision for major roads "circling" the city as much as possible for optimum traffic flow much like major cities in Texas do. It came up at a workshop involving major arterials to the north and east of developed Manteca.

He saw such a road to the east of Manteca starting somewhere near French Camp Road and looping to connect to the Raymus interchange as providing an expressway with no or little development to get east of the roadway making it the de facto city limits. That would connect with the Raymus roadway south of Manteca to hook up with the 120 Bypass at McKinley.

It would effectively create roughly three quarters of a loop of Manteca. And without traffic from urbanization on most of one side of it, such a roadway would allow for muscular movement of traffic.

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ENCLOSURE 29

Manteca • Ripon • Lathrop
Bulletin

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Vol. 112, No. 12 TUESDAY, JANUARY 19, 2021

MANTECA FLOODING

River Junction one of SJC's most flood prone areas

HISTORY

By DENNIS WYATT
THE BULLETIN

Spanish explorers climbing to the top of Mt. Diablo in the early summer of 1772 thought they had stumbled onto a great inland lake.

They reported seeing nothing but water as they scanned the horizon from north to south. In the distance, they spied the foothills of the Sierra that was yet to be explored by Europeans.

The Spanish band turned around and headed back to Yerba Buena (modern-day San Francisco) where they unwittingly wrote the first documented account of the Central Valley's long, tenacious history of flooding.

The only things that prevent a repeat of the 1772 landscape today is a series of dams doting the Sierra and levees restraining the Sacramento and San Joaquin rivers as well as dozens of major and minor tributaries that feed water into them.

The first settlers to arrive in what is now modern-day South San Joaquin County got a taste of the destructive forces of the rivers within months of arriving. They also had the misfortune of settling in the county's most flood prone area — the 5,000-acre River Junction District located at the confluence of the Stanislaus and San Joaquin rivers eight miles southwest of Manteca where the January 1997 floods started when the first levee broke.

River Junction has flooded 11 times in the 94 years since almost a dozen miles of levees were built around the farm area with the formation of a reclamation district. Prior to 1927, the area flooded virtually at will every winter and even late spring when the Central Valley wasn't in a drought cycle.

SEE **FLOODING,** PAGE A10

ROSE ALBANO RISSO/1997 Bulletin file photo

Wetherbee Lake residents boat by their homes flooded in 1997 almost to the second floor at the western end of Woodward Avenue.

FLOODING

FROM PAGE A1

Mormon settlers first flood victims

William Stout led a band of 20 Mormon men up the San Joaquin River from Yerba Buena. They sailed their launch known as "Comet" to a point what is now known as Mossdale. They continued up the river and established their colony on the north banks of the Stanislaus River about 1.5 miles east of where it flows into the San Joaquin River.

Within four months, Mother Nature turned on the spigot. The river rose eight feet in one hour in late December. By January, it overflowed its banks and flooded the countryside for miles. Stout wrote in his journal that the river was three miles wide looking toward Corral Hollow.

The frustrated Mormon company abandoned their settlement just in time to miss the soggy mess that greeted gold prospectors heading to the Sierra mining camps through Stockton in 1849.

Miners literally traveled through mud and water for miles to reach the eastern edge of the Central Valley.

It was common in early day Stockton for blocks of the city to have several feet of water for weeks in the winter.

Possibly the greatest flood of the 1800s occurred in January of 1862. That's when conditions similar to those that led to the 1997 floods developed. Snowpack in the Sierra was 15 feet higher than the previous record in 1849-50. Rainfall in Sonora topped 102 inches, more than 60 inches above normal. All major tributaries to the San Joaquin River reached record-breaking stages.

Other major flooding during the 19th century in South San Joaquin occurred in 1867, 1868, 1880, 1881, 1884, 1890 and 1893.

The first major flood in the 20th century started in River Junction in February of 1938. Boats were used to aid marooned families while cattle were driven to higher ground near Manteca. Most roads were closed. The only access to Stockton was via the French Camp Road.

The Paradise Cut levee along Stewart Tract also broke in 1938. The levee failure on March 17 closed Highway 50 (now Interstate 205/Interstate-5) and made travel to the Bay Area impossible except by boat.

20th century's worst flood was in 1950-51

The 20th century's worst flooding occurred in the winter of 1950-51. An unusually severe storm between Nov. 13 and Dec. 8 caused

extensive flooding from what is now the Airport Way bridge on the San Joaquin River north to Bowman Road in French Camp.

Prime farmland was under water for weeks causing erosion, large deposits of debris and sand as well as weed infestations. Dead livestock and poultry were found throughout the area as the water receded. Losses topped $750,000.

By January 1951, levees on both sides of the Stanislaus River as well as the San Joaquin at Mossdale had failed. Highway 50, the predecessor to Interstate 5-Interstate 205, was closed for several weeks. Flood waters came within four miles of what is today central Manteca.

The French Camp Slough backed up threatening the county hospital. Workers protected the hospital with a temporary levee. The county honor farm was threatened and some prisoners were ordered evacuated.

By the time the disaster had ended, damage along the river topped $3 million and 2,000 people were displaced between Mossdale and French Camp.

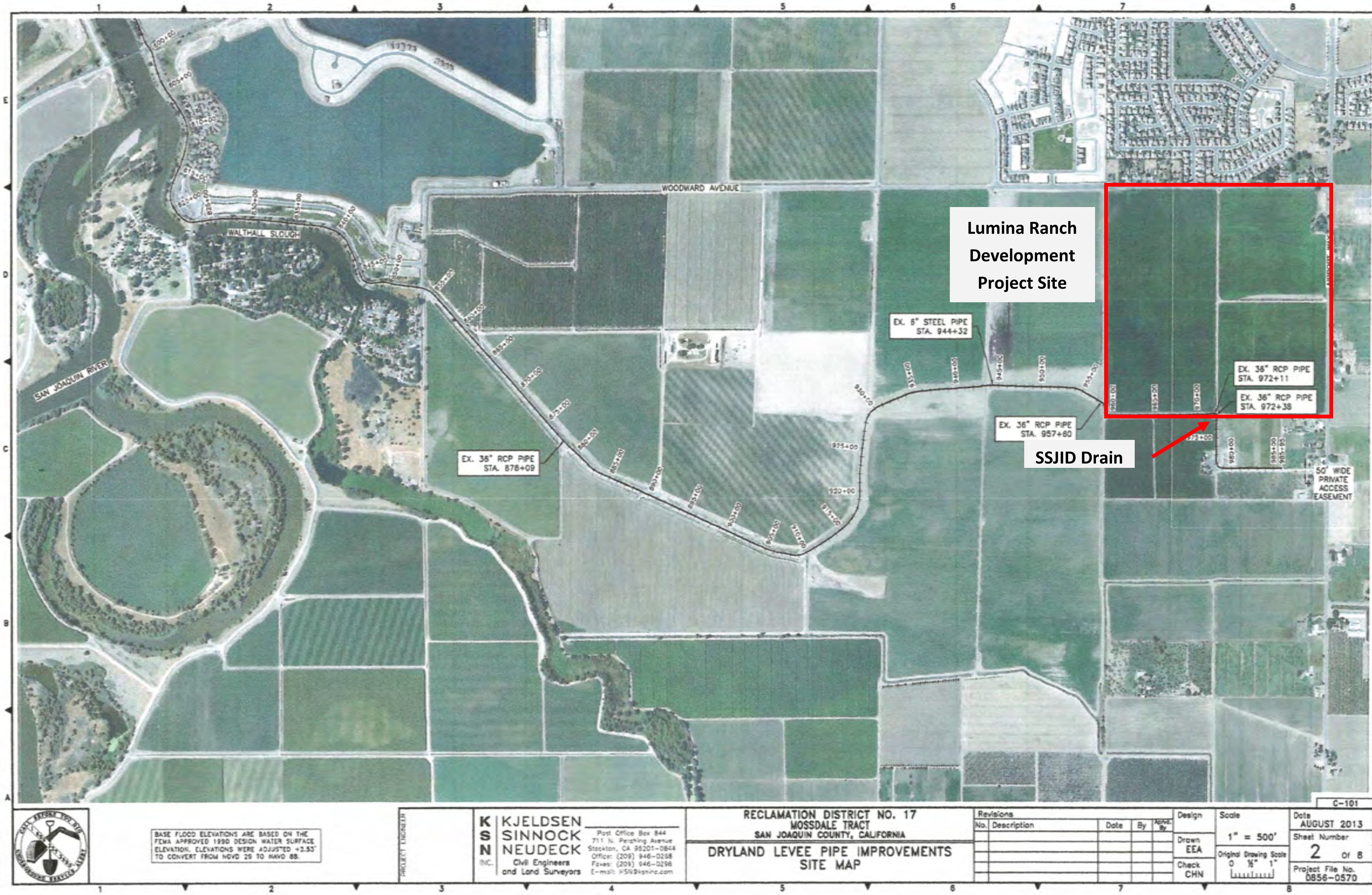
In Stockton, 125 city blocks were flooded and 3,500 people were evacuated. Flood water remained in San Joaquin County's largest city for nearly eight days with the deepest water reaching eight feet.

The 1950s saw several other floods.

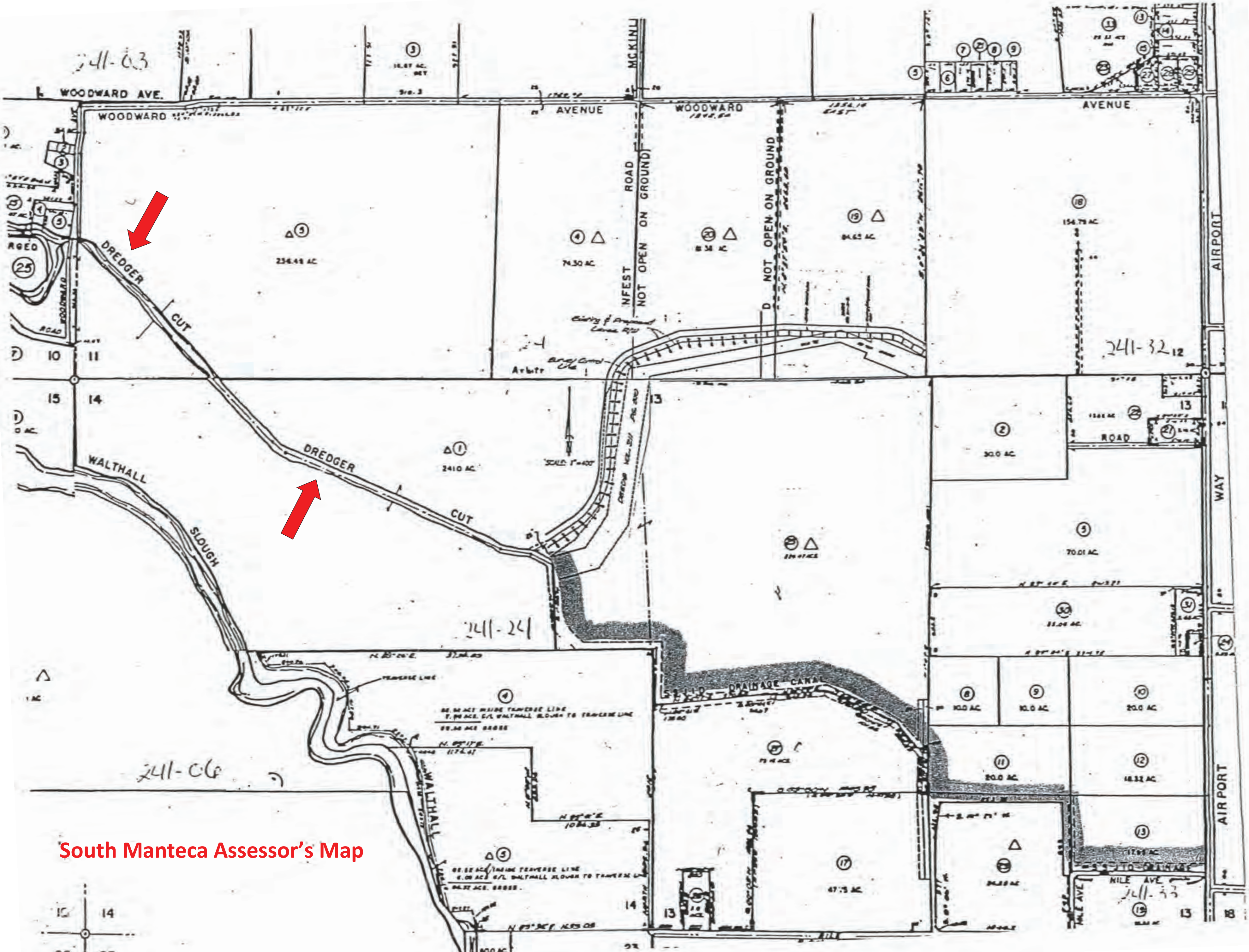
The next levee break wasn't until June of 1969 at River Junction. While damage was at a minimum in that flood, it did put the Manteca Sportsmen Club under six feet of water.

Flood occurred in 1983 at River Junction and 1986 along the San Joaquin. The last flood in 1997 covered nearly 70 square miles between Manteca and Tracy, damaged 700 buildings and caused damages pushing $100 million.

To contact Dennis Wyatt, e-mail dwyatt@mantecabulletin.com



ENCLOSURE 30



South Manteca Assessor's Map

ENCLOSURE 34

ENCLOSURE 35

Lumina Ranch southern boundary SSJID junction box and irrigation water delivery facility photos and encroachment upon RD 17 dryland levee

February 22, 2021

VIA EMAIL

Mark Niskanen
Contract Planner
(mark@jbandersonplanning.com)

RE: LETTER # 2: Public Comments on the Notice of Preparation of an Environmental Impact Report (EIR) and Scoping Meeting for the Proposed Lumina Ranch Project.

Dear Project Team Members,

My name is Martin Harris and I am a representative of Terra Land Group, LLC ("TLG"). TLG sent a letter on February 1, 2021 regarding the Lumina Ranch NOP. TLG would like to submit a second letter regarding that same project to ensure that all roadway and drainage impacts related to the Lumina Ranch project are properly identified and integrated into the planning process.

The most important part of our letter is a map which is attached as **Enclosure 1**. This is a San Joaquin County Flood Contingency map showing Brocchini Cut and the east boundary of Reclamation District 2094 ("RD 2094"). (This map was originally presented in a letter to the Manteca City Council on February 16, 2021. **See Enclosure 2**) TLG believes it is important to define these boundaries because the RD 2094 boundary is adjacent to property owned by TLG.

In addition, TLG has been informed that in a high-water event, the Stanislaus River may potentially be cut on the right hand side of the river at Brocchini Cut. Because of land elevation and slopes in the area, the water which comes out of Brocchini Cut will flow north and potentially reach SSJID drain #11 before being conveyed as far as RD 2094 and the Lumina Ranch project.

As the Lumina Ranch project team is considering adding more homes and roadways in the flood zone, TLG believes the team needs to be aware of any and all flood and drainage impacts which may currently exist in the south Manteca area. TLG hopes that the information presented in the Lumina Ranch NOP comment letters (#1 and #2) as submitted by TLG will prove helpful in providing safe and efficient roadway access to the City of Manteca governed areas south of Woodward Avenue and West of Airport Way while considering any and all impacts that may be created.

This concludes TLG's comments to the Lumina Ranch NOP/EIR.

Thank you for your efforts.

Respectfully,

Martin Harris
for Terra Land Group, LLC.

MH/cm

Enclosures:

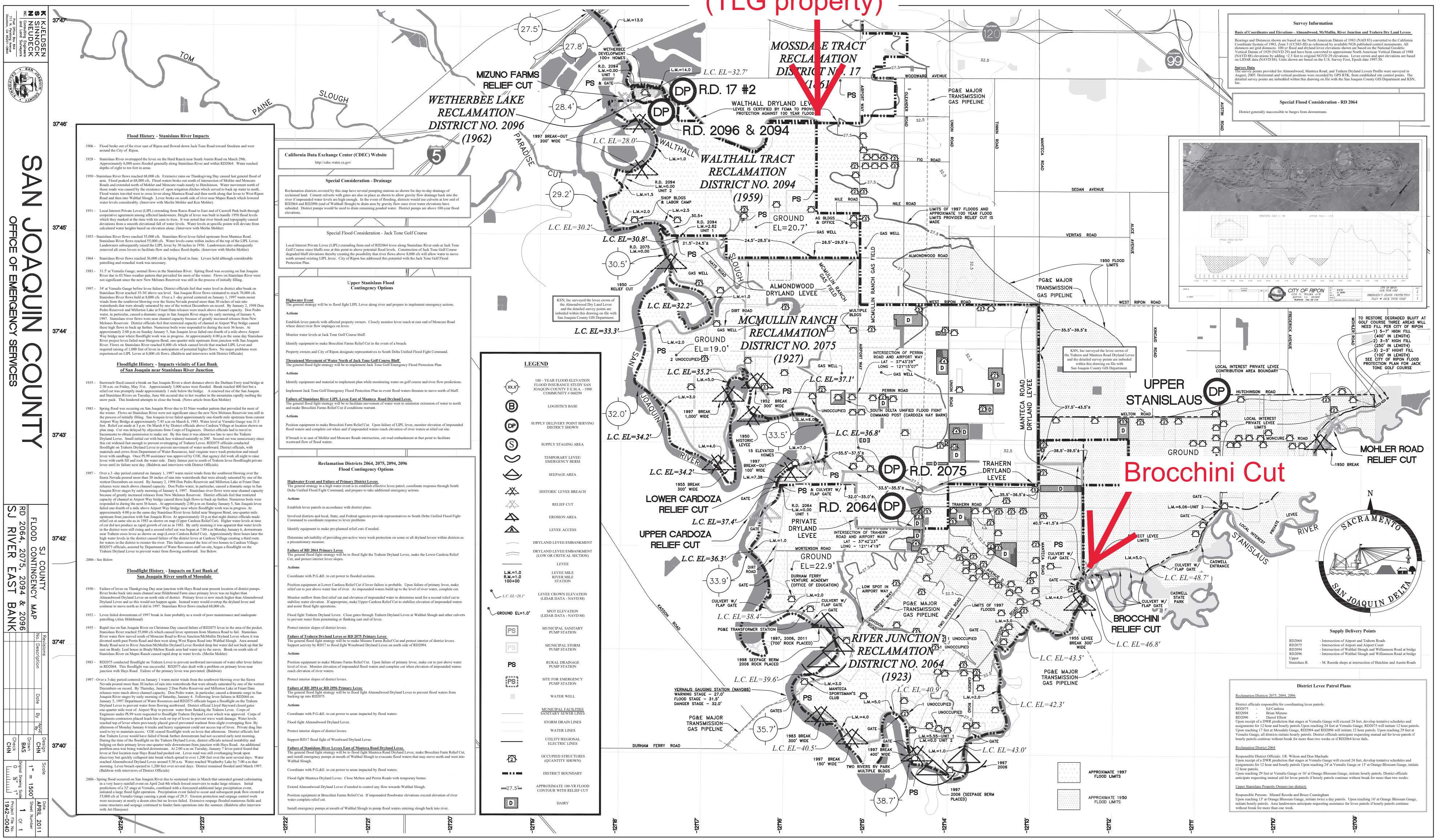
Enclosure 2 can be downloaded as needed via Dropbox through the provided hyperlink.

1. San Joaquin County Flood Contingency Map showing Brocchini Cut and the east boundary of RD 2094
2. 2021-02-15 letter from TLG to the Manteca City Council (https://www.dropbox.com/s/1lsaev09lygj3ck/2021-02-15_LTR_MCC_PubComm.pdf?dl=0)

cc:

Panos Kokkas, Director, City of Manteca Public Works
Manteca Community Development Department, ℅ Lisa Schimmelfennig
Lisa Blackmon, City of Manteca
Chris Erias, City of Manteca Community Development Director
Reclamation District No. 2094 Board of Directors, ℅ Pam Forbus
Reclamation District No. 17 Board of Directors, ℅ Nomellini, Grilli & McDaniel PLC
South San Joaquin Irrigation District Board of Directors, Attn: Danielle Barney
Bob Williams, WMD
Lee Del Deon, WMD
Jennifer Cozart, WMD
Marcia Perkins, Tuff Boy Sales
Melissa King, Tuff Boy Sales

RD 2094 east boundary (TLG property)



ENCLOSURE 1

22 February 2021

Mark Niskanen
City of Manteca
Community Development Department
1001 West Center Street
Manteca, CA 95337

COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, LUMINA RANCH PROJECT, SCH#2021010265, SAN JOAQUIN COUNTY

Pursuant to the State Clearinghouse's 22 January 2021 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environmental Impact Report* for the Lumina Ranch Project, located in San Joaquin County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of

Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues. For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Implementation Policy is available on page 74 at:
https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr_201805.pdf

In part it states:

Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit), Construction General Permit Order No. 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). For more information on the Construction General Permit, visit the State Water Resources Control Board website at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Threat General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Threat Waiver) R5-2018-0085. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Threat Waiver and the application process, visit the Central Valley Water Board website at:
https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2018-0085.pdf

Limited Threat General NPDES Permit

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[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Limited Threat Discharges to Surface Water* (Limited Threat General Order). A complete Notice of Intent must be submitted to the Central Valley Water Board to obtain coverage under the Limited Threat General Order. For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0076-01.pdf

NPDES Permit

If the proposed project discharges waste that could affect the quality of surface waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit. For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at: https://www.waterboards.ca.gov/centralvalley/help/permit/

If you have questions regarding these comments, please contact me at (916) 464-4856 or Nicholas.White@waterboards.ca.gov.

Nic White

Nicholas White
Water Resource Control Engineer

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

Department of Toxic Substances Control

Meredith Williams, Ph.D.
Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Jared Blumenfeld
Secretary for
Environmental Protection

Gavin Newsom
Governor

January 29, 2021

Mr. Mark Niskanen
Contract Planner
City of Manteca
1001 W. Center Street
Manteca, CA 95337
Mark@jbandersonplanning.com

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED LUMINA PROJECT – DATED JANUARY 22, 2021 (STATE CLEARINGHOUSE NUMBER: 2021010265)

Mr. Niskanen:

The Department of Toxic Substances Control (DTSC) received a Notice of Preparation of an Environmental Impact Report (EIR) for Lumina Ranch (Project). The Lead Agency is receiving this notice from DTSC because the Project includes one or more of the following: groundbreaking activities, work in close proximity to a roadway, work in close proximity to mining or suspected mining or former mining activities, presence of site buildings that may require demolition or modifications, importation of backfill soil, and/or work on or in close proximity to an agricultural or former agricultural site.

DTSC recommends that the following issues be evaluated in the MND Hazards and Hazardous Materials section:

1. The MND should acknowledge the potential for historic or future activities on or near the project site to result in the release of hazardous wastes/substances on the project site. In instances in which releases have occurred or may occur, further studies should be carried out to delineate the nature and extent of the contamination, and the potential threat to public health and/or the environment should be evaluated. The MND should also identify the mechanism(s) to initiate any required investigation and/or remediation and the government agency who will be responsible for providing appropriate regulatory oversight.

2. Refiners in the United States started adding lead compounds to gasoline in the 1920s in order to boost octane levels and improve engine performance. This practice did not officially end until 1992 when lead was banned as a fuel additive in California. Tailpipe emissions from automobiles using leaded gasoline

contained lead and resulted in aerially deposited lead (ADL) being deposited in and along roadways throughout the state. ADL-contaminated soils still exist along roadsides and medians and can also be found underneath some existing road surfaces due to past construction activities. Due to the potential for ADL-contaminated soil DTSC, recommends collecting soil samples for lead analysis prior to performing any intrusive activities for the project described in the MND.

3. If any sites within the project area or sites located within the vicinity of the project have been used or are suspected of having been used for mining activities, proper investigation for mine waste should be discussed in the MND. DTSC recommends that any project sites with current and/or former mining operations onsite or in the project site area should be evaluated for mine waste according to DTSC's 1998 Abandoned Mine Land Mines Preliminary Assessment Handbook (https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/11/aml_handbook.pdf).

4. If buildings or other structures are to be demolished on any project sites included in the proposed project, surveys should be conducted for the presence of lead-based paints or products, mercury, asbestos containing materials, and polychlorinated biphenyl caulk. Removal, demolition and disposal of any of the above-mentioned chemicals should be conducted in compliance with California environmental regulations and policies. In addition, sampling near current and/or former buildings should be conducted in accordance with DTSC's 2006 *Interim Guidance Evaluation of School Sites with Potential Contamination from Lead Based Paint, Termiticides, and Electrical Transformers* (https://dtsc.ca.gov/wpcontent/uploads/sites/31/2018/09/Guidance_Lead_Contamination_050118.pdf).

5. If any projects initiated as part of the proposed project require the importation of soil to backfill any excavated areas, proper sampling should be conducted to ensure that the imported soil is free of contamination. DTSC recommends the imported materials be characterized according to *DTSC's 2001 Information Advisory Clean Imported Fill Material* (https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/09/SMP_FS_Cleanfill-Schools.pdf).

6. If any sites included as part of the proposed project have been used for agricultural, weed abatement or related activities, proper investigation for organochlorinated pesticides should be discussed in the MND. DTSC recommends the current and former agricultural lands be evaluated in accordance with DTSC's 2008 *Interim Guidance for Sampling Agricultural Properties (Third Revision)* (https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/09/Ag-Guidance-Rev-3-August-7-2008-2.pdf).

DTSC appreciates the opportunity to comment on the MND. Should you need any assistance with an environmental investigation, please submit a request for Lead

Agency Oversight Application, which can be found at: https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/09/VCP_App-1460.doc. Additional information regarding voluntary agreements with DTSC can be found at: https://dtsc.ca.gov/brownfields/.

If you have any questions, please contact me at (916) 255-3710 or via email at Gavin.McCreary@dtsc.ca.gov.

Sincerely,

Gavin McCreary
Project Manager
Site Evaluation and Remediation Unit
Site Mitigation and Restoration Program
Department of Toxic Substances Control

cc: (via email)

Governor's Office of Planning and Research
State Clearinghouse
State.Clearinghouse@opr.ca.gov

Mr. Dave Kereazis
Office of Planning & Environmental Analysis
Department of Toxic Substances Control
Dave.Kereazis@dtsc.ca.gov

smcmurtry@denovoplanning.com

From: WRL <wrludwig65@gmail.com>
Sent: Wednesday, February 3, 2021 3:43 PM
To: mark@jbandersonplanning.com
Subject: Lumina Ranch Project

First of all I am wondering if John Anderson is the same John Anderson that had an office in Sonora in 1986? If so, I think he handled a lot-split and sewer design for me in Pine Mountain Lake.

I am, however, writing to oppose this Lumina Ranch Project. We live on Woodward and our residence is one of the parcels the city is trying to annex. We also own 2 additional houses within the city limits which share a property line with the property the city is trying to annex. We have watched as the city has promoted the development of properties here along west Woodward and the street has become a racetrack because of this poorly planned growth. With all of the transportation hubs being built on north Mckinley and no hwy 120 access for trucks heading east, they travel south on McKinley to Woodward and then head east to Airport and then use Airport to reach 120 going east. Of course on their way back they do the reverse.

I am trying to do my homework and locate environmental impact reports for all three of these residential developments on west Woodward and the Great Wolf Lodge. I bet they all mention the Hwy120/McKinley interchange and the extension of Atherton to McKinley as the mitigation for this added traffic. But neither the interchange nor extension have materialized. At what point does the city say stop the growth until their previous promises are kept? I do not think the City of Manteca should be promoting development while their offices are closed. Property developers already have a huge advantage and denying citizens access to city offices for information is unfair.

I would like to request a link to the scoping meeting on February 10, 2021.

Bill Ludwig (WRLudwig65@gmail.com)

Virus-free. www.avast.com

smcmurtry@denovoplanning.com

From: nvrpc1@charter.net
Sent: Friday, January 22, 2021 7:50 AM
To: Denny Keeler
Cc: mark@jbandersonplanning.com
Subject: FW: Welcome to more BATT (Bay Area Terrible Trashy Transplants)
Attachments: A_ Main.pdf; B_ Main.pdf

These SOB are bound and determine to turn the central valley into another BAY AREA. These assholes did the very same thing to orange county and look what that shit holes is today. Just a bunch of assholes. These planners don't GAF about you or the community. All they GAF about is getting rich quick and then leave town to live in their mansion in another state while you wallo in the shit-holes they've created for you to die in. Welcome to Thugville Central Valley

Appendix B

Air Quality, GHG, and Energy Calcs

APPENDIX B –AIR QUALITY, GREENHOUSES GASES, & ENERGY MODELING

Appendix Contents

1. Analysis of Models and Tools for Correlating Project-Generated Emissions to Health End Points
2. CalEEMod Modeling Results
3. Energy Consumption Estimates
4. GHG Calculation Methodology

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APPENDIX B.1

Analysis of Models and Tools for Correlating Project-Generated Emissions to Health End Points

APPENDIX B

Appendix B of the Draft EIR includes additional information regarding models and tools for correlating project-generated criteria pollutant emissions to health end points. The following table is an addition to Appendix B.

ANALYSIS OF MODELS AND TOOLS TO CORRELATE PROJECT-GENERATED CRITERIA POLLUTANT EMISSIONS TO HEALTH END POINTS

TOOL	CREATED BY	DESCRIPTION	RESOLUTION	POLLUTANTS ANALYZED	PROJECT-LEVEL CEQA APPLICABILITY
AERMOD Modeling System[1,2]	AERMIC	A steady-state plume model that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain. The modeling system incorporates air dispersion based on a planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain.	Project-level	SO_2, ROG, NO_2, Lead, $PM_{2.5}$, PM_{10}, NH_3	This model operates at the project-level and provides air dispersion modeling for a project's emissions on the surrounding environment. However, even with supplementary (i.e. additional software), the model cannot estimate specific health effects on receptors from the air dispersion modeling. Moreover, it cannot model the (complex) chemical reactions that occur between the ozone precursors (e.g. NOx and ROG) that generate ozone. Therefore, this model is not recommended for project-level CEQA analysis.
AirCounts[3]	Abt Assoc.	Online tool that helps large and medium-sized cities quickly estimate the health benefits of $PM_{2.5}$ emission reductions and economic value of those benefits. The tool estimates the number of deaths (mortality) avoided and economic value related to user-specified regional, annual $PM_{2.5}$ emissions reduction.	City-level	Primary $PM_{2.5}$	This tool is only illustrative, as it is limited to certain cities and does not target specific sectors. The tool is not sector specific, and includes limited California data. It cannot provide results at a project-level. Therefore, the tool is not recommended for project-level CEQA analysis.
Air Pollution Emission Experiments and Policy analysis (APEEP) model[4]	Mueller and Mendelsohn2006, 2009	The Air Pollution Emission Experiments and Policy (APEEP) analysis model (Muller and Mendelsohn 2006, 2009) is a traditional integrated assessment model. Like other integrated assessment models, APEEP connects emissions of air pollution through air-quality modeling to exposures, physical effects, and monetary damages. Making these links requires the use of findings reported in the peer-reviewed literature across several scientific disciplines. The air-quality models in APEEP use the emission data provided by EPA to estimate corresponding ambient concentrations in each county in the coterminous states.	National or county-level	SO_2, ROG, NO_x, Ozone, $PM_{2.5}$, PM_{10}	The model operates at the national scale but may be applied at the county-level (although it is not clear how this adjustment should be made). It cannot provide results at a project-level. The tool is also not commercially available. Therefore, the tool is not recommended for project-level CEQA analysis.

1 See: https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models
2 Note: May require additional software to estimate the level of each specific pollutant at the modeled receptors.
3 See: https://www.abtassociates.com/tools
4 See: https://public.tepper.cmu.edu/nmuller/APModel.aspx

Tool	Created by	Description	Resolution	Pollutants Analyzed	Project-level CEQA Applicability
CALINE3/ CAL3QHC/ CAL3QHCR[1, 2]	USEPA	A steady-state Gaussian dispersion model designed to determine air pollution concentrations at receptor locations downwind of highways located in relatively uncomplicated terrain. CALINE3 is incorporated into the more refined CAL3QHC and CAL3QHCR models. CAL3QHCR is a more refined version based on CAL3QHC that requires local meteorological data.	Project-level	SO_2, ROG, NO_2, Lead, $PM_{2.5}$, PM_{10}	This model operates at the project-level and provides air dispersion modeling for a project's emissions on the surrounding environment. However, even with supplementary (i.e. additional software), the model cannot estimate specific health effects on receptors from the air dispersion modeling. Moreover, it cannot model the (complex) chemical reactions that occur between the ozone precursors (e.g. NOx and ROG) that generate ozone. Therefore, this model is not recommended for project-level CEQA analysis.
Complex Terrain Dispersion Model Plus Algorithms for Unstable Situations (CTDMPLUS)[1, 2]	USEPA	A refined point source gaussian air quality model for use in all stability conditions for complex terrain. The purpose of the model is to provide a practical, refined plum model for elevated point sources near complex terrain.	Project-level	SO_2, ROG, NO_2, Lead, $PM_{2.5}$, PM_{10}	This model operates at the project-level and provides air dispersion modeling for a project's emissions on the surrounding environment. However, even with supplementary (i.e. additional software), the model cannot estimate specific health effects on receptors from the air dispersion modeling. Moreover, it cannot model the (complex) chemical reactions that occur between the ozone precursors (e.g. NOx and ROG) that generate ozone. Therefore, this model is not recommended for project-level CEQA analysis.
Co-Benefits Risk Assessment (COBRA)[5]	USEPA	Preliminary screening tool that contains baseline emission estimates of a variety of air pollutants for a single year. COBRA is targeted to state and local governments as a screening assessment for clean energy policies. EPA's CO–Benefits Risk Assessment (COBRA) screening model is a free tool that helps state and local governments: • Explore how changes in air pollution from clean energy policies and programs; • Estimate the economic value of the health benefits associated with clean energy policies and programs to compare against program costs; • Map and visually represent the air quality, human health, and health-related economic benefits from reductions in emissions of particulate matter ($PM_{2.5}$), sulfur dioxide ($S0_2$), nitrogen oxides (NO_X), ammonia (NH_3), and volatile organic compounds (VOCs) that result from clean energy policies and programs.	National, regional, state, or county-levels	$PM_{2.5}$, SO_2, NO_x, NH_3, and ROG	COBRA is a preliminary screening tool only and cannot be used at sub-county resolution. It cannot provide results at a project-level. It also does not account for secondary emission changes resulting from market responses. Accordingly, the tool is not recommended for project-level CEQA analysis.

5 See: https://www.epa.gov/statelocalenergy/co-benefits-risk-assessment-cobra-health-impacts-screening-and-mapping-tool

Tool	Created by	Description	Resolution	Pollutants Analyzed	Project-level CEQA Applicability
Environmental Benefits and Mapping Program-Community Edition (BenMAP-CE)[6]	USEPA	The USEPA's detailed model for estimating the health impacts from air pollution. It relies on input concentrations and applies concentration-response (C-R) health impact functions, which relate a change in the concentration of a pollutant with a change in the incidence of a health endpoint, including premature mortality, heart attacks, chronic respiratory illnesses, asthma exacerbation and other adverse health effects. Detailed inputs are required for air quality changes (concentrations from AERMOD), population, baseline incidence rates, and effect estimates.	National, County, City, and sub-regional levels	Ozone, PM, NO_2, SO_2, CO	This tool is not well suited to analyze small or localized changes in pollutant concentrations associated with individual projects. Although this tool is under consideration by some California air districts for use towards project-level analysis, no air district in California has promulgated a methodology (using this tool or any other) that would correlate the expected air quality emissions of projects to the likely health consequences of the increased emissions. Accordingly, the tool is not recommended.
Fast Scenario Screening Tool (TM5-FASST)[7]	Joint Research Centre (Italy)	A tool that allows users to evaluate how air pollutant emissions affect large scale pollutant concentrations and their impact on human health (mortality and years of life lost) and crop yield from national to regional air quality policies, such as climate policies. The target policy domains are national to regional air quality policies, or air pollutant scenarios linked to other policy domains (e.g. climate policy). The tool is web-based and does not require coding or modelling. Users must gain access through publishers.	Global and national-levels	$PM_{2.5}$, Ozone, NO_x, NH_3, CO, ROG, CH_4, SO_2	This tool is applicable at national to global scales. It cannot provide results a project-level. Accordingly, the tool is not recommended for project-level CEQA analysis.
Long-range Energy Alternatives Planning System-Integrated Benefits Calculator (LEAP-IBC)[8]	Climate and Clean Air Coalition (CCAC)	A calculator that allows users to rapidly estimate the impacts of reducing emissions on health, climate, and agriculture. The tool uses sensitivity coefficients that link gridded emissions of air pollutants and precursors to health, climate and agricultural impacts at a national level. The tool is primarily used for policy analysis. The tool is currently Excel-based and is available through the developers only. A web-based interface is currently under development.	National-level	$PM_{2.5}$, Ozone, NO_2	This tool is applicable at national scale. Accordingly, the tool is not recommended for project-level CEQA analysis.
Methodology for Estimating Premature Deaths Associated with Long-Term Exposure to Fine Airborne Particulate Matter in California[9]	California Air Resources Board	The staff report identifies a relative risk of premature death associated with $PM_{2.5}$ exposure based on a review of all relevant scientific literature, and a new relative risk factor was developed. This new factor is a 10% increase in risk of premature death per 10 $\mu g/m^3$ increase in exposure to $PM_{2.5}$ concentrations (uncertainty interval: 3% to 20%)	National	$PM_{2.5}$	The primary author of the CARB staff report notes that the analysis method is not suited for small projects and may yield unreliable results due to various uncertainties. The tool also cannot provide results on a project-level. Accordingly, the tool is not recommended for project-level CEQA analysis.

6 See: https://www.epa.gov/benmap
7 See: http://tm5-fasst.jrc.ec.europa.eu/
8 See: https://www.ccacoalition.org/en/resources/long-range-energy-alternatives-planning-integrated-benefits-calculator-leap-ibc-factsheet
9 See: https://ww3.arb.ca.gov/research/health/pm-mort/pmmortalityreportfinalr10-24-08.pdf

Tool	Created by	Description	Resolution	Pollutants Analyzed	Project-level CEQA Applicability
Multi-Pollutant Evaluation Method (MPEM)[10]	BAAQMD	Estimates the impacts of control measures on pollutant concentration, population exposures, and health outcomes for criteria, toxic, and GHG pollutants. Monetizes the value of total health benefits from reductions in $PM_{2.5}$, ozone, and certain carcinogens, and the social value of GHG reductions. MPEM was designed for development of a Clean Air Plan for the San Francisco Bay Area. The inputs are specific to the SF region and are not appropriate for projects outside BAAQMD.	Regional level in the SFBAAB	Ozone, PM, air toxics, GHG	This tool is designed to support the BAAQMD in regional planning and emissions analysis within the San Francisco Bay Area Air Basin (SFBAAB). The model applies changes in pollutant concentrations over a four-square kilometer grid. The tool also cannot provide results on a project-level. Additionally, this tool is only applicable for the SFBAAB. Accordingly, the tool is not recommended for project-level CEQA analysis.
Offshore and Coastal Dispersion Model Version 5 (OCD)[1,2]	USEPA	A straight-line Gaussian model developed to determine the impact of offshore emissions from point, area or line sources on the air quality of coastal regions. OCD incorporates overwater plume transport and dispersion as well as changes that occur as the plume crosses the shoreline. Hourly meteorological data are needed from both offshore and onshore locations.	Project-level	SO_2, ROG, NO_2, Lead, $PM_{2.5}$, PM_{10}	This model operates at the project-level and provides air dispersion modeling for a project's emissions on the surrounding environment. However, even with supplementary (i.e. additional software), the model cannot estimate specific health effects on receptors from the air dispersion modeling. Moreover, it cannot model the (complex) chemical reactions that occur between the ozone precursors (e.g. NOx and ROG) that generate ozone. Therefore, this model is not recommended for project-level CEQA analysis.
Response Surface Model (RSM)-based Benefit-per-Ton Estimates[11]	USEPA	Consists of tables reporting the monetized $PM_{2.5}$-related health benefits from reducing $PM_{2.5}$ precursors from certain source types nationally and for 9 US cities/regions. Applying these estimates simply involves multiplying the emissions reduction by the relevant benefit per-ton metric. The resulting value is the PM mortality risk estimate at a 3% discount rate.	National or regional (San Joaquin County only) levels	SOx, VOC, NH_3, NO_x	RSM includes regional values specific to San Joaquin County. The values are also dated. Accordingly, the tool is not recommended for project-level CEQA analysis.
Sector-based Benefit-per-Ton Estimates[12]	USEPA	Two specific sets of Benefit-per-ton (BPT) estimates for 17 key source categories are available. Both are a reduced-form approach based on BenMAP modeling. Applying these factors involves multiplying the emissions reduction (in tons) by the relevant benefit (economic value) or incidence (rates of mortality and morbidity) per-ton metric. The resulting value is the economics, mortality, and morbidity of direct and indirect $PM_{2.5}$ emissions.	National-scale	$PM_{2.5}$, SO_2, NO_x	The BPT estimates do not account for project-specific emissions or receptor locations, local dispersion characteristics, or regional photochemistry. The resultant health effects are therefore reflective of national averages and may not be accurate when applied to the project-level. Accordingly, the tool is not recommended for project-level CEQA analysis.

[10] See: http://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/mpem_nov_dec_2016-pdf.pdf?la=en

[11] See: https://www.epa.gov/benmap/response-surface-model-rsm-based-benefit-ton-estimates

[12] See: https://www.epa.gov/benmap/sector-based-pm25-benefit-ton-estimates. The updated Technical Support Document (February 2018) is available at: https://www.epa.gov/sites/production/files/2018-02/documents/sourceapportionmentbpttsd_2018.pdf

APPENDIX B.2

CalEEMod Modeling Results

Lumina Ranch

San Joaquin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	827.00	Dwelling Unit	146.63	1,488,600.00	2623
City Park	10.90	Acre	10.90	474,804.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	51
Climate Zone	2			**Operational Year**	2030
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2030 assumed as final buildout year

Land Use - Total development lot acreage = 157.53 acres

Construction Phase - Buildout assumed to occur by year 2030.

Demolition - Two small existing houses to be demolished. Estimated at 6000 sf total.

Grading - Site is relatively flat.

Vehicle Trips - Trip rates as provided by Traffic Impact Analysis (Fehr & Peers). 7,807 daily trips total. With 827 dwelling units (du), trip rate is 9.44 trips per du.

Fleet Mix - Fleet mix adjusted to reflect vehicle fleet mix from Traffic Impact Analysis.

Woodstoves - Assumes no hearths.

Energy Use -

Land Use Change - Assumes removal of 'grassland' land use type over the entire development area (157.53 acres).

Construction Off-road Equipment Mitigation - Water Exposed Area 2x daily; Clean Paved Road (9% fugitive dust PM reduction); Unpaved road mitigation: Limit on-site construction vehicle speeds to 5 mph; Soil Stabilizer for unpaved (10% reduction)

Architectural Coating - Assumes maximum of 100 g/L for interior coatings (per non-specialty coating limitations providded in SJVAPCD Rule 4601)

Area Coating - Assumes maximum of 100 g/L for interior coatings (per non-specialty coating limitations providded in SJVAPCD Rule 4601)

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Interior	150.00	100.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Interior	150	100
tblAreaCoating	Area_EF_Residential_Interior	150	100
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	5
tblConstructionPhase	NumDays	3,100.00	1,795.00
tblConstructionPhase	NumDays	220.00	2,105.00
tblConstructionPhase	NumDays	200.00	23.00
tblConstructionPhase	PhaseEndDate	11/22/2022	3/18/2022
tblConstructionPhase	PhaseEndDate	1/30/2024	5/26/2023
tblConstructionPhase	PhaseEndDate	12/18/2035	4/12/2030

tblConstructionPhase	PhaseEndDate	10/21/2036	3/29/2024
tblConstructionPhase	PhaseEndDate	8/25/2037	4/12/2030
tblConstructionPhase	PhaseEndDate	6/7/2022	10/1/2021
tblConstructionPhase	PhaseStartDate	6/8/2022	10/2/2021
tblConstructionPhase	PhaseStartDate	11/23/2022	3/19/2022
tblConstructionPhase	PhaseStartDate	1/31/2024	5/27/2023
tblConstructionPhase	PhaseStartDate	12/19/2035	5/27/2023
tblConstructionPhase	PhaseStartDate	10/22/2036	3/19/2022
tblFireplaces	FireplaceDayYear	82.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	3,078.40	0.00
tblFireplaces	NumberGas	454.85	0.00
tblFireplaces	NumberNoFireplace	372.15	0.00
tblLandUse	LotAcreage	268.51	146.63
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	9.52	9.44
tblWoodstoves	NumberCatalytic	146.63	0.00
tblWoodstoves	NumberNoncatalytic	146.63	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00
tblWoodstoves	WoodstoveWoodMass	3,019.20	0.00

2.0 Emissions Summary

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					
2021	0.1657	1.6831	0.9556	1.7500e-003	0.5964	0.0843	0.6808	0.3249	0.0778	0.4026	0.0000	153.9301	153.9301	0.0463	0.0000	155.0882
2022	1.5436	5.0646	4.0024	8.6300e-003	1.6261	0.2209	1.8471	0.6836	0.2039	0.8876	0.0000	760.3194	760.3194	0.2142	0.0000	765.6744
2023	1.8940	5.0087	5.4650	0.0147	1.2390	0.1814	1.4205	0.3562	0.1688	0.5251	0.0000	1,323.6327	1,323.6327	0.2084	0.0000	1,328.8420
2024	1.8319	4.0717	4.7320	0.0158	0.7695	0.1090	0.8785	0.2079	0.1027	0.3106	0.0000	1,432.1008	1,432.1008	0.1269	0.0000	1,435.2730
2025	1.7612	3.5810	4.0843	0.0147	0.7627	0.0809	0.8436	0.2061	0.0765	0.2825	0.0000	1,336.5049	1,336.5049	0.1037	0.0000	1,339.0966
2026	1.7479	3.5539	3.9818	0.0145	0.7627	0.0808	0.8435	0.2061	0.0764	0.2824	0.0000	1,316.4394	1,316.4394	0.1026	0.0000	1,319.0041
2027	1.7351	3.5279	3.8790	0.0143	0.7627	0.0806	0.8433	0.2061	0.0762	0.2823	0.0000	1,298.6079	1,298.6079	0.1015	0.0000	1,301.1457
2028	1.7156	3.4936	3.7755	0.0140	0.7597	0.0801	0.8398	0.2053	0.0757	0.2810	0.0000	1,278.1527	1,278.1527	0.1001	0.0000	1,280.6561
2029	1.7088	3.4868	3.7059	0.0139	0.7627	0.0801	0.8428	0.2061	0.0757	0.2818	0.0000	1,269.2989	1,269.2989	0.0996	0.0000	1,271.7886
2030	0.4771	0.8050	1.0316	4.0600e-003	0.2162	7.4600e-003	0.2237	0.0584	7.3800e-003	0.0658	0.0000	367.9230	367.9230	0.0116	0.0000	368.2129
Maximum	**1.8940**	**5.0646**	**5.4650**	**0.0158**	**1.6261**	**0.2209**	**1.8471**	**0.6836**	**0.2039**	**0.8876**	**0.0000**	**1,432.1008**	**1,432.1008**	**0.2142**	**0.0000**	**1,435.2730**

2.1 Overall Construction

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					
2021	0.1657	1.6831	0.9556	1.7500e-003	0.2714	0.0843	0.3557	0.1470	0.0778	0.2247	0.0000	153.9299	153.9299	0.0463	0.0000	155.0880
2022	1.5436	5.0646	4.0024	8.6300e-003	0.7795	0.2209	1.0004	0.3205	0.2039	0.5244	0.0000	760.3186	760.3186	0.2142	0.0000	765.6736
2023	1.8940	5.0087	5.4650	0.0147	0.8005	0.1814	0.9820	0.2268	0.1688	0.3956	0.0000	1,323.6320	1,323.6320	0.2084	0.0000	1,328.8412
2024	1.8319	4.0717	4.7320	0.0158	0.7116	0.1090	0.8207	0.1937	0.1027	0.2964	0.0000	1,432.1003	1,432.1003	0.1269	0.0000	1,435.2726
2025	1.7612	3.5810	4.0843	0.0147	0.7053	0.0809	0.7863	0.1920	0.0765	0.2685	0.0000	1,336.5045	1,336.5045	0.1037	0.0000	1,339.0962
2026	1.7479	3.5539	3.9818	0.0145	0.7053	0.0808	0.7862	0.1920	0.0764	0.2684	0.0000	1,316.4390	1,316.4390	0.1026	0.0000	1,319.0037
2027	1.7351	3.5279	3.8790	0.0143	0.7054	0.0806	0.7860	0.1920	0.0762	0.2682	0.0000	1,298.6075	1,298.6075	0.1015	0.0000	1,301.1453
2028	1.7156	3.4936	3.7755	0.0140	0.7026	0.0801	0.7827	0.1913	0.0757	0.2669	0.0000	1,278.1523	1,278.1523	0.1001	0.0000	1,280.6557
2029	1.7088	3.4868	3.7059	0.0139	0.7054	0.0801	0.7855	0.1920	0.0757	0.2677	0.0000	1,269.2985	1,269.2985	0.0996	0.0000	1,271.7882
2030	0.4771	0.8050	1.0316	4.0600e-003	0.2000	7.4600e-003	0.2075	0.0544	7.3800e-003	0.0618	0.0000	367.9228	367.9228	0.0116	0.0000	368.2127
Maximum	**1.8940**	**5.0646**	**5.4650**	**0.0158**	**0.8005**	**0.2209**	**1.0004**	**0.3205**	**0.2039**	**0.5244**	**0.0000**	**1,432.1003**	**1,432.1003**	**0.2142**	**0.0000**	**1,435.2726**

	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	**0.00**	**0.00**	**0.00**	**0.00**	**23.86**	**0.00**	**21.27**	**28.53**	**0.00**	**21.07**	**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	9-1-2021	11-30-2021	1.3413	1.3413
2	12-1-2021	2-28-2022	1.2590	1.2590
3	3-1-2022	5-31-2022	1.6805	1.6805
4	6-1-2022	8-31-2022	1.7984	1.7984
5	9-1-2022	11-30-2022	1.7797	1.7797
6	12-1-2022	2-28-2023	1.6593	1.6593
7	3-1-2023	5-31-2023	1.6503	1.6503
8	6-1-2023	8-31-2023	1.8145	1.8145
9	9-1-2023	11-30-2023	1.8010	1.8010
10	12-1-2023	2-29-2024	1.7557	1.7557
11	3-1-2024	5-31-2024	1.5058	1.5058
12	6-1-2024	8-31-2024	1.3933	1.3933
13	9-1-2024	11-30-2024	1.3838	1.3838
14	12-1-2024	2-28-2025	1.3393	1.3393
15	3-1-2025	5-31-2025	1.3466	1.3466
16	6-1-2025	8-31-2025	1.3439	1.3439
17	9-1-2025	11-30-2025	1.3345	1.3345
18	12-1-2025	2-28-2026	1.3156	1.3156
19	3-1-2026	5-31-2026	1.3362	1.3362
20	6-1-2026	8-31-2026	1.3338	1.3338
21	9-1-2026	11-30-2026	1.3241	1.3241
22	12-1-2026	2-28-2027	1.3054	1.3054
23	3-1-2027	5-31-2027	1.3263	1.3263
24	6-1-2027	8-31-2027	1.3240	1.3240
25	9-1-2027	11-30-2027	1.3142	1.3142
26	12-1-2027	2-29-2028	1.3106	1.3106

27	**3-1-2028**	**5-31-2028**	1.3176	1.3176
28	**6-1-2028**	**8-31-2028**	1.3155	1.3155
29	**9-1-2028**	**11-30-2028**	1.3055	1.3055
30	**12-1-2028**	**2-28-2029**	1.2875	1.2875
31	**3-1-2029**	**5-31-2029**	1.3090	1.3090
32	**6-1-2029**	**8-31-2029**	1.3070	1.3070
33	**9-1-2029**	**11-30-2029**	1.2968	1.2968
34	**12-1-2029**	**2-28-2030**	1.1754	1.1754
35	**3-1-2030**	**5-31-2030**	0.5334	0.5334
		Highest	1.8145	1.8145

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	7.0493	0.0706	6.1244	3.2000e-004		0.0341	0.0341		0.0341	0.0341	0.0000	10.0307	10.0307	9.5600e-003	0.0000	10.2696
Energy	0.1152	0.9845	0.4189	6.2800e-003		0.0796	0.0796		0.0796	0.0796	0.0000	3,171.5697	3,171.5697	0.1137	0.0399	3,186.3047
Mobile	1.4657	11.0054	16.4751	0.0890	8.4857	0.0504	8.5361	2.2723	0.0470	2.3193	0.0000	8,232.7480	8,232.7480	0.2872	0.0000	8,239.9281
Waste						0.0000	0.0000		0.0000	0.0000	191.8711	0.0000	191.8711	11.3393	0.0000	475.3526
Water						0.0000	0.0000		0.0000	0.0000	17.0944	132.6281	149.7225	1.7618	0.0427	206.4903
Total	**8.6301**	**12.0605**	**23.0185**	**0.0956**	**8.4857**	**0.1640**	**8.6497**	**2.2723**	**0.1606**	**2.4330**	**208.9655**	**11,546.9765**	**11,755.9420**	**13.5115**	**0.0826**	**12,118.3453**

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	7.0493	0.0706	6.1244	3.2000e-004		0.0341	0.0341		0.0341	0.0341	0.0000	10.0307	10.0307	9.5600e-003	0.0000	10.2696
Energy	0.1152	0.9845	0.4189	6.2800e-003		0.0796	0.0796		0.0796	0.0796	0.0000	3,171.5697	3,171.5697	0.1137	0.0399	3,186.3047
Mobile	1.4657	11.0054	16.4751	0.0890	8.4857	0.0504	8.5361	2.2723	0.0470	2.3193	0.0000	8,232.7480	8,232.7480	0.2872	0.0000	8,239.9281
Waste						0.0000	0.0000		0.0000	0.0000	191.8711	0.0000	191.8711	11.3393	0.0000	475.3526
Water						0.0000	0.0000		0.0000	0.0000	17.0944	132.6281	149.7225	1.7618	0.0427	206.4903
Total	**8.6301**	**12.0605**	**23.0185**	**0.0956**	**8.4857**	**0.1640**	**8.6497**	**2.2723**	**0.1606**	**2.4330**	**208.9655**	**11,546.9765**	**11,755.9420**	**13.5115**	**0.0826**	**12,118.3453**

	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	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
Vegetation Land Change	-678.9543
Total	**-678.9543**

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	9/1/2021	10/1/2021	5	23	
2	Site Preparation	Site Preparation	10/2/2021	3/18/2022	5	120	
3	Grading	Grading	3/19/2022	5/26/2023	5	310	
4	Building Construction	Building Construction	5/27/2023	4/12/2030	5	1795	
5	Paving	Paving	5/27/2023	3/29/2024	5	220	
6	Architectural Coating	Architectural Coating	3/19/2022	4/12/2030	5	2105	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 775

Acres of Paving: 0

Residential Indoor: 3,014,415; Residential Outdoor: 1,004,805; 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
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
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
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

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
Site Preparation	7	18.00	0.00	0.00	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
Building Construction	9	497.00	166.00	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
Architectural Coating	1	99.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	27.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

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					3.0000e-003	0.0000	3.0000e-003	4.5000e-004	0.0000	4.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0364	0.3616	0.2480	4.5000e-004		0.0178	0.0178		0.0166	0.0166	0.0000	39.1009	39.1009	0.0110	0.0000	39.3760
Total	**0.0364**	**0.3616**	**0.2480**	**4.5000e-004**	**3.0000e-003**	**0.0178**	**0.0208**	**4.5000e-004**	**0.0166**	**0.0170**	**0.0000**	**39.1009**	**39.1009**	**0.0110**	**0.0000**	**39.3760**

3.2 Demolition - 2021

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	1.0000e-004	3.4500e-003	5.5000e-004	1.0000e-005	2.3000e-004	1.0000e-005	2.4000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	1.0139	1.0139	4.0000e-005	0.0000	1.0150
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	6.4000e-004	4.4000e-004	4.4400e-003	1.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.7000e-004	1.0000e-005	3.7000e-004	0.0000	1.1726	1.1726	3.0000e-005	0.0000	1.1733
Total	**7.4000e-004**	**3.8900e-003**	**4.9900e-003**	**2.0000e-005**	**1.6000e-003**	**2.0000e-005**	**1.6200e-003**	**4.3000e-004**	**2.0000e-005**	**4.4000e-004**	**0.0000**	**2.1865**	**2.1865**	**7.0000e-005**	**0.0000**	**2.1884**

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					1.3500e-003	0.0000	1.3500e-003	2.0000e-004	0.0000	2.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0364	0.3616	0.2480	4.5000e-004		0.0178	0.0178		0.0166	0.0166	0.0000	39.1009	39.1009	0.0110	0.0000	39.3760
Total	**0.0364**	**0.3616**	**0.2480**	**4.5000e-004**	**1.3500e-003**	**0.0178**	**0.0192**	**2.0000e-004**	**0.0166**	**0.0168**	**0.0000**	**39.1009**	**39.1009**	**0.0110**	**0.0000**	**39.3760**

3.2 Demolition - 2021

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	1.0000e-004	3.4500e-003	5.5000e-004	1.0000e-005	2.1000e-004	1.0000e-005	2.3000e-004	6.0000e-005	1.0000e-005	7.0000e-005	0.0000	1.0139	1.0139	4.0000e-005	0.0000	1.0150
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	6.4000e-004	4.4000e-004	4.4400e-003	1.0000e-005	1.2700e-003	1.0000e-005	1.2800e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.1726	1.1726	3.0000e-005	0.0000	1.1733
Total	**7.4000e-004**	**3.8900e-003**	**4.9900e-003**	**2.0000e-005**	**1.4800e-003**	**2.0000e-005**	**1.5100e-003**	**4.0000e-004**	**2.0000e-005**	**4.2000e-004**	**0.0000**	**2.1865**	**2.1865**	**7.0000e-005**	**0.0000**	**2.1884**

3.3 Site Preparation - 2021

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					0.5872	0.0000	0.5872	0.3228	0.0000	0.3228	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1264	1.3162	0.6875	1.2400e-003		0.0664	0.0664		0.0611	0.0611	0.0000	108.6661	108.6661	0.0351	0.0000	109.5447
Total	**0.1264**	**1.3162**	**0.6875**	**1.2400e-003**	**0.5872**	**0.0664**	**0.6536**	**0.3228**	**0.0611**	**0.3839**	**0.0000**	**108.6661**	**108.6661**	**0.0351**	**0.0000**	**109.5447**

3.3 Site Preparation - 2021

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	2.1600e-003	1.4900e-003	0.0151	4.0000e-005	4.6600e-003	3.0000e-005	4.6900e-003	1.2400e-003	3.0000e-005	1.2700e-003	0.0000	3.9766	3.9766	1.0000e-004	0.0000	3.9791
Total	**2.1600e-003**	**1.4900e-003**	**0.0151**	**4.0000e-005**	**4.6600e-003**	**3.0000e-005**	**4.6900e-003**	**1.2400e-003**	**3.0000e-005**	**1.2700e-003**	**0.0000**	**3.9766**	**3.9766**	**1.0000e-004**	**0.0000**	**3.9791**

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					0.2642	0.0000	0.2642	0.1452	0.0000	0.1452	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1264	1.3162	0.6875	1.2400e-003		0.0664	0.0664		0.0611	0.0611	0.0000	108.6660	108.6660	0.0351	0.0000	109.5446
Total	**0.1264**	**1.3162**	**0.6875**	**1.2400e-003**	**0.2642**	**0.0664**	**0.3307**	**0.1452**	**0.0611**	**0.2064**	**0.0000**	**108.6660**	**108.6660**	**0.0351**	**0.0000**	**109.5446**

3.3 Site Preparation - 2021

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	2.1600e-003	1.4900e-003	0.0151	4.0000e-005	4.3000e-003	3.0000e-005	4.3300e-003	1.1500e-003	3.0000e-005	1.1800e-003	0.0000	3.9766	3.9766	1.0000e-004	0.0000	3.9791
Total	**2.1600e-003**	**1.4900e-003**	**0.0151**	**4.0000e-005**	**4.3000e-003**	**3.0000e-005**	**4.3300e-003**	**1.1500e-003**	**3.0000e-005**	**1.1800e-003**	**0.0000**	**3.9766**	**3.9766**	**1.0000e-004**	**0.0000**	**3.9791**

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					0.4968	0.0000	0.4968	0.2731	0.0000	0.2731	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0872	0.9098	0.5417	1.0500e-003		0.0444	0.0444		0.0408	0.0408	0.0000	91.9583	91.9583	0.0297	0.0000	92.7019
Total	**0.0872**	**0.9098**	**0.5417**	**1.0500e-003**	**0.4968**	**0.0444**	**0.5412**	**0.2731**	**0.0408**	**0.3139**	**0.0000**	**91.9583**	**91.9583**	**0.0297**	**0.0000**	**92.7019**

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	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	1.6900e-003	1.1300e-003	0.0116	4.0000e-005	3.9400e-003	3.0000e-005	3.9700e-003	1.0500e-003	2.0000e-005	1.0700e-003	0.0000	3.2452	3.2452	8.0000e-005	0.0000	3.2471
Total	**1.6900e-003**	**1.1300e-003**	**0.0116**	**4.0000e-005**	**3.9400e-003**	**3.0000e-005**	**3.9700e-003**	**1.0500e-003**	**2.0000e-005**	**1.0700e-003**	**0.0000**	**3.2452**	**3.2452**	**8.0000e-005**	**0.0000**	**3.2471**

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					0.2236	0.0000	0.2236	0.1229	0.0000	0.1229	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0872	0.9098	0.5417	1.0500e-003		0.0444	0.0444		0.0408	0.0408	0.0000	91.9582	91.9582	0.0297	0.0000	92.7017
Total	**0.0872**	**0.9098**	**0.5417**	**1.0500e-003**	**0.2236**	**0.0444**	**0.2679**	**0.1229**	**0.0408**	**0.1637**	**0.0000**	**91.9582**	**91.9582**	**0.0297**	**0.0000**	**92.7017**

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	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	1.6900e-003	1.1300e-003	0.0116	4.0000e-005	3.6400e-003	3.0000e-005	3.6600e-003	9.7000e-004	2.0000e-005	1.0000e-003	0.0000	3.2452	3.2452	8.0000e-005	0.0000	3.2471
Total	**1.6900e-003**	**1.1300e-003**	**0.0116**	**4.0000e-005**	**3.6400e-003**	**3.0000e-005**	**3.6600e-003**	**9.7000e-004**	**2.0000e-005**	**1.0000e-003**	**0.0000**	**3.2452**	**3.2452**	**8.0000e-005**	**0.0000**	**3.2471**

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					1.0282	0.0000	1.0282	0.3837	0.0000	0.3837	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3715	3.9815	2.9768	6.3600e-003		0.1676	0.1676		0.1542	0.1542	0.0000	558.9796	558.9796	0.1808	0.0000	563.4993
Total	**0.3715**	**3.9815**	**2.9768**	**6.3600e-003**	**1.0282**	**0.1676**	**1.1958**	**0.3837**	**0.1542**	**0.5378**	**0.0000**	**558.9796**	**558.9796**	**0.1808**	**0.0000**	**563.4993**

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	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	7.0100e-003	4.6800e-003	0.0481	1.5000e-004	0.0163	1.0000e-004	0.0164	4.3400e-003	1.0000e-004	4.4400e-003	0.0000	13.4396	13.4396	3.2000e-004	0.0000	13.4475
Total	**7.0100e-003**	**4.6800e-003**	**0.0481**	**1.5000e-004**	**0.0163**	**1.0000e-004**	**0.0164**	**4.3400e-003**	**1.0000e-004**	**4.4400e-003**	**0.0000**	**13.4396**	**13.4396**	**3.2000e-004**	**0.0000**	**13.4475**

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					0.4627	0.0000	0.4627	0.1727	0.0000	0.1727	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3715	3.9815	2.9768	6.3600e-003		0.1676	0.1676		0.1542	0.1542	0.0000	558.9790	558.9790	0.1808	0.0000	563.4986
Total	**0.3715**	**3.9815**	**2.9768**	**6.3600e-003**	**0.4627**	**0.1676**	**0.6303**	**0.1727**	**0.1542**	**0.3268**	**0.0000**	**558.9790**	**558.9790**	**0.1808**	**0.0000**	**563.4986**

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	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	7.0100e-003	4.6800e-003	0.0481	1.5000e-004	0.0151	1.0000e-004	0.0152	4.0300e-003	1.0000e-004	4.1200e-003	0.0000	13.4396	13.4396	3.2000e-004	0.0000	13.4475
Total	**7.0100e-003**	**4.6800e-003**	**0.0481**	**1.5000e-004**	**0.0151**	**1.0000e-004**	**0.0152**	**4.0300e-003**	**1.0000e-004**	**4.1200e-003**	**0.0000**	**13.4396**	**13.4396**	**3.2000e-004**	**0.0000**	**13.4475**

3.4 Grading - 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					
Fugitive Dust					0.7271	0.0000	0.7271	0.2182	0.0000	0.2182	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1744	1.8121	1.4727	3.2600e-003		0.0748	0.0748		0.0688	0.0688	0.0000	286.3098	286.3098	0.0926	0.0000	288.6248
Total	**0.1744**	**1.8121**	**1.4727**	**3.2600e-003**	**0.7271**	**0.0748**	**0.8019**	**0.2182**	**0.0688**	**0.2870**	**0.0000**	**286.3098**	**286.3098**	**0.0926**	**0.0000**	**288.6248**

3.4 Grading - 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	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	3.3400e-003	2.1500e-003	0.0225	7.0000e-005	8.3600e-003	5.0000e-005	8.4200e-003	2.2200e-003	5.0000e-005	2.2700e-003	0.0000	6.6275	6.6275	1.5000e-004	0.0000	6.6311
Total	**3.3400e-003**	**2.1500e-003**	**0.0225**	**7.0000e-005**	**8.3600e-003**	**5.0000e-005**	**8.4200e-003**	**2.2200e-003**	**5.0000e-005**	**2.2700e-003**	**0.0000**	**6.6275**	**6.6275**	**1.5000e-004**	**0.0000**	**6.6311**

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					0.3272	0.0000	0.3272	0.0982	0.0000	0.0982	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1744	1.8121	1.4727	3.2600e-003		0.0748	0.0748		0.0688	0.0688	0.0000	286.3095	286.3095	0.0926	0.0000	288.6245
Total	**0.1744**	**1.8121**	**1.4727**	**3.2600e-003**	**0.3272**	**0.0748**	**0.4020**	**0.0982**	**0.0688**	**0.1670**	**0.0000**	**286.3095**	**286.3095**	**0.0926**	**0.0000**	**288.6245**

3.4 Grading - 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	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	3.3400e-003	2.1500e-003	0.0225	7.0000e-005	7.7100e-003	5.0000e-005	7.7600e-003	2.0600e-003	5.0000e-005	2.1100e-003	0.0000	6.6275	6.6275	1.5000e-004	0.0000	6.6311
Total	**3.3400e-003**	**2.1500e-003**	**0.0225**	**7.0000e-005**	**7.7100e-003**	**5.0000e-005**	**7.7600e-003**	**2.0600e-003**	**5.0000e-005**	**2.1100e-003**	**0.0000**	**6.6275**	**6.6275**	**1.5000e-004**	**0.0000**	**6.6311**

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	0.1219	1.1148	1.2589	2.0900e-003		0.0542	0.0542		0.0510	0.0510	0.0000	179.6487	179.6487	0.0427	0.0000	180.7171
Total	**0.1219**	**1.1148**	**1.2589**	**2.0900e-003**		**0.0542**	**0.0542**		**0.0510**	**0.0510**	**0.0000**	**179.6487**	**179.6487**	**0.0427**	**0.0000**	**180.7171**

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	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	0.0281	1.0130	0.2207	3.4800e-003	0.0850	1.0400e-003	0.0860	0.0246	1.0000e-003	0.0256	0.0000	330.9559	330.9559	0.0134	0.0000	331.2914
Worker	0.1224	0.0788	0.8242	2.6900e-003	0.3068	1.8900e-003	0.3087	0.0816	1.7400e-003	0.0833	0.0000	243.1186	243.1186	5.3400e-003	0.0000	243.2521
Total	**0.1505**	**1.0917**	**1.0450**	**6.1700e-003**	**0.3918**	**2.9300e-003**	**0.3947**	**0.1061**	**2.7400e-003**	**0.1089**	**0.0000**	**574.0745**	**574.0745**	**0.0188**	**0.0000**	**574.5435**

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	0.1219	1.1148	1.2589	2.0900e-003		0.0542	0.0542		0.0510	0.0510	0.0000	179.6485	179.6485	0.0427	0.0000	180.7169
Total	**0.1219**	**1.1148**	**1.2589**	**2.0900e-003**		**0.0542**	**0.0542**		**0.0510**	**0.0510**	**0.0000**	**179.6485**	**179.6485**	**0.0427**	**0.0000**	**180.7169**

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	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	0.0281	1.0130	0.2207	3.4800e-003	0.0796	1.0400e-003	0.0806	0.0232	1.0000e-003	0.0242	0.0000	330.9559	330.9559	0.0134	0.0000	331.2914
Worker	0.1224	0.0788	0.8242	2.6900e-003	0.2829	1.8900e-003	0.2848	0.0757	1.7400e-003	0.0775	0.0000	243.1186	243.1186	5.3400e-003	0.0000	243.2521
Total	**0.1505**	**1.0917**	**1.0450**	**6.1700e-003**	**0.3625**	**2.9300e-003**	**0.3655**	**0.0990**	**2.7400e-003**	**0.1017**	**0.0000**	**574.0745**	**574.0745**	**0.0188**	**0.0000**	**574.5435**

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**

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	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	0.0459	1.6971	0.3526	5.8400e-003	0.1437	1.7400e-003	0.1454	0.0415	1.6600e-003	0.0432	0.0000	555.2708	555.2708	0.0224	0.0000	555.8305
Worker	0.1932	0.1196	1.2838	4.3500e-003	0.5186	3.1100e-003	0.5217	0.1379	2.8600e-003	0.1407	0.0000	393.2880	393.2880	8.0800e-003	0.0000	393.4899
Total	**0.2391**	**1.8166**	**1.6364**	**0.0102**	**0.6623**	**4.8500e-003**	**0.6671**	**0.1794**	**4.5200e-003**	**0.1839**	**0.0000**	**948.5588**	**948.5588**	**0.0305**	**0.0000**	**949.3204**

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	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7220**	**303.7220**	**0.0718**	**0.0000**	**305.5175**

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	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	0.0459	1.6971	0.3526	5.8400e-003	0.1346	1.7400e-003	0.1363	0.0393	1.6600e-003	0.0409	0.0000	555.2708	555.2708	0.0224	0.0000	555.8305
Worker	0.1932	0.1196	1.2838	4.3500e-003	0.4782	3.1100e-003	0.4813	0.1280	2.8600e-003	0.1308	0.0000	393.2880	393.2880	8.0800e-003	0.0000	393.4899
Total	**0.2391**	**1.8166**	**1.6364**	**0.0102**	**0.6128**	**4.8500e-003**	**0.6176**	**0.1673**	**4.5200e-003**	**0.1718**	**0.0000**	**948.5588**	**948.5588**	**0.0305**	**0.0000**	**949.3204**

3.5 Building Construction - 2025

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	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

3.5 Building Construction - 2025

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	0.0444	1.6750	0.3354	5.7800e-003	0.1431	1.7100e-003	0.1448	0.0414	1.6300e-003	0.0430	0.0000	549.2912	549.2912	0.0220	0.0000	549.8410
Worker	0.1807	0.1078	1.1790	4.1600e-003	0.5166	3.0400e-003	0.5197	0.1374	2.7900e-003	0.1402	0.0000	376.2847	376.2847	7.2700e-003	0.0000	376.4665
Total	**0.2252**	**1.7828**	**1.5143**	**9.9400e-003**	**0.6597**	**4.7500e-003**	**0.6645**	**0.1787**	**4.4200e-003**	**0.1831**	**0.0000**	**925.5759**	**925.5759**	**0.0293**	**0.0000**	**926.3074**

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	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

3.5 Building Construction - 2025

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	0.0444	1.6750	0.3354	5.7800e-003	0.1340	1.7100e-003	0.1358	0.0391	1.6300e-003	0.0408	0.0000	549.2912	549.2912	0.0220	0.0000	549.8410
Worker	0.1807	0.1078	1.1790	4.1600e-003	0.4764	3.0400e-003	0.4794	0.1275	2.7900e-003	0.1303	0.0000	376.2847	376.2847	7.2700e-003	0.0000	376.4665
Total	**0.2252**	**1.7828**	**1.5143**	**9.9400e-003**	**0.6104**	**4.7500e-003**	**0.6152**	**0.1666**	**4.4200e-003**	**0.1710**	**0.0000**	**925.5759**	**925.5759**	**0.0293**	**0.0000**	**926.3074**

3.5 Building Construction - 2026

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	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

3.5 Building Construction - 2026

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	0.0433	1.6593	0.3228	5.7400e-003	0.1431	1.6800e-003	0.1448	0.0414	1.6100e-003	0.0430	0.0000	545.8028	545.8028	0.0217	0.0000	546.3442
Worker	0.1706	0.0983	1.1039	4.0100e-003	0.5166	2.9600e-003	0.5196	0.1374	2.7300e-003	0.1401	0.0000	362.4612	362.4612	6.6500e-003	0.0000	362.6274
Total	**0.2139**	**1.7575**	**1.4268**	**9.7500e-003**	**0.6597**	**4.6400e-003**	**0.6644**	**0.1787**	**4.3400e-003**	**0.1831**	**0.0000**	**908.2640**	**908.2640**	**0.0283**	**0.0000**	**908.9715**

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	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

3.5 Building Construction - 2026

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	0.0433	1.6593	0.3228	5.7400e-003	0.1340	1.6800e-003	0.1357	0.0391	1.6100e-003	0.0407	0.0000	545.8028	545.8028	0.0217	0.0000	546.3442
Worker	0.1706	0.0983	1.1039	4.0100e-003	0.4764	2.9600e-003	0.4794	0.1275	2.7300e-003	0.1302	0.0000	362.4612	362.4612	6.6500e-003	0.0000	362.6274
Total	**0.2139**	**1.7575**	**1.4268**	**9.7500e-003**	**0.6104**	**4.6400e-003**	**0.6151**	**0.1666**	**4.3400e-003**	**0.1710**	**0.0000**	**908.2640**	**908.2640**	**0.0283**	**0.0000**	**908.9715**

3.5 Building Construction - 2027

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	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

3.5 Building Construction - 2027

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	0.0424	1.6435	0.3122	5.7100e-003	0.1431	1.6600e-003	0.1448	0.0414	1.5900e-003	0.0430	0.0000	542.7403	542.7403	0.0213	0.0000	543.2727
Worker	0.1607	0.0898	1.0271	3.8700e-003	0.5166	2.8200e-003	0.5194	0.1374	2.5900e-003	0.1400	0.0000	350.1455	350.1455	6.0500e-003	0.0000	350.2968
Total	**0.2031**	**1.7333**	**1.3393**	**9.5800e-003**	**0.6597**	**4.4800e-003**	**0.6642**	**0.1787**	**4.1800e-003**	**0.1829**	**0.0000**	**892.8858**	**892.8858**	**0.0274**	**0.0000**	**893.5694**

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	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

3.5 Building Construction - 2027

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	0.0424	1.6435	0.3122	5.7100e-003	0.1340	1.6600e-003	0.1357	0.0391	1.5900e-003	0.0407	0.0000	542.7403	542.7403	0.0213	0.0000	543.2727
Worker	0.1607	0.0898	1.0271	3.8700e-003	0.4764	2.8200e-003	0.4792	0.1275	2.5900e-003	0.1301	0.0000	350.1455	350.1455	6.0500e-003	0.0000	350.2968
Total	**0.2031**	**1.7333**	**1.3393**	**9.5800e-003**	**0.6104**	**4.4800e-003**	**0.6149**	**0.1666**	**4.1800e-003**	**0.1708**	**0.0000**	**892.8858**	**892.8858**	**0.0274**	**0.0000**	**893.5694**

3.5 Building Construction - 2028

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	0.1778	1.6211	2.0910	3.5000e-003		0.0686	0.0686		0.0645	0.0645	0.0000	301.4953	301.4953	0.0709	0.0000	303.2671
Total	**0.1778**	**1.6211**	**2.0910**	**3.5000e-003**		**0.0686**	**0.0686**		**0.0645**	**0.0645**	**0.0000**	**301.4953**	**301.4953**	**0.0709**	**0.0000**	**303.2671**

3.5 Building Construction - 2028

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	0.0414	1.6255	0.3028	5.6700e-003	0.1426	1.6300e-003	0.1442	0.0412	1.5600e-003	0.0428	0.0000	538.2319	538.2319	0.0208	0.0000	538.7529
Worker	0.1500	0.0818	0.9561	3.7300e-003	0.5146	2.6200e-003	0.5173	0.1368	2.4100e-003	0.1392	0.0000	337.9210	337.9210	5.5100e-003	0.0000	338.0588
Total	**0.1914**	**1.7073**	**1.2589**	**9.4000e-003**	**0.6572**	**4.2500e-003**	**0.6615**	**0.1780**	**3.9700e-003**	**0.1820**	**0.0000**	**876.1529**	**876.1529**	**0.0264**	**0.0000**	**876.8117**

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	0.1778	1.6211	2.0910	3.5000e-003		0.0686	0.0686		0.0645	0.0645	0.0000	301.4949	301.4949	0.0709	0.0000	303.2667
Total	**0.1778**	**1.6211**	**2.0910**	**3.5000e-003**		**0.0686**	**0.0686**		**0.0645**	**0.0645**	**0.0000**	**301.4949**	**301.4949**	**0.0709**	**0.0000**	**303.2667**

3.5 Building Construction - 2028

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	0.0414	1.6255	0.3028	5.6700e-003	0.1335	1.6300e-003	0.1352	0.0390	1.5600e-003	0.0406	0.0000	538.2319	538.2319	0.0208	0.0000	538.7529
Worker	0.1500	0.0818	0.9561	3.7300e-003	0.4746	2.6200e-003	0.4772	0.1270	2.4100e-003	0.1294	0.0000	337.9210	337.9210	5.5100e-003	0.0000	338.0588
Total	**0.1914**	**1.7073**	**1.2589**	**9.4000e-003**	**0.6081**	**4.2500e-003**	**0.6124**	**0.1660**	**3.9700e-003**	**0.1700**	**0.0000**	**876.1529**	**876.1529**	**0.0264**	**0.0000**	**876.8117**

3.5 Building Construction - 2029

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	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

3.5 Building Construction - 2029

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	0.0409	1.6200	0.2964	5.6600e-003	0.1431	1.6200e-003	0.1448	0.0414	1.5500e-003	0.0429	0.0000	538.1550	538.1550	0.0206	0.0000	538.6695
Worker	0.1400	0.0751	0.8959	3.6400e-003	0.5166	2.4500e-003	0.5191	0.1374	2.2500e-003	0.1396	0.0000	329.5285	329.5285	5.0400e-003	0.0000	329.6546
Total	**0.1809**	**1.6951**	**1.1923**	**9.3000e-003**	**0.6598**	**4.0700e-003**	**0.6638**	**0.1787**	**3.8000e-003**	**0.1825**	**0.0000**	**867.6835**	**867.6835**	**0.0256**	**0.0000**	**868.3241**

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	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

3.5 Building Construction - 2029

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	0.0409	1.6200	0.2964	5.6600e-003	0.1341	1.6200e-003	0.1357	0.0391	1.5500e-003	0.0407	0.0000	538.1550	538.1550	0.0206	0.0000	538.6695
Worker	0.1400	0.0751	0.8959	3.6400e-003	0.4764	2.4500e-003	0.4789	0.1275	2.2500e-003	0.1297	0.0000	329.5285	329.5285	5.0400e-003	0.0000	329.6546
Total	**0.1809**	**1.6951**	**1.1923**	**9.3000e-003**	**0.6105**	**4.0700e-003**	**0.6145**	**0.1666**	**3.8000e-003**	**0.1704**	**0.0000**	**867.6835**	**867.6835**	**0.0256**	**0.0000**	**868.3241**

3.5 Building Construction - 2030

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	0.0484	0.2936	0.5978	1.1500e-003		5.4800e-003	5.4800e-003		5.4800e-003	5.4800e-003	0.0000	97.2586	97.2586	3.9000e-003	0.0000	97.3561
Total	**0.0484**	**0.2936**	**0.5978**	**1.1500e-003**		**5.4800e-003**	**5.4800e-003**		**5.4800e-003**	**5.4800e-003**	**0.0000**	**97.2586**	**97.2586**	**3.9000e-003**	**0.0000**	**97.3561**

3.5 Building Construction - 2030

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	0.0114	0.4564	0.0824	1.6000e-003	0.0406	4.5000e-004	0.0410	0.0117	4.3000e-004	0.0122	0.0000	152.0977	152.0977	5.7500e-003	0.0000	152.2414
Worker	0.0367	0.0195	0.2376	1.0000e-003	0.1465	6.5000e-004	0.1471	0.0389	6.0000e-004	0.0395	0.0000	90.9941	90.9941	1.3000e-003	0.0000	91.0267
Total	**0.0481**	**0.4758**	**0.3200**	**2.6000e-003**	**0.1871**	**1.1000e-003**	**0.1882**	**0.0507**	**1.0300e-003**	**0.0517**	**0.0000**	**243.0918**	**243.0918**	**7.0500e-003**	**0.0000**	**243.2681**

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	0.0484	0.2936	0.5978	1.1500e-003		5.4800e-003	5.4800e-003		5.4800e-003	5.4800e-003	0.0000	97.2585	97.2585	3.9000e-003	0.0000	97.3560
Total	**0.0484**	**0.2936**	**0.5978**	**1.1500e-003**		**5.4800e-003**	**5.4800e-003**		**5.4800e-003**	**5.4800e-003**	**0.0000**	**97.2585**	**97.2585**	**3.9000e-003**	**0.0000**	**97.3560**

3.5 Building Construction - 2030

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	0.0114	0.4564	0.0824	1.6000e-003	0.0380	4.5000e-004	0.0385	0.0111	4.3000e-004	0.0115	0.0000	152.0977	152.0977	5.7500e-003	0.0000	152.2414
Worker	0.0367	0.0195	0.2376	1.0000e-003	0.1351	6.5000e-004	0.1357	0.0361	6.0000e-004	0.0367	0.0000	90.9941	90.9941	1.3000e-003	0.0000	91.0267
Total	**0.0481**	**0.4758**	**0.3200**	**2.6000e-003**	**0.1731**	**1.1000e-003**	**0.1742**	**0.0472**	**1.0300e-003**	**0.0483**	**0.0000**	**243.0918**	**243.0918**	**7.0500e-003**	**0.0000**	**243.2681**

3.6 Paving - 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	0.0800	0.7899	1.1303	1.7700e-003		0.0395	0.0395		0.0364	0.0364	0.0000	155.2082	155.2082	0.0502	0.0000	156.4632
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0800**	**0.7899**	**1.1303**	**1.7700e-003**		**0.0395**	**0.0395**		**0.0364**	**0.0364**	**0.0000**	**155.2082**	**155.2082**	**0.0502**	**0.0000**	**156.4632**

3.6 Paving - 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	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	3.7000e-003	2.3800e-003	0.0249	8.0000e-005	9.2600e-003	6.0000e-005	9.3200e-003	2.4600e-003	5.0000e-005	2.5100e-003	0.0000	7.3376	7.3376	1.6000e-004	0.0000	7.3416
Total	**3.7000e-003**	**2.3800e-003**	**0.0249**	**8.0000e-005**	**9.2600e-003**	**6.0000e-005**	**9.3200e-003**	**2.4600e-003**	**5.0000e-005**	**2.5100e-003**	**0.0000**	**7.3376**	**7.3376**	**1.6000e-004**	**0.0000**	**7.3416**

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	0.0800	0.7899	1.1303	1.7700e-003		0.0395	0.0395		0.0364	0.0364	0.0000	155.2080	155.2080	0.0502	0.0000	156.4630
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0800**	**0.7899**	**1.1303**	**1.7700e-003**		**0.0395**	**0.0395**		**0.0364**	**0.0364**	**0.0000**	**155.2080**	**155.2080**	**0.0502**	**0.0000**	**156.4630**

3.6 Paving - 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	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	3.7000e-003	2.3800e-003	0.0249	8.0000e-005	8.5400e-003	6.0000e-005	8.6000e-003	2.2800e-003	5.0000e-005	2.3400e-003	0.0000	7.3376	7.3376	1.6000e-004	0.0000	7.3416
Total	**3.7000e-003**	**2.3800e-003**	**0.0249**	**8.0000e-005**	**8.5400e-003**	**6.0000e-005**	**8.6000e-003**	**2.2800e-003**	**5.0000e-005**	**2.3400e-003**	**0.0000**	**7.3376**	**7.3376**	**1.6000e-004**	**0.0000**	**7.3416**

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	0.0321	0.3096	0.4753	7.4000e-004		0.0152	0.0152		0.0140	0.0140	0.0000	65.0862	65.0862	0.0211	0.0000	65.6125
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0321**	**0.3096**	**0.4753**	**7.4000e-004**		**0.0152**	**0.0152**		**0.0140**	**0.0140**	**0.0000**	**65.0862**	**65.0862**	**0.0211**	**0.0000**	**65.6125**

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	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	1.4500e-003	9.0000e-004	9.6100e-003	3.0000e-005	3.8800e-003	2.0000e-005	3.9100e-003	1.0300e-003	2.0000e-005	1.0500e-003	0.0000	2.9448	2.9448	6.0000e-005	0.0000	2.9463
Total	**1.4500e-003**	**9.0000e-004**	**9.6100e-003**	**3.0000e-005**	**3.8800e-003**	**2.0000e-005**	**3.9100e-003**	**1.0300e-003**	**2.0000e-005**	**1.0500e-003**	**0.0000**	**2.9448**	**2.9448**	**6.0000e-005**	**0.0000**	**2.9463**

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	0.0321	0.3096	0.4753	7.4000e-004		0.0152	0.0152		0.0140	0.0140	0.0000	65.0862	65.0862	0.0211	0.0000	65.6124
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0321**	**0.3096**	**0.4753**	**7.4000e-004**		**0.0152**	**0.0152**		**0.0140**	**0.0140**	**0.0000**	**65.0862**	**65.0862**	**0.0211**	**0.0000**	**65.6124**

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	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	1.4500e-003	9.0000e-004	9.6100e-003	3.0000e-005	3.5800e-003	2.0000e-005	3.6000e-003	9.6000e-004	2.0000e-005	9.8000e-004	0.0000	2.9448	2.9448	6.0000e-005	0.0000	2.9463
Total	**1.4500e-003**	**9.0000e-004**	**9.6100e-003**	**3.0000e-005**	**3.5800e-003**	**2.0000e-005**	**3.6000e-003**	**9.6000e-004**	**2.0000e-005**	**9.8000e-004**	**0.0000**	**2.9448**	**2.9448**	**6.0000e-005**	**0.0000**	**2.9463**

3.7 Architectural Coating - 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					
Archit. Coating	1.0205					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0210	0.1444	0.1859	3.0000e-004		8.3800e-003	8.3800e-003		8.3800e-003	8.3800e-003	0.0000	26.1709	26.1709	1.7000e-003	0.0000	26.2135
Total	**1.0415**	**0.1444**	**0.1859**	**3.0000e-004**		**8.3800e-003**	**8.3800e-003**		**8.3800e-003**	**8.3800e-003**	**0.0000**	**26.1709**	**26.1709**	**1.7000e-003**	**0.0000**	**26.2135**

3.7 Architectural Coating - 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	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	0.0347	0.0232	0.2383	7.4000e-004	0.0808	5.1000e-004	0.0813	0.0215	4.7000e-004	0.0220	0.0000	66.5258	66.5258	1.5800e-003	0.0000	66.5652
Total	**0.0347**	**0.0232**	**0.2383**	**7.4000e-004**	**0.0808**	**5.1000e-004**	**0.0813**	**0.0215**	**4.7000e-004**	**0.0220**	**0.0000**	**66.5258**	**66.5258**	**1.5800e-003**	**0.0000**	**66.5652**

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	1.0205					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0210	0.1444	0.1859	3.0000e-004		8.3800e-003	8.3800e-003		8.3800e-003	8.3800e-003	0.0000	26.1708	26.1708	1.7000e-003	0.0000	26.2134
Total	**1.0415**	**0.1444**	**0.1859**	**3.0000e-004**		**8.3800e-003**	**8.3800e-003**		**8.3800e-003**	**8.3800e-003**	**0.0000**	**26.1708**	**26.1708**	**1.7000e-003**	**0.0000**	**26.2134**

3.7 Architectural Coating - 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	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	0.0347	0.0232	0.2383	7.4000e-004	0.0745	5.1000e-004	0.0751	0.0200	4.7000e-004	0.0204	0.0000	66.5258	66.5258	1.5800e-003	0.0000	66.5652
Total	**0.0347**	**0.0232**	**0.2383**	**7.4000e-004**	**0.0745**	**5.1000e-004**	**0.0751**	**0.0200**	**4.7000e-004**	**0.0204**	**0.0000**	**66.5258**	**66.5258**	**1.5800e-003**	**0.0000**	**66.5652**

3.7 Architectural Coating - 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					
Archit. Coating	1.2943					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0249	0.1694	0.2355	3.9000e-004		9.2100e-003	9.2100e-003		9.2100e-003	9.2100e-003	0.0000	33.1923	33.1923	1.9900e-003	0.0000	33.2419
Total	**1.3192**	**0.1694**	**0.2355**	**3.9000e-004**		**9.2100e-003**	**9.2100e-003**		**9.2100e-003**	**9.2100e-003**	**0.0000**	**33.1923**	**33.1923**	**1.9900e-003**	**0.0000**	**33.2419**

3.7 Architectural Coating - 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	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	0.0409	0.0263	0.2754	9.0000e-004	0.1025	6.3000e-004	0.1032	0.0273	5.8000e-004	0.0278	0.0000	81.2342	81.2342	1.7800e-003	0.0000	81.2788
Total	**0.0409**	**0.0263**	**0.2754**	**9.0000e-004**	**0.1025**	**6.3000e-004**	**0.1032**	**0.0273**	**5.8000e-004**	**0.0278**	**0.0000**	**81.2342**	**81.2342**	**1.7800e-003**	**0.0000**	**81.2788**

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	1.2943					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0249	0.1694	0.2354	3.9000e-004		9.2100e-003	9.2100e-003		9.2100e-003	9.2100e-003	0.0000	33.1923	33.1923	1.9900e-003	0.0000	33.2419
Total	**1.3192**	**0.1694**	**0.2354**	**3.9000e-004**		**9.2100e-003**	**9.2100e-003**		**9.2100e-003**	**9.2100e-003**	**0.0000**	**33.1923**	**33.1923**	**1.9900e-003**	**0.0000**	**33.2419**

3.7 Architectural Coating - 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	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	0.0409	0.0263	0.2754	9.0000e-004	0.0945	6.3000e-004	0.0952	0.0253	5.8000e-004	0.0259	0.0000	81.2342	81.2342	1.7800e-003	0.0000	81.2788
Total	**0.0409**	**0.0263**	**0.2754**	**9.0000e-004**	**0.0945**	**6.3000e-004**	**0.0952**	**0.0253**	**5.8000e-004**	**0.0259**	**0.0000**	**81.2342**	**81.2342**	**1.7800e-003**	**0.0000**	**81.2788**

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	1.3043					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0237	0.1597	0.2371	3.9000e-004		7.9800e-003	7.9800e-003		7.9800e-003	7.9800e-003	0.0000	33.4476	33.4476	1.8800e-003	0.0000	33.4947
Total	**1.3279**	**0.1597**	**0.2371**	**3.9000e-004**		**7.9800e-003**	**7.9800e-003**		**7.9800e-003**	**7.9800e-003**	**0.0000**	**33.4476**	**33.4476**	**1.8800e-003**	**0.0000**	**33.4947**

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	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	0.0385	0.0238	0.2557	8.7000e-004	0.1033	6.2000e-004	0.1039	0.0275	5.7000e-004	0.0280	0.0000	78.3411	78.3411	1.6100e-003	0.0000	78.3813
Total	**0.0385**	**0.0238**	**0.2557**	**8.7000e-004**	**0.1033**	**6.2000e-004**	**0.1039**	**0.0275**	**5.7000e-004**	**0.0280**	**0.0000**	**78.3411**	**78.3411**	**1.6100e-003**	**0.0000**	**78.3813**

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	1.3043					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0237	0.1597	0.2371	3.9000e-004		7.9800e-003	7.9800e-003		7.9800e-003	7.9800e-003	0.0000	33.4476	33.4476	1.8800e-003	0.0000	33.4947
Total	**1.3279**	**0.1597**	**0.2371**	**3.9000e-004**		**7.9800e-003**	**7.9800e-003**		**7.9800e-003**	**7.9800e-003**	**0.0000**	**33.4476**	**33.4476**	**1.8800e-003**	**0.0000**	**33.4947**

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	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	0.0385	0.0238	0.2557	8.7000e-004	0.0953	6.2000e-004	0.0959	0.0255	5.7000e-004	0.0261	0.0000	78.3411	78.3411	1.6100e-003	0.0000	78.3813
Total	**0.0385**	**0.0238**	**0.2557**	**8.7000e-004**	**0.0953**	**6.2000e-004**	**0.0959**	**0.0255**	**5.7000e-004**	**0.0261**	**0.0000**	**78.3411**	**78.3411**	**1.6100e-003**	**0.0000**	**78.3813**

3.7 Architectural Coating - 2025

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	1.2993					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3200	33.3200	1.8200e-003	0.0000	33.3654
Total	**1.3216**	**0.1495**	**0.2361**	**3.9000e-004**		**6.7200e-003**	**6.7200e-003**		**6.7200e-003**	**6.7200e-003**	**0.0000**	**33.3200**	**33.3200**	**1.8200e-003**	**0.0000**	**33.3654**

3.7 Architectural Coating - 2025

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	0.0360	0.0215	0.2348	8.3000e-004	0.1029	6.0000e-004	0.1035	0.0274	5.6000e-004	0.0279	0.0000	74.9541	74.9541	1.4500e-003	0.0000	74.9903
Total	**0.0360**	**0.0215**	**0.2348**	**8.3000e-004**	**0.1029**	**6.0000e-004**	**0.1035**	**0.0274**	**5.6000e-004**	**0.0279**	**0.0000**	**74.9541**	**74.9541**	**1.4500e-003**	**0.0000**	**74.9903**

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	1.2993					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3199	33.3199	1.8200e-003	0.0000	33.3654
Total	**1.3216**	**0.1495**	**0.2361**	**3.9000e-004**		**6.7200e-003**	**6.7200e-003**		**6.7200e-003**	**6.7200e-003**	**0.0000**	**33.3199**	**33.3199**	**1.8200e-003**	**0.0000**	**33.3654**

3.7 Architectural Coating - 2025

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	0.0360	0.0215	0.2348	8.3000e-004	0.0949	6.0000e-004	0.0955	0.0254	5.6000e-004	0.0260	0.0000	74.9541	74.9541	1.4500e-003	0.0000	74.9903
Total	**0.0360**	**0.0215**	**0.2348**	**8.3000e-004**	**0.0949**	**6.0000e-004**	**0.0955**	**0.0254**	**5.6000e-004**	**0.0260**	**0.0000**	**74.9541**	**74.9541**	**1.4500e-003**	**0.0000**	**74.9903**

3.7 Architectural Coating - 2026

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	1.2993					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3200	33.3200	1.8200e-003	0.0000	33.3654
Total	**1.3216**	**0.1495**	**0.2361**	**3.9000e-004**		**6.7200e-003**	**6.7200e-003**		**6.7200e-003**	**6.7200e-003**	**0.0000**	**33.3200**	**33.3200**	**1.8200e-003**	**0.0000**	**33.3654**

3.7 Architectural Coating - 2026

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	0.0340	0.0196	0.2199	8.0000e-004	0.1029	5.9000e-004	0.1035	0.0274	5.4000e-004	0.0279	0.0000	72.2005	72.2005	1.3200e-003	0.0000	72.2336
Total	**0.0340**	**0.0196**	**0.2199**	**8.0000e-004**	**0.1029**	**5.9000e-004**	**0.1035**	**0.0274**	**5.4000e-004**	**0.0279**	**0.0000**	**72.2005**	**72.2005**	**1.3200e-003**	**0.0000**	**72.2336**

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	1.2993					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3199	33.3199	1.8200e-003	0.0000	33.3654
Total	**1.3216**	**0.1495**	**0.2361**	**3.9000e-004**		**6.7200e-003**	**6.7200e-003**		**6.7200e-003**	**6.7200e-003**	**0.0000**	**33.3199**	**33.3199**	**1.8200e-003**	**0.0000**	**33.3654**

3.7 Architectural Coating - 2026

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	0.0340	0.0196	0.2199	8.0000e-004	0.0949	5.9000e-004	0.0955	0.0254	5.4000e-004	0.0259	0.0000	72.2005	72.2005	1.3200e-003	0.0000	72.2336
Total	**0.0340**	**0.0196**	**0.2199**	**8.0000e-004**	**0.0949**	**5.9000e-004**	**0.0955**	**0.0254**	**5.4000e-004**	**0.0259**	**0.0000**	**72.2005**	**72.2005**	**1.3200e-003**	**0.0000**	**72.2336**

3.7 Architectural Coating - 2027

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	1.2993					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3200	33.3200	1.8200e-003	0.0000	33.3654
Total	**1.3216**	**0.1495**	**0.2361**	**3.9000e-004**		**6.7200e-003**	**6.7200e-003**		**6.7200e-003**	**6.7200e-003**	**0.0000**	**33.3200**	**33.3200**	**1.8200e-003**	**0.0000**	**33.3654**

3.7 Architectural Coating - 2027

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	0.0320	0.0179	0.2046	7.7000e-004	0.1029	5.6000e-004	0.1035	0.0274	5.2000e-004	0.0279	0.0000	69.7473	69.7473	1.2100e-003	0.0000	69.7774
Total	**0.0320**	**0.0179**	**0.2046**	**7.7000e-004**	**0.1029**	**5.6000e-004**	**0.1035**	**0.0274**	**5.2000e-004**	**0.0279**	**0.0000**	**69.7473**	**69.7473**	**1.2100e-003**	**0.0000**	**69.7774**

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	1.2993					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3199	33.3199	1.8200e-003	0.0000	33.3654
Total	**1.3216**	**0.1495**	**0.2361**	**3.9000e-004**		**6.7200e-003**	**6.7200e-003**		**6.7200e-003**	**6.7200e-003**	**0.0000**	**33.3199**	**33.3199**	**1.8200e-003**	**0.0000**	**33.3654**

3.7 Architectural Coating - 2027

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	0.0320	0.0179	0.2046	7.7000e-004	0.0949	5.6000e-004	0.0955	0.0254	5.2000e-004	0.0259	0.0000	69.7473	69.7473	1.2100e-003	0.0000	69.7774
Total	**0.0320**	**0.0179**	**0.2046**	**7.7000e-004**	**0.0949**	**5.6000e-004**	**0.0955**	**0.0254**	**5.2000e-004**	**0.0259**	**0.0000**	**69.7473**	**69.7473**	**1.2100e-003**	**0.0000**	**69.7774**

3.7 Architectural Coating - 2028

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	1.2943					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0222	0.1489	0.2352	3.9000e-004		6.7000e-003	6.7000e-003		6.7000e-003	6.7000e-003	0.0000	33.1923	33.1923	1.8100e-003	0.0000	33.2376
Total	**1.3165**	**0.1489**	**0.2352**	**3.9000e-004**		**6.7000e-003**	**6.7000e-003**		**6.7000e-003**	**6.7000e-003**	**0.0000**	**33.1923**	**33.1923**	**1.8100e-003**	**0.0000**	**33.2376**

3.7 Architectural Coating - 2028

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	0.0299	0.0163	0.1905	7.4000e-004	0.1025	5.2000e-004	0.1030	0.0273	4.8000e-004	0.0277	0.0000	67.3122	67.3122	1.1000e-003	0.0000	67.3397
Total	**0.0299**	**0.0163**	**0.1905**	**7.4000e-004**	**0.1025**	**5.2000e-004**	**0.1030**	**0.0273**	**4.8000e-004**	**0.0277**	**0.0000**	**67.3122**	**67.3122**	**1.1000e-003**	**0.0000**	**67.3397**

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	1.2943					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0222	0.1489	0.2352	3.9000e-004		6.7000e-003	6.7000e-003		6.7000e-003	6.7000e-003	0.0000	33.1923	33.1923	1.8100e-003	0.0000	33.2375
Total	**1.3165**	**0.1489**	**0.2352**	**3.9000e-004**		**6.7000e-003**	**6.7000e-003**		**6.7000e-003**	**6.7000e-003**	**0.0000**	**33.1923**	**33.1923**	**1.8100e-003**	**0.0000**	**33.2375**

3.7 Architectural Coating - 2028

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	0.0299	0.0163	0.1905	7.4000e-004	0.0945	5.2000e-004	0.0951	0.0253	4.8000e-004	0.0258	0.0000	67.3122	67.3122	1.1000e-003	0.0000	67.3397
Total	**0.0299**	**0.0163**	**0.1905**	**7.4000e-004**	**0.0945**	**5.2000e-004**	**0.0951**	**0.0253**	**4.8000e-004**	**0.0258**	**0.0000**	**67.3122**	**67.3122**	**1.1000e-003**	**0.0000**	**67.3397**

3.7 Architectural Coating - 2029

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	1.2993					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3200	33.3200	1.8200e-003	0.0000	33.3654
Total	**1.3216**	**0.1495**	**0.2361**	**3.9000e-004**		**6.7200e-003**	**6.7200e-003**		**6.7200e-003**	**6.7200e-003**	**0.0000**	**33.3200**	**33.3200**	**1.8200e-003**	**0.0000**	**33.3654**

3.7 Architectural Coating - 2029

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	0.0279	0.0150	0.1785	7.3000e-004	0.1029	4.9000e-004	0.1034	0.0274	4.5000e-004	0.0278	0.0000	65.6405	65.6405	1.0000e-003	0.0000	65.6656
Total	**0.0279**	**0.0150**	**0.1785**	**7.3000e-004**	**0.1029**	**4.9000e-004**	**0.1034**	**0.0274**	**4.5000e-004**	**0.0278**	**0.0000**	**65.6405**	**65.6405**	**1.0000e-003**	**0.0000**	**65.6656**

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	1.2993					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0223	0.1495	0.2361	3.9000e-004		6.7200e-003	6.7200e-003		6.7200e-003	6.7200e-003	0.0000	33.3199	33.3199	1.8200e-003	0.0000	33.3654
Total	**1.3216**	**0.1495**	**0.2361**	**3.9000e-004**		**6.7200e-003**	**6.7200e-003**		**6.7200e-003**	**6.7200e-003**	**0.0000**	**33.3199**	**33.3199**	**1.8200e-003**	**0.0000**	**33.3654**

3.7 Architectural Coating - 2029

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	0.0279	0.0150	0.1785	7.3000e-004	0.0949	4.9000e-004	0.0954	0.0254	4.5000e-004	0.0258	0.0000	65.6405	65.6405	1.0000e-003	0.0000	65.6656
Total	**0.0279**	**0.0150**	**0.1785**	**7.3000e-004**	**0.0949**	**4.9000e-004**	**0.0954**	**0.0254**	**4.5000e-004**	**0.0258**	**0.0000**	**65.6405**	**65.6405**	**1.0000e-003**	**0.0000**	**65.6656**

3.7 Architectural Coating - 2030

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	0.3684					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8400e-003	0.0317	0.0665	1.1000e-004		7.5000e-004	7.5000e-004		7.5000e-004	7.5000e-004	0.0000	9.4470	9.4470	3.8000e-004	0.0000	9.4566
Total	**0.3732**	**0.0317**	**0.0665**	**1.1000e-004**		**7.5000e-004**	**7.5000e-004**		**7.5000e-004**	**7.5000e-004**	**0.0000**	**9.4470**	**9.4470**	**3.8000e-004**	**0.0000**	**9.4566**

3.7 Architectural Coating - 2030

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	7.3100e-003	3.8800e-003	0.0473	2.0000e-004	0.0292	1.3000e-004	0.0293	7.7600e-003	1.2000e-004	7.8800e-003	0.0000	18.1256	18.1256	2.6000e-004	0.0000	18.1321
Total	**7.3100e-003**	**3.8800e-003**	**0.0473**	**2.0000e-004**	**0.0292**	**1.3000e-004**	**0.0293**	**7.7600e-003**	**1.2000e-004**	**7.8800e-003**	**0.0000**	**18.1256**	**18.1256**	**2.6000e-004**	**0.0000**	**18.1321**

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	0.3684					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8400e-003	0.0317	0.0665	1.1000e-004		7.5000e-004	7.5000e-004		7.5000e-004	7.5000e-004	0.0000	9.4470	9.4470	3.8000e-004	0.0000	9.4566
Total	**0.3732**	**0.0317**	**0.0665**	**1.1000e-004**		**7.5000e-004**	**7.5000e-004**		**7.5000e-004**	**7.5000e-004**	**0.0000**	**9.4470**	**9.4470**	**3.8000e-004**	**0.0000**	**9.4566**

3.7 Architectural Coating - 2030

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	7.3100e-003	3.8800e-003	0.0473	2.0000e-004	0.0269	1.3000e-004	0.0270	7.2000e-003	1.2000e-004	7.3200e-003	0.0000	18.1256	18.1256	2.6000e-004	0.0000	18.1321
Total	**7.3100e-003**	**3.8800e-003**	**0.0473**	**2.0000e-004**	**0.0269**	**1.3000e-004**	**0.0270**	**7.2000e-003**	**1.2000e-004**	**7.3200e-003**	**0.0000**	**18.1256**	**18.1256**	**2.6000e-004**	**0.0000**	**18.1321**

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	1.4657	11.0054	16.4751	0.0890	8.4857	0.0504	8.5361	2.2723	0.0470	2.3193	0.0000	8,232.748 0	8,232.748 0	0.2872	0.0000	8,239.928 1
Unmitigated	1.4657	11.0054	16.4751	0.0890	8.4857	0.0504	8.5361	2.2723	0.0470	2.3193	0.0000	8,232.748 0	8,232.748 0	0.2872	0.0000	8,239.928 1

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Single Family Housing	7,806.88	7,806.88	7806.88	22,622,908	22,622,908
Total	7,806.88	7,806.88	7,806.88	22,622,908	22,622,908

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
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Single Family Housing	10.80	7.30	7.50	45.60	19.00	35.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.581437	0.032303	0.190969	0.100551	0.011057	0.003880	0.015441	0.056216	0.001173	0.001204	0.004639	0.000578	0.000551
Single Family Housing	0.581437	0.032303	0.190969	0.100551	0.011057	0.003880	0.015441	0.056216	0.001173	0.001204	0.004639	0.000578	0.000551

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	2,031.4365	2,031.4365	0.0919	0.0190	2,039.3963
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2,031.4365	2,031.4365	0.0919	0.0190	2,039.3963
NaturalGas Mitigated	0.1152	0.9845	0.4189	6.2800e-003		0.0796	0.0796		0.0796	0.0796	0.0000	1,140.1332	1,140.1332	0.0219	0.0209	1,146.9084
NaturalGas Unmitigated	0.1152	0.9845	0.4189	6.2800e-003		0.0796	0.0796		0.0796	0.0796	0.0000	1,140.1332	1,140.1332	0.0219	0.0209	1,146.9084

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					
City Park	0	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
Single Family Housing	2.13653e+007	0.1152	0.9845	0.4189	6.2800e-003		0.0796	0.0796		0.0796	0.0796	0.0000	1,140.1332	1,140.1332	0.0219	0.0209	1,146.9084
Total		**0.1152**	**0.9845**	**0.4189**	**6.2800e-003**		**0.0796**	**0.0796**		**0.0796**	**0.0796**	**0.0000**	**1,140.1332**	**1,140.1332**	**0.0219**	**0.0209**	**1,146.9084**

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					
City Park	0	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
Single Family Housing	2.13653e+007	0.1152	0.9845	0.4189	6.2800e-003		0.0796	0.0796		0.0796	0.0796	0.0000	1,140.1332	1,140.1332	0.0219	0.0209	1,146.9084
Total		**0.1152**	**0.9845**	**0.4189**	**6.2800e-003**		**0.0796**	**0.0796**		**0.0796**	**0.0796**	**0.0000**	**1,140.1332**	**1,140.1332**	**0.0219**	**0.0209**	**1,146.9084**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	6.98301e +006	2,031.436 5	0.0919	0.0190	2,039.396 3
Total		**2,031.436 5**	**0.0919**	**0.0190**	**2,039.396 3**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	6.98301e +006	2,031.436 5	0.0919	0.0190	2,039.396 3
Total		**2,031.436 5**	**0.0919**	**0.0190**	**2,039.396 3**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	7.0493	0.0706	6.1244	3.2000e-004		0.0341	0.0341		0.0341	0.0341	0.0000	10.0307	10.0307	9.5600e-003	0.0000	10.2696
Unmitigated	7.0493	0.0706	6.1244	3.2000e-004		0.0341	0.0341		0.0341	0.0341	0.0000	10.0307	10.0307	9.5600e-003	0.0000	10.2696

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	1.0479					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.8182					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	0.1832	0.0706	6.1244	3.2000e-004		0.0341	0.0341		0.0341	0.0341	0.0000	10.0307	10.0307	9.5600e-003	0.0000	10.2696
Total	**7.0493**	**0.0706**	**6.1244**	**3.2000e-004**		**0.0341**	**0.0341**		**0.0341**	**0.0341**	**0.0000**	**10.0307**	**10.0307**	**9.5600e-003**	**0.0000**	**10.2696**

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	1.0479					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.8182					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	0.1832	0.0706	6.1244	3.2000e-004		0.0341	0.0341		0.0341	0.0341	0.0000	10.0307	10.0307	9.5600e-003	0.0000	10.2696
Total	**7.0493**	**0.0706**	**6.1244**	**3.2000e-004**		**0.0341**	**0.0341**		**0.0341**	**0.0341**	**0.0000**	**10.0307**	**10.0307**	**9.5600e-003**	**0.0000**	**10.2696**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	149.7225	1.7618	0.0427	206.4903
Unmitigated	149.7225	1.7618	0.0427	206.4903

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 12.9871	13.2234	6.0000e-004	1.2000e-004	13.2752
Single Family Housing	53.8824 / 33.9693	136.4991	1.7612	0.0426	193.2151
Total		**149.7224**	**1.7618**	**0.0427**	**206.4903**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 12.9871	13.2234	6.0000e-004	1.2000e-004	13.2752
Single Family Housing	53.8824 / 33.9693	136.4991	1.7612	0.0426	193.2151
Total		**149.7224**	**1.7618**	**0.0427**	**206.4903**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	191.8711	11.3393	0.0000	475.3526
Unmitigated	191.8711	11.3393	0.0000	475.3526

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.94	0.1908	0.0113	0.0000	0.4727
Single Family Housing	944.28	191.6803	11.3280	0.0000	474.8799
Total		**191.8711**	**11.3393**	**0.0000**	**475.3526**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.94	0.1908	0.0113	0.0000	0.4727
Single Family Housing	944.28	191.6803	11.3280	0.0000	474.8799
Total		**191.8711**	**11.3393**	**0.0000**	**475.3526**

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

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-678.9543	0.0000	0.0000	-678.9543

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Grassland	157.53 / 0	-678.9543	0.0000	0.0000	-678.9543
Total		**-678.9543**	**0.0000**	**0.0000**	**-678.9543**

Lumina Ranch

San Joaquin County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	827.00	Dwelling Unit	146.63	1,488,600.00	2623
City Park	10.90	Acre	10.90	474,804.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	51
Climate Zone	2			**Operational Year**	2030
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2030 assumed as final buildout year

Land Use - Total development lot acreage = 157.53 acres

Construction Phase - Buildout assumed to occur by year 2030.

Demolition - Two small existing houses to be demolished. Estimated at 6000 sf total.

Grading - Site is relatively flat.

Vehicle Trips - Trip rates as provided by Traffic Impact Analysis (Fehr & Peers). 7,807 daily trips total. With 827 dwelling units (du), trip rate is 9.44 trips per du.

Fleet Mix - Fleet mix adjusted to reflect vehicle fleet mix from Traffic Impact Analysis.

Woodstoves - Assumes no hearths.

Energy Use -

Land Use Change - Assumes removal of 'grassland' land use type over the entire development area (157.53 acres).

Construction Off-road Equipment Mitigation - Water Exposed Area 2x daily; Clean Paved Road (9% fugitive dust PM reduction); Unpaved road mitigation: Limit on-site construction vehicle speeds to 5 mph; Soil Stabilizer for unpaved (10% reduction)

Architectural Coating - Assumes maximum of 100 g/L for interior coatings (per non-specialty coating limitations providded in SJVAPCD Rule 4601)

Area Coating - Assumes maximum of 100 g/L for interior coatings (per non-specialty coating limitations providded in SJVAPCD Rule 4601)

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Interior	150.00	100.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Interior	150	100
tblAreaCoating	Area_EF_Residential_Interior	150	100
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	5
tblFireplaces	FireplaceDayYear	82.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	3,078.40	0.00
tblFireplaces	NumberGas	454.85	0.00
tblFireplaces	NumberNoFireplace	372.15	0.00
tblLandUse	LotAcreage	268.51	146.63
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	9.52	9.44
tblWoodstoves	NumberCatalytic	146.63	0.00
tblWoodstoves	NumberNoncatalytic	146.63	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00
tblWoodstoves	WoodstoveWoodMass	3,019.20	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

Lumina Ranch - San Joaquin County, Summer

	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					
2021	3.2273	31.5090	22.0066	0.0402	0.1578	1.5522	1.7101	0.0384	1.4419	1.4804	0.0000	3,881.4791	3,881.4791	1.0585	0.0000	3,907.9414
2022	3.7005	38.8848	29.5734	0.0637	18.2141	1.6359	19.8276	9.9699	1.5050	11.4543	0.0000	6,168.6192	6,168.6192	1.9480	0.0000	6,217.3181
2023	3.3921	34.5526	28.5370	0.0636	8.8376	1.4255	10.2631	3.6401	1.3114	4.9515	0.0000	6,162.8295	6,162.8295	1.9476	0.0000	6,211.5190
2024	3.4447	32.4102	29.8246	0.1082	8.8376	1.3364	10.1740	3.6401	1.2295	4.8695	0.0000	10,887.3334	10,887.3334	1.9467	0.0000	10,908.7701
2025	3.2299	25.9458	28.7722	0.1065	5.2075	0.5638	5.7712	1.4068	0.5301	1.9368	0.0000	10,711.9316	10,711.9316	0.8444	0.0000	10,733.0414
2026	3.1340	25.7629	28.0464	0.1049	5.2075	0.5631	5.7705	1.4068	0.5294	1.9362	0.0000	10,554.4076	10,554.4076	0.8360	0.0000	10,575.3064
2027	3.0419	25.5872	27.3116	0.1035	5.2075	0.5618	5.7692	1.4068	0.5282	1.9349	0.0000	10,414.7895	10,414.7895	0.8276	0.0000	10,435.4787
2028	2.9501	25.4467	26.6753	0.1023	5.2075	0.5602	5.7676	1.4068	0.5267	1.9335	0.0000	10,293.3839	10,293.3839	0.8198	0.0000	10,313.8786
2029	2.8551	25.3104	26.0751	0.1012	5.2075	0.5587	5.7661	1.4068	0.5253	1.9321	0.0000	10,185.9302	10,185.9302	0.8125	0.0000	10,206.2434
2030	2.7031	20.6542	25.6104	0.1043	5.2075	0.1779	5.3853	1.4068	0.1759	1.5827	0.0000	10,433.6368	10,433.6368	0.3213	0.0000	10,441.6695
2031	2.6064	20.5442	25.1051	0.1035	5.2075	0.1765	5.3840	1.4068	0.1747	1.5815	0.0000	10,352.8458	10,352.8458	0.3151	0.0000	10,360.7234
2032	2.5225	20.4475	24.6735	0.1028	5.2075	0.1753	5.3828	1.4068	0.1736	1.5804	0.0000	10,284.8871	10,284.8871	0.3098	0.0000	10,292.6326
2033	2.4494	20.3623	24.3012	0.1022	5.2075	0.1742	5.3817	1.4068	0.1726	1.5793	0.0000	10,227.0411	10,227.0411	0.3051	0.0000	10,234.6686
2034	2.3868	20.2883	23.9567	0.1017	5.2075	0.1732	5.3807	1.4068	0.1716	1.5784	0.0000	10,178.1460	10,178.1460	0.3010	0.0000	10,185.6708
2035	2.2400	19.4518	23.6234	0.1013	5.2075	0.1878	5.3220	1.4068	0.1877	1.5198	0.0000	10,136.8920	10,136.8920	0.2891	0.0000	10,144.1187
2036	95.5260	4.8859	15.9871	0.0289	0.8133	0.1878	0.8256	0.2157	0.1877	0.2279	0.0000	2,737.3963	2,737.3963	0.1031	0.0000	2,739.9734
2037	95.5260	0.8220	2.8949	8.3100e-003	0.8133	0.0124	0.8256	0.2157	0.0122	0.2279	0.0000	815.2530	815.2530	0.0160	0.0000	815.6531
Maximum	**95.5260**	**38.8848**	**29.8246**	**0.1082**	**18.2141**	**1.6359**	**19.8276**	**9.9699**	**1.5050**	**11.4543**	**0.0000**	**10,887.3334**	**10,887.3334**	**1.9480**	**0.0000**	**10,908.7701**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

Lumina Ranch - San Joaquin County, Summer

	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					
2021	3.2273	31.5090	22.0066	0.0402	0.1314	1.5522	1.6836	0.0335	1.4419	1.4754	0.0000	3,881.4791	3,881.4791	1.0585	0.0000	3,907.9414
2022	3.7005	38.8848	29.5734	0.0637	8.2661	1.6359	9.8796	4.5052	1.5050	5.9896	0.0000	6,168.6192	6,168.6192	1.9480	0.0000	6,217.3181
2023	3.3921	34.5526	28.5370	0.0636	4.0544	1.4255	5.4799	1.6589	1.3114	2.9703	0.0000	6,162.8295	6,162.8295	1.9476	0.0000	6,211.5190
2024	3.4447	32.4102	29.8246	0.1082	4.8160	1.3364	5.4662	1.6589	1.2295	2.8883	0.0000	10,887.3334	10,887.3334	1.9467	0.0000	10,908.7701
2025	3.2299	25.9458	28.7722	0.1065	4.8160	0.5638	5.3798	1.3107	0.5301	1.8407	0.0000	10,711.9316	10,711.9316	0.8444	0.0000	10,733.0414
2026	3.1340	25.7629	28.0464	0.1049	4.8160	0.5631	5.3791	1.3107	0.5294	1.8401	0.0000	10,554.4076	10,554.4076	0.8360	0.0000	10,575.3064
2027	3.0419	25.5872	27.3116	0.1035	4.8160	0.5618	5.3778	1.3107	0.5282	1.8389	0.0000	10,414.7895	10,414.7895	0.8276	0.0000	10,435.4787
2028	2.9501	25.4467	26.6753	0.1023	4.8160	0.5602	5.3762	1.3107	0.5267	1.8374	0.0000	10,293.3839	10,293.3839	0.8198	0.0000	10,313.8786
2029	2.8551	25.3104	26.0751	0.1012	4.8160	0.5587	5.3747	1.3107	0.5253	1.8360	0.0000	10,185.9302	10,185.9302	0.8125	0.0000	10,206.2434
2030	2.7031	20.6542	25.6104	0.1043	4.8160	0.1779	4.9939	1.3107	0.1759	1.4866	0.0000	10,433.6368	10,433.6368	0.3213	0.0000	10,441.6695
2031	2.6064	20.5442	25.1051	0.1035	4.8160	0.1765	4.9926	1.3107	0.1747	1.4854	0.0000	10,352.8458	10,352.8458	0.3151	0.0000	10,360.7234
2032	2.5225	20.4475	24.6735	0.1028	4.8160	0.1753	4.9914	1.3107	0.1736	1.4843	0.0000	10,284.8871	10,284.8871	0.3098	0.0000	10,292.6326
2033	2.4494	20.3623	24.3012	0.1022	4.8160	0.1742	4.9903	1.3107	0.1726	1.4833	0.0000	10,227.0411	10,227.0411	0.3051	0.0000	10,234.6686
2034	2.3868	20.2883	23.9567	0.1017	4.8160	0.1732	4.9892	1.3107	0.1716	1.4823	0.0000	10,178.1460	10,178.1460	0.3010	0.0000	10,185.6708
2035	2.2400	19.4518	23.6234	0.1013	4.8160	0.1878	4.9306	1.3107	0.1877	1.4237	0.0000	10,136.8920	10,136.8920	0.2891	0.0000	10,144.1187
2036	95.5260	4.8859	15.9871	0.0289	0.7497	0.1878	0.7620	0.2001	0.1877	0.2181	0.0000	2,737.3963	2,737.3963	0.1031	0.0000	2,739.9734
2037	95.5260	0.8220	2.8949	8.3100e-003	0.7497	0.0124	0.7620	0.2001	0.0122	0.2123	0.0000	815.2530	815.2530	0.0160	0.0000	815.6531
Maximum	**95.5260**	**38.8848**	**29.8246**	**0.1082**	**8.2661**	**1.6359**	**9.8796**	**4.5052**	**1.5050**	**5.9896**	**0.0000**	**10,887.3334**	**10,887.3334**	**1.9480**	**0.0000**	**10,908.7701**

	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	0.00	0.00	0.00	0.00	24.45	0.00	22.82	31.69	0.00	24.85	0.00	0.00	0.00	0.00	0.00	0.00

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	39.6578	0.7845	68.0494	3.6000e-003		0.3784	0.3784		0.3784	0.3784	0.0000	122.8551	122.8551	0.1171	0.0000	125.7815
Energy	0.6313	5.3944	2.2955	0.0344		0.4361	0.4361		0.4361	0.4361		6,886.4750	6,886.4750	0.1320	0.1263	6,927.3979
Mobile	9.7053	59.5581	98.5540	0.5177	48.0597	0.2767	48.3364	12.8376	0.2580	13.0956		52,740.7615	52,740.7615	1.7238		52,783.8567
Total	**49.9944**	**65.7370**	**168.8988**	**0.5557**	**48.0597**	**1.0912**	**49.1510**	**12.8376**	**1.0725**	**13.9101**	**0.0000**	**59,750.0916**	**59,750.0916**	**1.9729**	**0.1263**	**59,837.0361**

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	39.6578	0.7845	68.0494	3.6000e-003		0.3784	0.3784		0.3784	0.3784	0.0000	122.8551	122.8551	0.1171	0.0000	125.7815
Energy	0.6313	5.3944	2.2955	0.0344		0.4361	0.4361		0.4361	0.4361		6,886.4750	6,886.4750	0.1320	0.1263	6,927.3979
Mobile	9.7053	59.5581	98.5540	0.5177	48.0597	0.2767	48.3364	12.8376	0.2580	13.0956		52,740.7615	52,740.7615	1.7238		52,783.8567
Total	**49.9944**	**65.7370**	**168.8988**	**0.5557**	**48.0597**	**1.0912**	**49.1510**	**12.8376**	**1.0725**	**13.9101**	**0.0000**	**59,750.0916**	**59,750.0916**	**1.9729**	**0.1263**	**59,837.0361**

	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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	9/1/2021	6/7/2022	5	200	
2	Site Preparation	Site Preparation	6/8/2022	11/22/2022	5	120	
3	Grading	Grading	11/23/2022	1/30/2024	5	310	
4	Building Construction	Building Construction	1/31/2024	12/18/2035	5	3100	
5	Paving	Paving	12/19/2035	10/21/2036	5	220	
6	Architectural Coating	Architectural Coating	10/22/2036	8/25/2037	5	220	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 775

Acres of Paving: 0

Residential Indoor: 3,014,415; Residential Outdoor: 1,004,805; 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
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
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
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

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
Site Preparation	7	18.00	0.00	0.00	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
Building Construction	9	497.00	166.00	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
Architectural Coating	1	99.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	27.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

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					0.0300	0.0000	0.0300	4.5400e-003	0.0000	4.5400e-003			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**0.0300**	**1.5513**	**1.5813**	**4.5400e-003**	**1.4411**	**1.4456**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

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	1.0000e-003	0.0338	5.2500e-003	1.1000e-004	4.6300e-003	1.1000e-004	4.7500e-003	1.2100e-003	1.1000e-004	1.3100e-003		11.2765	11.2765	4.6000e-004		11.2880
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
Worker	0.0612	0.0346	0.4364	1.2300e-003	0.1232	7.8000e-004	0.1240	0.0327	7.2000e-004	0.0334		122.2577	122.2577	3.1400e-003		122.3361
Total	**0.0622**	**0.0684**	**0.4416**	**1.3400e-003**	**0.1279**	**8.9000e-004**	**0.1288**	**0.0339**	**8.3000e-004**	**0.0347**		**133.5341**	**133.5341**	**3.6000e-003**		**133.6240**

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					0.0135	0.0000	0.0135	2.0400e-003	0.0000	2.0400e-003			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**0.0135**	**1.5513**	**1.5648**	**2.0400e-003**	**1.4411**	**1.4431**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

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	1.0000e-003	0.0338	5.2500e-003	1.1000e-004	4.2700e-003	1.1000e-004	4.3800e-003	1.1200e-003	1.1000e-004	1.2200e-003		11.2765	11.2765	4.6000e-004		11.2880
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
Worker	0.0612	0.0346	0.4364	1.2300e-003	0.1136	7.8000e-004	0.1144	0.0303	7.2000e-004	0.0310		122.2577	122.2577	3.1400e-003		122.3361
Total	**0.0622**	**0.0684**	**0.4416**	**1.3400e-003**	**0.1179**	**8.9000e-004**	**0.1188**	**0.0314**	**8.3000e-004**	**0.0323**		**133.5341**	**133.5341**	**3.6000e-003**		**133.6240**

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					0.0300	0.0000	0.0300	4.5400e-003	0.0000	4.5400e-003			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**	**0.0300**	**1.2427**	**1.2726**	**4.5400e-003**	**1.1553**	**1.1598**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

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	9.4000e-004	0.0309	5.0700e-003	1.1000e-004	3.7700e-003	9.0000e-005	3.8600e-003	9.9000e-004	9.0000e-005	1.0800e-003		11.1340	11.1340	4.4000e-004		11.1450
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
Worker	0.0568	0.0310	0.3989	1.1800e-003	0.1232	7.6000e-004	0.1240	0.0327	7.0000e-004	0.0334		117.9065	117.9065	2.8100e-003		117.9767
Total	**0.0577**	**0.0619**	**0.4040**	**1.2900e-003**	**0.1270**	**8.5000e-004**	**0.1278**	**0.0337**	**7.9000e-004**	**0.0345**		**129.0405**	**129.0405**	**3.2500e-003**		**129.1217**

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					0.0135	0.0000	0.0135	2.0400e-003	0.0000	2.0400e-003			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.781 2	3,746.781 2	1.0524		3,773.092 0
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.0135**	**1.2427**	**1.2562**	**2.0400e-003**	**1.1553**	**1.1573**	**0.0000**	**3,746.781 2**	**3,746.781 2**	**1.0524**		**3,773.092 0**

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	9.4000e-004	0.0309	5.0700e-003	1.1000e-004	3.4800e-003	9.0000e-005	3.5700e-003	9.2000e-004	9.0000e-005	1.0100e-003		11.1340	11.1340	4.4000e-004		11.1450
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
Worker	0.0568	0.0310	0.3989	1.1800e-003	0.1136	7.6000e-004	0.1143	0.0303	7.0000e-004	0.0310		117.9065	117.9065	2.8100e-003		117.9767
Total	**0.0577**	**0.0619**	**0.4040**	**1.2900e-003**	**0.1171**	**8.5000e-004**	**0.1179**	**0.0312**	**7.9000e-004**	**0.0320**		**129.0405**	**129.0405**	**3.2500e-003**		**129.1217**

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			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**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

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
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
Worker	0.0681	0.0372	0.4787	1.4200e-003	0.1479	9.1000e-004	0.1488	0.0392	8.4000e-004	0.0401		141.4878	141.4878	3.3700e-003		141.5721
Total	**0.0681**	**0.0372**	**0.4787**	**1.4200e-003**	**0.1479**	**9.1000e-004**	**0.1488**	**0.0392**	**8.4000e-004**	**0.0401**		**141.4878**	**141.4878**	**3.3700e-003**		**141.5721**

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					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**8.1298**	**1.6126**	**9.7424**	**4.4688**	**1.4836**	**5.9524**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

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
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
Worker	0.0681	0.0372	0.4787	1.4200e-003	0.1363	9.1000e-004	0.1372	0.0364	8.4000e-004	0.0372		141.4878	141.4878	3.3700e-003		141.5721
Total	**0.0681**	**0.0372**	**0.4787**	**1.4200e-003**	**0.1363**	**9.1000e-004**	**0.1372**	**0.0364**	**8.4000e-004**	**0.0372**		**141.4878**	**141.4878**	**3.3700e-003**		**141.5721**

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			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**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

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
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
Worker	0.0757	0.0413	0.5319	1.5800e-003	0.1643	1.0100e-003	0.1653	0.0436	9.3000e-004	0.0445		157.2087	157.2087	3.7400e-003		157.3023
Total	**0.0757**	**0.0413**	**0.5319**	**1.5800e-003**	**0.1643**	**1.0100e-003**	**0.1653**	**0.0436**	**9.3000e-004**	**0.0445**		**157.2087**	**157.2087**	**3.7400e-003**		**157.3023**

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					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**3.9030**	**1.6349**	**5.5379**	**1.6184**	**1.5041**	**3.1225**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

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
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
Worker	0.0757	0.0413	0.5319	1.5800e-003	0.1514	1.0100e-003	0.1525	0.0404	9.3000e-004	0.0414		157.2087	157.2087	3.7400e-003		157.3023
Total	**0.0757**	**0.0413**	**0.5319**	**1.5800e-003**	**0.1514**	**1.0100e-003**	**0.1525**	**0.0404**	**9.3000e-004**	**0.0414**		**157.2087**	**157.2087**	**3.7400e-003**		**157.3023**

3.4 Grading - 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					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105		6,011.4777	6,011.4777	1.9442		6,060.0836
Total	**3.3217**	**34.5156**	**28.0512**	**0.0621**	**8.6733**	**1.4245**	**10.0978**	**3.5965**	**1.3105**	**4.9070**		**6,011.4777**	**6,011.4777**	**1.9442**		**6,060.0836**

3.4 Grading - 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
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
Worker	0.0703	0.0370	0.4859	1.5200e-003	0.1643	9.8000e-004	0.1653	0.0436	9.1000e-004	0.0445		151.3518	151.3518	3.3400e-003		151.4354
Total	**0.0703**	**0.0370**	**0.4859**	**1.5200e-003**	**0.1643**	**9.8000e-004**	**0.1653**	**0.0436**	**9.1000e-004**	**0.0445**		**151.3518**	**151.3518**	**3.3400e-003**		**151.4354**

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					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105	0.0000	6,011.4777	6,011.4777	1.9442		6,060.0836
Total	**3.3217**	**34.5156**	**28.0512**	**0.0621**	**3.9030**	**1.4245**	**5.3275**	**1.6184**	**1.3105**	**2.9290**	**0.0000**	**6,011.4777**	**6,011.4777**	**1.9442**		**6,060.0836**

3.4 Grading - 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
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
Worker	0.0703	0.0370	0.4859	1.5200e-003	0.1514	9.8000e-004	0.1524	0.0404	9.1000e-004	0.0413		151.3518	151.3518	3.3400e-003		151.4354
Total	**0.0703**	**0.0370**	**0.4859**	**1.5200e-003**	**0.1514**	**9.8000e-004**	**0.1524**	**0.0404**	**9.1000e-004**	**0.0413**		**151.3518**	**151.3518**	**3.3400e-003**		**151.4354**

3.4 Grading - 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					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286		6,009.748 7	6,009.748 7	1.9437		6,058.340 5
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**8.6733**	**1.3354**	**10.0087**	**3.5965**	**1.2286**	**4.8251**		**6,009.748 7**	**6,009.748 7**	**1.9437**		**6,058.340 5**

3.4 Grading - 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
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
Worker	0.0656	0.0333	0.4486	1.4500e-003	0.1643	9.6000e-004	0.1653	0.0436	8.8000e-004	0.0445		144.8393	144.8393	2.9900e-003		144.9141
Total	**0.0656**	**0.0333**	**0.4486**	**1.4500e-003**	**0.1643**	**9.6000e-004**	**0.1653**	**0.0436**	**8.8000e-004**	**0.0445**		**144.8393**	**144.8393**	**2.9900e-003**		**144.9141**

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					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286	0.0000	6,009.748 7	6,009.748 7	1.9437		6,058.340 5
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**3.9030**	**1.3354**	**5.2384**	**1.6184**	**1.2286**	**2.8470**	**0.0000**	**6,009.748 7**	**6,009.748 7**	**1.9437**		**6,058.340 5**

3.4 Grading - 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
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
Worker	0.0656	0.0333	0.4486	1.4500e-003	0.1514	9.6000e-004	0.1524	0.0404	8.8000e-004	0.0413		144.8393	144.8393	2.9900e-003		144.9141
Total	**0.0656**	**0.0333**	**0.4486**	**1.4500e-003**	**0.1514**	**9.6000e-004**	**0.1524**	**0.0404**	**8.8000e-004**	**0.0413**		**144.8393**	**144.8393**	**2.9900e-003**		**144.9141**

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		2,555.698 9	2,555.698 9	0.6044		2,570.807 7
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.698 9**	**2,555.698 9**	**0.6044**		**2,570.807 7**

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
Vendor	0.3434	12.8439	2.5114	0.0452	1.1247	0.0131	1.1378	0.3238	0.0125	0.3364		4,732.378 5	4,732.378 5	0.1787		4,736.847 0
Worker	1.6298	0.8266	11.1464	0.0361	4.0827	0.0237	4.1065	1.0829	0.0219	1.1048		3,599.256 0	3,599.256 0	0.0744		3,601.115 5
Total	**1.9731**	**13.6705**	**13.6578**	**0.0813**	**5.2074**	**0.0369**	**5.2443**	**1.4068**	**0.0344**	**1.4412**		**8,331.634 5**	**8,331.634 5**	**0.2531**		**8,337.962 4**

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.698 9	2,555.698 9	0.6044		2,570.807 7
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.698 9**	**2,555.698 9**	**0.6044**		**2,570.807 7**

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
Vendor	0.3434	12.8439	2.5114	0.0452	1.0526	0.0131	1.0657	0.3061	0.0125	0.3187		4,732.378 5	4,732.378 5	0.1787		4,736.847 0
Worker	1.6298	0.8266	11.1464	0.0361	3.7634	0.0237	3.7871	1.0046	0.0219	1.0264		3,599.256 0	3,599.256 0	0.0744		3,601.115 5
Total	**1.9731**	**13.6705**	**13.6578**	**0.0813**	**4.8160**	**0.0369**	**4.8529**	**1.3107**	**0.0344**	**1.3451**		**8,331.634 5**	**8,331.634 5**	**0.2531**		**8,337.962 4**

3.5 Building Construction - 2025

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2025

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
Vendor	0.3336	12.7276	2.3970	0.0449	1.1247	0.0130	1.1377	0.3238	0.0124	0.3362		4,698.787 5	4,698.787 5	0.1762		4,703.192 5
Worker	1.5290	0.7486	10.2906	0.0347	4.0827	0.0233	4.1060	1.0829	0.0214	1.1043		3,456.669 8	3,456.669 8	0.0672		3,458.350 8
Total	**1.8625**	**13.4761**	**12.6876**	**0.0795**	**5.2075**	**0.0362**	**5.2437**	**1.4068**	**0.0338**	**1.4406**		**8,155.457 3**	**8,155.457 3**	**0.2434**		**8,161.543 3**

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2025

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
Vendor	0.3336	12.7276	2.3970	0.0449	1.0526	0.0130	1.0656	0.3061	0.0124	0.3185		4,698.787 5	4,698.787 5	0.1762		4,703.192 5
Worker	1.5290	0.7486	10.2906	0.0347	3.7634	0.0233	3.7867	1.0046	0.0214	1.0260		3,456.669 8	3,456.669 8	0.0672		3,458.350 8
Total	**1.8625**	**13.4761**	**12.6876**	**0.0795**	**4.8160**	**0.0362**	**4.8522**	**1.3107**	**0.0338**	**1.3445**		**8,155.457 3**	**8,155.457 3**	**0.2434**		**8,161.543 3**

3.5 Building Construction - 2026

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2026

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
Vendor	0.3253	12.6107	2.3067	0.0446	1.1247	0.0128	1.1375	0.3238	0.0122	0.3361		4,668.445 3	4,668.445 3	0.1735		4,672.781 5
Worker	1.4414	0.6825	9.6551	0.0334	4.0827	0.0227	4.1055	1.0829	0.0209	1.1038		3,329.487 9	3,329.487 9	0.0616		3,331.026 8
Total	**1.7666**	**13.2932**	**11.9617**	**0.0780**	**5.2075**	**0.0355**	**5.2430**	**1.4068**	**0.0331**	**1.4399**		**7,997.933 2**	**7,997.933 2**	**0.2350**		**8,003.808 3**

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2026

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
Vendor	0.3253	12.6107	2.3067	0.0446	1.0526	0.0128	1.0654	0.3061	0.0122	0.3184		4,668.445 3	4,668.445 3	0.1735		4,672.781 5
Worker	1.4414	0.6825	9.6551	0.0334	3.7634	0.0227	3.7861	1.0046	0.0209	1.0255		3,329.487 9	3,329.487 9	0.0616		3,331.026 8
Total	**1.7666**	**13.2932**	**11.9617**	**0.0780**	**4.8160**	**0.0355**	**4.8515**	**1.3107**	**0.0331**	**1.3438**		**7,997.933 2**	**7,997.933 2**	**0.2350**		**8,003.808 3**

3.5 Building Construction - 2027

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2027

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
Vendor	0.3180	12.4940	2.2302	0.0443	1.1247	0.0126	1.1373	0.3238	0.0121	0.3359		4,641.888 0	4,641.888 0	0.1706		4,646.152 1
Worker	1.3564	0.6235	8.9968	0.0323	4.0827	0.0216	4.1043	1.0829	0.0199	1.1028		3,216.427 2	3,216.427 2	0.0561		3,217.828 5
Total	**1.6745**	**13.1176**	**11.2270**	**0.0766**	**5.2075**	**0.0342**	**5.2417**	**1.4068**	**0.0319**	**1.4387**		**7,858.315 2**	**7,858.315 2**	**0.2266**		**7,863.980 6**

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2027

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
Vendor	0.3180	12.4940	2.2302	0.0443	1.0526	0.0126	1.0652	0.3061	0.0121	0.3182		4,641.888 0	4,641.888 0	0.1706		4,646.152 1
Worker	1.3564	0.6235	8.9968	0.0323	3.7634	0.0216	3.7850	1.0046	0.0199	1.0244		3,216.427 2	3,216.427 2	0.0561		3,217.828 5
Total	**1.6745**	**13.1176**	**11.2270**	**0.0766**	**4.8160**	**0.0342**	**4.8502**	**1.3107**	**0.0319**	**1.3426**		**7,858.315 2**	**7,858.315 2**	**0.2266**		**7,863.980 6**

3.5 Building Construction - 2028

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2028

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
Vendor	0.3121	12.4062	2.1705	0.0441	1.1247	0.0125	1.1372	0.3238	0.0119	0.3358		4,620.690 0	4,620.690 0	0.1675		4,624.878 5
Worker	1.2706	0.5709	8.4201	0.0312	4.0827	0.0201	4.1029	1.0829	0.0185	1.1015		3,116.219 6	3,116.219 6	0.0513		3,117.502 1
Total	**1.5827**	**12.9771**	**10.5906**	**0.0754**	**5.2075**	**0.0326**	**5.2401**	**1.4068**	**0.0305**	**1.4372**		**7,736.909 5**	**7,736.909 5**	**0.2188**		**7,742.380 6**

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2028

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
Vendor	0.3121	12.4062	2.1705	0.0441	1.0526	0.0125	1.0651	0.3061	0.0119	0.3181		4,620.690 0	4,620.690 0	0.1675		4,624.878 5
Worker	1.2706	0.5709	8.4201	0.0312	3.7634	0.0201	3.7835	1.0046	0.0185	1.0231		3,116.219 6	3,116.219 6	0.0513		3,117.502 1
Total	**1.5827**	**12.9771**	**10.5906**	**0.0754**	**4.8160**	**0.0326**	**4.8486**	**1.3107**	**0.0305**	**1.3411**		**7,736.909 5**	**7,736.909 5**	**0.2188**		**7,742.380 6**

3.5 Building Construction - 2029

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2029

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
Vendor	0.3067	12.3185	2.1164	0.0439	1.1247	0.0123	1.1371	0.3238	0.0118	0.3356		4,602.049 0	4,602.049 0	0.1648		4,606.168 0
Worker	1.1810	0.5222	7.8740	0.0303	4.0827	0.0188	4.1015	1.0829	0.0173	1.1002		3,027.406 8	3,027.406 8	0.0468		3,028.577 3
Total	**1.4877**	**12.8407**	**9.9905**	**0.0743**	**5.2075**	**0.0311**	**5.2386**	**1.4068**	**0.0291**	**1.4358**		**7,629.455 8**	**7,629.455 8**	**0.2116**		**7,634.745 4**

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2029

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
Vendor	0.3067	12.3185	2.1164	0.0439	1.0526	0.0123	1.0650	0.3061	0.0118	0.3179		4,602.049 0	4,602.049 0	0.1648		4,606.168 0
Worker	1.1810	0.5222	7.8740	0.0303	3.7634	0.0188	3.7822	1.0046	0.0173	1.0218		3,027.406 8	3,027.406 8	0.0468		3,028.577 3
Total	**1.4877**	**12.8407**	**9.9905**	**0.0743**	**4.8160**	**0.0311**	**4.8471**	**1.3107**	**0.0291**	**1.3397**		**7,629.455 8**	**7,629.455 8**	**0.2116**		**7,634.745 4**

3.5 Building Construction - 2030

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.546 8	2,897.546 8	0.1162		2,900.452 9
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.546 8**	**2,897.546 8**	**0.1162**		**2,900.452 9**

3.5 Building Construction - 2030

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
Vendor	0.3023	12.2422	2.0748	0.0438	1.1247	0.0122	1.1369	0.3238	0.0117	0.3355		4,587.330 6	4,587.330 6	0.1623		4,591.387 8
Worker	1.0917	0.4774	7.3786	0.0296	4.0827	0.0175	4.1002	1.0829	0.0161	1.0990		2,948.759 5	2,948.759 5	0.0428		2,949.828 9
Total	**1.3940**	**12.7196**	**9.4534**	**0.0734**	**5.2075**	**0.0297**	**5.2372**	**1.4068**	**0.0278**	**1.4345**		**7,536.090 1**	**7,536.090 1**	**0.2051**		**7,541.216 7**

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.546 8	2,897.546 8	0.1162		2,900.452 9
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.546 8**	**2,897.546 8**	**0.1162**		**2,900.452 9**

3.5 Building Construction - 2030

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
Vendor	0.3023	12.2422	2.0748	0.0438	1.0526	0.0122	1.0648	0.3061	0.0117	0.3178		4,587.3306	4,587.3306	0.1623		4,591.3878
Worker	1.0917	0.4774	7.3786	0.0296	3.7634	0.0175	3.7809	1.0046	0.0161	1.0207		2,948.7595	2,948.7595	0.0428		2,949.8289
Total	**1.3940**	**12.7196**	**9.4534**	**0.0734**	**4.8160**	**0.0297**	**4.8457**	**1.3107**	**0.0278**	**1.3385**		**7,536.0901**	**7,536.0901**	**0.2051**		**7,541.2167**

3.5 Building Construction - 2031

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2031

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
Vendor	0.2989	12.1748	2.0433	0.0437	1.1247	0.0121	1.1368	0.3238	0.0116	0.3354		4,575.966 2	4,575.966 2	0.1599		4,579.963 5
Worker	0.9983	0.4348	6.9049	0.0289	4.0827	0.0163	4.0991	1.0829	0.0150	1.0979		2,879.332 8	2,879.332 8	0.0390		2,880.307 0
Total	**1.2972**	**12.6096**	**8.9481**	**0.0725**	**5.2075**	**0.0284**	**5.2359**	**1.4068**	**0.0266**	**1.4333**		**7,455.299 0**	**7,455.299 0**	**0.1989**		**7,460.270 6**

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.546 8	2,897.546 8	0.1162		2,900.452 9
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.546 8**	**2,897.546 8**	**0.1162**		**2,900.452 9**

3.5 Building Construction - 2031

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
Vendor	0.2989	12.1748	2.0433	0.0437	1.0526	0.0121	1.0647	0.3061	0.0116	0.3177		4,575.9662	4,575.9662	0.1599		4,579.9635
Worker	0.9983	0.4348	6.9049	0.0289	3.7634	0.0163	3.7797	1.0046	0.0150	1.0196		2,879.3328	2,879.3328	0.0390		2,880.3070
Total	**1.2972**	**12.6096**	**8.9481**	**0.0725**	**4.8160**	**0.0284**	**4.8444**	**1.3107**	**0.0266**	**1.3372**		**7,455.2990**	**7,455.2990**	**0.1989**		**7,460.2706**

3.5 Building Construction - 2032

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2032

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
Vendor	0.2963	12.1142	2.0219	0.0436	1.1247	0.0120	1.1367	0.3238	0.0114	0.3353		4,568.8232	4,568.8232	0.1579		4,572.7700
Worker	0.9170	0.3987	6.4946	0.0282	4.0827	0.0152	4.0980	1.0829	0.0140	1.0969		2,818.5172	2,818.5172	0.0357		2,819.4097
Total	**1.2133**	**12.5129**	**8.5165**	**0.0719**	**5.2075**	**0.0272**	**5.2347**	**1.4068**	**0.0254**	**1.4322**		**7,387.3403**	**7,387.3403**	**0.1936**		**7,392.1797**

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2032

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
Vendor	0.2963	12.1142	2.0219	0.0436	1.0526	0.0120	1.0646	0.3061	0.0114	0.3176		4,568.823 2	4,568.823 2	0.1579		4,572.770 0
Worker	0.9170	0.3987	6.4946	0.0282	3.7634	0.0152	3.7786	1.0046	0.0140	1.0186		2,818.517 2	2,818.517 2	0.0357		2,819.409 7
Total	**1.2133**	**12.5129**	**8.5165**	**0.0719**	**4.8160**	**0.0272**	**4.8432**	**1.3107**	**0.0254**	**1.3361**		**7,387.340 3**	**7,387.340 3**	**0.1936**		**7,392.179 7**

3.5 Building Construction - 2033

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.546 8	2,897.546 8	0.1162		2,900.452 9
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.546 8**	**2,897.546 8**	**0.1162**		**2,900.452 9**

3.5 Building Construction - 2033

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
Vendor	0.2944	12.0598	2.0056	0.0436	1.1247	0.0119	1.1366	0.3238	0.0113	0.3352		4,564.009 1	4,564.009 1	0.1560		4,567.908 4
Worker	0.8459	0.3678	6.1386	0.0277	4.0827	0.0142	4.0970	1.0829	0.0131	1.0960		2,765.485 3	2,765.485 3	0.0329		2,766.307 4
Total	**1.1403**	**12.4277**	**8.1442**	**0.0713**	**5.2075**	**0.0261**	**5.2336**	**1.4068**	**0.0244**	**1.4312**		**7,329.494 4**	**7,329.494 4**	**0.1889**		**7,334.215 8**

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.546 8	2,897.546 8	0.1162		2,900.452 9
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.546 8**	**2,897.546 8**	**0.1162**		**2,900.452 9**

3.5 Building Construction - 2033

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
Vendor	0.2944	12.0598	2.0056	0.0436	1.0527	0.0119	1.0645	0.3061	0.0113	0.3175		4,564.009 1	4,564.009 1	0.1560		4,567.908 4
Worker	0.8459	0.3678	6.1386	0.0277	3.7634	0.0142	3.7776	1.0046	0.0131	1.0176		2,765.485 3	2,765.485 3	0.0329		2,766.307 4
Total	**1.1403**	**12.4277**	**8.1442**	**0.0713**	**4.8160**	**0.0261**	**4.8421**	**1.3107**	**0.0244**	**1.3351**		**7,329.494 4**	**7,329.494 4**	**0.1889**		**7,334.215 8**

3.5 Building Construction - 2034

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.546 8	2,897.546 8	0.1162		2,900.452 9
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.546 8**	**2,897.546 8**	**0.1162**		**2,900.452 9**

3.5 Building Construction - 2034

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
Vendor	0.2928	12.0113	1.9917	0.0436	1.1247	0.0118	1.1365	0.3238	0.0113	0.3351		4,561.2387	4,561.2387	0.1544		4,565.0996
Worker	0.7849	0.3424	5.8080	0.0272	4.0827	0.0133	4.0960	1.0829	0.0122	1.0952		2,719.3605	2,719.3605	0.0303		2,720.1183
Total	**1.0777**	**12.3537**	**7.7997**	**0.0708**	**5.2075**	**0.0251**	**5.2325**	**1.4068**	**0.0235**	**1.4302**		**7,280.5993**	**7,280.5993**	**0.1847**		**7,285.2179**

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2034

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
Vendor	0.2928	12.0113	1.9917	0.0436	1.0527	0.0118	1.0644	0.3061	0.0113	0.3174		4,561.238 7	4,561.238 7	0.1544		4,565.099 6
Worker	0.7849	0.3424	5.8080	0.0272	3.7634	0.0133	3.7767	1.0046	0.0122	1.0168		2,719.360 5	2,719.360 5	0.0303		2,720.118 3
Total	**1.0777**	**12.3537**	**7.7997**	**0.0708**	**4.8160**	**0.0251**	**4.8411**	**1.3107**	**0.0235**	**1.3342**		**7,280.599 3**	**7,280.599 3**	**0.1847**		**7,285.217 9**

3.5 Building Construction - 2035

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	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904		2,897.546 8	2,897.546 8	0.1079		2,900.244 8
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**		**2,897.546 8**	**2,897.546 8**	**0.1079**		**2,900.244 8**

3.5 Building Construction - 2035

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
Vendor	0.2913	11.9679	1.9802	0.0435	1.1248	0.0117	1.1364	0.3238	0.0112	0.3350		4,559.536 6	4,559.536 6	0.1530		4,563.361 9
Worker	0.7319	0.3226	5.5254	0.0268	4.0827	0.0124	4.0952	1.0829	0.0114	1.0944		2,679.808 7	2,679.808 7	0.0281		2,680.512 0
Total	**1.0232**	**12.2905**	**7.5056**	**0.0704**	**5.2075**	**0.0241**	**5.2316**	**1.4068**	**0.0226**	**1.4294**		**7,239.345 3**	**7,239.345 3**	**0.1811**		**7,243.873 9**

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	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904	0.0000	2,897.546 8	2,897.546 8	0.1079		2,900.244 8
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**	**0.0000**	**2,897.546 8**	**2,897.546 8**	**0.1079**		**2,900.244 8**

3.5 Building Construction - 2035

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
Vendor	0.2913	11.9679	1.9802	0.0435	1.0527	0.0117	1.0643	0.3061	0.0112	0.3173		4,559.536 6	4,559.536 6	0.1530		4,563.361 9
Worker	0.7319	0.3226	5.5254	0.0268	3.7634	0.0124	3.7758	1.0046	0.0114	1.0160		2,679.808 7	2,679.808 7	0.0281		2,680.512 0
Total	**1.0232**	**12.2905**	**7.5056**	**0.0704**	**4.8160**	**0.0241**	**4.8402**	**1.3107**	**0.0226**	**1.3333**		**7,239.345 3**	**7,239.345 3**	**0.1811**		**7,243.873 9**

3.6 Paving - 2035

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	1.1405	4.8761	15.8203	0.0281		0.1874	0.1874		0.1874	0.1874		2,656.516 8	2,656.516 8	0.1022		2,659.072 7
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1405**	**4.8761**	**15.8203**	**0.0281**		**0.1874**	**0.1874**		**0.1874**	**0.1874**		**2,656.516 8**	**2,656.516 8**	**0.1022**		**2,659.072 7**

3.6 Paving - 2035

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
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
Worker	0.0221	9.7400e-003	0.1668	8.1000e-004	0.1232	3.8000e-004	0.1236	0.0327	3.5000e-004	0.0330		80.8795	80.8795	8.5000e-004		80.9008
Total	**0.0221**	**9.7400e-003**	**0.1668**	**8.1000e-004**	**0.1232**	**3.8000e-004**	**0.1236**	**0.0327**	**3.5000e-004**	**0.0330**		**80.8795**	**80.8795**	**8.5000e-004**		**80.9008**

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	1.1405	4.8761	15.8203	0.0281		0.1874	0.1874		0.1874	0.1874	0.0000	2,656.516 8	2,656.516 8	0.1022		2,659.072 6
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1405**	**4.8761**	**15.8203**	**0.0281**		**0.1874**	**0.1874**		**0.1874**	**0.1874**	**0.0000**	**2,656.516 8**	**2,656.516 8**	**0.1022**		**2,659.072 6**

3.6 Paving - 2035

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
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
Worker	0.0221	9.7400e-003	0.1668	8.1000e-004	0.1136	3.8000e-004	0.1140	0.0303	3.5000e-004	0.0307		80.8795	80.8795	8.5000e-004		80.9008
Total	**0.0221**	**9.7400e-003**	**0.1668**	**8.1000e-004**	**0.1136**	**3.8000e-004**	**0.1140**	**0.0303**	**3.5000e-004**	**0.0307**		**80.8795**	**80.8795**	**8.5000e-004**		**80.9008**

3.6 Paving - 2036

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	1.1405	4.8761	15.8203	0.0281		0.1874	0.1874		0.1874	0.1874		2,656.516 8	2,656.516 8	0.1022		2,659.072 7
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1405**	**4.8761**	**15.8203**	**0.0281**		**0.1874**	**0.1874**		**0.1874**	**0.1874**		**2,656.516 8**	**2,656.516 8**	**0.1022**		**2,659.072 7**

3.6 Paving - 2036

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
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
Worker	0.0221	9.7400e-003	0.1668	8.1000e-004	0.1232	3.8000e-004	0.1236	0.0327	3.5000e-004	0.0330		80.8795	80.8795	8.5000e-004		80.9008
Total	**0.0221**	**9.7400e-003**	**0.1668**	**8.1000e-004**	**0.1232**	**3.8000e-004**	**0.1236**	**0.0327**	**3.5000e-004**	**0.0330**		**80.8795**	**80.8795**	**8.5000e-004**		**80.9008**

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	1.1405	4.8761	15.8203	0.0281		0.1874	0.1874		0.1874	0.1874	0.0000	2,656.516 8	2,656.516 8	0.1022		2,659.072 6
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1405**	**4.8761**	**15.8203**	**0.0281**		**0.1874**	**0.1874**		**0.1874**	**0.1874**	**0.0000**	**2,656.516 8**	**2,656.516 8**	**0.1022**		**2,659.072 6**

3.6 Paving - 2036

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
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
Worker	0.0221	9.7400e-003	0.1668	8.1000e-004	0.1136	3.8000e-004	0.1140	0.0303	3.5000e-004	0.0307		80.8795	80.8795	8.5000e-004		80.9008
Total	**0.0221**	**9.7400e-003**	**0.1668**	**8.1000e-004**	**0.1136**	**3.8000e-004**	**0.1140**	**0.0303**	**3.5000e-004**	**0.0307**		**80.8795**	**80.8795**	**8.5000e-004**		**80.9008**

3.7 Architectural Coating - 2036

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	95.2624					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1179	0.7577	1.7943	2.9700e-003		9.9000e-003	9.9000e-003		9.9000e-003	9.9000e-003		281.4481	281.4481	0.0104		281.7081
Total	**95.3802**	**0.7577**	**1.7943**	**2.9700e-003**		**9.9000e-003**	**9.9000e-003**		**9.9000e-003**	**9.9000e-003**		**281.4481**	**281.4481**	**0.0104**		**281.7081**

3.7 Architectural Coating - 2036

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
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
Worker	0.1458	0.0643	1.1006	5.3400e-003	0.8133	2.4800e-003	0.8157	0.2157	2.2800e-003	0.2180		533.8050	533.8050	5.6000e-003		533.9451
Total	**0.1458**	**0.0643**	**1.1006**	**5.3400e-003**	**0.8133**	**2.4800e-003**	**0.8157**	**0.2157**	**2.2800e-003**	**0.2180**		**533.8050**	**533.8050**	**5.6000e-003**		**533.9451**

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	95.2624					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1179	0.7577	1.7943	2.9700e-003		9.9000e-003	9.9000e-003		9.9000e-003	9.9000e-003	0.0000	281.4481	281.4481	0.0104		281.7081
Total	**95.3802**	**0.7577**	**1.7943**	**2.9700e-003**		**9.9000e-003**	**9.9000e-003**		**9.9000e-003**	**9.9000e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0104**		**281.7081**

3.7 Architectural Coating - 2036

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
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
Worker	0.1458	0.0643	1.1006	5.3400e-003	0.7497	2.4800e-003	0.7521	0.2001	2.2800e-003	0.2024		533.8050	533.8050	5.6000e-003		533.9451
Total	**0.1458**	**0.0643**	**1.1006**	**5.3400e-003**	**0.7497**	**2.4800e-003**	**0.7521**	**0.2001**	**2.2800e-003**	**0.2024**		**533.8050**	**533.8050**	**5.6000e-003**		**533.9451**

3.7 Architectural Coating - 2037

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	95.2624					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1179	0.7577	1.7943	2.9700e-003		9.9000e-003	9.9000e-003		9.9000e-003	9.9000e-003		281.4481	281.4481	0.0104		281.7081
Total	**95.3802**	**0.7577**	**1.7943**	**2.9700e-003**		**9.9000e-003**	**9.9000e-003**		**9.9000e-003**	**9.9000e-003**		**281.4481**	**281.4481**	**0.0104**		**281.7081**

3.7 Architectural Coating - 2037

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
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
Worker	0.1458	0.0643	1.1006	5.3400e-003	0.8133	2.4800e-003	0.8157	0.2157	2.2800e-003	0.2180		533.8050	533.8050	5.6000e-003		533.9451
Total	**0.1458**	**0.0643**	**1.1006**	**5.3400e-003**	**0.8133**	**2.4800e-003**	**0.8157**	**0.2157**	**2.2800e-003**	**0.2180**		**533.8050**	**533.8050**	**5.6000e-003**		**533.9451**

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	95.2624					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1179	0.7577	1.7943	2.9700e-003		9.9000e-003	9.9000e-003		9.9000e-003	9.9000e-003	0.0000	281.4481	281.4481	0.0104		281.7081
Total	**95.3802**	**0.7577**	**1.7943**	**2.9700e-003**		**9.9000e-003**	**9.9000e-003**		**9.9000e-003**	**9.9000e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0104**		**281.7081**

3.7 Architectural Coating - 2037

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
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
Worker	0.1458	0.0643	1.1006	5.3400e-003	0.7497	2.4800e-003	0.7521	0.2001	2.2800e-003	0.2024		533.8050	533.8050	5.6000e-003		533.9451
Total	**0.1458**	**0.0643**	**1.1006**	**5.3400e-003**	**0.7497**	**2.4800e-003**	**0.7521**	**0.2001**	**2.2800e-003**	**0.2024**		**533.8050**	**533.8050**	**5.6000e-003**		**533.9451**

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	9.7053	59.5581	98.5540	0.5177	48.0597	0.2767	48.3364	12.8376	0.2580	13.0956		52,740.7615	52,740.7615	1.7238		52,783.8567
Unmitigated	9.7053	59.5581	98.5540	0.5177	48.0597	0.2767	48.3364	12.8376	0.2580	13.0956		52,740.7615	52,740.7615	1.7238		52,783.8567

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Single Family Housing	7,806.88	7,806.88	7806.88	22,622,908	22,622,908
Total	7,806.88	7,806.88	7,806.88	22,622,908	22,622,908

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
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Single Family Housing	10.80	7.30	7.50	45.60	19.00	35.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.581437	0.032303	0.190969	0.100551	0.011057	0.003880	0.015441	0.056216	0.001173	0.001204	0.004639	0.000578	0.000551
Single Family Housing	0.581437	0.032303	0.190969	0.100551	0.011057	0.003880	0.015441	0.056216	0.001173	0.001204	0.004639	0.000578	0.000551

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	0.6313	5.3944	2.2955	0.0344		0.4361	0.4361		0.4361	0.4361		6,886.475 0	6,886.475 0	0.1320	0.1263	6,927.397 9
NaturalGas Unmitigated	0.6313	5.3944	2.2955	0.0344		0.4361	0.4361		0.4361	0.4361		6,886.475 0	6,886.475 0	0.1320	0.1263	6,927.397 9

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					
City Park	0	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
Single Family Housing	58535	0.6313	5.3944	2.2955	0.0344		0.4361	0.4361		0.4361	0.4361		6,886.475 0	6,886.475 0	0.1320	0.1263	6,927.397 9
Total		**0.6313**	**5.3944**	**2.2955**	**0.0344**		**0.4361**	**0.4361**		**0.4361**	**0.4361**		**6,886.475 0**	**6,886.475 0**	**0.1320**	**0.1263**	**6,927.397 9**

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					
City Park	0	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
Single Family Housing	58.535	0.6313	5.3944	2.2955	0.0344		0.4361	0.4361		0.4361	0.4361		6,886.475 0	6,886.475 0	0.1320	0.1263	6,927.397 9
Total		**0.6313**	**5.3944**	**2.2955**	**0.0344**		**0.4361**	**0.4361**		**0.4361**	**0.4361**		**6,886.475 0**	**6,886.475 0**	**0.1320**	**0.1263**	**6,927.397 9**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	39.6578	0.7845	68.0494	3.6000e-003		0.3784	0.3784		0.3784	0.3784	0.0000	122.8551	122.8551	0.1171	0.0000	125.7815
Unmitigated	39.6578	0.7845	68.0494	3.6000e-003		0.3784	0.3784		0.3784	0.3784	0.0000	122.8551	122.8551	0.1171	0.0000	125.7815

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	5.7418					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	31.8805					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	2.0355	0.7845	68.0494	3.6000e-003		0.3784	0.3784		0.3784	0.3784		122.8551	122.8551	0.1171		125.7815
Total	**39.6578**	**0.7845**	**68.0494**	**3.6000e-003**		**0.3784**	**0.3784**		**0.3784**	**0.3784**	**0.0000**	**122.8551**	**122.8551**	**0.1171**	**0.0000**	**125.7815**

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	5.7418					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	31.8805					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	2.0355	0.7845	68.0494	3.6000e-003		0.3784	0.3784		0.3784	0.3784		122.8551	122.8551	0.1171		125.7815
Total	**39.6578**	**0.7845**	**68.0494**	**3.6000e-003**		**0.3784**	**0.3784**		**0.3784**	**0.3784**	**0.0000**	**122.8551**	**122.8551**	**0.1171**	**0.0000**	**125.7815**

7.0 Water Detail

7.1 Mitigation Measures Water

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

Lumina Ranch

San Joaquin County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	827.00	Dwelling Unit	146.63	1,488,600.00	2623
City Park	10.90	Acre	10.90	474,804.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.7 **Precipitation Freq (Days)** 51

Climate Zone 2 **Operational Year** 2030

Utility Company Pacific Gas & Electric Company

CO2 Intensity (lb/MWhr) 641.35 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2030 assumed as final buildout year

Land Use - Total development lot acreage = 157.53 acres

Construction Phase - Buildout assumed to occur by year 2030.

Demolition - Two small existing houses to be demolished. Estimated at 6000 sf total.

Grading - Site is relatively flat.

Vehicle Trips - Trip rates as provided by Traffic Impact Analysis (Fehr & Peers). 7,807 daily trips total. With 827 dwelling units (du), trip rate is 9.44 trips per du.

Fleet Mix - Fleet mix adjusted to reflect vehicle fleet mix from Traffic Impact Analysis.

Woodstoves - Assumes no hearths.

Energy Use -

Land Use Change - Assumes removal of 'grassland' land use type over the entire development area (157.53 acres).

Construction Off-road Equipment Mitigation - Water Exposed Area 2x daily; Clean Paved Road (9% fugitive dust PM reduction); Unpaved road mitigation: Limit on-site construction vehicle speeds to 5 mph; Soil Stabilizer for unpaved (10% reduction)

Architectural Coating - Assumes maximum of 100 g/L for interior coatings (per non-specialty coating limitations providded in SJVAPCD Rule 4601)

Area Coating - Assumes maximum of 100 g/L for interior coatings (per non-specialty coating limitations providded in SJVAPCD Rule 4601)

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Interior	150.00	100.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Interior	150	100
tblAreaCoating	Area_EF_Residential_Interior	150	100
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	5
tblFireplaces	FireplaceDayYear	82.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	3,078.40	0.00
tblFireplaces	NumberGas	454.85	0.00
tblFireplaces	NumberNoFireplace	372.15	0.00
tblLandUse	LotAcreage	268.51	146.63
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	9.52	9.44
tblWoodstoves	NumberCatalytic	146.63	0.00
tblWoodstoves	NumberNoncatalytic	146.63	0.00
tblWoodstoves	WoodstoveDayYear	82.00	0.00
tblWoodstoves	WoodstoveWoodMass	3,019.20	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

Lumina Ranch - San Joaquin County, Winter

	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					
2021	3.2258	31.5174	21.9570	0.0400	0.1578	1.5522	1.7101	0.0384	1.4419	1.4804	0.0000	3,868.2713	3,868.2713	1.0582	0.0000	3,894.7272
2022	3.6986	38.8937	29.5102	0.0635	18.2141	1.6359	19.8276	9.9699	1.5050	11.4543	0.0000	6,151.9486	6,151.9486	1.9476	0.0000	6,200.6380
2023	3.3904	34.5605	28.4775	0.0635	8.8376	1.4255	10.2631	3.6401	1.3114	4.9515	0.0000	6,146.7875	6,146.7875	1.9472	0.0000	6,195.4683
2024	3.4312	32.4173	28.8277	0.1031	8.8376	1.3364	10.1740	3.6401	1.2295	4.8695	0.0000	10,363.2688	10,363.2688	1.9464	0.0000	10,385.0722
2025	3.2209	26.1687	27.8433	0.1015	5.2075	0.5641	5.7715	1.4068	0.5303	1.9371	0.0000	10,205.5202	10,205.5202	0.8595	0.0000	10,227.0078
2026	3.1297	25.9674	27.1563	0.1001	5.2075	0.5633	5.7708	1.4068	0.5296	1.9364	0.0000	10,063.7820	10,063.7820	0.8513	0.0000	10,085.0647
2027	3.0418	25.7741	26.4767	0.0988	5.2075	0.5620	5.7695	1.4068	0.5284	1.9352	0.0000	9,937.6806	9,937.6806	0.8431	0.0000	9,958.7592
2028	2.9526	25.6195	25.8901	0.0977	5.2075	0.5604	5.7679	1.4068	0.5269	1.9337	0.0000	9,828.1352	9,828.1352	0.8355	0.0000	9,849.0224
2029	2.8599	25.4694	25.3363	0.0967	5.2075	0.5589	5.7663	1.4068	0.5255	1.9323	0.0000	9,731.0183	9,731.0183	0.8283	0.0000	9,751.7268
2030	2.7099	20.8003	24.9140	0.0999	5.2075	0.1780	5.3855	1.4068	0.1761	1.5829	0.0000	9,987.5414	9,987.5414	0.3372	0.0000	9,995.9718
2031	2.6146	20.6780	24.4487	0.0992	5.2075	0.1767	5.3842	1.4068	0.1749	1.5816	0.0000	9,914.2657	9,914.2657	0.3311	0.0000	9,922.5428
2032	2.5324	20.5704	24.0535	0.0986	5.2075	0.1755	5.3830	1.4068	0.1737	1.5805	0.0000	9,852.5373	9,852.5373	0.3259	0.0000	9,860.6838
2033	2.4612	20.4754	23.7133	0.0980	5.2075	0.1744	5.3819	1.4068	0.1727	1.5795	0.0000	9,799.8755	9,799.8755	0.3212	0.0000	9,807.9047
2034	2.4018	20.3928	23.3995	0.0976	5.2075	0.1733	5.3808	1.4068	0.1718	1.5785	0.0000	9,755.2914	9,755.2914	0.3171	0.0000	9,763.2192
2035	2.2578	19.5493	23.0927	0.0972	5.2075	0.1878	5.3222	1.4068	0.1877	1.5199	0.0000	9,717.6721	9,717.6721	0.3052	0.0000	9,725.3025
2036	95.5262	4.8879	15.9609	0.0288	0.8133	0.1878	0.8256	0.2157	0.1877	0.2279	0.0000	2,728.7726	2,728.7726	0.1030	0.0000	2,731.3470
2037	95.5262	0.8351	2.7225	7.7400e-003	0.8133	0.0124	0.8256	0.2157	0.0122	0.2279	0.0000	758.3367	758.3367	0.0153	0.0000	758.7188
Maximum	**95.5262**	**38.8937**	**29.5102**	**0.1031**	**18.2141**	**1.6359**	**19.8276**	**9.9699**	**1.5050**	**11.4543**	**0.0000**	**10,363.2688**	**10,363.2688**	**1.9476**	**0.0000**	**10,385.0722**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

Lumina Ranch - San Joaquin County, Winter

	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					
2021	3.2258	31.5174	21.9570	0.0400	0.1314	1.5522	1.6836	0.0335	1.4419	1.4754	0.0000	3,868.2713	3,868.2713	1.0582	0.0000	3,894.7272
2022	3.6986	38.8937	29.5102	0.0635	8.2661	1.6359	9.8796	4.5052	1.5050	5.9896	0.0000	6,151.9486	6,151.9486	1.9476	0.0000	6,200.6380
2023	3.3904	34.5605	28.4775	0.0635	4.0544	1.4255	5.4799	1.6589	1.3114	2.9703	0.0000	6,146.7875	6,146.7875	1.9472	0.0000	6,195.4683
2024	3.4312	32.4173	28.8277	0.1031	4.8160	1.3364	5.4665	1.6589	1.2295	2.8883	0.0000	10,363.2688	10,363.2688	1.9464	0.0000	10,385.0722
2025	3.2209	26.1687	27.8433	0.1015	4.8160	0.5641	5.3801	1.3107	0.5303	1.8410	0.0000	10,205.5202	10,205.5202	0.8595	0.0000	10,227.0078
2026	3.1297	25.9674	27.1563	0.1001	4.8160	0.5633	5.3793	1.3107	0.5296	1.8403	0.0000	10,063.7820	10,063.7820	0.8513	0.0000	10,085.0647
2027	3.0418	25.7741	26.4767	0.0988	4.8160	0.5620	5.3780	1.3107	0.5284	1.8391	0.0000	9,937.6806	9,937.6806	0.8431	0.0000	9,958.7592
2028	2.9526	25.6195	25.8901	0.0977	4.8160	0.5604	5.3764	1.3107	0.5269	1.8376	0.0000	9,828.1352	9,828.1352	0.8355	0.0000	9,849.0224
2029	2.8599	25.4694	25.3363	0.0967	4.8160	0.5589	5.3749	1.3107	0.5255	1.8362	0.0000	9,731.0183	9,731.0183	0.8283	0.0000	9,751.7268
2030	2.7099	20.8003	24.9140	0.0999	4.8160	0.1780	4.9941	1.3107	0.1761	1.4868	0.0000	9,987.5414	9,987.5414	0.3372	0.0000	9,995.9718
2031	2.6146	20.6780	24.4487	0.0992	4.8160	0.1767	4.9928	1.3107	0.1749	1.4856	0.0000	9,914.2657	9,914.2657	0.3311	0.0000	9,922.5428
2032	2.5324	20.5704	24.0535	0.0986	4.8160	0.1755	4.9915	1.3107	0.1737	1.4844	0.0000	9,852.5373	9,852.5373	0.3259	0.0000	9,860.6838
2033	2.4612	20.4754	23.7133	0.0980	4.8160	0.1744	4.9904	1.3107	0.1727	1.4834	0.0000	9,799.8755	9,799.8755	0.3212	0.0000	9,807.9047
2034	2.4018	20.3928	23.3995	0.0976	4.8160	0.1733	4.9894	1.3107	0.1718	1.4824	0.0000	9,755.2914	9,755.2914	0.3171	0.0000	9,763.2192
2035	2.2578	19.5493	23.0927	0.0972	4.8160	0.1878	4.9307	1.3107	0.1877	1.4238	0.0000	9,717.6721	9,717.6721	0.3052	0.0000	9,725.3025
2036	95.5262	4.8879	15.9609	0.0288	0.7497	0.1878	0.7620	0.2001	0.1877	0.2181	0.0000	2,728.7726	2,728.7726	0.1030	0.0000	2,731.3470
2037	95.5262	0.8351	2.7225	7.7400e-003	0.7497	0.0124	0.7620	0.2001	0.0122	0.2123	0.0000	758.3367	758.3367	0.0153	0.0000	758.7188
Maximum	**95.5262**	**38.8937**	**29.5102**	**0.1031**	**8.2661**	**1.6359**	**9.8796**	**4.5052**	**1.5050**	**5.9896**	**0.0000**	**10,363.2688**	**10,363.2688**	**1.9476**	**0.0000**	**10,385.0722**

	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	0.00	0.00	0.00	0.00	24.45	0.00	22.82	31.69	0.00	24.85	0.00	0.00	0.00	0.00	0.00	0.00

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	39.6578	0.7845	68.0494	3.6000e-003		0.3784	0.3784		0.3784	0.3784	0.0000	122.8551	122.8551	0.1171	0.0000	125.7815
Energy	0.6313	5.3944	2.2955	0.0344		0.4361	0.4361		0.4361	0.4361		6,886.4750	6,886.4750	0.1320	0.1263	6,927.3979
Mobile	7.6578	60.8614	92.3810	0.4779	48.0597	0.2777	48.3374	12.8376	0.2589	13.0966		48,725.5645	48,725.5645	1.8069		48,770.7380
Total	**47.9469**	**67.0403**	**162.7259**	**0.5159**	**48.0597**	**1.0922**	**49.1520**	**12.8376**	**1.0734**	**13.9111**	**0.0000**	**55,734.8946**	**55,734.8946**	**2.0560**	**0.1263**	**55,823.9173**

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	39.6578	0.7845	68.0494	3.6000e-003		0.3784	0.3784		0.3784	0.3784	0.0000	122.8551	122.8551	0.1171	0.0000	125.7815
Energy	0.6313	5.3944	2.2955	0.0344		0.4361	0.4361		0.4361	0.4361		6,886.4750	6,886.4750	0.1320	0.1263	6,927.3979
Mobile	7.6578	60.8614	92.3810	0.4779	48.0597	0.2777	48.3374	12.8376	0.2589	13.0966		48,725.5645	48,725.5645	1.8069		48,770.7380
Total	**47.9469**	**67.0403**	**162.7259**	**0.5159**	**48.0597**	**1.0922**	**49.1520**	**12.8376**	**1.0734**	**13.9111**	**0.0000**	**55,734.8946**	**55,734.8946**	**2.0560**	**0.1263**	**55,823.9173**

	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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	9/1/2021	6/7/2022	5	200	
2	Site Preparation	Site Preparation	6/8/2022	11/22/2022	5	120	
3	Grading	Grading	11/23/2022	1/30/2024	5	310	
4	Building Construction	Building Construction	1/31/2024	12/18/2035	5	3100	
5	Paving	Paving	12/19/2035	10/21/2036	5	220	
6	Architectural Coating	Architectural Coating	10/22/2036	8/25/2037	5	220	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 775

Acres of Paving: 0

Residential Indoor: 3,014,415; Residential Outdoor: 1,004,805; 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
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
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
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40

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
Site Preparation	7	18.00	0.00	0.00	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
Building Construction	9	497.00	166.00	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
Architectural Coating	1	99.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	15.00	0.00	27.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2021

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					0.0300	0.0000	0.0300	4.5400e-003	0.0000	4.5400e-003			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.944 9	3,747.944 9	1.0549		3,774.317 4
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**0.0300**	**1.5513**	**1.5813**	**4.5400e-003**	**1.4411**	**1.4456**		**3,747.944 9**	**3,747.944 9**	**1.0549**		**3,774.317 4**

3.2 Demolition - 2021

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	1.0400e-003	0.0346	5.8700e-003	1.1000e-004	4.6300e-003	1.1000e-004	4.7500e-003	1.2100e-003	1.1000e-004	1.3100e-003		11.0391	11.0391	5.1000e-004		11.0519
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
Worker	0.0596	0.0421	0.3861	1.1000e-003	0.1232	7.8000e-004	0.1240	0.0327	7.2000e-004	0.0334		109.2873	109.2873	2.8300e-003		109.3580
Total	**0.0607**	**0.0767**	**0.3920**	**1.2100e-003**	**0.1279**	**8.9000e-004**	**0.1288**	**0.0339**	**8.3000e-004**	**0.0347**		**120.3264**	**120.3264**	**3.3400e-003**		**120.4099**

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					0.0135	0.0000	0.0135	2.0400e-003	0.0000	2.0400e-003			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**0.0135**	**1.5513**	**1.5648**	**2.0400e-003**	**1.4411**	**1.4431**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

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	1.0400e-003	0.0346	5.8700e-003	1.1000e-004	4.2700e-003	1.1000e-004	4.3800e-003	1.1200e-003	1.1000e-004	1.2300e-003		11.0391	11.0391	5.1000e-004		11.0519
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
Worker	0.0596	0.0421	0.3861	1.1000e-003	0.1136	7.8000e-004	0.1144	0.0303	7.2000e-004	0.0310		109.2873	109.2873	2.8300e-003		109.3580
Total	**0.0607**	**0.0767**	**0.3920**	**1.2100e-003**	**0.1179**	**8.9000e-004**	**0.1188**	**0.0314**	**8.3000e-004**	**0.0323**		**120.3264**	**120.3264**	**3.3400e-003**		**120.4099**

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					0.0300	0.0000	0.0300	4.5400e-003	0.0000	4.5400e-003			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**	**0.0300**	**1.2427**	**1.2726**	**4.5400e-003**	**1.1553**	**1.1598**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

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	9.7000e-004	0.0316	5.6600e-003	1.0000e-004	3.7700e-003	1.0000e-004	3.8600e-003	9.9000e-004	9.0000e-005	1.0800e-003		10.8975	10.8975	4.9000e-004		10.9097
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
Worker	0.0554	0.0376	0.3516	1.0600e-003	0.1232	7.6000e-004	0.1240	0.0327	7.0000e-004	0.0334		105.4035	105.4035	2.5200e-003		105.4666
Total	**0.0563**	**0.0693**	**0.3572**	**1.1600e-003**	**0.1270**	**8.6000e-004**	**0.1278**	**0.0337**	**7.9000e-004**	**0.0345**		**116.3010**	**116.3010**	**3.0100e-003**		**116.3763**

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					0.0135	0.0000	0.0135	2.0400e-003	0.0000	2.0400e-003			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.0135**	**1.2427**	**1.2562**	**2.0400e-003**	**1.1553**	**1.1573**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

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	9.7000e-004	0.0316	5.6600e-003	1.0000e-004	3.4800e-003	1.0000e-004	3.5800e-003	9.2000e-004	9.0000e-005	1.0100e-003		10.8975	10.8975	4.9000e-004		10.9097
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
Worker	0.0554	0.0376	0.3516	1.0600e-003	0.1136	7.6000e-004	0.1143	0.0303	7.0000e-004	0.0310		105.4035	105.4035	2.5200e-003		105.4666
Total	**0.0563**	**0.0693**	**0.3572**	**1.1600e-003**	**0.1171**	**8.6000e-004**	**0.1179**	**0.0312**	**7.9000e-004**	**0.0320**		**116.3010**	**116.3010**	**3.0100e-003**		**116.3763**

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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			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**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

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
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
Worker	0.0664	0.0452	0.4219	1.2700e-003	0.1479	9.1000e-004	0.1488	0.0392	8.4000e-004	0.0401		126.4842	126.4842	3.0300e-003		126.5600
Total	**0.0664**	**0.0452**	**0.4219**	**1.2700e-003**	**0.1479**	**9.1000e-004**	**0.1488**	**0.0392**	**8.4000e-004**	**0.0401**		**126.4842**	**126.4842**	**3.0300e-003**		**126.5600**

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					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.061 9	3,686.061 9	1.1922		3,715.865 5
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**8.1298**	**1.6126**	**9.7424**	**4.4688**	**1.4836**	**5.9524**	**0.0000**	**3,686.061 9**	**3,686.061 9**	**1.1922**		**3,715.865 5**

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
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
Worker	0.0664	0.0452	0.4219	1.2700e-003	0.1363	9.1000e-004	0.1372	0.0364	8.4000e-004	0.0372		126.4842	126.4842	3.0300e-003		126.5600
Total	**0.0664**	**0.0452**	**0.4219**	**1.2700e-003**	**0.1363**	**9.1000e-004**	**0.1372**	**0.0364**	**8.4000e-004**	**0.0372**		**126.4842**	**126.4842**	**3.0300e-003**		**126.5600**

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			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**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

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
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
Worker	0.0738	0.0502	0.4687	1.4100e-003	0.1643	1.0100e-003	0.1653	0.0436	9.3000e-004	0.0445		140.5380	140.5380	3.3700e-003		140.6222
Total	**0.0738**	**0.0502**	**0.4687**	**1.4100e-003**	**0.1643**	**1.0100e-003**	**0.1653**	**0.0436**	**9.3000e-004**	**0.0445**		**140.5380**	**140.5380**	**3.3700e-003**		**140.6222**

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					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**3.9030**	**1.6349**	**5.5379**	**1.6184**	**1.5041**	**3.1225**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

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
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
Worker	0.0738	0.0502	0.4687	1.4100e-003	0.1514	1.0100e-003	0.1525	0.0404	9.3000e-004	0.0414		140.5380	140.5380	3.3700e-003		140.6222
Total	**0.0738**	**0.0502**	**0.4687**	**1.4100e-003**	**0.1514**	**1.0100e-003**	**0.1525**	**0.0404**	**9.3000e-004**	**0.0414**		**140.5380**	**140.5380**	**3.3700e-003**		**140.6222**

3.4 Grading - 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					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105		6,011.4777	6,011.4777	1.9442		6,060.0836
Total	**3.3217**	**34.5156**	**28.0512**	**0.0621**	**8.6733**	**1.4245**	**10.0978**	**3.5965**	**1.3105**	**4.9070**		**6,011.4777**	**6,011.4777**	**1.9442**		**6,060.0836**

3.4 Grading - 2023

Unmitigated Construction Off-Site

Category	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
	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
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
Worker	0.0687	0.0449	0.4263	1.3600e-003	0.1643	9.8000e-004	0.1653	0.0436	9.1000e-004	0.0445		135.3097	135.3097	3.0000e-003		135.3847
Total	**0.0687**	**0.0449**	**0.4263**	**1.3600e-003**	**0.1643**	**9.8000e-004**	**0.1653**	**0.0436**	**9.1000e-004**	**0.0445**		**135.3097**	**135.3097**	**3.0000e-003**		**135.3847**

Mitigated Construction On-Site

Category	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
	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	3.3217	34.5156	28.0512	0.0621		1.4245	1.4245		1.3105	1.3105	0.0000	6,011.4777	6,011.4777	1.9442		6,060.0836
Total	**3.3217**	**34.5156**	**28.0512**	**0.0621**	**3.9030**	**1.4245**	**5.3275**	**1.6184**	**1.3105**	**2.9290**	**0.0000**	**6,011.4777**	**6,011.4777**	**1.9442**		**6,060.0836**

3.4 Grading - 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
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
Worker	0.0687	0.0449	0.4263	1.3600e-003	0.1514	9.8000e-004	0.1524	0.0404	9.1000e-004	0.0413		135.3097	135.3097	3.0000e-003		135.3847
Total	**0.0687**	**0.0449**	**0.4263**	**1.3600e-003**	**0.1514**	**9.8000e-004**	**0.1524**	**0.0404**	**9.1000e-004**	**0.0413**		**135.3097**	**135.3097**	**3.0000e-003**		**135.3847**

3.4 Grading - 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					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286		6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**8.6733**	**1.3354**	**10.0087**	**3.5965**	**1.2286**	**4.8251**		**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

3.4 Grading - 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
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
Worker	0.0642	0.0404	0.3922	1.3000e-003	0.1643	9.6000e-004	0.1653	0.0436	8.8000e-004	0.0445		129.4972	129.4972	2.6800e-003		129.5641
Total	**0.0642**	**0.0404**	**0.3922**	**1.3000e-003**	**0.1643**	**9.6000e-004**	**0.1653**	**0.0436**	**8.8000e-004**	**0.0445**		**129.4972**	**129.4972**	**2.6800e-003**		**129.5641**

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					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	3.2181	32.3770	27.7228	0.0621		1.3354	1.3354		1.2286	1.2286	0.0000	6,009.7487	6,009.7487	1.9437		6,058.3405
Total	**3.2181**	**32.3770**	**27.7228**	**0.0621**	**3.9030**	**1.3354**	**5.2384**	**1.6184**	**1.2286**	**2.8470**	**0.0000**	**6,009.7487**	**6,009.7487**	**1.9437**		**6,058.3405**

3.4 Grading - 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
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
Worker	0.0642	0.0404	0.3922	1.3000e-003	0.1514	9.6000e-004	0.1524	0.0404	8.8000e-004	0.0413		129.4972	129.4972	2.6800e-003		129.5641
Total	**0.0642**	**0.0404**	**0.3922**	**1.3000e-003**	**0.1514**	**9.6000e-004**	**0.1524**	**0.0404**	**8.8000e-004**	**0.0413**		**129.4972**	**129.4972**	**2.6800e-003**		**129.5641**

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**

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
Vendor	0.3634	12.9115	2.9149	0.0438	1.1247	0.0134	1.1381	0.3238	0.0128	0.3367		4,589.565 6	4,589.565 6	0.2012		4,594.595 8
Worker	1.5962	1.0028	9.7461	0.0323	4.0827	0.0237	4.1065	1.0829	0.0219	1.1048		3,218.004 4	3,218.004 4	0.0666		3,219.668 8
Total	**1.9596**	**13.9143**	**12.6609**	**0.0761**	**5.2074**	**0.0372**	**5.2446**	**1.4068**	**0.0347**	**1.4415**		**7,807.569 9**	**7,807.569 9**	**0.2678**		**7,814.264 6**

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.698 9	2,555.698 9	0.6044		2,570.807 7
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.698 9**	**2,555.698 9**	**0.6044**		**2,570.807 7**

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
Vendor	0.3634	12.9115	2.9149	0.0438	1.0526	0.0134	1.0660	0.3061	0.0128	0.3190		4,589.5656	4,589.5656	0.2012		4,594.5958
Worker	1.5962	1.0028	9.7461	0.0323	3.7634	0.0237	3.7871	1.0046	0.0219	1.0264		3,218.0044	3,218.0044	0.0666		3,219.6688
Total	**1.9596**	**13.9143**	**12.6609**	**0.0761**	**4.8160**	**0.0372**	**4.8532**	**1.3107**	**0.0347**	**1.3454**		**7,807.5699**	**7,807.5699**	**0.2678**		**7,814.2646**

3.5 Building Construction - 2025

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2025

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
Vendor	0.3529	12.7913	2.7842	0.0435	1.1247	0.0132	1.1380	0.3238	0.0127	0.3365		4,558.316 8	4,558.316 8	0.1985		4,563.278 8
Worker	1.5005	0.9077	8.9745	0.0310	4.0827	0.0233	4.1060	1.0829	0.0214	1.1043		3,090.729 1	3,090.729 1	0.0601		3,092.230 9
Total	**1.8535**	**13.6990**	**11.7586**	**0.0745**	**5.2075**	**0.0365**	**5.2440**	**1.4068**	**0.0341**	**1.4408**		**7,649.045 9**	**7,649.045 9**	**0.2586**		**7,655.509 7**

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2025

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
Vendor	0.3529	12.7913	2.7842	0.0435	1.0526	0.0132	1.0659	0.3061	0.0127	0.3188		4,558.316 8	4,558.316 8	0.1985		4,563.278 8
Worker	1.5005	0.9077	8.9745	0.0310	3.7634	0.0233	3.7867	1.0046	0.0214	1.0260		3,090.729 1	3,090.729 1	0.0601		3,092.230 9
Total	**1.8535**	**13.6990**	**11.7586**	**0.0745**	**4.8160**	**0.0365**	**4.8525**	**1.3107**	**0.0341**	**1.3447**		**7,649.045 9**	**7,649.045 9**	**0.2586**		**7,655.509 7**

3.5 Building Construction - 2026

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2026

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
Vendor	0.3440	12.6705	2.6811	0.0433	1.1247	0.0131	1.1378	0.3238	0.0125	0.3363		4,530.061 5	4,530.061 5	0.1955		4,534.948 6
Worker	1.4183	0.8273	8.3906	0.0299	4.0827	0.0227	4.1055	1.0829	0.0209	1.1038		2,977.246 2	2,977.246 2	0.0549		2,978.618 1
Total	**1.7623**	**13.4978**	**11.0717**	**0.0731**	**5.2075**	**0.0358**	**5.2432**	**1.4068**	**0.0334**	**1.4401**		**7,507.307 6**	**7,507.307 6**	**0.2504**		**7,513.566 6**

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2026

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
Vendor	0.3440	12.6705	2.6811	0.0433	1.0526	0.0131	1.0657	0.3061	0.0125	0.3186		4,530.061 5	4,530.061 5	0.1955		4,534.948 6
Worker	1.4183	0.8273	8.3906	0.0299	3.7634	0.0227	3.7861	1.0046	0.0209	1.0255		2,977.246 2	2,977.246 2	0.0549		2,978.618 1
Total	**1.7623**	**13.4978**	**11.0717**	**0.0731**	**4.8160**	**0.0358**	**4.8518**	**1.3107**	**0.0334**	**1.3441**		**7,507.307 6**	**7,507.307 6**	**0.2504**		**7,513.566 6**

3.5 Building Construction - 2027

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2027

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
Vendor	0.3363	12.5489	2.5943	0.0430	1.1247	0.0129	1.1376	0.3238	0.0123	0.3361		4,505.1422	4,505.1422	0.1923		4,509.9501
Worker	1.3381	0.7555	7.7978	0.0288	4.0827	0.0216	4.1043	1.0829	0.0199	1.1028		2,876.0641	2,876.0641	0.0499		2,877.3111
Total	**1.6744**	**13.3045**	**10.3921**	**0.0719**	**5.2075**	**0.0345**	**5.2419**	**1.4068**	**0.0322**	**1.4389**		**7,381.2063**	**7,381.2063**	**0.2422**		**7,387.2611**

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2027

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
Vendor	0.3363	12.5489	2.5943	0.0430	1.0526	0.0129	1.0655	0.3061	0.0123	0.3184		4,505.1422	4,505.1422	0.1923		4,509.9501
Worker	1.3381	0.7555	7.7978	0.0288	3.7634	0.0216	3.7850	1.0046	0.0199	1.0244		2,876.0641	2,876.0641	0.0499		2,877.3111
Total	**1.6744**	**13.3045**	**10.3921**	**0.0719**	**4.8160**	**0.0345**	**4.8505**	**1.3107**	**0.0322**	**1.3428**		**7,381.2063**	**7,381.2063**	**0.2422**		**7,387.2611**

3.5 Building Construction - 2028

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2028

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
Vendor	0.3300	12.4583	2.5263	0.0428	1.1247	0.0127	1.1374	0.3238	0.0121	0.3360		4,485.378 1	4,485.378 1	0.1890		4,490.102 4
Worker	1.2553	0.6914	7.2791	0.0279	4.0827	0.0201	4.1029	1.0829	0.0185	1.1015		2,786.282 7	2,786.282 7	0.0456		2,787.422 0
Total	**1.5852**	**13.1498**	**9.8055**	**0.0708**	**5.2075**	**0.0328**	**5.2403**	**1.4068**	**0.0307**	**1.4374**		**7,271.660 8**	**7,271.660 8**	**0.2345**		**7,277.524 4**

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2028

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
Vendor	0.3300	12.4583	2.5263	0.0428	1.0526	0.0127	1.0653	0.3061	0.0121	0.3183		4,485.378 1	4,485.378 1	0.1890		4,490.102 4
Worker	1.2553	0.6914	7.2791	0.0279	3.7634	0.0201	3.7835	1.0046	0.0185	1.0231		2,786.282 7	2,786.282 7	0.0456		2,787.422 0
Total	**1.5852**	**13.1498**	**9.8055**	**0.0708**	**4.8160**	**0.0328**	**4.8489**	**1.3107**	**0.0307**	**1.3414**		**7,271.660 8**	**7,271.660 8**	**0.2345**		**7,277.524 4**

3.5 Building Construction - 2029

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2029

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
Vendor	0.3242	12.3677	2.4651	0.0427	1.1247	0.0125	1.1373	0.3238	0.0120	0.3358		4,467.941 7	4,467.941 7	0.1859		4,472.589 0
Worker	1.1683	0.6321	6.7865	0.0271	4.0827	0.0188	4.1015	1.0829	0.0173	1.1002		2,706.602 2	2,706.602 2	0.0415		2,707.639 8
Total	**1.4925**	**12.9997**	**9.2516**	**0.0698**	**5.2075**	**0.0313**	**5.2388**	**1.4068**	**0.0293**	**1.4360**		**7,174.543 9**	**7,174.543 9**	**0.2274**		**7,180.228 8**

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2029

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
Vendor	0.3242	12.3677	2.4651	0.0427	1.0526	0.0125	1.0652	0.3061	0.0120	0.3181		4,467.941 7	4,467.941 7	0.1859		4,472.589 0
Worker	1.1683	0.6321	6.7865	0.0271	3.7634	0.0188	3.7822	1.0046	0.0173	1.0218		2,706.602 2	2,706.602 2	0.0415		2,707.639 8
Total	**1.4925**	**12.9997**	**9.2516**	**0.0698**	**4.8160**	**0.0313**	**4.8473**	**1.3107**	**0.0293**	**1.3399**		**7,174.543 9**	**7,174.543 9**	**0.2274**		**7,180.228 8**

3.5 Building Construction - 2030

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.546 8	2,897.546 8	0.1162		2,900.452 9
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.546 8**	**2,897.546 8**	**0.1162**		**2,900.452 9**

3.5 Building Construction - 2030

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
Vendor	0.3195	12.2883	2.4181	0.0425	1.1247	0.0124	1.1371	0.3238	0.0119	0.3357		4,454.0319	4,454.0319	0.1831		4,458.6104
Worker	1.0812	0.5774	6.3389	0.0264	4.0827	0.0175	4.1002	1.0829	0.0161	1.0990		2,635.9627	2,635.9627	0.0378		2,636.9086
Total	**1.4008**	**12.8657**	**8.7570**	**0.0689**	**5.2075**	**0.0299**	**5.2374**	**1.4068**	**0.0280**	**1.4347**		**7,089.9946**	**7,089.9946**	**0.2210**		**7,095.5190**

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2030

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
Vendor	0.3195	12.2883	2.4181	0.0425	1.0526	0.0124	1.0650	0.3061	0.0119	0.3180		4,454.031 9	4,454.031 9	0.1831		4,458.610 4
Worker	1.0812	0.5774	6.3389	0.0264	3.7634	0.0175	3.7809	1.0046	0.0161	1.0207		2,635.962 7	2,635.962 7	0.0378		2,636.908 6
Total	**1.4008**	**12.8657**	**8.7570**	**0.0689**	**4.8160**	**0.0299**	**4.8459**	**1.3107**	**0.0280**	**1.3386**		**7,089.994 6**	**7,089.994 6**	**0.2210**		**7,095.519 0**

3.5 Building Construction - 2031

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.546 8	2,897.546 8	0.1162		2,900.452 9
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.546 8**	**2,897.546 8**	**0.1162**		**2,900.452 9**

3.5 Building Construction - 2031

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
Vendor	0.3159	12.2182	2.3826	0.0424	1.1247	0.0123	1.1370	0.3238	0.0117	0.3356		4,443.190 9	4,443.190 9	0.1805		4,447.702 6
Worker	0.9896	0.5252	5.9091	0.0258	4.0827	0.0163	4.0991	1.0829	0.0150	1.0979		2,573.528 0	2,573.528 0	0.0344		2,574.387 4
Total	**1.3055**	**12.7433**	**8.2917**	**0.0682**	**5.2075**	**0.0286**	**5.2360**	**1.4068**	**0.0267**	**1.4335**		**7,016.719 0**	**7,016.719 0**	**0.2148**		**7,022.089 9**

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.546 8	2,897.546 8	0.1162		2,900.452 9
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.546 8**	**2,897.546 8**	**0.1162**		**2,900.452 9**

3.5 Building Construction - 2031

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
Vendor	0.3159	12.2182	2.3826	0.0424	1.0526	0.0123	1.0649	0.3061	0.0117	0.3179		4,443.190 9	4,443.190 9	0.1805		4,447.702 6
Worker	0.9896	0.5252	5.9091	0.0258	3.7634	0.0163	3.7797	1.0046	0.0150	1.0196		2,573.528 0	2,573.528 0	0.0344		2,574.387 4
Total	**1.3055**	**12.7433**	**8.2917**	**0.0682**	**4.8160**	**0.0286**	**4.8446**	**1.3107**	**0.0267**	**1.3374**		**7,016.719 0**	**7,016.719 0**	**0.2148**		**7,022.089 9**

3.5 Building Construction - 2032

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.546 8	2,897.546 8	0.1162		2,900.452 9
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.546 8**	**2,897.546 8**	**0.1162**		**2,900.452 9**

3.5 Building Construction - 2032

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
Vendor	0.3131	12.1547	2.3591	0.0424	1.1247	0.0121	1.1369	0.3238	0.0116	0.3354		4,436.162 9	4,436.162 9	0.1782		4,440.618 1
Worker	0.9101	0.4811	5.5374	0.0252	4.0827	0.0152	4.0980	1.0829	0.0140	1.0969		2,518.827 7	2,518.827 7	0.0314		2,519.612 8
Total	**1.2232**	**12.6358**	**7.8965**	**0.0676**	**5.2075**	**0.0274**	**5.2348**	**1.4068**	**0.0256**	**1.4324**		**6,954.990 5**	**6,954.990 5**	**0.2096**		**6,960.230 9**

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.546 8	2,897.546 8	0.1162		2,900.452 9
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.546 8**	**2,897.546 8**	**0.1162**		**2,900.452 9**

3.5 Building Construction - 2032

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
Vendor	0.3131	12.1547	2.3591	0.0424	1.0526	0.0121	1.0648	0.3061	0.0116	0.3177		4,436.1629	4,436.1629	0.1782		4,440.6181
Worker	0.9101	0.4811	5.5374	0.0252	3.7634	0.0152	3.7786	1.0046	0.0140	1.0186		2,518.8277	2,518.8277	0.0314		2,519.6128
Total	**1.2232**	**12.6358**	**7.8965**	**0.0676**	**4.8160**	**0.0274**	**4.8434**	**1.3107**	**0.0256**	**1.3363**		**6,954.9905**	**6,954.9905**	**0.2096**		**6,960.2309**

3.5 Building Construction - 2033

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2033

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
Vendor	0.3112	12.0973	2.3416	0.0423	1.1247	0.0120	1.1368	0.3238	0.0115	0.3353		4,431.2023	4,431.2023	0.1761		4,435.6044
Worker	0.8409	0.4435	5.2147	0.0248	4.0827	0.0142	4.0970	1.0829	0.0131	1.0960		2,471.1264	2,471.1264	0.0288		2,471.8475
Total	**1.1520**	**12.5408**	**7.5563**	**0.0671**	**5.2075**	**0.0262**	**5.2337**	**1.4068**	**0.0246**	**1.4313**		**6,902.3287**	**6,902.3287**	**0.2049**		**6,907.4519**

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2033

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
Vendor	0.3112	12.0973	2.3416	0.0423	1.0527	0.0120	1.0647	0.3061	0.0115	0.3176		4,431.202 3	4,431.202 3	0.1761		4,435.604 4
Worker	0.8409	0.4435	5.2147	0.0248	3.7634	0.0142	3.7776	1.0046	0.0131	1.0176		2,471.126 4	2,471.126 4	0.0288		2,471.847 5
Total	**1.1520**	**12.5408**	**7.5563**	**0.0671**	**4.8160**	**0.0262**	**4.8423**	**1.3107**	**0.0246**	**1.3353**		**6,902.328 7**	**6,902.328 7**	**0.2049**		**6,907.451 9**

3.5 Building Construction - 2034

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481		2,897.546 8	2,897.546 8	0.1162		2,900.452 9
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**		**2,897.546 8**	**2,897.546 8**	**0.1162**		**2,900.452 9**

3.5 Building Construction - 2034

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
Vendor	0.3095	12.0457	2.3268	0.0423	1.1247	0.0119	1.1367	0.3238	0.0114	0.3352		4,428.1040	4,428.1040	0.1744		4,432.4630
Worker	0.7831	0.4125	4.9157	0.0243	4.0827	0.0133	4.0960	1.0829	0.0122	1.0952		2,429.6406	2,429.6406	0.0265		2,430.3033
Total	**1.0926**	**12.4582**	**7.2425**	**0.0666**	**5.2075**	**0.0252**	**5.2327**	**1.4068**	**0.0236**	**1.4304**		**6,857.7446**	**6,857.7446**	**0.2009**		**6,862.7664**

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	1.3091	7.9346	16.1570	0.0310		0.1481	0.1481		0.1481	0.1481	0.0000	2,897.5468	2,897.5468	0.1162		2,900.4529
Total	**1.3091**	**7.9346**	**16.1570**	**0.0310**		**0.1481**	**0.1481**		**0.1481**	**0.1481**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1162**		**2,900.4529**

3.5 Building Construction - 2034

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
Vendor	0.3095	12.0457	2.3268	0.0423	1.0527	0.0119	1.0646	0.3061	0.0114	0.3175		4,428.1040	4,428.1040	0.1744		4,432.4630
Worker	0.7831	0.4125	4.9157	0.0243	3.7634	0.0133	3.7767	1.0046	0.0122	1.0168		2,429.6406	2,429.6406	0.0265		2,430.3033
Total	**1.0926**	**12.4582**	**7.2425**	**0.0666**	**4.8160**	**0.0252**	**4.8412**	**1.3107**	**0.0236**	**1.3343**		**6,857.7446**	**6,857.7446**	**0.2009**		**6,862.7664**

3.5 Building Construction - 2035

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	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904		2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**		**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2035

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
Vendor	0.3080	11.9995	2.3149	0.0423	1.1248	0.0118	1.1366	0.3238	0.0113	0.3351		4,426.0482	4,426.0482	0.1728		4,430.3675
Worker	0.7330	0.3885	4.6600	0.0240	4.0827	0.0124	4.0952	1.0829	0.0114	1.0944		2,394.0771	2,394.0771	0.0245		2,394.6903
Total	**1.0410**	**12.3880**	**6.9749**	**0.0662**	**5.2075**	**0.0243**	**5.2317**	**1.4068**	**0.0227**	**1.4295**		**6,820.1254**	**6,820.1254**	**0.1973**		**6,825.0578**

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	1.2168	7.1613	16.1178	0.0310		0.0904	0.0904		0.0904	0.0904	0.0000	2,897.5468	2,897.5468	0.1079		2,900.2448
Total	**1.2168**	**7.1613**	**16.1178**	**0.0310**		**0.0904**	**0.0904**		**0.0904**	**0.0904**	**0.0000**	**2,897.5468**	**2,897.5468**	**0.1079**		**2,900.2448**

3.5 Building Construction - 2035

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
Vendor	0.3080	11.9995	2.3149	0.0423	1.0527	0.0118	1.0645	0.3061	0.0113	0.3174		4,426.048 2	4,426.048 2	0.1728		4,430.367 5
Worker	0.7330	0.3885	4.6600	0.0240	3.7634	0.0124	3.7758	1.0046	0.0114	1.0160		2,394.077 1	2,394.077 1	0.0245		2,394.690 3
Total	**1.0410**	**12.3880**	**6.9749**	**0.0662**	**4.8160**	**0.0243**	**4.8403**	**1.3107**	**0.0227**	**1.3334**		**6,820.125 4**	**6,820.125 4**	**0.1973**		**6,825.057 8**

3.6 Paving - 2035

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	1.1405	4.8761	15.8203	0.0281		0.1874	0.1874		0.1874	0.1874		2,656.516 8	2,656.516 8	0.1022		2,659.072 7
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1405**	**4.8761**	**15.8203**	**0.0281**		**0.1874**	**0.1874**		**0.1874**	**0.1874**		**2,656.516 8**	**2,656.516 8**	**0.1022**		**2,659.072 7**

3.6 Paving - 2035

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
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
Worker	0.0221	0.0117	0.1406	7.2000e-004	0.1232	3.8000e-004	0.1236	0.0327	3.5000e-004	0.0330		72.2559	72.2559	7.4000e-004		72.2744
Total	**0.0221**	**0.0117**	**0.1406**	**7.2000e-004**	**0.1232**	**3.8000e-004**	**0.1236**	**0.0327**	**3.5000e-004**	**0.0330**		**72.2559**	**72.2559**	**7.4000e-004**		**72.2744**

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	1.1405	4.8761	15.8203	0.0281		0.1874	0.1874		0.1874	0.1874	0.0000	2,656.5168	2,656.5168	0.1022		2,659.0726
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1405**	**4.8761**	**15.8203**	**0.0281**		**0.1874**	**0.1874**		**0.1874**	**0.1874**	**0.0000**	**2,656.5168**	**2,656.5168**	**0.1022**		**2,659.0726**

3.6 Paving - 2035

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
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
Worker	0.0221	0.0117	0.1406	7.2000e-004	0.1136	3.8000e-004	0.1140	0.0303	3.5000e-004	0.0307		72.2559	72.2559	7.4000e-004		72.2744
Total	**0.0221**	**0.0117**	**0.1406**	**7.2000e-004**	**0.1136**	**3.8000e-004**	**0.1140**	**0.0303**	**3.5000e-004**	**0.0307**		**72.2559**	**72.2559**	**7.4000e-004**		**72.2744**

3.6 Paving - 2036

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	1.1405	4.8761	15.8203	0.0281		0.1874	0.1874		0.1874	0.1874		2,656.5168	2,656.5168	0.1022		2,659.0727
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1405**	**4.8761**	**15.8203**	**0.0281**		**0.1874**	**0.1874**		**0.1874**	**0.1874**		**2,656.5168**	**2,656.5168**	**0.1022**		**2,659.0727**

3.6 Paving - 2036

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
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
Worker	0.0221	0.0117	0.1406	7.2000e-004	0.1232	3.8000e-004	0.1236	0.0327	3.5000e-004	0.0330		72.2559	72.2559	7.4000e-004		72.2744
Total	**0.0221**	**0.0117**	**0.1406**	**7.2000e-004**	**0.1232**	**3.8000e-004**	**0.1236**	**0.0327**	**3.5000e-004**	**0.0330**		**72.2559**	**72.2559**	**7.4000e-004**		**72.2744**

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	1.1405	4.8761	15.8203	0.0281		0.1874	0.1874		0.1874	0.1874	0.0000	2,656.516 8	2,656.516 8	0.1022		2,659.072 6
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1405**	**4.8761**	**15.8203**	**0.0281**		**0.1874**	**0.1874**		**0.1874**	**0.1874**	**0.0000**	**2,656.516 8**	**2,656.516 8**	**0.1022**		**2,659.072 6**

3.6 Paving - 2036

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
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
Worker	0.0221	0.0117	0.1406	7.2000e-004	0.1136	3.8000e-004	0.1140	0.0303	3.5000e-004	0.0307		72.2559	72.2559	7.4000e-004		72.2744
Total	**0.0221**	**0.0117**	**0.1406**	**7.2000e-004**	**0.1136**	**3.8000e-004**	**0.1140**	**0.0303**	**3.5000e-004**	**0.0307**		**72.2559**	**72.2559**	**7.4000e-004**		**72.2744**

3.7 Architectural Coating - 2036

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	95.2624					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1179	0.7577	1.7943	2.9700e-003		9.9000e-003	9.9000e-003		9.9000e-003	9.9000e-003		281.4481	281.4481	0.0104		281.7081
Total	**95.3802**	**0.7577**	**1.7943**	**2.9700e-003**		**9.9000e-003**	**9.9000e-003**		**9.9000e-003**	**9.9000e-003**		**281.4481**	**281.4481**	**0.0104**		**281.7081**

3.7 Architectural Coating - 2036

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
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
Worker	0.1460	0.0774	0.9283	4.7700e-003	0.8133	2.4800e-003	0.8157	0.2157	2.2800e-003	0.2180		476.8886	476.8886	4.8900e-003		477.0107
Total	**0.1460**	**0.0774**	**0.9283**	**4.7700e-003**	**0.8133**	**2.4800e-003**	**0.8157**	**0.2157**	**2.2800e-003**	**0.2180**		**476.8886**	**476.8886**	**4.8900e-003**		**477.0107**

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	95.2624					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1179	0.7577	1.7943	2.9700e-003		9.9000e-003	9.9000e-003		9.9000e-003	9.9000e-003	0.0000	281.4481	281.4481	0.0104		281.7081
Total	**95.3802**	**0.7577**	**1.7943**	**2.9700e-003**		**9.9000e-003**	**9.9000e-003**		**9.9000e-003**	**9.9000e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0104**		**281.7081**

3.7 Architectural Coating - 2036

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
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
Worker	0.1460	0.0774	0.9283	4.7700e-003	0.7497	2.4800e-003	0.7521	0.2001	2.2800e-003	0.2024		476.8886	476.8886	4.8900e-003		477.0107
Total	**0.1460**	**0.0774**	**0.9283**	**4.7700e-003**	**0.7497**	**2.4800e-003**	**0.7521**	**0.2001**	**2.2800e-003**	**0.2024**		**476.8886**	**476.8886**	**4.8900e-003**		**477.0107**

3.7 Architectural Coating - 2037

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	95.2624					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1179	0.7577	1.7943	2.9700e-003		9.9000e-003	9.9000e-003		9.9000e-003	9.9000e-003		281.4481	281.4481	0.0104		281.7081
Total	**95.3802**	**0.7577**	**1.7943**	**2.9700e-003**		**9.9000e-003**	**9.9000e-003**		**9.9000e-003**	**9.9000e-003**		**281.4481**	**281.4481**	**0.0104**		**281.7081**

3.7 Architectural Coating - 2037

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
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
Worker	0.1460	0.0774	0.9283	4.7700e-003	0.8133	2.4800e-003	0.8157	0.2157	2.2800e-003	0.2180		476.8886	476.8886	4.8900e-003		477.0107
Total	**0.1460**	**0.0774**	**0.9283**	**4.7700e-003**	**0.8133**	**2.4800e-003**	**0.8157**	**0.2157**	**2.2800e-003**	**0.2180**		**476.8886**	**476.8886**	**4.8900e-003**		**477.0107**

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	95.2624					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1179	0.7577	1.7943	2.9700e-003		9.9000e-003	9.9000e-003		9.9000e-003	9.9000e-003	0.0000	281.4481	281.4481	0.0104		281.7081
Total	**95.3802**	**0.7577**	**1.7943**	**2.9700e-003**		**9.9000e-003**	**9.9000e-003**		**9.9000e-003**	**9.9000e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0104**		**281.7081**

3.7 Architectural Coating - 2037

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
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
Worker	0.1460	0.0774	0.9283	4.7700e-003	0.7497	2.4800e-003	0.7521	0.2001	2.2800e-003	0.2024		476.8886	476.8886	4.8900e-003		477.0107
Total	**0.1460**	**0.0774**	**0.9283**	**4.7700e-003**	**0.7497**	**2.4800e-003**	**0.7521**	**0.2001**	**2.2800e-003**	**0.2024**		**476.8886**	**476.8886**	**4.8900e-003**		**477.0107**

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	7.6578	60.8614	92.3810	0.4779	48.0597	0.2777	48.3374	12.8376	0.2589	13.0966		48,725.5645	48,725.5645	1.8069		48,770.7380
Unmitigated	7.6578	60.8614	92.3810	0.4779	48.0597	0.2777	48.3374	12.8376	0.2589	13.0966		48,725.5645	48,725.5645	1.8069		48,770.7380

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Single Family Housing	7,806.88	7,806.88	7806.88	22,622,908	22,622,908
Total	7,806.88	7,806.88	7,806.88	22,622,908	22,622,908

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
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Single Family Housing	10.80	7.30	7.50	45.60	19.00	35.40	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.581437	0.032303	0.190969	0.100551	0.011057	0.003880	0.015441	0.056216	0.001173	0.001204	0.004639	0.000578	0.000551
Single Family Housing	0.581437	0.032303	0.190969	0.100551	0.011057	0.003880	0.015441	0.056216	0.001173	0.001204	0.004639	0.000578	0.000551

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	0.6313	5.3944	2.2955	0.0344		0.4361	0.4361		0.4361	0.4361		6,886.4750	6,886.4750	0.1320	0.1263	6,927.3979
NaturalGas Unmitigated	0.6313	5.3944	2.2955	0.0344		0.4361	0.4361		0.4361	0.4361		6,886.4750	6,886.4750	0.1320	0.1263	6,927.3979

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					
City Park	0	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
Single Family Housing	58535	0.6313	5.3944	2.2955	0.0344		0.4361	0.4361		0.4361	0.4361		6,886.4750	6,886.4750	0.1320	0.1263	6,927.3979
Total		**0.6313**	**5.3944**	**2.2955**	**0.0344**		**0.4361**	**0.4361**		**0.4361**	**0.4361**		**6,886.4750**	**6,886.4750**	**0.1320**	**0.1263**	**6,927.3979**

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					
City Park	0	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
Single Family Housing	58.535	0.6313	5.3944	2.2955	0.0344		0.4361	0.4361		0.4361	0.4361		6,886.4750	6,886.4750	0.1320	0.1263	6,927.3979
Total		**0.6313**	**5.3944**	**2.2955**	**0.0344**		**0.4361**	**0.4361**		**0.4361**	**0.4361**		**6,886.4750**	**6,886.4750**	**0.1320**	**0.1263**	**6,927.3979**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	39.6578	0.7845	68.0494	3.6000e-003		0.3784	0.3784		0.3784	0.3784	0.0000	122.8551	122.8551	0.1171	0.0000	125.7815
Unmitigated	39.6578	0.7845	68.0494	3.6000e-003		0.3784	0.3784		0.3784	0.3784	0.0000	122.8551	122.8551	0.1171	0.0000	125.7815

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	5.7418					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	31.8805					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	2.0355	0.7845	68.0494	3.6000e-003		0.3784	0.3784		0.3784	0.3784		122.8551	122.8551	0.1171		125.7815
Total	**39.6578**	**0.7845**	**68.0494**	**3.6000e-003**		**0.3784**	**0.3784**		**0.3784**	**0.3784**	**0.0000**	**122.8551**	**122.8551**	**0.1171**	**0.0000**	**125.7815**

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	5.7418					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	31.8805					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	2.0355	0.7845	68.0494	3.6000e-003		0.3784	0.3784		0.3784	0.3784		122.8551	122.8551	0.1171		125.7815
Total	**39.6578**	**0.7845**	**68.0494**	**3.6000e-003**		**0.3784**	**0.3784**		**0.3784**	**0.3784**	**0.0000**	**122.8551**	**122.8551**	**0.1171**	**0.0000**	**125.7815**

7.0 Water Detail

7.1 Mitigation Measures Water

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

APPENDIX B.3

Energy Consumption Estimates

EMFAC2017 (v1.0.2) Emissions Inventory
Region Type: County
Region: SAN JOAQUIN
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in the unit is operation day.

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption	**MPG**		
SAN JOAQUIN	2021	All Other Buses	Aggregated	Aggregated	DSL	69.64362884	3798.176602	585.0064823	0.433923467	**8.753103**		
SAN JOAQUIN	2021	LDA	Aggregated	Aggregated	GAS	286267.8223	11331154.17	1340711.479	369.880954	**30.6346**		
SAN JOAQUIN	2021	LDA	Aggregated	Aggregated	DSL	2226.814274	94152.13382	10574.47042	1.916141145	**49.13632**		
SAN JOAQUIN	2021	LDA	Aggregated	Aggregated	ELEC	3716.128485	145672.723	18655.36486	0			
SAN JOAQUIN	2021	LDT1	Aggregated	Aggregated	GAS	29154.07954	1025942.82	131402.2718	39.08987559	**26.24574**		
SAN JOAQUIN	2021	LDT1	Aggregated	Aggregated	DSL	24.7964189	441.5487246	85.78495419	0.018855057	**23.41805**		
SAN JOAQUIN	2021	LDT1	Aggregated	Aggregated	ELEC	96.9868293	3961.982168	492.4093528	0			
SAN JOAQUIN	2021	LDT2	Aggregated	Aggregated	GAS	93274.26907	3447688.028	430889.5144	142.9035653	**24.12598**		
SAN JOAQUIN	2021	LDT2	Aggregated	Aggregated	DSL	436.8525286	19843.57826	2148.405137	0.545866223	**36.35246**		
SAN JOAQUIN	2021	LDT2	Aggregated	Aggregated	ELEC	566.6785511	18259.36084	2871.386235	0			
SAN JOAQUIN	2021	LHD1	Aggregated	Aggregated	GAS	7966.254064	254686.7324	118685.3158	30.77208736	**8.27655**		
SAN JOAQUIN	2021	LHD1	Aggregated	Aggregated	DSL	8686.179642	288255.8686	109261.2127	16.3340585	**17.64753**		
SAN JOAQUIN	2021	LHD2	Aggregated	Aggregated	GAS	1062.066033	34784.66034	15823.20141	4.799249116	**7.247938**		
SAN JOAQUIN	2021	LHD2	Aggregated	Aggregated	DSL	2690.250305	93304.09058	33839.9645	5.908215081	**15.79226**		
SAN JOAQUIN	2021	MCY	Aggregated	Aggregated	GAS	13653.72518	101089.2873	27307.45037	2.720599198	**37.15699**		
SAN JOAQUIN	2021	MDV	Aggregated	Aggregated	GAS	91099.84328	2958779.364	411208.0578	153.5234997	**19.27249**		
SAN JOAQUIN	2021	MDV	Aggregated	Aggregated	DSL	1618.986421	66498.02606	7829.273778	2.51045655	**26.48842**		
SAN JOAQUIN	2021	MDV	Aggregated	Aggregated	ELEC	242.501609	8104.209822	1243.39086	0			
SAN JOAQUIN	2021	MH	Aggregated	Aggregated	GAS	1671.099052	13538.81777	167.1767492	2.874734355	**4.709589**		
SAN JOAQUIN	2021	MH	Aggregated	Aggregated	DSL	642.9095317	5406.775948	64.29095317	0.560468293	**9.64689**		
SAN JOAQUIN	2021	Motor Coach	Aggregated	Aggregated	DSL	20.26764279	2634.778672	295.9075848	0.421287109	**6.254117**		
SAN JOAQUIN	2021	OBUS	Aggregated	Aggregated	GAS	195.7409415	9310.146416	3916.384757	1.98898918	**4.680843**		
SAN JOAQUIN	2021	PTO	Aggregated	Aggregated	DSL	0	11686.88863	0	2.419169717	**4.83095**		
SAN JOAQUIN	2021	SBUS	Aggregated	Aggregated	GAS	41.68573532	2131.992934	166.7429413	0.227144021	**9.386084**		
SAN JOAQUIN	2021	SBUS	Aggregated	Aggregated	DSL	615.0183776	19430.40721	7097.226808	2.454444902	**7.916416**	**MHD**	
SAN JOAQUIN	2021	T6 Ag	Aggregated	Aggregated	DSL	91.35208547	1118.959516	401.9491761	0.124660736	**8.976038**	**8.984753**	
SAN JOAQUIN	2021	T6 CAIRP heavy	Aggregated	Aggregated	DSL	102.9308945	20247.91576	1502.79106	1.836577303	**11.02481**		
SAN JOAQUIN	2021	T6 CAIRP small	Aggregated	Aggregated	DSL	54.57391475	2861.739008	796.7791554	0.275737978	**10.37847**		
SAN JOAQUIN	2021	T6 instate constructio	Aggregated	Aggregated	DSL	289.3367577	19688.86951	1308.080232	2.450024844	**8.036192**		
SAN JOAQUIN	2021	T6 instate constructio	Aggregated	Aggregated	DSL	1516.329948	78458.90418	6855.268738	9.698846242	**8.089509**		
SAN JOAQUIN	2021	T6 instate heavy	Aggregated	Aggregated	DSL	1391.016683	164000.3379	16052.13967	17.36742296	**9.442986**		
SAN JOAQUIN	2021	T6 instate small	Aggregated	Aggregated	DSL	2799.131567	131067.3136	32301.59019	14.22689859	**9.212641**		
SAN JOAQUIN	2021	T6 OOS heavy	Aggregated	Aggregated	DSL	58.66500303	11625.3574	856.5090442	1.053429361	**11.03573**		
SAN JOAQUIN	2021	T6 OOS small	Aggregated	Aggregated	DSL	31.50965711	1636.402664	460.0409939	0.15789015	**10.36418**		
SAN JOAQUIN	2021	T6 Public	Aggregated	Aggregated	DSL	476.9983519	7598.49004	1446.894999	1.016600354	**7.474412**		
SAN JOAQUIN	2021	T6 utility	Aggregated	Aggregated	DSL	75.9700855	1278.477629	873.6559833	0.141986219	**9.004237**		
SAN JOAQUIN	2021	T6TS	Aggregated	Aggregated	GAS	558.9020249	29141.79999	11182.51171	6.099389397	**4.777823**	**HHD**	
SAN JOAQUIN	2021	T7 Ag	Aggregated	Aggregated	DSL	63.09921483	908.1025101	277.6365453	0.15835692	**5.73453**	**5.380834**	
SAN JOAQUIN	2021	T7 CAIRP	Aggregated	Aggregated	DSL	1484.277133	263585.597	21670.44614	39.57415851	**6.660548**		
SAN JOAQUIN	2021	T7 CAIRP construction	Aggregated	Aggregated	DSL	78.26736153	14142.686	353.8436984	2.458768859	**5.751938**		
SAN JOAQUIN	2021	T7 NNOOS	Aggregated	Aggregated	DSL	1601.854981	321331.1539	23387.08272	46.44161833	**6.919034**		
SAN JOAQUIN	2021	T7 NOOS	Aggregated	Aggregated	DSL	582.7832344	103558.3637	8508.635223	15.91313993	**6.507727**		
SAN JOAQUIN	2021	T7 other port	Aggregated	Aggregated	DSL	30.1346366	4810.716206	229.0232382	0.879814201	**5.467877**		
SAN JOAQUIN	2021	T7 POAK	Aggregated	Aggregated	DSL	159.2362607	18312.223	1210.195581	3.501866933	**5.229274**		
SAN JOAQUIN	2021	T7 POLA	Aggregated	Aggregated	DSL	141.2496883	17744.33851	1073.497631	3.409280904	**5.204716**		
SAN JOAQUIN	2021	T7 Public	Aggregated	Aggregated	DSL	478.1302497	9675.878524	1450.328423	1.824298002	**5.303891**		
SAN JOAQUIN	2021	T7 Single	Aggregated	Aggregated	DSL	849.4934503	58857.50716	9803.036638	9.680324065	**6.080117**		
SAN JOAQUIN	2021	T7 single construction	Aggregated	Aggregated	DSL	498.9874784	35085.40269	2255.902989	6.602419541	**5.314022**		
SAN JOAQUIN	2021	T7 SWCV	Aggregated	Aggregated	DSL	225.3362121	9190.993454	878.811227	3.706396195	**2.479766**		
SAN JOAQUIN	2021	T7 SWCV	Aggregated	Aggregated	NG	34.66386001	1413.537849	135.189054	0.613070391	**2.30567**		
SAN JOAQUIN	2021	T7 tractor	Aggregated	Aggregated	DSL	2787.655008	381099.8208	35403.2186	52.92700705	**7.200479**		
SAN JOAQUIN	2021	T7 tractor constructio	Aggregated	Aggregated	DSL	416.6841119	28942.36827	1883.812669	5.485850939	**5.275821**		
SAN JOAQUIN	2021	T7 utility	Aggregated	Aggregated	DSL	19.88620819	403.4595405	228.6913942	0.068633937	**5.878426**		
SAN JOAQUIN	2021	T7IS	Aggregated	Aggregated	GAS	2.006552531	196.6053117	40.14710304	0.047256986	**4.160344**		
SAN JOAQUIN	2021	UBUS	Aggregated	Aggregated	GAS	15.84914115	1442.965721	63.3965646	0.312746036	**4.613858**		
SAN JOAQUIN	2021	UBUS	Aggregated	Aggregated	DSL	64.04919124	5071.660773	256.196765	0.717472632	**7.068786**		
SAN JOAQUIN	2021	UBUS	Aggregated	Aggregated	ELEC	2.042727277	124.318219	8.170909109	0			
SAN JOAQUIN	2021	UBUS	Aggregated	Aggregated	NG	106.2074629	6765.746654	424.8298518	1.37346578	**4.926039**		

EMFAC2017 (v1.0.2) Emissions Inventory
Region Type: County
Region: SAN JOAQUIN
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in the unit is operation day.

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption	MPG	
SAN JOAQUIN	2021	All Other Buses	Aggregated	Aggregated	DSL	69.64362884	3798.176602	585.0064823	0.433923467	**8.753103**	
SAN JOAQUIN	2021	LDA	Aggregated	Aggregated	GAS	286267.8223	11331154.17	1340711.479	369.880954	**30.6346**	
SAN JOAQUIN	2021	LDA	Aggregated	Aggregated	DSL	2226.814274	94152.13382	10574.47042	1.916141145	**49.13632**	
SAN JOAQUIN	2021	LDA	Aggregated	Aggregated	ELEC	3716.128485	145672.723	18655.36486	0		
SAN JOAQUIN	2021	LDT1	Aggregated	Aggregated	GAS	29154.07954	1025942.82	131402.2718	39.08987559	**26.24574**	
SAN JOAQUIN	2021	LDT1	Aggregated	Aggregated	DSL	24.7964189	441.5487246	85.78495419	0.018855057	**23.41805**	
SAN JOAQUIN	2021	LDT1	Aggregated	Aggregated	ELEC	96.9868293	3961.982168	492.4093528	0		
SAN JOAQUIN	2021	LDT2	Aggregated	Aggregated	GAS	93274.26907	3447688.028	430889.5144	142.9035653	**24.12598**	
SAN JOAQUIN	2021	LDT2	Aggregated	Aggregated	DSL	436.8525286	19843.57826	2148.405137	0.545866223	**36.35246**	
SAN JOAQUIN	2021	LDT2	Aggregated	Aggregated	ELEC	566.6785511	18259.36084	2871.386235	0		
SAN JOAQUIN	2021	LHD1	Aggregated	Aggregated	GAS	7966.254064	254686.7324	118685.3158	30.77208736	**8.27655**	
SAN JOAQUIN	2021	LHD1	Aggregated	Aggregated	DSL	8686.179642	288255.8686	109261.2127	16.3340585	**17.64753**	
SAN JOAQUIN	2021	LHD2	Aggregated	Aggregated	GAS	1062.066033	34784.66034	15823.20141	4.799249116	**7.247938**	
SAN JOAQUIN	2021	LHD2	Aggregated	Aggregated	DSL	2690.250305	93304.09058	33839.9645	5.908215081	**15.79226**	
SAN JOAQUIN	2021	MCY	Aggregated	Aggregated	GAS	13653.72518	101089.2873	27307.45037	2.720599198	**37.15699**	
SAN JOAQUIN	2021	MDV	Aggregated	Aggregated	GAS	91099.84328	2958779.364	411208.0578	153.5234997	**19.27249**	
SAN JOAQUIN	2021	MDV	Aggregated	Aggregated	DSL	1618.986421	66498.02606	7829.273778	2.51045655	**26.48842**	
SAN JOAQUIN	2021	MDV	Aggregated	Aggregated	ELEC	242.501609	8104.209822	1243.39086	0		
SAN JOAQUIN	2021	MH	Aggregated	Aggregated	GAS	1671.099052	13538.81777	167.1767492	2.874734355	**4.709589**	
SAN JOAQUIN	2021	MH	Aggregated	Aggregated	DSL	642.9095317	5406.775948	64.29095317	0.560468293	**9.64689**	
SAN JOAQUIN	2021	Motor Coach	Aggregated	Aggregated	DSL	20.26764279	2634.778672	295.9075848	0.421287109	**6.254117**	
SAN JOAQUIN	2021	OBUS	Aggregated	Aggregated	GAS	195.7409415	9310.146416	3916.384757	1.98898918	**4.680843**	
SAN JOAQUIN	2021	PTO	Aggregated	Aggregated	DSL	0	11686.88863	0	2.419169717	**4.83095**	
SAN JOAQUIN	2021	SBUS	Aggregated	Aggregated	GAS	41.68573532	2131.992934	166.7429413	0.227144021	**9.386084**	
SAN JOAQUIN	2021	SBUS	Aggregated	Aggregated	DSL	615.0183776	19430.40721	7097.226808	2.454444902	**7.916416**	**MHD**
SAN JOAQUIN	2021	T6 Ag	Aggregated	Aggregated	DSL	91.35208547	1118.959516	401.9491761	0.124660736	**8.976038**	**8.984753**
SAN JOAQUIN	2021	T6 CAIRP heavy	Aggregated	Aggregated	DSL	102.9308945	20247.91576	1502.79106	1.836577303	**11.02481**	
SAN JOAQUIN	2021	T6 CAIRP small	Aggregated	Aggregated	DSL	54.57391475	2861.739008	796.7791554	0.275737978	**10.37847**	
SAN JOAQUIN	2021	T6 instate construction h	Aggregated	Aggregated	DSL	289.3367577	19688.86951	1308.080232	2.450024844	**8.036192**	
SAN JOAQUIN	2021	T6 instate construction s	Aggregated	Aggregated	DSL	1516.329948	78458.90418	6855.268738	9.698846242	**8.089509**	
SAN JOAQUIN	2021	T6 instate heavy	Aggregated	Aggregated	DSL	1391.016683	164000.3379	16052.13967	17.36742296	**9.442986**	
SAN JOAQUIN	2021	T6 instate small	Aggregated	Aggregated	DSL	2799.131567	131067.3136	32301.59019	14.22689859	**9.212641**	
SAN JOAQUIN	2021	T6 OOS heavy	Aggregated	Aggregated	DSL	58.66500303	11625.3574	856.5090442	1.053429361	**11.03573**	
SAN JOAQUIN	2021	T6 OOS small	Aggregated	Aggregated	DSL	31.50965711	1636.402664	460.0409939	0.15789015	**10.36418**	
SAN JOAQUIN	2021	T6 Public	Aggregated	Aggregated	DSL	476.9983519	7598.49004	1446.894999	1.016600354	**7.474412**	
SAN JOAQUIN	2021	T6 utility	Aggregated	Aggregated	DSL	75.9700855	1278.477629	873.6559833	0.141986219	**9.004237**	
SAN JOAQUIN	2021	T6TS	Aggregated	Aggregated	GAS	558.9020249	29141.79999	11182.51171	6.099389397	**4.777823**	**HHD**
SAN JOAQUIN	2021	T7 Ag	Aggregated	Aggregated	DSL	63.09921483	908.1025101	277.6365453	0.15835692	**5.73453**	**5.573032**
SAN JOAQUIN	2021	T7 CAIRP	Aggregated	Aggregated	DSL	1484.277133	263585.597	21670.44614	39.57415851	**6.660548**	
SAN JOAQUIN	2021	T7 CAIRP construction	Aggregated	Aggregated	DSL	78.26736153	14142.686	353.8436984	2.458768859	**5.751938**	
SAN JOAQUIN	2021	T7 NNOOS	Aggregated	Aggregated	DSL	1601.854981	321331.1539	23387.08272	46.44161833	**6.919034**	
SAN JOAQUIN	2021	T7 NOOS	Aggregated	Aggregated	DSL	582.7832344	103558.3637	8508.635223	15.91313993	**6.507727**	
SAN JOAQUIN	2021	T7 other port	Aggregated	Aggregated	DSL	30.1346366	4810.716206	229.0232382	0.879814201	**5.467877**	
SAN JOAQUIN	2021	T7 POAK	Aggregated	Aggregated	DSL	159.2362607	18312.223	1210.195581	3.501866933	**5.229274**	
SAN JOAQUIN	2021	T7 POLA	Aggregated	Aggregated	DSL	141.2496883	17744.33851	1073.497631	3.409280904	**5.204716**	
SAN JOAQUIN	2021	T7 Public	Aggregated	Aggregated	DSL	478.1302497	9675.878524	1450.328423	1.824298002	**5.303891**	
SAN JOAQUIN	2021	T7 Single	Aggregated	Aggregated	DSL	849.4934503	58857.50716	9803.036638	9.680324065	**6.080117**	
SAN JOAQUIN	2021	T7 single construction	Aggregated	Aggregated	DSL	498.9874784	35085.40269	2255.902989	6.602419541	**5.314022**	
SAN JOAQUIN	2021	T7 SWCV	Aggregated	Aggregated	DSL	225.3362121	9190.993454	878.811227	3.706396195	**2.479766**	
SAN JOAQUIN	2021	T7 SWCV	Aggregated	Aggregated	NG	34.66386001	1413.537849	135.189054	0.613070391		
SAN JOAQUIN	2021	T7 tractor	Aggregated	Aggregated	DSL	2787.655008	381099.8208	35403.2186	52.92700705	**7.200479**	
SAN JOAQUIN	2021	T7 tractor construction	Aggregated	Aggregated	DSL	416.6841119	28942.36827	1883.812669	5.485850939	**5.275821**	
SAN JOAQUIN	2021	T7 utility	Aggregated	Aggregated	DSL	19.88620819	403.4595405	228.6913942	0.068633937	**5.878426**	
SAN JOAQUIN	2021	T7IS	Aggregated	Aggregated	GAS	2.006552531	196.6053117	40.14710304	0.047256986	**4.160344**	
SAN JOAQUIN	2021	UBUS	Aggregated	Aggregated	GAS	15.84914115	1442.965721	63.3965646	0.312746036	**4.613858**	
SAN JOAQUIN	2021	UBUS	Aggregated	Aggregated	DSL	64.04919124	5071.660773	256.196765	0.717472632	**7.068786**	
SAN JOAQUIN	2021	UBUS	Aggregated	Aggregated	ELEC	2.042727277	124.318219	8.170909109	0		
SAN JOAQUIN	2021	UBUS	Aggregated	Aggregated	NG	106.2074629	6765.746654	424.8298518	1.37346578	**4.926039**	

EMFAC2017 (v1.0.2) Emissions Inventory
Region Type: County
Region: SAN JOAQUIN
Calendar Year: 2030
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in the unit is operation day.

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption	MPG	
SAN JOAQUIN	2030	All Other Buses	Aggregated	Aggregated	DSL	90.68299161	4854.321527	761.7371295	0.460405402	**10.54358**	
SAN JOAQUIN	2030	LDA	Aggregated	Aggregated	GAS	368565.5934	13072318.41	1723541.12	339.7810424	**38.47277**	
SAN JOAQUIN	2030	LDA	Aggregated	Aggregated	DSL	4005.251374	150415.4379	19091.44311	2.481506062	**60.61458**	
SAN JOAQUIN	2030	LDA	Aggregated	Aggregated	ELEC	15744.5952	588321.9885	76884.11576	0		
SAN JOAQUIN	2030	LDT1	Aggregated	Aggregated	GAS	36584.01941	1208039.25	167881.3787	36.67959649	**32.93491**	
SAN JOAQUIN	2030	LDT1	Aggregated	Aggregated	DSL	7.834479373	208.2756467	32.80647981	0.007235674	**28.78455**	
SAN JOAQUIN	2030	LDT1	Aggregated	Aggregated	ELEC	810.507532	31128.76202	3993.545167	0		
SAN JOAQUIN	2030	LDT2	Aggregated	Aggregated	GAS	115999.6709	3888891.963	536669.6904	120.7615023	**32.20308**	
SAN JOAQUIN	2030	LDT2	Aggregated	Aggregated	DSL	984.1675207	36059.31172	4710.469284	0.797281377	**45.22784**	
SAN JOAQUIN	2030	LDT2	Aggregated	Aggregated	ELEC	3213.787274	84086.29133	15749.30968	0		
SAN JOAQUIN	2030	LHD1	Aggregated	Aggregated	GAS	7059.580971	219497.5874	105177.2377	23.45892811	**9.356676**	
SAN JOAQUIN	2030	LHD1	Aggregated	Aggregated	DSL	7705.330011	229852.6749	96923.35824	11.49008057	**20.00444**	
SAN JOAQUIN	2030	LHD2	Aggregated	Aggregated	GAS	1006.755286	31033.5905	14999.1537	3.798886817	**8.169127**	
SAN JOAQUIN	2030	LHD2	Aggregated	Aggregated	DSL	2802.490639	84594.01692	35251.80671	4.724507425	**17.90536**	
SAN JOAQUIN	2030	MCY	Aggregated	Aggregated	GAS	14715.42138	96353.56835	29430.84276	2.580463367	**37.33964**	
SAN JOAQUIN	2030	MDV	Aggregated	Aggregated	GAS	86074.46812	2578376.437	389040.756	100.793777	**25.58071**	
SAN JOAQUIN	2030	MDV	Aggregated	Aggregated	DSL	2566.168962	85268.9785	12064.52133	2.552603103	**33.40471**	
SAN JOAQUIN	2030	MDV	Aggregated	Aggregated	ELEC	2213.936447	58894.63416	10910.95616	0		
SAN JOAQUIN	2030	MH	Aggregated	Aggregated	GAS	1219.865772	10325.95735	122.0353718	1.910797768	**5.404003**	
SAN JOAQUIN	2030	MH	Aggregated	Aggregated	DSL	641.4644059	4834.819589	64.14644059	0.453834686	**10.65326**	
SAN JOAQUIN	2030	Motor Coach	Aggregated	Aggregated	DSL	25.79428546	3014.458019	376.5965677	0.413126586	**7.296693**	
SAN JOAQUIN	2030	OBUS	Aggregated	Aggregated	GAS	189.4711033	8265.979023	3790.937835	1.514328112	**5.458513**	
SAN JOAQUIN	2030	PTO	Aggregated	Aggregated	DSL	0	12660.12213	0	2.267014368	**5.584491**	
SAN JOAQUIN	2030	SBUS	Aggregated	Aggregated	GAS	87.7726111	4039.496105	351.0904444	0.389128169	**10.38089**	
SAN JOAQUIN	2030	SBUS	Aggregated	Aggregated	DSL	610.7688987	19049.13733	7048.188411	2.241142818	**8.499743**	**MHD**
SAN JOAQUIN	2030	T6 Ag	Aggregated	Aggregated	DSL	81.13666711	388.2674468	357.0013353	0.045710034	**8.49414**	**10.5776**
SAN JOAQUIN	2030	T6 CAIRP heavy	Aggregated	Aggregated	DSL	130.7741794	23189.39672	1909.30302	1.672164329	**13.86789**	
SAN JOAQUIN	2030	T6 CAIRP small	Aggregated	Aggregated	DSL	72.20092643	3318.58929	1054.133526	0.26660637	**12.44752**	
SAN JOAQUIN	2030	T6 instate construction	Aggregated	Aggregated	DSL	387.0603533	23537.46353	1749.884808	2.614062478	**9.00417**	
SAN JOAQUIN	2030	T6 instate construction	Aggregated	Aggregated	DSL	1887.194314	93795.30883	8531.932119	9.77233969	**9.59804**	
SAN JOAQUIN	2030	T6 instate heavy	Aggregated	Aggregated	DSL	1572.924495	140709.6969	18151.33059	12.72171054	**11.0606**	
SAN JOAQUIN	2030	T6 instate small	Aggregated	Aggregated	DSL	3125.811787	135748.4267	36071.43465	12.24905946	**11.08236**	
SAN JOAQUIN	2030	T6 OOS heavy	Aggregated	Aggregated	DSL	74.91742813	13330.66182	1093.794451	0.960558346	**13.87803**	
SAN JOAQUIN	2030	T6 OOS small	Aggregated	Aggregated	DSL	41.48093394	1893.274119	605.6216356	0.152292399	**12.43184**	
SAN JOAQUIN	2030	T6 Public	Aggregated	Aggregated	DSL	610.8390078	9685.097236	1852.878322	1.109215116	**8.731487**	
SAN JOAQUIN	2030	T6 utility	Aggregated	Aggregated	DSL	82.73943795	1375.543105	951.5035364	0.12752598	**10.78638**	
SAN JOAQUIN	2030	T6TS	Aggregated	Aggregated	GAS	682.448093	36578.49041	13654.42145	6.592151218	**5.548794**	**HHD**
SAN JOAQUIN	2030	T7 Ag	Aggregated	Aggregated	DSL	96.76876673	393.2302492	425.7825736	0.082451294	**4.769243**	**6.769316**
SAN JOAQUIN	2030	T7 CAIRP	Aggregated	Aggregated	DSL	1510.642271	302170.2333	22055.37715	35.34901085	**8.548195**	
SAN JOAQUIN	2030	T7 CAIRP construction	Aggregated	Aggregated	DSL	91.76799041	16907.16452	414.8795167	2.38001301	**7.103812**	
SAN JOAQUIN	2030	T7 NNOOS	Aggregated	Aggregated	DSL	2055.346713	368353.1063	30008.062	42.18541746	**8.731764**	
SAN JOAQUIN	2030	T7 NOOS	Aggregated	Aggregated	DSL	602.4853181	118718.1543	8796.285644	14.2684731	**8.320312**	
SAN JOAQUIN	2030	T7 other port	Aggregated	Aggregated	DSL	32.24049415	5932.302988	245.0277555	0.789649254	**7.51258**	
SAN JOAQUIN	2030	T7 POAK	Aggregated	Aggregated	DSL	191.7000151	28796.9099	1456.920115	3.959954766	**7.27203**	
SAN JOAQUIN	2030	T7 POLA	Aggregated	Aggregated	DSL	156.9755232	26280.12898	1193.013976	4.025451171	**6.528493**	
SAN JOAQUIN	2030	T7 Public	Aggregated	Aggregated	DSL	604.3413786	12234.95245	1833.168847	1.94117249	**6.302867**	
SAN JOAQUIN	2030	T7 Single	Aggregated	Aggregated	DSL	900.5481572	63758.90559	10392.20088	8.926433913	**7.142707**	
SAN JOAQUIN	2030	T7 single construction	Aggregated	Aggregated	DSL	590.1628845	41943.56543	2668.103455	6.712816516	**6.248281**	
SAN JOAQUIN	2030	T7 SWCV	Aggregated	Aggregated	DSL	218.0943768	8894.271487	850.5680693	3.065575977	**2.901338**	
SAN JOAQUIN	2030	T7 SWCV	Aggregated	Aggregated	NG	36.06641154	1470.698573	140.659005	0.563363805		
SAN JOAQUIN	2030	T7 tractor	Aggregated	Aggregated	DSL	3799.048333	448899.6013	48247.91383	50.60060201	**8.871428**	
SAN JOAQUIN	2030	T7 tractor construction	Aggregated	Aggregated	DSL	495.6076313	34599.74873	2240.622832	5.558202987	**6.224988**	
SAN JOAQUIN	2030	T7 utility	Aggregated	Aggregated	DSL	21.51463107	435.943389	247.4182572	0.06481324	**6.726147**	
SAN JOAQUIN	2030	T7IS	Aggregated	Aggregated	GAS	2.277336147	315.7370996	45.56494162	0.061850165	**5.104871**	
SAN JOAQUIN	2030	UBUS	Aggregated	Aggregated	GAS	18.20222249	1657.199142	72.80888998	0.312779382	**5.2983**	
SAN JOAQUIN	2030	UBUS	Aggregated	Aggregated	DSL	39.35118186	2731.919507	157.4047274	0.353604191	**7.725925**	
SAN JOAQUIN	2030	UBUS	Aggregated	Aggregated	NG	158.5290469	11005.73287	634.1161877	2.434288436	**4.521129**	

On-road Mobile (Operational) Energy Usage

Unmitigated:

Step 1:

Therefore:

Average Daily VMT:

7,807 Source: Fehr & Peers

Step 2:

Given:

Fleet Mix (CalEEMod Output)

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
58.1437%	3.2303%	19.0969%	10.0551%	1.1057%	0.3880%	1.5441%	5.6216%	0.1173%	0.1204%	0.4639%	0.0578%	0.0551%

And:

Gasoline MPG Factors for each Vehicle Class - Year 2040 (EMFAC2017 Output)

LDA	LDT1	LDT2	MDV	MCY	MH
38.47277152	32.93491	32.20308	25.58071059	37.33963814	5.40400325

Diesel MPG Factors for each Vehicle Class - Year 2040 (EMFAC2017 Output)

LHD1	LHD2	MHD	HHD	OBUS	UBUS	SBUS
20.00444414	17.90536	10.5776	6.769316028	5.458512563	7.725925128	8.499743

Therefore:

Weighted Average MPG Factors

Gasoline: **35.5** Diesel: **9.4**

Step 3:

Therefore:

200 daily gallons of gasoline **75 daily gallons of diesel**

or

73,057 annual gallons of gasoline **27,219 annual gallons of diesel**

Off-road Mobile (Construction) Energy Usage

Note: For the sake of simplicity, and as a conservative estimation, it was assumed that all off-road vehicles use diesel fuel as an energy source.
Demolition (if applicable), Site preparation and grading off-road mobile vehicle on-site gallons of fuel are calculated below.

Given Factor:	**1,054.4**	**metric tons**	**CO_2**	**(provided in CalEEMod Output File)**
Conversion Factor:	2204.6262	pounds	per metric ton	
Intermediate Result:	**2,324,490**	**pounds**	**CO_2**	
Conversion Factor:	22.38	pounds	CO_2 per 1 gallon of diesel fuel	Source: U.S. EIA, 2016
Final Result:	**103,865**	**gallons**	**diesel fuel**	http://www.eia.gov/tools/faqs/faq.cfm?id=307&t=11

Mitigated Onsite Scenario	Total CO_2 (MT/yr) (provided in CalEEMod Output File)
Demolition -	39.38
Site Preparation - 2021	109.54
Site Preparation - 2022	92.70
Grading - 2022	563.4986
Grading - 2023	288.6245

On-road Mobile (Construction) Energy Usage - Demolition

Note: Year 2021 MPG factors were derived for construction-releated energy consumption (for the sake of a conservative estimate).

Step 1: **Total Daily Worker Trips (CalEEMod output)**
15

Worker Trip Length (miles) (CalEEMod output)
14.7

Therefore:
Average Worker Daily VMT:
221

Step 2: Given:
Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	**LDT1**	**LDT2**
0.5	0.25	0.25

And:
Gasoline MPG Factors for each Vehicle Class - Year 2020 (EMFAC2017 output)

LDA	**LDT1**	**LDT2**
30.63	26.25	24.13

Therefore:
Weighted Average Worker MPG Factor
27.91

Step 3: **Therefore:**
8 Worker daily gallons of gasoline (all workers)

Step 4: 23 **# of Days (CalEEMod ouput)**

Therefore:
Result: **182 Total gallons of gasoline (all workers)**

Total Hauler Trips (CalEEMod Output)
27
Note: Hauler trips are total values (not daily).

Hauler Trip Length (miles) (CalEEMod Output)
20

Average Hauler Daily VMT:
540

Fleet Mix for Workers (CalEEMod Output)

MHD	**HHD**
0%	100%

Diesel MPG Factors for each Vehicle Class - Year 2020 (EMFAC2017 output)

MHD	**HHD**
8.98	5.57

Therefore:
Weighted Average Hauler (Diesel) MPG Factor
5.57

Therefore:
97 Worker daily gallons of gasoline (all workers)

Therefore:
Result: **97 Hauler gallons of diesel**

On-road Mobile (Construction) Energy Usage - Site Preparation

Note: Year 2021 MPG factors were derived for construction-releated energy consumption (for the sake of a conservative estimate).

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

18

Worker Trip Length (miles) (CalEEMod Output)

10.8

Therefore:

Average Worker Daily VMT:

194

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class (from EMFAC2017) - Year 2021

LDA	LDT1	LDT2
30.63	26.25	24.13

Therefore:

Weighted Average Worker MPG Factor

27.9

Step 3: **Therefore:**

7.0 Worker daily gallons of gasoline

Step 4: 120 **# of Days (CalEEMod Output)**

Therefore:

Result: **836 Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Grading

Note: Year 2021 MPG factors were derived for construction-releated energy consumption (for the sake of a conservative estimate).

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

20

Worker Trip Length (miles) (CalEEMod Output)

10.8

Therefore:

Average Worker Daily VMT:

216

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class (from EMFAC2017) - Year 2021

LDA	LDT1	LDT2
30.63	26.25	24.13

Therefore:

Weighted Average Worker MPG Factor

27.9

Step 3: **Therefore:**

7.7 Worker daily gallons of gasoline

Step 4: 310 **# of Days (CalEEMod Output)**

Therefore:

Result: **2,399** **Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Building Construction

Note: Year 2021 MPG factors were derived for construction-releated energy consumption (for the sake of a conservative estimate).

Step 1:

Total Daily Worker Trips (CalEEMod Output)

497	5%	**25**

Total Daily Vendor Trips (CalEEMod Output)

166	5%	**8**

Note: Assumes 5% of Plan Area under construction at given point in time (on average) until buildout.

Worker Trip Length (miles) (CalEEMod Output)
10.8

Vendor Trip Length (miles) (CalEEMod Output)
7.3

Therefore:

Average Worker Daily VMT:
268

Average Vendor Daily VMT:
61

Step 2:

Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	**LDT1**	**LDT2**
0.5	0.25	0.25

Assumed Fleet Mix for Vendors

Fleet Mix for Workers (CalEEMod Output)

MHD	**HHD**
0%	100%

And:

MPG Factors for each Vehicle Class (from EMFAC2017) - Year 2021

<u>Gasoline:</u>

LDA	**LDT1**	**LDT2**
30.63	26.25	24.13

<u>Diesel:</u>

MHD	**HHD**
8.98	5.57

Therefore:

Weighted Average Worker (Gasoline) MPG Factor
27.9

Weighted Average Vendor (Diesel) MPG Factor
5.6

Step 3:

Therefore:
10 Worker daily gallons of gasoline

Therefore:
11 Vendor daily gallons of diesel

Step 4:

1795 **# of Days (CalEEMod Output)**

Therefore:
17,260 Total gallons of gasoline

Therefore:
19,515 Total gallons of diesel

On-road Mobile (Construction) Energy Usage - Paving

Note: Year 2021 MPG factors were derived for construction-releated energy consumption (for the sake of a conservative estimate).

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

15

Worker Trip Length (miles) (CalEEMod Output)

10.8

Therefore:

Average Worker Daily VMT:

162

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	**LDT1**	**LDT2**
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class (from EMFAC2017) - Year 2021

LDA	**LDT1**	**LDT2**
30.63	26.25	24.13

Therefore:

Weighted Average Worker MPG Factor

27.9

Step 3: **Therefore:**

5.8 Worker daily gallons of gasoline

Step 4: 220 **# of Days (CalEEMod Output)**

Therefore:

Result: **1,277** **Total gallons of gasoline**

On-road Mobile (Construction) Energy Usage - Architectural Coating

Note: Year 2021 MPG factors were derived for construction-releated energy consumption (for the sake of a conservative estimate).

Step 1: **Total Daily Worker Trips (CalEEMod Output)**

99	5%	5

Note: Assumes 5% of Plan Area under construction at given point in time (on average) until buildout.

Worker Trip Length (miles) (CalEEMod Output)

10.8

Therefore:

Average Worker Daily VMT:

53

Step 2: Given:

Assumed Fleet Mix for Workers (Percentage mix is provided on Appendix A: Calculation Details for CalEEMOD p. 15)

LDA	LDT1	LDT2
0.5	0.25	0.25

And:

Gasoline MPG Factors for each Vehicle Class (EMFAC2017 Output) - Year 2021

LDA	LDT1	LDT2
30.63	26.25	24.13

Therefore:

Weighted Average Worker MPG Factor

27.9

Step 3: **Therefore:**

1.9 Worker daily gallons of gasoline

Step 4: 2,105 **# of Days (CalEEMod Output)**

Therefore:

Result: **4,032 Total gallons of gasoline**

APPENDIX B.4

GHG Calculation Methodology

Greenhouse Gas Efficiency Metric Calculation Methodology – City of Manteca – Lumina Ranch Project

The methodology used for assessing the proposed project's consistency with GHG targets established in AB 32 is the use of GHG efficiency metrics to assess the GHG efficiency of the project on a "service population (SP)" basis (the sum of the number of jobs and the number of residents provided by a project). These metrics represent the rate of emissions needed to achieve a fair share of the state's emissions mandate embodied in AB 32. The use of "fair share" in this instance indicates the GHG efficiency level that, if applied statewide, would meet the AB 32 emissions target and support efforts to reduce emissions beyond 2020.

GHG efficiency metrics for the project were developed based on emissions rates for the land use-driven emission sectors in the CARB's GHG inventory. The GHG efficiency metric is only based on sectors that would accommodate projected growth (as indicated by population and employment growth) while allowing for consistency with the goals of AB 32 (i.e., 1990 GHG emissions levels by 2020). The per service population efficiency target is based on the AB 32 GHG reduction target and GHG emissions inventory prepared for the CARB's 2008 Scoping Plan.

To develop the efficiency metric for 2020, land-use driven sectors in the CARB's 1990 GHG inventory were identified and separated to tailor the inventory to land use projects. This process removes emission sources that would not be applicable to the project area. For example, emissions associated with ships and commercial boats, aviation, rail, industrial sources, agriculture and forestry, and unspecified sectors were removed from the CARB's 1990 inventory in order to exclude non-land use sectors. The exceptions for the industrial sector are the landfill and domestic wastewater sub-sectors which were included in development of the GHG efficiency metric because emissions from these sectors are included in the project's emissions profile. Isolating the land use-driven sectors from the CARB's overall inventory ensures that the threshold is directly applicable to land use projects, whereby emission sectors included in the inventory used for developing the GHG efficiency metric can be mapped to a project's emissions data. For example, emissions associated with on-road transportation, electricity, natural gas, wastewater treatment, and solid waste are included in both the inventory used to develop the GHG efficiency metric and the project's operational emissions. The CARB's complete 1990 inventory and the adjusted land use-driven emissions inventory are shown on the following pages.

The land-use sector driven inventory for 1990 was divided by the population and employment projections for California in 2020. Detailed calculations showing derivation of the efficiency metrics are shown on the following pages. The efficiency metric allows the threshold to be applied evenly to all project types (residential, commercial/retail and mixed use) and uses an emissions inventory comprised only of sources from land-use related sectors. The efficiency approach allows lead agencies to assess whether any given project or plan would accommodate population and employment growth in a way that is consistent with the emissions limit established under AB 32. The resultant GHG efficiency metric would be (approximately) 4.84 MT CO_2e/SP/year for 2020 (as provided below).

The proposed project is anticipated to be built out in the relative medium-term, within the timeframe of the State's longer-term target years (2030 and 2050). The CARB has indicated that an average statewide

GHG reduction of 5.2 percent per year would be necessary to achieve the 2030 target[1,2]. Therefore, GHG efficiency goals in terms of metric tons per service population, similar to the one developed for 2020, were estimated for Years 2030, 2040, and 2050 to allow evaluation of the project's GHG emissions in the post-2020 landscape. The equivalent goal for 2030 computes to approximately 2.62 MT CO_2e/SP/year. For Year 2040, the goal computes to 1.94 MT CO_2e/SP/year, for Year 2040, 1.44 MT CO_2e/SP/year, and for Year 2050 the goal is 0.80 MT CO_2e/SP/year. These targets were estimated by applying a uniform reduction from the CARB's 1990 emissions inventory and dividing the resultant value by the projected population and employment in these future years.

These GHG efficiency metric were derived based on the reduction trajectory the state needs to maintain to achieve its 2030 and 2050 goals (an approximately 5.2 percent reduction per year) (CARB, 2016b). All calculations are based on the IPCC Second Assessment Report's Global Warming Potentials to allow consistent comparison between the ARB 1990 inventory and the California Emissions Estimator Model (CalEEMod; used to estimate project emissions).

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[1] California Air Resources Board. 2016. California Climate Strategy. January 29, 2016. Available at: http://docketpublic.energy.ca.gov/PublicDocuments/15-RETI-02/TN210091_20160129T154626_California_Climate_Strategy_CARB_for_RETI_20_Plenary_Meeting_on.pdf

[2] California Air Resources Board. 2015. 2030 Target Scoping Plan Workshop Slides. (October 1, 2015). Available at: http://www.arb.ca.gov/cc/scopingplan/meetings/10_1_15slides/2015slides.pdf

California Greenhouse Gas Inventory for 1990 – by Sector and Activity (Land Use-driven sectors only) *Million metric tons of CO_2-equiavlent (CO_2e) – (based on IPCC Second Assessment Report's Global Warming Potentials) (CARB, 2007).*

Year 1990

Transportation	
On Road	
Passenger Cars	63.77
Light Duty Trucks	44.75
Motorcycles	0.43
Heavy Duty Trucks	29.03
Freight	0.02
Electricity Generation In-State	
CHP: Commercial	***0.70***
Merchant Owned	***2.33***
Transmission and Distribution	***1.56***
Utility Owned	***29.92***
Electricity Generation In-State	
Specified Imports	***29.61***
Transmission and Distribution	***1.02***
Unspecified Imports	***30.96***
Commercial	
CHP: Commercial	***0.40***
Communication	***0.07***
Domestic Utilities	***0.34***
Education	***1.42***
Food Services	***1.89***
Healthcare	***1.32***
Hotels	***0.67***
Not Specified Commercial	***5.58***
Offices	***1.46***
Retail & Wholesale	***0.68***
Transportation Services	***0.03***
Residential	
Household Use	***29.66***
Industrial	
Landfills	***6.26***
Wastewater Treatment	
Domestic Wastewater	2.83
Total Emissions	**286.70**

Future Year Service Population Thresholds

	2020	2030	2035	2040	2050
Population	40,719,999	44,019,846	45,521,334	46,088,425	49,158,401
Employment	18,511,200	20,011,301*	20,693,874*	21,313,702*	22,347,274*
Service Population	59,231,199	64,031,147	66,215,208	68,198,503	71,505,675
Emissions (Million Metric Tons)	286.70	167.67	128.22	98.06	57.35
MT/SP	**4.84**	**2.62**	**1.94**	**1.44**	**0.80**

Notes:

SP = service population.

*Assumes proportion of employed persons to the overall population remains equal to that as was applicable in 2020 (direct 2030, 2035, 2040, 2045, and 2050 employment projections were not available).

2030, 2035, 2040, and 2050 Emissions are based on an annual 5.2% reduction from 2020 (CARB, 2016).

Sources:

California Air Resources Board (CARB). 2007. Staff Report: California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit. Public Release Date: November 16, 2007. Available: https://www.arb.ca.gov/cc/inventory/1990level/1990level.htm

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California Air Resources Board (CARB). 2016. California Climate Strategy. January 29, 2016. Available at: http://docketpublic.energy.ca.gov/PublicDocuments/15-RETI-02/TN210091_20160129T154626_California_Climate_Strategy_CARB_for_RETI_20_Plenary_Meeting_on.pdf

California Department of Finance, Demographics Research Unit (Total Estimated and Projected Population for California and Counties: July 1, 2010 to July 1, 2060 in 5-year Increments. Published February, 2017.

California Department of Finance Employment Development Department. Industry Employment Projections Labor Market Information Division 2010-2020. Published 5/23/2012.

Appendix C

Cultural Resources Investigation

CULTURAL RESOURCE ASSESSMENT FOR THE

LUMINA RANCH PROJECT SITE, CITY OF MANTECA,

SAN JOAQUIN COUNTY, CALIFORNIA

Prepared by

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February 16, 2021
(Job #20-057)

PROJECT DESCRIPTION

Project Location and Setting

The Project site is located in the southwestern portion of the City of Manteca directly adjacent to the city limits. The Project site is immediately southwest of the intersection of Airport Way and Woodward Avenue. The Project site is bounded on the north by Woodward Avenue, on the east by Airport Way, on the south by an existing Reclamation District #2094 (RD2094) dry levee and existing agricultural fields, and on the west by the existing Terra Ranch Subdivision. Figures 1 and 2 show the Project's regional location and vicinity. The Project site is located within Section 12 of Township 2 South, Range 6 East Mount Diablo Base and Meridian (MDBM). Figure 3 illustrates the project location on the USGS Manteca, California, 7.5-minute series quadrangle map.

Project Site Defined

The Project site includes several distinct planning boundaries defined below. The following terms are used throughout this DEIR to describe planning area boundaries within the Project site:

- Annexation Area – includes the whole of the project, including the proposed 157.53-acre Development Area, 19.11-acre Non-development area on 15 inhabited residential lots, and 6.82 acres of existing right-of-way.
- Development Area - includes a 157.53-acre parcel (APN 241-32-018) that is intended for the development of up to 827 residential units, two parks, and public infrastructure.
- Non-development Area 1 - includes six 1.0 acre lots with existing residential homes. Access to these homes is directly onto Woodward Avenue.
- Non-development Area 2 - includes nine lots ranging in size from 1.3 to 1.8 acres totaling 13.11 acres with existing residential homes. Access to three of these homes is directly onto Woodward Avenue, five are onto Airport Way, and one has access onto both Woodward Avenue and Airport Way.
- Right-of-Way Annexation Area - includes 6.82 acres of existing right-of-way owned by San Joaquin County, and intended to be annexed into the City of Manteca.

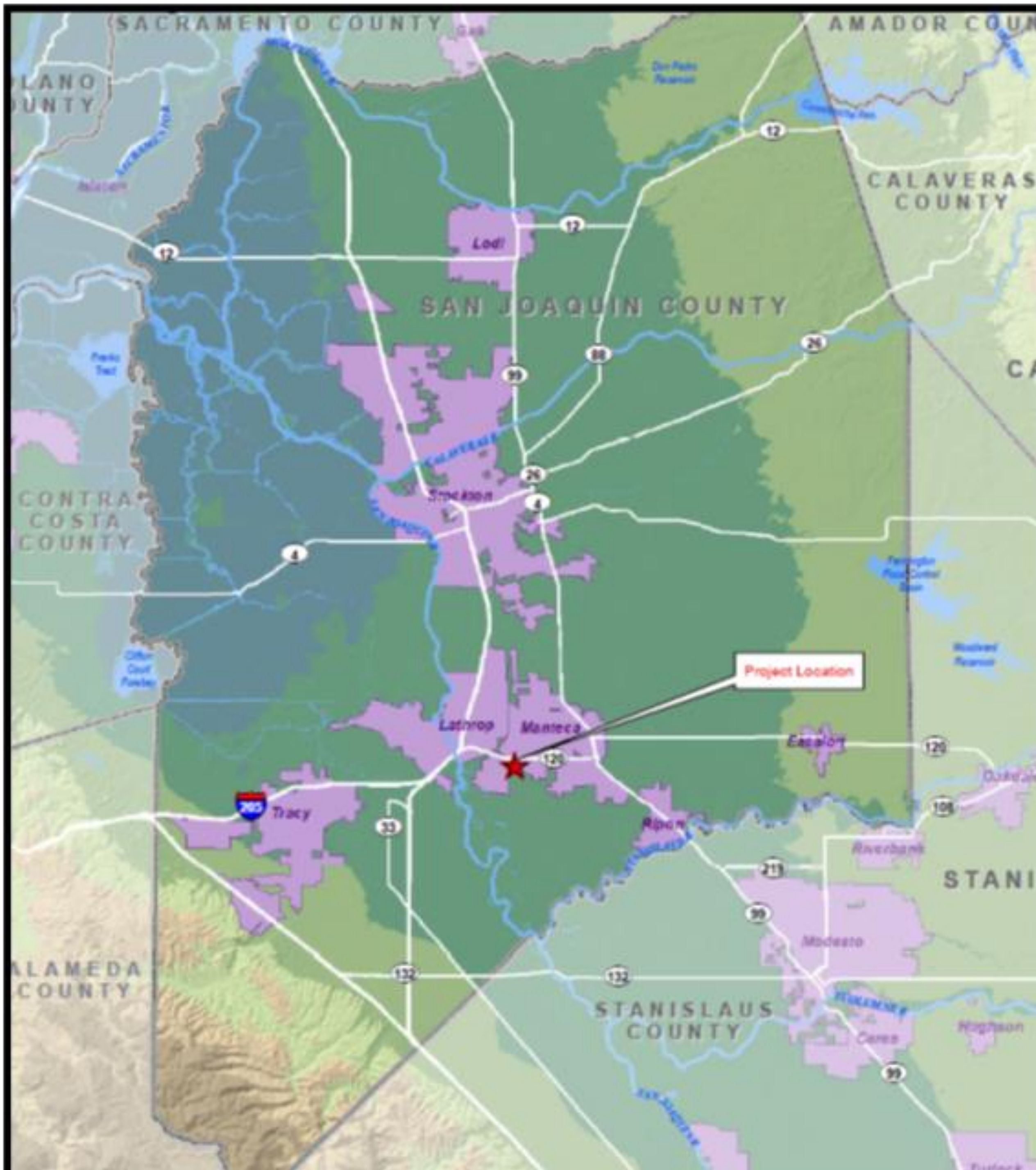
TABLE 1: PARCELS WITHIN THE PROJECT SITE

APN / RIGHT OF WAY	ACREAGE
Development Area	
241-32-018 (Project)	157.53

Non-development Area 1	
241-32-005	1.00
241-32-006	1.00
241-32-007	1.00
241-32-021	1.00
241-32-008	1.00
241-32-009	1.00
Non-development Area 2	
241-32-011	1.86
241-32-012	1.37
241-32-013	1.35
241-32-014	1.35
241-32-015	1.35
241-32-029	1.49
241-32-028	1.51
241-32-027	1.49
241-32-023	1.34
Right-of-Way Annexation Area	
Public Right-of-Way	6.82
Total	**183.46**

Site Topography

The Project site is relatively flat with natural gentle slope from south to north. The Project site topography ranges in elevation from approximately 19 to 24 feet above sea level.



LEGEND

- Project Location
- Incorporated Area
- County Boundary

0 2½ 5
Miles

LUMINA RANCH

Figure 1. Regional Location Map

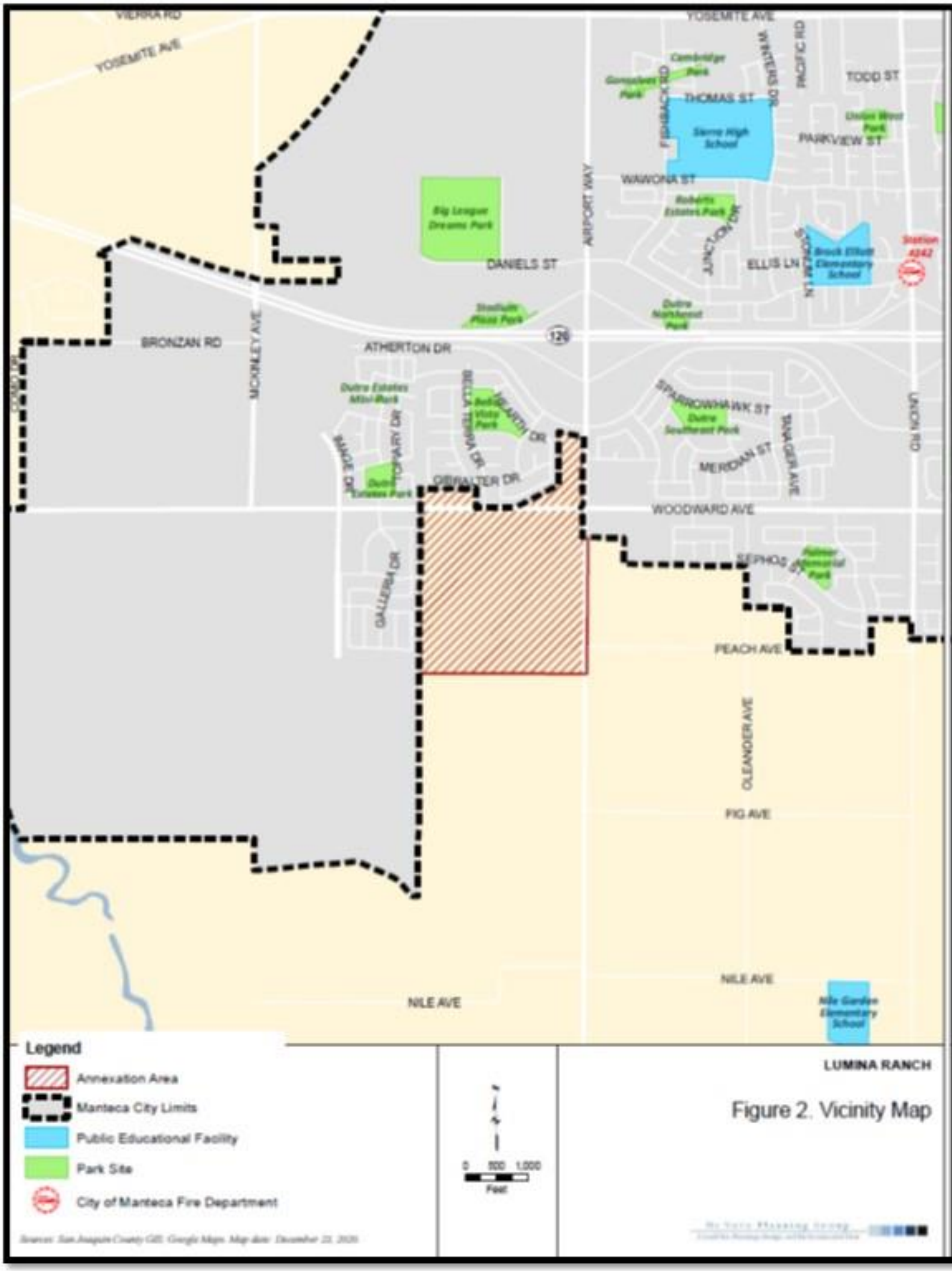
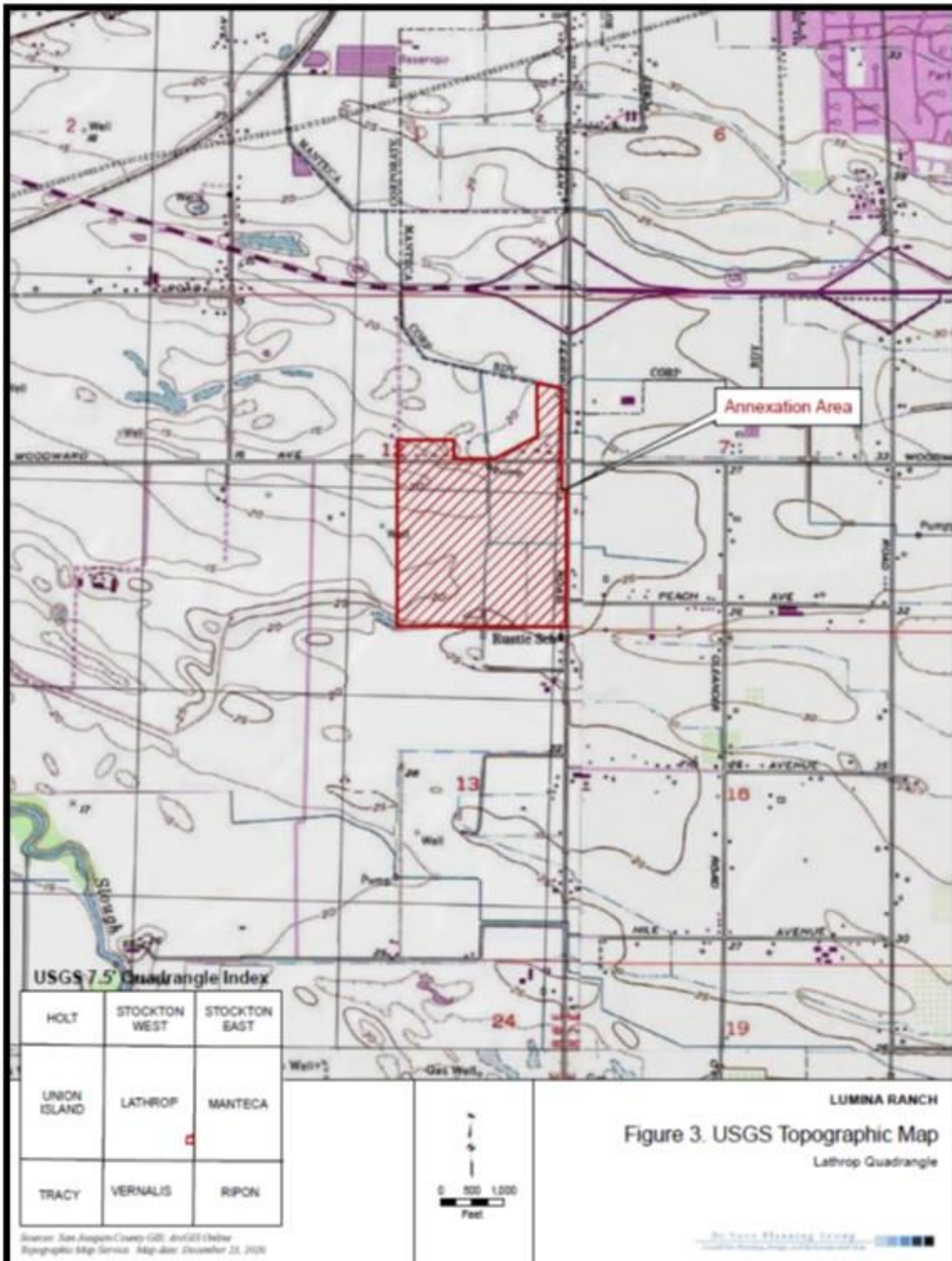


Figure 2. Vicinity Map



LUMINA RANCH

Figure 3. USGS Topographic Map

Lathrop Quadrangle

Sources: San Joaquin County GIS; ArcGIS Online Topographic Map Service. Map date: December 23, 2020

Existing Site Uses

The Development Area has some existing improvements including two existing houses and barns and/or sheds with associated equipment, dirt and gravel roadways. The house and barn structures are located in the northeastern portions of the Development Area. The majority of the Development Area is in active agricultural use. Woodward Avenue is along the north, and Airport Way is along the east. A South San Joaquin Irrigation District (SSJID) pipeline exists within the Development Area. An RD 2094 dry levee makes up a portion of the southern property line. This dryland levee is not intended to hold floodwaters from the south (upstream), instead it is intended to contain flows on RD 2094 and RD 2096 in the event of a levee breach of levees along RD 2094, RD 2096, or RD 17. It is noted that the Annexation Area is located within the RD 17 boundary.

Non-development Area 1 includes six existing residential homes just north of the Development Area and Woodward Avenue.

Non-development Area 2 includes nine existing residential homes just north of Woodward Avenue, and West of Airport Way.

Existing Surrounding Uses

Uses immediately adjacent to the east and south of the Project site include agricultural and residential uses, including ranchettes and large estates lots. Existing uses north of the Project site are residential uses which includes a residential subdivision. Existing uses west of the Project site are residential uses.

General Plan Land Use Designations

The Development Area is designated as Low Density Residential (LDR, 2.1 to 8 du/ac) with a Park designation under the current General Plan. The Draft General Plan Update currently being prepared by the City shows the same land use designation for this area when compared to the existing General Plan.

Non-development Area 1 is designated Low Density Residential (LDR, 2.1 to 8 du/ac) under the current General Plan. The General Plan Update shows the same land use designation for this area when compared to the existing General Plan.

Non-development Area 2 is designated Commercial Mixed Use (CMU), Neighborhood Commercial (NC), and General Commercial (GC) under the current General Plan. It is noted that these parcels are currently inhabited as residential. The General Plan Update includes some modifications to the land uses in this area. The Neighborhood Commercial designation was eliminated as a land use category in the General Plan Update, and General Commercial (GC) was changed to Commercial (C). In the General Plan Update the parcel currently designated as NC is changed to C, five parcels that were CMU changed to C, and two parcels remained CMU.

The General Plan contains the following standards to guide development for these land uses. It is noted that the currently adopted General Plan is the 2023 General Plan; however, the City is currently undergoing an Update to the General Plan. Both are noted below:

2023 General Plan

LDR (Low Density Residential): The LDR land use will establish a mix of dwelling unit types and character determined by the individual site and market conditions. The density range allows substantial flexibility in selecting dwelling unit types and parcel configurations to suit particular site conditions and housing needs. The type of dwelling units anticipated in this density range include small lots and clustered lots as well as conventional large lot detached residences.

CMU (Commercial Mixed Use): The CMU designation will accommodate a variety of purposes including high density residential, employment centers, retail commercial, and professional offices.

NC (Neighborhood Commercial): This designation provides for locally oriented retail and service uses, offices, restaurants, and service stations, public and quasi-public uses and similar and compatible uses. The mix of uses anticipated in these centers includes supermarket/drug store configuration including associated smaller retail stores and services. Pad sites will provide restaurant and service station opportunities.

GC (General Commercial): The General Commercial category provides for wholesale, warehousing, and heavy commercial uses, highway oriented commercial retail, public and quasi-public uses, and similar and compatible uses. The designation is also intended to accommodate visitor commercial, lodging, commercial recreation and public gathering facilities, such as amphitheaters, or public gardens.

General Plan Update

LDR (Low Density Residential): This designation provides for a mix of single-family housing, including small lots, clustered lots, attached homes, and conventional large lot detached residences. Density ranges from 2.1 to 8 dwelling units per acre.

CMU (Commercial Mixed Use): This designation provides for high density residential, employment centers, retail commercial, and professional offices. A mix of compatible uses is encouraged to provide neighborhood-serving sales, services, and activities, as well as employment opportunities, including offices.

Developments shall include community-serving amenities and connections that distinguish them from conventional multifamily, neighborhood commercial, or office development, with the intent that a recreational area and neighborhood serving uses will provide a local gathering place for recreation and socializing much as does a small-town square. For example, a residential development could include a work center that provides on-site facilities that encourage telecommuting and entrepreneurship.

Mixed uses may be integrated vertically or horizontally and shall be linked together through common walkways, plazas and parking areas, as well as linkages to the adjoining bicycle and pedestrian system.

Where required, open space, detention facilities, and parks, will be designed as an amenity within the site. Public facilities, such as a post office, library, fire station, or satellite government office, shall be included where feasible.

Developments shall have a shared parking program with the objective of reducing the parking required for each individual use.

C (Commercial): This designation provides for neighborhood, community, and regional-serving retail and service uses; offices; restaurants; service stations; highway-oriented and visitor commercial and lodging; auto-serving and heavy commercial uses; wholesale; warehousing; public and quasi-public uses; commercial recreation and public gathering facilities, such as amphitheaters or public gardens; and similar and compatible uses. Uses that are incompatible with residential uses due to noise, vibration, or other characteristics are not permitted in locations that may impact existing or future residential development.

PROJECT GOALS AND OBJECTIVES

Consistent with CEQA Guidelines Section 15124(b), a clear statement of objectives and the underlying purpose of the proposed Project shall be discussed.

Project Objectives

The principal objective of the proposed Project is the annexation of the Project site into the City of Manteca, and approval and subsequent development of the Development Area for residential and park uses.

The quantifiable objectives of the proposed Project include annexation of 183.46 acres, including the proposed 157.53-acre Development Area, 19.11-acre Non-development area on 15 inhabited residential lots, and 6.82 acres of existing right-of-way. The quantifiable objectives include the development of 827 single family detached units, two parks totaling 9.62 acres (Lot E 4.22 acres and Lot F 5.40 acres).

The goals of the proposed Development are as follows:

- Provide residential housing opportunities that are visually attractive and accommodate the future housing demand in Manteca.
- Establish a mixture of Low-Density Residential project types that collectively provide for local and regional housing and that take advantage of the area's high level of accessibility.
- Provide infrastructure and park space that meets City standards, is integrated with existing and planned facilities and connections, and increases recreation opportunities for existing and future residents of the City.
- Establish a logical phasing plan designed to ensure that each phase of development would include necessary public improvements required to meet City standards.

PROJECT ENTITLEMENTS

General Plan Amendment

The proposed Project would require a minor General Plan Land Use Amendment to adjust the exact location and shape of the Park land use designation within Development Area. No changes are proposed for the Non-development Area 1. It is noted that the General Plan Update proposed changes to the land use in Non-development Area 2, and the proposed Land Uses under this General Plan Amendment are consistent with the General Plan Update.

Prezoning

The Project site is currently outside of the jurisdiction of the City of Manteca, and therefore does not have zoning. The proposed project includes a request for pre-zoning of the Development Area, Non-development Area 1, and Non-development Area 2.

Development Area: The pre-zoning request is for a Planned Development (PD) zoning over this area.

Non-development Area 1: The pre-zoning request is for an R-1 District over these existing lots. The R-1 is defined as follows:

- **R-1 One-Family Dwelling Zoning District**. This designation allows for substantial flexibility in selecting dwelling unit types and parcel configurations to suit site conditions and housing needs. The types of dwelling units include small lots and clustered lots as well as conventional large-lot detached residences.

Non-development Area 2: The pre-zoning request is for a Commercial Mixed Use (CMU), and General Commercial (GC) District over these lots. The CMU and GC are defined as follows:

- **Mixed Use Commercial Zoning District**. This designation will accommodate a variety of uses including high-density residential, employment centers, retail commercial, and professional offices.
- **General Commercial Zoning District**. This category provides for wholesale, warehousing, and heavy commercial uses, highway-oriented commercial retail, public and quasi-public uses, and similar and compatible uses. The designation is also intended to accommodate visitor lodging, commercial recreation and public gathering facilities, such as amphitheaters, or public gardens. It also allows most neighborhood and mixed commercial uses.

Tentative Subdivision Map

The proposed Project includes a Tentative Subdivision Map for the Development Area that would ultimately be divided into four phases on single tentative subdivision map. The tentative map would result in the subdivision of 157.53 acres into 827 residential lots and two park parcels totaling 9.62 acres.

Annexation

The proposed Project includes an Annexation of 16 APNs totaling 183.46 acres. This includes the Development Area (157.53-acre parcel, APN 241-32-018), Non-development Area 1 (an inhabited annexation of 6 parcels on 6 acres), Non-development Area 2 (an inhabited annexation of 9 parcels on 13.11 acres), and the Right-of-Way Annexation Area (6.82 acres of existing County right-of-way). The annexation will also include detachment from the Lathrop Manteca Fire District.

Development Agreement

The proposed Project anticipates a Development Agreement that will be negotiated between the City and Applicant. Terms of the Development Agreement are not available at this early stage of review, but will be required to be consistent with the environmental analysis, including any mitigation measures that are created to reduce impacts.

DEVELOPMENT PROJECT CHARACTERISTICS

The proposed Project is primarily a residential development anticipated to provide up to 827 units. The Development Project would provide approximately 9.62 acres of parkland. Other uses to support and compliment the proposed residential development include underground wet and dry utility infrastructure, roadways, curb/gutters/sidewalks, bicycle/pedestrian facilities, street lighting, and street signage. As shown in Table 2 provides a land use summary of the Development Project.

TABLE 2: LAND USE SUMMARY

PROPOSED LAND USE DESIGNATIONS	APPROXIMATE ACRES	ALLOWABLE DENSITY (OR FAR)	PROPOSED AVERAGE DENSITY (OR FAR)	PROJECTED NUMBER OF UNITS (OR SQUARE FEET)
LDR	146.63	2.1 to 8.0	5.1	827 units
OS	10.90	--	--	--
Total	**157.53**	**--**	**--**	**827 units**

Development of housing will depend on market conditions and demand. The plan for infrastructure allows for development to occur in phases to respond to the market conditions and demand.

Residential Development

The proposed Project will provide a variety of housing types and lot sizes that will accommodate a range of housing objectives and buyer needs with a goal to ensure housing for a variety of families and lifestyles. As shown in Table 2 above, at full build-out, the Development Area will accommodate up to 827 residential units.

The residential neighborhoods are divided into four phases (quadrants) as part of one tentative subdivision map. Phase One (northwestern quadrant) will subdivide the Development Area into 193 single family residential lots. Lot sizes within this phase would range from 4,000 square feet to 11,145 square feet. The northern portion of the central park (4.22-acres) will begin construction during this phase of the project and will be completed during the development of Phase Two of the project. Phase Two (northeastern quadrant) will subdivide the Development Area into 239 single family residential lots. Lot sizes within this phase would range from 2,746 square feet to 12,315 square feet. A southern portion of the central park/basin will be constructed with this phase, but that area will only be utilized for extra stormwater storage and treatment. Phase Three (southwestern quadrant) will subdivide the Development Area into 250 single family residential lots. Lot sizes within this phase would range from 3,245 square feet to 9,904 square feet. The remaining portion of the central park/basin (5.40-acre) will be constructed in this phase Additionally, a 1.28-acre open space area will be constructed in this phase in the vicinity of the proposed RD 2094 dry levee. Phase Four (southeastern quadrant) will subdivide the Development Area into 145 single family residential lots. Lot sizes within this phase would range from 3,375 square feet to 20,182 square feet.

Parks

Approximately 9.62 acres of park and recreation facilities will be provided within the Project site in a variety of forms, consistent with the City's General Plan. After dedication to the City, the parks, parkways, and recreation facilities will be under the jurisdiction of the City, and will be operated and maintained by the City for the enjoyment of the residents of Manteca. Maintenance will be funded through a community facilities district. The park sites shown on Figure 9 indicate conceptual park locations. Actual locations of parks and dual use basins may change as the Development Area is developed. Parks and parkways are shown for reference only, but will be finalized during the development of Improvement Plans and Final Maps. Parks may include community or neighborhood parks with active and passive components as approved by the City. Park acreage and facilities shall occur within the Development Area in a variety of forms as determined by the City during the mapping and improvement plan process. Parks may feature play fields, children play areas, picnic areas, ball courts, open lawn areas, or other amenities. Park areas will be designed in conjunction with storm water basins.

Circulation

The proposed Project will participate with and expand the existing circulation system in the City of Manteca. Additionally, the proposed Project will provide sidewalks and bike lanes to offer additional bicycling and walking facilities for all of Manteca's residents. The Development Area is a natural progression of the existing housing areas and street network on the south side of the City and ties directly to the existing roadway network. The Development Area is bounded on the north by Woodward Avenue, on the east by Airport Way, on the south by an existing Reclamation District #2094 (RD 2094) dry levee and existing agricultural fields, and on the west by the existing Terra Ranch Subdivision.

The proposed Project includes a hierarchy of roadways to accommodate the capacity needs of the existing street network as well as provide additional vehicular access to the Development Area that will also benefit the vehicular circulation for the entire City. Woodward Avenue and Airport Way are the main arterial roadways providing access to the Development Area. The proposed project includes annexation of right-of-way along Woodward Avenue and Airport Way, which will be improved to a City of Manteca standard.

The neighborhoods within the Development Area will include a network of minor collectors, and residential streets to provide an efficient flow of traffic through the area. Additionally, sidewalks and bicycle lanes will be included per the City standards.

Cultural Resource Investigations

Melinda Peak served as principal investigator for the project, with Michael Lawson completing the field survey. Resumes are included in Appendix 1.

STATE REGULATIONS

State historic preservation regulations affecting this project include the statutes and guidelines contained in the California Environmental Quality Act (CEQA; Public Resources Code sections 21083.2 and 21084.1 and sections 15064.5 and 15126.4 (b) of the CEQA Guidelines). CEQA Section 15064.5 requires that lead agencies determine whether projects may have a significant effect on archaeological and historical resources. Public Resources Code Section 21098.1 further cites: A project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.

An “historical resource” includes, but is not limited to, any object, building, structure, site, area, place, record or manuscript that is historically or archaeologically significant (Public Resources Code section 5020.1).

Advice on procedures to identify such resources, evaluate their importance, and estimate potential effects is given in several agency publications such as the series produced by the Governor's Office of Planning and Research (OPR), *CEQA and Archaeological Resources*, 1994. The technical advice series produced by OPR strongly recommends that Native American concerns and the concerns of other interested persons and corporate entities, including, but not limited to, museums, historical commissions, associations and societies be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains, and associated grave goods regardless of the antiquity and provides for the sensitive treatment and disposition of those remains (California Health and Safety Code Section 7050.5, California Public Resources Codes Sections 5097.94 et al).

The California Register of Historical Resources (Public Resources Code Section 5020 et seq.)

The State Historic Preservation Office (SHPO) maintains the California Register of Historical Resources (CRHR). Properties listed, or formally designated as eligible for listing, on the National Register of Historic Places are automatically listed on the CRHR, as are State Landmarks and Points of Interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

For the purposes of CEQA, an historical resource is a resource listed in, or determined eligible for listing in the California Register of Historical Resources. When a project will impact a site, it needs to be determined whether the site is an historical resource. The criteria are set forth in Section 15064.5(a) (3) of the CEQA Guidelines, and are defined as any resource that does any of the following:

A. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

B. Is associated with the lives of persons important in our past;

C. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

D. Has yielded, or may be likely to yield, information important in prehistory or history.

In addition, the CEQA Guidelines, Section 15064.5(a) (4) states:

The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code section 5020.1(j) or 5024.1.

California Health and Safety Code Sections 7050.5, 7051, And 7054

These sections collectively address the illegality of interference with human burial remains, as well as the disposition of Native American burials in archaeological sites. The law protects such remains from disturbance, vandalism, or inadvertent destruction, and establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project, including the treatment of remains prior to, during, and after evaluation, and reburial procedures.

California Public Resources Code Section 15064.5(e)

This law addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction. The section establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project and establishes the Native American Heritage Commission as the entity responsible to resolve disputes regarding the disposition of such remains.

Senate Bill 18

Senate Bill (SB) 18, requires local (city and county) governments to consult with California Native American tribes to aid in the protection of traditional tribal cultural places ("cultural places") through local land use planning. This legislation, which amended §65040.2, §65092, §65351, §65352, and §65560, and added §65352.3, §653524, and §65562.5 to the Government Code; also requires the Governor's Office of Planning and Research (OPR) to include in the General Plan Guidelines advice to local governments on how to conduct these consultations. The intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to, cultural places. These consultation and notice requirements apply to adoption and amendment of both general plans (defined in Government Code §65300 et seq.) and specific plans (defined in Government Code §65450 et seq.).

Assembly Bill 52

Assembly Bill (AB) 52 establishes a formal consultation process for California tribes as part of CEQA and equates significant impacts on tribal cultural resources with significant environmental impacts. AB 52 defines a "California Native American Tribe" as a Native American tribe located in California that is on the contact list maintained by the Native American Heritage Commission. AB 52 requires formal consultation with California Native American Tribes prior to determining the level of environmental document if a tribe has requested to be informed by the lead agency of proposed projects. AB 52 also requires that consultation address project alternatives, mitigation measures, for significant effects, if requested by the California Native American Tribe, and that consultation be considered concluded when either the parties agree to measures to mitigate or avoid a significant effect, or the agency concludes that mutual agreement cannot be reached. Under AB 52, such measures shall be recommended for inclusion in the environmental document and adopted mitigation monitoring program if determined to avoid or lessen a significant impact on a tribal cultural resource.

CULTURAL SETTING

Prehistory

The Central Valley region was among the first in the state to attract intensive fieldwork, and research has continued to the present day. This has resulted in a substantial accumulation of data.

In the early decades of the 1900s, E.J. Dawson explored numerous sites near Stockton and Lodi, later collaborating with W.E. Schenck (Schenck and Dawson 1929). By 1933, the focus of work was directed to the Cosumnes locality, where survey and excavation studies were conducted by the Sacramento Junior College (Lillard and Purves 1936). Excavation data, in particular from the stratified Windmiller site (CA-Sac-107), suggested two temporally distinct cultural traditions. Later work at other mounds by Sacramento Junior College and the University of California, Berkeley, enabled the investigators to identify a third cultural tradition, intermediate between the previously postulated Early and Late Horizons. The three-horizon sequence, based on discrete changes in ornamental artifacts and mortuary practices, as well as on observed differences in soils within sites (Lillard, Heizer and Fenenga 1939), was later refined by Beardsley (1954). An expanded definition of artifacts diagnostic of each time period was developed, and its application extended to parts of the central California coast. Traits held in common allow the application of this system within certain limits of time and space to other areas of prehistoric central California.

The Windmiller Culture (Early Horizon) is characterized by ventrally-extended burials (some dorsal extensions are known), with westerly orientation of heads; a high percentage of burials with grave goods; frequent presence of red ocher in graves; large projectile points, of which 60 percent are of materials other than obsidian; rectangular *Haliotis* beads; *Olivella* shell beads (types A1a and L); rare use of bone; some use of baked clay objects; and well-fashioned charmstones, usually perforated.

The Cosumnes Culture (Middle Horizon) displays considerable changes from the preceding cultural expression. The burial mode is predominately flexed, with variable cardinal orientation and some cremations present. There are a lower percentage of burials with grave goods, and ocher staining is common in graves. *Olivella* beads of types C1, F and G predominate, and there is abundant use of green *Haliotis sp.* rather than red *Haliotis sp.* Other characteristic artifacts include perforated and canid teeth; asymmetrical and “fishtail” charmstones, usually unperforated; cobble mortars and evidence of wooden mortars; extensive use of bone for tools and ornaments; large projectile points, with considerable use of rock other than obsidian; and use of baked clay.

Hotchkiss Culture (Late Horizon) -- The burial pattern retains the use of the flexed mode, and there is wide spread evidence of cremation, lesser use of red ocher, heavy use of baked clay, *Olivella* beads of Types E and M, extensive use of *Haliotis* ornaments of many elaborate shapes and forms, shaped mortars and cylindrical pestles, bird-bone tubes with elaborate geometric designs, clam shell disc beads, small projectile points indicative of the introduction of the bow and arrow, flanged tubular pipes of steatite and schist, and use of magnesite (Moratto 1984:181-183). The characteristics noted are not all-inclusive, but cover the more important traits.

Schulz (1981), in an extensive examination of the central California evidence for the use of acorns, used the terms Early, Middle and Late Complexes, but the traits attributed to them remain generally the same. While it is not altogether clear, Schulz seemingly uses the term “Complex” to refer to the particular archeological entities (above called “Horizons”) as defined in this region. Ragir's (1972) cultures are the same as Schulz’s complexes.

Bennyhoff and Hughes (1984) have presented alternative dating schemes for the Central California Archeological Sequence. The primary emphasis is a more elaborate division of the horizons to reflect what is seen as cultural/temporal changes within the three horizons and a compression of the temporal span.

There have been other chronologies proposed, including Fredrickson (1973), and since it is correlated with Bennyhoff's (1977) work, it does merit discussion. The particular archeological cultural entities Fredrickson has defined, based upon the work of Bennyhoff, are patterns, phases and aspects. Bennyhoff's (1977) work in the Plains Miwok area is the best definition of the Cosumnes District, which likely conforms to Fredrickson's pattern. Fredrickson also proposed periods of time associated heavily with economic modes, which provides a temporal term for comparing contemporary cultural entities. It corresponds with Willey and Phillips' (1958) earlier "tradition", although it is tied more specifically to the archeological record in California.

Ethnography

The Project site lies within the northern portion of the ethnographic territory of the Yokuts people. The Yokuts were members of the Penutian language family which held all of the Central Valley, San Francisco Bay Area, and the Pacific Coast from Marin County to near Point Sur. The Yokuts

differed from other ethnographic groups in California as they had true tribal divisions with group names (Kroeber 1925; Latta 1949). Each tribe spoke a particular dialect, common to its members, but similar enough to other Yokuts that they were mutually intelligible (Kroeber 1925).

The Yokuts held portions of the San Joaquin Valley from the Tehachapis in the south to Stockton in the north. On the north they were bordered by the Plains Miwok, and on the west by the Saclan or Bay Miwok and Costonoan peoples. Although neighbors were often from distinct language families, differences between the people appear to have been more influenced by environmental factors as opposed to linguistic affinities. Thus, the Plains Miwok were more similar to the nearby Yokuts than to foothill members of their own language group. Similarities in cultural inventory co-varied with distance from other groups and proximity to culturally diverse people. The material culture of the southern San Joaquin Yokuts was therefore more closely related to that of their non-Yokuts neighbors than to that of Delta members of their own language group.

Trade was well developed, with mutually beneficial interchange of needed or desired goods. Obsidian, rare in the San Joaquin Valley, was obtained by trade with Paiute and Shoshoni groups on the eastern side of the Sierra Nevada, where numerous sources of this material are located, and to some extent from the Napa Valley to the north. Shell beads, obtained by the Yokuts from coastal people, and acorns, rare in the Great Basin, were among many items exported to the east by Yokuts traders (Davis 1961).

Economic subsistence was based on the acorn, with substantial dependency on gathering and processing of wild seeds and other vegetable foods. The rivers, streams, and sloughs that formed a maze within the valley provided abundant food resources such as fish, shellfish, and turtles. Game, wild fowl, and small mammals were trapped and hunted to provide protein augmentation of the diet. In general, the eastern portion of the San Joaquin Valley provided a lush environment of varied food resources, with the estimated large population centers reflecting this abundance (Cook 1955; Baumhoff 1963).

Settlements were oriented along the water ways, with their village sites normally placed adjacent to these features for their nearby water and food resources. House structures varied in size and shape (Latta 1949; Kroeber 1925), with most constructed from the readily available tules found in the extensive marshes of the low-lying valley areas. The housepit depressions for the structures ranged in diameter from 3 meters to 18 meters (Wallace 1978:470).

Historical Background

The first extensive wheat-growing in the San Joaquin Valley took place on the sand plains in the region between Stockton and Manteca and on the west side of the valley between Tracy and Newman. The wheat growing was due to an initial experiment of John Wheeler Jones, who planted 160 acres to wheat in 1855 which included the central town site of what is now Manteca. He plowed his fields with a walking plow. The famous Stockton gang-plow was reported to be invented near the present site of Manteca (Smith 1960: 221, 243).

When the Visalia Branch of the Central Pacific Railroad (later the Fresno Branch of the Southern Pacific) was completed through the San Joaquin Valley, a shipping point was set up in the region and named Cowell or Cowell Station for Joshua Cowell, who had donated the right of way for the railroad. Maps of the area printed in the early San Joaquin County history shows scattered ranches in the area on large tracts of land (Thompson and West 1879). The town became a supply center for the region.

The station was re-named Manteca in 1904 or 1905 by the Southern Pacific for a local creamery that had taken its name from the Spanish word for “butter” or “lard” (Gudde 1969: 191). Another version of the naming of the town is that the Southern Pacific misprinted the name of the “Monteca” as “Manteca”, and would not change the spelling (Hillman and Covello 1985).

After irrigation systems were developed, the large tracts of land formerly cultivated by dry land crops such as grain could be converted to use for orchards, alfalfa, diversified crops and large-scale dairying. Within a short time after the completion of the first irrigation system in the region by the Stanislaus and San Joaquin Water Company, the population of the town grew from 80 to about 500. Further growth occurred with the creation of the South San Joaquin Irrigation District in 1909 and the completion of Goodwin Dam on the Stanislaus River and associated canals in 1913 (Hillman and Covello 1985).

Industries in the area were agricultural in nature for many years, with stockyards, dairy farms, pumpkins and sugar beets being important economically. The Spreckels Sugar Company opened a mill in 1918 that remained an important industry in the region.

The population of Manteca began to grow at a rapid rate in the early 1950s, with the town serving as a bedroom community for industrial plants in San Joaquin County communities. Beginning in the 1970s, improvements to community infrastructure and the attractive pricing of homes brought even more growth (Hillman and Covelo 1985). The pattern of rapid growth continues to this day, with industrial development in the area, as well as many residents commuting regularly to the Bay Area.

RESEARCH

Records of previously recorded cultural resources and cultural resource investigations were examined by the Central California Information Center of the California Historical Resources Information System on for the Project site and a one-eighth mile radius (CCIC File # 11560L, Appendix 2) on November 17, 2020.

The Project site has been previously surveyed in 2007 by Jones & Stokes Associates (Report #SJ - 7769). This team of archeologists found no historic or prehistoric cultural resources in their survey. A letter report, reflecting a literature review, was prepared by Miley Holman in 2013 (Report #SJ-7770).

Two sites have been recorded along the edges of the property. At the eastern edge of the Project site, the major 50-mile-long Tesla-Salado-Manteca 115 kV transmission line has been recorded as #P-39-005337. The recorder, Matt Walker, evaluated the system in 2017, and determined that the site was not eligible for the National Register of Historic Places (Cardno 2017).

The other site within the Project site is a small section of the Walthall Slough Dry Land levee, recorded as #P-39-5086. A section of the RD 17 West Levee had been recorded in 2008 by Brian Ludwig of AECOM. This recordation lay over 2 miles to the west of the Project site. In 2012, archeologists recorded the Walthall Slough Dry Levee as a part of the RD 17 system in an abbreviated form, extending into the southwestern corner of the property. The Walthall Slough Dry Levee may actually be part of RD 2094, not RD 17.

To the south, within the record search radius lies the Rustic School, recorded as #P-39- 5046. The first Rustic School was a small rural one-room schoolhouse built in about 1870. Population remained sparse in the area, and replacement of the school with a two-room schoolhouse did not occur until 1921. The school served the region until 1963, with students then transferring to the Nile Garden School. In 1991, the 1921 school had been converted to a private residence.

NATIVE AMERICAN CONSULTATION

The project, as currently describer, may involve a minor adjustment to the General Plan. As a result, Senate Bill 18 consultation may be necessary**.** Peak & Associates requested a check of the

Sacred Lands files through the Native American Heritage Commission**,** and the response from December 4, 2020 resulted in negative findings. The NAHC also included a list of contacts for future consultation efforts by the City (Appendix 3).

FIELD INVESTIGATIONS

The property was surveyed on November 19, 20 and 23, 2020 by Michael Lawson of Peak & Associates. He investigated the property by walking linear transects spaced no more than fifteen meters apart across the entire property. Transects were narrowed in portions of the property such as near the buildings and other features (Figure 4).

The landform is flat, apparently leveled for agricultural purposes, with an irrigation ditch and a modern well with a pump are present within the property. The land is in use for hay cultivation.

The soil is uniformly light tan in color and sandy loam in texture, with occasional water rounded pebbles. Inspection of the ditch cut showed no variation in the soils relative to the soils at the surface.

There is no evidence of prehistoric period use or occupancy of the property.

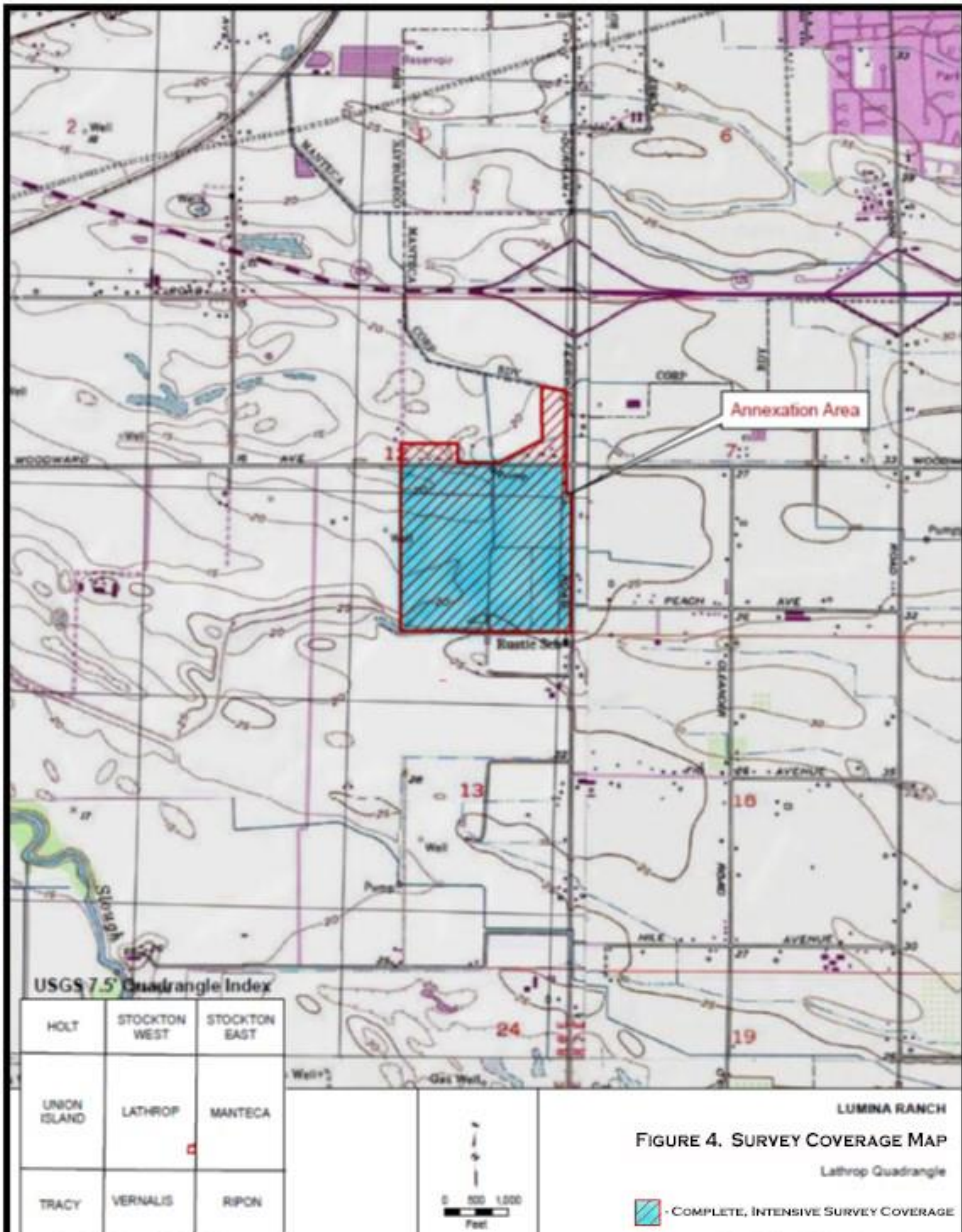
RECORDED RESOURCES

Three historic period resources have been recorded in the Project site. The Walthall Dry Land Levee forms a portion of the south boundary. A site form update has been prepared, and included in Appendix 4.

Two residences are present on the property, located at the northwest corner of the property. The residences are more than 50 years in age, and have been formally recorded. Site forms are included in Appendix 4.

20329 South Airport Way, Manteca

The resource consists of a single-family residence and an outbuilding. The residence is rectangular shaped, single story with a moderately pitched, side gable roof. The roof is covered with asphalt



Source: San Joaquin County GIS; ArcGIS Online Topographic Map Service. Map date: December 23, 2020

LUMINA RANCH

FIGURE 4. SURVEY COVERAGE MAP

Lathrop Quadrangle

- COMPLETE, INTENSIVE SURVEY COVERAGE

shingles and the siding is primarily stucco. There is a small, open sided entryway on the east facing façade and a larger, enclosed entryway on the south facing façade. The roof eaves are close with exposed rafter tails. The windows are double sash, divided horizontally enclosed with a slip sill.

The outbuilding is rectangular shaped, single story with a moderately steeply pitched gable roof with exposed rafter tails. Like the adjoining residence, the roof is covered with asphalt shingles and the siding is stucco. There is a single door located on the south facing façade and a single window located on both the west and east facing façades. A small, all metal, modern shed is located along the north facing façade.

The residence is not mapped on the 1915 Lathrop USGS topographic map. It is shown on the 1952 USGS Lathrop 7.5 minutes series topographic map quadrangle that was based on aerial photographs taken in 1949. Stylistically, the residence is a Side-Gable Roof variant of the Minimal Traditional Style that was popular between the period of 1935 to 1950 (McAlester 2017:586-595).

20333 South Airport Way, Manteca

The resource is a single-family residence. The residence is rectangular shaped, single story with a moderately pitched, side gable roof. The roof is covered with asphalt shingles and the siding is stucco. There is an open porch/entryway located on the southeastern corner. An addition with a shed roof is located along the north facing façade. The roof eaves are close with exposed rafter tails. The windows are double sash and triple sash, divided vertically and are enclosed with a slip sill. The addition along the north facing façade has modern aluminum windows with no window treatment.

The residence is not mapped on the 1915 Lathrop USGS topographic map. It is shown on the 1952 USGS Lathrop 7.5 minutes series topographic map quadrangle that was based on aerial photographs taken in 1949. Stylistically, the residence is a Side-Gable Roof variant of the Minimal Traditional Style that was popular between the period of 1935 to 1950 (McAlester 2017:586-595).

Walthall Slough Dry Land Levee

As with most older levees and other types of infrastructure, the owners did not place information in newspapers or retain other sources of information about dates of construction, project designers or construction firms, or maintenance and improvements. The Walthall Slough Dry Land Levee is shown as a levee feature on the 1915 Lathrop USGS in approximately the present location. The team that recorded the levee as part of RD 17 in 2012 provided no information about the feature's age, history, or any other details. They noted it is 2.25 miles in length, and the overall integrity was very good, although it is very similar to many levees in the Central Valley.

Checking Newspapers.com provided no further insight on the history of the levee until reports are made of the modern flooding in 1997 that affected the levee. The levee was being shored up by the Department of Water Resources because it was leaking but not yet breached (*San Francisco Examiner* 27 January 1997).

RESOURCE EVALAUTIONS

20329 South Airport Way, Manteca

Under CRHR criterion A, the site must "be associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage." The residence and outbuilding do not appear to be associated with any specific, significant contribution.

For a property to be eligible under Criterion B of the CRHR, the features must be associated with persons important in the past. There is no evidence to suggest that this property was ever associated with a significant person in our past.

For CRHR Criterion C, the resource must embody "the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values." The Side-Gable Roof subtype of Minimal Traditional Style home represents the one of the most economical to build residential unit layouts available and was widely advertised as such during the 1930s and 1940s (McAlester 2017:587). The residence and outbuilding at 20329 South Airport Way are a typical, but not at all elaborate, example of this widely built subtype.

For Criterion D. there were no associated archeological deposits observed during the field inspection and recordation and it is unlikely given the degree of ground disturbance surrounding the buildings that a buried, undiscovered deposit would be present.

We conclude that this complex does not meet the threshold under Criteria A-D of the CRHR and is not a historical resource.

20333 South Airport Way, Manteca

Under CRHR Criterion A, the site must "be associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage." The residence does not appear to be associated with any specific, significant contribution.

For a property to be eligible under Criterion B of the CRHR, the features must be associated with persons important in the past. There is no evidence to suggest that this property was ever associated with a significant person in our past.

For CRHR Criterion C, the resource must embody "the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values." The Side-Gable Roof subtype of Minimal Traditional Style home represents the one of the most economical to build residential unit layouts available and was widely advertised as such during the 1930s and 1940s (McAlester 2017:587). The residence located at 20330 South Airport Way is a typical, fairly plain, example of this widely built subtype. The more modern addition added to the north facing side detracts from the overall integrity as well.

For Criterion D. there were no associated archeological deposits observed during the field inspection and recordation and it is unlikely given the degree of ground disturbance surrounding the buildings that a buried, undiscovered deposit would be present.

We conclude that this complex does not meet the threshold under Criteria A-D of the CRHR and is not a historical resource.

Walthall Slough Dry Land Levee

The levee may be a significant resource as a part of the San Joaquin River Levee system. The levee is currently recorded as a part of RD 17, or may actually be later and tied to the later RD 2094. Archival studies would need to be undertaken to provide the historical context for the levee, and an evaluation made based on further studies.

RECOMMENDATIONS

Although unlikely, there is always a slight possibility that a site may exist in the Project site and be obscured by vegetation, siltation or historic activities, leaving no surface evidence. In order to assist in the recognition of cultural resources, a training session for all workers should be conducted in advance of the initiation of construction activities at the site. The training session will provide information on recognition of artifacts, human remains, and cultural deposits to help in the recognition of potential issues.

In addition, during the initial grading we recommend that a qualified archeologist be present to observe the initial land disturbance, and be able to halt work in the immediate vicinity should artifacts, exotic rock, shell or bone are uncovered during the construction. The monitor will be able to document the finding, and determine if additional work is necessary to excavate or remove the artifacts or feature.

Discovery of Human Remains

In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area suspected to overlie adjacent remains until the San Joaquin County Coroner has determined that the remains are not subject to any provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains.

If the San Joaquin County Coroner determines that the remains are not subject to his or her authority and if the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission (NAHC).

After notification, the NAHC will follow the procedures outlined in Public Resources Code Section 5097.98, that include notification of most likely descendants (MLDs), and recommendations for treatment of the remains. The MLDs will have 48 hours after notification by the NAHC to make their recommendations (PRC Section 5097.98).

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APPENDIX 1

Resumes

PEAK & ASSOCIATES, INC.

RESUME

MELINDA A. PEAK **January 2021**
Senior Historian/Archeologist
3941 Park Drive, Suite 20 #329
El Dorado Hills, CA 95762
(916) 939-2405

PROFESSIONAL EXPERIENCE

Ms. Peak has served as the principal investigator on a wide range of prehistoric and historic excavations throughout California. She has directed laboratory analyses of archeological materials, including the historic period. She has also conducted a wide variety of cultural resource assessments in California, including documentary research, field survey, Native American consultation and report preparation.

In addition, Ms. Peak has developed a second field of expertise in applied history, specializing in site-specific research for historic period resources. She is a registered professional historian and has completed a number of historical research projects for a wide variety of site types.

Through her education and experience, Ms. Peak meets the Secretary of Interior Standards for historian, architectural historian, prehistoric archeologist and historic archeologist.

EDUCATION

M.A. - History - California State University, Sacramento, 1989

Thesis: *The Bellevue Mine: A Historical Resources Management Site Study in Plumas and Sierra Counties, California*

B.A. - Anthropology - University of California, Berkeley

PROJECTS

In recent years, Ms. Peak has led the team completing the cultural resource sections for General Plan and General Plan Updates, for a number of cities/neighborhoods including Campbell, Milpitas, Yountville, Manteca, The Springs, Sebastopol, Martinez, Brentwood, Colusa County and Foster City. Older General Plan efforts include Wheatland, Rocklin, Sheridan, Granite Bay and South Sutter County.

In recent months, Ms. Peak has completed a number of determinations of eligibility and effect documents in coordination with the Corps of Engineers for projects requiring federal permits, assessing the eligibility of a number of sites for the National Register of Historic Places.

She has also completed historical research projects on a wide variety of topics for a number of projects including the development of a winery in a ranch in Folsom, commercial buildings in the City of Davis, a lumber mill in Clovis, older farmhouses dating to the 1860s, an early roadhouse, bridges, canals, former small-town site, and a section of an electric railway line.

In recent years, Ms. Peak has prepared a number of cultural resource overviews and predictive models for blocks of land proposed for future development for general and specific plans. She has been able to direct a number of surveys of these areas, allowing the model to be tested.

Ms. Peak completed the cultural resource research and contributed to the text prepared for the DeSabla-Centerville PAD for the initial stage of the FERC relicensing. She also served cultural resource project manager for the FERC relicensing of the Beardsley-Donnells Project. For the South Feather Power Project and the Woodleaf-Palermo and Sly Creek Transmission Lines, her team completing the technical work for the project.

She served as principal investigator for the multi-phase Twelve Bridges Golf Club project in Placer County. She served as liaison with the various agencies, helped prepare the historic properties treatment plan, managed the various phases of test and data recovery excavations, and completed the final report on the analysis of the test phase excavations of a number of prehistoric sites. She is currently involved as the principal investigator for the Clover Valley Lakes project adjacent to Twelve Bridges in the City of Rocklin, coordinating contacts with Native Americans, the Corps of Engineers and the Office of Historic Preservation.

Ms. Peak has served as project manager for a number of major survey and excavation projects in recent years, including the many surveys and site definition excavations for the 172-mile-long Pacific Pipeline proposed for construction in Santa Barbara, Ventura and Los Angeles counties. She also completed an archival study in the City of Los Angeles for the project, and served as principal investigator for a major coaxial cable removal project for AT&T.

Additionally, she completed a number of small surveys, served as a construction monitor at several urban sites, and conducted emergency recovery excavations for sites found during monitoring. She has directed the excavations of several historic complexes in Sacramento, Placer and El Dorado Counties.

Ms. Peak is the author of a chapter and two sections of a published history (1999) of Sacramento County, *Sacramento: Gold Rush Legacy, Metropolitan Legacy*. She served as the consultant for a children's book on California, published by Capstone Press in 2003 in the Land of Liberty series.

PEAK & ASSOCIATES, INC.
RESUME

MICHAEL LAWSON **January 2021**
Archeological Specialist
3941 Park Drive, Suite 20-329
El Dorado Hills, CA 95672
(916) 939-2405

PROFESSIONAL EXPERIENCE

Mr. Lawson has compiled an excellent record of supervision of excavation and survey projects for both the public and private sectors over the past twenty-two years. He has conducted a number of surveys throughout northern and central California, as well as serving as an archeological technician and crew chief for a number of excavation projects.

EDUCATION

B.A. - Anthropology - California State University, Sacramento

Special Course: Comparative Osteology. University of Tennessee, Knoxville. Forensic Anthropology Center. January 2018.

> Intensive lab and outdoor study with human example from outdoor research facility, including typical and non-metric examples, compared with fifty non-human species most commonly confused with human remains. Outdoor research facility "The Body Farm" study included survey, photography, collection and identification of faunal and human bone fragments, with a Power Point presentation discussing finds.

EXPERIENCE

- Extensive monitoring of open space, streets and project development areas for prehistoric period and historic period resources. Areas monitored include Sutter Street in Folsom; Mud Creek Archeological District in Chico; Camp Roberts, San Luis Obispo County; Avila Beach, San Luis Obispo County; Edgewood Golf Course, South Lake Tahoe; Davis Water Project, Davis; Star Bend levee section, Sutter County; Feather River levees, Sutter County; Bodega Bay, Sonoma County; San Jose BART line extension, Santa Clara County; and numerous sites for PG&E in San Francisco.
- Over twenty years of experience working in CRM, volunteer, and academic settings in California historic, proto-historic, and prehistoric archaeology.
- Expertise in pedestrian survey, excavation, feature (including burial) exposure, laboratory techniques, research. Field positions include crew chief and lead technician.

APPENDIX 2

Record Search

CENTRAL CALIFORNIA INFORMATION CENTER

California Historical Resources Information System

Department of Anthropology – California State University, Stanislaus

One University Circle, Turlock, California 95382

(209) 667-3307

Alpine, Calaveras, Mariposa, Merced, San Joaquin, Stanislaus & Tuolumne Counties

Date: 11/17/2020

Records Search File No.: 11560L
Access Agreement: #137
Project: Machado Estates,
Various Woodward Avenue

Robert Gerry
Peak & Associates, Inc.
3941 Park Drive, Suite 20-329
El Dorado Hills, CA 95762
916-939-2405

invoice to: peakinc@sbcglocal.net

Dear Mr. Gerry:

The Central California Information Center received your record search request for the project area/radius referenced above, located on the Lathrop & Manteca 7.5' quadrangle in San Joaquin County. The following reflects the results of the records search for the project study area and radius:

As per data currently available at the CCaIC, the locations of resources/reports are provided in the following format: ☒ custom GIS maps ☐ shape files ☐ hand-drawn maps

Summary Data:

Resources within the project area:	2: P-39-005086, 5337
Resources within the 1/8-mile radius:	1: P-39-005046
Reports within the project area:	11: SJ-00729, 1900, 4786, 4901, 5309, 6625, 7465, 7581, 7769, 7770, 8023
Reports within the 1/8-mile radius:	1: SJ-06925

Resource Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Database Printout (details):	☐ enclosed	☒ not requested	☐ nothing listed
Resource Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Report Database Printout (details):	☐ enclosed	☒ not requested	☐ nothing listed
Report Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Resource Record Copies:	☒ enclosed	☐ not requested	☐ nothing listed

Report Copies: ☐ enclosed ☒ not requested ☐ nothing listed
OHP Historic Properties Directory: New Excel File: Built Environment Resource Directory (BERD)
Dated 12/17/2019 ☐ enclosed ☐ not requested ☒ nothing listed
Archaeological Determinations of Eligibility: ☐ enclosed ☐ not requested ☒ nothing listed
CA Inventory of Historic Resources (1976): ☐ enclosed ☒ not requested ☐ nothing listed
Caltrans Bridge Survey: ☐ enclosed ☒ not requested ☐ nothing listed
Ethnographic Information: ☐ enclosed ☒ not requested ☐ nothing listed
Historical Literature: ☐ enclosed ☒ not requested ☐ nothing listed
Historical Maps: ☐ enclosed ☒ not requested ☐ nothing listed
Local Inventories: ☐ enclosed ☒ not requested ☐ nothing listed
GLO and/or Rancho Plat Maps: ☐ enclosed ☒ not requested ☐ nothing listed
Shipwreck Inventory: ☒ not available at CCIC; please go to
http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Database.asp
Soil Survey Maps: ☒ not available at CCIC; please go to
http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System (CHRIS).

Note: Billing will be transmitted separately via email by our Financial Services office *($574.43), payable within 60 days of receipt of the invoice.

If you wish to include payment by Credit Card, you must wait to receive the official invoice from Financial Services so that you can reference the CMP # (Invoice Number), and then contact the link below:

https://commerce.cashnet.com/ANTHROPOLOGY

Sincerely,

E. A. Greathouse

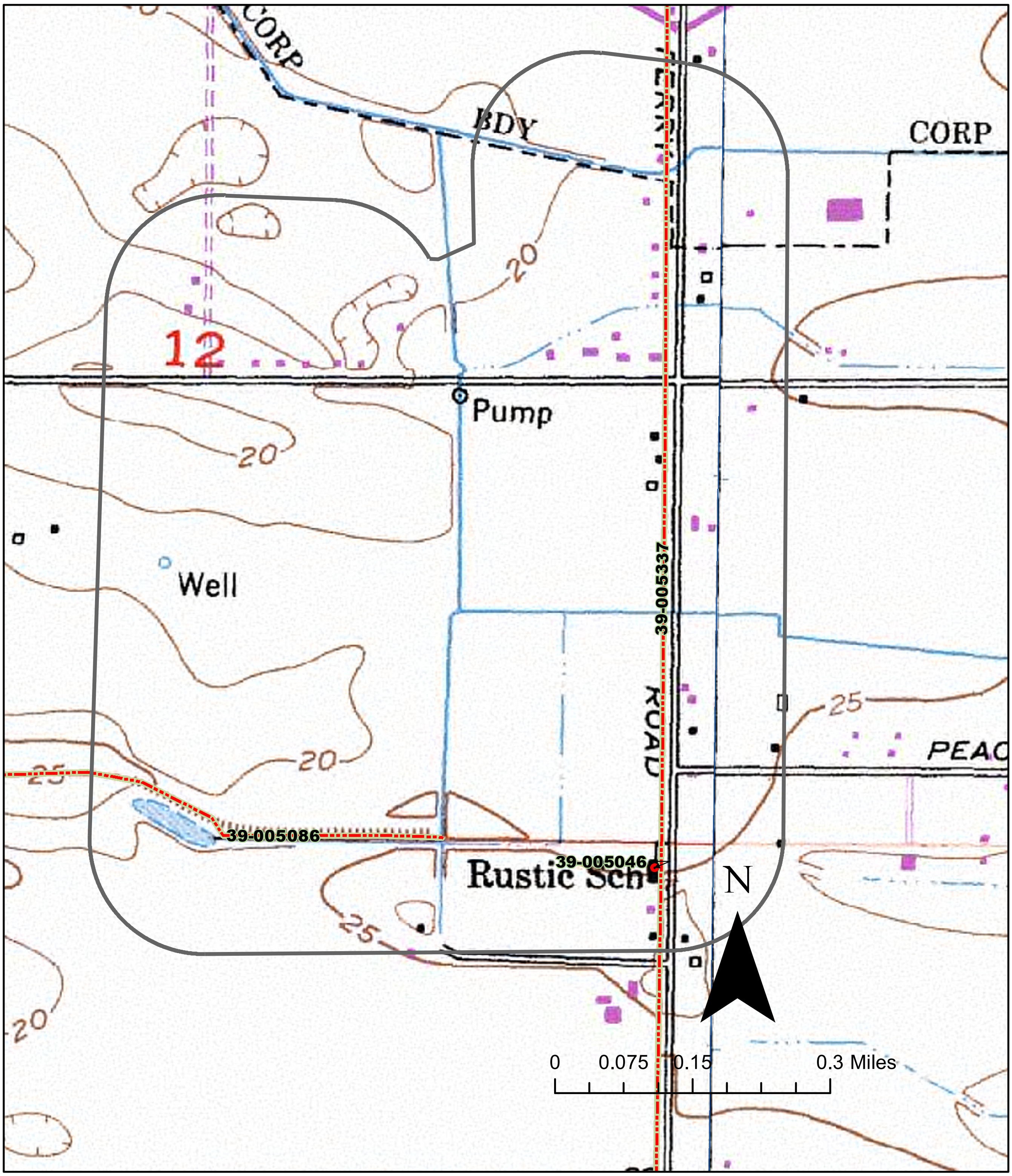
E. A. Greathouse, Coordinator
Central California Information Center
California Historical Resources Information System

* Invoice Request sent to: Laurie Marroquin CSU Stanislaus Financial Services
lamarroquin@csustan.edu

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-39-005046		Resource Name - Rustic School	Building	Historic	HP15	1991 (San Joaquin County Superintendent of Schools, Public Schools of San Joaquin County 1852-1990 (1991))	
P-39-005086		Resource Name - RD 17 West Levee; Resource Name - Walthal Slough Dry Land Levee	Structure	Historic	HP11	2008 (Brian Ludwig, AECOM); 2012 (Cindy Arrington, Parus Consulting, Inc)	SJ-07465, SJ-07581
P-39-005337		Resource Name - Tesla-Salado-Manteca 115 kV Transmission Line	Structure	Historic	HP11	2017 (M. Walker, Cardno, Inc., for PG&E)	SJ-09022

CCaIC 11560L Machado Estates
Resources 1/8-mile radius 1:10,000-scale
Lahtrop & Manteca USGS 7.5' Quadrangle



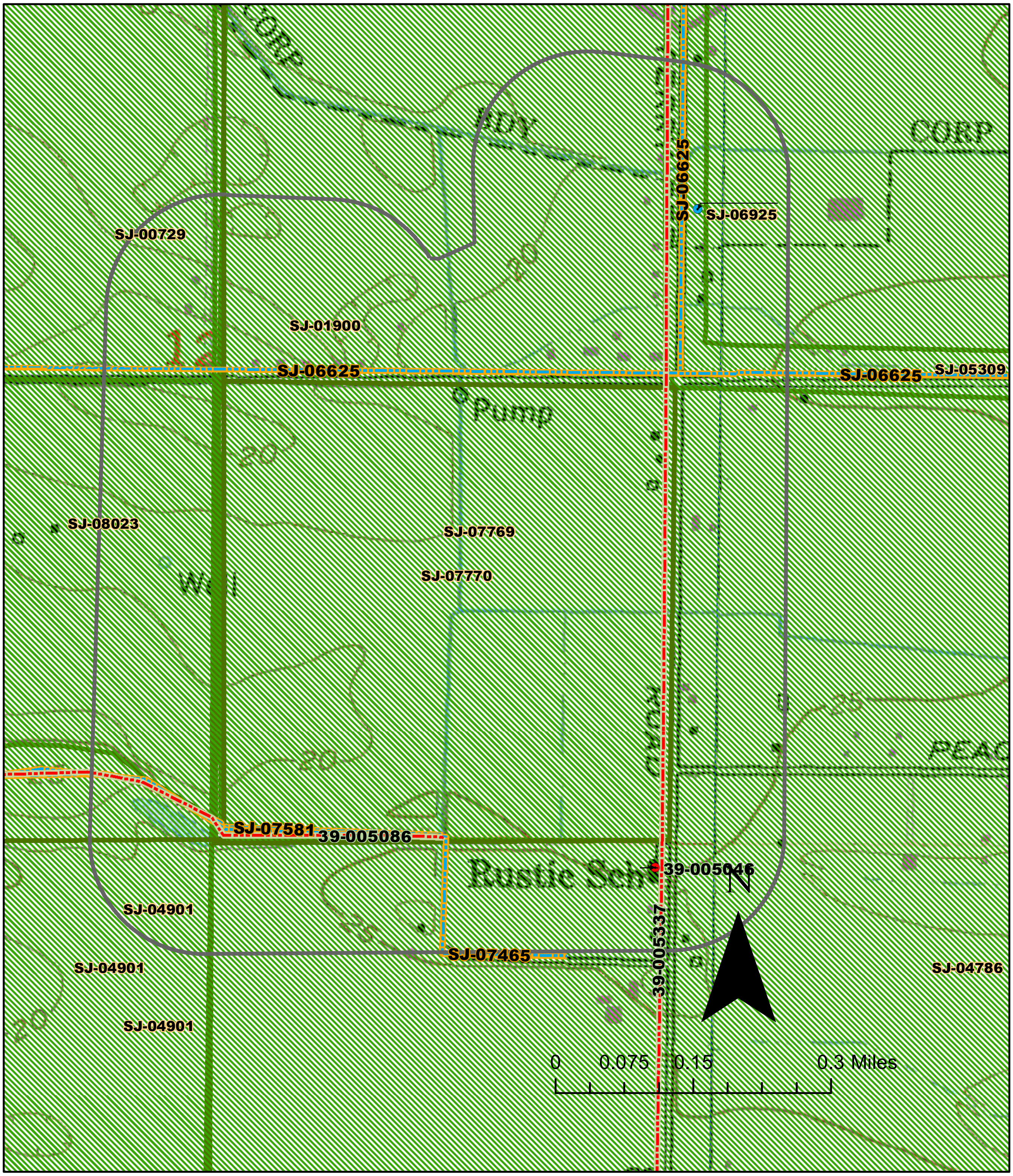
Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
SJ-00729	NADB-R - 1361539	1981	Chavez, D.	Cultural Resource Evaluation for the Manteca Wastewater Project, San Joaquin County, California.	David Chavez, Consulting Archaeologist; for James M. Montgomery Consulting Engineers, Inc.	
SJ-01900	NADB-R - 1360590	1993	Napton, L. K.	A Preliminary Cultural Resources Investigation of the South Manteca Area Plan, 7,800 acres in San Joaquin County, California.	CSU Stanislaus, Institute for Archaeological Research	39-000282
SJ-04786	NADB-R - 1364725	2002	Windmiller, Ric and Donald Napoli	City of Manteca--General Plan Update, Background Reports: Archaeological Resources, Historical Resources, Records Search Results.	Ric Windmiller, Consulting Archaeologist (and) Donald Napoli, of Historic Preservation Planning; for Wade Associates, Sacramento, CA	39-000002, 39-000015, 39-000098, 39-000099, 39-000102, 39-000103, 39-000111, 39-000282, 39-000354, 39-000681, 39-000682, 39-000683, 39-000684, 39-004148, 39-004188, 39-004189, 39-004190, 39-004191, 39-004192
SJ-04901	NADB-R - 1364814	2003	Windmiller, R. and D. Napoli	Southwest Manteca Area Specific Plan, Background Reports: Archaeological Resources, Historical Resources, Records Search Results.	R. Windmiller, Consulting Archaeologist (and) Donald Napoli, Historic Preservation Planning; for Wade Associates	
SJ-05309	NADB-R - 1365195	2004	Baloian, M., R. Baloian, and W. Nettles	Cultural Resources Investigations for the South San Joaquin Irrigation District in San Joaquin County, California.	Applied Earthworks, Inc.; prepared for Russell Associates, Palo Alto, CA	39-000002, 39-000015, 39-000098, 39-000099, 39-000103, 39-000354, 39-004400, 39-004401, 39-004402, 39-004403, 39-004404, 39-004405, 39-004406, 39-004407, 39-004408, 39-004409, 39-004410, 39-004411, 39-004412, 39-004413, 39-004414, 39-004415, 39-004416, 39-004417
SJ-06625	NADB-R - 1367290	1998	ASI Archaeology and Cultural Resource Management	Cultural Resources Survey, South County Surface Water Project, San Joaquin County, California, South San Joaquin Irrigation District	ASI Archaeology and Cultural Resource Management (prepared for Environmental Science Associates, Inc.)	39-000002, 39-000098, 39-000129, 39-000317, 39-000531, 39-000548, 50-000001
SJ-06925	NADB-R - 1367187	2008	Dougherty, J.	Cultural Resources Constraints Study for the Replacement of 6 Poles on the Tesla-Saludo-Manteca High Voltage Transmission Line. Stanislaus and San Joaquin Counties, California.	PAR Environmental Services	
SJ-07465	NADB-R - 1367812	2011	Shephard, A.	Cultural Resources Inventory and Evaluation Report for the Phase 3 Reclamation District 17 100-Year Levee Seepage Area Project	AECOM; for Reclamation District 17	39-000002, 39-000014, 39-004345, 39-004346, 39-004602, 39-005086

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
SJ-07581	NADB-R - 1367942	2012	Sikes, N. E. and C. J. Arrington	An Archaeological Survey for the Department of Water Resources' Geotechnical Levee Investigation of Walthal Slough Dry Land Levee, San Joaquin County, California	Parus Consulting, Inc.; for Kleinfelder West, Inc. and for CA Dept. of Water Resources	39-005086
SJ-07769	NADB-R - 1368146	2007	Jones & Stokes	Draft: Cultural Resources Inventory and Evaluation Report for the Machado Development Project, San Joaquin County, California. [Appendix B with Site Records not attached]	Jones & Stokes; for City of Manteca Community Development Dept.	
SJ-07770	NADB-R - 1368147	2013	Holman, M. P.	Letter Report: Cultural Resources Study of the Machado Property, 20329 South Airport Parkway, Manteca, San Joaquin County, California, APN 241-320-18.	Holman & Associates; for UPC/LLC	
SJ-08023	Submitter - Tom Origer No. 10-56S	2010	Barrow, E., and J. M. Loyd	A Cultural Resources Survey for the Terra Ranch Subdivision Project, Manteca, San Joaquin County, California.	Tom Origer and Associates for Raney Planning and Management	

CCaIC 11560L Machado Estates
Reports 1/8-mile radius 1:10,000-scale
Lahtrop & Manteca USGS 7.5' Quadrangle



APPENDIX 3

Native American Heritage Commission

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Merri Lopez-Keifer
Luiseño

PARLIAMENTARIAN
Russell Attebery
Karuk

COMMISSIONER
Marshall McKay
Wintun

COMMISSIONER
William Mungary
Paiute/White Mountain Apache

COMMISSIONER
Julie Tumamait-Stenslie
Chumash

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

December 4, 2020

Robert A. Gerry

Peak & Associates,Inc.

Via Email to:peakinc@surewest.net

Re: Machado Estates, San Joaquin County

Dear Mr. Gerry:

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: Nancy.Gonzalez-Lopez@nahc.ca.gov.

Sincerely,

Nancy Gonzalez-Lopez

Nancy Gonzalez-Lopez
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
San Joaquin County
12/4/2020

North Valley Yokuts Tribe	
Timothy Perez, MLD Contact	
P.O. Box 717	Costanoan
Linden, CA, 95236	Northern Valley
Phone: (209) 662 - 2788	Yokut
huskanam@gmail.com	
North Valley Yokuts Tribe	
Katherine Perez, Chairperson	
P.O. Box 717	Costanoan
Linden, CA, 95236	Northern Valley
Phone: (209) 887 - 3415	Yokut
canutes@verizon.net	
The Confederated Villages of Lisjan	
Corrina Gould, Chairperson	
10926 Edes Avenue	Bay Miwok
Oakland, CA, 94603	Ohlone
Phone: (510) 575 - 8408	Delta Yokut
cvltribe@gmail.com	

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

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Machado Estates, San Joaquin County.

APPENDIX 4

DPR 523 Site Forms

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code Reviewer Date

 *Resource Name or #: 20329 South Airport Way, Manteca

P1. Other Identifier:
***P2. Location:** ☐ **Not for Publication** X **Unrestricted** ***a. County:** San Joaquin
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Lathrop, CA **Date:** 1952 (1987/1994) **T** 2S; **R** 6E ; NE¼ **of** SE¼ **of Sec** 12**;** M.D.B.M.
c. Address: 20329 South Airport Way City: Manteca Zip: 95337-9615
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation: 22 Feet. The residence is located approximately 300 feet south of the intersection of Woodward Avenue and South Airport Way in the unincorporated portion of San Joaquin County south of the City of Manteca.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The resource consists of a single-family residence and an outbuilding. The residence is rectangular shaped, single story with a moderately pitched, side gable roof. The roof is covered with asphalt shingles and the siding is primarily stucco. There is a small, open sided entryway on the east facing façade and a larger, enclosed entryway on the south facing façade. The roof eaves are close with exposed rafter tails. The windows are double sash, divided horizontally enclosed with a slip sill.

The outbuilding is rectangular shaped, single story with a moderately steeply pitched gable roof with exposed rafter tails. Like the adjoining residence, the roof is covered with asphalt shingles and the siding is stucco. There is a single door located on the south facing façade and a single window located on both the west and east facing façades. A small, all metal, modern shed is located along the north facing façade.

The residence is not mapped on the 1915 Lathrop USGS topographic map. It is shown on the 1952 USGS Lathrop 7.5 minutes series topographic map quadrangle that was based on aerial photographs taken in 1949. Stylistically, the residence is a Side-Gable Roof variant of the Minimal Traditional Style that was popular between the period of 1935 to 1950 (McAlester 2017:586-595).
***P3b. Resource Attributes:** (List attributes and codes) HP2 – Single family property
***P4. Resources Present:** **X** Building ☐Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #) View of the residence and outbuilding (left) looking northwest. 11-29-20. Acc. #MM9381.

***P6. Date Constructed/Age and Sources:** **X** Historic ☐Prehistoric ☐Both
Pre 1949 according to the 1952 Lathrop USGS topographic map.

***P7. Owner and Address:**
Unknown

***P8. Recorded by:** (Name, affiliation, and address) Michael Lawson, Peak & Associates, Inc. 3941 Park Drive, Suite 20-329, El Dorado Hills, CA 95762

***P9. Date Recorded:** 11-29-20

***P10. Survey Type:** (Describe)
Complete, intensive.

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") *Cultural Resource Assessment for the Lumina Ranch Project Area, San Joaquin County, California.* Peak & Associates, Inc. 2021
***Attachments:** ☐NONE X Location Map X Sketch Map X Continuation Sheet X Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status Code**

***Resource Name or #** (Assigned by recorder) **20329 South Airport Way, Manteca**

B1. Historic Name:
B2. Common Name:
B3. Original Use: Residence B4. Present Use: Residence
***B5. Architectural Style:** Minimal Traditional, Side-Gable variant
***B6. Construction History:** (Construction date, alterations, and date of alterations) Pre 1949 according to the 1952 Lathrop USGS topographic map.

***B7. Moved?** **X No** **☐Yes** **☐Unknown** **Date:** **Original Location:**
***B8. Related Features:** **Outbiuilding**
B9a. Architect: Unknown b. Builder: Unknown
***B10. Significance:** **Theme:** Residential architecture **Area:** Northern California
Period of Significance: 1900-1971 **Property Type:** Single family residence **Applicable Criteria:** A-D
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Under CRHR criterion A, the site must "be associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage." The residence and outbuilding do not appear to be associated with any specific, significant contribution.

For a property to be eligible under Criterion B of the CRHR, the features must be associated with persons important in the past. There is no evidence to suggest that this property was ever associated with a significant person in our past.

For CRHR Criterion C, the resource must embody "the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values." The Side-Gable Roof subtype of Minimal Traditional Style home represents the one of the most economical to build residential unit layouts available and was widely advertised as such during the 1930s and 1940s (McAlester 2017:587). The residence and outbuilding at 20329 South Airport Way is a typical, but not at all elaborate, example of this widely built subtype.

For Criterion D. there were no associated archeological deposits observed during the field inspection and recordation and it is unlikely given the degree of ground disturbance surrounding the buildings that a buried, undiscovered deposit would be present.

We conclude that this complex does not meet the threshold under criteria A-D of the CRHR and is not a historical resource.

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:** McAlester, Virginia Savage 2017 *A Field Guide to American Houses*. Alfred A. Knopf, New York.

B13. Remarks:

***B14. Evaluator:** Melinda Peak
***Date of Evaluation:** 2/12/21

(This space reserved for official comments.)

A) View of the east facing façade of the residence looking west. 11/29/20. Acc. #MM9267

B) View of the south facing façade of the residence looking north. 11/29/20. Acc. #MM9271

***Resource Name or #** (Assigned by recorder) **20329 South Airport Way, Manteca**

***Recorded by:** Michael Lawson ***Date:** 11/29/20 **X** Continuation ☐ Update

C) View of the north facing façade of the residence looking south. 11/29/20. Acc. #MM9275

D) View of the west facing façade of the residence looking east. 11/29/20. Acc. #MM9377b

***Resource Name or #** (Assigned by recorder) **20329 South Airport Way, Manteca**

***Recorded by:** Michael Lawson ***Date:** 11/29/20 **X** Continuation ☐ Update

E) View of the west and south facing façades of the outbuilding looking east. 11/29/20. Acc. #MM9374

F) View of the south facing façade of the outbuilding looking north. 11/29/20. Acc. #MM9272

G) View of the east facing façades of the outbuilding, shed addition, looking west. 11/29/20. Acc. #MM9270

H) View of the north facing façade of the outbuilding, shed addition, looking south. 11/29/20. Acc. #MM9376

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

SKETCH MAP

Primary #
HRI#
Trinomial

Page 7 of 8 ***Resource Name or #** (Assigned by recorder) 20329 South Airport Way, Manteca

***Drawn By:** Michael Lawson ***Date** 11/29/20

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #
HRI#
Trinomial

***Resource Name or #: 20329 South Airport Way, Manteca**

***Map Name:** Lathrop, CA / Manteca, CA ***Scale:** 1:24,000 ***Date of Maps:** 1994

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: **20333 South Airport Way, Manteca**

P1. Other Identifier:
***P2. Location:** ☐ Not for Publication X Unrestricted ***a. County:** San Joaquin
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Lathrop, CA **Date:** 1952 (1987/1994) **T** 2S; **R** 6E; NE¼ **of** SE¼ **of Sec** 12 **;** M.D.B.M.
c. Address: 20333 South Airport Way City: Manteca Zip: 95337-9615
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation: 22 Feet. The residence is located approximately 400 feet south of the intersection of Woodward Avenue and South Airport Way in the unincorporated portion of San Joaquin County south of the City of Manteca.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The resource is a single-family residence. The residence is rectangular shaped, single story with a moderately pitched, side gable roof. The roof is covered with asphalt shingles and the siding is stucco. There is an open porch/entryway located on the southeastern corner. An addition with a shed roof is located along the north facing façade. The roof eaves are close with exposed rafter tails. The windows are double sash and triple sash, divided vertically and are enclosed with a slip sill. The addition along the north facing façade has modern aluminum windows with no window treatment.

The residence is not mapped on the 1915 Lathrop USGS topographic map. It is shown on the 1952 USGS Lathrop 7.5 minutes series topographic map quadrangle that was based on aerial photographs taken in 1949. Stylistically, the residence is a Side-Gable Roof variant of the Minimal Traditional Style that was popular between the period of 1935 to 1950 (McAlester 2017:586-595).

***P3b. Resource Attributes:** (List attributes and codes) HP2 – Single family property
***P4. Resources Present:** **X** Building ☐Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #) View of the residence looking northwest. 11-29-20. Acc. #MM9379

***P6. Date Constructed/Age and Sources:** **X** Historic ☐Prehistoric ☐Both
Pre 1949 according to the 1952 Lathrop USGS topographic map.

***P7. Owner and Address:**
Unknown

***P8. Recorded by:** (Name, affiliation, and address) Michael Lawson, Peak & Associates, Inc. 3941 Park Drive, Suite 20-329, El Dorado Hills, CA 95762

***P9. Date Recorded:** 11-29-20

***P10. Survey Type:** (Describe)
Complete, intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") *Cultural Resource Assessment for the Lumina Ranch Project Area, San Joaquin County, California.* Peak & Associates, Inc. 2021

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

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
Primary #
HRI#

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status Code

***Resource Name or #** (Assigned by recorder) **20333 South Airport Way, Manteca**

B1. Historic Name:
B2. Common Name:
B3. Original Use: Residence   B4. Present Use: Residence
***B5. Architectural Style:** Minimal Traditional, Side-Gable variant
***B6. Construction History:** (Construction date, alterations, and date of alterations) Pre 1949 according to the 1952 Lathrop USGS topographic map.
***B7. Moved?** X No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features: None**
B9a. Architect: Unknown   b. Builder: Unknown
***B10. Significance: Theme:** Residential architecture   **Area:** Northern California
Period of Significance: 1900-1971   **Property Type:** Single family residence   **Applicable Criteria:** A-D
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Under CRHR criterion A, the site must "be associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage." The residence does not appear to be associated with any specific, significant contribution.

For a property to be eligible under Criterion B of the CRHR, the features must be associated with persons important in the past. There is no evidence to suggest that this property was ever associated with a significant person in our past.

For CRHR Criterion C, the resource must embody "the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values." The Side-Gable Roof subtype of Minimal Traditional Style home represents the one of the most economical to build residential unit layouts available and was widely advertised as such during the 1930s and 1940s (McAlester 2017:587). The residence located at 20330 South Airport Way is a typical, fairly plain, example of this widely built subtype. The more modern addition added to the north facing side detracts from the overall integrity as well.

For Criterion D. there were no associated archeological deposits observed during the field inspection and recordation and it is unlikely given the degree of ground disturbance surrounding the buildings that a buried, undiscovered deposit would be present.

We conclude that this residence does not meet the threshold under criteria A-D of the CRHR and is not a historical resource.

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:** McAlester, Virginia Savage 2017 *A Field Guide to American Houses*. Alfred A. Knopf, New York.

B13. Remarks:

***B14. Evaluator:** Melinda Peak

***Date of Evaluation:** 2/12/21

(This space reserved for official comments.)

***Resource Name or #** (Assigned by recorder) **20333 South Airport Way, Manteca**

***Recorded by:** Michael Lawson ***Date:** 11/29/20 **X** Continuation ☐ Update

A) View of the east facing façade of the residence looking west. 11/29/20. Acc. #MM9265

B) View of the south facing façade of the residence looking north. 11/29/20. Acc. #MM9281

C) View of the west facing façade of the residence looking east. 11/29/20. Acc. #MM9378

D) View of the north facing façade of the residence looking south. 11/29/20. Acc. #MM9269

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
SKETCH MAP

Primary #
HRI#
Trinomial

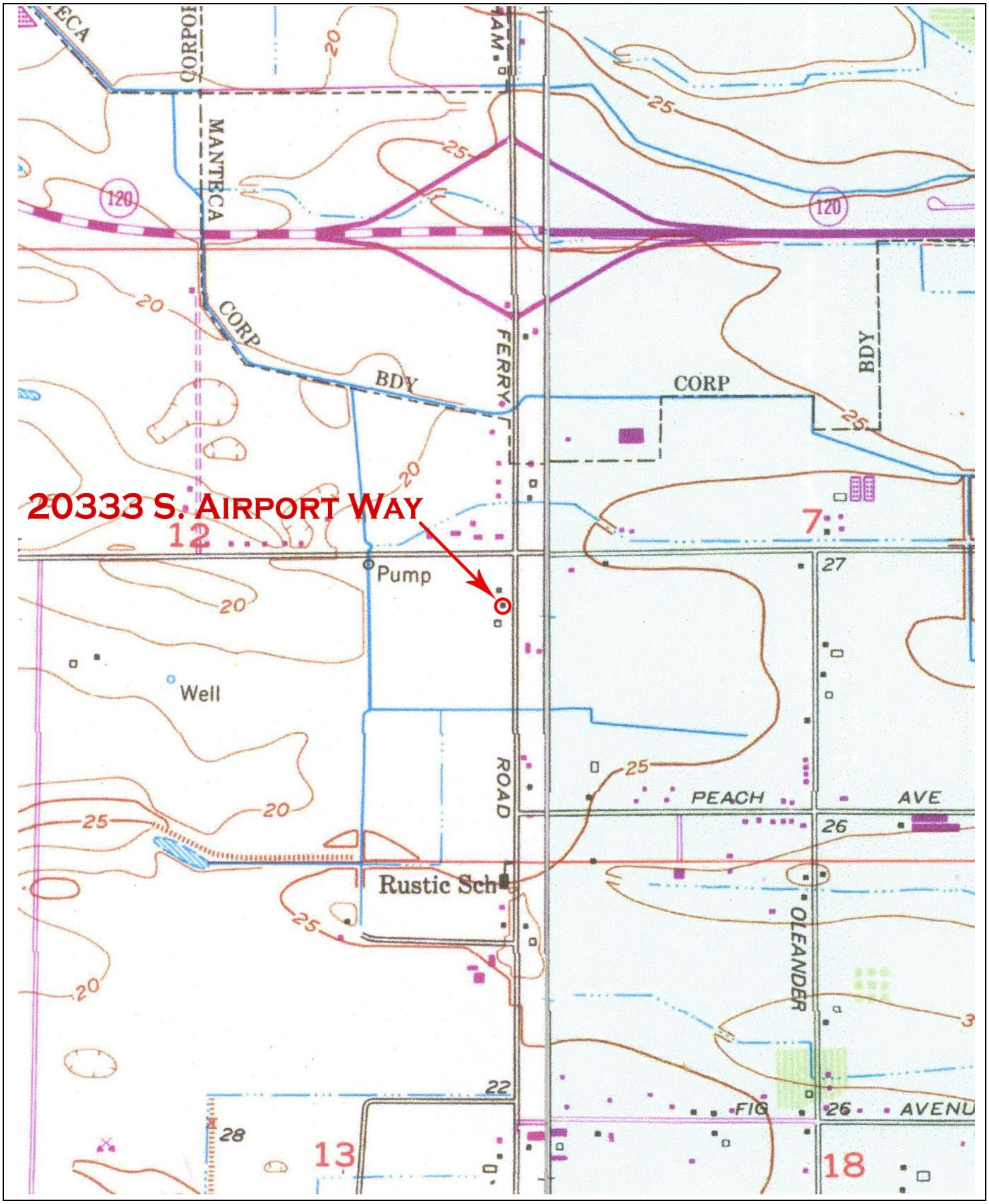
Page 5 **of** 6 ***Resource Name or #** (Assigned by recorder) 20333 South Airport Way, Manteca
***Drawn By:** Michael Lawson ***Date** 11/29/20

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #
HRI#
Trinomial

Page 6 **of** 6 ***Resource Name or #: 20333 South Airport Way, Manteca**

***Map Name:** Lathrop, CA / Manteca, CA ***Scale:** 1:24,000 ***Date of Maps:** 1994



DPR 523J (1/95) *Required information

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

PRIMARY RECORD

Supplmental Update

Primary # 39-005086
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code Reviewer Date

 *Resource Name or #: Walthall Slough Dry Land Levee

P1. Other Identifier:

***P2. Location:** ☐ Not for Publication X Unrestricted ***a. County:** San Joaquin
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Lathrop, CA **Date:** 1952 (1987/1994) **T** 2S; **R** 6E; SW¼ **of** SE¼ **of Sec** 12 **;** M.D.B.M.
c. Address: City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
This is a supplemental form for the far eastern end of the Walthall Slough Dry Land Levee, Primary #39-005086. A section of the Reclamation District (RD) 17 West Levee, located about two miles west of the current project area, was recorded in 2008 by Brian Ludwig of AECOM. In 2012, Cindy Arrington, Parus Consulting, Inc., recorded the Walthall Slough Dry Levee as a part of the RD 17 system.

The current Lumina Ranch project area contains about 1500 feet of the Walthall Slough Dry Land Levee along the southern border in the southwestern portion of the project area.

***P3b. Resource Attributes:** (List attributes and codes) HP11 – Engineering structure
***P4. Resources Present:** ☐Building X Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #) View of the levee from the southwest corner of the project area looking east. 11-23-20. Acc. #MM9306

***P6. Date Constructed/Age and Sources:** X Historic ☐Prehistoric ☐Both
Pre 1912 according to 1915 Lathrop 1:31,680 USGS topographic map.

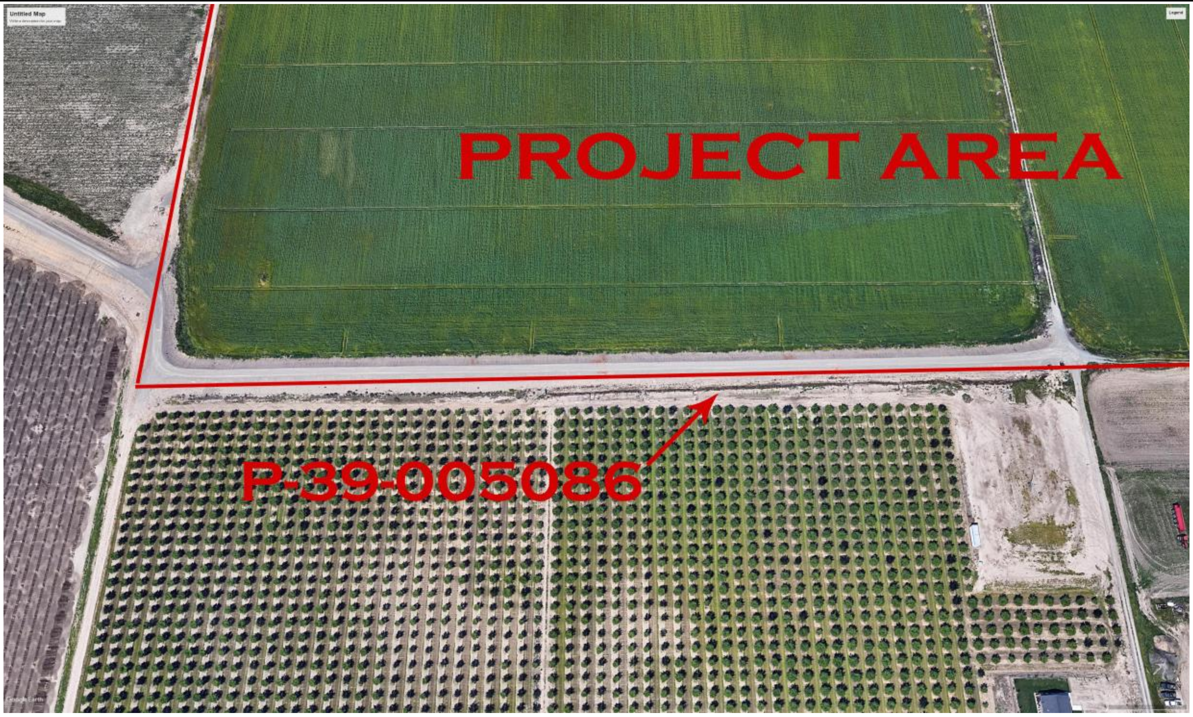
***P7. Owner and Address:**
Unknown

***P8. Recorded by:** (Name, affiliation, and address) Michael Lawson, Peak & Associates, Inc. 3941 Park Drive, Suite 20-329, El Dorado Hills, CA 95762

***P9. Date Recorded:** 11-23-20
***P10. Survey Type:** (Describe)
Complete, intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") *Cultural Resource Assessment for the Lumina Ranch Project Area, San Joaquin County, California.* Peak & Associates, Inc. 2021

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



A) Aerial view of the Walthall Slough Dry Land Levee (P-39-005086) eastern terminous, project area. Google Earth image.

B) View of the levee at the southwest corner of the project area looking east. 11/23/20. Acc. #MM9306

***Resource Name or #** (Assigned by recorder) Walthall Slough Dry Land Levee

***Recorded by:** Michael Lawson ***Date:** 11/29/20 Continuation X Update

C) View of the levee looking east, project area to left. 11/23/20. Acc. #MM9307.

D) View of the terminous of the levee, project area to left, looking east. 11/23/20. Acc. #MM9308

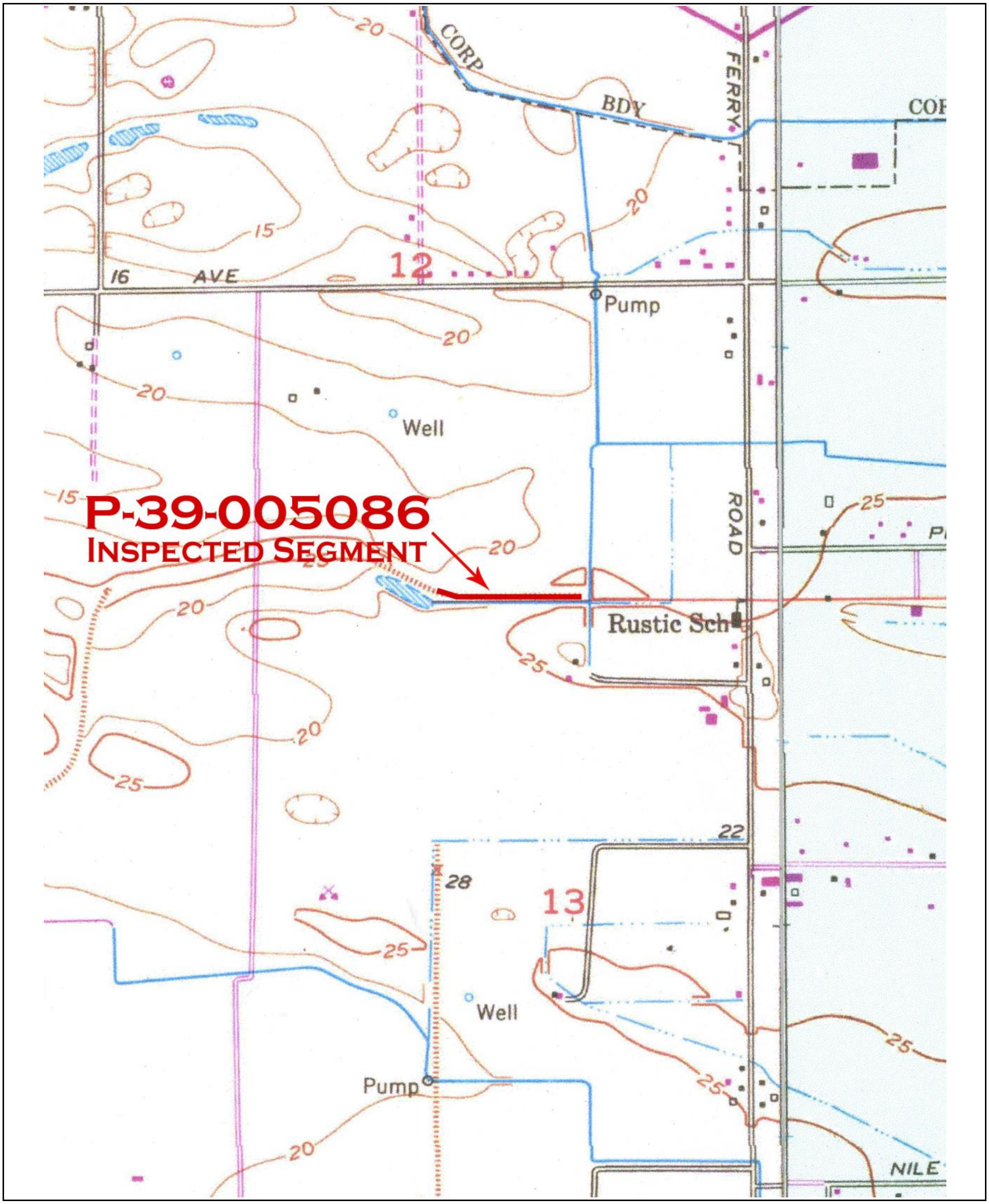
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Primary # 39-005086
HRI#
Trinomial

LOCATION MAP

***Resource Name or #:** Walthall Slough Dry Land Levee segment

***Map Name:** Lathrop, CA / Manteca, CA ***Scale:** 1:24,000 ***Date of Maps:** 1994



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #P-39-5086 Update
HRI #
Trinomial
NRHP Status Code
Other
Review Code Reviewer Date

Page 1 of 2 **Resource Name or #:** (Assigned by recorder) Walthal Slough Dry Land Levee **- UPDATE**

7/12

1. **Other Identifier:** RD 17 West Levee

***P2. Location:** X **Not for Publication** ☐ **Unrestricted** ***a. County** San Joaquin

and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Lathrop **Date** 1984 PR **T** 2S ; **R** 6E ; **of** Unsectioned portions of the El Pesadero Land Grant ; MD **B.M.**

c. Address City Zip

d. UTM: (Give more than one for large and/or linear resources) Zone 10S , 653532 mE/ 4181543 mN eastern terminus

e. Other Locational Data: From Sacramento, take I-5 south to highway 120 east and then turn south onto S. Airport Way. Go approximately 1.15 miles to a private dirt road (signage says "The Cambra's"), turn right and follow the dirt road 0.35 miles to the eastern terminus of the levee.

***P3a. Description:**
A segment (11.6-miles) of the RD 17 levee along the San Joaquin River right bank was originally recorded by AECOM in 2008. This effort updates the original record and records an additional 2.25 miles (known by the county as the Walthal Slough Dry Land Levee) that adjoin the southern terminus of the originally recorded segment (RD 17 West Levee). The levee remains as described in the 2008 recordation. The levee has been continually maintained and modified throughout its existence. The overall integrity of the Walthal Slough Dry Land Levee is very good, and although it is very similar to many levees throughout the Central Valley, it may provide significant information about the historic patterns of agriculture in the Central Valley Delta/Manteca area and could be eligible for the CRHR. Further evaluation would be necessary to make this determination.

***P3b. Resource Attributes:** (List attributes and codes) HP-11

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

P5b. Description of Photo:
Walthall Dry Land Levee, view to the east

***P6. Date Constructed/Age and Sources:** X Historic ☐Prehistoric ☐Both

***P7. Owner and Address:**
Reclamation District 17
1812 Burnside Way
Stockton, CA 95207

***P8. Recorded by:**
Cindy Arrington
Parus Consulting, Inc.,
1508 Eureka Rd, Ste 170,
Roseville, CA 95661

***P9. Date Recorded:** 2-8-2012

***P10. Survey Type:**
Intensive pedestrian survey

***P11. Report Citation**: Nancy E. Sikes and Cindy J. Arrington (Parus Consulting, Inc) 2012. An Archeological Survey for the Department of Water Resources' Geotechnical Levee Investigation of the Walthal Slough Dry Land Levee, San Joaquin County, California.

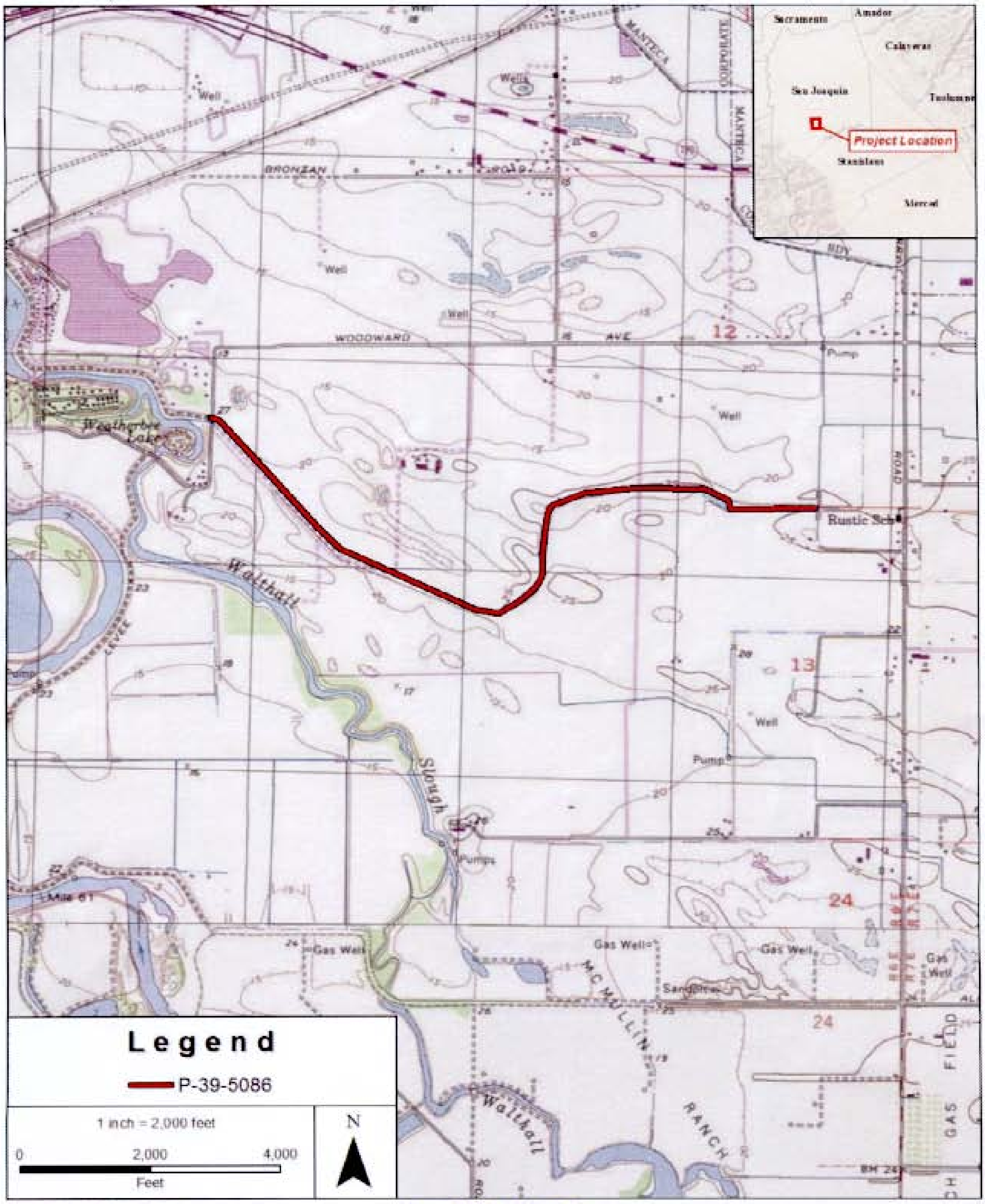
***Attachments:** ☐NONE X Location Map ☐Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-39-5086 Update
HRI#
Trinomial

*Resource Name or #: Walthal Slough Dry Land Levee

*Map Name: Lathrop *Scale: 1:24000 Date of Map: PR 1984



Project Name: NULE Walthal Slough
Quad Name: Lathrop PR 1984
Township: 2S, Range: 6E
Unsectioned Portion of the Pescadero Land Grant

PARUS CONSULTING, INC.

Map 1

DPR 523J (1/95)

*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # P-39 - 005086
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Reclamation District West Levee "RD 17" (East?)

western boundary of District → but East bank of River 8/11

P1. Other Identifier: n/a

P2. Location: ☒ Not for Publication * ☐ Unrestricted ***a. County:** San Joaquin

b. USGS 7.5' Quad: Lathrop **Date:** 1987 Lathrop + Stockton West **T** 1S-2S ; **R** 6E ; n/a ¼ **of** n/a ¼ **of Sec** n/a ; Mount Diablo **B.M.**

c. Address: n/a **City:** Lathrop **Zip:** 95330

d. UTM: Zone 10S ; south end: 649735 **mE /** 4182390 **mN**
north end: 646850 **mE /** 4193210 **mN**

e. Other Locational Data:
Levee segment located along the east bank of the San Joaquin River and forming the western boundary of Reclamation District. This segment is located between approximately one mile south of the I-5/SR 120 interchange at the southern end to Howard Road at the northern end.

P3a. Description:
Resource consists of an earthen levee originally constructed circa 1864 by RD-17 but continually modified, repaired, and upgraded throughout the 19th and 20th centuries. Although dimensions vary, the levee measures approximately 50 feet in width at the base and approximately 12 feet in height above the present-day ground level.

P3b. Resource Attributes:
HP-11

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

P5b. Description of Photo: Levee section in vicinity of Lathrop Road: View to south.

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

P7. Owner and Address:
RD-17
1812 Burnside Way
Stockton, CA 95207

P8. Recorded by:
Brian Ludwig
AECOM
2020 L Street, Suite 400
Sacramento, CA 95819

P9. Date Recorded:
July, 2008

P10. Survey Type:
Intensive pedestrian

P11. Report Citation:
Cultural Resources Inventory and Evaluation Report for the Phase 3 Reclamation District 17 100-Year Levee Seepage Project, AECOM 2010

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

*Resource Name or # Reclamation District 17 West Levee

*Recorded by: Brian Ludwig, Ph.D. *Date: September, 2008 ☒ Continuation ☐ Update

Affiliation: AECOM, 2020 L Street, Suite 400, Sacramento, California 95819

According to Thompson (1958: 482-484), in the southern Delta, only Grand Island (RD-3) and RD-17 have maintained their organizational and areal integrity since the 1860s with other districts having been reorganized several times. RD-17 was completely leveed along the San Joaquin River by early 1864 but, as with most Delta levees, periodically required seasonal repairs. At RD-17, such repairs were necessary in response to the winters of 1868 and 1875 but by 1877 the entire levee system was strengthened and enlarged by which time the entire district had been reclaimed for agricultural purposes. RD-17's newly-strengthened levees held up against the winter and spring floods of 1878 although levee breaks were documented in 1901 and 1911. Since that time, the district's levees have been continually upgraded and modified to a point where they bear little resemblance to their 19th century counterparts in terms of size and overall configuration.

East site of levee – view to north.

East site of levee – view to south

East side of levee and adjacent fields – view to north

East side of levee and adjacent residential development – view to north

*Resource Name or #: Reclamation District 17 West Levee

B1. Historic Name: n/a
B2. Common Name: Reclamation District 17 Levee
B3. Original Use: river levee **B4. Present Use:** river levee
B5. Architectural Style: n/a
B6. Construction History:
Resource consists of an earthen levee originally constructed circa 1864 by RD-17 but continually modified, repaired, and upgraded throughout the 19th and 20th centuries. Although dimensions vary, the levee measures approximately 50 feet in width at the base and approximately 12 feet in height above the present-day ground level. According to Thompson (1958: 482-484), in the southern Delta, only Grand Island (RD-3) and RD-17 have maintained their organizational and areal integrity since the 1860s with other districts having been reorganized several times. RD-17 was completely leveed along the San Joaquin River by early 1864 but, as with most Delta levees, periodically required seasonal repairs. At RD-17, such repairs were necessary in response to the winters of 1868 and 1875 but by 1877 the entire levee system was strengthened and enlarged by which time the entire district had been reclaimed for agricultural purposes. RD-17's newly-strengthened levees held up against the winter and spring floods of 1878 although levee breaks were documented in 1901 and 1911. Since that time, the district's levees have been continually upgraded and modified to a point where they bear little resemblance to their 19th century counterparts in terms of size and overall configuration.

B7. Moved? ☒No ☐Yes ☐Unknown **Date:** 1864-present day **Original Location:** yes
B8. Related Features: n/a
B9a. Architect: n/a **B9b. Builder:** Reclamation District 17
B10. Significance: Theme – Delta land reclamation **Area** San Joaquin-Sacramento Rivers Delta
Period of Significance n/a **Property Type** levee **Applicable Criteria** n/a
Due to the ubiquity of reclamation and flood control levees in the Delta, the fact that the RD-17 levees have been heavily modified and continually improved and reconstructed since their initial building ca. 1864, and that much of the setting of the RD-17 levees has been and is presently being urbanized, EDAW recommends this levee as being not eligible for listing on the California Register of Historical Resources or the National Register of Historic Places.

B11. Additional Resource Attributes: n/a

B12. References:
Thompson, John
1958 The Settlement Geography of the Sacramento-San Joaquin Delta, California. Ph.D. dissertation, Stanford University, Palo Alto, CA. University Microfilms International, Ann Arbor, MI.

B13. Remarks:
Photo – east side of levee with road access ramp.

B14. Evaluator:
Brian Ludwig, Ph.D.
EDAW, Inc.
2022 J St.
Sacramento, CA 95811

Date of Evaluation:
July, 2008

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LINEAR FEATURE RECORD

Primary # P-39-005086
HRI #
Trinomial

 *Resource Name or #: Reclamation District 17 West Levee

L1. **Historic and/or Common Name:** n/a

L2a. **Portion Described:** ☐ Entire Resource ☒ Segment ☐ Point Observation **Designation:** West Levee

b. **Location of point or segment:** Levee segment located along the east bank of the San Joaquin River and forming the western boundary of Reclamation District. This segment is located between approximately one mile south of the I-5/SR 120 interchange at the southern end to Howard Road at the northern end.
UTM: Zone 10S ; south end: 649735 **mE** / 4182390 **mN**
north end: 646850 **mE** / 4193210 **mN**

L3. **Description:** Resource consists of an earthen levee originally constructed circa 1864 by RD-17 but continually modified, repaired, and upgraded throughout the 19th and 20th centuries. Although dimensions vary, the levee measures approximately 50 feet in width at the base and approximately 12 feet in height above the present-day ground level.

L4. Dimensions:

a. **Top Width:** approx. 15 ft.
b. **Bottom Width:** various – 75-100 ft.
c. **Height or Depth:** approx. 12 ft.
d. **Length of Segment:** approx. 11.6 miles

L4e. Sketch of Cross-Section (include scale) **Facing:** ________

L5. Associated Resources:
Union Pacific rail line and bridge at southern end of recorded levee segment.

L6. Setting: San Joaquin River floodplain – agricultural fields, orchards, and urban/suburban development.

L7. Integrity Considerations: Although levee segment is in excellent condition, documentation indicates it has been repeatedly and heavily modified, strengthened, and re-built throughout the 19th and 20th centuries.

L8B. Description of Photo, Map, or Drawing
Section of levee and nearby agricultural fields – view to so.

L9. Remarks:
n/a

L10. Form Prepared by:
Brian Ludwig, Ph.D.
AECOM, 2020 L Street, Suite 400
Sacramento, CA 95819

L11. Date:
July, 2008

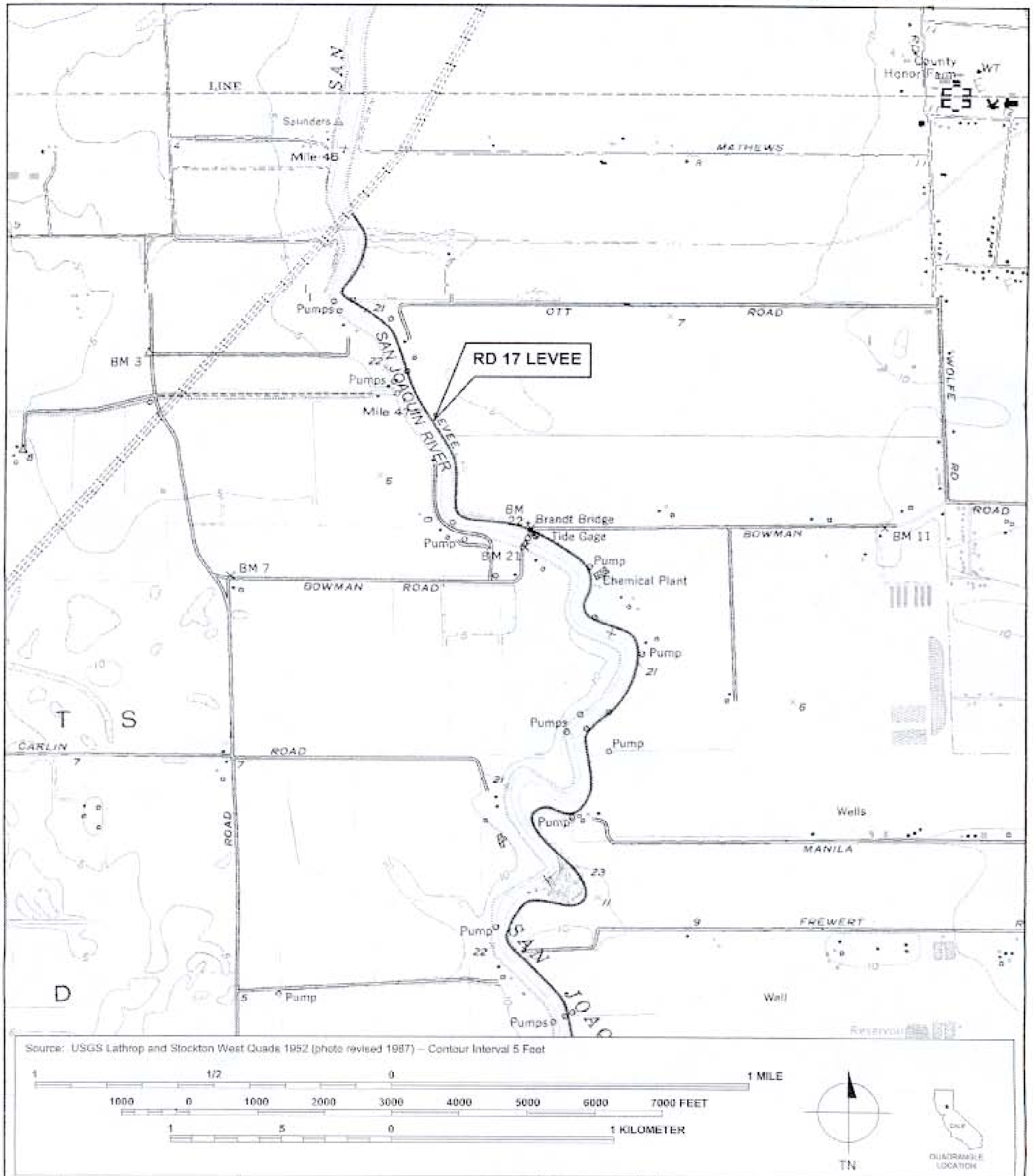
State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary # P-39-005086
HRI#
Trinomial

Page 15 of 87 *Resource Name or # (Assigned by recorder) RD 17 Levee

*Map Name: USGS Lathrop and Stockton West Quads *Scale: 1:24 000 *Date of Map: 1952



DPR 523J (1/95)

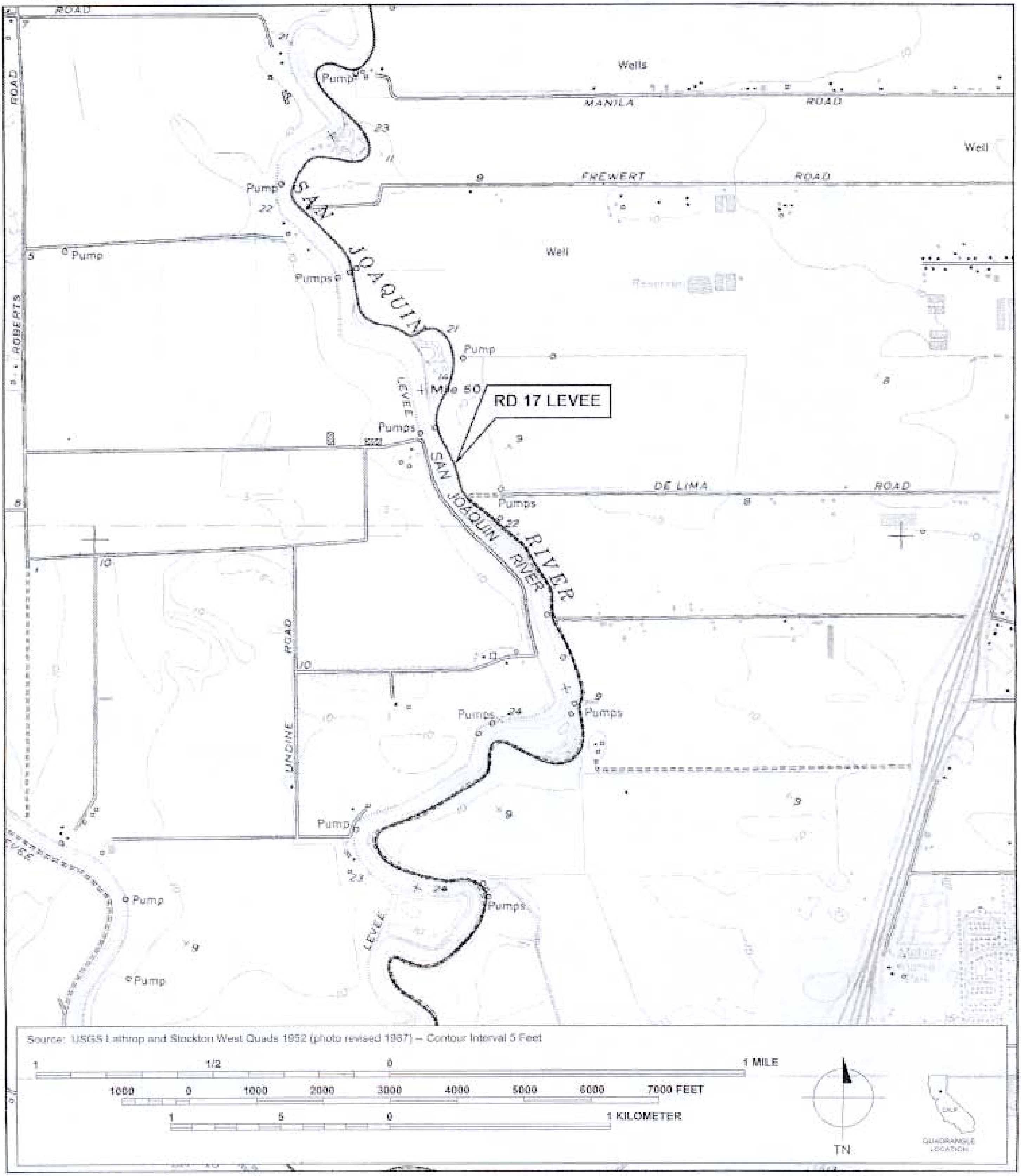
*Required Information

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # P-39-005086
HRI#
Trinomial

Page 16 of 37 *Resource Name or # (Assigned by recorder) RD 17 Levee

*Map Name: USGS Lathrop and Stockton West Quads *Scale: 1:24 000 *Date of Map: 1952



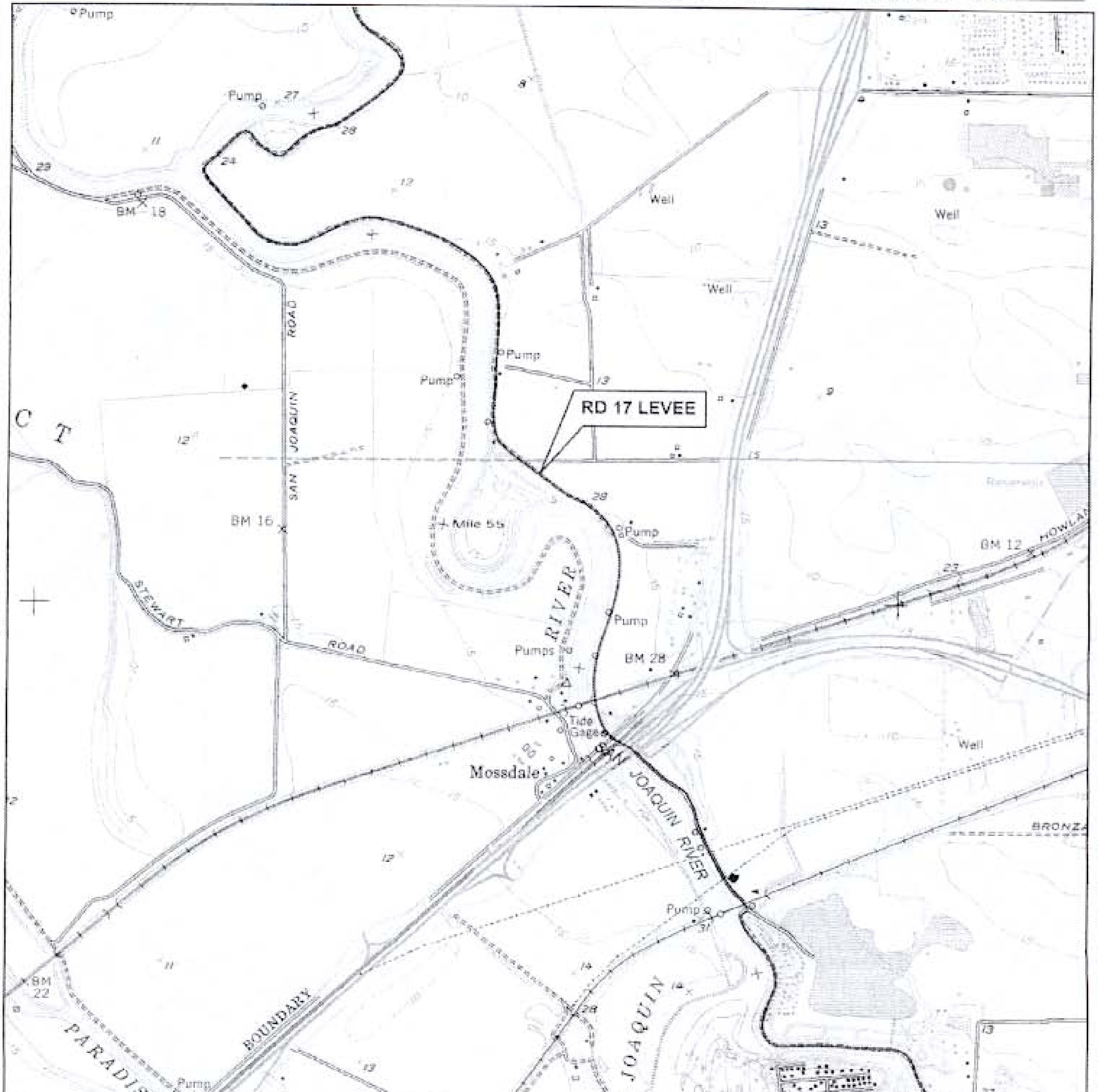
DPR 523J (1/95) *Required Information

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

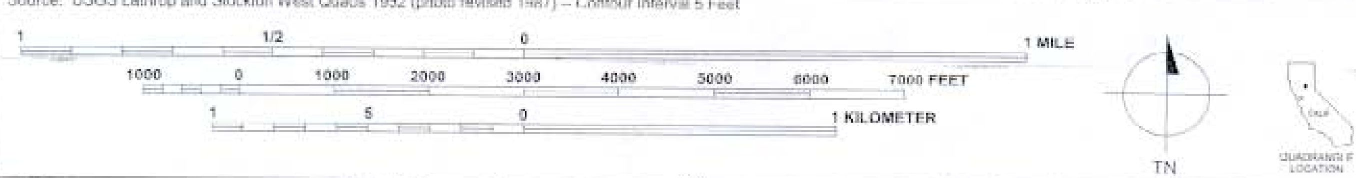
Primary # P-39-005086
HRI#
Trinomial

Page 8 of 8 — *Resource Name or # (Assigned by recorder) RD 17 Levee

*Map Name: USGS Lathrop and Stockton West Quads — *Scale: 1:24 000 — *Date of Map: 1952



Source: USGS Lathrop and Stockton West Quads 1952 (photo revised 1987) – Contour Interval 5 Feet



Appendix D

Phase 1 Environmental Site Assessment

PHASE I ENVIRONMENTAL SITE ASSESSMENT THE MACHADO PROPERTY MANTECA, CALIFORNIA

Prepared For:
Mr. Steve Hicks
Signature Homes, Inc.

Submitted By:
Consulting Associates of California
1 Casey Glen Court
Clayton, California 94517

January 30, 2019

Prepared By:

Gary D. Hennis, R.E.A.

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LIST OF FIGURES

LIST OF APPENDICES

1.0 EXECUTIVE SUMMARY

Consulting Associates of California (CAC) was retained by Signature Homes, Inc. (Signature-The User) to conduct a Phase I environmental site assessment (ESA) of the property identified as the Machado Property near Manteca in unincorporated San Joaquin County, California (the Site). Work for this project was conducted pursuant to Signature's request on January 10, 2019. The ESA has been prepared to document the existing conditions at the Site.

The Site consists of one parcel of land which totals approximately 156 acres of land. Reportedly, the Site is will be subdivided and developed with single-family residential structures, associated streets and easements. The Site is located at the southwest corner of the intersection of South Airport Way and West Woodward Avenue near Manteca, San Joaquin County, California.

At the time of the Site reconnaissance, the Site was occupied by two small residential structures and three small outbuildings while the majority of the Site is used for agricultural production. Adjacent land use includes single-family residential to the north and agricultural to the east, south and west.

Historically, the Site has been used for agricultural production including oats and corn.

The Site and/or any adjacent or nearby facilities were not listed on any regulatory database as having had releases of hazardous materials or other issues that could result in impact to the soil or groundwater beneath the Site.

Findings

A *recognized environmental condition* (*REC*) refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to a release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. The following was identified during the course of this assessment:

- This assessment has revealed no evidence of recognized environmental conditions in connection with the Site.

A *controlled recognized environmental condition* (*CREC*) refers to a REC resulting from a past release hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. The following was identified during the course of this assessment:

- This assessment revealed no evidence of controlled recognized environmental conditions in connection with the Site.

A *historical recognized environmental condition* (*HREC*) refers to a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. The following was identified during the course of this assessment:

- This assessment has revealed no evidence of historic controlled recognized environmental conditions in connection with the Site.

An *environmental issue* refers to environmental concerns identified by CAC which do not qualify as RECs; however, warrant further discussion.

- There are reportedly two septic systems associated with the residences located at the Site. Although there is no physical or documented evidence of a release to or from these features, future development of the Site will require removal and appropriate closure of them.
- Historic use of the Site for agricultural purposes have the potential to have introduced persistent agricultural chemicals such as herbicides and/or pesticides into the surface soils at the Site.
- Prior to demolition activities, a pre-demolition asbestos assessment should be conducted on the structures at the Site.

2.0 INTRODUCTION

CAC was retained by Signature Homes, Inc. (Signature) to conduct a Phase I environmental site assessment (ESA) of the property identified as the Machado Property near Manteca, California (the Site). Work for this project was conducted pursuant to Signature's request on January 10, 2019. This ESA presents a summary of the conditions at the Site.

Figure 1 is a site location map showing the location of the Site with respect to the site vicinity. Figure 2 is a site plan showing approximate boundaries of the Site, improvements, adjacent site use, and salient features observed during the site visit. Copies of photographs taken during the site visit are included in Appendix A.

This report was prepared under the direction of Mr. Steve Hicks, of Signature. The report will be used for the purposes of providing advice to the Senior Management of Signature.

2.0 METHODOLOGY

This Phase I ESA was performed in accordance with the American Society for Testing and Materials (ASTM) *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, ASTM Designation E 1527. Title 40 of the Code of Federal Regulations, Part 312 specifies standards and practices for "all appropriate inquiries" required to obtain protection from liability under the federal Comprehensive Environmental Response, Cleanup and Liability Act (CERCLA). 40CFR 312.11(a) identifies a Phase I ESA completed in accordance with the E1527 practice as one way to achieve compliance with requirements of the "All Appropriate Inquiries" rule.

The objective of this Phase I ESA Update was, to the extent feasible pursuant to the process outlined in E1527 and the approved scope of work for this project, to identify Recognized Environmental Conditions (RECs) or Historic Recognized Environmental Conditions (HRECs). As defined in E1527, a REC is:

> *"…the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include de minimis conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate government agencies. Conditions determined to be de minimis are not RECs."*

The scope of services did not include overall environmental regulatory compliance or sampling and analysis of environmental media.

This Phase I ESA consisted of the following components: 1) summarizing historical information review, 2) regulatory agency records review, 3) site reconnaissance, 4) interviews, and 5) preparation of this report. The following tasks were completed as part of this assessment:

- Obtaining and reviewing historical information to ascertain general uses of the Site and vicinity back to the obvious first developed use;

- Review of documentation provided by Signature pertaining to the Site;

- Acquisition and review of a regulatory agency database search report for ASTM E 1527 specified standard environmental record sources and search distances;

- Review of reasonably ascertainable government agency files for the Site and nearby sites considered to have a potential to adversely impact the Site;

- Site reconnaissance which included visual observations of accessible portions of the Site;

- Interviews with Mr. Steve Hicks, (representative of the User), and local governmental officials regarding current and past uses of the Site, and whether recognized environmental conditions may exist on the Site; and

- Review of the United States Geological Survey (USGS) 7.5-Minute Topographic Maps titled Lathrop, Vernalis, Ripon and Manteca California depicting the Site area to assess the physical setting.

2.1 EXCEPTIONS TO THE SCOPE OF WORK AND CONDITONS LIMITING THE SITE RECONNAISSANCE

This Phase I ESA did not deviate from the scope of work set forth in ASTM E 1527.

2.2 WORK PERFORMED BEYOND ASTM E 1527

CAC did not conduct any work beyond the scope of work established in the ASTM E1527 Standard.

3.0 LIMITATIONS

The conclusions presented in this report are professional opinions based on data described in this report. These opinions have been arrived at in accordance with currently accepted hydrogeologic and engineering standards and practices applicable to this location at the time the work was performed, and are subject to the following inherent limitations:

1. CAC derived the data in this report primarily from visual observations, examination of records in the public domain, and interviews with individuals having information about the Site. The passage of time, manifestation of latent conditions, or occurrence of future events may require further study at the Site, analysis of the data, and reevaluation of the findings, observations, and conclusions in the report.

2. The data reported and the findings, observations, and conclusions expressed in the report are limited by the scope of work. The scope of work was prescribed by ASTM E 1527 and was agreed to by the client.

3. Because of the limitations stated above, the findings, observations, and conclusions expressed by CAC in this report are not, nor should be, considered an opinion concerning the compliance of any past or present owner or operator of the Site with any federal, state, or local law or regulation.

4. No warranty or guarantee, whether expressed or implied, is made with respect to the findings, observations, or conclusions that are based solely upon the Site conditions in existence at the time of investigation.

5. Phase I ESA reports present professional opinions and findings of a scientific and technical nature. This report shall not be construed to offer legal opinion or representations as to the requirements of, nor compliance with, environmental laws, rules, regulations, or policies of federal, state, or local government agencies. Any use of the Phase I ESA report constitutes acceptance of the limits of CAC's liability. CAC's liability extends only to its client and not to any other parties who may obtain the Phase I report.

6. The conclusions presented in this report are professional opinions based on data described in this report. They are intended only for the purpose, site location, and project indicated. This report is not a definitive study of contamination at the Site and should not be interpreted as such. An evaluation of subsurface soil and groundwater conditions was not performed as part of this investigation. No sampling or chemical analyses of structural materials or other media was completed as part of this study unless explicitly stated.

7. This report is based, in part, on unverified information supplied to CAC by third party sources. While efforts have been made to substantiate this third-party information, CAC cannot guarantee its completeness or accuracy.

8. This report was prepared for the exclusive use of Signature Homes, Inc.

4.0 SITE DESCRIPTION

A description of the location and characteristics of the Site and the surrounding area is presented in the following subsections.

4.1 SITE LOCATION AND DESCRIPTION

Site Location:	The address associated with the Site (residence) is 20329 South Airport Way in Manteca, California. The Site is located at the southwestern corner of the intersection of South Airport Way and Woodward Avenue.
Assessor's Parcel Nos.:	San Joaquin County Assessors: 241-32-180.
Key Contact:	Mr. Steve Hicks.

4.2 SITE AND VICINITY CHARACTERISTICS

General Property Type and Use

At the time of the Site reconnaissance (January 21, 2019) the Site two residences at the Site were occupied by renters and the majority of the Site was covered in what appeared to be weeds. The Site is bound on the north by Woodward Avenue and on the east by South Airport Avenue.

General Type and Use of Surrounding Areas

Land use in the general vicinity of the Site as observed during CAC's site reconnaissance is a combination farms and single-family homes.

Site Size

According to information obtained from the San Joaquin County Assessor's Office and Signature Homes, the Site is 156.79 acres in area.

Buildings on Site

At the time of the site reconnaissance, the Site was occupied by two small single-family homes and two small sheds or shacks.

Construction Dates

Based on a review of historic records (aerial photographs, historic maps, building department records and interviews), The structures were constructed as early as 1937.

Tenants

At the time of CAC's reconnaissance, the only tenants were two residential tenants in each of the homes.

Areas Observed During Site Visit

CAC observed the boundaries of the Site by traversing the walking throughout the grounds.

Topography

Based on CAC's review of the USGS Lathrop, Vernalis, Manteca and Ripon Quadrangles and observations made during the site visit, topography of the Site is approximately 20-feet above mean sea level (AMSL). The land in the vicinity of the Site is very flat

Surface Water and Flood Zone

Surface Water: CAC did not observe surface water at the Site, however irrigation ditches traverse the Site from east to west and north to south (they were dry at the time of the assessment).

Flood Zone: According to the Federal Emergency Management Agency (FEMA) Map Panel, the Site is in Zone X, and not within the 100 or 500-year Flood Zones.

Geology

The Site is located in the north central portion of the San Joaquin Valley approximately 5 miles east of the San Joaquin River Delta. Surface soils are made up of Bisgani loamy coarse sand which is moderately well infiltrated and poorly drained.

Groundwater

Based on a review of geotechnical borings drilled at the Site in 2002, and water-well data provided by EDR and the local topography, groundwater in the vicinity of the Site is expected to be encountered between 10 and 15 feet below ground surface (bgs) and is likely influenced by tidal movement. Groundwater flow is expected to be to the west, in conformance with local topography.

Potable Water Supply

There is at least one irrigation well and one potable water supply well at the Site. According to information reviewed at the City of Manteca Public Works Division, potable water will be supplied to the Site by the City of Manteca as soon as the Site is annexed.

Sanitary Sewer and/or Septic System

New development at the Site will be serviced by the City of Manteca Public Works Department.

Heating, Ventilation and Air Conditioning Systems

CAC did not inspect the interior of the residential structures at the Site, but assumes that there are sources of heating, ventilation or air-conditioning equipment at the Site. These systems should be evaluated prior to demolition.

5.0 HISTORICAL USE INFORMATION

The following is a list of historical Site use information sources reviewed during the original Phase I ESA.

Aerial Photographs -	CAC acquired and reviewed aerial photographs from Environmental Data Resources, Inc. (EDR). EDR provided photographs from 1937, 1940, 1957, 1963, 1968, 1975, 1982, 1993, 2006, 2009, 2012 and 2016. Copies of the aerial photographs are included in Appendix B.
Sanborn Fire Insurance Maps-	CAC requested Sanborn Fire Insurance Maps from EDR covering the Site and nearby areas. Sanborn Fire Insurance Maps were not available for the Site vicinity.
City Directories -	City Directories were available for the Site vicinity, however there were no documented uses in the vicinity.
USGS Topographic Map -	CAC acquired and reviewed the historic topographic maps of the Lathrop, Ripon, Vernalis and Manteca, California Quadrangles (7.5-minute) for the years 1914, 1915, 1952, 1968, 1969, 1976, 1980, 1987, 1991, 1994, 1996 and 2012.
Building Department -	CAC interviewed personnel at the City of Manteca and San Joaquin County Building and Planning Departments regarding records for the Site.
Fire Department -	CAC interviewed personnel regarding past hazardous materials use/storage at the Site at the San Joaquin County Environmental Health Department.
Other Sources -	CAC interviewed Ms. Joanne Kimbrough (representative of the current Site ownership) and Mr. Steve Hicks of Signature.

5.1 SUMMARY OF PRIOR USES – THE SITE

Pre 1914-1968	Based on a review of historic maps from 1914 and aerial photographs from as early as 1937, the Site has been vacant and/or used for agricultural production. The irrigation ditch running through the Site and pump were observed as early as 1940. The residential structures as well as a larger structure (possibly a barn) were identified in the northeast corner of the Site as early as 1937.
1968-Present	As of 1968, the Site remained in use for agricultural production**.** The larger

structures identified earlier had been removed and only the existing residential structures remained after 1968. No other significant changes were observed.

Recognized environmental conditions, which are expected to have adversely impacted the Site, were not discovered during the review of historical Site use information. However, the Site was used from sometime between 1914 and 1937 to the current time for agricultural production and may have included agricultural chemicals such as herbicides and/or pesticides.

5.2 SUMMARY OF PRIOR USES – ADJACENT SITES

Pre-1914-2006 Based on a review of historic maps and aerial photographs, the vicinity of the Site was generally vacant and/or used for agricultural production from sometime between 1914 and 2006. There was a structure labeled "Rustic School" located adjacent to the southeast corner of the Site. The Rustic School appeared to be a single structure and remained in-place through 1996. The other adjacent land was occupied by farms and rural residences.

2006-Present The initial single-family residential development was observed to the north of the Site (across Woodward Avenue) in 2006. Several rural residences were also constructed in the vicinity, but generally the use of the area remains farms and rural residences.

Recognized environmental conditions, which are expected to have adversely impacted the Site, were not discovered during the review of historical Site use information sources for the adjacent sites.

6.0 INFORMATION FROM INTERVIEWS AND SITE RECONNAISSANCE

Results of observations made during the site reconnaissance conducted on January 21, 2019, review of documents provided by Signature and associated parties, and interviews with Ms. Kimbrough (Site representative), are presented in the following subsections. Information derived from interviews with Mr. Hicks and observations made during the site reconnaissance are presented below. Copies of photographs taken during the site reconnaissance are provided in Appendix A.

6.1 INTERVIEWS

CAC sent a questionnaire to Mr. Hicks of Signature prior to the site reconnaissance. Mr. Hicks and Ms. Kimbrough indicated that they were not aware of any pending, threatened, or past:

- Litigation relevant to hazardous substances or petroleum products in, on, or from the Site;
- Administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the Site; or

- Notices from a governmental entity regarding violations of environmental laws or liability relating to hazardous substances or petroleum products.

- Ms. Kimbrough indicated that her family (the Machado's) have owned and operated the Site since 1971. Since her family has owned and operated at the Site, she indicated that they have grown oats in the winter and corn in the spring. Ms. Kimbrough also indicated that she recalled the family applying Round-up (for weed control) and UAN32 (Nitrogen) to the corn crops in the spring and summer. She indicated that there are two septic tanks at the Site (adjacent to the residences) and that to the best of her knowledge there are no and never have been any underground or aboveground storage tanks at the Site.

Additional information obtained from interviews is presented in subsequent sections of this report.

6.2 SPECIALIZED KNOWLEDGE

The Federal AAI rule (40CFR 312.28) and ASTM E1527 require that all appropriate inquiry must take into account relevant and applicable specialized knowledge and experience on the part of the User regarding the subject property, the area surrounding the subject property, the conditions of adjoining properties, and any other experience relevant to identifying RECs on the subject property.

CAC submitted a written questionnaire to the User inquiring whether the User had any specialized knowledge or experience relative to this inquiry. The User responded that he had no such specialized knowledge or experience. A copy of the questionnaire is provided in Appendix D.

6.3 RELATIONSHIP TO PURCHASE PRICE TO VALUE OF PROPERTY

The federal AAI rule (40 CFR 312.29) and ASTM E1527 require that all appropriate inquiry must take into account the relationship of the purchase price to the fair market value of the property, if it was not contaminated. The rule states that this portion of the inquiry may be the responsibility of the User, and the User has the option of sharing or not sharing this information with the Environmental Professional performing the Phase I ESA.

Based on information provided to CAC by the User, there was no significant relationship between the purchase price and value of the property (Site).

CAC has not performed any independent evaluation of the purchase price of the property and its relationship to fair market value. No information relative to this matter has been provided to CAC by the User.

6.4 INFORMATION FROM DOCUMENTS PROVIDED FOR REVIEW

Mr. Hicks provided CAC a map identifying the Site boundaries. Mr. Hicks indicated that Signature is in the process of acquiring the Site.

6.5 ACTIVITIES/PROCESSESS CONDUCTED AT THE SITE

At the time of the Site reconnaissance, the Site was primarily covered with weeds or recently planted oats. Additionally, two small residences are located in the northeast corner of the Site.

6.6 ADJACENT SITE USES

The following adjacent properties were noted during CAC's site reconnaissance:

- *North* – Single-family residences, across Woodward Avenue.
- *East* –Agricultural land and rural residences
- *South* – Agricultural land and rural residences.
- *West* – Agricultural land and rural residences.

6.7 HAZARDOUS AND/OR PETROLEUM SUBSTANCES

CAC did not observe any sources of hazardous materials or petroleum substances at the Site.

6.8 HAZARDOUS WASTE

No evidence of past or current generation of hazardous waste was observed at the Site.

6.9 ON-SITE ROADS AND PARKING AREAS

The Site is accessed on the north by Woodward Avenue and on the east by South Airport Way. A dirt path also traverses the Site from east to west, along the irrigation ditch.

6.10 ABOVEGROUND TANKS

CAC did not identify any evidence of aboveground storage at the Site.

6.11 UNDERGROUND TANKS

CAC did not observe any evidence of underground storage tanks (USTs) at the Site.

6.12 UNUSUAL OR NOXIOUS ODORS

CAC did not identify unusual or noxious odors at the Site.

6.13 SUMPS, PITS, FLOOR DRAINS, POOLS OF LIQUID - INSIDE BUILDING

CAC did not inspect the interior of the residential structures.

6.14 PITS, PONDS, LAGOONS - EXTERIOR, ON-SITE OR ADJACENT

CAC did not observe any pits, ponds, lagoons on-Site or adjacent to the Site with the exception of the irrigation ditch which was dry at the time of the Site inspection.

6.15 TRANSFORMERS OR PCB-SUSPECT HYDRAULIC SYSTEMS

CAC did not pole or pad-mounted electrical transformers at the Site.

6.16 STAINED SOIL OR PAVEMENT

CAC did not observe stained soil or pavement at the Site.

6.17 DISTRESSED VEGETATION

CAC did not observe distressed vegetation at the Site.

6.18 DISCHARGES TO DRAINS, DITCHES, OR STREAMS

CAC did not observe discharges to drains, ditches or streams at the Site.

6.19 WELLS

CAC observed an above-ground well pump along the west Site boundary. According to Ms. Kimbrough, the pump and associated equipment are owned by the Machado family. It is also possible that a domestic well exists at or near the residences.

6.20 LEACH FIELDS/SEPTIC TANKS/CESSPOOLS

CAC did not observe any evidence of leach fields or cesspools at the Site. According to Ms. Kimbrough, two septic systems exist at or near the residences.

6.21 INDICATIONS OF FILL SITES OR DUMPING

CAC did not observe indications of fill sites or dumping on the Site.

6.22 STAINING/CORROSION ON FLOORS, CEILINGS, OR WALLS

CAC did not observe staining or corrosion at structures at the Site.

6.23 VACANT BUILDINGS OR PORTIONS OF BUILDINGS

CAC did not observe vacant structures at the Site.

6.24 OTHER CONDITIONS OF CONCERN

CAC did not identify other conditions of concern in connection with the at the Site.

7.0 RECORDS REVIEW

The records review consisted of acquisition and review of a regulatory agency database search report, interviews with local government (agency) personnel, and review of reasonably ascertainable information from regulatory agency files for the Site and/or nearby sites considered to have a potential to have adversely impacted the Site.

7.1 REVIEW OF DATABASE SEARCH REPORT

CAC retained EDR to perform a database search of standard federal and state environmental records for the Site and sites within minimum search distances specified in ASTM Standard E 1527, and to document the results in a summary report. A copy of the report is included as Appendix E. The database search report includes a complete listing of the databases searched, the search distance for each database searched, and the results of the search, including a map and summary of findings.

The Site was not identified on the report as having any documented uses or releases of hazardous materials.

There were two schools identified as having been researched in the vicinity, however, no documented incidents were listed. Additionally, two facilities were identified, but neither facility is identified as having had a release or spill of hazardous materials and therefore, are not likely to impact the Site.

7.2 GOVERNMENTAL OFFICIALS INTERVIEWED

CAC contacted the following governmental agencies regarding potential recognized environmental conditions in connection with the Site:

<u>City of Manteca Community Development Department</u>

> CAC interviewed Ms. Esmeralda Villalobos with the City of Manteca Community Development Department. Ms. Villalobos had no records for permits for the Site, and indicated that the Site is currently not within the City limits however, it is within the Sphere of Influence. According to the General Plan, the Site would be zoned Low Density Residential.

<u>San Joaquin County Community Development Department</u>

> CAC interviewed Ms. Teddie Hernandez of the San Joaquin County Community Development Department regarding historic permits for the Site. Ms. Hernandez indicated that the Site had permits issued for 20329 South Airport Way for re-roofing in 1993 and 1987. Additionally, a permit was issued for exploratory oil and gas drilling in 1981. Finally, the Site is zoned by San Joaquin County as Agriculture with parcel sizes of at least 40

acres.

San Joaquin County Environmental Health Department

CAC interviewed Mr. Jeff Wong of the San Joaquin County Environmental Health Department regarding the possibility of hazardous materials use, storage or releases at or in the vicinity of the Site. Mr. Wong indicated that a permit was issued for geotechnical borings at the Site in 2013. The borings were advanced in anticipation of potential development at the Site. The borings identified groundwater at a depth of between 10 and 15-feet bgs. A permit was also issued in 2013 for the replacement of an irrigation well pump. Mr. Wong indicated that there was no documented evidence of existing or previous hazardous materials storage or use at the Site.

8.0 ASSESSMENT OF RADON RISK DATA

No specific radon studies relative to the Site were located during this investigation. Based on a review of the California Department of Health Services Statewide Radon Survey, the Site is located in Zone 3. Average radon concentrations in Zone 3 are below 2 picoCuries per liter (pCi/l) of air, below the EPA-designated action level for radon mitigation and/or control measures of 4.0 pCi/l (EPA, 1993).

The radon concentrations in buildings and homes depend on many factors, including soil types, temperature, barometric pressure, and building construction. Information regarding the potential presence of radon at the Site relies on regional data and does not represent site-specific data. To determine site-specific radon levels a radon survey would have to be conducted. Because regional radon levels do not appear to represent a recognized environmental condition, a radon survey was not performed as part of this scope of work.

9.0 ASBESTOS ASSESSMENT

CAC did not access the structures at the Site to conduct an asbestos assessment of the building materials. The structures were constructed during the period when asbestos-containing materials may have been used. Prior to demolition activities, an asbestos assessment should be conducted.

10.0 DATA GAPS

The federal AAI rule [40 CFR 312.10(a)] and ASTM E1527-05 identify a “data gap” as the lack or inability to obtain information required by the standards and practices of the rule despite good faith efforts by the Environmental Professional or the User. The intervals between Standard Historical Sources exceeded the ASTM minimum standard. However, the usage of the Site between the gaps appears the same and additional research is not required.

11.0 OPINION AND CONCLUSIONS

CAC has performed a Phase I ESA of the Machado Property located near Manteca, California. The Phase I was performed in conformance with the scope and limitations of ASTM Practice E 1527. CAC has, in the course of this inquiry, attempted to identify and review commonly known or reasonably ascertainable information about the Site that is relevant to evaluating the presence of RECs. Any exceptions to, or deletions from, this practice are described in Section 10.0 of this report.

A *recognized environmental condition* (*REC*) refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to a release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. The following was identified during the course of this assessment:

- This assessment has revealed no evidence of recognized environmental conditions in connection with the Site.

A *controlled recognized environmental condition* (*CREC*) refers to a REC resulting from a past release hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. The following was identified during the course of this assessment:

- This assessment revealed no evidence of controlled recognized environmental conditions in connection with the Site.

A *historical recognized environmental condition* (*HREC*) refers to a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. The following was identified during the course of this assessment:

- This assessment has revealed no evidence of historic controlled recognized environmental conditions in connection with the Site.

An *environmental issue* refers to environmental concerns identified by CAC which do not qualify as RECs; however, warrant further discussion. The following was identified during the course of this assessment:

- There are reportedly two septic systems associated with the residences located at the Site. Although there is no physical or documented evidence of a release to or from these features, future development of the Site will require removal and appropriate closure of them.

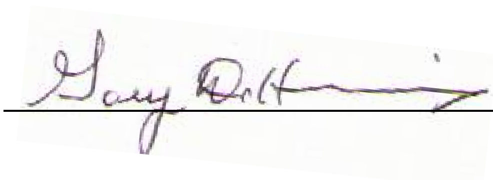
- Historic use of the Site for agricultural purposes have the potential to have introduced persistent agricultural chemicals such as herbicides and/or pesticides into the surface soils at the Site.
- Prior to demolition activities, a pre-demolition asbestos assessment should be conducted on the structures at the Site.

12.0 DECLARATIONS OF ENVIRONMENTAL PROFESSIONAL

The federal AAI rule and ASTM E-1527 require that the Phase I ESA report include the following declarations by the Environmental Professional who completed the assessment.

1. *I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in 40 CFR 312.10.*

2. *I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR 312.*

Signature  ______________________________

Name (printed): Gary D. Hennis

Title: Environmental Professional   Date: January 30, 2019

13.0 REFERENCES

13.1 CONTACTS

Mr. Stephen Hicks, Signature Homes
Ms. Joanne Kimbrough, Property Owner representative

Ms. Esmeralda Villalobos Development Coordinator-City of Manteca

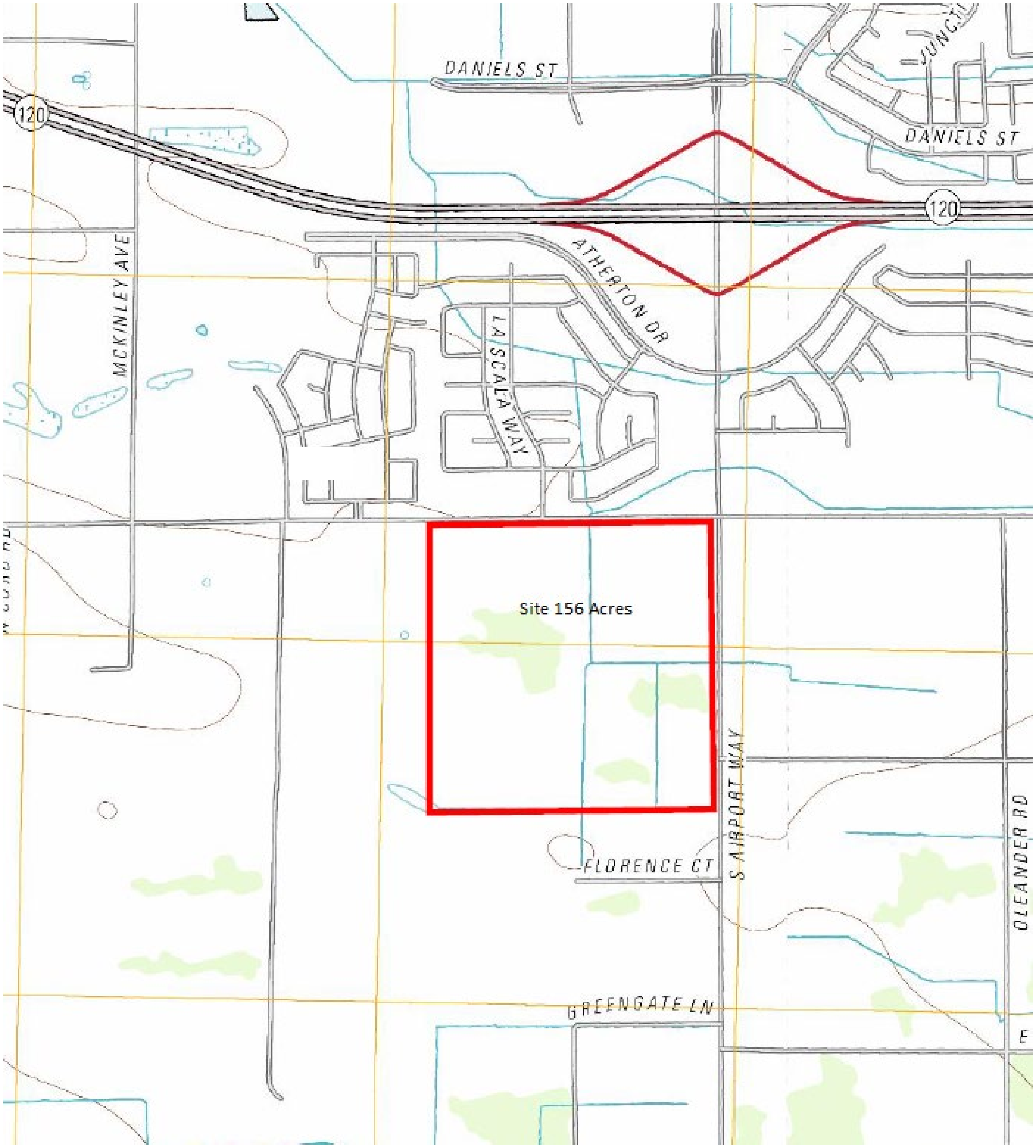
Ms. Teddie Hernandez, Assistant Planner-San Joaquin County Planning Department

Mr. Jeff Wong-Senior Environmental Health Specialist-San Joaquin County Environmental Health Department

13.2 DOCUMENTS

EDR Radius Map Report ID 5531458.2s dated January 10, 2019
Aerial Photographs for the following years: 1937, 1940, 1957, 1963, 1968, 1975, 1982, 1993, 2006, 2009, 2012 and 2016 from EDR.
USGS 7.5-minute topographic maps titled Lathrop, Manteca, Ripon and Vernalis, California for the years: 1914, 1915, 1952, 1968, 1969, 1976, 1980, 1987, 1991, 1994, 1996 and 2012 from EDR.
State of California Division of Oil and Gas-Webpage
California Geological Survey, 1977

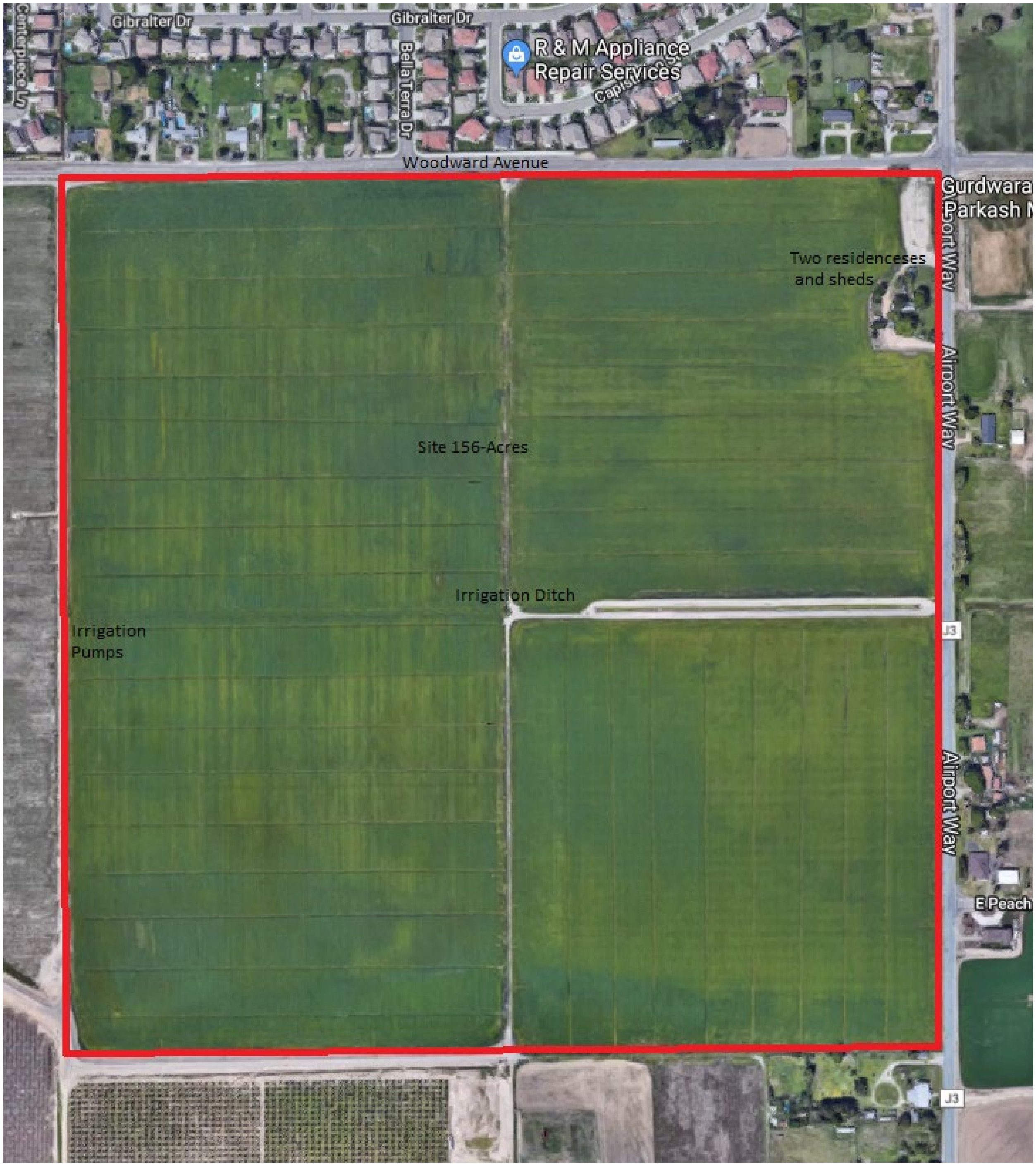
FIGURES



North

Approximate Site Boundary

Drafted by: GH	**Checked by:** GH	**Figure 1**	**Consulting Associates of California**
Prep. Date: 1/18/19	**Rev. Date:** 1/18/19	**Site Location Map** **Machado Property** **Manteca, CA**	
Client Name: **Signature Homes, Inc.**			



North

Approximate Site Boundary

Drafted by: GH	**Checked by:** GH	**Figure 2**	**Consulting Associates of California**
Prep. Date: 1/18/19	**Rev. Date:** 1/18/19	**Site Plan** **Machado Property** **Manteca, CA**	
Client Name: Signature Homes, Inc.			

APPENDIX A
PHOTOGRAPHS

Photographic Record	
Client: Signature Homes, Inc.	**Job Number:** SH-19-01
Site Name: Machado Property-Manteca, CA	**Date: January 30, 2019**

Photo No. 1

View of property from the southeast corner to the north, along S. Airport Way

Photo No. 2

View of property from the southeast corner to northwest

Photographic Record

Client: Signature Homes, Inc.	Job Number: SH-19-01
Site Name: Machado Property-Manteca, CA	Date: January 30, 2019

Photo No. 3

View of property, from the east central, to the west, along irrigation ditch

Photo No. 4

View of residential structures in northeastern corner of Site.

Photographic Record	
Client: Signature Homes, Inc.	**Job Number:** SH-19-01
Site Name: Machado Property-Manteca, CA	**Date: January 30, 2019**

Photo No. 5

View of property, from the northwest corner to the east, along Woodward Avenue

Photo No. 6

View of Site from northwest corner to the south, along west Site boundary.

APPENDIX B
AERIAL PHOTOGRAPHS

Appendix E

Noise Study

Environmental Noise Assessment

Lumina Ranch EIR

City of Manteca, California

April 5, 2021

Project #201104

Prepared for:

DE NOVO PLANNING GROUP

De Novo Planning Group
1020 Suncast Lane, #106
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Appendices

Appendix A: Acoustical Terminology
Appendix B: Continuous Ambient Noise Measurement Results
Appendix C: Traffic Noise Calculation Inputs and Results
Appendix D: Interior Noise Reduction Calculations

This section provides a general description of the existing noise sources in the project vicinity, a discussion of the regulatory setting, and identifies potential noise impacts associated with the proposed project. Project impacts are evaluated relative to applicable noise level criteria and to the existing ambient noise environment. Mitigation measures have been identified for significant noise-related impacts.

3.10.1 ENVIRONMENTAL SETTING

KEY TERMS

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given area consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of noise.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response. A-weighted dB values are expressed as dBA.
Decibel or dB	Fundamental unit of sound, defined as ten times the logarithm of the ratio of the sound pressure squared over the reference pressure squared.
CNEL	Community noise equivalent level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic acoustic signal, expressed in cycles per second or Hertz.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
L_{dn}	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
L_{eq}	Equivalent or energy-averaged sound level.
L_{max}	The highest root-mean-square (RMS) sound level measured over a given period of time.
$L_{(n)}$	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L_{50} is the sound level exceeded 50 percent of the time during the one hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
Noise	Unwanted sound.
SEL	Sound exposure levels. A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy into a one-second event.

FUNDAMENTALS OF ACOUSTICS

Acoustics is the science of sound. Sound may be thought of as mechanical energy of a vibrating object transmitted by pressure waves through a medium to human (or animal) ears. If the pressure variations occur frequently enough (at least 20 times per second), then they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second or Hertz (Hz).

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dB) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels, but are expressed as dB, unless otherwise noted.

The decibel scale is logarithmic, not linear. In other words, two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10 dB is generally perceived as a doubling in loudness. For example, a 70-dB sound is half as loud as an 80-dB sound, and twice as loud as a 60-dB sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state A weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The day/night average level (L_{dn}) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment. CNEL is similar to L_{dn}, but includes a +5-dB penalty for evening noise. Table 3.10-1 lists several examples of the noise levels associated with common situations.

TABLE 3.10-1: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	NOISE LEVEL (DB)	COMMON INDOOR ACTIVITIES
	--110--	Rock Band
Jet Fly-over at 300 m (1,000 ft)	--100--	
Gas Lawn Mower at 1 m (3 ft)	--90--	
Diesel Truck at 15 m (50 ft), at 80 km/hr (50 mph)	--80--	Food Blender at 1 m (3 ft) Garbage Disposal at 1 m (3 ft)
Noisy Urban Area, Daytime Gas Lawn Mower, 30 m (100 ft)	--70--	Vacuum Cleaner at 3 m (10 ft)
Commercial Area Heavy Traffic at 90 m (300 ft)	--60--	Normal Speech at 1 m (3 ft)
Quiet Urban Daytime	--50--	Large Business Office Dishwasher in Next Room
Quiet Urban Nighttime	--40--	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	--30--	Library
Quiet Rural Nighttime	--20--	Bedroom at Night, Concert Hall (Background)
	--10--	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	--0--	Lowest Threshold of Human Hearing

SOURCE: CALTRANS, TECHNICAL NOISE SUPPLEMENT, TRAFFIC NOISE ANALYSIS PROTOCOL. SEPTEMBER 2013.

EFFECTS OF NOISE ON PEOPLE

The effects of noise on people can be placed in three categories:

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

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

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called ambient noise level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a 1 dB change cannot be perceived;
- Outside of the laboratory, a 3-dB change is considered a just-perceivable difference;
- A change in level of at least 5-dB is required before any noticeable change in human response would be expected; and

- A 10-dB change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

Stationary point sources of noise – including stationary mobile sources such as idling vehicles – attenuate (lessen) at a rate of approximately 6 dB per doubling of distance from the source, depending on environmental conditions (i.e. atmospheric conditions and either vegetative or manufactured noise barriers, etc.). Widely distributed noises, such as a large industrial facility spread over many acres, or a street with moving vehicles, would typically attenuate at a lower rate.

EXISTING AND FUTURE NOISE AND VIBRATION ENVIRONMENTS

Existing and Surrounding Land Uses

North: Existing residential developments border the north side of the Annexation Area.

East: The Gurmat Parkash Sikh Gurdwara temple is located near the northeastern side of the Annexation Area. Farmland and existing single-family residences are located east and southeast of the Annexation Area.

South: Farmland and single-family residences border the southern boundary of the Annexation Area.

West: Farmland borders the western boundary of the Annexation Area.

Existing Ambient Noise Levels

To quantify the existing ambient noise environment in the Project Vicinity, continuous (24-hour) noise level measurements were conducted on the Development Area site on December 3rd – December 4th, 2020. The noise measurement locations are shown on Figure 3.10-1. The noise level measurement survey results are provided in Table 3.10-2. Appendix B of Appendix F shows the complete results of the noise monitoring survey.

The sound level meters were programmed to collect hourly noise level intervals at each site during the survey. The maximum value (L_{max}) represents the highest noise level measured during an interval. The average value (L_{eq}) represents the energy average of all of the noise measured during an interval. The median value (L_{50}) represents the sound level exceeded 50 percent of the time during an interval.

TABLE 3.10-2: SUMMARY OF EXISTING BACKGROUND NOISE MEASUREMENT DATA

SITE	*LOCATION*	*DATE/TIME*	*L_{DN}*	*AVERAGE MEASURED HOURLY NOISE LEVELS, DB*					
				DAYTIME (7AM-10PM)			*NIGHTTIME (10PM-7AM)*		
				L_{EQ}	*L_{50}*	*L_{MAX}*	*L_{EQ}*	*L_{50}*	*L_{MAX}*
Continuous (24-hour) Noise Level Measurements1									
LT-1	Northern side of Development Area, 25 yds to centerline of Woodward Ave.	12/3/20 – 12/4/20	63	59	56	74	56	51	71
LT-2	Southeastern side of Development Area, 9 yds to centerline of Airport Way	12/3/20 – 12/4/20	71	70	56	88	63	46	85

SOURCE: SAXELBY ACOUSTICS, 2020.

Larson Davis Laboratories (LDL) Model 812 precision integrating sound level meters were used for the ambient noise level measurement survey. The meters were calibrated before and after use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

Existing and Future Traffic Noise Environment at Sensitive Receptors

OFF-SITE TRAFFIC NOISE IMPACT ASSESSMENT METHODOLOGY

To predict existing noise levels due to traffic, the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used. The model is based upon the Calveno reference noise emission factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA model was developed to predict hourly L_{eq} values for free-flowing traffic conditions.

Traffic noise analysis was conducted for roadways which would affect sensitive receptors within the Development Area, Non-Development Areas 1 and 2, as well as receptors which lie outside of the Annexation Area. Traffic noise level changes are presented by roadway rather than by planning boundary.

Traffic volumes for existing conditions were obtained from the traffic data prepared for the project (De Novo, 2021). Truck percentages and vehicle speeds on the local area roadways were estimated from field observations.

Traffic noise levels are predicted at the sensitive receptors located at the closest typical setback distance along each project-area roadway segment. Where traffic noise barriers are predominately along a roadway segment, a -5 offset was added to the noise prediction model to account for various noise barrier heights. A -5 to dB offset was also applied where outdoor activity areas are shielded by intervening buildings. In some locations, sensitive receptors may be located at distances which vary from the assumed calculation distance and may experience shielding from intervening barriers or sound walls. However, the traffic noise analysis is believed to be representative of the majority of sensitive receptors located closest to the project-area roadway segments analyzed in this report.

Table 3.10-3 shows the existing traffic noise levels in terms of L_{dn} at closest sensitive receptors along each roadway segment. A complete listing of the FHWA Model input data is contained in Appendix C of Appendix F.

TABLE 3.10-3: EXISTING TRAFFIC NOISE LEVELS

ROADWAY	*SEGMENT*	*EXTERIOR TRAFFIC NOISE LEVEL, DB L_{DN}*
Airport Way	North of Daniels Street	64.2
Airport Way	South of Daniels Street	51.9
Highway 120 Ramp	WB Off Ramp	56.4
Highway 120 Ramp	WB On Ramp	53.9
Airport Way	Between 120 Ramps	52.2
Highway 120 Ramp	EB On Ramp	55.8
Highway 120 Ramp	EB Off Ramp	55.9
Airport Way	Highway 120 to Atherton Dr.	51.3
Airport Way	Atherton Drive to Woodward Avenue	66.5
Airport Way	South of Woodward Avenue	65.9
Woodward Avenue	West of Airport Way	65.1
Woodward Avenue	East of Airport Way	60.6
Airport Way	South of Peach Road	63.4
East Peach Road	East of Aiprort Way	46.8
Woodward Avenue	Woodward W of McKinley	N/A
Woodward Avenue	Woodward E of McKinley	N/A
McKinley Avenue	McKinley N of Woodward	N/A

SOURCE: FHWA-RD-77-108 WITH INPUTS FROM DE NOVO AND SAXELBY ACOUSTICS. 2021.

PREDICTED EXTERIOR TRAFFIC NOISE LEVELS

Implementation of the proposed project would result in an increase in ADT volumes on the local roadway network, and consequently, an increase in noise levels from traffic sources along affected segments. Tables 3.10-4 and 3.10-5 show the predicted traffic noise level increases on the local roadway network for Existing, Existing + Project, Cumulative No Project, and Cumulative + Project conditions. Appendix C of Appendix F provides the complete inputs and results of the FHWA traffic noise modeling.

TABLE 3.10-4: EXISTING AND EXISTING PLUS PROJECT TRAFFIC NOISE LEVELS

ROADWAY	SEGMENT	NOISE LEVELS (L_{DN}, DB) AT NEAREST SENSITIVE RECEPTORS				
		EXISTING	EXISTING + PROJECT	CHANGE	EX. GP CRITERIA[1] / PROPOSED GP CRITERIA[2]	SIGNIFICANT UNDER EX. GP? / SIGNIFICANT UNDER GP UPDATE?
Airport Way	North of Daniels Street	64.2	64.7	0.4	+5-10 dBA	No
					+3 dBA	No
Airport Way	South of Daniels Street	51.9	52.2	0.3	>60 dBA	No
					+ 5 dBA	No
Highway 120 Ramp	WB Off Ramp	56.4	57.4	1.0	>60 dBA	No
					+ 5 dBA	No
Highway 120 Ramp	WB On Ramp	53.9	54.4	0.5	>60 dBA	No
					+ 5 dBA	No
Airport Way	Between 120 Ramps	52.2	53.0	0.9	>60 dBA	No
					+ 5 dBA	No
Highway 120 Ramp	EB On Ramp	55.8	57.3	1.5	>60 dBA	No
					+ 5 dBA	No
Highway 120 Ramp	EB Off Ramp	55.9	56.5	0.6	>60 dBA	No
					+ 5 dBA	No
Airport Way	Highway 120 to Atherton Dr.	51.3	52.8	1.5	>60 dBA	No
					+ 5 dBA	No
Airport Way	Atherton Drive to Woodward Avenue (Includes Non-Development Area 2)	66.5	68.9	2.5	+5-10 dBA	No
					+1.5 dBA	**Yes**
Airport Way	South of Woodward Avenue	65.9	68.4	2.5	+5-10 dBA	No
					+1.5 dBA	**Yes**
Woodward Avenue	West of Airport Way (Includes Non-Development Area 1)	65.1	67.1	2.0	+5-10 dBA	No
					+1.5 dBA	**Yes**
Woodward Avenue	East of Airport Way	60.6	61.0	0.4	+5-10 dBA	No
					+3 dBA	No
Airport Way	South of Peach Road	63.4	63.6	0.1	+5-10 dBA	No
					+3 dBA	No
East Peach Road	East of Airport Way	46.8	46.8	0.0	>60 dBA	No
					+ 5 dBA	No
Woodward Avenue	Woodward W of McKinley	N/A	N/A	N/A	N/A	N/A
					N/A	N/A

<table>
<tr><th rowspan="3">ROADWAY</th><th rowspan="3">SEGMENT</th><th colspan="5">NOISE LEVELS (L_{DN}, DB) AT NEAREST SENSITIVE RECEPTORS</th></tr>
<tr><th rowspan="2">EXISTING</th><th rowspan="2">EXISTING + PROJECT</th><th rowspan="2">CHANGE</th><th>EX. GP CRITERIA[1]</th><th>SIGNIFICANT UNDER EX. GP?</th></tr>
<tr><th>PROPOSED GP CRITERIA[2]</th><th>SIGNIFICANT UNDER GP UPDATE?</th></tr>
<tr><td rowspan="2">Woodward Avenue</td><td rowspan="2">Woodward E of McKinley</td><td rowspan="2">N/A</td><td rowspan="2">N/A</td><td rowspan="2">N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td>N/A</td><td>N/A</td></tr>
<tr><td rowspan="2">McKinley Avenue</td><td rowspan="2">McKinley N of Woodward</td><td rowspan="2">N/A</td><td rowspan="2">N/A</td><td rowspan="2">N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td>N/A</td><td>N/A</td></tr>
</table>

[1] *EXISTING GP CRITERIA - IN MAKING A DETERMINATION OF IMPACT UNDER THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA), A SUBSTANTIAL INCREASE WILL OCCUR IF AMBIENT NOISE LEVELS ARE INCREASED BY 10 DB OR MORE. AN INCREASE FROM 5-10 DB MAY BE SUBSTANTIAL. FACTORS TO BE CONSIDERED IN DETERMINING THE SIGNIFICANCE OF INCREASES FROM 5-10 DB INCLUDE:*

- *THE RESULTING NOISE LEVELS*
- *THE DURATION AND FREQUENCY OF THE NOISE*
- *THE NUMBER OF PEOPLE AFFECTED*
- *THE LAND USE DESIGNATION OF THE AFFECTED RECEPTOR SITES*
- *PUBLIC REACTIONS/CONTROVERSY AS DEMONSTRATED AT WORKSHOPS/HEARINGS, OR BY CORRESPONDENCE*
- *PRIOR CEQA DETERMINATIONS BY OTHER AGENCIES SPECIFIC TO THE PROJECT*

[2] *PROPOSED GP CRITERIA - IN MAKING A DETERMINATION OF IMPACT UNDER THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA), A SUBSTANTIAL INCREASE WILL OCCUR IF AMBIENT NOISE LEVELS ARE HAVE A SUBSTANTIAL INCREASE. GENERALLY, A 3 DB INCREASE IN NOISE LEVELS IS BARELY PERCEPTIBLE, AND A 5 DB INCREASE IN NOISE LEVELS IS CLEARLY PERCEPTIBLE. THEREFORE, INCREASES IN NOISE LEVELS SHALL BE CONSIDERED TO BE SUBSTANTIAL WHEN THE FOLLOWING OCCURS:*

- *WHEN EXISTING NOISE LEVELS ARE LESS THAN 60 DB, A 5 DB INCREASE IN NOISE WILL BE CONSIDERED SUBSTANTIAL;*
- *WHEN EXISTING NOISE LEVELS ARE BETWEEN 60 DB AND 65 DB, A 3 DB INCREASE IN NOISE WILL BE CONSIDERED SUBSTANTIAL;*
- *WHEN EXISTING NOISE LEVELS EXCEED 65 DB, A 1.5 DB INCREASE IN NOISE WILL BE CONSIDERED SUBSTANTIAL.*

SOURCE: FHWA-RD-77-108 WITH INPUTS FROM DE NOVO AND SAXELBY ACOUSTICS. 2021.

TABLE 3.10-5: CUMULATIVE AND CUMULATIVE + PROJECT TRAFFIC NOISE LEVELS

ROADWAY	SEGMENT	NOISE LEVELS (L_{DN}, DB) AT NEAREST SENSITIVE RECEPTORS				
		CUMULATIVE	CUMULATIVE + PROJECT	CHANGE	EX. GP CRITERIA[1] / PROPOSED GP CRITERIA[2]	SIGNIFICANT UNDER EX. GP? / SIGNIFICANT UNDER GP UPDATE?
Airport Way	North of Daniels Street	66.6	66.7	0.1	+5-10 dBA	No
					+1.5 dBA	No
Airport Way	South of Daniels Street	54.6	54.8	0.1	>60 dBA	No
					+ 5 dBA	No
Highway 120 Ramp	WB Off Ramp	60.7	61.0	0.3	+5-10 dBA	No
					+3 dBA	No
Highway 120 Ramp	WB On Ramp	56.7	56.9	0.2	>60 dBA	No
					+ 5 dBA	No
Airport Way	Between 120 Ramps	55.4	55.7	0.3	>60 dBA	No
					+ 5 dBA	No
Highway 120 Ramp	EB On Ramp	60.7	61.0	0.3	+5-10 dBA	No
					+3 dBA	No
Highway 120 Ramp	EB Off Ramp	58.4	58.6	0.2	>60 dBA	No
					+ 5 dBA	No
Airport Way	Highway 120 to Atherton Dr.	55.1	55.6	0.5	>60 dBA	No
					+ 5 dBA	No
Airport Way	Atherton Drive to Woodward Avenue (Includes Non-Development Area 2)	70.4	71.3	0.9	+5-10 dBA	No
					+1.5 dBA	No
Airport Way	South of Woodward Avenue	67.9	69.6	1.7	+5-10 dBA	No
					+1.5 dBA	**Yes**
Woodward Avenue	West of Airport Way (Includes Non-Development Area 1)	69.7	70.1	0.4	+5-10 dBA	No
					+1.5 dBA	No
Woodward Avenue	East of Airport Way	63.4	63.7	0.3	+5-10 dBA	No
					+3 dBA	No
Airport Way	South of Peach Road	65.0	65.1	0.1	+5-10 dBA	No
					+1.5 dBA	No
East Peach Road	East of Airport Way	49.8	50.0	0.2	>60 dBA	No
					+ 5 dBA	No

ROADWAY	SEGMENT	NOISE LEVELS (L_{DN}, DB) AT NEAREST SENSITIVE RECEPTORS				
		CUMULATIVE	CUMULATIVE + PROJECT	CHANGE	EX. GP CRITERIA[1] / PROPOSED GP CRITERIA[2]	SIGNIFICANT UNDER EX. GP? / SIGNIFICANT UNDER GP UPDATE?
Woodward Avenue	Woodward W of McKinley	55.3	55.3	0.0	>60 dBA	No
					+ 5 dBA	No
Woodward Avenue	Woodward E of McKinley	65.1	65.6	0.5	+5-10 dBA	No
					+1.5 dBA	No
McKinley Avenue	McKinley N of Woodward	51.7	52.1	0.4	>60 dBA	No
					+ 5 dBA	No

[1] *EXISTING GP CRITERIA - IN MAKING A DETERMINATION OF IMPACT UNDER THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA), A SUBSTANTIAL INCREASE WILL OCCUR IF AMBIENT NOISE LEVELS ARE INCREASED BY 10 DB OR MORE. AN INCREASE FROM 5-10 DB MAY BE SUBSTANTIAL. FACTORS TO BE CONSIDERED IN DETERMINING THE SIGNIFICANCE OF INCREASES FROM 5-10 DB INCLUDE:*

- *THE RESULTING NOISE LEVELS*
- *THE DURATION AND FREQUENCY OF THE NOISE*
- *THE NUMBER OF PEOPLE AFFECTED*
- *THE LAND USE DESIGNATION OF THE AFFECTED RECEPTOR SITES*
- *PUBLIC REACTIONS/CONTROVERSY AS DEMONSTRATED AT WORKSHOPS/HEARINGS, OR BY CORRESPONDENCE*
- *PRIOR CEQA DETERMINATIONS BY OTHER AGENCIES SPECIFIC TO THE PROJECT*

[2] *PROPOSED GP CRITERIA - IN MAKING A DETERMINATION OF IMPACT UNDER THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA), A SUBSTANTIAL INCREASE WILL OCCUR IF AMBIENT NOISE LEVELS ARE HAVE A SUBSTANTIAL INCREASE. GENERALLY, A 3 DB INCREASE IN NOISE LEVELS IS BARELY PERCEPTIBLE, AND A 5 DB INCREASE IN NOISE LEVELS IS CLEARLY PERCEPTIBLE. THEREFORE, INCREASES IN NOISE LEVELS SHALL BE CONSIDERED TO BE SUBSTANTIAL WHEN THE FOLLOWING OCCURS:*

- *WHEN EXISTING NOISE LEVELS ARE LESS THAN 60 DB, A 5 DB INCREASE IN NOISE WILL BE CONSIDERED SUBSTANTIAL;*
- *WHEN EXISTING NOISE LEVELS ARE BETWEEN 60 DB AND 65 DB, A 3 DB INCREASE IN NOISE WILL BE CONSIDERED SUBSTANTIAL;*
- *WHEN EXISTING NOISE LEVELS EXCEED 65 DB, A 1.5 DB INCREASE IN NOISE WILL BE CONSIDERED SUBSTANTIAL.*

SOURCE: FHWA-RD-77-108 WITH INPUTS FROM DE NOVO AND SAXELBY ACOUSTICS. 2021.

Based upon data in Tables 3.10-4 and 3.10-5, the proposed project is predicted to result in a maximum traffic noise level increase of 2.5 dB.

EVALUATION OF TRANSPORTATION NOISE ON DEVELOPMENT AREA

Traffic Noise Levels

Woodward Avenue

Cumulative plus project traffic noise levels are predicted to be 71 dB L_{dn} at a distance of 65 feet from the centerline of Woodward Avenue, assuming no shielding from intervening buildings or sound walls. The proposed residential uses are located approximately 65 feet from the centerline Woodward Avenue. Therefore, maximum exterior noise levels of 71 dB L_{dn} are predicted for these uses.

Airport Way

Cumulative plus project traffic noise levels are predicted to be 72 dB L_{dn} at a distance of 65 feet from the centerline of Airport Way, assuming no shielding from intervening buildings or sound walls. The proposed residential uses are located approximately 65 feet from the centerline Airport Way. Therefore, maximum exterior noise levels of 72 dB L_{dn} are predicted for these uses.

CONSTRUCTION NOISE ENVIRONMENT

During the construction of the proposed project, including roads, water, and sewer lines and related infrastructure, noise from construction activities would add to the noise environment in the project vicinity. As indicated in Table 3.10-6, activities involved in construction would generate maximum noise levels ranging from 76 to 90 dB at a distance of 50 feet.

TABLE 3.10-6: CONSTRUCTION EQUIPMENT NOISE

Type of Equipment	*Maximum Level, dB*	
	25 feet	*50 feet*
Backhoe	84	78
Compactor	89	83
Compressor (air)	84	78
Concrete Saw	96	90
Dozer	88	82
Dump Truck	82	76
Excavator	87	81
Generator	87	81
Jackhammer	94	89
Pneumatic Tools	91	85

SOURCE: ROADWAY CONSTRUCTION NOISE MODEL USER'S GUIDE. FEDERAL HIGHWAY ADMINISTRATION. FHWA-HEP-05-054. JANUARY 2006.

CONSTRUCTION VIBRATION ENVIRONMENT

The primary vibration-generating activities associated with the proposed project would happen during construction when activities such as grading, utilities placement, and road construction occur. Table 3.10-7 shows the typical vibration levels produced by construction placement.

TABLE 3.10-7: VIBRATION LEVELS FOR VARIOUS CONSTRUCTION EQUIPMENT

TYPE OF EQUIPMENT	*PEAK PARTICLE VELOCITY @ 25 FEET (INCHES/SECOND)*	*PEAK PARTICLE VELOCITY @ 100 FEET (INCHES/SECOND)*
Large Bulldozer	0.089	0.011
Loaded Trucks	0.076	0.010
Small Bulldozer	0.003	0.000
Auger/drill Rigs	0.089	0.011
Jackhammer	0.035	0.004
Vibratory Hammer	0.070	0.009
Vibratory Compactor/roller	0.210	0.026

SOURCE: FEDERAL TRANSIT ADMINISTRATION, TRANSIT NOISE AND VIBRATION IMPACT ASSESSMENT GUIDELINES, MAY 2006

3.10.2 REGULATORY SETTING

FEDERAL

There are no federal regulations related to noise that apply to the proposed project.

STATE

California Environmental Quality Act

The California Environmental Quality Act (CEQA) Guidelines, Appendix G, indicate that a significant noise impact may occur if a project exposes persons to noise or vibration levels in excess of local general plans or noise ordinance standards, or cause a substantial permanent or temporary increase in ambient noise levels. CEQA standards are discussed more below under the Thresholds of Significance section.

California State Building Codes

The State Building Code, Title 24, Part 2 of the State of California Code of Regulations establishes uniform minimum noise insulation performance standards to protect persons within new buildings which house people, including hotels, motels, dormitories, apartment houses and dwellings other than single-family dwellings. Title 24 mandates that interior noise levels attributable to exterior sources shall not exceed 45 dB L_{dn} or CNEL in any habitable room.

Title 24 also mandates that for structures containing noise-sensitive uses to be located where the L_{dn} or CNEL exceeds 60 dB, an acoustical analysis must be prepared to identify mechanisms for limiting exterior noise to the prescribed allowable interior levels. If the interior allowable noise levels are met by requiring that windows be kept closed, the design for the structure must also specify a ventilation or air conditioning system to provide a habitable interior environment

CITY OF MANTECA

The City of Manteca General Plan – Existing (2003) General Plan

The City of Manteca General Plan Noise Element contains goals, policies, and implementation measures for assessing noise impacts within the City. Listed below are the noise goals, policies, and implementation measures that are applicable to the proposed Project (City of Manteca as amended through 2016):

GOALS: NOISE

- N-1. Protect the residents of Manteca from the harmful and annoying effects of exposure to excessive noise.
- N-3. Ensure that the downtown core noise levels remain acceptable and compatible with commercial and higher density residential land uses.
- N-4. Protect public health and welfare by eliminating existing noise problems where feasible, by establishing standards for acceptable indoor and outdoor noise, and by preventing significant increases in noise levels.
- N-5. Incorporate noise considerations into land use planning decisions, and guide the location and design of transportation facilities to minimize the effects of noise on adjacent land uses.

POLICIES: NOISE

- N-P-2. New development of residential or other noise-sensitive land uses will not be permitted in noise-impacted areas unless effective mitigation measures are incorporated into the project design to satisfy the performance standards in Table 9-1 [Table 3.10-8].

TABLE 3.10-8: MAXIMUM ALLOWABLE NOISE EXPOSURE MOBILE NOISE SOURCES

LAND USE[4]	*OUTDOOR ACTIVITY AREAS*[1]	*INTERIOR SPACES*	
		L_{DN}/CNEL, DB	*L_{EQ}/CNEL, DB*[3]
Residential	60[2]	45	--
Transient Lodging	60[2]	45	--
Hospitals, Nursing Homes	60[2]	45	--
Theatres, Auditoriums, Music Halls	--	--	35
Churches, Music Halls	60[2]	--	40
Office Buildings	65	--	45
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

NOTES: [1] OUTDOOR ACTIVITY AREAS FOR RESIDENTIAL DEVELOPMENT ARE CONSIDERED TO BE BACKYARD PATIOS OR DECKS OF SINGLE FAMILY DWELLINGS, AND THE COMMON AREAS WHERE PEOPLE GENERALLY CONGREGATE FOR MULTI-FAMILY DEVELOPMENTS. OUTDOOR ACTIVITY AREAS FOR NON-RESIDENTIAL DEVELOPMENTS ARE CONSIDERED TO BE THOSE COMMON AREAS WHERE PEOPLE

GENERALLY CONGREGATE, INCLUDING PEDESTRIAN PLAZAS, SEATING AREAS, AND OUTSIDE LUNCH FACILITIES. WHERE THE LOCATION OF OUTDOOR ACTIVITY AREAS IS UNKNOWN, THE EXTERIOR NOISE LEVEL STANDARD SHALL BE APPLIED TO THE PROPERTY LINE OF THE RECEIVING LAND USE.

[2] IN AREAS WHERE IT IS NOT POSSIBLE TO REDUCE EXTERIOR NOISE LEVELS TO 60 DB L_{DN} OR BELOW USING A PRACTICAL APPLICATION OF THE BEST NOISE-REDUCTION TECHNOLOGY, AN EXTERIOR NOISE LEVEL OF UP TO 65 L_{DN} WILL BE ALLOWED.

[3] DETERMINED FOR A TYPICAL WORST-CASE HOUR DURING PERIODS OF USE.

[4] WHERE A PROPOSED USE IS NOT SPECIFICALLY LISTED ON THE TABLE, THE USE SHALL COMPLY WITH THE NOISE EXPOSURE STANDARDS FOR THE NEAREST SIMILAR USE AS DETERMINED BY THE CITY.

SOURCE: CITY OF MANTECA GENERAL PLAN, NOISE ELEMENT, TABLE 9-1.

- N-P-3. The City may permit the development of new noise-sensitive uses only where the noise level due to fixed (non-transportation) noise sources satisfies the noise level standards of Table 9-2 [Table 3.10-9]. Noise mitigation may be required to meet Table 9-2 [Table 3.10-9] performance standards.

TABLE 3.10-9: PERFORMANCE STANDARDS FOR STATIONARY NOISE SOURCES OR PROJECTS AFFECTED BY STATIONARY NOISE SOURCES [1,2]

NOISE LEVEL DESCRIPTOR	*DAYTIME (7 AM – 10 PM)*	*NIGHTTIME (10 PM – 7 AM)*
Hourly L_{eq}, dB	50	45
Maximum Level, dB	70	65

NOTES: [1] EACH OF THE NOISE LEVELS SPECIFIED ABOVE SHOULD BE LOWERED BY FIVE (5) DB FOR SIMPLE NOISE TONES, NOISES CONSISTING PRIMARILY OF SPEECH OR MUSIC, OR RECURRING IMPULSIVE NOISES. SUCH NOISES ARE GENERALLY CONSIDERED BY RESIDENTS TO BE PARTICULARLY ANNOYING AND ARE A PRIMARY SOURCE OF NOISE COMPLAINTS.

[2] NO STANDARDS HAVE BEEN INCLUDED FOR INTERIOR NOISE LEVELS. STANDARD CONSTRUCTION PRACTICES SHOULD, WITH THE EXTERIOR NOISE LEVELS IDENTIFIED, RESULT IN ACCEPTABLE INTERIOR NOISE LEVELS.

SOURCE: CITY OF MANTECA GENERAL PLAN, NOISE ELEMENT, TABLE 9-2.

- N-P-5. In accord with the Table 9-2 [Table 3.10-9] standards, the City shall regulate construction-related noise impacts on adjacent uses.

IMPLEMENTATION MEASURES: NOISE

- N-I-1. New development in residential areas with an actual or projected exterior noise level of greater than 60 dB L_{dn} will be conditioned to use mitigation measures to reduce exterior noise levels to less than or equal to 60 dB L_{dn}.
- N-I-3. In making a determination of impact under the California Environmental Quality Act (CEQA), a substantial increase will occur if ambient noise levels are increased by 10 dB or more. An increase from 5-10 dB may be substantial. Factors to be considered in determining the significance of increases from 5-10 dB include:
    - the resulting noise levels
    - the duration and frequency of the noise
    - the number of people affected
    - the land use designation of the affected receptor sites
    - public reactions or controversy as demonstrated at workshops or hearings, or by correspondence
    - prior CEQA determinations by other agencies specific to the project

- N-I-4. Control noise at the source through use of insulation, berms, building design and orientation, buffer space, staggered operating hours and other techniques. Use noise barriers to attenuate noise to acceptable levels.

The City of Manteca General Plan – Proposed General Plan Update

It is expected that the City's General Plan update may be adopted prior to the adoption of the Lumina Ranch EIR. Therefore, the goals and policies of the proposed General Plan are also considered in this document. The City of Manteca General Plan Update noise goals, policies, and implementation measures are included below:

GOALS

Goal S-5: Protect the quality of life by protecting the community from harmful and excessive noise.

POLICIES

S-5.1 Incorporate noise considerations into land use, transportation, and infrastructure planning decisions, and guide the location and design of noise-producing uses to minimize the effects of noise on adjacent noise-sensitive land uses, including residential uses and schools.

S-5.2 Ensure that Downtown noise levels remain acceptable and compatible with a pedestrian-oriented environment and higher density residential land uses.

S-5.3 Areas within Manteca exposed to existing or projected exterior noise levels from mobile noise sources exceeding the performance standards in Table S-1 shall be designated as noise-impacted areas.

S-5.4 Require residential and other noise-sensitive development projects to satisfy the noise level criteria in Tables S-1 and S-2.

S-5.5 Require new stationary noise sources proposed adjacent to noise sensitive uses to be mitigated so as to not exceed the noise level performance standards in Table S-2, or a substantial increase in noise levels established through a detailed ambient noise survey.

S-5.6 Regulate construction-related noise to reduce impacts on adjacent uses to the criteria identified in Table S-2 or, if the criteria in Table S-2 cannot be met, to the maximum level feasible using best management practices and complying with the MMC Chapter 9.52.

S-5.7 Where the development of residential or other noise-sensitive land use is proposed for a noise-impacted area or where the development of a stationary noise source is proposed in the vicinity of noise-sensitive uses, an acoustical analysis is required as part of the environmental review process so that noise mitigation may be considered in the project design. The acoustical analysis shall:

- Be the responsibility of the applicant.
- Be prepared by a qualified acoustical consultant experienced in the fields of environmental noise assessment and architectural acoustics.
- Include representative noise level measurements with sufficient sampling periods and

locations to adequately describe local conditions and the predominant noise sources.

- Estimate existing and projected (20 years) noise levels in terms of the standards of Table S-1 or Table S-2, and compare those levels to the adopted policies of the Noise Element.
- Recommend appropriate mitigation measures to achieve compliance with the adopted policies and standards of the Noise Element.
- Estimate noise exposure after the prescribed mitigation measures have been implemented.
- If necessary, describe a post-project assessment program to monitor the effectiveness of the proposed mitigation measures.

S-5.8 Apply noise level criteria applied to land uses other than residential or other noise-sensitive uses consistent with noise performance levels of Table S-1 and Table S-2.

S-5.9 Enforce the Sound Transmission Control Standards of the California Building Code concerning the construction of new multiple occupancy dwellings such as hotels, apartments, and condominiums.

S-5.10 Ensure that new equipment and vehicles purchased by the City comply with noise level performance standards consistent with the best available noise reduction technology.

S-5.11 Require the Manteca Police Department to actively enforce requirements of the California Vehicle Code relating to vehicle mufflers and modified exhaust systems.

S-5.12 For new residential development backing on to a freeway or railroad right-of-way, the developer shall be required to provide appropriate mitigation measures to satisfy the performance standards in Table S-1.

S-5.13 It is recognized that the City and surrounding areas are considered to be urban in nature and rely upon both the industrial and agricultural economy of the area. Therefore, it is recognized that noise sources of existing uses may exceed generally accepted standards.

S-5.14 Carefully review and give potentially affected residents an opportunity to fully review any proposals for the establishment of helipads or heliports.

S-5.15 Recognizing that existing noise-sensitive uses may be exposed to increase noise levels due to circulation improvement projects associated with development under the General Plan and that it may not be feasible to reduce increased traffic noise levels to the criteria identified in Table S-1, the following criteria may be used to determine the significance of noise impacts associated with circulation improvement projects:

- Where existing traffic noise levels are less than 60 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +5 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant; and
- Where existing traffic noise levels range between 60 and 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a +3 dB Ldn increase in noise levels due to roadway improvement projects will be considered significant; and
- Where existing traffic noise levels are greater than 65 dB Ldn at the outdoor activity areas of noise-sensitive uses, a + 1.5 dB Ldn increase in noise levels due to roadway

improvement projects will be considered significant.

S-5.16 Work with the Federal Railroad Administration and passenger and freight rail operators to reduce exposure to rail and train noise, including establishing train horn “quiet zones” consistent with the federal regulations.

IMPLEMENTATION

S-5a *Require an acoustical analysis that complies with the requirements of S-5.7 where:*

- *Noise sensitive land uses are proposed in areas exposed to existing or projected noise levels exceeding the levels specified in Table S-1 or S-2.*
- *Proposed transportation projects are likely to produce noise levels exceeding the levels specified in Table S-1 or S-2 at existing or planned noise sensitive uses.*

S-5b *Assist in enforcing compliance with noise emissions standards for all types of vehicles, established by the California Vehicle Code and by federal regulations, through coordination with the Manteca Police Department and the California Highway Patrol.*

S-5c *Update the City's Noise Ordinance (Chapter 9.52) to reflect the noise standards established in this Noise Element and proactively enforce the City's Noise Ordinance, including requiring the following measures for construction:*

- *Restrict construction activities to the hours of 7:00 a.m. to 7:00 p.m. on Monday through Friday, and 8:00 a.m. to 6:00 p.m. on Saturdays. No construction shall be permitted outside of these hours or on Sundays or federal holidays, without a specific exemption issued by the City.*
- *A Construction Noise Management Plan shall be submitted by the applicant for construction projects, when determined necessary by the City. The Construction Noise Management Plan shall include proper posting of construction schedules, appointment of a noise disturbance coordinator, and methods for assisting in noise reduction measures.*
- *Noise reduction measures may include, but are not limited to, the following:*
    a. *Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds) wherever feasible.*
    b. *Except as provided herein, impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used. This muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used, if such jackets are commercially available. this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures.*
    c. *Temporary power poles shall be used instead of generators where feasible.*

d. Stationary noise sources shall be located as far from adjacent properties as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or use other measures as determined by the City of provide equivalent noise reduction.

e. The noisiest phases of construction shall be limited to less than 10 days at a time. Exceptions may be allowed if the City determines an extension is necessary and all available noise reduction controls are implemented.

f. Delivery of materials shall observe the hours of operation described above.

g. *Truck traffic should avoid residential areas to the extent possible.*

S-5d *In making a determination of impact under the California Environmental Quality Act (CEQA), a substantial increase will occur if ambient noise levels are have a substantial increase. Generally, a 3 dB increase in noise levels is barely perceptible, and a 5 dB increase in noise levels is clearly perceptible. Therefore, increases in noise levels shall be considered to be substantial when the following occurs:*

- *When existing noise levels are less than 60 dB, a 5 dB increase in noise will be considered substantial;*
- *When existing noise levels are between 60 dB and 65 dB, a 3 dB increase in noise will be considered substantial;*
- *When existing noise levels exceed 65 dB, a 1.5 dB increase in noise will be considered substantial.*

Additional or alternative criteria can be used for determining a substantial increase in noise levels. For instance, if the overall increase in noise levels occurs where no noise-sensitive uses are located, then the City may use their discretion in determining if there is any impact at all. In such a case, the following alternative factors may be used for determining a substantial increase in noise levels:

- *the resulting noise levels;*
- *the duration and frequency of the noise;*
- *the number of people affected;*
- *conforming or non-conforming land uses;*
- *the land use designation of the affected receptor sites;*
- *public reactions or controversy as demonstrated at workshops or hearings, or by correspondence; and*
- *prior CEQA determinations by other agencies specific to the project.*

S-5e *Control noise at the source through use of insulation, berms, building design and orientation, buffer space, staggered operating hours, and similar techniques. Where such techniques would not meet acceptable levels, use noise barriers to attenuate noise associated with new noise sources to acceptable levels.*

S-5f *Require that all noise-attenuating features are designed to be attractive and to minimize maintenance.*

S-5g *Evaluate new transportation projects, such as truck routes, rail or public transit routes, and transit stations, using the standards contained in Table S-1. However, noise from these projects may be allowed to exceed the standards contained in Table S-1, if the City Council finds that there are special overriding circumstances.*

S-5h *Work with the Federal Rail Authority and passenger and freight rail service providers to establish a Quiet Zone at at-grade crossings in the City. Where new development would be affected by the train and rail noise, require project applicants to fund a fair-share of: a) studies associated with the application for a Quiet Zone, and b) alternative safety measures associated with the Quiet Zone (including, but not limited to signage, gates, lights, etc.).*

S-5i *Work in cooperation with Caltrans, the Union Pacific Railroad, San Joaquin Regional Rail Commission, and other agencies where appropriate to maintain noise level standards for both new and existing projects in compliance with Table S-1.*

S-5j *The City shall require new residential projects located adjacent to major freeways, truck routes, hard rail lines, or light rail lines to follow the FTA screening distance criteria to ensure that groundborne vibrations to do not exceed acceptable levels.*

TABLE S-1: MAXIMUM ALLOWABLE NOISE EXPOSURE FROM MOBILE NOISE SOURCES

LAND USE[1]	OUTDOOR ACTIVITY AREAS[2,3]	INTERIOR SPACES	
		LDN/ CNEL, DBA	LEQ, DBA[4]
Residential	60	45	-
Motels/Hotels	65	45	-
Mixed-Use	65	45	
Hospitals, Nursing Homes	60	45	-
Theaters, Auditoriums	-	-	35
Churches	60	-	40
Office Buildings	65	-	45
Schools, Libraries, Museums	70	-	45
Playgrounds, Neighborhood Parks	70	-	-
Industrial	75	-	45
Golf Courses, Water Recreation	70	-	-

[1]Where a proposed use is not specifically listed, the use shall comply with the standards for the most similar use as determined by the City.

[2]Outdoor activity areas for residential development are considered to be the back yard patios or decks of single family units and the common areas where people generally congregate for multi-family developments. Where common outdoor activity areas for multi-family developments comply with the outdoor noise level standard, the standard will not be applied at patios or decks of individual units provided noise-reducing measures are incorporated (e.g., orientation of patio/deck, screening of patio with masonry or other noise-attenuating material). Outdoor activity areas for non-residential developments are the common areas where people generally congregate, including pedestrian plazas, seating areas, and outside lunch facilities; not all residential developments include outdoor activity areas.

[3]In areas where it is not possible to reduce exterior noise levels to achieve the outdoor activity area standard w using a practical application of the best noise-reduction technology, an increase of up to 5 Ldn over the standard will be allowed

provided that available exterior noise reduction measures have been implemented and interior noise levels are in compliance with this table

[4]Determined for a typical worst-case hour during periods of use.

TABLE S-2: PERFORMANCE STANDARDS FOR STATIONARY NOISE SOURCES, INCLUDING ***AFFECTED PROJECTS[1,2,3,4]***

Noise Level Descriptor	Daytime	Nighttime
	7 AM TO 10 PM	10 PM TO 7 AM
Hourly Leq, dBA	55	45

[1]Each of the noise levels specified above should be lowered by 5 dB for simple noise tones, noises consisting primarily of speech or music, or recurring impulsive noises. Such noises are generally considered to be particularly annoying and are a primary source of noise complaints.

[2]No standards have been included for interior noise levels. Standard construction practices should, with the exterior noise levels identified, result in acceptable interior noise levels.

[3]Stationary noise sources which are typically of concern include, but are not limited to, the following:

HVAC Systems	*Cooling Towers/Evaporative Condensers*
Pump Stations	*Lift Stations*
Emergency Generators	*Boilers*
Steam Valves	*Steam Turbines*
Generators	*Fans*
Air Compressors	*Heavy Equipment*
Conveyor Systems	*Transformers*
Pile Drivers	*Grinders*
Drill Rigs	*Gas or Diesel Motors*
Welders	*Cutting Equipment*
Outdoor Speakers	*Blowers*

[4]The types of uses which may typically produce the noise sources described above include but are not limited to: industrial facilities, pump stations, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and athletic fields.

City of Manteca Municipal Code Noise Ordinance

VIBRATION STANDARDS

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration will depend on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities.

The City does not have specific policies pertaining to vibration levels. However, vibration levels associated with construction activities are addressed as potential noise impacts associated with project implementation.

Human and structural response to different vibration levels is influenced by several factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table 3.10-10 indicates that the threshold for damage to structures ranges from 0.2 to 0.6 peak particle velocity in inches per second (in/sec p.p.v). A threshold of 0.20 in/sec p.p.v. is considered to be a reasonable threshold for short-term construction projects.

TABLE 3.10-10: EFFECTS OF VIBRATION ON PEOPLE AND BUILDINGS

Peak Particle Velocity		*Human Reaction*	*Effect on Buildings*
mm/sec.	*in./sec.*		
0.15-0.30	0.006-0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of “architectural” damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of “architectural” damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize “architectural” damage
10-15	0.4-0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause “architectural” damage and possibly minor structural damage.

Source: Caltrans. Transportation Related Earthborn Vibrations. TAV-02-01-R9601 February 20, 2002.

3.10.3 IMPACTS AND MITIGATION MEASURES

THRESHOLDS OF SIGNIFICANCE

Consistent with Appendix G of the CEQA Guidelines, the project will have a significant impact related to noise if it will result in:

Would the project:

a. Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
b. Expose persons to, or generate, excessive groundborne vibration or groundborne noise levels;
c. Cause a substantial permanent increase in ambient noise levels in the project vicinity above existing levels without the project;
d. Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above existing levels without the project;
e. Expose persons residing or working in the project area to excessive noise levels if 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; or
f. Expose persons residing or working in the project area to excessive noise levels if located within the vicinity of a private airstrip.

Determination of a Significant Increase in Noise Levels

Existing (2003) General Plan Policies

The CEQA guidelines define a significant impact of a project if it "increases substantially the ambient noise levels for adjoining areas". Implementation Measure N-I-3 of the City of Manteca General Plan Noise Element provides specific guidance for assessing increases in ambient noise, as follows:

> *In making a determination of impact under the California Environmental Quality Act (CEQA), a substantial increase will occur if ambient noise levels are increased by 10 dB or more. An increase from 5-10 dB may be substantial. Factors to be considered in determining the significance of increases from 5-10 dB include:*
>
> - *the resulting noise levels*
> - *the duration and frequency of the noise*
> - *the number of people affected*
> - *the land use designation of the affected receptor sites*
> - *public reactions/controversy as demonstrated at workshops/hearings, or by correspondence*
> - *prior CEQA determinations by other agencies specific to the project*

Proposed General Plan Policies

Under the City's proposed General Plan Update, the following policy S-5d will apply when evaluating substantial noise increases:

In making a determination of impact under the California Environmental Quality Act (CEQA), a substantial increase will occur if ambient noise levels are have a substantial increase. Generally, a 3 dB increase in noise levels is barely perceptible, and a 5 dB increase in noise levels is clearly perceptible. Therefore, increases in noise levels shall be considered to be substantial when the following occurs:

- *When existing noise levels are less than 60 dB, a 5 dB increase in noise will be considered substantial;*
- *When existing noise levels are between 60 dB and 65 dB, a 3 dB increase in noise will be considered substantial;*
- *When existing noise levels exceed 65 dB, a 1.5 dB increase in noise will be considered substantial.*

Additional or alternative criteria can be used for determining a substantial increase in noise levels. For instance, if the overall increase in noise levels occurs where no noise-sensitive uses are located, then the City may use their discretion in determining if there is any impact at all. In such a case, the following alternative factors may be used for determining a substantial increase in noise levels:

- *the resulting noise levels;*
- *the duration and frequency of the noise;*
- *the number of people affected;*
- *conforming or non-conforming land uses;*
- *the land use designation of the affected receptor sites;*
- *public reactions or controversy as demonstrated at workshops or hearings, or by correspondence; and*
- *prior CEQA determinations by other agencies specific to the project.*

IMPACTS AND MITIGATION MEASURES

IMPACT 1: WOULD THE PROJECT GENERATE 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?

TRAFFIC NOISE INCREASES UNDER EXISTING (2003) GENERAL PLAN STANDARDS

As shown in Tables 3.10-4 and 3.10-5, some noise-sensitive receptors located along the project-area roadways within and outside of the Annexation Area are currently exposed to exterior traffic noise levels exceeding the City of Manteca 60 dB L_{dn} exterior noise level standard for residential uses. These receptors would continue to experience elevated exterior noise levels with implementation of the proposed project. For example, sensitive receptors under Existing conditions located adjacent to Airport Way, north of Woodward Avenue (includes Non-Development Area 2) experience an exterior noise level of approximately 66.5 dB L_{dn}. Under Existing + Project conditions, exterior traffic noise levels are predicted to be approximately 68.9 dB L_{dn}. Exterior noise levels in both scenarios exceed the City's exterior noise level standard of 60 dB L_{dn}. Under the City's existing General Plan, the project's contribution of 2.5 dB would not exceed the City's increase criteria of 5-10 dB.

TRAFFIC NOISE INCREASES UNDER PROPOSED GENERAL PLAN STANDARDS

Under Plus Project conditions, the proposed Project's contribution to increased traffic ranges between 0.1 dB and 2.5 dB, with three roadway segments experiencing increases that would exceed the 1.5 dB increase threshold where existing noise levels are over 65.0 dB. As shown in Table 3.10-4 and 3.10-5, significant traffic noise increases under the Plus Project traffic conditions include the following segments:

- **Airport Way from Atherton to Woodward Avenue (Includes Non-Development Area 2)** – noise levels are predicted to increase by 2.5 dB under Existing Plus Project conditions.
- **Airport Way South of Woodward Avenue** – noise levels are predicted to increase by 1.5 dB under Existing Plus Project conditions.
- **Woodward Avenue west of Airport Way** – noise levels are predicted to increase by 2.0 dB under Existing Plus Project conditions and 1.7 dB under Cumulative Plus Project conditions.

In order to reduce this impact, the use of sound walls or quiet pavement would be required. Construction of new six-foot-tall sound walls could be a potential mitigation measure. However, all of the impacted residential uses along the roadway segments listed above are accessed directly via driveways off the main roadway. As such, a sound wall would require many driveway openings, resulting in partial noise barriers. These openings in the sound wall would substantially reduce the noise barrier performance. Additionally, construction of noise barriers at off-site locations would result in encroachment into private property. Such encroachment would require private property owners to allow permission to enter their property. Therefore, noise barriers are not considered to be a practical option.

Quiet pavements are typically assumed to provide a 3 to 5 dBA reduction. Assuming a minimum reduction of 3 dBA, quiet pavement placed along sensitive receptor areas on the previously-listed roadway segments could reduce Project noise level increases to the following roadway segments:

- **Airport Way from Atherton to Woodward Avenue (Includes Non-Development Area 2)** – noise levels are predicted to increase by 2.5 dB without mitigation. Use of quiet pavement would eliminate this increase. Approximately 1,250 feet (approximately 0.24 miles) of quiet pavement would be required. See Figure 3.10-3 for approximate required pavement locations.
- **Airport Way South of Woodward Avenue** – noise levels are predicted to increase by 1.5 dB without mitigation. Use of quiet pavement would eliminate this increase. Approximately 1,460 feet (approximately 0.28 miles) of quiet pavement would be required. See Figure 3.10-3 for approximate required pavement locations.
- **Woodward Avenue west of Airport Way** – noise levels are predicted to increase by 2.0 dB without mitigation. Use of quiet pavement would eliminate this increase. Approximately

2,050 feet (approximately 0.39 miles) of quiet pavement would be required. See Figure 3.10-3 for approximate required pavement locations.

Therefore, with implementation of Mitigation Measure 3.10-1, traffic noise impacts would be ***less-than-significant***.

OPERATIONAL NOISE INCREASES (DEVELOPMENT AREA)

The proposed Development Area would include typical residential noise sources which would be compatible with the adjacent existing residential uses (a.k.a. neighborhood traffic, yard equipment, truck deliveries, garbage collected, etc.). Proposed neighborhood parks are located internal to the project site and would not impact off-site residential uses. Therefore, operational noise by the proposed project is not analyzed further.

CONSTRUCTION NOISE

During the construction of the project, including roads, water, sewer lines, and related infrastructure, noise from construction activities would add to the noise environment in the project vicinity. Existing receptors adjacent to the proposed construction activities are located north, south west, and east of the site.

As indicated in Table 3.10-6, activities involved in construction would generate maximum noise levels ranging from 82 to 96 dB L_{max} at a distance of 50 feet. Noise would also be generated during the construction phase by increased truck traffic on area roadways. A significant project-generated noise source would be truck traffic associated with transport of heavy materials and equipment to and from construction sites. This noise increase would be of short duration and would likely occur primarily during daytime hours.

Construction activities would be temporary in nature and are exempt from noise regulation during the hours of 7:00 AM to 7:00 PM, as outlined in the City's Municipal Code:

> **17.58.050 D. Exempt Activities**
>
> 8. Construction activities when conducted as part of an approved Building Permit, except as prohibited in Subsection 17.58.050(E)(1) (Prohibited Activities) below.
>
> **17.58.050 E. Prohibited Activities**
>
> 1. Construction Noise. Operating or causing the operation of tools or equipment on private property used in alteration, construction, demolition, drilling, or repair work daily between the hours of 7:00 p.m. and 7:00 a.m., so that the sound creates a noise disturbance across a residential property line, except for emergency work of public service utilities.

Therefore, with implementation of MM 3.10-1, temporary construction noise impacts would be reduced to less than significant.

EXTERIOR NOISE IMPACTS ON PROPOSED DEVELOPMENT AREA

Table 3.10-11 shows the predicted traffic noise levels at the proposed Development Area residential uses adjacent to the major project-area arterial roadways. Based upon Table 3.10-11, exterior noise levels would exceed the City's 60 dBA L_{dn} normally acceptable exterior noise standard. The 60 dBA L_{dn} noise contours for Woodward Avenue and South Airport Way were found to extend to an approximate distance of 330 feet and 350 feet from the roadway centerlines, respectively. This would encroach into the outdoor activity areas of proposed residences. Therefore, use of a physical barrier would be the only feasible method to reduce exterior noise levels to within the City's allowable exterior noise standard range.

Table 3.10-11 also indicates the property line noise barrier heights required to achieve compliance with an exterior noise level standard of 60 dB L_{dn}.

TABLE 3.10-11: CUMULATIVE + PROJECT TRANSPORTATION NOISE LEVELS AT PROPOSED RESIDENTIAL USES

SEGMENT	APPROXIMATE RESIDENTIAL SETBACK, FEET[1]	PREDICTED NOISE LEVELS, DB L_{DN}[2]					
		NO BARRIER	6' BARRIER	7' BARRIER	8' BARRIER	9' BARRIER	10' BARRIER
Woodward Avenue	65	71	65	64	62	61	60
S Airport Way	70	72	66	64	63	62	61

NOTES:
[1] SETBACK DISTANCES ARE MEASURED IN FEET FROM THE CENTERLINES OF THE ROADWAYS TO THE CENTER OF RESIDENTIAL BACKYARDS.
[2] THE MODELED NOISE BARRIERS ASSUME FLAT SITE CONDITIONS WHERE ROADWAY ELEVATIONS, BASE OF WALL ELEVATIONS, AND BUILDING PAD ELEVATIONS ARE APPROXIMATELY EQUIVALENT. SOUND BARRIER HEIGHT MAY BE ACHIEVED THROUGH THE USE A WALL AND EARTHEN BERM TO ACHIEVE THE TOTAL HEIGHT (I.E. 6-FOOT WALL ON 2-FOOT BERM IS EQUIVALENT TO AN 8-FOOT TALL BARRIER).
SOURCE: SAXELBY ACOUSTICS. 2021.

The modeled noise barriers assume flat site conditions where roadway elevations, base of wall elevations, and building pad elevations are approximately equivalent.

The Table 3.10-11 data indicate that a noise barrier greater than 10-feet in height would be required to achieve compliance with the City of Manteca 60 dB L_{dn} exterior noise level standard for the proposed residential uses. It should be noted that Table 9-1 (Table 3.10-8) of the City's General Plan notes that residential uses are conditionally compatible with exterior noise levels of up to 65 dB L_{dn}, assuming that interior noise levels are in compliance with the City's interior noise level standards. The City of Manteca has indicated that they would only support construction of a sound wall matching the height of the adjacent residential development in the Project vicinity. The adjacent residential development to the north employs an 8-foot tall masonry wall for traffic noise protection. Therefore, it is expected that the proposed project would also include construction of an 8-foot tall masonry wall or a 6-foot tall masonry wall on a 2-foot tall earthen berm, for a total barrier height of 8-feet. Based upon Table 3.10-11, an 8-foot tall barrier would achieve an exterior noise level of 62-63 dBA L_{dn} which is within the City's conditionally compatible exterior noise standard of up to 65 dB L_{dn}.

INTERIOR NOISE IMPACTS AT PROPOSED DEVELOPMENT AREA

Modern construction typically provides a 25-dB exterior-to-interior noise level reduction with windows closed. Therefore, sensitive receptors exposed to exterior noise of 70 dB L_{dn}, or less, will typically comply with the City of Manteca 45 dB L_{dn} interior noise level standard. Additional noise reduction measures, such as acoustically-rated windows, are generally required for exterior noise levels exceeding 70 dB L_{dn}.

It should be noted that noise barriers do not typically reduce exterior noise levels at second floor locations. The proposed residential uses are predicted to be exposed to unmitigated first-floor exterior transportation noise levels up to 72 dBA L_{dn}. Mitigated first-floor noise levels of 63 dBA L_{dn} are expected after construction of sound barriers.

Based upon a 25-dB exterior-to-interior noise level reduction, interior noise levels are predicted to be up to 48 dB L_{dn} at second floors and 38 dBA L_{dn} at first floors. Accordingly, predicted interior noise levels along the first row of residential uses along Woodward Avenue and South Airport Way are predicted to exceed the City's 45 dB L_{dn} interior noise level standard at second floor locations.

Appendix D (See Appendix F of this EIR) shows an estimate of the interior noise control measures required to meet the City's interior noise level standards.

Implementation of the following mitigation measure will ensure that these potential impacts are reduced to a ***less-than-significant*** level.

MITIGATION MEASURE(S)

Mitigation Measure 3.10-1A: *Construction activities shall adhere to the requirements of the City of Manteca Municipal Code with respect to hours of operation. This requirement shall be noted in the improvements plans prior to approval by the City's Public Works Department.*

Mitigation Measure 3.10-1B: *All equipment shall be fitted with factory equipped mufflers, and in good working order. This requirement shall be noted in the improvements plans prior to approval by the City's Public Works Department.*

Mitigation Measure 3.10-2: *An 8-foot tall sound wall shall be constructed along the Woodward Avenue and South Airport Way frontages, adjacent to proposed Development Area residential uses, in order to achieve the City's exterior noise standards. Noise barrier walls shall be constructed of concrete panels, concrete masonry units, earthen berms, or any combination of these materials that achieve the required total height. Wood is not recommended due to eventual warping and degradation of acoustical performance. These requirements shall be included in the improvements plans prior to their approval by the City's Public Works Department. Figure 3.10-2 shows the recommended sound wall locations.*

Mitigation Measure 3.10-3: *For the first rows of lots on the Development Area site adjacent to the Woodward Avenue or South Airport Way right of way, second floor exterior facades with a view of Woodward Avenue or South Airport Way would need the following noise control measures:*

- *Windows shall have a sound transmission class (STC) rating of 32.*
- *Interior gypsum at exterior walls shall be 5/8";*
- *Ceiling gypsum shall be 5/8";*
- *Exterior finish shall be stucco, fiber cement lap siding, or system with equivalent weight per square foot;*
- *Mechanical ventilation shall be installed in all residential uses to allow residents to keep doors and windows closed, as desired for acoustical isolation.*
- *As an alternative to the above-listed interior noise control measures, the applicant may provide a detailed analysis of interior noise control measures once building plans become available. The analysis should be prepared by a qualified noise control engineer and shall outline the specific measures required to meet the City of Manteca 45 dB L_{dn} interior noise level standard.*

Mitigation Measure 3.10-4: *To reduce traffic noise increases to less than +1.5 dB, the following roadway segments shall be paved with quiet pavement:*

- *Airport Way from Atherton to Woodward Avenue (Includes Non-Development Area 2)*
- *Airport Way South of Woodward Avenue*
- *Woodward Avenue west of Airport Way*

*The pavement would be required for any portion of roadway passing a noise-sensitive use not protected by an existing sound wall, and for a distance of 100 feet on either side of the sensitive-use**.** This requirement shall be noted on the Project improvement plans. Approximate pavement locations are shown on Figure 3.10-3.*

IMPACT 2: WOULD THE PROJECT GENERATE EXCESSIVE GROUNDBORNE VIBRATION OR GROUNDBORNE NOISE LEVELS?

Construction vibration impacts include human annoyance and building structural damage. Human annoyance occurs when construction vibration rises significantly above the threshold of perception. Building damage can take the form of cosmetic or structural damage.

With the exception of vibratory compactors, the Table 3.10-7 data indicate that construction vibration levels anticipated for the project are less than the 0.2 in/sec threshold at a distance of 25 feet. Use of vibratory compactors within 26 feet of the adjacent buildings could cause vibrations in excess of 0.2 in/sec. Sensitive receptors which could be impacted by construction-related vibrations, especially vibratory compactors/rollers, are located approximately 10-15 feet, or further, from the Development Area project site.

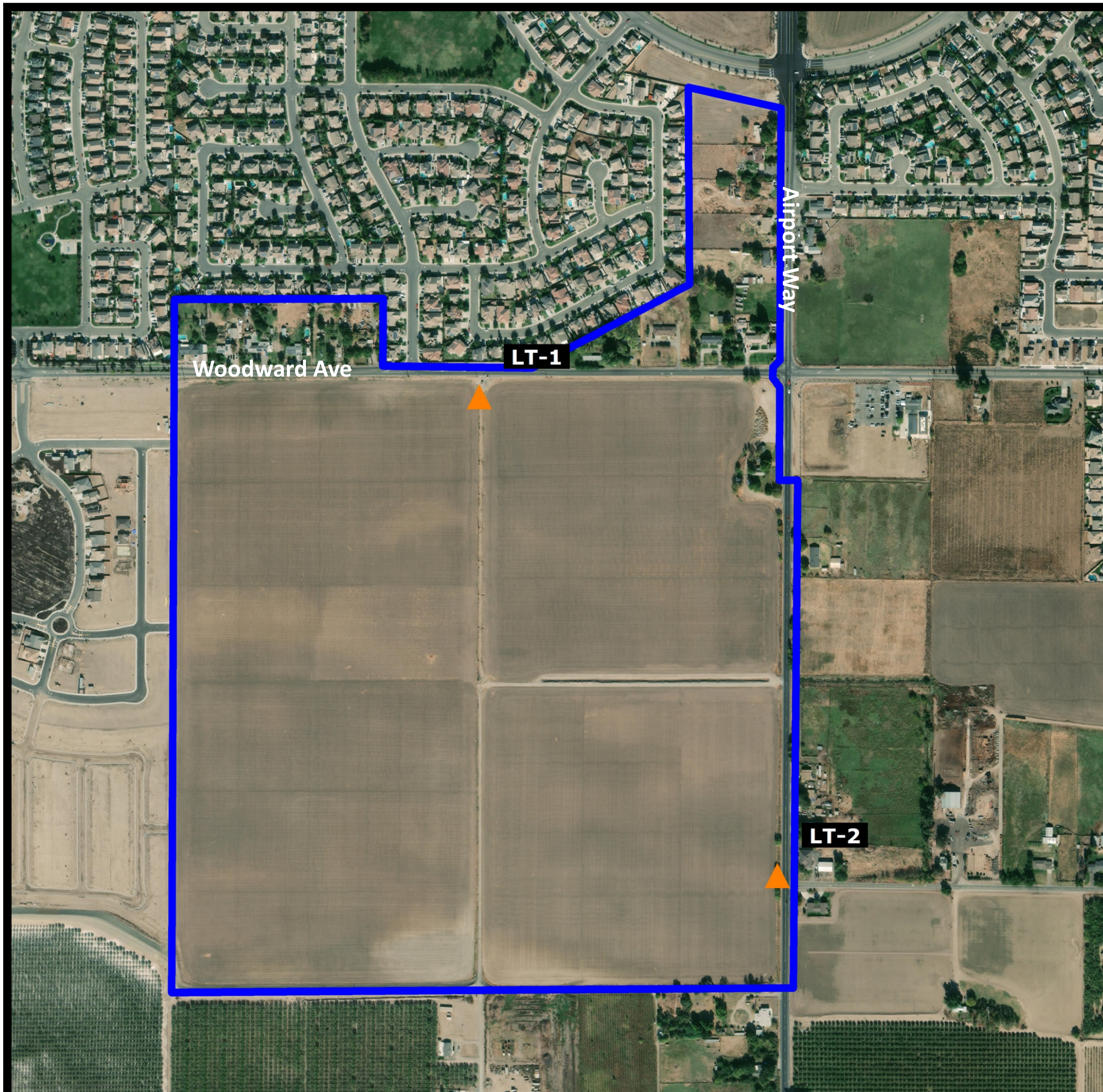
Implementation of the following mitigation measure will ensure that these potential impacts are reduced to a ***less-than-significant*** level.

MITIGATION MEASURE(S)

Mitigation Measure 3.10-4: *Any compaction required less than 26 feet from the adjacent residential structures shall be accomplished by using static drum rollers which use weight instead of vibrations to achieve soil compaction. As an alternative to this requirement, pre-construction crack documentation and construction vibration monitoring could be conducted to ensure that construction vibrations do not cause damage to any adjacent structures.*

IMPACT 3: 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?

There are no airports in the project vicinity. Therefore, this impact is not applicable to the proposed project.



Lumina Ranch EIR

City of Manteca, California

Figure 3.10-1

Noise Measurement Sites

Legend

Annexation Boundary

Noise Measurement Site - Long Term

0 m 100 m 200 m 300 m

Projection: State Plane (California Zone 3) / NAD83 / meters
Rev. Date: 03/12/2021

SAXELBY ACOUSTICS
Acoustics · Noise · Vibration

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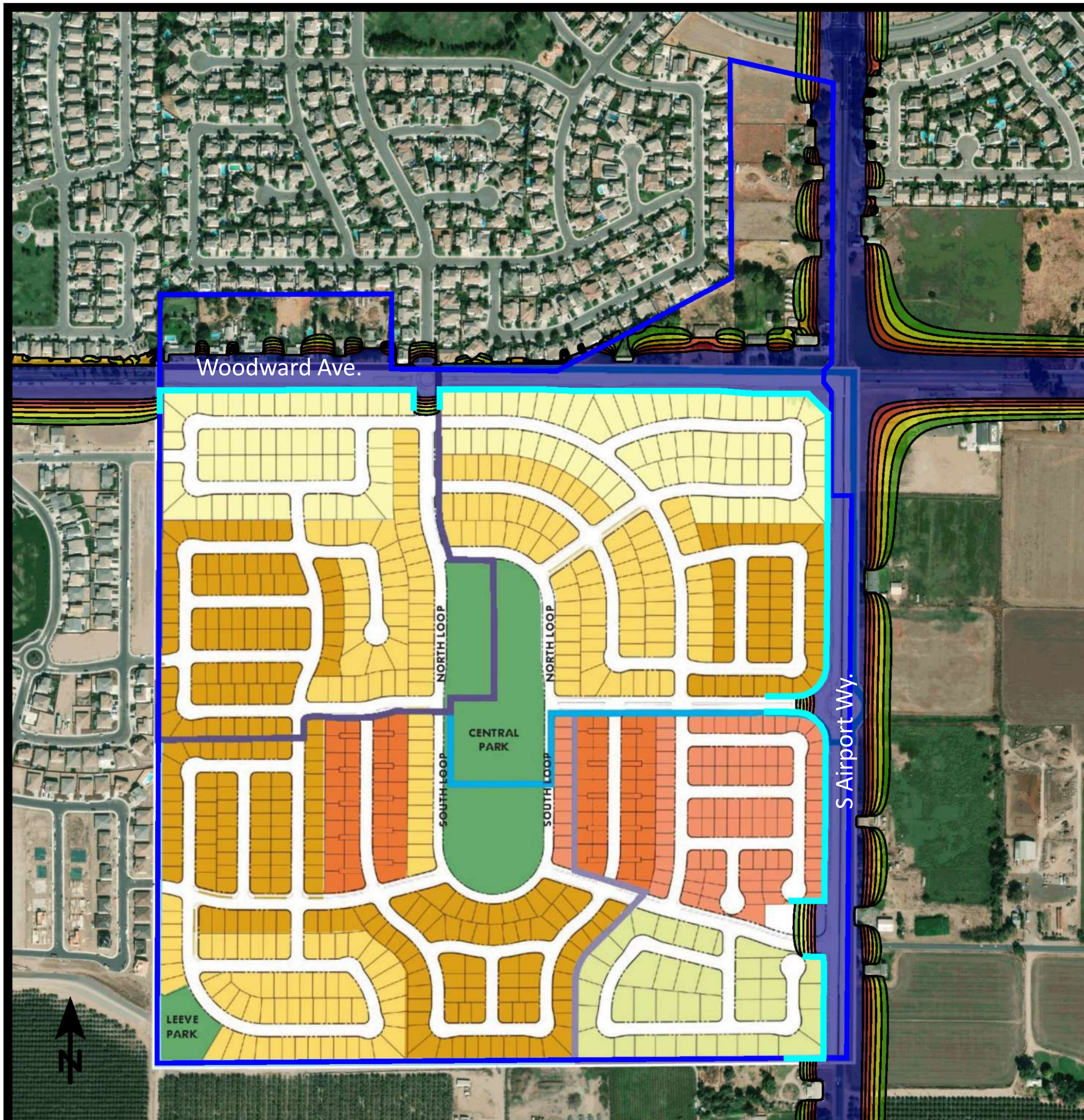
Lumina Ranch EIR

City of Manteca, California

Figure 3.10-2

Cumulative + Project Transportation Noise Contours (dBA L_{dn}) – with 8-Foot Sound Walls



Signs and symbols

Annexation Boundary

8-Foot Sound Wall

Levels in dB(A)

<= 65
65 - 66
66 - 67
67 - 68
68 - 69
69 - 70
> 70

1 : 6750

0 35 70 140 210 280 m

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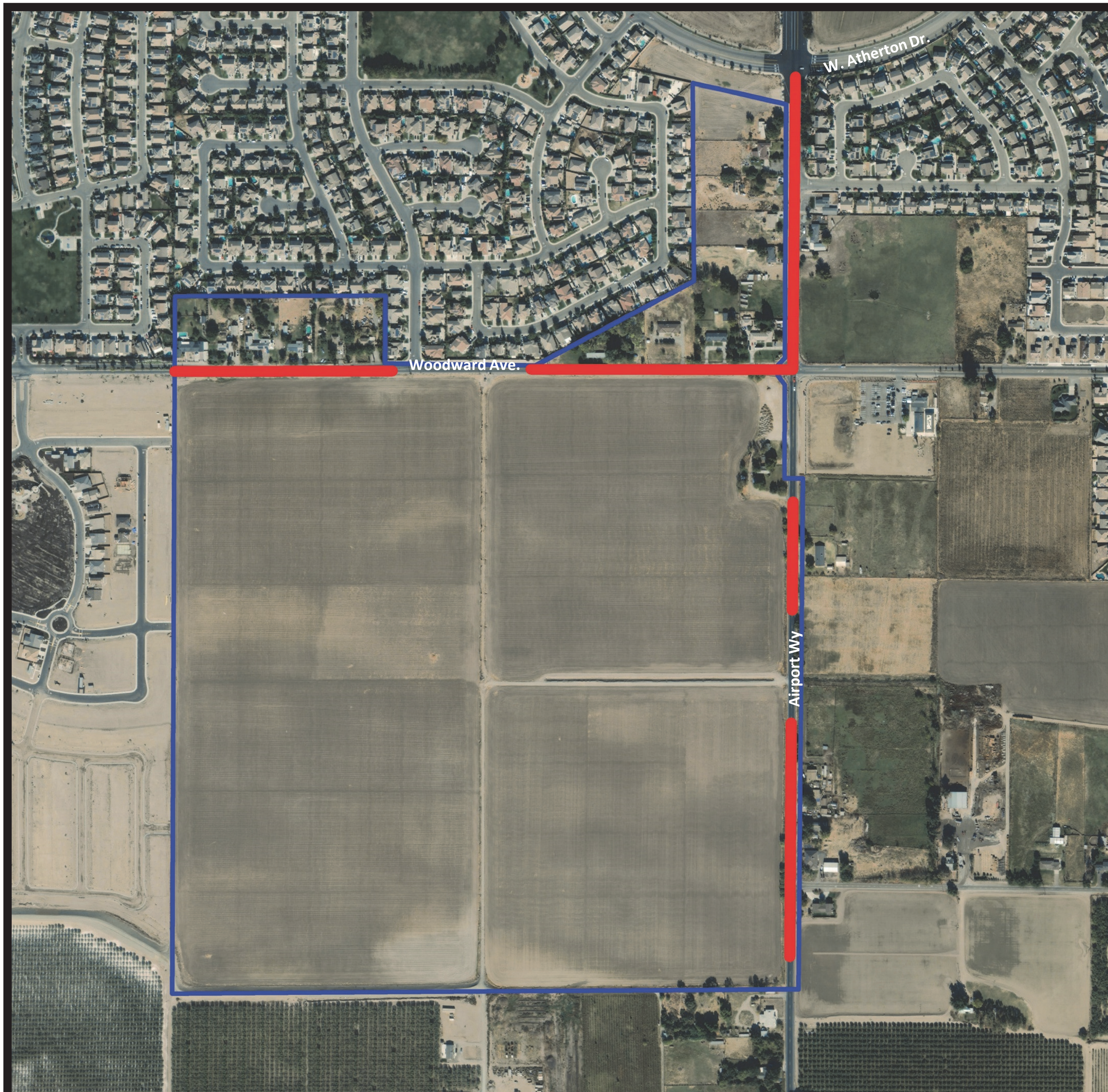

Lumina Ranch EIR

City of Manteca, California

Figure 3.10-3

Required Quiet Pavement Locations

Legend

Annexation Boundary

Recommended Quiet Pavement

0 m 100 m 200 m 300 m

Projection: State Plane (California Zone 3) / NAD83 / meters
Rev. Date: 04/05/2021

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Appendix A: Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
ASTC	Apparent Sound Transmission Class. Similar to STC but includes sound from flanking paths and correct for room reverberation. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by +5 dBA and nighttime hours weighted by +10 dBA.
DNL	See definition of Ldn.
IIC	Impact Insulation Class. An integer-number rating of how well a building floor attenuates impact sounds, such as footsteps. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz (Hz).
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
L(n)	The sound level exceeded a described percentile over a measurement period. For instance, an hourly L50 is the sound level exceeded 50% of the time during the one-hour period.
Loudness	A subjective term for the sensation of the magnitude of sound.
NIC	Noise Isolation Class. A rating of the noise reduction between two spaces. Similar to STC but includes sound from flanking paths and no correction for room reverberation.
NNIC	Normalized Noise Isolation Class. Similar to NIC but includes a correction for room reverberation.
Noise	Unwanted sound.
NRC	Noise Reduction Coefficient. NRC is a single-number rating of the sound-absorption of a material equal to the arithmetic mean of the sound-absorption coefficients in the 250, 500, 1000, and 2,000 Hz octave frequency bands rounded to the nearest multiple of 0.05. It is a representation of the amount of sound energy absorbed upon striking a particular surface. An NRC of 0 indicates perfect reflection; an NRC of 1 indicates perfect absorption.
RT60	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 Sabin.
SEL	Sound Exposure Level. SEL is a rating, in decibels, of a discrete event, such as an aircraft flyover or train pass by, that compresses the total sound energy into a one-second event.
SPC	Speech Privacy Class. SPC is a method of rating speech privacy in buildings. It is designed to measure the degree of speech privacy provided by a closed room, indicating the degree to which conversations occurring within are kept private from listeners outside the room.
STC	Sound Transmission Class. STC is an integer rating of how well a building partition attenuates airborne sound. It is widely used to rate interior partitions, ceilings/floors, doors, windows and exterior wall configurations. The STC rating is typically used to rate the sound transmission of a specific building element when tested in laboratory conditions where flanking paths around the assembly don't exist. A larger number means more attenuation. The scale, like the decibel scale for sound, is logarithmic.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.

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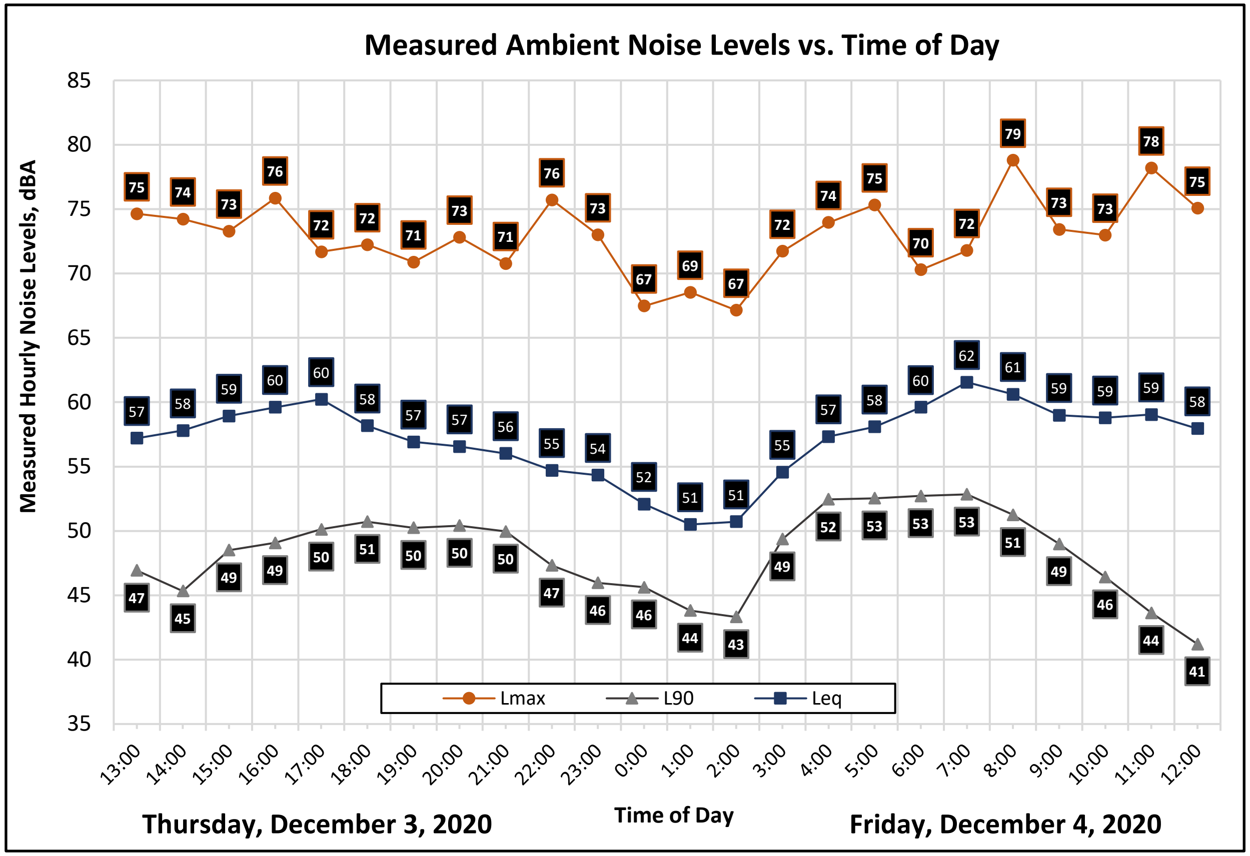
Appendix B: Continuous Ambient Noise Measurement Results

Appendix B1: Continuous Noise Monitoring Results

Site: LT-1
Project: 201104 Lumina Ranch EIR
Location: Northern Project Boundary
Coordinates: 37.7753107°, -121.2567553°
Meter: LDL 812-1
Calibrator: CAL200

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Thursday, December 3, 2020	13:00	57	75	53	47
Thursday, December 3, 2020	14:00	58	74	54	45
Thursday, December 3, 2020	15:00	59	73	57	49
Thursday, December 3, 2020	16:00	60	76	58	49
Thursday, December 3, 2020	17:00	60	72	58	50
Thursday, December 3, 2020	18:00	58	72	55	51
Thursday, December 3, 2020	19:00	57	71	54	50
Thursday, December 3, 2020	20:00	57	73	54	50
Thursday, December 3, 2020	21:00	56	71	53	50
Thursday, December 3, 2020	22:00	55	76	50	47
Thursday, December 3, 2020	23:00	54	73	49	46
Friday, December 4, 2020	0:00	52	67	49	46
Friday, December 4, 2020	1:00	51	69	47	44
Friday, December 4, 2020	2:00	51	67	48	43
Friday, December 4, 2020	3:00	55	72	53	49
Friday, December 4, 2020	4:00	57	74	55	52
Friday, December 4, 2020	5:00	58	75	55	53
Friday, December 4, 2020	6:00	60	70	56	53
Friday, December 4, 2020	7:00	62	72	60	53
Friday, December 4, 2020	8:00	61	79	57	51
Friday, December 4, 2020	9:00	59	73	55	49
Friday, December 4, 2020	10:00	59	73	56	46
Friday, December 4, 2020	11:00	59	78	56	44
Friday, December 4, 2020	12:00	58	75	55	41

Statistics	Leq	Lmax	L50	L90
Day Average	59	74	56	48
Night Average	56	71	51	48
Day Low	56	71	53	41
Day High	62	79	60	53
Night Low	51	67	47	43
Night High	60	76	56	53
Ldn	62.7	Day %		77
CNEL	63	Night %		23

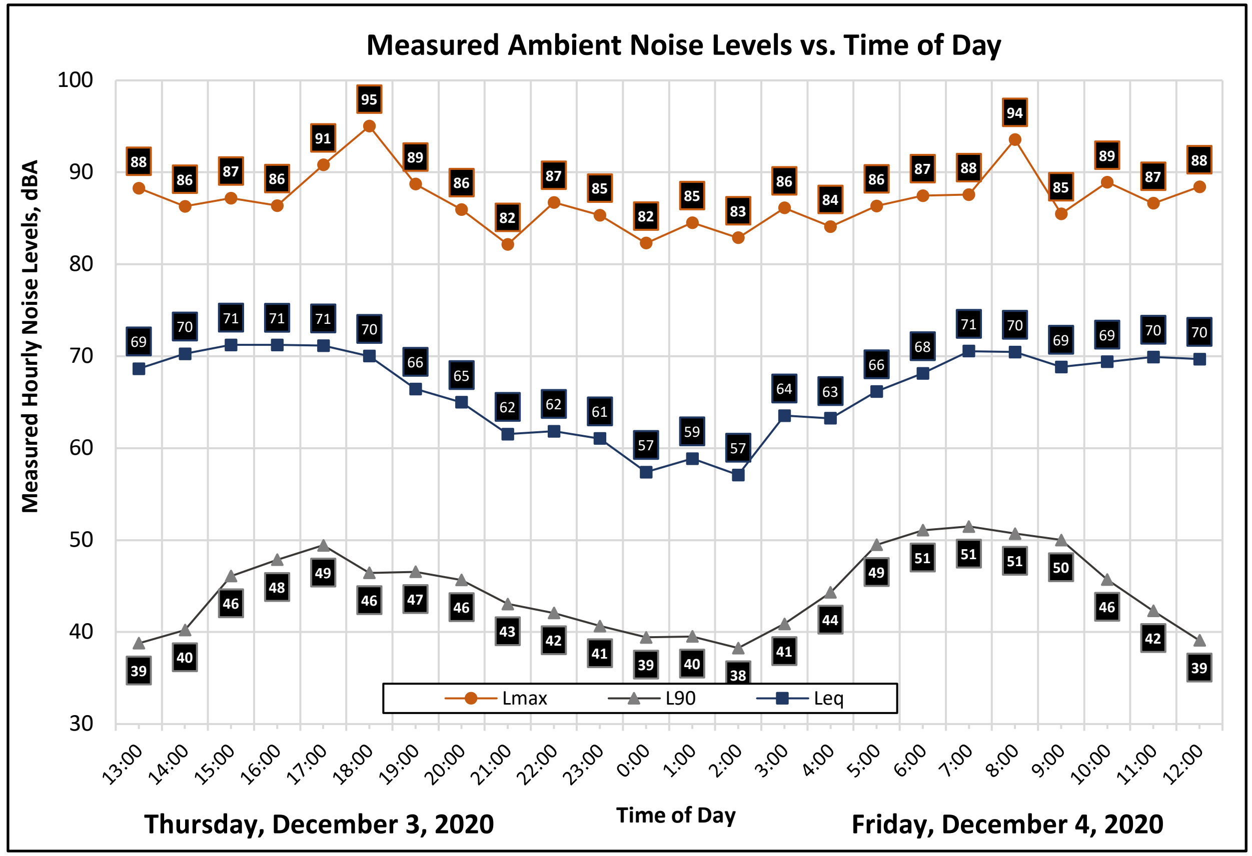


Appendix B1: Continuous Noise Monitoring Results

Site: LT-2
Project: 201104 Lumina Ranch EIR
Location: Southeastern Project Boundary
Coordinates: 37.7696795°, -121.2522519°
Meter: LDL 812-2
Calibrator: CAL200

Date	Time	Measured Level, dBA			
		L_{eq}	L_{max}	L_{50}	L_{90}
Thursday, December 3, 2020	13:00	69	88	53	39
Thursday, December 3, 2020	14:00	70	86	58	40
Thursday, December 3, 2020	15:00	71	87	63	46
Thursday, December 3, 2020	16:00	71	86	63	48
Thursday, December 3, 2020	17:00	71	91	62	49
Thursday, December 3, 2020	18:00	70	95	56	46
Thursday, December 3, 2020	19:00	66	89	51	47
Thursday, December 3, 2020	20:00	65	86	49	46
Thursday, December 3, 2020	21:00	62	82	46	43
Thursday, December 3, 2020	22:00	62	87	45	42
Thursday, December 3, 2020	23:00	61	85	43	41
Friday, December 4, 2020	0:00	57	82	42	39
Friday, December 4, 2020	1:00	59	85	42	40
Friday, December 4, 2020	2:00	57	83	40	38
Friday, December 4, 2020	3:00	64	86	43	41
Friday, December 4, 2020	4:00	63	84	48	44
Friday, December 4, 2020	5:00	66	86	53	49
Friday, December 4, 2020	6:00	68	87	55	51
Friday, December 4, 2020	7:00	71	88	59	51
Friday, December 4, 2020	8:00	70	94	57	51
Friday, December 4, 2020	9:00	69	85	54	50
Friday, December 4, 2020	10:00	69	89	55	46
Friday, December 4, 2020	11:00	70	87	56	42
Friday, December 4, 2020	12:00	70	88	56	39

Statistics	Leq	Lmax	L50	L90
Day Average	70	88	56	46
Night Average	63	85	46	43
Day Low	62	82	46	39
Day High	71	95	63	51
Night Low	57	82	40	38
Night High	68	87	55	51
Ldn	71.4	Day %		87
CNEL	72	Night %		13



Appendix C: Traffic Noise Calculation Inputs and Results

Appendix C-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 201104

Description: Lumina Ranch EIR - Existing Traffic

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset 60 dBA	65 dBA	70 dBA	Level, dBA
1	Airport Way	North of Daniels Street	16,800	87	0	13	1.0%	1.0%	40	85	0	163	76	35	64.2
2	Airport Way	South of Daniels Street	25,900	87	0	13	1.0%	1.0%	40	750	0	217	101	47	51.9
3	Highway 120 Ramp	WB Off Ramp	6,100	87	0	13	1.0%	1.0%	65	330	0	190	88	41	56.4
4	Highway 120 Ramp	WB On Ramp	7,300	87	0	13	1.0%	1.0%	65	550	0	214	99	46	53.9
5	Airport Way	Between 120 Ramps	19,800	87	0	13	1.0%	1.0%	50	875	0	263	122	57	52.2
6	Highway 120 Ramp	EB On Ramp	4,600	87	0	13	1.0%	1.0%	65	300	0	157	73	34	55.8
7	Highway 120 Ramp	EB Off Ramp	6,600	87	0	13	1.0%	1.0%	65	375	0	200	93	43	55.9
8	Airport Way	Highway 120 to Atherton Dr.	16,700	87	0	13	1.0%	1.0%	45	750	0	197	91	42	51.3
9	Airport Way	Atherton Drive to Woodward Avenue	9,400	87	0	13	1.0%	1.0%	55	70	0	189	88	41	66.5
10	Airport Way	South of Woodward Avenue	5,700	87	0	13	1.0%	1.0%	55	55	0	135	63	29	65.9
11	Woodward Avenue	West of Airport Way	5,300	77	0	23	1.0%	1.0%	35	35	0	77	36	17	65.1
12	Woodward Avenue	East of Airport Way	4,700	77	0	23	1.0%	1.0%	35	65	0	71	33	15	60.6
13	Airport Way	South of Peach Road	5,200	87	0	13	1.0%	1.0%	55	75	0	127	59	27	63.4
14	East Peach Road	East of Aiprort Way	700	87	0	13	1.0%	1.0%	25	80	0	10	5	2	46.8
15	Woodward Avenue	Woodward W of McKinley	N/A												
16	Woodward Avenue	Woodward E of McKinley	N/A												
17	McKinley Avenue	McKinley N of Woodward	N/A												

Appendix C-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 201104
Description: Lumina Ranch EIR - Existing Plus Project Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset 60 dBA	65 dBA	70 dBA	Level, dBA
1	Airport Way	North of Daniels Street	18,518	87	0	13	1.0%	1.0%	40	85	0	174	81	37	64.7
2	Airport Way	South of Daniels Street	27,696	87	0	13	1.0%	1.0%	40	750	0	227	105	49	52.2
3	Highway 120 Ramp	WB Off Ramp	7,740	87	0	13	1.0%	1.0%	65	330	0	223	103	48	57.4
4	Highway 120 Ramp	WB On Ramp	8,237	87	0	13	1.0%	1.0%	65	550	0	232	108	50	54.4
5	Airport Way	Between 120 Ramps	24,173	87	0	13	1.0%	1.0%	50	875	0	301	140	65	53.0
6	Highway 120 Ramp	EB On Ramp	6,435	87	0	13	1.0%	1.0%	65	300	0	197	91	42	57.3
7	Highway 120 Ramp	EB Off Ramp	7,537	87	0	13	1.0%	1.0%	65	375	0	219	102	47	56.5
8	Airport Way	Highway 120 to Atherton Dr.	23,845	87	0	13	1.0%	1.0%	45	750	0	250	116	54	52.8
9	Airport Way	Atherton Drive to Woodward Avenue	16,545	87	0	13	1.0%	1.0%	55	70	0	275	128	59	68.9
10	Airport Way	South of Woodward Avenue	10,230	87	0	13	1.0%	1.0%	55	55	0	200	93	43	68.4
11	Woodward Avenue	West of Airport Way	8,424	77	0	23	1.0%	1.0%	35	35	0	105	49	23	67.1
12	Woodward Avenue	East of Airport Way	5,207	77	0	23	1.0%	1.0%	35	65	0	76	35	16	61.0
13	Airport Way	South of Peach Road	5,356	87	0	13	1.0%	1.0%	55	75	0	130	60	28	63.6
14	East Peach Road	East of Aiprort Way	700	87	0	13	1.0%	1.0%	25	80	0	10	5	2	46.8
15	Woodward Avenue	Woodward W of McKinley	N/A												
16	Woodward Avenue	Woodward E of McKinley	N/A												
17	McKinley Avenue	McKinley N of Woodward	N/A												

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Appendix C-3
FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 201104
Description: Lumina Ranch EIR - Cumulative
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset 60 dBA	65 dBA	70 dBA	Level, dBA
1	Airport Way	North of Daniels Street	28,900	87	0	13	1.0%	1.0%	40	85	0	234	108	50	66.6
2	Airport Way	South of Daniels Street	48,100	87	0	13	1.0%	1.0%	40	750	0	328	152	71	54.6
3	Highway 120 Ramp	WB Off Ramp	16,400	87	0	13	1.0%	1.0%	65	330	0	367	171	79	60.7
4	Highway 120 Ramp	WB On Ramp	14,000	87	0	13	1.0%	1.0%	65	550	0	331	153	71	56.7
5	Airport Way	Between 120 Ramps	41,100	87	0	13	1.0%	1.0%	50	875	0	429	199	92	55.4
6	Highway 120 Ramp	EB On Ramp	14,300	87	0	13	1.0%	1.0%	65	300	0	335	156	72	60.7
7	Highway 120 Ramp	EB Off Ramp	11,600	87	0	13	1.0%	1.0%	65	375	0	292	135	63	58.4
8	Airport Way	Highway 120 to Atherton Dr.	40,100	87	0	13	1.0%	1.0%	45	750	0	353	164	76	55.1
9	Airport Way	Atherton Drive to Woodward Avenue	23,500	87	0	13	1.0%	1.0%	55	70	0	348	162	75	70.4
10	Airport Way	South of Woodward Avenue	9,100	87	0	13	1.0%	1.0%	55	55	0	185	86	40	67.9
11	Woodward Avenue	West of Airport Way	15,200	77	0	23	1.0%	1.0%	35	35	0	155	72	33	69.7
12	Woodward Avenue	East of Airport Way	9,100	77	0	23	1.0%	1.0%	35	65	0	110	51	24	63.4
13	Airport Way	South of Peach Road	7,400	87	0	13	1.0%	1.0%	55	75	0	161	75	35	65.0
14	East Peach Road	East of Aiprort Way	1,400	87	0	13	1.0%	1.0%	25	80	0	17	8	4	49.8
15	Woodward Avenue	Woodward W of McKinley	17,400	77	0	23	1.0%	1.0%	35	350	0	170	79	37	55.3
16	Woodward Avenue	Woodward E of McKinley	13,300	77	0	23	1.0%	1.0%	35	65	0	142	66	31	65.1
17	McKinley Avenue	McKinley N of Woodward	17,100	87	0	13	1.0%	1.0%	55	1000	0	282	131	61	51.7

Appendix C-4

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 201104
Description: Lumina Ranch EIR - Cumulative Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

												Contours (ft.) - No Offset			
Segment	Roadway	Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	60 dBA	65 dBA	70 dBA	Level, dBA
1	Airport Way	North of Daniels Street	29,915	87	0	13	1.0%	1.0%	40	85	0	239	111	51	66.7
2	Airport Way	South of Daniels Street	49,778	87	0	13	1.0%	1.0%	40	750	0	336	156	72	54.8
3	Highway 120 Ramp	WB Off Ramp	17,376	87	0	13	1.0%	1.0%	65	330	0	382	177	82	61.0
4	Highway 120 Ramp	WB On Ramp	14,586	87	0	13	1.0%	1.0%	65	550	0	340	158	73	56.9
5	Airport Way	Between 120 Ramps	44,340	87	0	13	1.0%	1.0%	50	875	0	451	209	97	55.7
6	Highway 120 Ramp	EB On Ramp	15,393	87	0	13	1.0%	1.0%	65	300	0	352	163	76	61.0
7	Highway 120 Ramp	EB Off Ramp	12,147	87	0	13	1.0%	1.0%	65	375	0	301	140	65	58.6
8	Airport Way	Highway 120 to Atherton Dr.	44,980	87	0	13	1.0%	1.0%	45	750	0	381	177	82	55.6
9	Airport Way	Atherton Drive to Woodward Avenue	28,770	87	0	13	1.0%	1.0%	55	70	0	398	185	86	71.3
10	Airport Way	South of Woodward Avenue	13,542	87	0	13	1.0%	1.0%	55	55	0	241	112	52	69.6
11	Woodward Avenue	West of Airport Way	16,684	77	0	23	1.0%	1.0%	35	35	0	165	77	36	70.1
12	Woodward Avenue	East of Airport Way	9,763	77	0	23	1.0%	1.0%	35	65	0	115	54	25	63.7
13	Airport Way	South of Peach Road	7,556	87	0	13	1.0%	1.0%	55	75	0	163	76	35	65.1
14	East Peach Road	East of Aiprort Way	1,478	87	0	13	1.0%	1.0%	25	80	0	17	8	4	50.0
15	Woodward Avenue	Woodward W of McKinley	17,400	77	0	23	1.0%	1.0%	35	350	0	170	79	37	55.3
16	Woodward Avenue	Woodward E of McKinley	14,940	77	0	23	1.0%	1.0%	35	65	0	153	71	33	65.6
17	McKinley Avenue	McKinley N of Woodward	18,740	87	0	13	1.0%	1.0%	55	1000	0	299	139	64	52.1

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Appendix D: Interior Noise Reduction Calculations

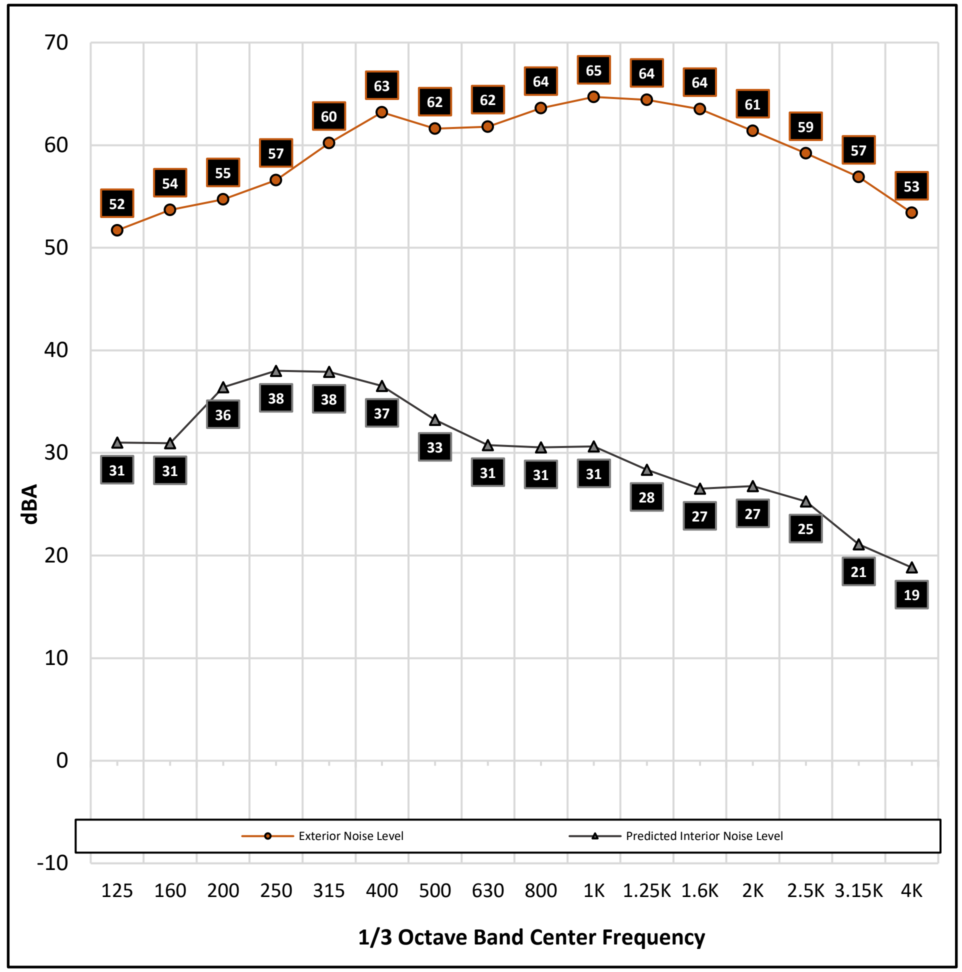
Appendix C1: Interior Noise Calculation Sheet

Project: Lumina Ranch EIR
Room Description: 2nd Story Bedroom

Inputs

Parallel Exterior level, dBA:	73.0	**Ldn**
Correction Factor, dBA:	5	
Noise Source:	Arterial Traffic	
Room Length, ft:	10	
Room Width, ft:	10	
Room Height, ft:	8	
Transmitting Panel Length, ft:	20	
Transmitting Panel Height, ft:	8	
Ceiling Finish:	**Gyp Board**	
Ceiling, sf:	100	
Wall Finish 1:	**Gyp Board**	
Wall Finish 1, sf:	296	
Wall Finish 2:	**Glass**	
Wall Finish 2, sf:	24	
Floor:	**Carpet, on foam rubber pad**	
Floor, sf:	100	
Misc. Finish:	**Soft Furnishings**	
Misc. Finish, sf:	25	
Transmitting Element 1:	**Wall - 1-Coat Stucco, 5/8" gyp INSUL**	
Element 1, sf:	136	
Transmitting Element 2:	**Window - WPI Model 9100HS STC 32**	
Element 2, sf:	24	
Transmitting Element 3:		
Element 3, sf:		
Transmitting Element 4:		
Element 4, sf:		

Predicted Interior Noise Level, dBA: 45
Noise Reduction, dBA: -28



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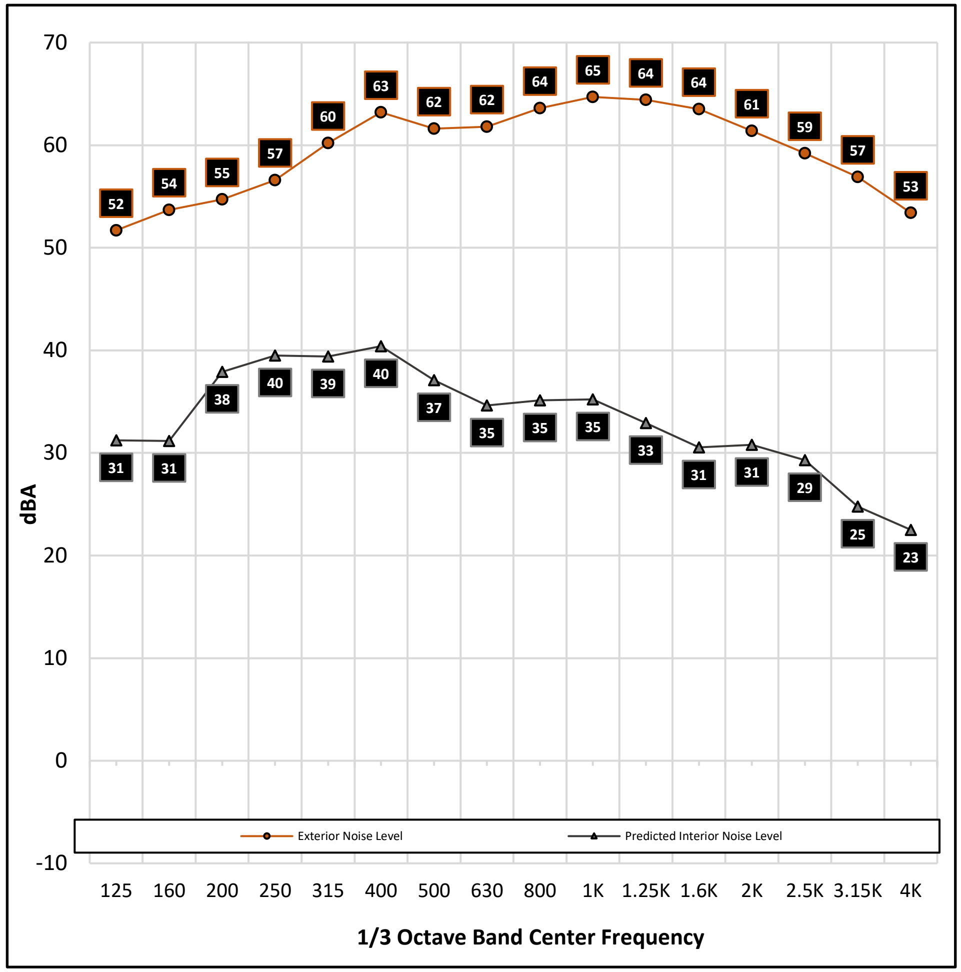
Appendix C2: Interior Noise Calculation Sheet

Project: Lumina Ranch EIR
Room Description: 2nd Story Home Office

Inputs

Parallel Exterior level, dBA:	73.0	**Ldn**
Correction Factor, dBA:	5	
Noise Source:	Arterial Traffic	
Room Length, ft:	10	
Room Width, ft:	10	
Room Height, ft:	8	
Transmitting Panel Length, ft:	20	
Transmitting Panel Height, ft:	8	
Ceiling Finish:	**Gyp Board**	
Ceiling, sf:	100	
Wall Finish 1:	**Gyp Board**	
Wall Finish 1, sf:	296	
Wall Finish 2:	**Glass**	
Wall Finish 2, sf:	24	
Floor:	**Marble or glazed tile**	
Floor, sf:	100	
Misc. Finish:	**Soft Furnishings**	
Misc. Finish, sf:	25	
Transmitting Element 1:	**Wall - 1-Coat Stucco, 5/8" gyp INSUL**	
Element 1, sf:	136	
Transmitting Element 2:	**Window - WPI Model 9100HS STC 32**	
Element 2, sf:	24	
Transmitting Element 3:		
Element 3, sf:		
Transmitting Element 4:		
Element 4, sf:		

Predicted Interior Noise Level, dBA: 48
Noise Reduction, dBA: -25



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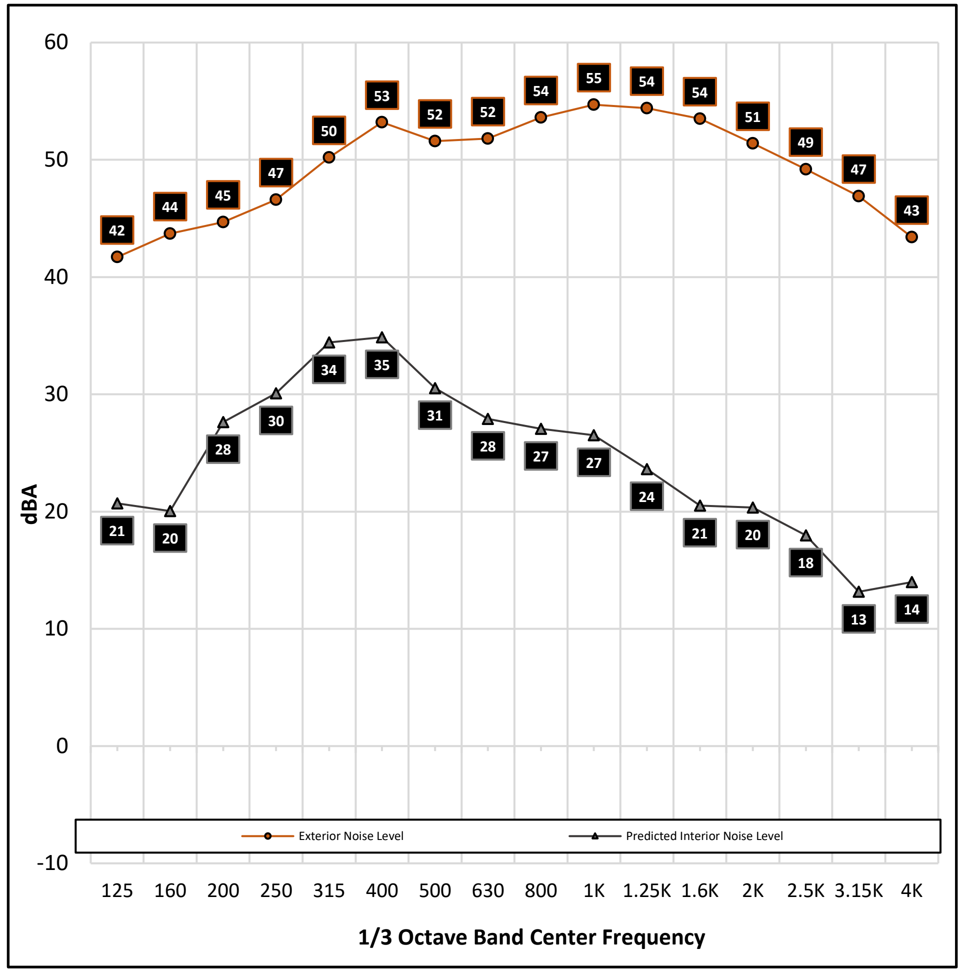
Appendix C3: Interior Noise Calculation Sheet

Project: Lumina Ranch EIR
Room Description: 1st Story Living Room

Inputs

Parallel Exterior level, dBA:	63.0	**Ldn**
Correction Factor, dBA:	5	
Noise Source:	Arterial Traffic	
Room Length, ft:	20	
Room Width, ft:	20	
Room Height, ft:	8	
Transmitting Panel Length, ft:	40	
Transmitting Panel Height, ft:	8	
Ceiling Finish:	**Gyp Board**	
Ceiling, sf:	400	
Wall Finish 1:	**Gyp Board**	
Wall Finish 1, sf:	616	
Wall Finish 2:	**Glass**	
Wall Finish 2, sf:	24	
Floor:	**Marble or glazed tile**	
Floor, sf:	400	
Misc. Finish:	**Soft Furnishings**	
Misc. Finish, sf:	25	
Transmitting Element 1:	**Wall - 1-Coat Stucco, 5/8" gyp INSUL**	
Element 1, sf:	296	
Transmitting Element 2:	**Window - WPI 9100HS STC 26**	
Element 2, sf:	24	
Transmitting Element 3:		
Element 3, sf:		
Transmitting Element 4:		
Element 4, sf:		

Predicted Interior Noise Level, dBA: 40
Noise Reduction, dBA: -23



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Appendix F

Transportation Analysis

Lumina at Machado Ranch – Transportation Analysis

Prepared for:
De Novo Planning Group
City of Manteca

July 27, 2021

RS20-3996

FEHR PEERS

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1. Introduction

This study addresses the potential transportation impacts associated with the proposed Lumina at Machado Ranch project located in the City of Manteca. Vehicle miles traveled, intersection operations, site access, and access to bicycle, pedestrian and transit facilities are analyzed. This report documents the methodologies, inputs, and results of the analysis.

1.1 Project Site Defined

The project site encompasses 183.46 acres located on the west side of the Airport Way/Woodward Avenue intersection. The project site includes several distinct planning boundaries which are cumulatively described as the "Annexation Area". The specific planning boundaries that make up the Annexation Area are described below:

- **Development Area** – includes a 161.19-acre parcel intended for the development of up to 827 single family residential units, two parks, and public infrastructure;

- **Non-development Area 1** – includes six 1.0-acre parcels with existing residential homes. Access to these homes is provided by Woodward Avenue;

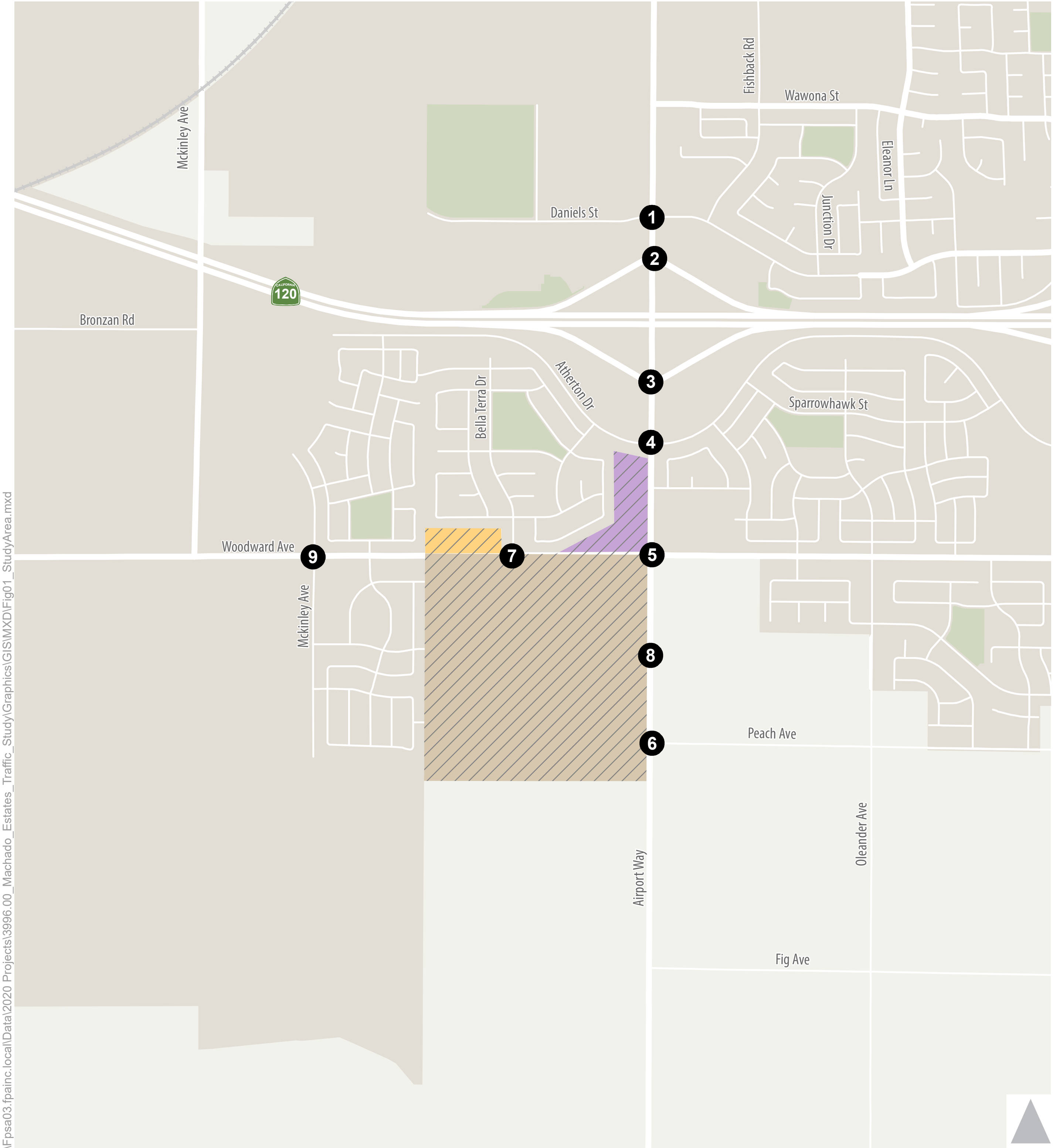
- **Non-development Area 2** – includes nine parcels ranging in size from 1.3 to 1.8 acres totaling 13.11 acres with existing residential homes. Access to three homes is provided by Woodward Avenue, access to five homes is provided by Airport Way, and access to one home is provided by both Woodward Avenue and Airport Way.

- **Right-of-Way Annexation Area** – includes 3.16 acres of existing right-of-way owned by San Joaquin County.

Figure 1 shows the location of the project site and the distinct planning boundaries. Although the project site includes non-development areas and existing right-of-way, this traffic analysis only analyzes impacts of the proposed Development Area, as no development is currently proposed in the Non-Development Areas or the right-of-way annexation area.

1.2 Development Area Description

The Development Area is located on an approximately 161-acre parcel southwest of the Airport Way/Woodward Avenue intersection and proposes to construct 827 single family residential units. Primary access to the development would be provided by one full access intersection on Woodward Avenue (Woodward Avenue/Bella Terra Drive) and two full access intersections on Airport Way (Airport Way/Street MM and Airport Way/Peach Road).



1 Study Intersection
Annexation Area
Development Area
Non-Development Area 1
Non-Development Area 2
Manteca City Limits

Figure 1

Project Location

1.3 Study Area

The study area was selected based on the development project's location, site access, and expected trip distribution and assignment. The analysis considers traffic operations at the following intersections, which are displayed on Figure 1.

Study Intersections

1. Airport Way/Daniels Street
2. Airport Way/SR 120 WB Ramps
3. Airport Way/SR 120 EB Ramps
4. Airport Way/W Atherton Drive
5. Airport Way/Woodward Avenue
6. Airport Way/Peach Road
7. Woodward Avenue/Bella Terra Drive
8. Airport Way/Street MM (future intersection)
9. Woodward Avenue/South McKinley Avenue (future intersection)

1.4 Study Scenarios

The study intersections were evaluated for the following four scenarios:

- **Existing Conditions** – Analyzes operations as they exist today.

- **Existing Plus Project Conditions** – Analyzes existing operations with the addition of trips generated from the Development Area.

- **Cumulative No Project Conditions** - Analyzes cumulative year (2042) volumes based on the City of Manteca / San Joaquin Council of Governments Travel Demand Forecasting (TDF) Model, assuming the Development Area remains in its current undeveloped state.

- **Cumulative Plus Project Conditions** – Analyzes cumulative year volumes with the addition of trips generated from the Development Area.

2. Significance Criteria and Analysis Methodology

This chapter describes the significance criteria used to evaluate project impacts and the methodology used to analyze the study intersections described above, to develop traffic forecasts for study intersections, and to complete the vehicle miles traveled analysis.

2.1 Applicable Policies and Significance Criteria

Senate Bill (SB) 743

Senate Bill (SB) 743 was signed into law in 2013 and is leading to substantial changes in the way transportation impact analyses are being prepared. Notably, it precludes the use of level of service (LOS) to identify significant transportation impacts in CEQA documents for land use projects, recommending instead that VMT be used as the preferred metric. On December 28, 2018, the CEQA Guidelines were amended to add Section 15064.3, Determining the Significance of Transportation Impacts, which states that generally, VMT is the most appropriate measure of transportation impacts. According to 15064.3(a), "Except as provided in subdivision (b)(2) (regarding roadway capacity), a project's effect on automobile delay shall not constitute a significant environmental impact." Beginning on July 1, 2020, the provisions of 15064.3 applied statewide.

To aid in SB 743 implementation, in December 2018 OPR released a Technical Advisory on Evaluating Transportation Impacts in CEQA (Technical Advisory). The Technical Advisory provides advice and recommendations to CEQA lead agencies on how to implement the SB 743 changes. This includes technical recommendations regarding the assessment of VMT, thresholds of significance, VMT mitigation measures, and screening thresholds for certain land use projects. Lead agencies may consider and use these recommendations at their discretion and with the provision of substantial evidence to support alternative approaches.

The Technical Advisory identifies "screening thresholds" to identify when a project should be expected to cause a less-than-significant impact without conducting a detailed study. The Technical Advisory suggests that projects meeting one or more of the following criteria should be expected to have a less-than-significant impact on VMT.

- Small projects – projects consistent with a Sustainable Communities Strategy and local general plan that generate or attract fewer than 110 trips per day.

- Projects near major transit stops – certain projects (residential, retail, office, or a mix of these uses) proposed within ½ mile of an existing major transit stop or an existing stop along a high-quality transit corridor.

- Affordable residential development – a project consisting of a high percentage of affordable housing may be a basis to find a less-than-significant impact on VMT.

- Local-serving retail – local-serving retail development tends to shorten trips and reduce VMT. The Technical Advisory encourages lead agencies to decide when a project will likely be local-serving, but generally acknowledges that retail development including stores larger than 50,000 square feet might be considered regional-serving. The Technical Advisory suggests lead agencies analyze whether regional-serving retail would increase or decrease VMT (i.e., not presume a less-than-significant).

- Projects in low VMT areas – residential and office projects that incorporate similar features (i.e., density, mix of uses, transit accessibility) as existing development in areas with low VMT will tend to exhibit similarly low VMT.

The Technical Advisory also identifies recommended numeric VMT thresholds for residential, office, and retail projects. The residential threshold is described below.

- Residential development that would generate vehicle travel exceeding 15 percent below existing (baseline) residential VMT per capita may indicate a significant transportation impact. Existing VMT per capita may be measured as a regional VMT per capita or as city VMT per capita.

The Travel Demand Forecasting model developed for the City of Manteca General Plan Update was used to develop baseline (2019) VMT per single family residential household. The established baseline VMT per single family household is 103.8. Therefore, single family residential projects that exceed 88.2 VMT per household would be considered to have a significant transportation impact. Projects that generate less than 88.2 VMT per household would be considered to have a less than significant transportation impact.

Level of Service

As previously noted, level of service (LOS) may no longer be used to identify significant transportation impacts in CEQA documents for land use projects. However, this analysis includes a LOS analysis to determine if the proposed project would result in unacceptable intersection operations per the City of Manteca standards. Policy C-P-2 of the 2023 General Plan strives for LOS D or better while LOS E or worse is considered unacceptable.

2.2 Data Collection

Figure 2 displays the existing intersection turning movement counts at the study intersections. Traffic count data collected in 2019 was used for the Airport Way/Daniels Street, Airport Way/SR 120 WB Ramps, Airport Way/SR 120 EB Ramps, and Airport Way/Woodward Avenue intersections. Traffic count data collected in February 2020 (pre-COVID-19) was used for the Airport Way/W Atherton Drive intersection.

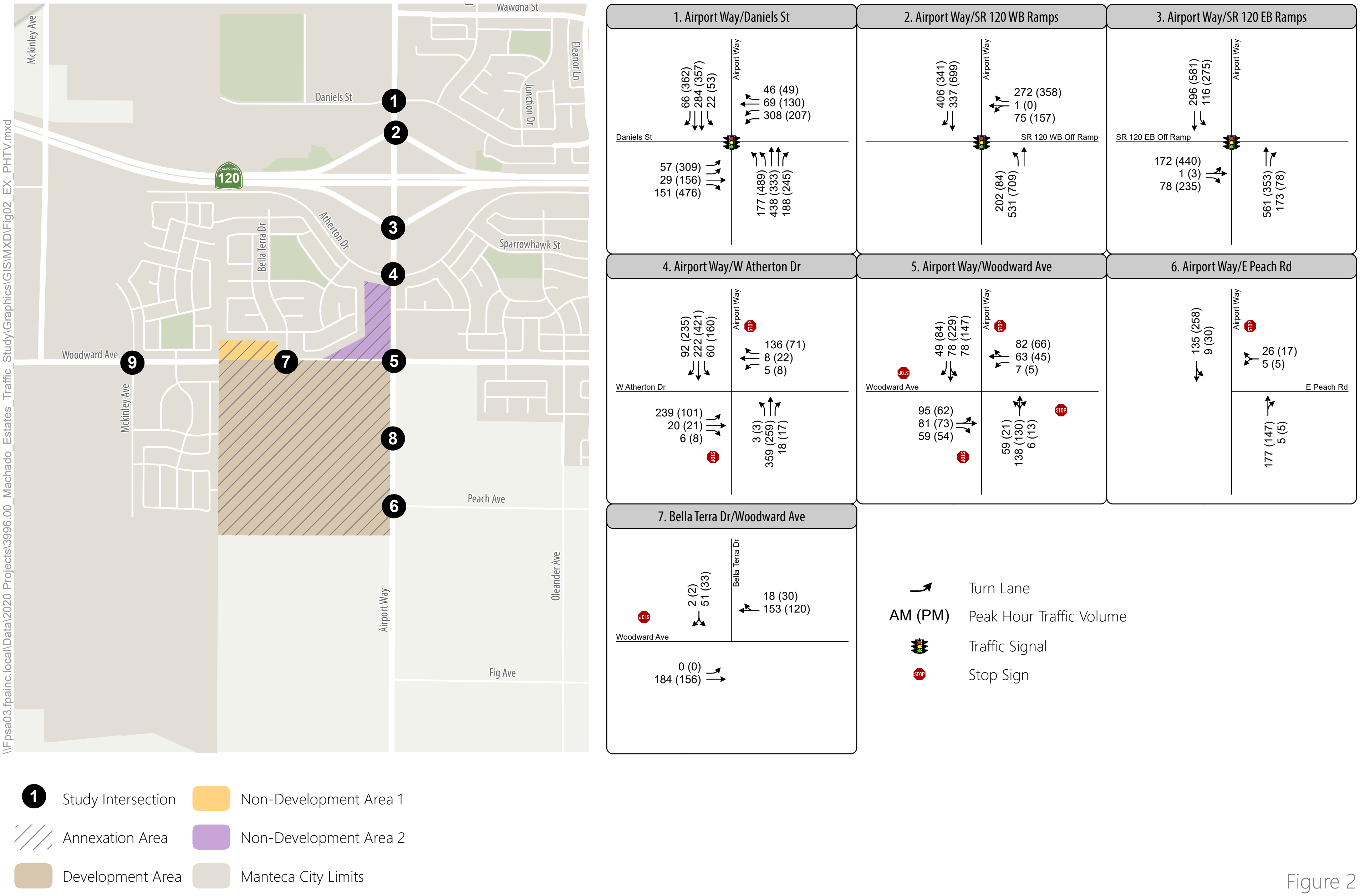


Figure 2

Peak Hour Traffic Volumes and Lane Configurations - Existing Conditions

Intersection turning movement counts were conducted during the AM (7:00 to 9:00) and PM (4:00 to 6:00) peak periods. Historical count data was unavailable at the Airport Way/Peach Road and Woodward Avenue/Bella Terra Drive intersections and due to the COVID-19 pandemic, new counts were not collected for this study. Instead, trips to/from Bella Terra Avenue and Peach Road were estimated based on existing land uses using trip rates published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual 10th Edition* and distributed based on existing travel patterns and intersection turning movement counts at Airport Way/Woodward Avenue.

2.3 Travel Demand Forecasting

The City of Manteca is currently in the process of updating their General Plan, which included development of a new City of Manteca Travel Demand Model. However, the General Plan has not been adopted and the Cumulative Year model has not yet been finalized. Therefore, the original City of Manteca model was used to develop project travel characteristics (i.e. trip distribution) and Cumulative (2042) No Project intersection turning movement forecasts.

The travel demand model is a modified version of the SJCOG sub-area Travel Demand Forecasting (TDF) Model and incorporates the current RTP / Air Quality Model, build-out of the current City of Manteca General Plan, and General Plans for the surrounding communities of Lathrop, Ripon, San Joaquin County, and Stockton. The TDF Model also includes projects identified in the City's Public Facilities Implementation Plan (PFIP) and the Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS) Project List for:

- Mainline Highway Improvements (Table 6-1 from SJCOG RTP);
- Interchange Improvements (Table 6-1 from SJCOG RTP); and
- Regional Roadway Improvements (Table 6-3 from SJCOG RTP).

The General Plan Update does not propose any changes to the General Plan land use designation for Non-development Area 1; however, the General Plan Update does include changes to the land use designation for Non-development Area 2. These changes include modifying one parcel currently designated as Neighborhood Commercial to Commercial and modifying five parcels designated as Commercial Mixed Use to Commercial. Two parcels are currently designated and will remain designated as Commercial Mixed Use. The Cumulative No Project TDF model was updated to incorporate the proposed General Plan land use designations for consistency with the General Plan Update. Additionally, the model was updated to reflect anticipated land uses for the commercial development located northwest and southwest of the Airport Way/W Atherton Drive intersection, based on direction from the City of Manteca.

The traffic forecasting adjustment procedure known as the "difference method" was used to develop Cumulative Year (2042) AM and PM Peak Hour traffic forecasts. For a given intersection, this forecasting procedure is calculated as follows for every movement at the study intersections:

Cumulative Year Forecast = Existing Volume + (Cumulative Year TDF Model – Base Year TDF Model)

In addition to developing intersection turning movement forecasts, the Base Year and Cumulative Year travel demand models were used to develop trip distribution for Existing Plus Project and Cumulative Plus Project conditions.

2.4 VMT Analysis Methodology

As previously described, VMT is used as the primary metric for significant transportation impacts. Residential development that would generate vehicle travel exceeding 15 percent below the established baseline VMT may indicate a significant transportation impact. The following sections describe the methodology used for the Baseline and Cumulative Vehicle Miles Traveled (VMT) Analysis.

Baseline (Existing) Manteca Model

The Base Year Travel Demand Forecasting (TDF) Model developed for the General Plan Update was used to develop Baseline Average Weekday Daily VMT per single family household and to develop trip distribution under Existing Plus Project conditions. The Base Year model represents 2019/2020 Pre-COVID AM peak hour, PM peak hour, and Average Daily Traffic conditions. Baseline VMT was calculated by taking the total VMT generated by all single-family residential households in the City of Manteca and dividing it by the total number of single-family residential households in the City of Manteca. The established baseline for single family homes is 103.8 VMT per single family home.

Interim General Plan Year 2040 Model

Fehr & Peers recently developed an Interim General Plan Year 2040 TDF Model for the City of Manteca, City of Lathrop, City of Ripon and surrounding unincorporated areas of San Joaquin County. The TDF model was used to estimate the Development Area's Cumulative Average Weekday Daily VMT and considers several factors that affect frequency and distance of vehicle travel, including availability and locations of complimentary land use, transportation network, distances traveled to and from areas external to the model area, and availability of high-capacity commuter rail / transit services.

The proposed development project was added to the Cumulative Year 2040 model. Based on the Interim Model, the Development Area would generate a total 63,266 daily VMT, resulting in a VMT of 76.5 per household.

2.5 Intersection Analysis

Study intersections were analyzed using procedures and methodologies contained in the *Highway Capacity Manual – 6th Edition* (Transportation Research Board, 2016). These methodologies were applied using Synchro 10 software which considers traffic volumes, lane configurations, signal timings, signal coordination, and other pertinent parameters of intersection operations.

Level of Service Definition

Study intersections were analyzed using the concept of Level of Service (LOS). LOS is a qualitative measure of traffic operating conditions whereby a letter grade, from A (the best) to F (the worst), is assigned. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. In general, LOS A represents free-flow conditions with no congestion, and LOS F represents severe congestion and delay under stop-and-go conditions. For signalized intersections, roundabouts and all way stop control intersections, LOS is based on the average delay experienced by all vehicles passing through the intersection. For side-street stop-controlled intersections, the delay and LOS for the overall intersection is reported along with the delay for the worst-case movement. **Table 1** displays the delay range associated with each LOS category for signalized and unsignalized intersections.

Table 1: Intersection Level of Service (LOS) Criteria

LOS	Description (for Signalized Intersections)	Average Delay (Seconds/Vehicle) at Signalized Intersections	Average Delay (Seconds/Vehicle) at Unsignalized Intersections
A	Operations with very low delay occurring with favorable traffic signal progression and/or short cycle lengths.	< 10.0	< 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10.0 to 20.0	> 10.0 to 15.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20.0 to 35.0	> 15.0 to 25.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35.0 to 55.0	> 25.0 to 35.0
E	Operations with high delay values indicating poor progression, and long cycle lengths. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55.0 to 80.0	> 35.0 to 50.0
F	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	> 80.0	> 50.0

Note: LOS = level of service; V/C ratio = volume-to-capacity ratio
Source: Transportation Research Board, 2016

3. Vehicle Miles Traveled Analysis

The proposed development was evaluated against the screening criteria in OPR's Technical Advisory. The following criteria is applicable to residential developments.

- Small projects – projects consistent with a Sustainable Communities Strategy and local general plan that generate or attract fewer than 110 trips per day.

- Projects near major transit stops – certain projects (residential, retail, office, or a mix of these uses) proposed within ½ mile of an existing major transit stop or an existing stop along a high-quality transit corridor.

- Affordable residential development – a project consisting of a high percentage of affordable housing may be a basis to find a less-than-significant impact on VMT.

- Projects in low VMT areas – residential and office projects that incorporate similar features (i.e., density, mix of uses, transit accessibility) as existing development in areas with low VMT will tend to exhibit similarly low VMT.

The proposed development does not constitute a small project, is not located within ½ mile of an existing major transit stop, and does not include a high percentage of affordable housing units; therefore, the development is not eligible to be screened out based on these criteria. The City of Manteca has not developed low VMT areas so this criterion is not applicable at this time.

Therefore, a detailed VMT analysis was conducted using methodology discussed in Chapter 2 of this report. The proposed development would result in a significant impact if it were to generate vehicle travel exceeding 15 percent below the established Baseline VMT of 103.8.

Table 2 presents the established Baseline Citywide VMT per single family residential household and the Cumulative Development Project VMT per household.

Table 2: Project Vehicle Miles Traveled Analysis			
Baseline VMT Per Single Family Household	**Cumulative Development Project VMT Per Single Family Household**	**VMT Reduction**	**Percentage Reduction**
103.8	76.5	-27.3	-26.3%
Source: City of Manteca Travel Demand Model - Fehr & Peers, 2021			

As displayed, the proposed development would generate an estimated average of 76.5 VMT per single family household, resulting in a total daily project VMT of 63,266. The development is anticipated to generate a total of 7,807 daily trips, indicating the average trip length would be approximately 8.1 miles. This is due to the fact that in the Cumulative Year, the number of jobs and the amount of commercial, retail, and recreational development in the City is anticipated to increase and residents would be able to travel shorter distances to access these types of land uses.

The Cumulative Development Project daily VMT of 76.5 represents an approximately 26 percent decrease from Baseline conditions. Because the development would not generate vehicle travel exceeding 15 percent below the established baseline, this is a **less than significant** transportation impact.

4. Existing Conditions

This chapter presents the existing bicycle, pedestrian, and transit facilities as well as intersection operations under Existing Conditions.

4.1 Existing Bicycle and Pedestrian Facilities

The City of Manteca Active Transportation Plan (adopted September 1, 2020) defines the following bicycle facility types:

Class I Bikeway: Bike Path

Bike paths, often referred to as shared-use paths or trails, are off-street facilities that provide exclusive use for non-motorized travel, including bicyclists and pedestrians. Bike paths have minimal cross flow with motorists and are typically located along landscaped corridors.

Class II Bikeway: Bike Lane

Class II bike lanes are on-street facilities that use striping, stencils, and signage to denote preferential or exclusive use by bicyclists. On-street bike lanes are located adjacent to motor vehicle traffic.

Class III Bikeway: Bike Route

Class III bike routes are streets with signage and optional pavement markings where bicyclists travel on the shoulder or share a lane with motor vehicles. Class III bike routes are utilized on low-speed and low-volume streets to connect bike lanes or paths along corridors that do not provide enough space for dedicated lanes.

Class III Bikeway: Bicycle Boulevard

Class III bicycle boulevards are similar to Class III bike routes, in that they are primarily utilized on low-speed and low-volume streets, and can close important gaps in the bicycle network where there may be insufficient space for dedicated lanes. Bicycle boulevards provide further enhancements to bike routes to encourage slow speeds and discourage non-local vehicle traffic via traffic diverters, chicanes, traffic circles, and/or speed tables.

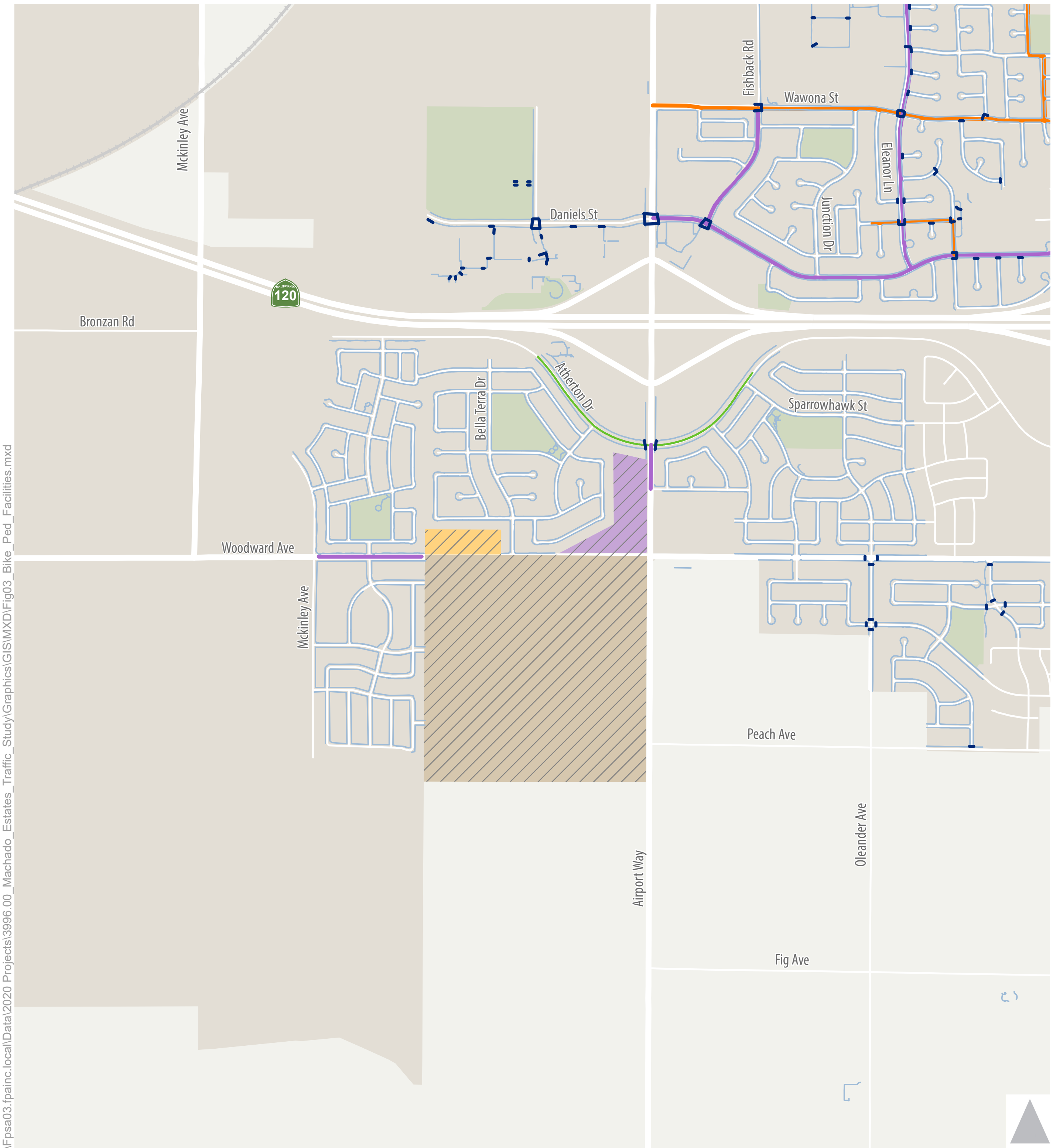
Class IV Bikeway: Separated Bikeway

Class IV separated bikeways, commonly known as cycle tracks, are physically separated bicycle facilities that are distinct from the sidewalk and designed for exclusive use by bicyclists. They are located within the street right-of-way, but provide comfort similar to Class I bike paths.

Figure 3 presents the existing bicycle and pedestrian network in the study area. As displayed, sidewalks are present along portions of Woodward Avenue adjacent to residential subdivisions and along internal roadways within those subdivisions. Class II bike lanes are also present along segments of Woodward Avenue.

4.2 Existing Transit Facilities

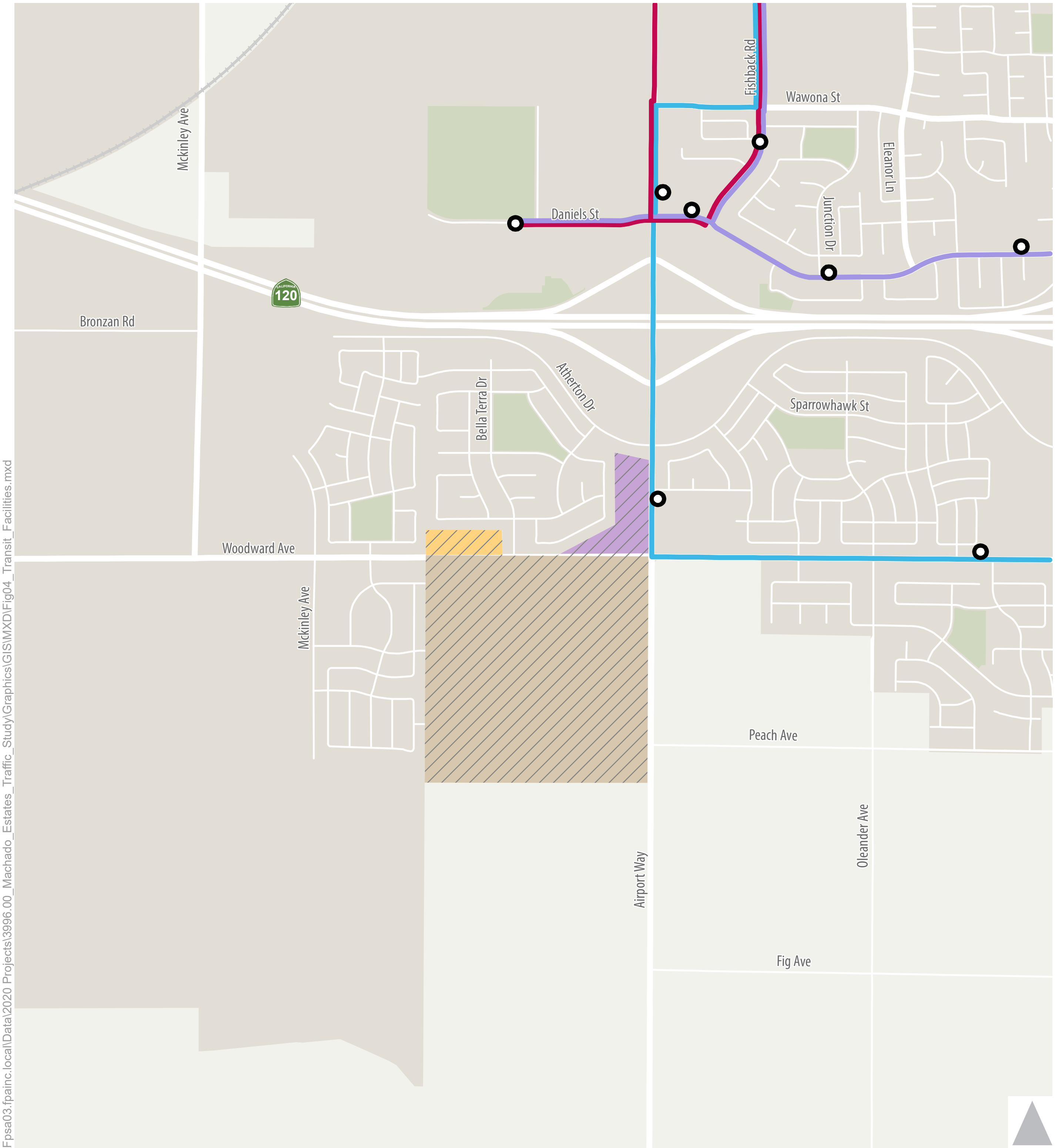
Figure 4 presents the existing transit network in the study area. Manteca Transit operates a fixed-route and Dial-a-Ride bus service with stops throughout the City. Route 4 provides weekday fixed route service to the study area. The nearest stop is less than one half mile from the proposed project and is located on Airport Way north of Peregrine Street. In addition to Manteca Transit, the San Joaquin Regional Transportation District provides both weekday and weekend service to the City.



Class I Shared-use Path
Class II Bike Lane
Class III Bike Route
Crosswalk
Sidewalk
Annexation Area
Development Area
Non-Development Area 1
Non-Development Area 2
Manteca City Limits

Figure 3

Existing Bicycle and Pedestrian Facilities



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Bus Stop

Manteca Transit

Route 1

Route 2

Route 4

Annexation Area

Development Area

Non-Development Area 1

Non-Development Area 2

Manteca City Limits

Figure 4

Existing Transit Facilities

4.3 Existing Intersection Operations

Table 3 displays the existing AM and PM peak hour operations at the study intersections. Traffic associated with the existing residential properties located in Non-development Areas 1 and 2 are included in the existing traffic counts and corresponding existing conditions analysis. In the future, Non-development Area 2 is designated for commercial land uses, rather than residential. Therefore, the cumulative year analysis reflects this change in land use designation. However, the existing conditions analysis does not, as the intent of the existing intersection operations analysis is to reflect conditions with the residential development that exists today. Technical calculations are displayed in **Appendix A**.

Table 3: Intersection Operations – Existing Conditions

Intersection	Control Type	Peak Hour	Delay[1]	LOS
1. Airport Way/ Daniels St	Signal	AM PM	47.4 39.9	D D
2. Airport Way/ SR 120 WB Ramps	Signal	AM PM	8.1 14.0	A B
3. Airport Way/ SR 120 EB Ramps	Signal	AM PM	13.2 16.7	B B
4. Airport Way/ W Atherton Dr	AWSC	AM PM	26.0 16.7	D C
5. Airport Way/ Woodward Ave	AWSC	AM PM	11.7 14.8	B B
6. Airport Way/ E Peach Rd	SSSC	AM PM	1.0 (9.7) 1.0 (9.9)	A (A) A (A)
7. Woodward Ave/ Bella Terra Dr	SSSC	AM PM	1.3 (10.3) 1.0 (9.9)	A (B) A (A)

Notes:
AWSC = All-Way Stop Control; SSSC = Side-Street Stop Control; LOS = Level of Service
[1] For signalized intersections and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for all approaches. For side street stop-controlled intersections, intersection delay is reported in seconds per vehicle for the overall intersection and (worst-case) movement. Intersection delay is calculated based on the procedures and methodology contained in the Highway Capacity Manual 6th Edition (Transportation Research Board, 2016).
Source: Fehr & Peers, 2021

As displayed, all intersections operate acceptably during both the AM and PM peak hour. Most intersections operate at LOS A or B during the peak hours; however, Airport Way/Daniels Street operates at LOS D during the AM and PM peak hour and Airport Way/W Atherton Drive operates at LOS D during the AM peak hour and LOS C during the PM peak hour.

5. Existing Plus Project Conditions

This chapter presents the results of the Existing Plus Project transportation impact analysis.

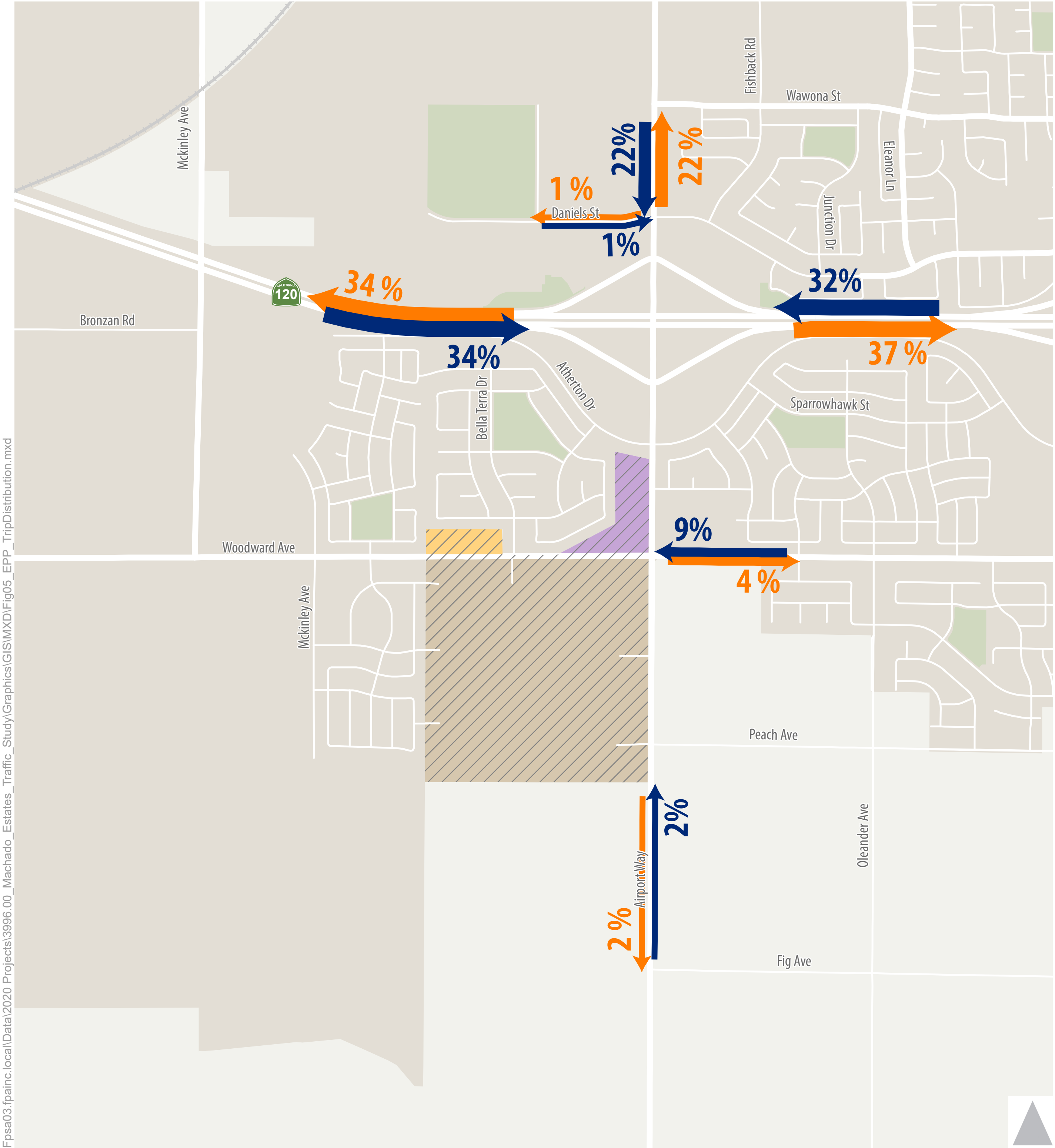
5.1 Project Trip Generation

Project trips generated by the Development Area were estimated using trip rates published in the *Trip Generation Manual 10th Edition* (Institute of Transportation Engineers, 2017). **Table 4** displays the estimated number of daily, AM peak hour, and PM peak hour vehicle trips for the proposed development project.

Table 4: Project Trip Generation								
Land Use	Quantity	Daily	AM Peak			PM Peak		
			In	Out	Total	In	Out	Total
Single-Family Detached Housing (ITE 210)	827 DU	7,807	153	459	612	516	303	819
Notes: Trip generation is based on trip rates published in *Trip Generation Manuel 10th Edition* (Institute of Transportation Engineers, 2017). Source: Fehr & Peers, 2021								

5.2 Project Trip Distribution

Project trips were distributed throughout the study area based the location of project access roads, existing directional patterns and output from the base year Manteca Travel Demand Model. **Figure 5** presents the trip distribution under Existing Plus Project conditions. **Figure 6** displays the traffic volumes under Existing Plus Project conditions.



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x% AM & PM Inbound Trip Distribution Percentage

x% AM & PM Outbound Trip Distribution Percentage

Annexation Area

Development Area

Non-Development Area 1

Non-Development Area 2

Manteca City Limits

Figure 5

Existing Plus Project Trip Distribution

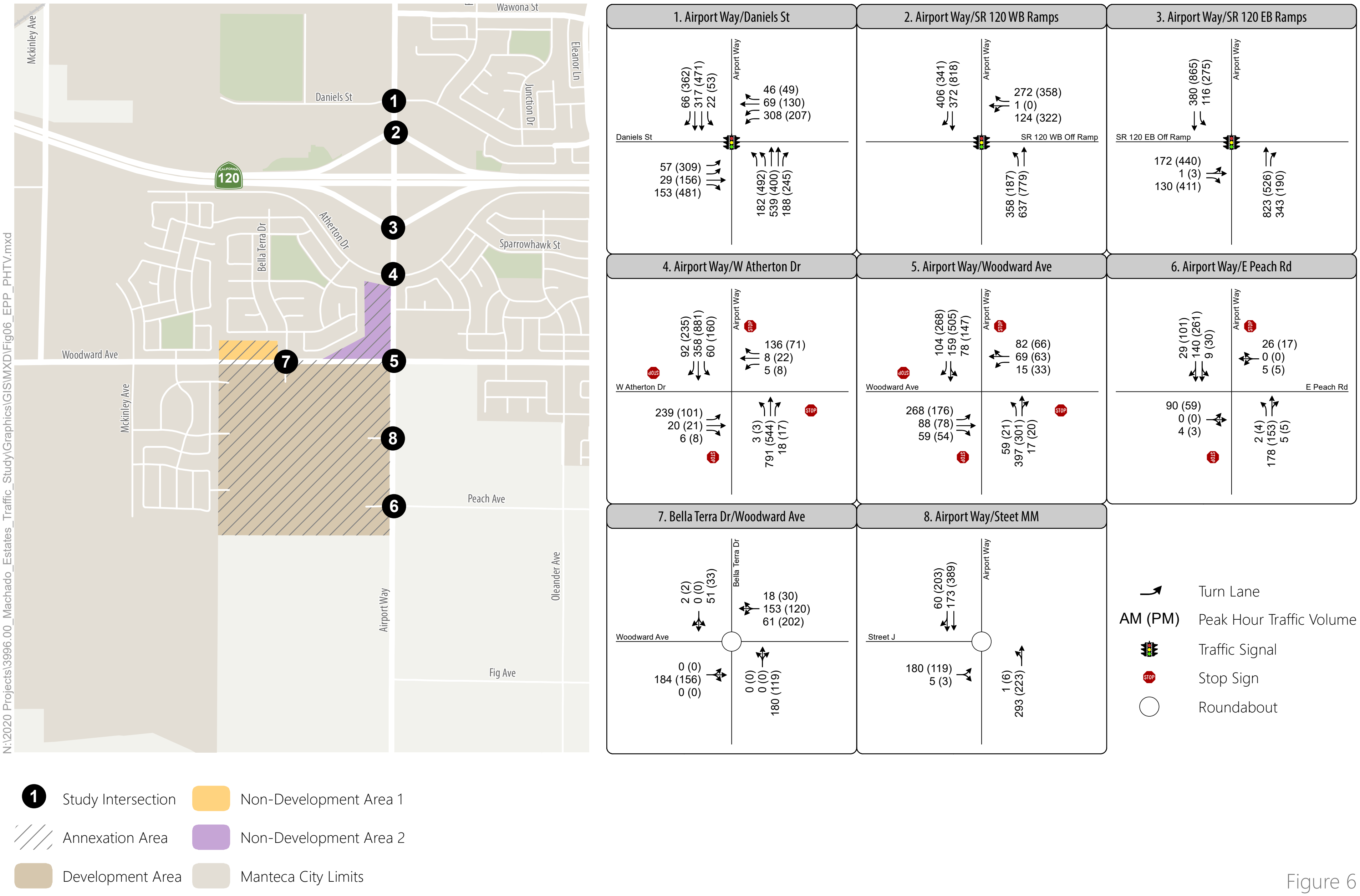

Figure 6

Peak Hour Traffic Volumes and Lane Configurations - Existing Plus Project Conditions

5.3 Existing Plus Project Intersection Operations

Primary access to the proposed development project would be provided by three full access intersections located at Woodward Avenue/Bella Terra Drive, Airport Way/Street MM, and Airport Way/Peach Road, as displayed on **Figure 7**. The following improvements were assumed under Existing Plus Project conditions based on the Tentative Subdivision Map Plans dated June 22, 2021.

- **Woodward Avenue/Bella Terra Drive** – The existing side-street stop controlled intersection would be modified to include a single lane roundabout with a shared left/through/right turn lane on each approach..

- **Airport Way/Woodward Avenue** – The eastbound and part of the northbound approaches for the intersection would be modified for consistency with the future lane configurations identified in the City of Manteca Public Facilities Implementation Plan (PFIP). The eastbound approach would be modified to include one left turn pocket, one through lane, and one right turn pocket. The northbound approach would include one left turn pocket and one shared through/right turn lane. No modifications to the southbound or westbound approaches are proposed.

- **Airport Way/Street MM** – The intersection would be constructed as a roundabout with two lanes in the southbound direction and one lane in the northbound direction.

- **Airport Way/Peach Road** – The existing side-street stop controlled intersection would be modified to include a shared eastbound left/through/right turn lane, one southbound shared left turn/through lane and one shared through/right turn lane, and a northbound left turn pocket. No other modifications are proposed.

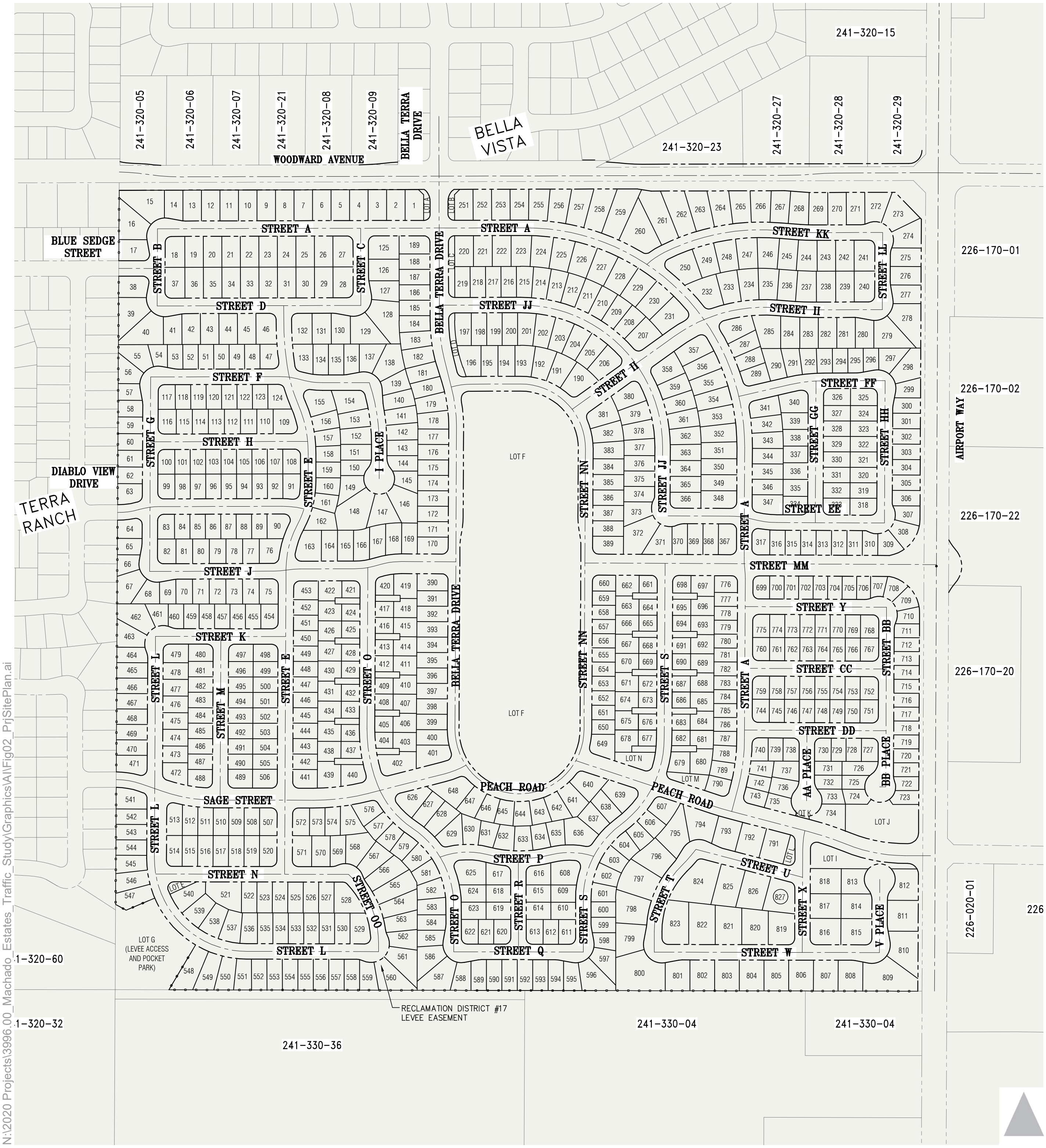

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Figure 7

Project Site Plan

Table 5 displays the AM and PM peak hour intersection operations under Existing Plus Project conditions. Technical calculations are displayed in **Appendix A**.

Table 5: Intersection Operations – Existing Plus Project Conditions						
Intersection	Control Type	Peak Hour	Existing Conditions		Existing Plus Project Conditions	
			Delay[1]	LOS	Delay[1]	LOS
1. Airport Way/ Daniels St	Signal	AM PM	47.4 39.9	D D	42.0 39.4	D D
2. Airport Way/ SR 120 WB Ramps	Signal	AM PM	8.1 14.0	A B	12.3 29.9	B C
3. Airport Way/ SR 120 EB Ramps	Signal	AM PM	13.2 16.7	B B	45.6 25.8	D C
4. Airport Way/ W Atherton Dr	AWSC	AM PM	26.0 16.7	D C	**256.8** **191.1**	**F** **F**
5. Airport Way/ Woodward Ave	AWSC	AM PM	11.7 14.8	B B	**45.1** **130.6**	**E** **F**
6. Airport Way/ E Peach Rd	SSSC	AM PM	1.0 (9.7) 1.0 (9.9)	A (A) A (A)	3.4 (13.4) 2.3 (16.0)	A (B) A (C)
7. Woodward Ave/ Bella Terra Dr	SSSC/Roundabout[2]	AM PM	1.3 (10.3) 1.0 (9.9)	A (B) A (A)	4.5 4.9	A A
8. Airport Way/ Street MM	Roundabout	AM PM	N/A	N/A	4.9 4.9	A A

Notes:
Bold indicates unacceptable operations.
AWSC = All-Way Stop Control; SSSC = Side-Street Stop Control; LOS = Level of Service
[1] For signalized intersections, roundabouts, and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for all approaches. For side street stop-controlled intersections, intersection delay is reported in seconds per vehicle for the overall intersection and (worst-case) movement. Intersection delay is calculated based on the procedures and methodology contained in the Highway Capacity Manual 6th Edition (Transportation Research Board, 2016).
[2] Intersection was analyzed as a SSSC under Existing Conditions and a roundabout under Existing Plus Project conditions.
Source: Fehr & Peers, 2021

As displayed, the Airport Way/W Atherton Drive and Airport Way/Woodward Avenue intersection would operate unacceptably during both the AM and PM peak hours with the addition of project trips. In the near-term, the majority of trips are anticipated to use Airport Way to access SR 120 or continue north into Manteca, resulting in a large increase in trips at both intersections as a result of the proposed project.

The City of Manteca PFIP identifies traffic signals at both intersections; therefore, we completed an AM and PM peak hour signal warrant analysis to determine if traffic volumes under Existing Plus Project conditions satisfy the warrant for installation of a traffic signal. Results of this analysis indicate that both the Airport Way/W Atherton Drive and Airport Way/Woodward Avenue intersections satisfy the AM and PM peak hour warrant for installation of a traffic signal under Existing Plus Project conditions. Technical calculations are provided in **Appendix B**.

A traffic signal at both intersections was analyzed using Synchro 10. The PFIP includes modifications to lane configurations in addition to the installation of a traffic signal. Full PFIP improvements were not included in the Existing Plus Project analysis and no lane configuration changes were assumed for this scenario (aside from those already being proposed with the project). This is due to the fact that the full improvements identified in the PFIP would accommodate cumulative year traffic volumes, which would include development on the northwest, northeast, and southwest properties adjacent to the Airport Way/West Atherton Road intersection and the northeast, northwest, and southeast properties adjacent to the Woodward Avenue/Airport Way intersection. These parcels are not currently developed so we evaluated whether the intersections would operate acceptably with just the proposed project improvements and installation of the traffic signal, rather than the full PFIP improvements.

Full PFIP improvements are analyzed under Cumulative No Project conditions and discussed later in this report.

Table 6 displays the AM and PM peak hour intersection operations at both intersections with installation of a traffic signal. As shown, both intersections would operate acceptably. Technical calculations are displayed in **Appendix A**.

Table 6: Intersection Operations – Existing Plus Project Conditions Mitigation

Intersection	Control Type[2]	Peak Hour	Existing Plus Project Conditions		Existing Plus Project Mitigation	
			Delay[1]	LOS	Delay[1]	LOS
4. Airport Way/ W Atherton Dr	AWSC/Signal	AM PM	**256.8** **191.1**	**F** **F**	39.8 15.5	D B
5. Airport Way/ Woodward Ave	AWSC/Signal	AM PM	**45.1** **130.6**	**E** **F**	15.4 16.4	B B

Notes:
AWSC = All-Way Stop Control; LOS = Level of Service
[1] For signalized intersections and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for all approaches. Intersection delay is calculated based on the procedures and methodology contained in the Highway Capacity Manual 6th Edition (Transportation Research Board, 2016).
[2] Intersection was analyzed as AWSC under EPP Conditions and with a traffic signal under EPP Mitigation.
Source: Fehr & Peers, 2021

To determine appropriate timing for the traffic signals, we evaluated how much additional traffic would cause the Airport Way/W Atherton Drive and Airport Way/Woodward Avenue intersections to degrade from acceptable to unacceptable level of service. With completion of Phase 1 of the development (which includes 193 units on the northwest side of the parcel), the Airport Way/W Atherton Drive intersection would degrade to unacceptable conditions and would satisfy the warrant for installation of a traffic signal under AM peak hour conditions.

With completion of Phase 2 (which includes 239 single family homes on the northeast side of the parcel), Airport Way/Woodward Avenue would degrade to unacceptable conditions and would satisfy the warrant for installation of a traffic signal under PM peak hour conditions. Therefore, it is recommended that the following be included in the Conditions of Approval for the proposed project.

- **Traffic COA #1** - The developer shall install a traffic signal at Airport Way/W Atherton Drive prior to issuance of the 193 building permit, unless an alternative installation plan is agreed to by the Director of Public Works or City Engineer. The design of the traffic signal and associated intersection improvements shall be reviewed and approved by the Director of Public Works or City Engineer. The developer shall pay for the total cost for the design and installation of the traffic signal but will be reimbursed by the City of Manteca for the cost less their fair share. The project contributes to approximately 12 percent of volumes at this intersection, therefore, the project's fair share would be 12 percent.

- **Traffic COA #2** - The developer shall install a traffic signal at Airport Way/Woodward Avenue prior to issuance of the 432 building permit, unless an alternative installation plan is agreed to by the Director of Public Works or City Engineer. The design of the traffic signal and associated intersection improvements shall be reviewed and approved by the Director of Public Works or City Engineer. The developer shall pay for the total cost for the design and installation of the traffic signal but will be reimbursed by the City of Manteca for the cost less their fair share. The project contributes to approximately 22 percent of volumes at this intersection, therefore, the project's fair share would be 22 percent.

6. Cumulative Conditions Analysis

This chapter analyzes the impacts of the project under Cumulative Conditions. The analysis reflects long-term development in the City of Manteca and other nearby jurisdictions using the original Manteca TDF model previously described.

The Cumulative Year analysis assumes the following improvements:

- **Construction of the McKinley Interchange:** The McKinley Interchange is assumed to be fully constructed. Construction of the interchange is anticipated to modify project trip distribution and therefore, McKinley Avenue/Woodward Avenue is added as a new study intersection under Cumulative Conditions. The McKinley Interchange ramps are not included as study intersections as development consistent with the proposed development project was assumed as part of that project analysis.

- **PFIP Improvements**: Intersection lane configurations and traffic controls identified in the City of Manteca PFIP were assumed to be constructed. This results in modifications to the following intersections:
    - Airport Way/Daniels Way
    - Airport Way/W Atherton Drive
    - Airport Way/Woodward Avenue
    - Airport Way/E Peach Street

  It is noted that the PFIP indicates a roundabout at the Airport Way/E Peach Street. However, since adoption of the PFIP, it has been determined that the roundabout would result in significant impacts to the existing residential homes adjacent to the intersection and is no longer the preferred control option. For this reason, Airport Way/E Peach Street is analyzed as a side-street stop controlled intersection under Cumulative Conditions.

- **SR 120 / Airport Way Interchange:** Appendix F of the SJCOG Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS) indicates reconstruction of the SR 120/Airport Way Interchange. The design has not been formalized; therefore, we assumed the reconstruction would result in a configuration similar to the McKinley Interchange, which will be constructed as a partial cloverleaf interchange.

6.1 Cumulative No Project Intersection Operations

The original Manteca model was used to develop Cumulative No Project forecasts. As previously noted, land uses in Non-development Area 2 were updated for consistency with the Commercial Mixed Use and Commercial land use designations identified in the General Plan Update.

The Commercial Mixed Use designation allows for a combination of high-density residential, employment centers, retail commercial, and professional office uses. The Commercial designation allows for neighborhood, community, and regional-serving retail and service uses; offices; restaurants; service stations; high-way oriented and visitor commercial and lodging, and more. **Figure 8** displays AM and PM peak hour turning movements and lane configurations at the study intersections. **Table 7** displays the AM and PM peak hour intersection operations. Technical calculations are displayed in **Appendix A**.

Table 7: Intersection Operations –Cumulative No Project Conditions

Intersection	Control Type	Peak Hour	Existing Conditions		Cumulative No Project Conditions	
			Delay[1]	LOS	Delay[1]	LOS
1. Airport Way/ Daniels St	Signal	AM PM	47.4 39.9	D D	33.1 **67.4**	C **E**
2. Airport Way/ SR 120 WB Ramps	Signal	AM PM	8.1 14.0	A B	9.3 9.6	A A
3. Airport Way/ SR 120 EB Ramps	Signal	AM PM	13.2 16.7	B B	6.8 9.7	A A
4. Airport Way/ W Atherton Dr	AWSC/Signal[2]	AM PM	26.0 16.7	D C	**81.5** **62.8**	**F** **E**
5. Airport Way/ Woodward Ave	AWSC/Signal[2]	AM PM	11.7 14.8	B B	19.8 22.7	B B
6. Airport Way/ E Peach Rd	SSSC	AM PM	1.0 (9.7) 1.0 (9.9)	A (A) A (A)	1.7 (10.5) 1.4 (10.2)	A (B) A (B)
7. Woodward Ave/ Bella Terra Dr	SSSC	AM PM	1.3 (10.3) 1.0 (9.9)	A (B) A (A)	4.5 (21.9) 2.4 (24.4)	A (C) A (C)
9. Woodward Ave/McKinley Ave[3]	Roundabout	AM PM	N/A	N/A	15.7 30.2	C D

Notes:
Bold indicates unacceptable operations.
AWSC = All-Way Stop Control; SSSC = Side-Street Stop Control; LOS = Level of Service
[1] For signalized intersections, roundabouts, and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for all approaches. For side street stop-controlled intersections, intersection delay is reported in seconds per vehicle for the overall intersection and (worst-case) movement. Intersection delay is calculated based on the procedures and methodology contained in the Highway Capacity Manual 6th Edition (Transportation Research Board, 2016).
[2] Intersection was analyzed as AWSC under Existing Conditions and with a traffic signal under Cumulative No Project Conditions.
[3] Intersection 8 – Airport Way/Street MM does not exist under Cumulative No Project Conditions
Source: Fehr & Peers, 2021

As displayed, Airport Way/Daniels Street would operate unacceptably at LOS E with 67 seconds of delay during the PM peak hour. Airport Way/W Atherton Drive would operate unacceptably at LOS F with 82 seconds of delay during the AM peak hour and LOS E with 63 seconds of delay during the PM peak hour.

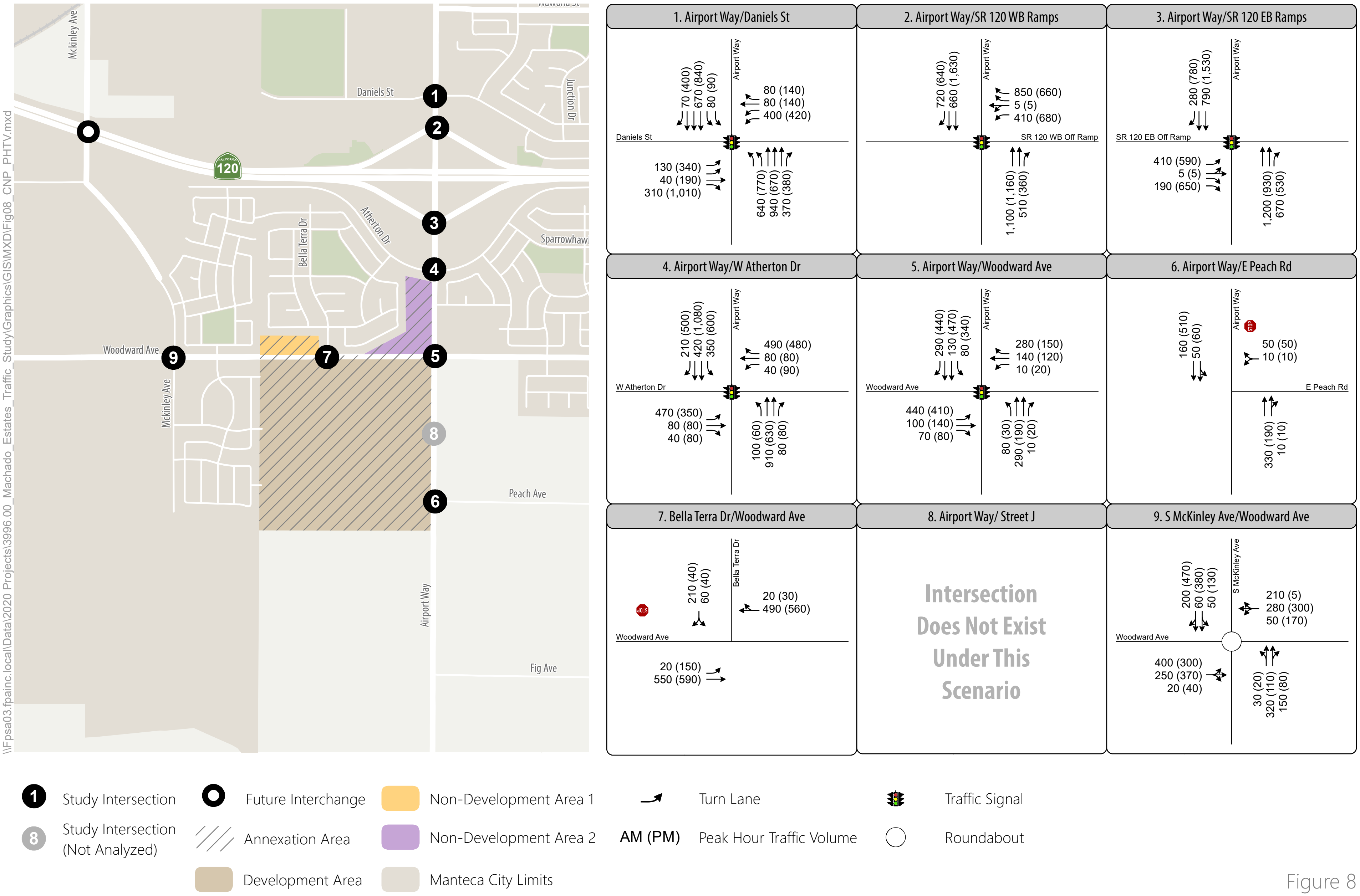


Figure 8

Peak Hour Traffic Volumes and Lane Configurations - Cumulative No Project Conditions

6.2 Cumulative Plus Project Intersection Operations

As previously noted, construction of the McKinley Interchange would result in modifications to the development project's trip distribution. The original Manteca TDF model was used to determine Cumulative Plus Project trip distribution. Cumulative Plus Project trip distribution is displayed in **Figure 9**.

Project trips were added to Cumulative No Project volumes to develop Cumulative Plus Project turning movements. **Figure 10** displays the intersection turning movements under Cumulative Plus Project conditions. **Table 8** presents the results of the Cumulative Plus Project intersection operations analysis.

Table 8: Intersection Operations –Cumulative Plus Project Conditions

Intersection	Control Type	Peak Hour	Cumulative No Project Conditions		Cumulative Plus Project Conditions	
			Delay[1]	LOS	Delay[1]	LOS
1. Airport Way/ Daniels St	Signal	AM PM	33.1 **67.4**	C **E**	30.2 **73.0**	C **E**
2. Airport Way/ SR 120 WB Ramps	Signal	AM PM	9.3 9.6	A A	10.1 14.9	B B
3. Airport Way/ SR 120 EB Ramps	Signal	AM PM	6.8 9.7	A A	8.6 13.5	A B
4. Airport Way/ W Atherton Dr	Signal	AM PM	**81.5** **62.8**	**F** E	**104.8** **73.1**	**F** **E**
5. Airport Way/ Woodward Ave	Signal	AM PM	19.8 22.7	B C	28.6 33.3	C C
6. Airport Way/ E Peach Rd	SSSC	AM PM	1.7 (10.5) 1.4 (10.2)	A (B) A (B)	3.6 (16.8) 3.1 (28.7)	A (C) A (D)
7. Woodward Ave/ Bella Terra Dr	SSSC/Roundabout[2]	AM PM	4.5 (21.9) 2.4 (24.4)	A (C) A (C)	9.4 18.7	A C
8. Airport Way/Street MM	Roundabout	AM PM	N/A	N/A	6.1 6.9	A A
9. Woodward Ave/McKinley Ave	Roundabout	AM PM	15.7 30.2	C D	24.3 **42.3**	C **E**

Notes:
Bold indicates unacceptable operations; SSSC = Side-Street Stop Control; LOS = Level of Service
[1] For signalized intersections and roundabouts, average intersection delay is reported in seconds per vehicle for all approaches. For side street stop-controlled intersections, intersection delay is reported in seconds per vehicle for the overall intersection and (worst-case) movement. Intersection delay is calculated based on the procedures and methodology contained in the Highway Capacity Manual 6th Edition (Transportation Research Board, 2016).
[2] Intersection was analyzed as a SSSC intersection under Cumulative No Project conditions and a roundabout under Cumulative Plus Project conditions.

Table 8: Intersection Operations –Cumulative Plus Project Conditions						
Intersection	Control Type	Peak Hour	Cumulative No Project Conditions		Cumulative Plus Project Conditions	
			Delay[1]	LOS	Delay[1]	LOS
Source: Fehr & Peers, 2021						

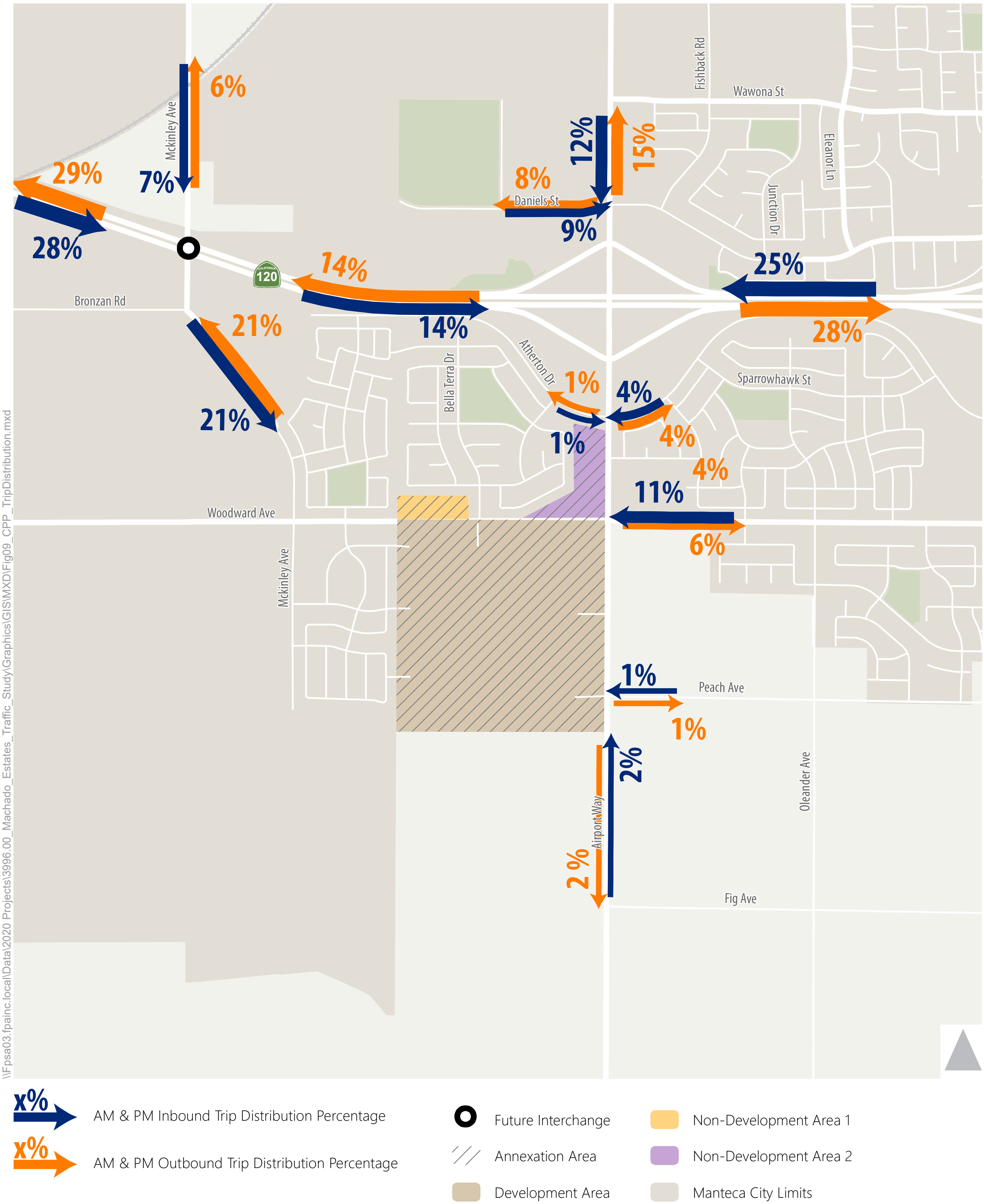


Figure 9

Cumulative Plus Project Conditions

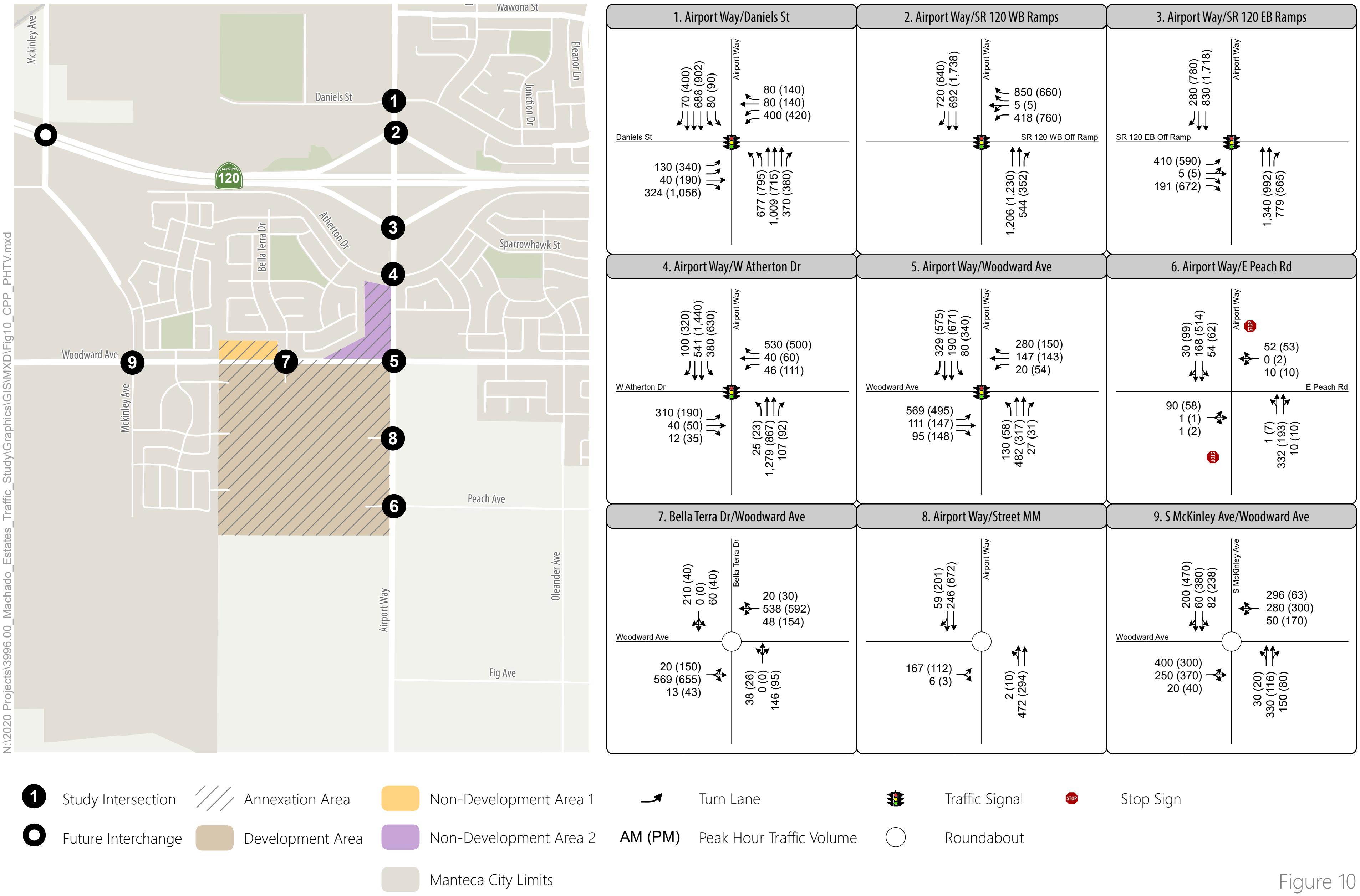


Figure 10

Peak Hour Traffic Volumes and Lane Configurations - Cumulative Plus Project Conditions

As displayed, Airport Way/Daniels Street and Airport Way/W Atherton Drive would continue to operate unacceptably with the addition of project trips. Delay at Airport Way/Daniels Street would increase by approximately six seconds during the PM peak hour. Delay at Airport Way/W Atherton Drive would increase by approximately 23 seconds during the AM peak hour and 10 seconds during the PM peak hour.

Because these intersections operate unacceptably under both Cumulative Year scenarios, the following improvements were analyzed under Cumulative No Project Conditions and Cumulative Plus Project Conditions:

- **Airport Way/Daniels Street** – The eastbound approach was modified to include two right turn pockets due to the high eastbound right turn volume in the PM peak hour. It is important to note, adding dual right turn pockets can increase safety risks for pedestrians. If dual right turns are constructed, careful safety considerations should be considered for the sidewalk on the south leg of the intersection to ensure pedestrian safety is prioritized. This intersection will be further evaluated as part of the PFIP update that is anticipated to be completed by the end of 2021.

- **Airport Way/W Atherton Drive –** The eastbound approach was modified to include dual lefts and a shared through/right turn lane. The signal phasing for the westbound approach was modified to include an overlap phase for the westbound right turn. With this phasing plan, southbound U-turns would be prohibited.

Table 9 presents the results of this analysis. As displayed, both intersections would operate acceptably at LOS D or better with the improvements during both peak hours.

Table 9: Intersection Operations –Cumulative Plus Project Conditions with Improvements

Intersection	Control Type	Peak Hour	Cumulative No Project With Improvements		Cumulative Plus Project With Improvements	
			Delay[1]	LOS	Delay[1]	LOS
1. Airport Way/ Daniels St	Signal	AM PM	28.9 50.6	C D	27.5 53.2	C D
4. Airport Way/ W Atherton Dr	Signal	AM PM	41.1 33.5	D C	54.8 40.9	D D

Notes:
LOS = Level of Service
[1] For signalized intersections, roundabouts, and all-way stop controlled intersections, average intersection delay is reported in seconds per vehicle for all approaches. Intersection delay is calculated based on the procedures and methodology contained in the Highway Capacity Manual 6th Edition (Transportation Research Board, 2016).
Source: Fehr & Peers, 2021

With the addition of project trips, LOS at Woodward Avenue/McKinley Avenue, LOS would worsen from LOS D to LOS E during the PM peak hour.

To improve intersection operations, the eastbound approach at Woodward Avenue/McKinley Avenue was modified to include a left turn lane and a through/right turn lane.

Tables 10 presents the results of this analysis.

Table 10: Intersection Operations –Cumulative Plus Project Conditions with Improvements

Intersection	Control Type	Peak Hour	Cumulative Plus Project No Improvements		Cumulative Plus Project With Improvements	
			Delay[1]	LOS	Delay[1]	LOS
9. Woodward Ave/McKinley Ave	Roundabout	AM PM	24.3 **42.3**	C **E**	22.9 15.9	C C

Notes:
LOS = Level of Service
[1] For roundabouts, average intersection delay is reported in seconds per vehicle for all approaches. Intersection delay is calculated based on the procedures and methodology contained in the Highway Capacity Manual 6th Edition (Transportation Research Board, 2016).
Source: Fehr & Peers, 2021

As displayed, the intersection would operate acceptably with the recommended intersection improvements.

It is recommended that the improvements at the three intersections listed in Tables 9 and 10 be constructed at the following times:

- Intersection 1: Airport Way/Daniels Street – This intersection would operate unacceptably with and without the proposed project under Cumulative Conditions. Therefore, the additional right turn lane should be constructed when the intersection is widened to include improvements identified in the PFIP, or if a new project is developed on the west side of the Airport Way/Daniels Street intersection. The proposed project would add traffic to this intersection and should pay their fair share of three percent (3%) for the improvements listed in the PFIP.

  Intersection 4: Airport Way/W Atherton Drive - This intersection would operate unacceptably with and without the proposed project under Cumulative Conditions. However, the project would install the traffic signal as described in Chapter 5, although all of the PFIP improvements identified for this intersection would not be necessary at that time. It is recommended that the eastbound approach striping and signal phasing be modified when development occurs on the northwest, northeast, or southwest parcels adjacent to the intersection. The project should not be required to fund these additional improvements, as the project is already constructing the traffic signal and the additional modifications would be necessary as a result of traffic associated with future developments on the west and east sides of the Airport Way/W Atherton Drive intersection.

- Intersection 9: Woodward Avenue/McKinley Avenue – The intersection would degrade from acceptable to unacceptable level of service under Cumulative Conditions with the addition of project trips. It is recommended that this intersection be constructed with an eastbound left turn lane and shared through/right turn lane when the roundabout is constructed. The project should pay their fair share of six percent (6%) for this improvement.

It is recommended that the following be incorporated into the Conditions of Approval for the proposed project:

- **Traffic COA #3** – The developer shall pay their fair share for improvements identified in the PFIP at the Airport Way/Daniels Street and Woodward Avenue/McKinley Avenue intersections. The project's fair share at Airport Way/Daniels Street would be three percent (3%) and the project's fair share at Woodward Avenue/McKinley Avenue would be six percent (6%). This condition will be satisfied when the developer pays the PFIP fee, which is collected upon issuance of each home's building permit.

7. Additional Analysis

This chapter describes the additional analysis completed for the proposed development project, including a policy consistency review and a site access evaluation.

7.1 Policy Consistency

The Active Transportation Plan and City of Manteca General Plan were reviewed to determine if the proposed development project results in any inconsistencies with adopted transportation related policies.

Active Transportation Plan (ATP)

The ATP identifies planned sidewalks and a future Class II bike lane on Woodward Avenue and Class III bike route on Airport Way. The proposed development project is consistent with the ATP and will construct a separated sidewalk and Class II bike lanes on Woodward Avenue. Additionally, sidewalks are proposed on Airport Way and on internal streets, providing adequate connections to and throughout the site for pedestrians.

The ATP indicates lighting may be needed on Woodward Avenue. Detailed project plans have not been provided; therefore, it is unclear if lighting is proposed at this time. However, it is recommended that lighting be provided along the project frontages to increase visibility and help prevent bicycle and pedestrian collisions.

Manteca General Plan 2023

The proposed development project's General Plan land use designation is Low Density Residential (LDR), which allows 2.1 to 8 dwelling units per acre. The development project proposes 5.3 dwelling units/acre and is therefore, consistent with the General Plan land use designation. Additionally, the project is consistent with goals and policies identified in the Circulation Element of the City of Manteca General Plan 2023, as described below:

Goals

- Goal C-2. Provide complete streets designed to serve a broad spectrum of travel modes, including automobiles, public transit, walking, and bicycling.

- Goal C-9. Provide a safe, secure, and convenient bicycle route system that connects to retail, employment centers, public facilities, and parks

- Goal C-10. Provide for safe and convenient pedestrian circulation.

The proposed project includes bicycle and pedestrian improvements consistent with those required in the ATP. Additionally, the proposed project includes bus turnouts on Woodward Avenue and Airport Way.

Each of these improvements help create complete streets and are consistent with the goals described above.

Policies

- C-P-2: To the extent feasible, the City shall strive for a vehicular LOS of D or better at all streets and intersections, except in the Downtown area where right-of-way is limited, pedestrian, bicycle, and transit mobility are most important and vehicular LOS is not a consideration.
- C-P-9: Residential and collector street intersections with collector and arterial streets shall be aligned with other residential and collector streets, where feasible, to maintain a high degree of connectivity between neighborhoods, minimize circuitous travel, and to allow bicyclists and pedestrians to travel conveniently and safely from one neighborhood to another without using major streets.

Although LOS cannot be used as a CEQA metric to identify significant transportation impacts, intersection operations were analyzed for the proposed project and are discussed in Chapters 4, 5, and 6. With recommended improvements described in those chapters, all intersections would operate at LOS D or better with the addition of project trips. Additionally, the project has been designed so residential streets align with existing intersections, including Woodward Avenue/Bella Terra Drive, Airport Way/Peach Street, and internal streets that connect to the residential development to the west.

7.2 Site Access Evaluation

As described in Chapter 4 and displayed in **Figure 7**, primary access for the proposed development project would be at Woodward Avenue/Bella Terra Drive, Airport Way/Street MM, and Airport Way/Peach Road. Access would also be provided internally by Blue Sledge Street, Diablo View Drive, and Sage Street, which connect to the subdivision to the west. The preliminary site plan indicates adequate emergency access would be provided and there do not appear to be any geometric hazards. However, all intersections and street sections should be reviewed by the City of Manteca and designed to comply with typical City standards. The project proposes side-street stop control at the Airport Way/Peach Road intersection and a roundabout at the Woodward Avenue/Bella Terra Drive and Airport Way/Street MM intersections. Both the Woodward Avenue/Bella Terra Drive and Airport Way/Street MM roundabouts should be carefully designed to ensure they can accommodate emergency vehicles.

8. Conclusion

This chapter presents the conclusions of the transportation impact analysis for the proposed Lumina Ranch Subdivision in the City of Manteca.

8.1 Transportation Impact Analysis

Consistent with SB 743, VMT is used as the primary metric for identifying significant transportation impacts. The established Baseline VMT per single family household in the City of Manteca is 103.8. The proposed development project would generate an average of 76.5 VMT per single family household, which is approximately 27 less VMT per single family household when compared to the established Baseline Citywide VMT per single family household. This represents an approximately 26 percent decrease. Because the project would not generate vehicle travel exceeding 15 percent below the established baseline, this is a **less than significant** transportation impact.

Additionally, the proposed development project would not conflict with any program, plan, ordinance, or policy addressing the circulation system, substantially increase hazards due to a geometric feature, or result in inadequate emergency access. These impacts would be **less than significant**.

8.2 Intersection Operations Analysis

Results of the intersection operations analysis indicate that all intersections operate acceptably under Existing Conditions. With the addition of project trips, level of service at Airport Way/W Atherton Drive and Airport Way/Woodward Avenue would degrade from acceptable operations to unacceptable operations during both peak hours. The City of Manteca PFIP identifies a traffic signal at both intersections; therefore, we completed an AM and PM peak hour signal warrant analysis, consistent with methodologies in the 2014 CA MUTCD. Results of this analysis indicate volumes under Existing Plus Project Conditions satisfy the warrant for installation of a traffic signal. A traffic signal was analyzed using Synchro 10. With installation of a traffic signal, Airport Way/W Atherton Drive and Airport Way/Woodward Avenue would operate acceptably under Existing Plus Project Conditions.

Under Cumulative No Project Conditions, Airport Way/Daniels Street would operate unacceptably during the PM peak hour and Airport Way/W Atherton Drive would operate unacceptably during both peak hours. Delay at these intersections would increase with the proposed project. Additionally, with the addition of project trips, level of service at Woodward Avenue/McKinley Avenue would degrade from acceptable operations to unacceptable operations. The following improvements are recommended:

- **Airport Way/Daniels Street** – Consider modifying the eastbound approach to include two right turn lanes. Adding dual right turn pockets would increase safety risks for pedestrians. If dual right turns are constructed, careful safety considerations should be given to the sidewalk on the south leg of the intersection to ensure pedestrian safety is prioritized. This intersection will be further evaluated as part of the PFIP update that is anticipated to be completed by the end of 2021.

- **Airport Way/W Atherton Drive –** Modify the eastbound approach to include dual left turn lanes and a shared through/right turn lane. Modify the signal phasing on the westbound approach to include an overlap phase for the westbound right turning movement. Prohibit southbound U-turns.

- **Woodward Avenue/McKinley Avenue –** Modify the eastbound approach to include a left turn lane and a shared through/right turn lane.

With the improvements recommended above, all intersections would operate acceptably under Cumulative Plus Project conditions.

The project's fair share for improvements at Airport Way/Daniels Street is three percent, and the project's fair share for improvements at Woodward Avenue/McKinley Avenue is six percent. Because the project would construct the traffic signal at Airport Way/W Atherton Drive and Airport Way/Woodward Avenue, additional fees for widening or intersection restriping and signal phasing should not be required with the project. Rather, these improvements should be funded by the future developments adjacent to the intersections, as these developments would necessitate the modifications to the signals.

Recommended Conditions of Approval

The following conditions should be incorporated into the Conditions of Approval for the proposed project:

- **Traffic COA #1** - The developer shall install a traffic signal at Airport Way/W Atherton Drive prior to issuance of the 193 building permit, unless an alternative installation plan is agreed to by the Director of Public Works or City Engineer. The design of the traffic signal and associated intersection improvements shall be reviewed and approved by the Director of Public Works or City Engineer. The developer shall pay for the total cost for the design and installation of the traffic signal but will be reimbursed by the City of Manteca for the cost less their fair share. The project contributes to approximately 12 percent of volumes at this intersection, therefore, the project's fair share would be 12 percent.

- **Traffic COA #2** - The developer shall install a traffic signal at Airport Way/Woodward Avenue prior to issuance of the 432 building permit, unless an alternative installation plan is agreed to by the Director of Public Works or City Engineer. The design of the traffic signal and associated intersection improvements shall be reviewed and approved by the Director of Public Works or City Engineer. The developer shall pay for the total cost for the design and installation of the traffic signal but will be reimbursed by the City of Manteca for the cost less their fair share. The project contributes to approximately 22 percent of volumes at this intersection, therefore, the project's fair share would be 22 percent.

- **Traffic COA #3** – The developer shall pay their fair share for improvements identified in the PFIP at the Airport Way/Daniels Street and Woodward Avenue/McKinley Avenue intersections. The project's fair share at Airport Way/Daniels Street would be three percent (3%) and the project's fair share at Woodward Avenue/McKinley Avenue would be six percent (6%). This condition will be satisfied when the developer pays the PFIP fee, which is collected upon issuance of each home's building permit

Appendix A – Technical Calculations

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	29	151	308	69	46	177	438	188	22	284	66
Future Volume (veh/h)	57	29	151	308	69	46	177	438	188	22	284	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	68	35	7	367	82	1	211	521	103	26	338	31
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	145	105	218	295	187	158	280	2039	891	40	1831	817
Arrive On Green	0.04	0.06	0.06	0.09	0.10	0.10	0.08	0.58	0.58	0.02	0.52	0.52
Sat Flow, veh/h	3401	1841	1560	3401	1841	1560	3401	3497	1528	1753	3497	1560
Grp Volume(v), veh/h	68	35	7	367	82	1	211	521	103	26	338	31
Grp Sat Flow(s),veh/h/ln	1700	1841	1560	1700	1841	1560	1700	1749	1528	1753	1749	1560
Q Serve(g_s), s	1.3	1.2	0.3	5.9	2.8	0.0	4.1	5.0	2.0	1.0	3.5	0.7
Cycle Q Clear(g_c), s	1.3	1.2	0.3	5.9	2.8	0.0	4.1	5.0	2.0	1.0	3.5	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	145	105	218	295	187	158	280	2039	891	40	1831	817
V/C Ratio(X)	0.47	0.33	0.03	1.24	0.44	0.01	0.75	0.26	0.12	0.65	0.18	0.04
Avail Cap(c_a), veh/h	295	1243	1181	295	1243	1053	280	2039	891	144	1831	817
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.8	30.8	25.3	31.0	28.7	27.5	30.5	6.9	6.3	33.0	8.5	7.9
Incr Delay (d2), s/veh	2.4	1.8	0.1	134.9	1.6	0.0	11.0	0.3	0.3	16.3	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.6	0.1	7.9	1.3	0.0	2.0	1.5	0.6	0.6	1.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.2	32.6	25.3	166.0	30.3	27.5	41.5	7.2	6.6	49.3	8.8	8.0
LnGrp LOS	C	C	C	F	C	C	D	A	A	D	A	A
Approach Vol, veh/h		110			450			835			395	
Approach Delay, s/veh		33.1			141.0			15.8			11.4	
Approach LOS		C			F			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	44.0	10.0	8.0	10.0	40.0	7.0	11.0
Change Period (Y+Rc), s	4.4	4.4	4.1	4.1	4.4	4.4	4.1	4.1
Max Green Setting (Gmax), s	5.6	35.6	5.9	45.9	5.6	35.6	5.9	45.9
Max Q Clear Time (g_c+I1), s	3.0	7.0	7.9	3.2	6.1	5.5	3.3	4.8
Green Ext Time (p_c), s	0.0	3.8	0.0	0.2	0.0	2.2	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	47.4
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	75	1	272	202	531	0	0	337	406
Future Volume (veh/h)	0	0	0	75	1	272	202	531	0	0	337	406
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1841	1841	1841	1841	1841	0	0	1841	1841
Adj Flow Rate, veh/h				89	1	9	240	632	0	0	401	110
Peak Hour Factor				0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %				4	4	4	4	4	0	0	4	4
Cap, veh/h				131	1	118	324	1200	0	0	609	516
Arrive On Green				0.08	0.08	0.08	0.18	0.65	0.00	0.00	0.33	0.33
Sat Flow, veh/h				1735	19	1560	1753	1841	0	0	1841	1560
Grp Volume(v), veh/h				90	0	9	240	632	0	0	401	110
Grp Sat Flow(s),veh/h/ln				1754	0	1560	1753	1841	0	0	1841	1560
Q Serve(g_s), s				1.5	0.0	0.2	3.8	5.3	0.0	0.0	5.5	1.5
Cycle Q Clear(g_c), s				1.5	0.0	0.2	3.8	5.3	0.0	0.0	5.5	1.5
Prop In Lane				0.99		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				132	0	118	324	1200	0	0	609	516
V/C Ratio(X)				0.68	0.00	0.08	0.74	0.53	0.00	0.00	0.66	0.21
Avail Cap(c_a), veh/h				956	0	850	1075	2884	0	0	1505	1275
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				13.2	0.0	12.6	11.3	2.7	0.0	0.0	8.4	7.1
Incr Delay (d2), s/veh				6.0	0.0	0.3	3.3	0.4	0.0	0.0	1.2	0.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.6	0.0	0.0	1.2	0.1	0.0	0.0	1.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				19.2	0.0	12.9	14.6	3.1	0.0	0.0	9.6	7.3
LnGrp LOS				B	A	B	B	A	A	A	A	A
Approach Vol, veh/h					99			872			511	
Approach Delay, s/veh					18.6			6.3			9.1	
Approach LOS					B			A			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		23.1			9.4	13.7		6.2				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		46.0			18.0	24.0		16.0				
Max Q Clear Time (g_c+I1), s		7.3			5.8	7.5		3.5				
Green Ext Time (p_c), s		4.5			0.5	2.4		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		8.1
HCM 6th LOS		A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	172	1	78	0	0	0	0	561	173	116	296	0
Future Volume (veh/h)	172	1	78	0	0	0	0	561	173	116	296	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841				0	1841	1841	1841	1841	0
Adj Flow Rate, veh/h	205	1	1				0	668	95	138	352	0
Peak Hour Factor	0.84	0.84	0.84				0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	4	4	4				0	4	4	4	4	0
Cap, veh/h	285	1	255				0	802	665	182	1175	0
Arrive On Green	0.16	0.16	0.16				0.00	0.44	0.44	0.10	0.64	0.00
Sat Flow, veh/h	1745	9	1560				0	1841	1526	1753	1841	0
Grp Volume(v), veh/h	206	0	1				0	668	95	138	352	0
Grp Sat Flow(s),veh/h/ln	1753	0	1560				0	1841	1526	1753	1841	0
Q Serve(g_s), s	4.5	0.0	0.0				0.0	13.0	1.5	3.1	3.4	0.0
Cycle Q Clear(g_c), s	4.5	0.0	0.0				0.0	13.0	1.5	3.1	3.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	286	0	255				0	802	665	182	1175	0
V/C Ratio(X)	0.72	0.00	0.00				0.00	0.83	0.14	0.76	0.30	0.00
Avail Cap(c_a), veh/h	869	0	773				0	1003	832	695	1916	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.0	0.0	14.1				0.0	10.1	6.9	17.6	3.3	0.0
Incr Delay (d2), s/veh	3.4	0.0	0.0				0.0	5.0	0.1	6.3	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.0				0.0	4.2	0.3	1.3	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.4	0.0	14.1				0.0	15.1	7.0	23.9	3.4	0.0
LnGrp LOS	B	A	B				A	B	A	C	A	A
Approach Vol, veh/h		207						763			490	
Approach Delay, s/veh		19.4						14.1			9.2	
Approach LOS		B						B			A	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	8.2	21.6		10.6		29.8						
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0						
Max Green Setting (Gmax), s	16.0	22.0		20.0		42.0						
Max Q Clear Time (g_c+I1), s	5.1	15.0		6.5		5.4						
Green Ext Time (p_c), s	0.2	2.6		0.8		2.1						
Intersection Summary												
HCM 6th Ctrl Delay			13.2									
HCM 6th LOS			B									

Intersection	
Intersection Delay, s/veh	26
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	239	20	6	5	8	136	3	359	18	60	222	92
Future Vol, veh/h	239	20	6	5	8	136	3	359	18	60	222	92
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	275	23	7	6	9	156	3	413	21	69	255	106
Number of Lanes	1	1	1	1	1	1	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	24.2	14.2	41.4	16.4
HCM LOS	C	B	E	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	359	18	239	20	6	5	8	136	60	222	92
LT Vol	3	0	0	239	0	0	5	0	0	60	0	0
Through Vol	0	359	0	0	20	0	0	8	0	0	222	0
RT Vol	0	0	18	0	0	6	0	0	136	0	0	92
Lane Flow Rate	3	413	21	275	23	7	6	9	156	69	255	106
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.008	0.87	0.04	0.647	0.051	0.014	0.014	0.022	0.337	0.157	0.546	0.206
Departure Headway (Hd)	8.089	7.589	6.889	8.474	7.974	7.274	8.965	8.465	7.765	8.209	7.709	7.009
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	442	475	518	426	448	490	398	421	461	436	467	510
Service Time	5.854	5.354	4.654	6.244	5.744	5.044	6.746	6.246	5.546	5.981	5.481	4.781
HCM Lane V/C Ratio	0.007	0.869	0.041	0.646	0.051	0.014	0.015	0.021	0.338	0.158	0.546	0.208
HCM Control Delay	10.9	43.2	9.9	25.6	11.2	10.1	11.9	11.4	14.5	12.5	19.4	11.6
HCM Lane LOS	B	E	A	D	B	B	B	B	B	B	C	B
HCM 95th-tile Q	0	9.1	0.1	4.4	0.2	0	0	0.1	1.5	0.6	3.2	0.8

Intersection	
Intersection Delay, s/veh	11.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	95	81	59	7	63	82	59	138	6	78	78	49
Future Vol, veh/h	95	81	59	7	63	82	59	138	6	78	78	49
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	103	88	64	8	68	89	64	150	7	85	85	53
Number of Lanes	0	1	1	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	11.6	10.7	13	11.1
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	29%	54%	0%	100%	0%	50%	0%
Vol Thru, %	68%	46%	0%	0%	43%	50%	0%
Vol Right, %	3%	0%	100%	0%	57%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	203	176	59	7	145	156	49
LT Vol	59	95	0	7	0	78	0
Through Vol	138	81	0	0	63	78	0
RT Vol	6	0	59	0	82	0	49
Lane Flow Rate	221	191	64	8	158	170	53
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.38	0.342	0.097	0.014	0.259	0.301	0.08
Departure Headway (Hd)	6.206	6.428	5.443	6.825	5.914	6.392	5.429
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	578	559	657	524	605	561	658
Service Time	4.253	4.174	3.188	4.576	3.664	4.139	3.177
HCM Lane V/C Ratio	0.382	0.342	0.097	0.015	0.261	0.303	0.081
HCM Control Delay	13	12.5	8.8	9.7	10.7	11.9	8.7
HCM Lane LOS	B	B	A	A	B	B	A
HCM 95th-tile Q	1.8	1.5	0.3	0	1	1.3	0.3

Intersection						
Int Delay, s/veh	1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	26	177	5	9	135
Future Vol, veh/h	5	26	177	5	9	135
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	28	192	5	10	147

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	362	195	0	0	197	0
Stage 1	195	-	-	-	-	-
Stage 2	167	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	637	846	-	-	1376	-
Stage 1	838	-	-	-	-	-
Stage 2	863	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	632	846	-	-	1376	-
Mov Cap-2 Maneuver	632	-	-	-	-	-
Stage 1	838	-	-	-	-	-
Stage 2	856	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	802	1376	-
HCM Lane V/C Ratio	-	-	0.042	0.007	-
HCM Control Delay (s)	-	-	9.7	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection						
Int Delay, s/veh	1.3					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	184	153	18	51	2
Future Vol, veh/h	0	184	153	18	51	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	200	166	20	55	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	186	0	-	0	376	176
Stage 1	-	-	-	-	176	-
Stage 2	-	-	-	-	200	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1388	-	-	-	625	867
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	834	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1388	-	-	-	625	867
Mov Cap-2 Maneuver	-	-	-	-	732	-
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	834	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1388	-	-	-	736
HCM Lane V/C Ratio	-	-	-	-	0.078
HCM Control Delay (s)	0	-	-	-	10.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	309	156	476	207	130	49	489	333	245	53	357	362
Future Volume (veh/h)	309	156	476	207	130	49	489	333	245	53	357	362
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	325	164	400	218	137	6	515	351	111	56	376	130
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	391	468	660	279	407	345	579	1727	768	73	1276	569
Arrive On Green	0.11	0.25	0.25	0.08	0.22	0.22	0.17	0.48	0.48	0.04	0.36	0.36
Sat Flow, veh/h	3483	1885	1588	3483	1885	1598	3483	3582	1593	1795	3582	1598
Grp Volume(v), veh/h	325	164	400	218	137	6	515	351	111	56	376	130
Grp Sat Flow(s),veh/h/ln	1742	1885	1588	1742	1885	1598	1742	1791	1593	1795	1791	1598
Q Serve(g_s), s	10.4	8.2	22.5	7.0	7.0	0.3	16.5	6.4	4.4	3.5	8.6	6.5
Cycle Q Clear(g_c), s	10.4	8.2	22.5	7.0	7.0	0.3	16.5	6.4	4.4	3.5	8.6	6.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	391	468	660	279	407	345	579	1727	768	73	1276	569
V/C Ratio(X)	0.83	0.35	0.61	0.78	0.34	0.02	0.89	0.20	0.14	0.77	0.29	0.23
Avail Cap(c_a), veh/h	486	842	975	333	760	644	630	1727	768	167	1276	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	35.3	26.1	51.4	37.8	35.2	46.5	16.9	16.4	54.1	26.4	25.7
Incr Delay (d2), s/veh	9.6	0.4	0.9	9.6	0.5	0.0	13.9	0.3	0.4	15.7	0.6	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	3.8	8.5	3.4	3.3	0.1	8.1	2.6	1.7	1.9	3.7	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.1	35.7	27.0	61.0	38.3	35.2	60.4	17.2	16.8	69.8	27.0	26.6
LnGrp LOS	E	D	C	E	D	D	E	B	B	E	C	C
Approach Vol, veh/h		889			361			977			562	
Approach Delay, s/veh		40.4			52.0			39.9			31.1	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	59.3	13.2	32.4	23.3	45.0	16.9	28.7
Change Period (Y+Rc), s	4.4	4.4	4.1	4.1	4.4	4.4	4.1	4.1
Max Green Setting (Gmax), s	10.6	50.6	10.9	50.9	20.6	40.6	15.9	45.9
Max Q Clear Time (g_c+I1), s	5.5	8.4	9.0	24.5	18.5	10.6	12.4	9.0
Green Ext Time (p_c), s	0.0	2.7	0.1	2.5	0.5	2.8	0.4	0.8

Intersection Summary	
HCM 6th Ctrl Delay	39.9
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	157	0	358	84	709	0	0	699	341
Future Volume (veh/h)	0	0	0	157	0	358	84	709	0	0	699	341
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1885	1885	1885	1885	1885	0	0	1885	1885
Adj Flow Rate, veh/h				165	0	251	88	746	0	0	736	188
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				1	1	1	1	1	0	0	1	1
Cap, veh/h				349	0	310	157	1125	0	0	799	677
Arrive On Green				0.19	0.00	0.19	0.09	0.60	0.00	0.00	0.42	0.42
Sat Flow, veh/h				1795	0	1598	1795	1885	0	0	1885	1598
Grp Volume(v), veh/h				165	0	251	88	746	0	0	736	188
Grp Sat Flow(s),veh/h/ln				1795	0	1598	1795	1885	0	0	1885	1598
Q Serve(g_s), s				3.8	0.0	7.0	2.2	12.4	0.0	0.0	17.3	3.6
Cycle Q Clear(g_c), s				3.8	0.0	7.0	2.2	12.4	0.0	0.0	17.3	3.6
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				349	0	310	157	1125	0	0	799	677
V/C Ratio(X)				0.47	0.00	0.81	0.56	0.66	0.00	0.00	0.92	0.28
Avail Cap(c_a), veh/h				1154	0	1027	575	1252	0	0	1252	1061
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				16.7	0.0	18.0	20.5	6.3	0.0	0.0	12.8	8.8
Incr Delay (d2), s/veh				0.4	0.0	1.9	3.1	0.8	0.0	0.0	5.5	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.3	0.0	2.2	0.9	2.6	0.0	0.0	6.2	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				17.1	0.0	20.0	23.6	7.1	0.0	0.0	18.3	8.9
LnGrp LOS				B	A	B	C	A	A	A	B	A
Approach Vol, veh/h					416			834			924	
Approach Delay, s/veh					18.8			8.9			16.4	
Approach LOS					B			A			B	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		32.8			8.1	24.8		14.0				
Change Period (Y+Rc), s		4.9			4.0	4.9		4.9				
Max Green Setting (Gmax), s		31.1			15.0	31.1		30.1				
Max Q Clear Time (g_c+I1), s		14.4			4.2	19.3		9.0				
Green Ext Time (p_c), s		0.6			0.1	0.6		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			14.0									
HCM 6th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	440	3	235	0	0	0	0	353	78	275	581	0
Future Volume (veh/h)	440	3	235	0	0	0	0	353	78	275	581	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	463	3	79				0	372	23	289	612	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	522	3	468				0	437	370	362	962	0
Arrive On Green	0.30	0.30	0.30				0.00	0.23	0.23	0.20	0.51	0.00
Sat Flow, veh/h	1770	11	1585				0	1870	1585	1781	1870	0
Grp Volume(v), veh/h	466	0	79				0	372	23	289	612	0
Grp Sat Flow(s),veh/h/ln	1782	0	1585				0	1870	1585	1781	1870	0
Q Serve(g_s), s	12.9	0.0	1.9				0.0	9.8	0.6	7.9	12.2	0.0
Cycle Q Clear(g_c), s	12.9	0.0	1.9				0.0	9.8	0.6	7.9	12.2	0.0
Prop In Lane	0.99		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	526	0	468				0	437	370	362	962	0
V/C Ratio(X)	0.89	0.00	0.17				0.00	0.85	0.06	0.80	0.64	0.00
Avail Cap(c_a), veh/h	1215	0	1081				0	985	834	831	1130	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.3	0.0	13.5				0.0	18.9	15.3	19.5	9.0	0.0
Incr Delay (d2), s/veh	2.1	0.0	0.1				0.0	1.8	0.0	4.1	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	0.5				0.0	3.8	0.2	3.2	3.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.4	0.0	13.5				0.0	20.7	15.4	23.6	9.5	0.0
LnGrp LOS	B	A	B				A	C	B	C	A	A
Approach Vol, veh/h		545						395			901	
Approach Delay, s/veh		18.5						20.4			14.0	
Approach LOS		B						C			B	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	14.5	16.9		20.1		31.4
Change Period (Y+Rc), s	4.0	4.9		4.9		4.9
Max Green Setting (Gmax), s	24.0	27.1		35.1		31.1
Max Q Clear Time (g_c+I1), s	9.9	11.8		14.9		14.2
Green Ext Time (p_c), s	0.7	0.3		0.3		0.5

Intersection Summary			
HCM 6th Ctrl Delay			16.7
HCM 6th LOS			B

Intersection	
Intersection Delay, s/veh	16.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	101	21	8	8	22	71	3	259	17	160	421	235
Future Vol, veh/h	101	21	8	8	22	71	3	259	17	160	421	235
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	102	21	8	8	22	72	3	262	17	162	425	237
Number of Lanes	1	1	1	1	1	1	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	12.8	11	16.6	18.1
HCM LOS	B	B	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	259	17	101	21	8	8	22	71	160	421	235
LT Vol	3	0	0	101	0	0	8	0	0	160	0	0
Through Vol	0	259	0	0	21	0	0	22	0	0	421	0
RT Vol	0	0	17	0	0	8	0	0	71	0	0	235
Lane Flow Rate	3	262	17	102	21	8	8	22	72	162	425	237
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.006	0.512	0.03	0.231	0.045	0.016	0.019	0.048	0.141	0.3	0.731	0.362
Departure Headway (Hd)	7.54	7.04	6.34	8.153	7.653	6.953	8.272	7.772	7.072	6.688	6.188	5.488
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	472	510	561	438	465	511	430	458	503	535	583	653
Service Time	5.322	4.822	4.122	5.945	5.445	4.745	6.07	5.57	4.87	4.453	3.953	3.253
HCM Lane V/C Ratio	0.006	0.514	0.03	0.233	0.045	0.016	0.019	0.048	0.143	0.303	0.729	0.363
HCM Control Delay	10.4	17.1	9.3	13.4	10.8	9.9	11.2	11	11	12.3	24.1	11.4
HCM Lane LOS	B	C	A	B	B	A	B	B	B	B	C	B
HCM 95th-tile Q	0	2.9	0.1	0.9	0.1	0	0.1	0.2	0.5	1.3	6.2	1.6

Intersection	
Intersection Delay, s/veh	14.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	73	54	5	45	66	21	130	13	147	229	84
Future Vol, veh/h	62	73	54	5	45	66	21	130	13	147	229	84
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	66	78	57	5	48	70	22	138	14	156	244	89
Number of Lanes	0	1	1	1	1	0	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	2
HCM Control Delay	11.4	10.9	12.2	18.2
HCM LOS	B	B	B	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	13%	46%	0%	100%	0%	39%	0%
Vol Thru, %	79%	54%	0%	0%	41%	61%	0%
Vol Right, %	8%	0%	100%	0%	59%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	164	135	54	5	111	376	84
LT Vol	21	62	0	5	0	147	0
Through Vol	130	73	0	0	45	229	0
RT Vol	13	0	54	0	66	0	84
Lane Flow Rate	174	144	57	5	118	400	89
Geometry Grp	6	7	7	7	7	7	7
Degree of Util (X)	0.306	0.275	0.095	0.011	0.21	0.671	0.127
Departure Headway (Hd)	6.319	6.895	5.947	7.339	6.403	6.036	5.131
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	567	520	600	486	559	600	697
Service Time	4.376	4.657	3.708	5.107	4.17	3.779	2.874
HCM Lane V/C Ratio	0.307	0.277	0.095	0.01	0.211	0.667	0.128
HCM Control Delay	12.2	12.3	9.3	10.2	10.9	20.3	8.6
HCM Lane LOS	B	B	A	B	B	C	A
HCM 95th-tile Q	1.3	1.1	0.3	0	0.8	5.1	0.4

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	17	147	5	30	258
Future Vol, veh/h	5	17	147	5	30	258
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	18	160	5	33	280

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	509	163	0	0	165	0
Stage 1	163	-	-	-	-	-
Stage 2	346	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	524	882	-	-	1413	-
Stage 1	866	-	-	-	-	-
Stage 2	716	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	509	882	-	-	1413	-
Mov Cap-2 Maneuver	509	-	-	-	-	-
Stage 1	866	-	-	-	-	-
Stage 2	696	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	756	1413	-
HCM Lane V/C Ratio	-	-	0.032	0.023	-
HCM Control Delay (s)	-	-	9.9	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	156	120	30	33	2
Future Vol, veh/h	0	156	120	30	33	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	170	130	33	36	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	163	0	-	0	317	147
Stage 1	-	-	-	-	147	-
Stage 2	-	-	-	-	170	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1416	-	-	-	676	900
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	860	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1416	-	-	-	676	900
Mov Cap-2 Maneuver	-	-	-	-	764	-
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	860	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1416	-	-	-	771
HCM Lane V/C Ratio	-	-	-	-	0.049
HCM Control Delay (s)	0	-	-	-	9.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	29	153	308	69	46	182	539	188	22	317	66
Future Volume (veh/h)	57	29	153	308	69	46	182	539	188	22	317	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	68	35	9	367	82	1	217	642	103	26	377	31
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	150	108	236	300	190	161	300	2060	900	50	1852	826
Arrive On Green	0.04	0.06	0.06	0.09	0.10	0.10	0.09	0.59	0.59	0.03	0.53	0.53
Sat Flow, veh/h	3401	1841	1560	3401	1841	1560	3401	3497	1528	1753	3497	1560
Grp Volume(v), veh/h	68	35	9	367	82	1	217	642	103	26	377	31
Grp Sat Flow(s),veh/h/ln	1700	1841	1560	1700	1841	1560	1700	1749	1528	1753	1749	1560
Q Serve(g_s), s	1.3	1.2	0.3	6.0	2.8	0.0	4.2	6.3	2.0	1.0	3.9	0.6
Cycle Q Clear(g_c), s	1.3	1.2	0.3	6.0	2.8	0.0	4.2	6.3	2.0	1.0	3.9	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	150	108	236	300	190	161	300	2060	900	50	1852	826
V/C Ratio(X)	0.45	0.32	0.04	1.22	0.43	0.01	0.72	0.31	0.11	0.52	0.20	0.04
Avail Cap(c_a), veh/h	300	1245	1200	300	1245	1055	300	2060	900	155	1852	826
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	30.7	24.6	31.0	28.6	27.4	30.2	7.0	6.2	32.6	8.4	7.7
Incr Delay (d2), s/veh	2.1	1.7	0.1	126.4	1.6	0.0	8.3	0.4	0.3	8.0	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.6	0.1	7.6	1.3	0.0	2.0	1.9	0.6	0.5	1.2	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.9	32.4	24.7	157.4	30.2	27.4	38.5	7.4	6.4	40.5	8.7	7.8
LnGrp LOS	C	C	C	F	C	C	D	A	A	D	A	A
Approach Vol, veh/h		112			450			962			434	
Approach Delay, s/veh		32.7			134.0			14.3			10.5	
Approach LOS		C			F			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	44.0	10.0	8.0	10.0	40.0	7.0	11.0
Change Period (Y+Rc), s	4.4	4.4	4.1	4.1	4.4	4.4	4.1	4.1
Max Green Setting (Gmax), s	5.6	35.6	5.9	45.9	5.6	35.6	5.9	45.9
Max Q Clear Time (g_c+I1), s	3.0	8.3	8.0	3.2	6.2	5.9	3.3	4.8
Green Ext Time (p_c), s	0.0	4.8	0.0	0.2	0.0	2.5	0.0	0.4

Intersection Summary			
HCM 6th Ctrl Delay			42.0
HCM 6th LOS			D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	124	1	272	358	637	0	0	372	406
Future Volume (veh/h)	0	0	0	124	1	272	358	637	0	0	372	406
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1841	1841	1841	1841	1841	0	0	1841	1841
Adj Flow Rate, veh/h				148	1	9	426	758	0	0	443	110
Peak Hour Factor				0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %				4	4	4	4	4	0	0	4	4
Cap, veh/h				206	1	184	507	1285	0	0	583	494
Arrive On Green				0.12	0.12	0.12	0.29	0.70	0.00	0.00	0.32	0.32
Sat Flow, veh/h				1742	12	1560	1753	1841	0	0	1841	1560
Grp Volume(v), veh/h				149	0	9	426	758	0	0	443	110
Grp Sat Flow(s),veh/h/ln				1754	0	1560	1753	1841	0	0	1841	1560
Q Serve(g_s), s				3.6	0.0	0.2	9.9	9.2	0.0	0.0	9.4	2.3
Cycle Q Clear(g_c), s				3.6	0.0	0.2	9.9	9.2	0.0	0.0	9.4	2.3
Prop In Lane				0.99		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				207	0	184	507	1285	0	0	583	494
V/C Ratio(X)				0.72	0.00	0.05	0.84	0.59	0.00	0.00	0.76	0.22
Avail Cap(c_a), veh/h				644	0	573	725	1945	0	0	1015	860
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				18.5	0.0	17.0	14.5	3.4	0.0	0.0	13.4	10.9
Incr Delay (d2), s/veh				4.6	0.0	0.1	6.1	0.4	0.0	0.0	2.1	0.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.4	0.0	0.1	3.8	0.6	0.0	0.0	3.2	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				23.1	0.0	17.1	20.6	3.8	0.0	0.0	15.4	11.2
LnGrp LOS				C	A	B	C	A	A	A	B	B
Approach Vol, veh/h					158			1184			553	
Approach Delay, s/veh					22.8			9.8			14.6	
Approach LOS					C			A			B	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		34.4			16.6	17.8		9.1				
Change Period (Y+Rc), s		4.0			4.0	4.0		4.0				
Max Green Setting (Gmax), s		46.0			18.0	24.0		16.0				
Max Q Clear Time (g_c+I1), s		11.2			11.9	11.4		5.6				
Green Ext Time (p_c), s		5.8			0.7	2.4		0.5				

Intersection Summary			
HCM 6th Ctrl Delay			12.3
HCM 6th LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	172	1	130	0	0	0	0	823	343	116	380	0
Future Volume (veh/h)	172	1	130	0	0	0	0	823	343	116	380	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841				0	1841	1841	1841	1841	0
Adj Flow Rate, veh/h	205	1	63				0	980	297	138	452	0
Peak Hour Factor	0.84	0.84	0.84				0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	4	4	4				0	4	4	4	4	0
Cap, veh/h	295	1	264				0	866	718	181	1215	0
Arrive On Green	0.17	0.17	0.17				0.00	0.47	0.47	0.10	0.66	0.00
Sat Flow, veh/h	1745	9	1560				0	1841	1526	1753	1841	0
Grp Volume(v), veh/h	206	0	63				0	980	297	138	452	0
Grp Sat Flow(s),veh/h/ln	1753	0	1560				0	1841	1526	1753	1841	0
Q Serve(g_s), s	5.2	0.0	1.6				0.0	22.0	6.0	3.6	5.2	0.0
Cycle Q Clear(g_c), s	5.2	0.0	1.6				0.0	22.0	6.0	3.6	5.2	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	296	0	264				0	866	718	181	1215	0
V/C Ratio(X)	0.70	0.00	0.24				0.00	1.13	0.41	0.76	0.37	0.00
Avail Cap(c_a), veh/h	750	0	668				0	866	718	600	1654	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.3	0.0	16.8				0.0	12.4	8.1	20.4	3.6	0.0
Incr Delay (d2), s/veh	2.9	0.0	0.5				0.0	73.4	0.4	6.4	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.5				0.0	23.4	1.4	1.6	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.2	0.0	17.3				0.0	85.8	8.5	26.8	3.8	0.0
LnGrp LOS	C	A	B				A	F	A	C	A	A
Approach Vol, veh/h		269						1277			590	
Approach Delay, s/veh		20.3						67.8			9.2	
Approach LOS		C						E			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	8.8	26.0		11.9		34.8
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s	16.0	22.0		20.0		42.0
Max Q Clear Time (g_c+I1), s	5.6	24.0		7.2		7.2
Green Ext Time (p_c), s	0.2	0.0		1.0		2.8

Intersection Summary		
HCM 6th Ctrl Delay		45.6
HCM 6th LOS		D

Intersection	
Intersection Delay, s/veh	256.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	239	20	6	5	8	136	3	791	18	60	358	92
Future Vol, veh/h	239	20	6	5	8	136	3	791	18	60	358	92
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	275	23	7	6	9	156	3	909	21	69	411	106
Number of Lanes	1	1	1	1	1	1	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	33.3	18.8	505.1	47.2
HCM LOS	D	C	F	E

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	791	18	239	20	6	5	8	136	60	358	92
LT Vol	3	0	0	239	0	0	5	0	0	60	0	0
Through Vol	0	791	0	0	20	0	0	8	0	0	358	0
RT Vol	0	0	18	0	0	6	0	0	136	0	0	92
Lane Flow Rate	3	909	21	275	23	7	6	9	156	69	411	106
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.008	2.093	0.044	0.701	0.056	0.015	0.016	0.024	0.376	0.164	0.925	0.217
Departure Headway (Hd)	8.789	8.289	7.589	10.883	10.383	9.683	11.578	11.078	10.378	10.157	9.657	8.957
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	409	446	474	335	347	372	311	325	349	355	379	404
Service Time	6.496	5.996	5.296	8.583	8.083	7.383	9.278	8.778	8.078	7.857	7.357	6.657
HCM Lane V/C Ratio	0.007	2.038	0.044	0.821	0.066	0.019	0.019	0.028	0.447	0.194	1.084	0.262
HCM Control Delay	11.6	518.2	10.6	35.5	13.7	12.5	14.5	14.1	19.2	14.8	61.1	14.1
HCM Lane LOS	B	F	B	E	B	B	B	B	C	B	F	B
HCM 95th-tile Q	0	64.6	0.1	5	0.2	0	0	0.1	1.7	0.6	9.8	0.8

Intersection	
Intersection Delay, s/veh	45.1
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	268	88	59	15	69	82	59	397	17	78	159	104
Future Vol, veh/h	268	88	59	15	69	82	59	397	17	78	159	104
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	291	96	64	16	75	89	64	432	18	85	173	113
Number of Lanes	1	1	1	1	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	3
HCM Control Delay	28.2	18.9	84.4	23.9
HCM LOS	D	C	F	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	33%	0%
Vol Thru, %	0%	96%	0%	100%	0%	0%	46%	67%	0%
Vol Right, %	0%	4%	0%	0%	100%	0%	54%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	59	414	268	88	59	15	151	237	104
LT Vol	59	0	268	0	0	15	0	78	0
Through Vol	0	397	0	88	0	0	69	159	0
RT Vol	0	17	0	0	59	0	82	0	104
Lane Flow Rate	64	450	291	96	64	16	164	258	113
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.163	1.073	0.749	0.233	0.144	0.046	0.422	0.652	0.259
Departure Headway (Hd)	9.13	8.587	9.629	9.11	8.383	10.66	9.733	9.426	8.532
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	392	423	379	397	430	338	373	386	424
Service Time	6.893	6.35	7.329	6.81	6.083	8.36	7.433	7.126	6.232
HCM Lane V/C Ratio	0.163	1.064	0.768	0.242	0.149	0.047	0.44	0.668	0.267
HCM Control Delay	13.7	94.5	36.1	14.6	12.5	13.9	19.4	28.1	14.2
HCM Lane LOS	B	F	E	B	B	B	C	D	B
HCM 95th-tile Q	0.6	15	5.9	0.9	0.5	0.1	2	4.4	1

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	90	0	4	5	0	26	2	178	5	9	140	29
Future Vol, veh/h	90	0	4	5	0	26	2	178	5	9	140	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	92	91	92	91	92	92	92	92	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	99	0	4	5	0	28	2	193	5	10	152	32

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	402	390	92	296	404	196	184	0	0	198	0	0
Stage 1	188	188	-	200	200	-	-	-	-	-	-	-
Stage 2	214	202	-	96	204	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	546	545	948	645	535	845	1390	-	-	1373	-	-
Stage 1	796	744	-	801	735	-	-	-	-	-	-	-
Stage 2	788	734	-	900	732	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	524	540	948	637	530	845	1390	-	-	1373	-	-
Mov Cap-2 Maneuver	524	540	-	637	530	-	-	-	-	-	-	-
Stage 1	795	738	-	800	734	-	-	-	-	-	-	-
Stage 2	761	733	-	889	726	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.4	9.7	0.1	0.4
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1390	-	-	534	803	1373	-	-
HCM Lane V/C Ratio	0.002	-	-	0.193	0.042	0.007	-	-
HCM Control Delay (s)	7.6	-	-	13.4	9.7	7.6	0	-
HCM Lane LOS	A	-	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.1	0	-	-

Intersection	
Intersection Delay, s/veh	4.5
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	200	253	198	57
Demand Flow Rate, veh/h	204	257	202	58
Vehicles Circulating, veh/h	124	0	260	237
Vehicles Exiting, veh/h	171	462	68	20
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.5	4.2	5.2	3.8
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	204	257	202	58
Cap Entry Lane, veh/h	1216	1380	1058	1084
Entry HV Adj Factor	0.980	0.983	0.980	0.983
Flow Entry, veh/h	200	253	198	57
Cap Entry, veh/h	1192	1357	1037	1065
V/C Ratio	0.168	0.186	0.191	0.054
Control Delay, s/veh	4.5	4.2	5.2	3.8
LOS	A	A	A	A
95th %tile Queue, veh	1	1	1	0

Intersection	
Intersection Delay, s/veh	4.9
Intersection LOS	A

Approach	EB	NB	SB
Entry Lanes	1	1	2
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	201	319	253
Demand Flow Rate, veh/h	205	325	258
Vehicles Circulating, veh/h	192	200	1
Vehicles Exiting, veh/h	67	197	524
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.9	6.0	3.5
Approach LOS	A	A	A

Lane	Left	Left	Left	Right
Designated Moves	LR	LT	LT	R
Assumed Moves	LR	LT	LT	R
RT Channelized				
Lane Util	1.000	1.000	0.744	0.256
Follow-Up Headway, s	2.609	2.609	2.535	2.535
Critical Headway, s	4.976	4.976	4.544	4.544
Entry Flow, veh/h	205	325	192	66
Cap Entry Lane, veh/h	1134	1125	1419	1419
Entry HV Adj Factor	0.980	0.980	0.980	0.985
Flow Entry, veh/h	201	319	188	65
Cap Entry, veh/h	1112	1103	1391	1397
V/C Ratio	0.181	0.289	0.135	0.047
Control Delay, s/veh	4.9	6.0	3.7	2.9
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	309	156	481	207	130	49	492	400	245	53	471	362
Future Volume (veh/h)	309	156	481	207	130	49	492	400	245	53	471	362
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	325	164	405	218	137	6	518	421	111	56	496	130
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	391	472	664	279	411	348	581	1723	766	73	1270	567
Arrive On Green	0.11	0.25	0.25	0.08	0.22	0.22	0.17	0.48	0.48	0.04	0.35	0.35
Sat Flow, veh/h	3483	1885	1588	3483	1885	1598	3483	3582	1593	1795	3582	1598
Grp Volume(v), veh/h	325	164	405	218	137	6	518	421	111	56	496	130
Grp Sat Flow(s),veh/h/ln	1742	1885	1588	1742	1885	1598	1742	1791	1593	1795	1791	1598
Q Serve(g_s), s	10.5	8.2	22.9	7.0	7.0	0.3	16.7	7.9	4.5	3.5	11.9	6.5
Cycle Q Clear(g_c), s	10.5	8.2	22.9	7.0	7.0	0.3	16.7	7.9	4.5	3.5	11.9	6.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	391	472	664	279	411	348	581	1723	766	73	1270	567
V/C Ratio(X)	0.83	0.35	0.61	0.78	0.33	0.02	0.89	0.24	0.14	0.77	0.39	0.23
Avail Cap(c_a), veh/h	484	838	972	332	756	640	627	1723	766	166	1270	567
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.8	35.3	26.1	51.7	37.8	35.1	46.7	17.5	16.6	54.4	27.7	26.0
Incr Delay (d2), s/veh	9.8	0.4	0.9	9.8	0.5	0.0	14.4	0.3	0.4	15.7	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	3.8	8.7	3.4	3.3	0.1	8.2	3.2	1.7	1.9	5.1	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.5	35.7	27.0	61.5	38.2	35.2	61.1	17.8	17.0	70.1	28.6	26.9
LnGrp LOS	E	D	C	E	D	D	E	B	B	E	C	C
Approach Vol, veh/h		894			361			1050			682	
Approach Delay, s/veh		40.4			52.2			39.1			31.7	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	59.5	13.3	32.7	23.5	45.0	17.0	29.0
Change Period (Y+Rc), s	4.4	4.4	4.1	4.1	4.4	4.4	4.1	4.1
Max Green Setting (Gmax), s	10.6	50.6	10.9	50.9	20.6	40.6	15.9	45.9
Max Q Clear Time (g_c+I1), s	5.5	9.9	9.0	24.9	18.7	13.9	12.5	9.0
Green Ext Time (p_c), s	0.0	3.2	0.1	2.5	0.4	3.7	0.4	0.8

Intersection Summary			
HCM 6th Ctrl Delay			39.4
HCM 6th LOS			D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	322	0	358	187	779	0	0	818	341
Future Volume (veh/h)	0	0	0	322	0	358	187	779	0	0	818	341
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1885	1885	1885	1885	1885	0	0	1885	1885
Adj Flow Rate, veh/h				339	0	251	197	820	0	0	861	188
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				1	1	1	1	1	0	0	1	1
Cap, veh/h				386	0	343	244	1213	0	0	848	719
Arrive On Green				0.21	0.00	0.21	0.14	0.64	0.00	0.00	0.45	0.45
Sat Flow, veh/h				1795	0	1598	1795	1885	0	0	1885	1598
Grp Volume(v), veh/h				339	0	251	197	820	0	0	861	188
Grp Sat Flow(s),veh/h/ln				1795	0	1598	1795	1885	0	0	1885	1598
Q Serve(g_s), s				12.6	0.0	10.1	7.4	19.0	0.0	0.0	31.1	5.1
Cycle Q Clear(g_c), s				12.6	0.0	10.1	7.4	19.0	0.0	0.0	31.1	5.1
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				386	0	343	244	1213	0	0	848	719
V/C Ratio(X)				0.88	0.00	0.73	0.81	0.68	0.00	0.00	1.02	0.26
Avail Cap(c_a), veh/h				782	0	695	389	1213	0	0	848	719
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				26.3	0.0	25.3	29.0	7.8	0.0	0.0	19.0	11.9
Incr Delay (d2), s/veh				2.6	0.0	1.1	6.5	1.2	0.0	0.0	34.8	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.1	0.0	3.5	3.4	5.5	0.0	0.0	19.3	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				28.9	0.0	26.4	35.5	9.0	0.0	0.0	53.8	11.9
LnGrp LOS				C	A	C	D	A	A	A	F	B
Approach Vol, veh/h					590			1017			1049	
Approach Delay, s/veh					27.8			14.2			46.3	
Approach LOS					C			B			D	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		49.4			13.4	36.0		19.8				
Change Period (Y+Rc), s		4.9			4.0	4.9		4.9				
Max Green Setting (Gmax), s		31.1			15.0	31.1		30.1				
Max Q Clear Time (g_c+I1), s		21.0			9.4	33.1		14.6				
Green Ext Time (p_c), s		0.7			0.2	0.0		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			29.9									
HCM 6th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	440	3	411	0	0	0	0	526	190	275	865	0
Future Volume (veh/h)	440	3	411	0	0	0	0	526	190	275	865	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	463	3	265				0	554	141	289	911	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	507	3	454				0	598	507	345	1069	0
Arrive On Green	0.29	0.29	0.29				0.00	0.32	0.32	0.19	0.57	0.00
Sat Flow, veh/h	1770	11	1585				0	1870	1585	1781	1870	0
Grp Volume(v), veh/h	466	0	265				0	554	141	289	911	0
Grp Sat Flow(s),veh/h/ln	1782	0	1585				0	1870	1585	1781	1870	0
Q Serve(g_s), s	17.4	0.0	9.9				0.0	19.7	4.6	10.8	28.1	0.0
Cycle Q Clear(g_c), s	17.4	0.0	9.9				0.0	19.7	4.6	10.8	28.1	0.0
Prop In Lane	0.99		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	510	0	454				0	598	507	345	1069	0
V/C Ratio(X)	0.91	0.00	0.58				0.00	0.93	0.28	0.84	0.85	0.00
Avail Cap(c_a), veh/h	907	0	807				0	735	623	620	1069	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.8	0.0	21.1				0.0	22.7	17.5	26.8	12.3	0.0
Incr Delay (d2), s/veh	3.6	0.0	0.4				0.0	14.4	0.1	5.4	6.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	0.0	3.3				0.0	10.0	1.5	4.7	10.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.4	0.0	21.5				0.0	37.0	17.6	32.2	18.8	0.0
LnGrp LOS	C	A	C				A	D	B	C	B	A
Approach Vol, veh/h		731						695			1200	
Approach Delay, s/veh		25.2						33.1			22.0	
Approach LOS		C						C			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	17.3	27.0		24.6		44.3
Change Period (Y+Rc), s	4.0	4.9		4.9		4.9
Max Green Setting (Gmax), s	24.0	27.1		35.1		31.1
Max Q Clear Time (g_c+I1), s	12.8	21.7		19.4		30.1
Green Ext Time (p_c), s	0.6	0.3		0.3		0.2

Intersection Summary			
HCM 6th Ctrl Delay			25.8
HCM 6th LOS			C

Intersection	
Intersection Delay, s/veh	191.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	101	21	8	8	22	71	3	544	17	160	881	235
Future Vol, veh/h	101	21	8	8	22	71	3	544	17	160	881	235
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	102	21	8	8	22	72	3	549	17	162	890	237
Number of Lanes	1	1	1	1	1	1	1	1	1	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	3	3
HCM Control Delay	15.9	13.7	118.1	255.3
HCM LOS	C	B	F	F

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	544	17	101	21	8	8	22	71	160	881	235
LT Vol	3	0	0	101	0	0	8	0	0	160	0	0
Through Vol	0	544	0	0	21	0	0	22	0	0	881	0
RT Vol	0	0	17	0	0	8	0	0	71	0	0	235
Lane Flow Rate	3	549	17	102	21	8	8	22	72	162	890	237
Geometry Grp	8	8	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.007	1.159	0.033	0.269	0.053	0.019	0.022	0.057	0.169	0.34	1.749	0.421
Departure Headway (Hd)	8.884	8.384	7.684	10.316	9.816	9.116	10.497	9.997	9.297	7.815	7.315	6.615
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	405	440	469	351	367	395	343	360	388	464	507	548
Service Time	6.584	6.084	5.384	8.016	7.516	6.816	8.197	7.697	6.997	5.515	5.015	4.315
HCM Lane V/C Ratio	0.007	1.248	0.036	0.291	0.057	0.02	0.023	0.061	0.186	0.349	1.755	0.432
HCM Control Delay	11.6	122	10.6	16.8	13.1	12	13.4	13.3	13.9	14.5	363.4	14
HCM Lane LOS	B	F	B	C	B	B	B	B	B	B	F	B
HCM 95th-tile Q	0	18.6	0.1	1.1	0.2	0.1	0.1	0.2	0.6	1.5	52.3	2.1

Intersection	
Intersection Delay, s/veh	130.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	176	78	54	33	63	66	21	301	20	147	505	268
Future Vol, veh/h	176	78	54	33	63	66	21	301	20	147	505	268
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	187	83	57	35	67	70	22	320	21	156	537	285
Number of Lanes	1	1	1	1	1	0	1	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	3	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	3	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	3
HCM Control Delay	19.6	17.9	43	220.2
HCM LOS	C	C	E	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	0%	100%	0%	23%	0%
Vol Thru, %	0%	94%	0%	100%	0%	0%	49%	77%	0%
Vol Right, %	0%	6%	0%	0%	100%	0%	51%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	21	321	176	78	54	33	129	652	268
LT Vol	21	0	176	0	0	33	0	147	0
Through Vol	0	301	0	78	0	0	63	505	0
RT Vol	0	20	0	0	54	0	66	0	268
Lane Flow Rate	22	341	187	83	57	35	137	694	285
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.058	0.828	0.499	0.21	0.134	0.099	0.354	1.601	0.592
Departure Headway (Hd)	10.169	9.607	10.588	10.066	9.336	11.278	10.372	8.307	7.474
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	354	379	343	359	387	320	349	444	482
Service Time	7.869	7.307	8.288	7.766	7.036	8.978	8.072	6.071	5.237
HCM Lane V/C Ratio	0.062	0.9	0.545	0.231	0.147	0.109	0.393	1.563	0.591
HCM Control Delay	13.5	44.9	23.4	15.4	13.5	15.2	18.6	302.2	20.6
HCM Lane LOS	B	E	C	C	B	C	C	F	C
HCM 95th-tile Q	0.2	7.5	2.7	0.8	0.5	0.3	1.6	38.9	3.8

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	0	3	5	0	17	4	153	5	30	261	101
Future Vol, veh/h	59	0	3	5	0	17	4	153	5	30	261	101
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	92	91	92	91	92	92	92	92	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	0	3	5	0	18	4	166	5	33	284	111

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	592	585	198	385	638	169	395	0	0	171	0	0
Stage 1	406	406	-	177	177	-	-	-	-	-	-	-
Stage 2	186	179	-	208	461	-	-	-	-	-	-	-
Critical Hdwy	7.33	6.53	6.93	7.33	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.53	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.53	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.519	4.019	3.319	3.519	4.019	3.319	2.219	-	-	2.219	-	-
Pot Cap-1 Maneuver	404	422	811	561	394	874	1162	-	-	1405	-	-
Stage 1	593	597	-	824	752	-	-	-	-	-	-	-
Stage 2	815	751	-	775	564	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	385	408	811	544	381	874	1162	-	-	1405	-	-
Mov Cap-2 Maneuver	385	408	-	544	381	-	-	-	-	-	-	-
Stage 1	591	578	-	822	750	-	-	-	-	-	-	-
Stage 2	795	749	-	748	547	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16	9.8	0.2	0.6
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1162	-	-	395	768	1405	-	-
HCM Lane V/C Ratio	0.004	-	-	0.172	0.031	0.023	-	-
HCM Control Delay (s)	8.1	-	-	16	9.8	7.6	0.1	-
HCM Lane LOS	A	-	-	C	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.1	0.1	-	-

Intersection	
Intersection Delay, s/veh	4.9
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	170	385	131	38
Demand Flow Rate, veh/h	173	393	134	39
Vehicles Circulating, veh/h	263	0	210	359
Vehicles Exiting, veh/h	135	344	226	34
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.0	5.1	4.4	4.2
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	173	393	134	39
Cap Entry Lane, veh/h	1055	1380	1114	957
Entry HV Adj Factor	0.980	0.981	0.978	0.974
Flow Entry, veh/h	170	385	131	38
Cap Entry, veh/h	1035	1353	1089	932
V/C Ratio	0.164	0.285	0.120	0.041
Control Delay, s/veh	5.0	5.1	4.4	4.2
LOS	A	A	A	A
95th %tile Queue, veh	1	1	0	0

Intersection	
Intersection Delay, s/veh	4.9
Intersection LOS	A

Approach	EB	NB	SB
Entry Lanes	1	1	2
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	132	249	644
Demand Flow Rate, veh/h	135	254	656
Vehicles Circulating, veh/h	431	132	7
Vehicles Exiting, veh/h	232	434	379
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.6	4.9	4.8
Approach LOS	A	A	A

Lane	Left	Left	Left	Right
Designated Moves	LR	LT	LT	R
Assumed Moves	LR	LT	LT	R
RT Channelized				
Lane Util	1.000	1.000	0.657	0.343
Follow-Up Headway, s	2.609	2.609	2.535	2.535
Critical Headway, s	4.976	4.976	4.544	4.544
Entry Flow, veh/h	135	254	431	225
Cap Entry Lane, veh/h	889	1206	1411	1411
Entry HV Adj Factor	0.978	0.981	0.980	0.982
Flow Entry, veh/h	132	249	423	221
Cap Entry, veh/h	869	1183	1383	1386
V/C Ratio	0.152	0.211	0.305	0.159
Control Delay, s/veh	5.6	4.9	5.3	3.9
LOS	A	A	A	A
95th %tile Queue, veh	1	1	1	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	239	20	6	5	8	136	3	791	18	60	358	92
Future Volume (veh/h)	239	20	6	5	8	136	3	791	18	60	358	92
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	275	23	7	6	9	156	3	909	21	69	411	106
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	304	528	447	11	220	186	6	968	820	88	1054	894
Arrive On Green	0.17	0.28	0.28	0.01	0.12	0.12	0.00	0.52	0.52	0.05	0.56	0.56
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	275	23	7	6	9	156	3	909	21	69	411	106
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	16.7	1.0	0.4	0.4	0.5	10.6	0.2	50.4	0.7	4.2	13.6	3.5
Cycle Q Clear(g_c), s	16.7	1.0	0.4	0.4	0.5	10.6	0.2	50.4	0.7	4.2	13.6	3.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	304	528	447	11	220	186	6	968	820	88	1054	894
V/C Ratio(X)	0.91	0.04	0.02	0.55	0.04	0.84	0.53	0.94	0.03	0.78	0.39	0.12
Avail Cap(c_a), veh/h	323	779	660	65	508	431	65	1067	904	97	1101	933
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.9	28.8	28.6	54.7	43.2	47.7	54.9	25.0	13.0	51.9	13.5	11.3
Incr Delay (d2), s/veh	26.8	0.0	0.0	37.4	0.1	9.5	60.0	14.5	0.0	30.5	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	0.4	0.1	0.3	0.2	4.6	0.2	24.1	0.2	2.6	5.3	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.7	28.8	28.6	92.1	43.3	57.2	114.9	39.5	13.0	82.3	13.7	11.3
LnGrp LOS	E	C	C	F	D	E	F	D	B	F	B	B
Approach Vol, veh/h		305			171			933			586	
Approach Delay, s/veh		67.5			57.7			39.1			21.3	
Approach LOS		E			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	61.1	4.7	35.1	4.4	66.2	22.8	17.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	6.0	63.0	4.0	46.0	4.0	65.0	20.0	30.0
Max Q Clear Time (g_c+I1), s	6.2	52.4	2.4	3.0	2.2	15.6	18.7	12.6
Green Ext Time (p_c), s	0.0	4.7	0.0	0.1	0.0	2.9	0.1	0.4

Intersection Summary	
HCM 6th Ctrl Delay	39.8
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	268	88	59	15	69	82	59	397	17	78	159	104
Future Volume (veh/h)	268	88	59	15	69	82	59	397	17	78	159	104
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	291	96	64	16	75	89	64	432	18	85	173	113
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	369	617	516	29	107	127	93	588	25	0	319	264
Arrive On Green	0.21	0.33	0.33	0.02	0.14	0.14	0.05	0.33	0.33	0.00	0.17	0.17
Sat Flow, veh/h	1781	1870	1564	1781	767	910	1781	1781	74	0	1870	1545
Grp Volume(v), veh/h	291	96	64	16	0	164	64	0	450	0	173	113
Grp Sat Flow(s),veh/h/ln	1781	1870	1564	1781	0	1678	1781	0	1855	0	1870	1545
Q Serve(g_s), s	5.7	1.3	1.1	0.3	0.0	3.5	1.3	0.0	8.0	0.0	3.1	2.4
Cycle Q Clear(g_c), s	5.7	1.3	1.1	0.3	0.0	3.5	1.3	0.0	8.0	0.0	3.1	2.4
Prop In Lane	1.00		1.00	1.00		0.54	1.00		0.04	0.00		1.00
Lane Grp Cap(c), veh/h	369	617	516	29	0	233	93	0	613	0	319	264
V/C Ratio(X)	0.79	0.16	0.12	0.55	0.00	0.70	0.69	0.00	0.73	0.00	0.54	0.43
Avail Cap(c_a), veh/h	576	1209	1011	192	0	994	240	0	1100	0	1109	916
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	8.8	8.7	18.1	0.0	15.2	17.3	0.0	11.0	0.0	14.1	13.8
Incr Delay (d2), s/veh	3.9	0.1	0.1	15.0	0.0	3.8	8.8	0.0	1.7	0.0	1.4	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.4	0.3	0.2	0.0	1.3	0.6	0.0	2.0	0.0	1.1	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.9	8.9	8.8	33.2	0.0	19.1	26.1	0.0	12.7	0.0	15.5	14.9
LnGrp LOS	B	A	A	C	A	B	C	A	B	A	B	B
Approach Vol, veh/h		451			180			514			286	
Approach Delay, s/veh		14.7			20.3			14.4			15.3	
Approach LOS		B			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	16.3	4.6	16.2	5.9	10.3	11.7	9.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.0	22.0	4.0	24.0	5.0	22.0	12.0	22.0
Max Q Clear Time (g_c+I1), s	0.0	10.0	2.3	3.3	3.3	5.1	7.7	5.5
Green Ext Time (p_c), s	0.0	1.8	0.0	0.6	0.0	1.1	0.3	0.8

Intersection Summary		
HCM 6th Ctrl Delay		15.4
HCM 6th LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	21	8	8	22	71	3	544	17	160	881	235
Future Volume (veh/h)	101	21	8	8	22	71	3	544	17	160	881	235
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	102	21	8	8	22	72	3	549	17	162	890	237
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	131	251	212	15	129	109	6	851	712	209	1064	902
Arrive On Green	0.07	0.13	0.13	0.01	0.07	0.07	0.00	0.45	0.45	0.12	0.57	0.57
Sat Flow, veh/h	1781	1870	1579	1781	1870	1574	1781	1870	1565	1781	1870	1585
Grp Volume(v), veh/h	102	21	8	8	22	72	3	549	17	162	890	237
Grp Sat Flow(s),veh/h/ln	1781	1870	1579	1781	1870	1574	1781	1870	1565	1781	1870	1585
Q Serve(g_s), s	3.2	0.6	0.2	0.3	0.6	2.5	0.1	12.7	0.3	5.0	21.9	4.3
Cycle Q Clear(g_c), s	3.2	0.6	0.2	0.3	0.6	2.5	0.1	12.7	0.3	5.0	21.9	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	131	251	212	15	129	109	6	851	712	209	1064	902
V/C Ratio(X)	0.78	0.08	0.04	0.54	0.17	0.66	0.52	0.65	0.02	0.78	0.84	0.26
Avail Cap(c_a), veh/h	191	1068	901	127	1001	842	127	1334	1117	413	1635	1385
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.5	21.3	21.1	27.7	24.6	25.5	27.9	11.8	8.4	24.0	9.9	6.1
Incr Delay (d2), s/veh	11.8	0.1	0.1	26.9	0.6	6.7	56.9	0.8	0.0	6.1	2.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.2	0.1	0.2	0.3	1.0	0.1	4.2	0.1	2.2	6.4	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.4	21.4	21.2	54.6	25.2	32.1	84.8	12.6	8.4	30.1	12.3	6.3
LnGrp LOS	D	C	C	D	C	C	F	B	A	C	B	A
Approach Vol, veh/h		131			102			569			1289	
Approach Delay, s/veh		33.8			32.4			12.9			13.5	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	29.5	4.5	11.5	4.2	35.9	8.1	7.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	13.0	40.0	4.0	32.0	4.0	49.0	6.0	30.0
Max Q Clear Time (g_c+I1), s	7.0	14.7	2.3	2.6	2.1	23.9	5.2	4.5
Green Ext Time (p_c), s	0.2	3.5	0.0	0.1	0.0	7.9	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	15.5
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	176	78	54	33	63	66	21	301	20	147	505	268
Future Volume (veh/h)	176	78	54	33	63	66	21	301	20	147	505	268
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	187	83	57	35	67	70	22	320	21	156	537	285
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	236	402	335	56	94	98	38	832	55	0	687	569
Arrive On Green	0.13	0.21	0.21	0.03	0.11	0.11	0.02	0.48	0.48	0.00	0.37	0.37
Sat Flow, veh/h	1781	1870	1562	1781	825	862	1781	1733	114	0	1870	1550
Grp Volume(v), veh/h	187	83	57	35	0	137	22	0	341	0	537	285
Grp Sat Flow(s),veh/h/ln	1781	1870	1562	1781	0	1686	1781	0	1847	0	1870	1550
Q Serve(g_s), s	4.5	1.6	1.3	0.9	0.0	3.4	0.5	0.0	5.2	0.0	11.2	6.3
Cycle Q Clear(g_c), s	4.5	1.6	1.3	0.9	0.0	3.4	0.5	0.0	5.2	0.0	11.2	6.3
Prop In Lane	1.00		1.00	1.00		0.51	1.00		0.06	0.00		1.00
Lane Grp Cap(c), veh/h	236	402	335	56	0	192	38	0	886	0	687	569
V/C Ratio(X)	0.79	0.21	0.17	0.62	0.00	0.71	0.58	0.00	0.38	0.00	0.78	0.50
Avail Cap(c_a), veh/h	244	981	820	203	0	846	163	0	927	0	939	778
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	18.4	14.1	14.0	21.0	0.0	18.7	21.3	0.0	7.3	0.0	12.3	10.8
Incr Delay (d2), s/veh	15.9	0.3	0.2	10.6	0.0	4.8	12.9	0.0	0.3	0.0	3.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.6	0.4	0.5	0.0	1.4	0.3	0.0	1.0	0.0	3.9	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.4	14.4	14.3	31.6	0.0	23.5	34.2	0.0	7.5	0.0	15.3	11.4
LnGrp LOS	C	B	B	C	A	C	C	A	A	A	B	B
Approach Vol, veh/h		327			172			363			822	
Approach Delay, s/veh		25.8			25.2			9.2			14.0	
Approach LOS		C			C			A			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	25.0	5.4	13.4	4.9	20.1	9.8	9.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.0	22.0	5.0	23.0	4.0	22.0	6.0	22.0
Max Q Clear Time (g_c+I1), s	0.0	7.2	2.9	3.6	2.5	13.2	6.5	5.4
Green Ext Time (p_c), s	0.0	1.4	0.0	0.5	0.0	2.9	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	16.4
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	40	310	400	80	80	640	940	370	80	670	70
Future Volume (veh/h)	130	40	310	400	80	80	640	940	370	80	670	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	137	42	273	421	84	8	674	989	278	84	705	30
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	199	296	596	490	453	384	753	2523	998	136	1611	591
Arrive On Green	0.06	0.16	0.16	0.14	0.25	0.25	0.22	0.50	0.50	0.04	0.32	0.32
Sat Flow, veh/h	3401	1841	1560	3401	1841	1560	3401	5025	1541	3401	5025	1560
Grp Volume(v), veh/h	137	42	273	421	84	8	674	989	278	84	705	30
Grp Sat Flow(s),veh/h/ln	1700	1841	1560	1700	1841	1560	1700	1675	1541	1700	1675	1560
Q Serve(g_s), s	4.3	2.1	14.1	13.0	3.9	0.4	20.7	13.1	8.4	2.6	11.9	1.3
Cycle Q Clear(g_c), s	4.3	2.1	14.1	13.0	3.9	0.4	20.7	13.1	8.4	2.6	11.9	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	199	296	596	490	453	384	753	2523	998	136	1611	591
V/C Ratio(X)	0.69	0.14	0.46	0.86	0.19	0.02	0.89	0.39	0.28	0.62	0.44	0.05
Avail Cap(c_a), veh/h	348	752	983	569	872	739	853	2523	998	253	1611	591
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.7	38.8	24.9	45.0	32.0	30.7	40.7	16.6	8.2	50.9	28.9	21.2
Incr Delay (d2), s/veh	4.2	0.2	0.6	11.3	0.2	0.0	11.1	0.5	0.7	4.6	0.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	1.0	5.2	6.2	1.8	0.2	9.5	4.8	2.8	1.2	4.8	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.9	39.0	25.5	56.3	32.2	30.8	51.7	17.1	8.9	55.4	29.8	21.3
LnGrp LOS	D	D	C	E	C	C	D	B	A	E	C	C
Approach Vol, veh/h		452			513			1941			819	
Approach Delay, s/veh		35.3			51.9			27.9			32.1	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	58.4	19.5	21.4	27.8	38.9	10.3	30.6
Change Period (Y+Rc), s	4.0	4.4	4.0	4.1	4.0	4.4	4.0	4.1
Max Green Setting (Gmax), s	8.0	53.5	18.0	44.0	27.0	34.5	11.0	51.0
Max Q Clear Time (g_c+I1), s	4.6	15.1	15.0	16.1	22.7	13.9	6.3	5.9
Green Ext Time (p_c), s	0.1	9.4	0.5	1.2	1.1	4.6	0.2	0.5

Intersection Summary	
HCM 6th Ctrl Delay	33.1
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	410	5	850	0	1100	510	0	660	720
Future Volume (veh/h)	0	0	0	410	5	850	0	1100	510	0	660	720
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1841	1841	1841	0	1841	1841	0	1841	1841
Adj Flow Rate, veh/h				436	0	616	0	1158	379	0	695	429
Peak Hour Factor				0.95	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				4	4	4	0	4	4	0	4	4
Cap, veh/h				1064	0	947	0	1807	806	0	1807	806
Arrive On Green				0.30	0.00	0.30	0.00	0.52	0.52	0.00	0.52	0.52
Sat Flow, veh/h				3506	0	3120	0	3589	1560	0	3589	1560
Grp Volume(v), veh/h				436	0	616	0	1158	379	0	695	429
Grp Sat Flow(s),veh/h/ln				1753	0	1560	0	1749	1560	0	1749	1560
Q Serve(g_s), s				4.4	0.0	7.6	0.0	10.6	6.9	0.0	5.3	8.2
Cycle Q Clear(g_c), s				4.4	0.0	7.6	0.0	10.6	6.9	0.0	5.3	8.2
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1064	0	947	0	1807	806	0	1807	806
V/C Ratio(X)				0.41	0.00	0.65	0.00	0.64	0.47	0.00	0.38	0.53
Avail Cap(c_a), veh/h				2049	0	1824	0	2831	1263	0	1807	806
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				12.3	0.0	13.4	0.0	7.8	6.9	0.0	6.5	7.2
Incr Delay (d2), s/veh				0.3	0.0	0.8	0.0	0.4	0.4	0.0	0.1	0.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.3	0.0	2.0	0.0	2.4	1.4	0.0	1.2	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				12.6	0.0	14.2	0.0	8.1	7.3	0.0	6.6	7.8
LnGrp LOS				B	A	B	A	A	A	A	A	A
Approach Vol, veh/h					1052			1537			1124	
Approach Delay, s/veh					13.5			7.9			7.1	
Approach LOS					B			A			A	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		27.0				27.0		17.5				
Change Period (Y+Rc), s		4.0				4.0		4.0				
Max Green Setting (Gmax), s		36.0				17.0		26.0				
Max Q Clear Time (g_c+I1), s		12.6				10.2		9.6				
Green Ext Time (p_c), s		10.3				3.3		3.9				

Intersection Summary	
HCM 6th Ctrl Delay	9.3
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	410	5	190	0	0	0	0	1200	670	0	790	280
Future Volume (veh/h)	410	5	190	0	0	0	0	1200	670	0	790	280
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841				0	1841	1841	0	1841	1841
Adj Flow Rate, veh/h	436	0	119				0	1263	607	0	832	295
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4				0	4	4	0	4	4
Cap, veh/h	716	0	637				0	2119	925	0	2119	945
Arrive On Green	0.20	0.00	0.20				0.00	0.61	0.61	0.00	0.61	0.61
Sat Flow, veh/h	3506	0	3120				0	3589	1527	0	3589	1560
Grp Volume(v), veh/h	436	0	119				0	1263	607	0	832	295
Grp Sat Flow(s),veh/h/ln	1753	0	1560				0	1749	1527	0	1749	1560
Q Serve(g_s), s	4.8	0.0	1.3				0.0	9.4	11.0	0.0	5.2	3.9
Cycle Q Clear(g_c), s	4.8	0.0	1.3				0.0	9.4	11.0	0.0	5.2	3.9
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	716	0	637				0	2119	925	0	2119	945
V/C Ratio(X)	0.61	0.00	0.19				0.00	0.60	0.66	0.00	0.39	0.31
Avail Cap(c_a), veh/h	2079	0	1850				0	2986	1303	0	4727	2109
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	15.2	0.0	13.9				0.0	5.1	5.4	0.0	4.3	4.0
Incr Delay (d2), s/veh	0.8	0.0	0.1				0.0	0.3	0.8	0.0	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.4				0.0	1.4	1.5	0.0	0.7	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.1	0.0	14.0				0.0	5.4	6.2	0.0	4.4	4.2
LnGrp LOS	B	A	B				A	A	A	A	A	A
Approach Vol, veh/h		555						1870			1127	
Approach Delay, s/veh		15.6						5.7			4.4	
Approach LOS		B						A			A	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		29.6		12.6		29.6						
Change Period (Y+Rc), s		4.0		4.0		4.0						
Max Green Setting (Gmax), s		36.0		25.0		57.0						
Max Q Clear Time (g_c+I1), s		13.0		6.8		7.2						
Green Ext Time (p_c), s		12.6		1.9		8.0						

Intersection Summary			
HCM 6th Ctrl Delay			6.8
HCM 6th LOS			A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	470	80	40	40	80	490	100	910	80	350	420	210
Future Volume (veh/h)	470	80	40	40	80	490	100	910	80	350	420	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	500	85	34	43	85	233	106	968	12	372	447	158
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	421	694	581	55	311	259	129	1080	475	319	1458	636
Arrive On Green	0.24	0.37	0.37	0.03	0.17	0.17	0.07	0.30	0.30	0.18	0.41	0.41
Sat Flow, veh/h	1781	1870	1564	1781	1870	1561	1781	3554	1563	1781	3554	1550
Grp Volume(v), veh/h	500	85	34	43	85	233	106	968	12	372	447	158
Grp Sat Flow(s),veh/h/ln	1781	1870	1564	1781	1870	1561	1781	1777	1563	1781	1777	1550
Q Serve(g_s), s	33.0	4.2	2.0	3.3	5.5	20.4	8.2	36.4	0.8	25.0	11.8	9.3
Cycle Q Clear(g_c), s	33.0	4.2	2.0	3.3	5.5	20.4	8.2	36.4	0.8	25.0	11.8	9.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	421	694	581	55	311	259	129	1080	475	319	1458	636
V/C Ratio(X)	1.19	0.12	0.06	0.77	0.27	0.90	0.82	0.90	0.03	1.17	0.31	0.25
Avail Cap(c_a), veh/h	421	710	594	115	388	324	217	1196	526	319	1458	636
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	28.9	28.2	67.2	50.9	57.1	63.8	46.5	34.1	57.3	27.8	27.0
Incr Delay (d2), s/veh	106.0	0.1	0.0	20.1	0.5	22.9	11.9	8.5	0.0	103.5	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	26.8	1.9	0.7	1.8	2.6	9.5	4.1	17.0	0.3	20.2	5.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	159.3	29.0	28.3	87.3	51.3	80.0	75.8	55.0	34.1	160.8	27.9	27.2
LnGrp LOS	F	C	C	F	D	E	E	E	C	F	C	C
Approach Vol, veh/h		619			361			1086			977	
Approach Delay, s/veh		134.2			74.1			56.8			78.4	
Approach LOS		F			E			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.0	46.4	8.4	55.8	14.1	61.3	37.0	27.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	25.0	47.0	9.0	53.0	17.0	55.0	33.0	29.0
Max Q Clear Time (g_c+I1), s	27.0	38.4	5.3	6.2	10.2	13.8	35.0	22.4
Green Ext Time (p_c), s	0.0	4.1	0.0	0.5	0.1	3.6	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	81.5
HCM 6th LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	440	100	70	10	140	280	80	290	10	80	130	290
Future Volume (veh/h)	440	100	70	10	140	280	80	290	10	80	130	290
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	468	106	33	11	149	39	85	309	1	85	138	44
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	562	808	676	20	239	200	108	552	240	108	552	240
Arrive On Green	0.32	0.43	0.43	0.01	0.13	0.13	0.06	0.16	0.16	0.06	0.16	0.16
Sat Flow, veh/h	1781	1870	1564	1781	1870	1560	1781	3554	1545	1781	3554	1545
Grp Volume(v), veh/h	468	106	33	11	149	39	85	309	1	85	138	44
Grp Sat Flow(s),veh/h/ln	1781	1870	1564	1781	1870	1560	1781	1777	1545	1781	1777	1545
Q Serve(g_s), s	11.5	1.6	0.6	0.3	3.5	1.1	2.2	3.8	0.0	2.2	1.6	1.2
Cycle Q Clear(g_c), s	11.5	1.6	0.6	0.3	3.5	1.1	2.2	3.8	0.0	2.2	1.6	1.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	562	808	676	20	239	200	108	552	240	108	552	240
V/C Ratio(X)	0.83	0.13	0.05	0.54	0.62	0.20	0.79	0.56	0.00	0.79	0.25	0.18
Avail Cap(c_a), veh/h	1176	2071	1732	303	1155	963	303	1589	691	303	1589	691
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.9	8.0	7.7	23.1	19.4	18.3	21.8	18.4	16.8	21.8	17.4	17.2
Incr Delay (d2), s/veh	3.3	0.1	0.0	20.7	2.6	0.5	11.7	0.9	0.0	11.7	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.5	0.2	0.2	1.5	0.4	1.1	1.4	0.0	1.1	0.6	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.2	8.1	7.8	43.8	22.0	18.8	33.5	19.2	16.8	33.5	17.7	17.6
LnGrp LOS	B	A	A	D	C	B	C	B	B	C	B	B
Approach Vol, veh/h		607			199			395			267	
Approach Delay, s/veh		15.9			22.6			22.3			22.7	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	11.3	4.5	24.3	6.9	11.3	18.8	10.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	8.0	21.0	8.0	52.0	8.0	21.0	31.0	29.0
Max Q Clear Time (g_c+I1), s	4.2	5.8	2.3	3.6	4.2	3.6	13.5	5.5
Green Ext Time (p_c), s	0.0	1.6	0.0	0.7	0.0	0.8	1.4	0.9

Intersection Summary		
HCM 6th Ctrl Delay		19.8
HCM 6th LOS		B

Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	50	330	10	50	160
Future Vol, veh/h	10	50	330	10	50	160
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	54	359	11	54	174

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	560	185	0	0	370	0
Stage 1	365	-	-	-	-	-
Stage 2	195	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	458	826	-	-	1185	-
Stage 1	673	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	435	826	-	-	1185	-
Mov Cap-2 Maneuver	435	-	-	-	-	-
Stage 1	639	-	-	-	-	-
Stage 2	819	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	718	1185	-
HCM Lane V/C Ratio	-	-	0.091	0.046	-
HCM Control Delay (s)	-	-	10.5	8.2	0.1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection						
Int Delay, s/veh	4.5					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	550	490	20	60	210
Future Vol, veh/h	20	550	490	20	60	210
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	598	533	22	65	228

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	555	0	-	0	1186	544
Stage 1	-	-	-	-	544	-
Stage 2	-	-	-	-	642	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1015	-	-	-	208	539
Stage 1	-	-	-	-	582	-
Stage 2	-	-	-	-	524	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1015	-	-	-	203	539
Mov Cap-2 Maneuver	-	-	-	-	400	-
Stage 1	-	-	-	-	569	-
Stage 2	-	-	-	-	524	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	21.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1015	-	-	-	500
HCM Lane V/C Ratio	0.021	-	-	-	0.587
HCM Control Delay (s)	8.6	-	-	-	21.9
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	3.7

Intersection	
Intersection Delay, s/veh	15.7
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	1	1
Adj Approach Flow, veh/h	729	586	544	336
Demand Flow Rate, veh/h	743	598	555	342
Vehicles Circulating, veh/h	176	833	776	399
Vehicles Exiting, veh/h	565	498	143	1032
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	10.6	32.4	10.7	5.5
Approach LOS	B	D	B	A

Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	TR	LT	R
RT Channelized						
Lane Util	1.000	1.000	0.470	0.530	0.354	0.646
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.544	4.544	4.544	4.544
Entry Flow, veh/h	743	598	261	294	121	221
Cap Entry Lane, veh/h	1223	699	701	701	988	988
Entry HV Adj Factor	0.981	0.980	0.980	0.981	0.981	0.982
Flow Entry, veh/h	729	586	256	288	119	217
Cap Entry, veh/h	1199	685	687	687	969	970
V/C Ratio	0.608	0.855	0.372	0.420	0.123	0.224
Control Delay, s/veh	10.6	32.4	10.2	11.1	4.8	5.9
LOS	B	D	B	B	A	A
95th %tile Queue, veh	4	10	2	2	0	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	190	1010	420	140	140	770	670	380	90	840	400
Future Volume (veh/h)	340	190	1010	420	140	140	770	670	380	90	840	400
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	358	200	962	442	147	101	811	705	253	95	884	170
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	405	556	861	442	576	488	852	2220	873	139	1166	544
Arrive On Green	0.12	0.29	0.29	0.13	0.31	0.31	0.24	0.43	0.43	0.04	0.23	0.22
Sat Flow, veh/h	3483	1885	1598	3483	1885	1598	3483	5147	1564	3483	5147	1598
Grp Volume(v), veh/h	358	200	962	442	147	101	811	705	253	95	884	170
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1742	1885	1598	1742	1716	1564	1742	1716	1598
Q Serve(g_s), s	15.1	12.5	44.0	19.0	8.8	7.0	34.3	13.5	12.8	4.0	24.0	11.7
Cycle Q Clear(g_c), s	15.1	12.5	44.0	19.0	8.8	7.0	34.3	13.5	12.8	4.0	24.0	11.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	405	556	861	442	576	488	852	2220	873	139	1166	544
V/C Ratio(X)	0.88	0.36	1.12	1.00	0.26	0.21	0.95	0.32	0.29	0.68	0.76	0.31
Avail Cap(c_a), veh/h	442	556	861	442	576	488	862	2220	873	210	1166	544
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.1	41.6	34.5	65.3	39.1	38.5	55.6	28.0	17.6	70.9	54.0	36.4
Incr Delay (d2), s/veh	17.6	0.4	68.4	42.5	0.2	0.2	19.9	0.4	0.8	5.8	4.6	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	6.0	46.7	11.1	4.2	2.8	17.2	5.6	4.9	1.9	10.7	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	82.7	42.0	102.9	107.8	39.4	38.7	75.5	28.4	18.5	76.7	58.6	37.9
LnGrp LOS	F	D	F	F	D	D	E	C	B	E	E	D
Approach Vol, veh/h		1520			690			1769			1149	
Approach Delay, s/veh		90.1			83.1			48.6			57.1	
Approach LOS		F			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	68.5	23.0	48.1	40.6	37.9	21.4	49.7
Change Period (Y+Rc), s	4.0	4.4	4.0	4.1	4.0	4.4	4.0	4.1
Max Green Setting (Gmax), s	9.0	61.5	19.0	44.0	37.0	33.5	19.0	44.0
Max Q Clear Time (g_c+I1), s	6.0	15.5	21.0	46.0	36.3	26.0	17.1	10.8
Green Ext Time (p_c), s	0.1	6.4	0.0	0.0	0.3	3.7	0.3	1.2

Intersection Summary	
HCM 6th Ctrl Delay	67.4
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	680	5	660	0	1160	360	0	1630	640
Future Volume (veh/h)	0	0	0	680	5	660	0	1160	360	0	1630	640
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1885	1885	1885	0	1885	1885	0	1885	1885
Adj Flow Rate, veh/h				720	0	569	0	1221	379	0	1716	503
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				1	1	1	0	1	1	0	1	1
Cap, veh/h				938	0	835	0	1948	868	0	1948	869
Arrive On Green				0.26	0.00	0.26	0.00	0.54	0.54	0.00	0.54	0.54
Sat Flow, veh/h				3591	0	3195	0	3676	1596	0	3676	1598
Grp Volume(v), veh/h				720	0	569	0	1221	379	0	1716	503
Grp Sat Flow(s),veh/h/ln				1795	0	1598	0	1791	1596	0	1791	1598
Q Serve(g_s), s				7.6	0.0	6.6	0.0	9.7	5.8	0.0	17.2	8.6
Cycle Q Clear(g_c), s				7.6	0.0	6.6	0.0	9.7	5.8	0.0	17.2	8.6
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				938	0	835	0	1948	868	0	1948	869
V/C Ratio(X)				0.77	0.00	0.68	0.00	0.63	0.44	0.00	0.88	0.58
Avail Cap(c_a), veh/h				2712	0	2413	0	2792	1244	0	2792	1245
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				14.0	0.0	13.6	0.0	6.5	5.6	0.0	8.2	6.2
Incr Delay (d2), s/veh				0.5	0.0	0.4	0.0	0.1	0.1	0.0	1.9	0.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.3	0.0	1.7	0.0	1.8	1.0	0.0	3.6	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				14.5	0.0	14.0	0.0	6.6	5.7	0.0	10.1	6.5
LnGrp LOS				B	A	B	A	A	A	A	B	A
Approach Vol, veh/h					1289			1600			2219	
Approach Delay, s/veh					14.3			6.4			9.3	
Approach LOS					B			A			A	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		26.3				26.3		14.7				
Change Period (Y+Rc), s		4.9				4.9		4.9				
Max Green Setting (Gmax), s		31.1				31.1		30.1				
Max Q Clear Time (g_c+I1), s		11.7				19.2		9.6				
Green Ext Time (p_c), s		1.4				2.2		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	9.6
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	590	5	650	0	0	0	0	930	530	0	1530	780
Future Volume (veh/h)	590	5	650	0	0	0	0	930	530	0	1530	780
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885				0	1885	1885	0	1885	1885
Adj Flow Rate, veh/h	625	0	516				0	979	499	0	1611	821
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1				0	1	1	0	1	1
Cap, veh/h	847	0	754				0	2042	911	0	2042	911
Arrive On Green	0.24	0.00	0.24				0.00	0.57	0.57	0.00	0.57	0.57
Sat Flow, veh/h	3591	0	3195				0	3676	1598	0	3676	1598
Grp Volume(v), veh/h	625	0	516				0	979	499	0	1611	821
Grp Sat Flow(s),veh/h/ln	1795	0	1598				0	1791	1598	0	1791	1598
Q Serve(g_s), s	6.6	0.0	6.1				0.0	6.7	8.1	0.0	14.5	18.8
Cycle Q Clear(g_c), s	6.6	0.0	6.1				0.0	6.7	8.1	0.0	14.5	18.8
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	847	0	754				0	2042	911	0	2042	911
V/C Ratio(X)	0.74	0.00	0.68				0.00	0.48	0.55	0.00	0.79	0.90
Avail Cap(c_a), veh/h	3133	0	2788				0	2431	1084	0	2778	1239
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	14.6	0.0	14.4				0.0	5.2	5.5	0.0	6.9	7.8
Incr Delay (d2), s/veh	0.5	0.0	0.4				0.0	0.1	0.2	0.0	0.7	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	1.6				0.0	1.1	1.2	0.0	2.5	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.1	0.0	14.8				0.0	5.3	5.7	0.0	7.7	13.9
LnGrp LOS	B	A	B				A	A	A	A	A	B
Approach Vol, veh/h		1141						1478			2432	
Approach Delay, s/veh		14.9						5.5			9.8	
Approach LOS		B						A			A	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		27.5		13.7		27.5						
Change Period (Y+Rc), s		4.9		4.9		4.9						
Max Green Setting (Gmax), s		27.1		35.1		31.1						
Max Q Clear Time (g_c+I1), s		10.1		8.6		20.8						
Green Ext Time (p_c), s		1.0		0.2		1.9						

Intersection Summary			
HCM 6th Ctrl Delay			9.7
HCM 6th LOS			A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	350	80	80	90	80	480	60	630	80	600	1080	500
Future Volume (veh/h)	350	80	80	90	80	480	60	630	80	600	1080	500
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	372	85	59	96	85	204	64	670	20	638	1149	342
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	341	513	428	119	279	233	82	771	339	578	1760	775
Arrive On Green	0.19	0.27	0.27	0.07	0.15	0.15	0.05	0.22	0.22	0.32	0.50	0.50
Sat Flow, veh/h	1781	1870	1563	1781	1870	1561	1781	3554	1562	1781	3554	1564
Grp Volume(v), veh/h	372	85	59	96	85	204	64	670	20	638	1149	342
Grp Sat Flow(s),veh/h/ln	1781	1870	1563	1781	1870	1561	1781	1777	1562	1781	1777	1564
Q Serve(g_s), s	26.0	4.7	3.9	7.2	5.5	17.4	4.8	24.7	1.4	44.0	32.7	19.2
Cycle Q Clear(g_c), s	26.0	4.7	3.9	7.2	5.5	17.4	4.8	24.7	1.4	44.0	32.7	19.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	341	513	428	119	279	233	82	771	339	578	1760	775
V/C Ratio(X)	1.09	0.17	0.14	0.81	0.30	0.88	0.78	0.87	0.06	1.10	0.65	0.44
Avail Cap(c_a), veh/h	341	513	428	236	400	334	105	917	403	578	1860	819
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.8	37.5	37.2	62.4	51.4	56.5	64.1	51.3	42.1	45.8	25.5	22.1
Incr Delay (d2), s/veh	74.9	0.2	0.1	11.9	0.6	16.4	24.7	7.9	0.1	69.3	0.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.5	2.1	1.5	3.6	2.6	7.8	2.7	11.7	0.5	30.0	13.5	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	129.8	37.6	37.3	74.3	52.0	72.9	88.7	59.2	42.2	115.2	26.3	22.5
LnGrp LOS	F	D	D	E	D	E	F	E	D	F	C	C
Approach Vol, veh/h		516			385			754			2129	
Approach Delay, s/veh		104.0			68.7			61.3			52.3	
Approach LOS		F			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	48.0	33.4	13.1	41.2	10.2	71.2	30.0	24.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	44.0	35.0	18.0	37.0	8.0	71.0	26.0	29.0
Max Q Clear Time (g_c+I1), s	46.0	26.7	9.2	6.7	6.8	34.7	28.0	19.4
Green Ext Time (p_c), s	0.0	2.7	0.1	0.6	0.0	11.8	0.0	0.7

Intersection Summary			
HCM 6th Ctrl Delay			62.8
HCM 6th LOS			E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	410	140	80	20	120	150	30	190	20	340	470	440
Future Volume (veh/h)	410	140	80	20	120	150	30	190	20	340	470	440
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	436	149	30	21	128	21	32	202	2	362	500	148
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	506	690	577	35	195	163	49	364	158	426	1116	487
Arrive On Green	0.28	0.37	0.37	0.02	0.10	0.10	0.03	0.10	0.10	0.24	0.31	0.31
Sat Flow, veh/h	1781	1870	1564	1781	1870	1558	1781	3554	1540	1781	3554	1549
Grp Volume(v), veh/h	436	149	30	21	128	21	32	202	2	362	500	148
Grp Sat Flow(s),veh/h/ln	1781	1870	1564	1781	1870	1558	1781	1777	1540	1781	1777	1549
Q Serve(g_s), s	13.8	3.2	0.7	0.7	3.9	0.7	1.1	3.2	0.1	11.5	6.7	4.3
Cycle Q Clear(g_c), s	13.8	3.2	0.7	0.7	3.9	0.7	1.1	3.2	0.1	11.5	6.7	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	506	690	577	35	195	163	49	364	158	426	1116	487
V/C Ratio(X)	0.86	0.22	0.05	0.60	0.65	0.13	0.65	0.56	0.01	0.85	0.45	0.30
Avail Cap(c_a), veh/h	811	1514	1265	240	914	762	240	1258	545	661	2097	914
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.1	12.8	12.0	28.8	25.5	24.1	28.6	25.3	23.9	21.5	16.2	15.4
Incr Delay (d2), s/veh	5.6	0.2	0.0	15.2	3.7	0.4	13.5	1.3	0.0	6.3	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	1.2	0.2	0.4	1.8	0.3	0.6	1.3	0.0	4.9	2.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.7	13.0	12.1	44.0	29.2	24.5	42.1	26.7	24.0	27.8	16.5	15.8
LnGrp LOS	C	B	B	D	C	C	D	C	C	C	B	B
Approach Vol, veh/h		615			170			236			1010	
Approach Delay, s/veh		22.0			30.5			28.7			20.5	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.2	10.1	5.2	25.9	5.6	22.6	20.8	10.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	22.0	21.0	8.0	48.0	8.0	35.0	27.0	29.0
Max Q Clear Time (g_c+I1), s	13.5	5.2	2.7	5.2	3.1	8.7	15.8	5.9
Green Ext Time (p_c), s	0.7	1.0	0.0	0.9	0.0	3.8	1.1	0.7

Intersection Summary	
HCM 6th Ctrl Delay	22.7
HCM 6th LOS	C

Intersection						
Int Delay, s/veh	1.4					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	50	190	10	60	510
Future Vol, veh/h	10	50	190	10	60	510
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	54	207	11	65	554

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	620	109	0	0	218	0
Stage 1	213	-	-	-	-	-
Stage 2	407	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	420	924	-	-	1349	-
Stage 1	802	-	-	-	-	-
Stage 2	641	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	391	924	-	-	1349	-
Mov Cap-2 Maneuver	391	-	-	-	-	-
Stage 1	746	-	-	-	-	-
Stage 2	641	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	753	1349	-
HCM Lane V/C Ratio	-	-	0.087	0.048	-
HCM Control Delay (s)	-	-	10.2	7.8	0.2
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.2	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	150	590	560	30	40	40
Future Vol, veh/h	150	590	560	30	40	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	163	641	609	33	43	43

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	642	0	-	0	1593	626
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	967	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	943	-	-	-	118	484
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	369	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	943	-	-	-	98	484
Mov Cap-2 Maneuver	-	-	-	-	188	-
Stage 1	-	-	-	-	441	-
Stage 2	-	-	-	-	369	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	24.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	943	-	-	-	271
HCM Lane V/C Ratio	0.173	-	-	-	0.321
HCM Control Delay (s)	9.6	-	-	-	24.4
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.6	-	-	-	1.3

Intersection	
Intersection Delay, s/veh	30.2
Intersection LOS	D

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	1	1
Adj Approach Flow, veh/h	771	516	229	1065
Demand Flow Rate, veh/h	787	527	233	1086
Vehicles Circulating, veh/h	754	477	887	544
Vehicles Exiting, veh/h	876	643	654	460
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	71.2	11.4	8.0	14.4
Approach LOS	F	B	A	B

Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	TR	LT	TR
RT Channelized						
Lane Util	1.000	1.000	0.472	0.528	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.544	4.544	4.544	4.544
Entry Flow, veh/h	787	527	110	123	510	576
Cap Entry Lane, veh/h	748	947	633	633	866	866
Entry HV Adj Factor	0.980	0.980	0.977	0.985	0.981	0.980
Flow Entry, veh/h	771	516	107	121	500	564
Cap Entry, veh/h	733	928	619	624	849	848
V/C Ratio	1.052	0.557	0.174	0.194	0.589	0.665
Control Delay, s/veh	71.2	11.4	7.9	8.1	13.1	15.6
LOS	F	B	A	A	B	C
95th %tile Queue, veh	20	4	1	1	4	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	40	324	400	80	80	677	1009	370	80	688	70
Future Volume (veh/h)	130	40	324	400	80	80	677	1009	370	80	688	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	137	42	188	421	84	37	713	1062	282	84	724	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	202	216	549	497	375	318	798	2683	1051	137	1707	623
Arrive On Green	0.06	0.12	0.12	0.15	0.20	0.20	0.23	0.53	0.53	0.04	0.34	0.34
Sat Flow, veh/h	3401	1841	1560	3401	1841	1560	3401	5025	1541	3401	5025	1560
Grp Volume(v), veh/h	137	42	188	421	84	37	713	1062	282	84	724	32
Grp Sat Flow(s),veh/h/ln	1700	1841	1560	1700	1841	1560	1700	1675	1541	1700	1675	1560
Q Serve(g_s), s	4.0	2.1	9.0	12.3	3.9	2.0	20.6	12.7	7.3	2.5	11.3	1.3
Cycle Q Clear(g_c), s	4.0	2.1	9.0	12.3	3.9	2.0	20.6	12.7	7.3	2.5	11.3	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	202	216	549	497	375	318	798	2683	1051	137	1707	623
V/C Ratio(X)	0.68	0.19	0.34	0.85	0.22	0.12	0.89	0.40	0.27	0.61	0.42	0.05
Avail Cap(c_a), veh/h	368	797	1042	603	924	783	904	2683	1051	268	1707	623
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.8	40.5	24.3	42.3	33.7	33.0	37.6	14.0	6.4	48.0	25.9	18.7
Incr Delay (d2), s/veh	3.9	0.4	0.4	9.3	0.3	0.2	10.4	0.4	0.6	4.4	0.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.0	3.3	5.7	1.8	0.8	9.4	4.5	2.3	1.1	4.4	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.7	41.0	24.6	51.6	34.0	33.1	48.0	14.4	7.0	52.3	26.6	18.9
LnGrp LOS	D	D	C	D	C	C	D	B	A	D	C	B
Approach Vol, veh/h		367			542			2057			840	
Approach Delay, s/veh		36.2			47.6			25.1			28.9	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	58.6	18.8	16.0	27.8	38.9	10.0	24.8				
Change Period (Y+Rc), s	4.0	4.4	4.0	4.1	4.0	4.4	4.0	4.1				
Max Green Setting (Gmax), s	8.0	53.5	18.0	44.0	27.0	34.5	11.0	51.0				
Max Q Clear Time (g_c+I1), s	4.5	14.7	14.3	11.0	22.6	13.3	6.0	5.9				
Green Ext Time (p_c), s	0.1	10.3	0.6	0.9	1.2	4.8	0.2	0.6				
Intersection Summary												
HCM 6th Ctrl Delay			30.2									
HCM 6th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	448	5	850	0	1206	574	0	692	720
Future Volume (veh/h)	0	0	0	448	5	850	0	1206	574	0	692	720
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1841	1841	1841	0	1841	1841	0	1841	1841
Adj Flow Rate, veh/h				476	0	616	0	1269	604	0	728	429
Peak Hour Factor				0.95	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				4	4	4	0	4	4	0	4	4
Cap, veh/h				911	0	811	0	2044	912	0	2044	912
Arrive On Green				0.26	0.00	0.26	0.00	0.58	0.58	0.00	0.58	0.58
Sat Flow, veh/h				3506	0	3120	0	3589	1560	0	3589	1560
Grp Volume(v), veh/h				476	0	616	0	1269	604	0	728	429
Grp Sat Flow(s),veh/h/ln				1753	0	1560	0	1749	1560	0	1749	1560
Q Serve(g_s), s				6.0	0.0	9.3	0.0	12.2	13.5	0.0	5.6	8.1
Cycle Q Clear(g_c), s				6.0	0.0	9.3	0.0	12.2	13.5	0.0	5.6	8.1
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				911	0	811	0	2044	912	0	2044	912
V/C Ratio(X)				0.52	0.00	0.76	0.00	0.62	0.66	0.00	0.36	0.47
Avail Cap(c_a), veh/h				1093	0	972	0	3134	1398	0	2044	912
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				16.3	0.0	17.5	0.0	7.0	7.2	0.0	5.6	6.1
Incr Delay (d2), s/veh				0.5	0.0	2.9	0.0	0.3	0.8	0.0	0.1	0.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.0	0.0	3.0	0.0	2.7	2.8	0.0	1.2	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				16.7	0.0	20.4	0.0	7.3	8.1	0.0	5.7	6.5
LnGrp LOS				B	A	C	A	A	A	A	A	A
Approach Vol, veh/h					1092			1873			1157	
Approach Delay, s/veh					18.8			7.5			6.0	
Approach LOS					B			A			A	

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		34.0				34.0		17.3				
Change Period (Y+Rc), s		4.0				4.0		4.0				
Max Green Setting (Gmax), s		46.0				24.0		16.0				
Max Q Clear Time (g_c+I1), s		15.5				10.1		11.3				
Green Ext Time (p_c), s		14.5				5.4		2.0				

Intersection Summary	
HCM 6th Ctrl Delay	10.1
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	410	5	211	0	0	0	0	1370	799	0	860	280
Future Volume (veh/h)	410	5	211	0	0	0	0	1370	799	0	860	280
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841				0	1841	1841	0	1841	1841
Adj Flow Rate, veh/h	436	0	141				0	1442	743	0	905	295
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4				0	4	4	0	4	4
Cap, veh/h	748	0	665				0	2000	873	0	2000	892
Arrive On Green	0.21	0.00	0.21				0.00	0.57	0.57	0.00	0.57	0.57
Sat Flow, veh/h	3506	0	3120				0	3589	1526	0	3589	1560
Grp Volume(v), veh/h	436	0	141				0	1442	743	0	905	295
Grp Sat Flow(s),veh/h/ln	1753	0	1560				0	1749	1526	0	1749	1560
Q Serve(g_s), s	4.2	0.0	1.4				0.0	11.2	15.1	0.0	5.6	3.7
Cycle Q Clear(g_c), s	4.2	0.0	1.4				0.0	11.2	15.1	0.0	5.6	3.7
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	748	0	665				0	2000	873	0	2000	892
V/C Ratio(X)	0.58	0.00	0.21				0.00	0.72	0.85	0.00	0.45	0.33
Avail Cap(c_a), veh/h	1884	0	1676				0	2067	902	0	3946	1760
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	13.2	0.0	12.1				0.0	5.8	6.6	0.0	4.6	4.2
Incr Delay (d2), s/veh	0.7	0.0	0.2				0.0	1.2	7.7	0.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.3				0.0	1.7	3.4	0.0	0.7	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.9	0.0	12.2				0.0	7.0	14.3	0.0	4.8	4.4
LnGrp LOS	B	A	B				A	A	B	A	A	A
Approach Vol, veh/h		577						2185			1200	
Approach Delay, s/veh		13.5						9.5			4.7	
Approach LOS		B						A			A	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		25.3		11.9		25.3						
Change Period (Y+Rc), s		4.0		4.0		4.0						
Max Green Setting (Gmax), s		22.0		20.0		42.0						
Max Q Clear Time (g_c+I1), s		17.1		6.2		7.6						
Green Ext Time (p_c), s		4.2		1.8		8.4						
Intersection Summary												
HCM 6th Ctrl Delay			8.6									
HCM 6th LOS			A									
Notes												

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑↑	↱	↰	↑↑	↱
Traffic Volume (veh/h)	470	80	42	46	80	490	105	1209	97	350	511	210
Future Volume (veh/h)	470	80	42	46	80	490	105	1209	97	350	511	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	500	85	36	49	85	233	112	1286	30	372	544	158
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	406	668	559	63	309	258	135	1152	507	307	1496	653
Arrive On Green	0.23	0.36	0.36	0.04	0.17	0.17	0.08	0.32	0.32	0.17	0.42	0.42
Sat Flow, veh/h	1781	1870	1564	1781	1870	1561	1781	3554	1564	1781	3554	1550
Grp Volume(v), veh/h	500	85	36	49	85	233	112	1286	30	372	544	158
Grp Sat Flow(s),veh/h/ln	1781	1870	1564	1781	1870	1561	1781	1777	1564	1781	1777	1550
Q Serve(g_s), s	33.0	4.4	2.2	4.0	5.8	21.2	9.0	47.0	1.9	25.0	15.2	9.5
Cycle Q Clear(g_c), s	33.0	4.4	2.2	4.0	5.8	21.2	9.0	47.0	1.9	25.0	15.2	9.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	406	668	559	63	309	258	135	1152	507	307	1496	653
V/C Ratio(X)	1.23	0.13	0.06	0.78	0.28	0.90	0.83	1.12	0.06	1.21	0.36	0.24
Avail Cap(c_a), veh/h	406	684	572	111	374	312	209	1152	507	307	1496	653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.0	31.4	30.6	69.3	52.9	59.4	66.1	49.0	33.7	60.0	28.7	27.0
Incr Delay (d2), s/veh	124.5	0.1	0.0	18.1	0.5	25.1	14.9	64.3	0.0	121.1	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	28.5	2.0	0.8	2.1	2.7	10.0	4.6	30.6	0.7	21.5	6.4	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	180.5	31.4	30.7	87.4	53.4	84.4	80.9	113.3	33.8	181.1	28.8	27.2
LnGrp LOS	F	C	C	F	D	F	F	F	C	F	C	C
Approach Vol, veh/h		621			367			1428			1074	
Approach Delay, s/veh		151.4			77.6			109.1			81.3	
Approach LOS		F			E			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.0	51.0	9.1	55.8	15.0	65.0	37.0	27.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	25.0	47.0	9.0	53.0	17.0	55.0	33.0	29.0
Max Q Clear Time (g_c+I1), s	27.0	49.0	6.0	6.4	11.0	17.2	35.0	23.2
Green Ext Time (p_c), s	0.0	0.0	0.0	0.5	0.1	4.4	0.0	0.6

Intersection Summary		
HCM 6th Ctrl Delay		104.8
HCM 6th LOS		F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	569	111	95	20	147	280	130	482	27	80	190	329
Future Volume (veh/h)	569	111	95	20	147	280	130	482	27	80	190	329
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	605	118	60	21	156	39	138	513	19	85	202	85
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	665	892	746	34	230	192	175	714	311	110	584	254
Arrive On Green	0.37	0.48	0.48	0.02	0.12	0.12	0.10	0.20	0.20	0.06	0.16	0.16
Sat Flow, veh/h	1781	1870	1564	1781	1870	1559	1781	3554	1547	1781	3554	1545
Grp Volume(v), veh/h	605	118	60	21	156	39	138	513	19	85	202	85
Grp Sat Flow(s),veh/h/ln	1781	1870	1564	1781	1870	1559	1781	1777	1547	1781	1777	1545
Q Serve(g_s), s	21.4	2.3	1.4	0.8	5.3	1.5	5.0	8.9	0.7	3.1	3.3	3.2
Cycle Q Clear(g_c), s	21.4	2.3	1.4	0.8	5.3	1.5	5.0	8.9	0.7	3.1	3.3	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	665	892	746	34	230	192	175	714	311	110	584	254
V/C Ratio(X)	0.91	0.13	0.08	0.61	0.68	0.20	0.79	0.72	0.06	0.78	0.35	0.33
Avail Cap(c_a), veh/h	833	1468	1228	215	819	682	215	1126	490	215	1126	490
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.7	9.7	9.4	32.2	27.8	26.1	29.2	24.7	21.4	30.6	24.5	24.5
Incr Delay (d2), s/veh	12.0	0.1	0.0	16.1	3.5	0.5	14.7	1.4	0.1	11.1	0.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.0	0.8	0.4	0.5	2.4	0.5	2.7	3.5	0.2	1.6	1.3	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.7	9.7	9.5	48.3	31.3	26.7	44.0	26.1	21.5	41.7	24.9	25.2
LnGrp LOS	C	A	A	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		783			216			670			372	
Approach Delay, s/veh		26.7			32.1			29.7			28.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	17.3	5.3	35.6	10.5	14.9	28.7	12.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	8.0	21.0	8.0	52.0	8.0	21.0	31.0	29.0
Max Q Clear Time (g_c+I1), s	5.1	10.9	2.8	4.3	7.0	5.3	23.4	7.3
Green Ext Time (p_c), s	0.0	2.3	0.0	0.9	0.0	1.2	1.4	0.9

Intersection Summary	
HCM 6th Ctrl Delay	28.6
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	90	1	1	10	0	52	1	332	10	54	168	30
Future Vol, veh/h	90	1	1	10	0	52	1	332	10	54	168	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	92	91	92	91	92	92	92	92	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	99	1	1	11	0	57	1	361	11	59	183	33

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	501	692	108	579	703	186	216	0	0	372	0	0
Stage 1	318	318	-	369	369	-	-	-	-	-	-	-
Stage 2	183	374	-	210	334	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	453	366	925	398	360	824	1351	-	-	1183	-	-
Stage 1	668	652	-	623	619	-	-	-	-	-	-	-
Stage 2	801	616	-	773	642	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	403	345	925	379	339	824	1351	-	-	1183	-	-
Mov Cap-2 Maneuver	403	345	-	379	339	-	-	-	-	-	-	-
Stage 1	667	615	-	622	618	-	-	-	-	-	-	-
Stage 2	745	615	-	727	605	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.8	10.8	0	1.8
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1351	-	-	405	693	1183	-	-
HCM Lane V/C Ratio	0.001	-	-	0.25	0.097	0.05	-	-
HCM Control Delay (s)	7.7	0	-	16.8	10.8	8.2	0.1	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1	0.3	0.2	-	-

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	654	660	202	293
Demand Flow Rate, veh/h	666	673	206	299
Vehicles Circulating, veh/h	120	65	718	694
Vehicles Exiting, veh/h	873	859	68	44
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	9.3	8.5	9.6	11.8
Approach LOS	A	A	A	B

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	666	673	206	299
Cap Entry Lane, veh/h	1221	1291	663	680
Entry HV Adj Factor	0.981	0.981	0.981	0.980
Flow Entry, veh/h	654	660	202	293
Cap Entry, veh/h	1198	1267	651	666
V/C Ratio	0.546	0.521	0.310	0.440
Control Delay, s/veh	9.3	8.5	9.6	11.8
LOS	A	A	A	B
95th %tile Queue, veh	3	3	1	2

Intersection	
Intersection Delay, s/veh	6.1
Intersection LOS	A

Approach	EB	NB	SB
Entry Lanes	1	2	2
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	191	521	335
Demand Flow Rate, veh/h	195	531	341
Vehicles Circulating, veh/h	275	188	2
Vehicles Exiting, veh/h	68	282	717
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.3	7.7	3.9
Approach LOS	A	A	A

Lane	Left	Left	Left	Right
Designated Moves	LR	LT	LT	R
Assumed Moves	LR	LT	LT	R
RT Channelized				
Lane Util	1.000	1.000	0.806	0.194
Follow-Up Headway, s	2.609	2.535	2.535	2.535
Critical Headway, s	4.976	4.544	4.544	4.544
Entry Flow, veh/h	195	531	275	66
Cap Entry Lane, veh/h	1042	1197	1418	1418
Entry HV Adj Factor	0.979	0.980	0.980	0.985
Flow Entry, veh/h	191	521	270	65
Cap Entry, veh/h	1021	1173	1390	1396
V/C Ratio	0.187	0.444	0.194	0.047
Control Delay, s/veh	5.3	7.7	4.2	2.9
LOS	A	A	A	A
95th %tile Queue, veh	1	2	1	0

Intersection						
Intersection Delay, s/veh	24.3					
Intersection LOS	C					

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	1	1
Adj Approach Flow, veh/h	729	680	555	371
Demand Flow Rate, veh/h	743	693	566	378
Vehicles Circulating, veh/h	212	844	812	399
Vehicles Exiting, veh/h	565	534	143	1138
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.3	59.1	11.4	5.6
Approach LOS	B	F	B	A

Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	TR	LT	R
RT Channelized						
Lane Util	1.000	1.000	0.470	0.530	0.415	0.585
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.544	4.544	4.544	4.544
Entry Flow, veh/h	743	693	266	300	157	221
Cap Entry Lane, veh/h	1186	693	678	678	988	988
Entry HV Adj Factor	0.981	0.981	0.980	0.980	0.979	0.982
Flow Entry, veh/h	729	680	261	294	154	217
Cap Entry, veh/h	1163	680	665	665	967	970
V/C Ratio	0.627	1.000	0.392	0.442	0.159	0.224
Control Delay, s/veh	11.3	59.1	10.8	11.9	5.2	5.9
LOS	B	F	B	B	A	A
95th %tile Queue, veh	5	16	2	2	1	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	190	1056	420	140	140	795	715	380	90	902	400
Future Volume (veh/h)	340	190	1056	420	140	140	795	715	380	90	902	400
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	358	200	1011	442	147	101	837	753	253	95	949	170
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	405	553	863	441	573	485	859	2214	875	139	1149	543
Arrive On Green	0.12	0.29	0.29	0.13	0.30	0.30	0.25	0.43	0.43	0.04	0.22	0.22
Sat Flow, veh/h	3483	1885	1598	3483	1885	1598	3483	5147	1564	3483	5147	1598
Grp Volume(v), veh/h	358	200	1011	442	147	101	837	753	253	95	949	170
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1742	1885	1598	1742	1716	1564	1742	1716	1598
Q Serve(g_s), s	15.2	12.6	44.0	19.0	8.8	7.0	35.7	14.6	12.8	4.0	26.3	11.8
Cycle Q Clear(g_c), s	15.2	12.6	44.0	19.0	8.8	7.0	35.7	14.6	12.8	4.0	26.3	11.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	405	553	863	441	573	485	859	2214	875	139	1149	543
V/C Ratio(X)	0.88	0.36	1.17	1.00	0.26	0.21	0.97	0.34	0.29	0.68	0.83	0.31
Avail Cap(c_a), veh/h	441	553	863	441	573	485	859	2214	875	209	1149	543
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.3	41.9	34.5	65.5	39.4	38.8	56.0	28.5	17.6	71.1	55.5	36.6
Incr Delay (d2), s/veh	17.8	0.4	89.6	43.3	0.2	0.2	24.4	0.4	0.8	5.8	6.8	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	6.0	52.0	11.1	4.2	2.8	18.4	6.1	4.9	1.9	12.0	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	83.1	42.3	124.1	108.8	39.7	39.0	80.5	28.9	18.4	76.9	62.3	38.1
LnGrp LOS	F	D	F	F	D	D	F	C	B	E	E	D
Approach Vol, veh/h		1569			690			1843			1214	
Approach Delay, s/veh		104.3			83.9			50.9			60.0	
Approach LOS		F			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	68.9	23.0	48.1	41.0	37.9	21.4	49.7
Change Period (Y+Rc), s	4.0	4.4	4.0	4.1	4.0	4.4	4.0	4.1
Max Green Setting (Gmax), s	9.0	61.5	19.0	44.0	37.0	33.5	19.0	44.0
Max Q Clear Time (g_c+I1), s	6.0	16.6	21.0	46.0	37.7	28.3	17.2	10.8
Green Ext Time (p_c), s	0.1	6.8	0.0	0.0	0.0	2.9	0.3	1.2

Intersection Summary			
HCM 6th Ctrl Delay			73.0
HCM 6th LOS			E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	810	5	660	0	1230	402	0	1738	640
Future Volume (veh/h)	0	0	0	810	5	660	0	1230	402	0	1738	640
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1885	1885	1885	0	1885	1885	0	1885	1885
Adj Flow Rate, veh/h				857	0	569	0	1295	423	0	1829	503
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				1	1	1	0	1	1	0	1	1
Cap, veh/h				973	0	866	0	1946	867	0	1946	868
Arrive On Green				0.27	0.00	0.27	0.00	0.54	0.54	0.00	0.54	0.54
Sat Flow, veh/h				3591	0	3195	0	3676	1596	0	3676	1598
Grp Volume(v), veh/h				857	0	569	0	1295	423	0	1829	503
Grp Sat Flow(s),veh/h/ln				1795	0	1598	0	1791	1596	0	1791	1598
Q Serve(g_s), s				12.1	0.0	8.3	0.0	13.7	8.7	0.0	25.2	11.1
Cycle Q Clear(g_c), s				12.1	0.0	8.3	0.0	13.7	8.7	0.0	25.2	11.1
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				973	0	866	0	1946	867	0	1946	868
V/C Ratio(X)				0.88	0.00	0.66	0.00	0.67	0.49	0.00	0.94	0.58
Avail Cap(c_a), veh/h				2047	0	1822	0	2110	940	0	2110	941
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				18.4	0.0	17.1	0.0	8.6	7.5	0.0	11.2	8.0
Incr Delay (d2), s/veh				1.1	0.0	0.3	0.0	0.5	0.2	0.0	8.3	0.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.2	0.0	2.5	0.0	3.6	2.0	0.0	8.6	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				19.5	0.0	17.4	0.0	9.1	7.6	0.0	19.6	8.4
LnGrp LOS				B	A	B	A	A	A	A	B	A
Approach Vol, veh/h					1426			1718			2332	
Approach Delay, s/veh					18.7			8.8			17.2	
Approach LOS					B			A			B	
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		33.6				33.6		19.2				
Change Period (Y+Rc), s		4.9				4.9		4.9				
Max Green Setting (Gmax), s		31.1				31.1		30.1				
Max Q Clear Time (g_c+I1), s		15.7				27.2		14.1				
Green Ext Time (p_c), s		1.5				1.5		0.2				
Intersection Summary												
HCM 6th Ctrl Delay			14.9									
HCM 6th LOS			B									
Notes												

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	590	5	722	0	0	0	0	1042	615	0	1768	780
Future Volume (veh/h)	590	5	722	0	0	0	0	1042	615	0	1768	780
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885				0	1885	1885	0	1885	1885
Adj Flow Rate, veh/h	625	0	592				0	1097	588	0	1861	821
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1				0	1	1	0	1	1
Cap, veh/h	806	0	717				0	2015	899	0	2015	899
Arrive On Green	0.22	0.00	0.22				0.00	0.56	0.56	0.00	0.56	0.56
Sat Flow, veh/h	3591	0	3195				0	3676	1598	0	3676	1598
Grp Volume(v), veh/h	625	0	592				0	1097	588	0	1861	821
Grp Sat Flow(s),veh/h/ln	1795	0	1598				0	1791	1598	0	1791	1598
Q Serve(g_s), s	7.5	0.0	8.1				0.0	8.9	11.7	0.0	21.8	21.3
Cycle Q Clear(g_c), s	7.5	0.0	8.1				0.0	8.9	11.7	0.0	21.8	21.3
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	806	0	717				0	2015	899	0	2015	899
V/C Ratio(X)	0.78	0.00	0.83				0.00	0.54	0.65	0.00	0.92	0.91
Avail Cap(c_a), veh/h	2740	0	2438				0	2111	941	0	2422	1080
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	16.7	0.0	17.0				0.0	6.3	7.0	0.0	9.2	9.1
Incr Delay (d2), s/veh	0.6	0.0	0.9				0.0	0.1	1.2	0.0	5.4	9.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	2.4				0.0	1.8	2.4	0.0	5.9	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.4	0.0	17.9				0.0	6.5	8.1	0.0	14.5	18.6
LnGrp LOS	B	A	B				A	A	A	A	B	B
Approach Vol, veh/h		1217						1685			2682	
Approach Delay, s/veh		17.6						7.1			15.8	
Approach LOS		B						A			B	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		30.8		15.2		30.8						
Change Period (Y+Rc), s		4.9		4.9		4.9						
Max Green Setting (Gmax), s		27.1		35.1		31.1						
Max Q Clear Time (g_c+I1), s		13.7		10.1		23.8						
Green Ext Time (p_c), s		1.2		0.2		2.1						

Intersection Summary			
HCM 6th Ctrl Delay			13.5
HCM 6th LOS			B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	350	80	85	111	80	480	63	827	92	600	1390	500
Future Volume (veh/h)	350	80	85	111	80	480	63	827	92	600	1390	500
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	372	85	64	118	85	204	67	880	33	638	1479	342
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	326	471	393	142	277	231	85	876	385	552	1807	788
Arrive On Green	0.18	0.25	0.25	0.08	0.15	0.15	0.05	0.25	0.25	0.31	0.51	0.51
Sat Flow, veh/h	1781	1870	1563	1781	1870	1561	1781	3554	1563	1781	3554	1551
Grp Volume(v), veh/h	372	85	64	118	85	204	67	880	33	638	1479	342
Grp Sat Flow(s),veh/h/ln	1781	1870	1563	1781	1870	1561	1781	1777	1563	1781	1777	1551
Q Serve(g_s), s	26.0	5.1	4.5	9.3	5.8	18.2	5.3	35.0	2.3	44.0	49.8	19.8
Cycle Q Clear(g_c), s	26.0	5.1	4.5	9.3	5.8	18.2	5.3	35.0	2.3	44.0	49.8	19.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	326	471	393	142	277	231	85	876	385	552	1807	788
V/C Ratio(X)	1.14	0.18	0.16	0.83	0.31	0.88	0.79	1.01	0.09	1.16	0.82	0.43
Avail Cap(c_a), veh/h	326	487	407	226	382	319	100	876	385	552	1807	788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.0	41.7	41.5	64.4	54.0	59.3	66.9	53.5	41.2	49.0	29.4	22.0
Incr Delay (d2), s/veh	93.7	0.2	0.2	13.5	0.6	18.8	29.0	31.6	0.1	89.3	3.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.9	2.3	1.8	4.7	2.7	8.3	3.1	19.2	0.9	32.8	21.1	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	151.7	41.8	41.7	78.0	54.6	78.0	96.0	85.2	41.3	138.4	32.5	22.4
LnGrp LOS	F	D	D	E	D	E	F	F	D	F	C	C
Approach Vol, veh/h		521			407			980			2459	
Approach Delay, s/veh		120.3			73.1			84.4			58.6	
Approach LOS		F			E			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	48.0	39.0	15.3	39.8	10.8	76.2	30.0	25.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	44.0	35.0	18.0	37.0	8.0	71.0	26.0	29.0
Max Q Clear Time (g_c+I1), s	46.0	37.0	11.3	7.1	7.3	51.8	28.0	20.2
Green Ext Time (p_c), s	0.0	0.0	0.1	0.6	0.0	11.7	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	73.1
HCM 6th LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	495	147	148	54	143	150	58	317	31	340	671	575
Future Volume (veh/h)	495	147	148	54	143	150	58	317	31	340	671	575
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	527	156	102	57	152	21	62	337	14	362	714	292
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	567	731	612	73	213	178	80	487	211	407	1139	496
Arrive On Green	0.32	0.39	0.39	0.04	0.11	0.11	0.04	0.14	0.14	0.23	0.32	0.32
Sat Flow, veh/h	1781	1870	1564	1781	1870	1559	1781	3554	1543	1781	3554	1549
Grp Volume(v), veh/h	527	156	102	57	152	21	62	337	14	362	714	292
Grp Sat Flow(s),veh/h/ln	1781	1870	1564	1781	1870	1559	1781	1777	1543	1781	1777	1549
Q Serve(g_s), s	22.6	4.4	3.4	2.5	6.2	1.0	2.7	7.1	0.6	15.5	13.5	12.5
Cycle Q Clear(g_c), s	22.6	4.4	3.4	2.5	6.2	1.0	2.7	7.1	0.6	15.5	13.5	12.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	567	731	612	73	213	178	80	487	211	407	1139	496
V/C Ratio(X)	0.93	0.21	0.17	0.78	0.71	0.12	0.78	0.69	0.07	0.89	0.63	0.59
Avail Cap(c_a), veh/h	610	1138	952	181	688	573	181	946	411	497	1577	687
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.0	16.0	15.6	37.5	33.7	31.4	37.3	32.5	29.6	29.5	22.8	22.4
Incr Delay (d2), s/veh	20.2	0.1	0.1	16.4	4.4	0.3	15.0	1.8	0.1	15.7	0.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.0	1.8	1.1	1.4	3.0	0.4	1.5	3.0	0.2	7.9	5.3	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	16.1	15.8	53.9	38.1	31.7	52.3	34.2	29.8	45.2	23.4	23.6
LnGrp LOS	D	B	B	D	D	C	D	C	C	D	C	C
Approach Vol, veh/h		785			230			413			1368	
Approach Delay, s/veh		36.3			41.4			36.8			29.2	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	14.8	7.2	34.9	7.5	29.3	29.1	13.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	22.0	21.0	8.0	48.0	8.0	35.0	27.0	29.0
Max Q Clear Time (g_c+I1), s	17.5	9.1	4.5	6.4	4.7	15.5	24.6	8.2
Green Ext Time (p_c), s	0.5	1.6	0.0	1.2	0.0	5.6	0.5	0.8

Intersection Summary	
HCM 6th Ctrl Delay	33.3
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	1	2	10	2	53	7	193	10	62	514	99
Future Vol, veh/h	58	1	2	10	2	53	7	193	10	62	514	99
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	92	91	92	91	92	92	92	92	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	64	1	2	11	2	58	8	210	11	67	559	109

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	870	985	334	646	1034	111	668	0	0	221	0	0
Stage 1	748	748	-	232	232	-	-	-	-	-	-	-
Stage 2	122	237	-	414	802	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	246	247	662	357	231	921	918	-	-	1345	-	-
Stage 1	371	418	-	750	711	-	-	-	-	-	-	-
Stage 2	869	708	-	586	395	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	213	225	662	330	210	921	918	-	-	1345	-	-
Mov Cap-2 Maneuver	213	225	-	330	210	-	-	-	-	-	-	-
Stage 1	367	384	-	743	704	-	-	-	-	-	-	-
Stage 2	804	701	-	535	363	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28.7	11	0.3	0.9
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	918	-	-	218	667	1345	-	-
HCM Lane V/C Ratio	0.008	-	-	0.307	0.106	0.05	-	-
HCM Control Delay (s)	9	0	-	28.7	11	7.8	0.3	-
HCM Lane LOS	A	A	-	D	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.2	0.4	0.2	-	-

Intersection	
Intersection Delay, s/veh	18.7
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	922	845	133	86
Demand Flow Rate, veh/h	940	862	136	88
Vehicles Circulating, veh/h	216	196	936	858
Vehicles Exiting, veh/h	730	876	220	200
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	22.8	16.7	10.6	8.3
Approach LOS	C	C	B	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	940	862	136	88
Cap Entry Lane, veh/h	1107	1130	531	575
Entry HV Adj Factor	0.981	0.980	0.978	0.977
Flow Entry, veh/h	922	845	133	86
Cap Entry, veh/h	1086	1108	519	562
V/C Ratio	0.849	0.763	0.256	0.153
Control Delay, s/veh	22.8	16.7	10.6	8.3
LOS	C	C	B	A
95th %tile Queue, veh	11	8	1	1

Intersection				
Intersection Delay, s/veh	6.9			
Intersection LOS	A			

Approach	EB	NB	SB
Entry Lanes	1	2	2
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	126	334	959
Demand Flow Rate, veh/h	128	340	978
Vehicles Circulating, veh/h	753	125	11
Vehicles Exiting, veh/h	236	756	454
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	8.1	5.3	7.3
Approach LOS	A	A	A

Lane	Left	Left	Left	Right
Designated Moves	LR	LT	LT	R
Assumed Moves	LR	LT	LT	R
RT Channelized				
Lane Util	1.000	1.000	0.770	0.230
Follow-Up Headway, s	2.609	2.535	2.535	2.535
Critical Headway, s	4.976	4.544	4.544	4.544
Entry Flow, veh/h	128	340	753	225
Cap Entry Lane, veh/h	640	1267	1406	1406
Entry HV Adj Factor	0.984	0.981	0.980	0.982
Flow Entry, veh/h	126	334	738	221
Cap Entry, veh/h	630	1243	1378	1381
V/C Ratio	0.200	0.268	0.536	0.160
Control Delay, s/veh	8.1	5.3	8.3	3.9
LOS	A	A	A	A
95th %tile Queue, veh	1	1	3	1

Intersection						
Intersection Delay, s/veh	42.3					
Intersection LOS	E					

Approach	EB	WB	NB		SB	
Entry Lanes	1	1	2		2	
Conflicting Circle Lanes	2	2	1		1	
Adj Approach Flow, veh/h	771	579	235		1183	
Demand Flow Rate, veh/h	787	591	240		1206	
Vehicles Circulating, veh/h	874	484	1007		544	
Vehicles Exiting, veh/h	876	763	654		531	
Ped Vol Crossing Leg, #/h	0	0	0		0	
Ped Cap Adj	1.000	1.000	1.000		1.000	
Approach Delay, s/veh	112.6	13.4	9.3		17.1	
Approach LOS	F	B	A		C	

Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	TR	LT	TR
RT Channelized						
Lane Util	1.000	1.000	0.471	0.529	0.470	0.530
Follow-Up Headway, s	2.535	2.535	2.535	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.544	4.544	4.544	4.544
Entry Flow, veh/h	787	591	113	127	567	639
Cap Entry Lane, veh/h	676	941	568	568	866	866
Entry HV Adj Factor	0.980	0.980	0.979	0.983	0.980	0.981
Flow Entry, veh/h	771	579	111	125	556	627
Cap Entry, veh/h	662	923	556	558	849	849
V/C Ratio	1.165	0.628	0.199	0.224	0.655	0.738
Control Delay, s/veh	112.6	13.4	9.1	9.4	15.2	18.9
LOS	F	B	A	A	C	C
95th %tile Queue, veh	25	5	1	1	5	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	40	310	400	80	80	640	940	370	80	670	70
Future Volume (veh/h)	130	40	310	400	80	80	640	940	370	80	670	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	137	42	273	421	84	8	674	989	278	84	705	30
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	203	198	915	500	358	304	768	2707	1059	138	1776	645
Arrive On Green	0.06	0.11	0.11	0.15	0.19	0.19	0.23	0.54	0.54	0.04	0.35	0.35
Sat Flow, veh/h	3401	1841	2745	3401	1841	1560	3401	5025	1541	3401	5025	1560
Grp Volume(v), veh/h	137	42	273	421	84	8	674	989	278	84	705	30
Grp Sat Flow(s),veh/h/ln	1700	1841	1373	1700	1841	1560	1700	1675	1541	1700	1675	1560
Q Serve(g_s), s	3.9	2.1	7.3	12.0	3.8	0.4	19.0	11.2	6.9	2.4	10.5	1.1
Cycle Q Clear(g_c), s	3.9	2.1	7.3	12.0	3.8	0.4	19.0	11.2	6.9	2.4	10.5	1.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	203	198	915	500	358	304	768	2707	1059	138	1776	645
V/C Ratio(X)	0.67	0.21	0.30	0.84	0.23	0.03	0.88	0.37	0.26	0.61	0.40	0.05
Avail Cap(c_a), veh/h	377	816	1836	616	945	801	925	2707	1059	274	1776	645
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	40.5	24.5	41.2	33.7	32.4	37.1	13.2	6.0	46.9	24.1	17.4
Incr Delay (d2), s/veh	3.8	0.5	0.2	8.6	0.3	0.0	8.4	0.4	0.6	4.3	0.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.0	2.4	5.6	1.7	0.2	8.5	4.0	2.1	1.1	4.1	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.6	41.0	24.7	49.9	34.1	32.4	45.5	13.5	6.6	51.1	24.8	17.6
LnGrp LOS	D	D	C	D	C	C	D	B	A	D	C	B
Approach Vol, veh/h		452			513			1941			819	
Approach Delay, s/veh		33.7			47.0			23.6			27.2	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	57.9	18.6	14.8	26.4	39.5	9.9	23.4
Change Period (Y+Rc), s	4.0	4.4	4.0	4.1	4.0	4.4	4.0	4.1
Max Green Setting (Gmax), s	8.0	53.5	18.0	44.0	27.0	34.5	11.0	51.0
Max Q Clear Time (g_c+I1), s	4.4	13.2	14.0	9.3	21.0	12.5	5.9	5.8
Green Ext Time (p_c), s	0.1	9.4	0.6	1.4	1.4	4.7	0.2	0.5

Intersection Summary	
HCM 6th Ctrl Delay	28.9
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	470	80	40	40	80	490	100	910	80	350	420	210
Future Volume (veh/h)	470	80	40	40	80	490	100	910	80	350	420	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	500	85	34	43	85	233	106	968	12	372	447	158
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	566	345	138	55	262	576	133	1160	511	401	1695	740
Arrive On Green	0.16	0.27	0.27	0.03	0.14	0.14	0.07	0.33	0.33	0.23	0.48	0.48
Sat Flow, veh/h	3456	1265	506	1781	1870	1560	1781	3554	1564	1781	3554	1550
Grp Volume(v), veh/h	500	0	119	43	85	233	106	968	12	372	447	158
Grp Sat Flow(s),veh/h/ln	1728	0	1771	1781	1870	1560	1781	1777	1564	1781	1777	1550
Q Serve(g_s), s	15.7	0.0	5.8	2.7	4.5	12.4	6.5	28.0	0.6	22.7	8.3	6.6
Cycle Q Clear(g_c), s	15.7	0.0	5.8	2.7	4.5	12.4	6.5	28.0	0.6	22.7	8.3	6.6
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	566	0	484	55	262	576	133	1160	511	401	1695	740
V/C Ratio(X)	0.88	0.00	0.25	0.78	0.32	0.40	0.80	0.83	0.02	0.93	0.26	0.21
Avail Cap(c_a), veh/h	623	0	639	145	489	765	257	1538	676	434	1890	825
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.4	0.0	31.4	53.4	42.9	26.3	50.5	34.6	25.4	42.1	17.4	16.9
Incr Delay (d2), s/veh	13.3	0.0	0.3	20.7	0.7	0.5	10.3	3.1	0.0	25.2	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	0.0	2.4	1.5	2.1	4.5	3.2	12.1	0.2	12.5	3.3	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.7	0.0	31.7	74.0	43.7	26.7	60.8	37.7	25.4	67.3	17.4	17.0
LnGrp LOS	E	A	C	E	D	C	E	D	C	E	B	B
Approach Vol, veh/h		619			361			1086			977	
Approach Delay, s/veh		53.5			36.3			39.8			36.3	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	29.0	40.2	7.4	34.3	12.3	56.9	22.2	19.6				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	27.0	48.0	9.0	40.0	16.0	59.0	20.0	29.0				
Max Q Clear Time (g_c+I1), s	24.7	30.0	4.7	7.8	8.5	10.3	17.7	14.4				
Green Ext Time (p_c), s	0.3	6.3	0.0	0.6	0.1	3.6	0.5	1.0				
Intersection Summary												
HCM 6th Ctrl Delay			41.1									
HCM 6th LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	190	1010	420	140	140	770	670	380	90	840	400
Future Volume (veh/h)	340	190	1010	420	140	140	770	670	380	90	840	400
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	358	200	962	442	147	101	811	705	253	95	884	170
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	408	529	1481	454	554	470	859	2259	891	140	1197	554
Arrive On Green	0.12	0.28	0.28	0.13	0.29	0.29	0.25	0.44	0.44	0.04	0.23	0.23
Sat Flow, veh/h	3483	1885	2812	3483	1885	1598	3483	5147	1564	3483	5147	1598
Grp Volume(v), veh/h	358	200	962	442	147	101	811	705	253	95	884	170
Grp Sat Flow(s),veh/h/ln	1742	1885	1406	1742	1885	1598	1742	1716	1564	1742	1716	1598
Q Serve(g_s), s	14.7	12.4	35.9	18.4	8.7	6.9	33.3	13.0	12.2	3.9	23.2	11.3
Cycle Q Clear(g_c), s	14.7	12.4	35.9	18.4	8.7	6.9	33.3	13.0	12.2	3.9	23.2	11.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	408	529	1481	454	554	470	859	2259	891	140	1197	554
V/C Ratio(X)	0.88	0.38	0.65	0.97	0.27	0.21	0.94	0.31	0.28	0.68	0.74	0.31
Avail Cap(c_a), veh/h	454	570	1542	454	570	483	884	2259	891	215	1197	554
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.3	42.2	24.8	63.1	39.4	38.8	53.9	26.6	16.3	69.0	51.8	34.8
Incr Delay (d2), s/veh	16.4	0.4	0.9	35.3	0.3	0.2	17.9	0.4	0.8	5.7	4.1	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	5.9	12.1	10.4	4.1	2.8	16.5	5.3	4.6	1.8	10.3	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.8	42.6	25.7	98.5	39.7	39.0	71.9	26.9	17.1	74.7	56.0	36.2
LnGrp LOS	E	D	C	F	D	D	E	C	B	E	E	D
Approach Vol, veh/h		1520			690			1769			1149	
Approach Delay, s/veh		40.7			77.2			46.1			54.6	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	68.0	23.0	44.9	40.0	37.9	21.1	46.9
Change Period (Y+Rc), s	4.0	4.4	4.0	4.1	4.0	4.4	4.0	4.1
Max Green Setting (Gmax), s	9.0	61.5	19.0	44.0	37.0	33.5	19.0	44.0
Max Q Clear Time (g_c+I1), s	5.9	15.0	20.4	37.9	35.3	25.2	16.7	10.7
Green Ext Time (p_c), s	0.1	6.4	0.0	2.9	0.6	3.9	0.3	1.2

Intersection Summary	
HCM 6th Ctrl Delay	50.6
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	350	80	80	90	80	480	60	630	80	600	1080	500
Future Volume (veh/h)	350	80	80	90	80	480	60	630	80	600	1080	500
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	372	85	59	96	85	204	64	670	20	638	1149	342
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	437	170	118	121	201	769	82	843	371	675	2026	892
Arrive On Green	0.13	0.17	0.17	0.07	0.11	0.11	0.05	0.24	0.24	0.38	0.57	0.57
Sat Flow, veh/h	3456	1021	709	1781	1870	1558	1781	3554	1563	1781	3554	1565
Grp Volume(v), veh/h	372	0	144	96	85	204	64	670	20	638	1149	342
Grp Sat Flow(s),veh/h/ln	1728	0	1730	1781	1870	1558	1781	1777	1563	1781	1777	1565
Q Serve(g_s), s	11.3	0.0	8.1	5.7	4.5	8.3	3.8	19.0	1.1	37.1	22.0	12.9
Cycle Q Clear(g_c), s	11.3	0.0	8.1	5.7	4.5	8.3	3.8	19.0	1.1	37.1	22.0	12.9
Prop In Lane	1.00		0.41	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	437	0	287	121	201	769	82	843	371	675	2026	892
V/C Ratio(X)	0.85	0.00	0.50	0.79	0.42	0.27	0.78	0.79	0.05	0.94	0.57	0.38
Avail Cap(c_a), veh/h	485	0	550	167	507	1024	133	1429	628	783	2725	1200
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	0.0	40.6	49.1	44.6	16.2	50.4	38.3	31.5	32.1	14.6	12.7
Incr Delay (d2), s/veh	12.6	0.0	1.4	16.2	1.4	0.2	14.3	1.8	0.1	18.5	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	3.4	3.0	2.1	2.8	2.0	8.2	0.4	18.5	8.1	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.3	0.0	41.9	65.3	46.0	16.4	64.8	40.1	31.6	50.7	14.9	12.9
LnGrp LOS	E	A	D	E	D	B	E	D	C	D	B	B
Approach Vol, veh/h		516			385			754			2129	
Approach Delay, s/veh		53.8			35.1			42.0			25.3	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	44.5	29.4	11.3	21.8	9.0	64.9	17.5	15.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	47.0	43.0	10.0	34.0	8.0	82.0	15.0	29.0
Max Q Clear Time (g_c+I1), s	39.1	21.0	7.7	10.1	5.8	24.0	13.3	10.3
Green Ext Time (p_c), s	1.5	4.4	0.0	0.7	0.0	12.9	0.2	1.0

Intersection Summary	
HCM 6th Ctrl Delay	33.5
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	40	324	400	80	80	677	1009	370	80	688	70
Future Volume (veh/h)	130	40	324	400	80	80	677	1009	370	80	688	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	137	42	188	421	84	37	713	1062	282	84	724	32
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	205	150	877	504	311	264	810	2802	1090	139	1811	656
Arrive On Green	0.06	0.08	0.08	0.15	0.17	0.17	0.24	0.56	0.56	0.04	0.36	0.36
Sat Flow, veh/h	3401	1841	2745	3401	1841	1560	3401	5025	1541	3401	5025	1560
Grp Volume(v), veh/h	137	42	188	421	84	37	713	1062	282	84	724	32
Grp Sat Flow(s),veh/h/ln	1700	1841	1373	1700	1841	1560	1700	1675	1541	1700	1675	1560
Q Serve(g_s), s	3.8	2.1	4.8	11.5	3.8	1.9	19.4	11.4	6.3	2.3	10.3	1.2
Cycle Q Clear(g_c), s	3.8	2.1	4.8	11.5	3.8	1.9	19.4	11.4	6.3	2.3	10.3	1.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	150	877	504	311	264	810	2802	1090	139	1811	656
V/C Ratio(X)	0.67	0.28	0.21	0.84	0.27	0.14	0.88	0.38	0.26	0.60	0.40	0.05
Avail Cap(c_a), veh/h	390	844	1913	638	978	829	957	2802	1090	284	1811	656
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.1	41.4	23.9	39.7	34.7	33.9	35.2	11.9	5.1	45.2	22.9	16.4
Incr Delay (d2), s/veh	3.7	1.0	0.1	7.7	0.5	0.2	8.5	0.4	0.6	4.2	0.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	1.0	1.6	5.3	1.7	0.7	8.6	3.9	1.9	1.0	4.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.8	42.4	24.0	47.4	35.2	34.2	43.7	12.3	5.7	49.4	23.6	16.6
LnGrp LOS	D	D	C	D	D	C	D	B	A	D	C	B
Approach Vol, veh/h		367			542			2057			840	
Approach Delay, s/veh		35.0			44.6			22.3			25.9	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	57.9	18.2	11.9	26.8	39.0	9.8	20.3
Change Period (Y+Rc), s	4.0	4.4	4.0	4.1	4.0	4.4	4.0	4.1
Max Green Setting (Gmax), s	8.0	53.5	18.0	44.0	27.0	34.5	11.0	51.0
Max Q Clear Time (g_c+I1), s	4.3	13.4	13.5	6.8	21.4	12.3	5.8	5.8
Green Ext Time (p_c), s	0.1	10.3	0.7	1.0	1.5	4.9	0.2	0.6

Intersection Summary	
HCM 6th Ctrl Delay	27.5
HCM 6th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	470	80	42	46	80	490	105	1209	97	350	511	210
Future Volume (veh/h)	470	80	42	46	80	490	105	1209	97	350	511	210
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	500	85	36	49	85	233	112	1286	30	372	544	158
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	536	321	136	63	259	549	137	1323	582	373	1795	783
Arrive On Green	0.16	0.26	0.26	0.04	0.14	0.14	0.08	0.37	0.37	0.21	0.50	0.50
Sat Flow, veh/h	3456	1241	526	1781	1870	1560	1781	3554	1564	1781	3554	1551
Grp Volume(v), veh/h	500	0	121	49	85	233	112	1286	30	372	544	158
Grp Sat Flow(s),veh/h/ln	1728	0	1767	1781	1870	1560	1781	1777	1564	1781	1777	1551
Q Serve(g_s), s	18.4	0.0	7.0	3.5	5.3	14.7	8.0	45.9	1.6	26.9	11.5	7.2
Cycle Q Clear(g_c), s	18.4	0.0	7.0	3.5	5.3	14.7	8.0	45.9	1.6	26.9	11.5	7.2
Prop In Lane	1.00		0.30	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	536	0	457	63	259	549	137	1323	582	373	1795	783
V/C Ratio(X)	0.93	0.00	0.26	0.77	0.33	0.42	0.82	0.97	0.05	1.00	0.30	0.20
Avail Cap(c_a), veh/h	536	0	549	124	421	683	221	1324	583	373	1795	783
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.7	0.0	38.0	61.6	50.1	32.2	58.6	39.8	25.9	50.9	18.6	17.6
Incr Delay (d2), s/veh	23.3	0.0	0.3	18.0	0.7	0.5	11.7	18.4	0.0	45.6	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	0.0	3.0	1.9	2.5	5.5	4.0	22.6	0.6	16.5	4.6	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.1	0.0	38.3	79.6	50.8	32.7	70.2	58.1	25.9	96.5	18.7	17.7
LnGrp LOS	E	A	D	E	D	C	E	E	C	F	B	B
Approach Vol, veh/h		621			367			1428			1074	
Approach Delay, s/veh		69.5			43.1			58.4			45.5	
Approach LOS		E			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.0	52.0	8.6	37.3	13.9	69.1	24.0	21.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	27.0	48.0	9.0	40.0	16.0	59.0	20.0	29.0
Max Q Clear Time (g_c+I1), s	28.9	47.9	5.5	9.0	10.0	13.5	20.4	16.7
Green Ext Time (p_c), s	0.0	0.1	0.0	0.6	0.1	4.4	0.0	0.9

Intersection Summary			
HCM 6th Ctrl Delay			54.8
HCM 6th LOS			D

Intersection	
Intersection Delay, s/veh	22.9
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	2	1	2	2
Conflicting Circle Lanes	2	2	2	1
Adj Approach Flow, veh/h	729	680	555	371
Demand Flow Rate, veh/h	743	693	566	378
Vehicles Circulating, veh/h	212	844	812	399
Vehicles Exiting, veh/h	565	534	143	1138
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.6	59.1	11.4	5.6
Approach LOS	A	F	B	A

Lane	Left	Right	Left	Left	Right	Left	Right
Designated Moves	L	TR	LTR	LT	TR	LT	TR
Assumed Moves	L	TR	LTR	LT	TR	LT	R
RT Channelized							
Lane Util	0.598	0.402	1.000	0.470	0.530	0.415	0.585
Follow-Up Headway, s	2.667	2.535	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.328	4.645	4.328	4.544	4.544
Entry Flow, veh/h	444	299	693	266	300	157	221
Cap Entry Lane, veh/h	1111	1186	693	640	712	988	988
Entry HV Adj Factor	0.980	0.982	0.981	0.980	0.980	0.979	0.982
Flow Entry, veh/h	435	294	680	261	294	154	217
Cap Entry, veh/h	1088	1164	680	627	698	967	970
V/C Ratio	0.400	0.252	1.000	0.416	0.421	0.159	0.224
Control Delay, s/veh	7.5	5.4	59.1	11.8	11.0	5.2	5.9
LOS	A	A	F	B	B	A	A
95th %tile Queue, veh	2	1	16	2	2	1	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	340	190	1056	420	140	140	795	715	380	90	902	400
Future Volume (veh/h)	340	190	1056	420	140	140	795	715	380	90	902	400
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	358	200	1011	442	147	101	837	753	253	95	949	170
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	406	540	1506	445	562	476	867	2236	884	139	1160	546
Arrive On Green	0.12	0.29	0.29	0.13	0.30	0.30	0.25	0.43	0.43	0.04	0.23	0.23
Sat Flow, veh/h	3483	1885	2812	3483	1885	1598	3483	5147	1564	3483	5147	1598
Grp Volume(v), veh/h	358	200	1011	442	147	101	837	753	253	95	949	170
Grp Sat Flow(s),veh/h/ln	1742	1885	1406	1742	1885	1598	1742	1716	1564	1742	1716	1598
Q Serve(g_s), s	15.0	12.6	38.7	18.8	8.8	7.0	35.3	14.4	12.5	4.0	26.0	11.6
Cycle Q Clear(g_c), s	15.0	12.6	38.7	18.8	8.8	7.0	35.3	14.4	12.5	4.0	26.0	11.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	406	540	1506	445	562	476	867	2236	884	139	1160	546
V/C Ratio(X)	0.88	0.37	0.67	0.99	0.26	0.21	0.97	0.34	0.29	0.68	0.82	0.31
Avail Cap(c_a), veh/h	445	558	1533	445	562	476	867	2236	884	211	1160	546
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.6	42.3	25.0	64.7	39.7	39.1	55.2	27.8	17.0	70.4	54.6	36.0
Incr Delay (d2), s/veh	17.3	0.4	1.1	40.6	0.2	0.2	22.4	0.4	0.8	5.8	6.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	6.0	13.1	10.9	4.2	2.8	17.9	6.0	4.8	1.9	11.8	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.9	42.7	26.1	105.3	40.0	39.3	77.5	28.2	17.8	76.2	61.1	37.5
LnGrp LOS	F	D	C	F	D	D	E	C	B	E	E	D
Approach Vol, veh/h		1569			690			1843			1214	
Approach Delay, s/veh		41.0			81.7			49.2			59.0	
Approach LOS		D			F			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	69.0	23.0	46.7	41.0	37.9	21.3	48.4
Change Period (Y+Rc), s	4.0	4.4	4.0	4.1	4.0	4.4	4.0	4.1
Max Green Setting (Gmax), s	9.0	61.5	19.0	44.0	37.0	33.5	19.0	44.0
Max Q Clear Time (g_c+I1), s	6.0	16.4	20.8	40.7	37.3	28.0	17.0	10.8
Green Ext Time (p_c), s	0.1	6.8	0.0	1.8	0.0	3.0	0.3	1.2

Intersection Summary			
HCM 6th Ctrl Delay			53.2
HCM 6th LOS			D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	350	80	85	111	80	480	63	827	92	600	1390	500
Future Volume (veh/h)	350	80	85	111	80	480	63	827	92	600	1390	500
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	372	85	64	118	85	204	67	880	33	638	1479	342
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	423	144	108	143	195	756	86	971	427	667	2130	930
Arrive On Green	0.12	0.15	0.15	0.08	0.10	0.10	0.05	0.27	0.27	0.37	0.60	0.60
Sat Flow, veh/h	3456	983	740	1781	1870	1558	1781	3554	1563	1781	3554	1551
Grp Volume(v), veh/h	372	0	149	118	85	204	67	880	33	638	1479	342
Grp Sat Flow(s),veh/h/ln	1728	0	1723	1781	1870	1558	1781	1777	1563	1781	1777	1551
Q Serve(g_s), s	13.4	0.0	10.3	8.3	5.4	10.0	4.7	30.4	2.0	44.3	36.3	14.4
Cycle Q Clear(g_c), s	13.4	0.0	10.3	8.3	5.4	10.0	4.7	30.4	2.0	44.3	36.3	14.4
Prop In Lane	1.00		0.43	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	423	0	252	143	195	756	86	971	427	667	2130	930
V/C Ratio(X)	0.88	0.00	0.59	0.83	0.44	0.27	0.78	0.91	0.08	0.96	0.69	0.37
Avail Cap(c_a), veh/h	435	0	434	182	427	949	168	1035	455	729	2154	940
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.8	0.0	50.7	57.5	53.4	19.9	59.8	44.6	34.3	38.7	17.5	13.1
Incr Delay (d2), s/veh	18.1	0.0	2.2	21.0	1.5	0.2	14.0	10.9	0.1	22.3	1.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	0.0	4.5	4.5	2.6	3.5	2.4	14.5	0.8	22.7	13.9	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.9	0.0	52.9	78.6	54.9	20.1	73.7	55.5	34.3	61.1	18.4	13.3
LnGrp LOS	E	A	D	E	D	C	E	E	C	E	B	B
Approach Vol, veh/h		521			407			980			2459	
Approach Delay, s/veh		67.2			44.3			56.0			28.8	
Approach LOS		E			D			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	51.5	38.7	14.2	22.6	10.1	80.1	19.5	17.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	52.0	37.0	13.0	32.0	12.0	77.0	16.0	29.0
Max Q Clear Time (g_c+I1), s	46.3	32.4	10.3	12.3	6.7	38.3	15.4	12.0
Green Ext Time (p_c), s	1.2	2.3	0.1	0.7	0.0	17.1	0.1	1.0

Intersection Summary			
HCM 6th Ctrl Delay			40.9
HCM 6th LOS			D

Intersection							
Intersection Delay, s/veh	15.9						
Intersection LOS	C						

Approach	EB	WB	NB	SB
Entry Lanes	2	1	2	2
Conflicting Circle Lanes	2	2	2	1
Adj Approach Flow, veh/h	771	579	235	1183
Demand Flow Rate, veh/h	787	591	240	1206
Vehicles Circulating, veh/h	874	484	1007	544
Vehicles Exiting, veh/h	876	763	654	531
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	17.9	13.4	9.2	17.1
Approach LOS	C	B	A	C

Lane	Left	Right	Left	Left	Right	Left	Right
Designated Moves	L	TR	LTR	LT	TR	LT	TR
Assumed Moves	L	TR	LTR	LT	TR	LT	TR
RT Channelized							
Lane Util	0.423	0.577	1.000	0.471	0.529	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.328	4.645	4.328	4.544	4.544
Entry Flow, veh/h	333	454	591	113	127	567	639
Cap Entry Lane, veh/h	604	676	941	535	603	866	866
Entry HV Adj Factor	0.979	0.980	0.980	0.979	0.983	0.980	0.981
Flow Entry, veh/h	326	445	579	111	125	556	627
Cap Entry, veh/h	591	662	923	524	593	849	849
V/C Ratio	0.551	0.672	0.628	0.211	0.211	0.655	0.738
Control Delay, s/veh	16.1	19.2	13.4	9.8	8.7	15.2	18.9
LOS	C	C	B	A	A	C	C
95th %tile Queue, veh	3	5	5	1	1	5	7

Appendix B – Signal Warrant Calculations

FEHR PEERS

			Project	Machado Estates
Major Street	Airport Way		Scenario	EPP
Minor Street	Atherton Drive		Peak Hour	AM

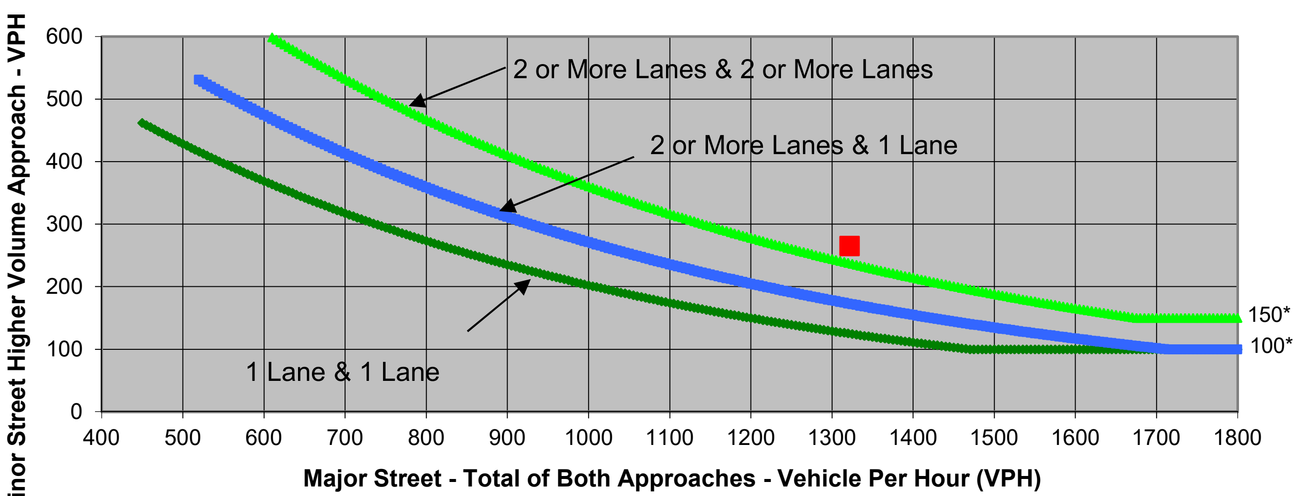
Turn Movement Volumes

	NB	SB	EB	WB
Left	3	60	239	5
Through	791	358	20	8
Right	18	92	6	136
Total	812	510	265	149

Major Street Direction

x	North/South
	East/West

Warrant 3B, Peak Hour



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Airport Way	Minor Street Atherton Drive	Warrant Met
Number of Approach Lanes	**1**	**2**	**YES**
Traffic Volume (VPH) *	**1,322**	**265**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Major Street	Airport Way	Project	Machado Estates
Minor Street	Atherton Drive	Scenario	EPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	3	60	239	5
Through	791	358	20	8
Right	18	92	6	136
Total	812	510	265	149

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	2
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	505
Approach with Worst Case Delay	NB
Total Vehicles on Approach	812

Warrant 3A, Peak Hour

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
EPP	**113.9**	**265**	**1,736**
Limiting Value	**5**	**150**	**800**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR & PEERS

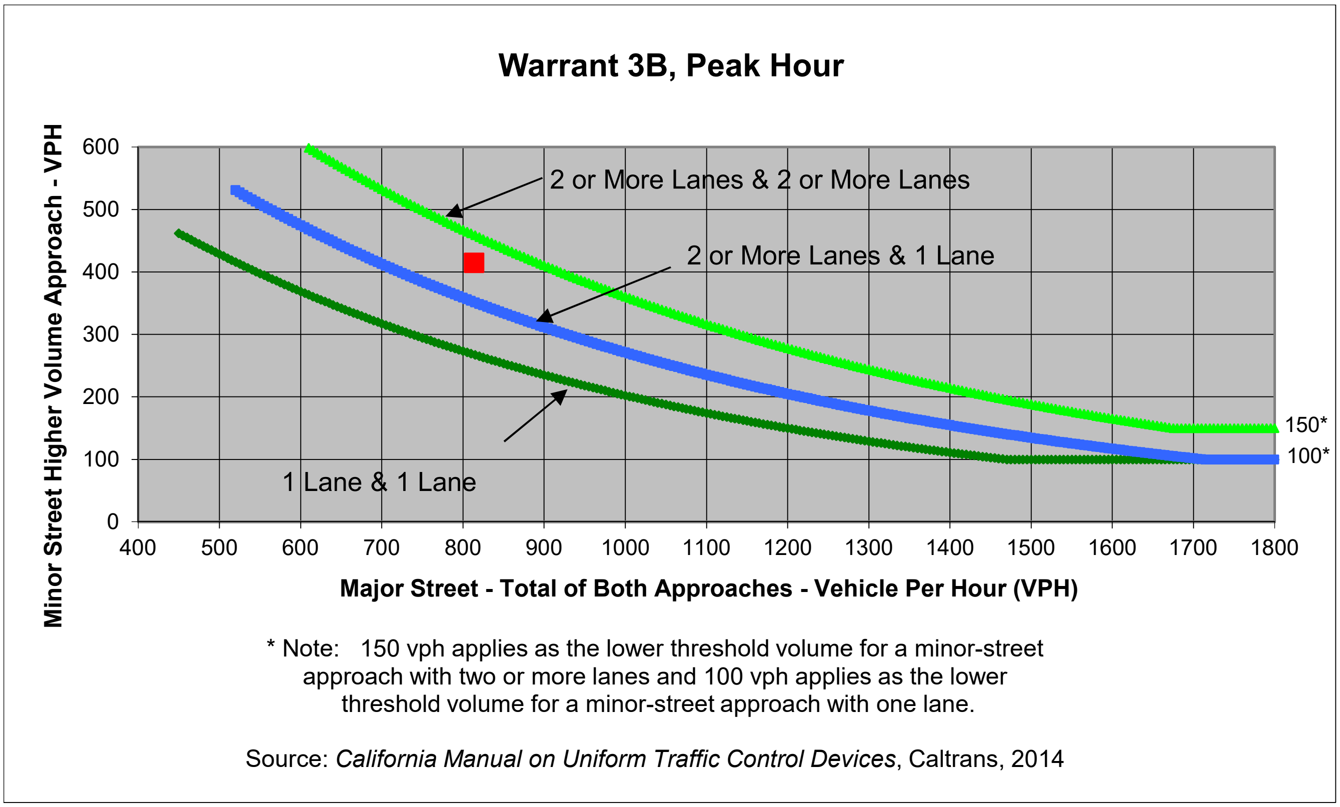
Major Street	Airport Way		Project	Machado Estates
Minor Street	Woodward Avenue		Scenario	EPP
			Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	59	78	268	15
Through	397	159	88	69
Right	17	104	59	82
Total	473	341	415	166

Major Street Direction

x	North/South
	East/West



	Major Street Airport Way	Minor Street Woodward Avenue	Warrant Met
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**814**	**415**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Major Street	Airport Way		Project	Machado Estates
Minor Street	Woodward Avenue		Scenario	EPP
			Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	59	78	268	15
Through	397	159	88	69
Right	17	104	59	82
Total	473	341	415	166

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	84
Approach with Worst Case Delay	NB
Total Vehicles on Approach	473

Warrant 3A, Peak Hour

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
EPP	**11**	**415**	**1,395**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR & PEERS

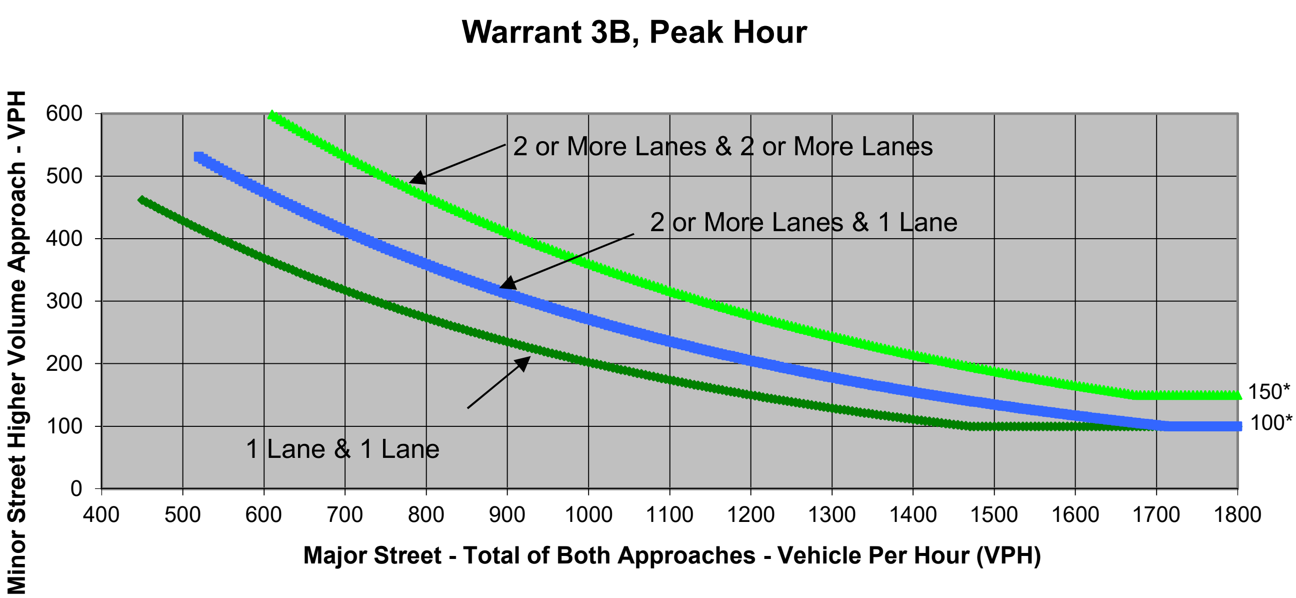
		Project	Machado Estates
Major Street	Airport Way	Scenario	EPP
Minor Street	Atherton Drive	Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	3	160	101	8
Through	544	881	21	22
Right	17	235	8	71
Total	564	1,276	130	101

Major Street Direction

x	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Airport Way	Minor Street Atherton Drive	Warrant Met
Number of Approach Lanes	**1**	**2**	**YES**
Traffic Volume (VPH) *	**1,840**	**130**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR & PEERS

Major Street	Airport Way
Minor Street	Atherton Drive

Project	Machado Estates
Scenario	EPP
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	3	160	101	8
Through	544	881	21	22
Right	17	235	8	71
Total	564	1,276	130	101

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	2
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	255
Approach with Worst Case Delay	SB
Total Vehicles on Approach	1,276

Warrant 3A, Peak Hour

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
EPP	**90.4**	**130**	**2,071**
Limiting Value	**5**	**150**	**800**
Condition Satisfied?	**Met**	**Not Met**	**Met**
Warrant Met	**NO**		

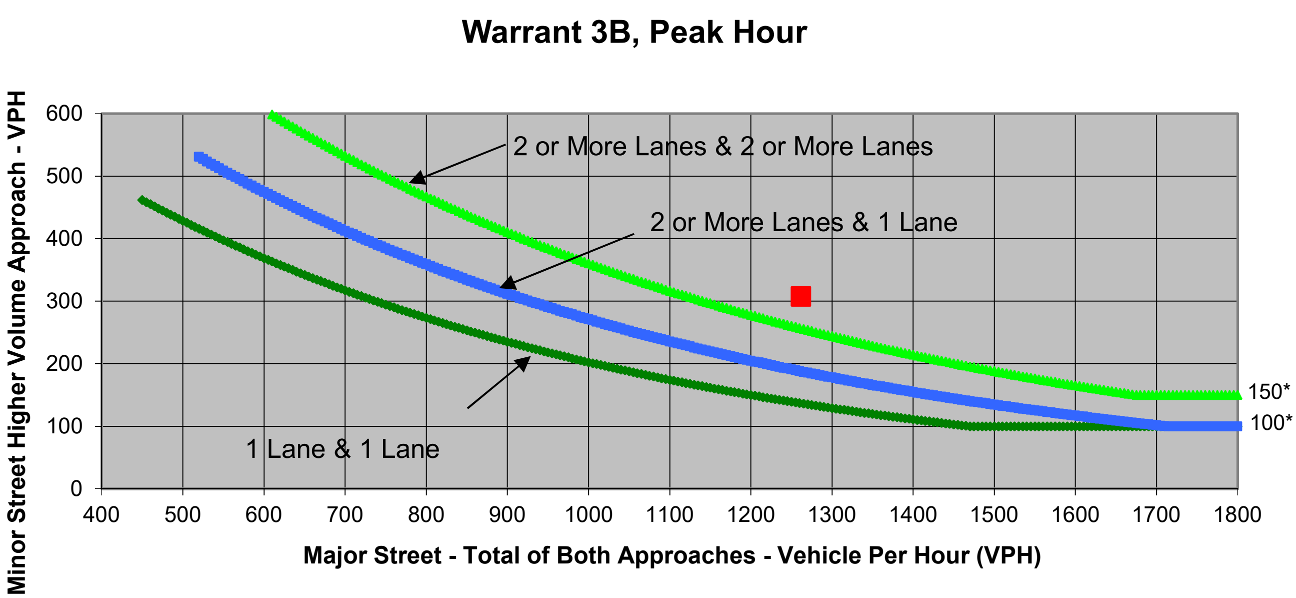
Major Street	Airport Way	Project	Machado Estates
Minor Street	Woodward Avenue	Scenario	EPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	21	147	176	33
Through	301	505	78	63
Right	20	268	54	66
Total	342	920	308	162

Major Street Direction

x	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street Airport Way	Minor Street Woodward Avenue	Warrant Met
Number of Approach Lanes	**1**	**1**	**YES**
Traffic Volume (VPH) *	**1,262**	**308**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Airport Way		Project	Machado Estates
Minor Street	Woodward Avenue		Scenario	EPP
			Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	21	147	176	33
Through	301	505	78	63
Right	20	268	54	66
Total	342	920	308	162

Major Street Direction

x	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	220
Approach with Worst Case Delay	SB
Total Vehicles on Approach	920

Warrant 3A, Peak Hour

	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
EPP	**56.2**	**308**	**1,732**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

Appendix G

Water Supply Assessment

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Lumina at Machado
Water Supply Assessment

PREPARED FOR

City of Manteca

PREPARED BY

WEST YOST
Water. Engineered.

Lumina at Machado
Water Supply Assessment

Prepared for

City of Manteca

Project No. 487-60-20-23

DRAFT

Project Manager: Jim Connell, PE	Date
QA/QC Review: Elizabeth T. Drayer, PE	Date

WEST YOST
Water. Engineered.

PUBLIC REVIEW DRAFT | SEPTEMBER 2021

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LIST OF ACRONYMS AND ABBREVIATIONS

AFY	Acre-feet Per Year
CASGEM	California Statewide Groundwater Elevation Monitoring
CEQA	California Environmental Quality Act
CIMIS	California Irrigation Management Information Service
City	City of Manteca
CMU	Commercial Mixed Use
DU	Dwelling Units
DWR	Department of Water Resources
EIR	Environmental Impact Report
ESJ	Eastern San Joaquin
ESJGB-GMP	Eastern San Joaquin Groundwater Basin Management Plan
ETo	Evapotranspiration
GPCD	Gallons Per Capita Per Day
GPD	Gallons Per Day
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
LDR	Low Density Residential
MDR	Medium Density Residential
MUSD	Manteca Unified School District
NOAA	National Oceanic and Atmospheric Administration
P	Park
P/QP	Public/Quasi-Public
Proposed Project	Lumina Ranch Development Project
SB 610	California Senate Bill 610
SCWSP	South County Water Supply Program
SGMA	Sustainable Groundwater Management Act
SSJID	South San Joaquin Irrigation District
UAFW	Unaccounted-For Water
UR-LDR	Urban Reserve Low Density Residential
UWMP	Urban Water Management Plan
WSA	Water Supply Assessment
WTP	Nick C. DeGroot Water Treatment Plant

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EXECUTIVE SUMMARY

The proposed Lumina at Machado development project (Proposed Project), if approved, would be constructed within the General Plan boundary of the City of Manteca (City). The purpose of this Water Supply Assessment (WSA) is to perform the evaluation required by Water Code sections 10910 through 10915 in connection with the Proposed Project. This WSA is not intended to reserve water, or to function as a "will serve" letter or any other form of commitment to supply water (see Water Code section 10914). The provision of water service will continue to be undertaken in a manner consistent with applicable City policies and procedures, consistent with existing law.

This WSA includes discussion of the projected water demands of the Proposed Project (Section 2), determinations required under applicable regulations (Section 3), the City's water service area (Section 4), the City's projected water demands through the year 2040 (Section 5), and the City's projected water supply sources and reliability through the year 2040 (Section 6). This WSA also documents the plan to ensure that sufficient water supplies will be available to serve the Proposed Project and the other planned development in the City's water service area through the planning period (Section 7). Finally, the water supply assessment approval process (Section 8) is discussed.

The projected potable water demand and supplies documented in this WSA are based on several available documents, including the City's 2015 Urban Water Management Plan (2015 UWMP), the Eastern San Joaquin Groundwater Subbasin Groundwater Sustainability Plan (2019), the South San Joaquin Irrigation District 2020 UWMP (2020), and the draft City of Manteca General Plan Update (2021). Water Code section 10910(c)(4) states that:

> *"…the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses."*

Based on the technical analyses described in this WSA, the total projected water supplies documented to be available for the Proposed Project during Normal, Single Dry and Multiple Dry water years during a 20-year projection are sufficient to meet the projected water demands associated with the Proposed Project, in addition to existing and planned future uses. Documentation of the availability of this water to be allocated to the Proposed Project is provided in this WSA. This analysis has determined that the City's total projected water supplies will meet the above requirement from Water Code section 10910(c)(4), as documented in this WSA.

The following are three major findings that resulted from this effort:

- The projected water demand at buildout of the Proposed Project is approximately 483 acre-feet per year (AFY).
- Water demand within the City's service area is not expected to exceed the City's supplies in any normal year between 2020 and 2045.
- During Single Dry Years, and Multiple Dry Years, the City's total annual water demand is not expected to exceed the City's water supplies from 2020 to 2045.

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SB 221 applies to residential subdivisions of over 500 dwelling units and requires that the water supplier provide a written verification that the water supply for the project is sufficient, prior to issuance of the final permits. Because the Proposed Project includes 827 residential dwelling units, it is subject to the requirements of SB 221 (Government Code section 66473.7) and a verification of sufficient water supply (SB 221) report will be required prior to final approvals.

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1.0 INTRODUCTION

The Proposed Project, if approved, would be constructed in the southeast portion of the City of Manteca General Plan boundary. The purpose of this WSA is to perform the evaluation required by Water Code sections 10910 through 10915 in connection with the Proposed Project. Key topics covered in this introduction include:

- Legal Requirements for the WSA
- Need for and Purpose of WSA
- Water Supply Assessment Preparation, Format and Organization

1.1 Legal Requirements for the Water Supply Assessment

California Senate Bill 610 (SB 610) and Senate Bill 221 (SB 221) amended state law, effective January 1, 2002, to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 and SB 221 were companion measures that sought to promote more collaborative planning between local water suppliers and cities and counties. Both statutes require that detailed information regarding water availability be provided to the city and county decision-makers prior to approval of large development projects. The purpose of providing such information is to ensure that prudent water supply planning has been conducted, and that planned water supplies are adequate to meet existing demands, anticipated demands from approved projects, and the demands of proposed projects.

SB 610 amended California Water Code sections 10910 through 10915 to require agencies responsible for land use decisions:

- To identify the public water purveyor(s) that may supply water for a proposed development project; and
- To request a WSA from the identified water purveyor(s).

The City is the identified water purveyor for the Proposed Project. The purpose of the WSA is to demonstrate the sufficiency of the purveyor's water supplies to satisfy the water demands of the Proposed Project, while still meeting the water purveyor's obligations with regard to existing and planned future uses. Water Code sections 10910 through 10915 delineate the specific information that must be included in the WSA.

SB 221 amended State law (California Government Code section 66473.7) to require that approval by a city or county of certain residential subdivisions[1] requires an affirmative written verification of sufficient water supply. SB 221 was intended as a fail-safe mechanism to ensure that collaboration on finding the needed water supplies to serve a new large residential subdivision occurs before construction begins.

[1] Per Government Code Section 66473.7(a)(1) subdivision means a proposed residential development of more than 500 dwelling units.

1.2 Need for and Purpose of Water Supply Assessment

The purpose of this WSA is to perform the evaluation required by Water Code Sections 10910 through 10915 (SB 610) in connection with the Proposed Project. This WSA is not intended to reserve water, or to function as a "will serve" letter or any other form of commitment to supply water (see Water Code section 10914), nor is it intended to meet the requirements of SB 221. The provision of water service will continue to be undertaken in a manner consistent with applicable City policies and procedures, consistent with existing law.

1.3 Water Supply Assessment Preparation, Format and Organization

The format of this WSA is intended to clearly delineate compliance with the specific requirements for a WSA, per Water Code sections 10910 through 10915. This WSA includes the following sections:

- Section 1: Introduction
- Section 2: Description of Proposed Project
- Section 3: Required SB 610 Determinations
- Section 4: City of Manteca Water Service Area
- Section 5: City of Manteca Water Demands
- Section 6: City of Manteca Water Supplies
- Section 7: Determination of Water Supply Sufficiency Based on the Requirements of SB 610
- Section 8: Water Supply Assessment Approval Process
- Section 9: References

Relevant citations of Water Code sections 10910 through 10915 are included throughout this WSA to demonstrate compliance with the specific requirements of SB 610.

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2.0 DESCRIPTION OF PROPOSED PROJECT

A general description of the Proposed Project location, proposed land uses, projected water demand, and proposed water supply is provided below.

2.1 Proposed Project Location

The Proposed Project site is located in the southwestern portion of the City of Manteca directly adjacent to City limits. The Project site is immediately southwest of the intersection of Airport Way and Woodward Avenue. The Project site is bounded on the north by Woodward Avenue, on the east by Airport Way, on the south by an existing Reclamation District #2094 (RD2094) dry levee and existing agricultural fields, and on the west by the existing Terra Ranch Subdivision. The Project site is located within Section 12 of Township 2 South, Range 6 East Mount Diablo Base and Meridian (MDBM).

2.2 Proposed Land Uses

The Project site is 183.4 acres within 16 Assessor parcels (APNs). This includes the Development Area (157.53-acre parcel, APN 241-32-018), Non-development Area 1 (an inhabited annexation of 6 parcels on 6 acres), Non-development Area 2 (an inhabited annexation of 9 parcels on 13.11 acres), and the Right-of-Way Annexation Area (6.82 acres of existing County right-of-way).

Land uses for the Proposed Project are summarized in Table 2-1, and the location of these land uses is shown on Figure 2-2.

Table 2-1. Proposed Land Uses for the Proposed Project

Proposed Land Use	Approximate Area, acres	Average Dwelling Units per Acre	Number of Dwelling Units
Single Family Residential	146.6	5.1	827
Park	10.9		
Non-Development Area	19.1		
Right-of-Way	6.82		
Total	**183.4**		**827**

Source: City of Manteca. Notice of Preparation of an Environmental Impact Report (EIR) for the Proposed Lumina at Machado Project. January 2021.

The Development Area is designated as Low Density Residential (LDR, 2.1 to 8 du/ac) with a Park designation under the current General Plan. The Draft General Plan Update currently being prepared by the City shows the same land use designation for this area when compared to the existing General Plan.

Non-development Area 1 is designated Low Density Residential (LDR, 2.1 to 8 du/ac) under the current General Plan. The General Plan Update shows the same land use designation for this area when compared to the existing General Plan. There are six existing dwelling units in Non-development Area 1.

Non-development Area 2 is designated Commercial Mixed Use (CMU), Neighborhood Commercial (NC), and General Commercial (GC) under the current General Plan. There are three existing dwelling units in Non-development Area 2. The General Plan Update includes some modifications to the land uses in this area. The Neighborhood Commercial designation was eliminated as a land use category in the General Plan Update, and General Commercial (GC) was changed to Commercial (C). In the General Plan Update the parcel currently designated as NC is changed to C, five parcels that were CMU changed to C, and two parcels remained CMU.

2.3 Adjusted City Water Demand Factors

Unit water use factors for projecting water demand based on the proposed future land uses within the City's General Plan were developed as part of the City of Manteca 2005 Water Master Plan. These unit water use factors assume a per capita water use of approximately 225 gallons per capita per day (GPCD) and do not account for conservation goals, water recycling and other possible conservation-derived sources. In the City's 2015 Urban Water Management Plan (UWMP), water demand projections assume that the City is able to meet its SB X7-7 2020 per capita water use target of 179 GPCD. Therefore, to reflect the City's 2020 conservation goals, the water use factor for LDR was reduced by 20 percent, corresponding to the overall per capita water use reduction from 225 GPCD to 179 GPCD. The water use factors for Parks were reduced by 10 percent to correspond with the climate data discussed in Section 4 of this WSA.

The unit water use-factors for the land use designations applicable to the Proposed Project are summarized in Table 2-2.

Table 2-2. Water Use Factors by Land Use Type

Land Use Designation	Water Use Factor, gallons per day (gpd) per acre	
	2005 Water Master Plan[a]	Adjusted for SB X7-7[b]
Low Density Residential	2,800	2,240
Park	4,000	3,600

(a) Based on unit water demand factors established in the City of Manteca 2005 Water Master Plan. These factors assume a per capita water use of approximately 225 GPCD and do not account for conservation measures.
(b) Based on a 20 percent reduction of factors shown in the City of Manteca 2005 Water Master Plan. These factors assume that the City is able to meet its 2020 per capita water use target of 179 GPCD.

Potable water losses documented in the City's 2015 UWMP were calculated using a historical loss estimate of 12 percent of potable demands. It is anticipated that the implementation of advanced metering infrastructure (AMI) by 2018 will reduce losses to 8 percent by 2020, 7 percent by 2025, 6 percent by 2030, and 5 percent thereafter. Because the Proposed Project is anticipated to have AMI, this WSA assumes that unaccounted-for-water (UAFW) will be 6 percent of the Project's potable demands.

2.4 Projected Buildout Water Demand of Proposed Project

Based on the water use factors shown in Table 2-2 and a UAFW of 6 percent, the projected water demand at buildout of the Proposed Project is approximately 483 AFY, as shown in Table 2-3.

The Proposed Project does not intend to use recycled water at this time. The City currently uses undisinfected secondary effluent to irrigate fodder crops in the land adjacent to the City's wastewater treatment plant. Tertiary treated recycled water is used for dust control at construction sites and for irrigation at the Great Wolf Lodge. Although a Recycled Water Master Plan is being prepared with the intent that the City would use recycled water to offset potable water demands for outdoor uses in the future, recycled water infrastructure is not planned to be constructed in time to serve the buildout of the Proposed Project. Therefore, recycled water supplies are not assumed for use at the Proposed Project in this WSA.

Except for the nine existing dwelling units in the Non-development areas that will be connected to the City's potable water system, this WSA does not include the water demand for the remainder of the Non-development Areas since it is part of a separate future project. The Non-development Areas are proposed for annexation. Although there is no new water demand, the residences will shift water supply source from an existing private well to City water.

Table 2-3. Projected Water Demand for Buildout of the Proposed Project

Land Use Designation	Gross Area, acres	Dwelling Units, DU	Water Use Factor		Potable Water Demand, AFY
Low Density Residential	146.6	827	439[a]	gpd/DU	406.9
Non-Development Areas	19.1	9	439[b]	gpd/DU	4.4
Park	10.9		3,600	gpd/acre	44.0
Subtotal	**176.6**	**836**			**455.3**
UAFW[c]					27.3
Total Demand					**482.6**

(a) Based on LDR water use factor of 2,240 gpd/acre and an average density of 5.1 du/acre.

(b) Density of existing residences is unknown, so the water use factor from the proposed Low Density Residential is used. Future development of remaining area is not part of this Project.

(c) Based on 6 percent of project water demands.

2.5 Projected Water Supply for Proposed Project

Water demands for the Proposed Project will be served using the City's existing and future portfolio of water supplies. The inclusion of existing and planned future supplies is specifically allowed by the Water Code:

> *Water Code section 10631(b): Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

Proponents of the Proposed Project will provide their proportionate share of required funding to the City for the acquisition and delivery of treated potable water supplies to the Proposed Project area. Figure 2-1 shows the Proposed Project Vicinity and Figure 2-2 shows the proposed land use.

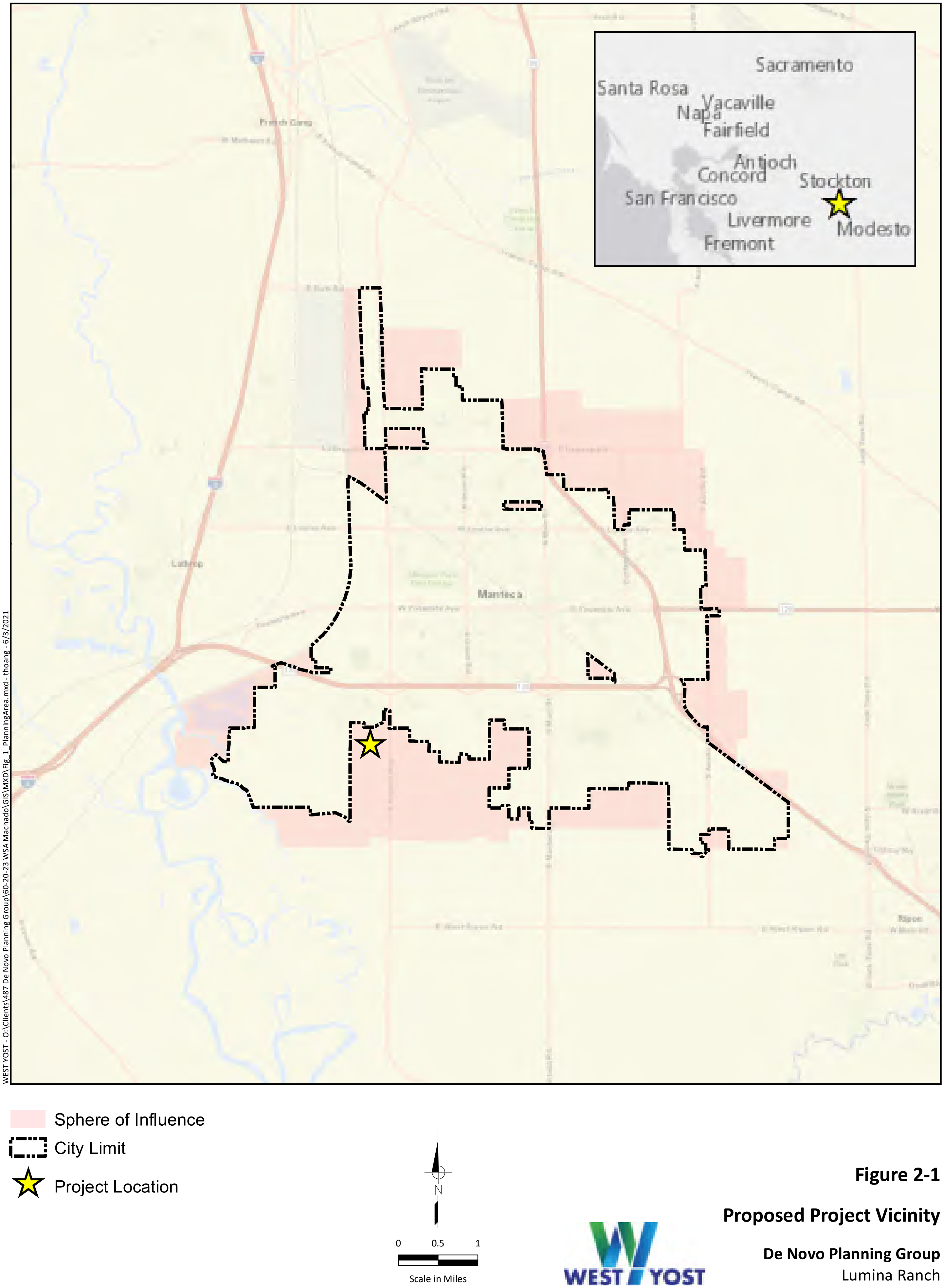

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Figure 2-1

Proposed Project Vicinity

De Novo Planning Group

Lumina Ranch

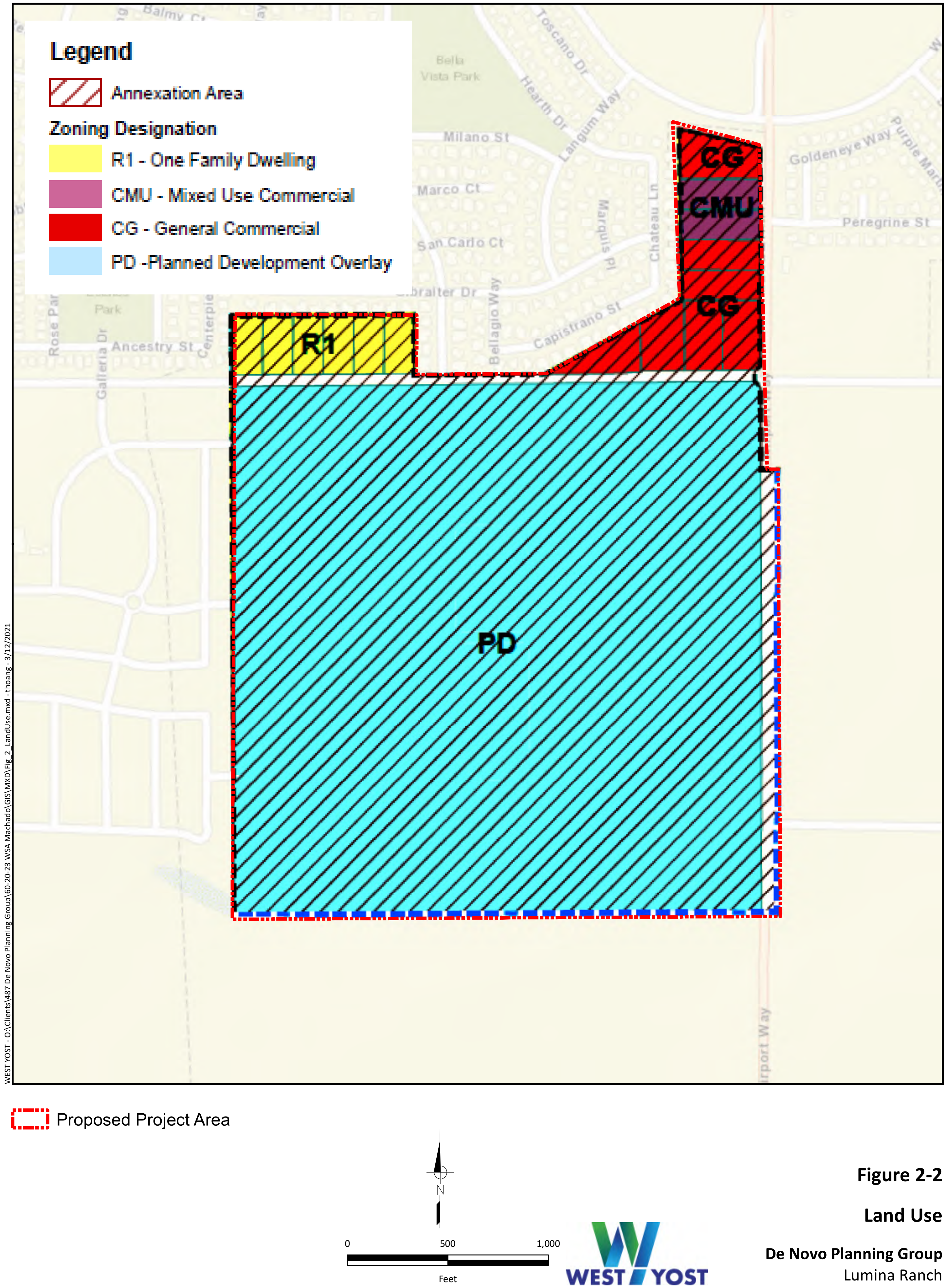

Figure 2-2

Land Use

De Novo Planning Group
Lumina Ranch

3.0 REQUIRED SB 610 DETERMINATIONS

The following determinations must be made, pursuant to SB 610.

3.1 Does SB 610 Apply to the Proposed Project?

Water Code sections 10910 and 10912 state:

> *10910 (a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.*
>
> *10912 (a) "Project" means any of the following:*
>
> *(1) A proposed residential development of more than 500 dwelling units.*
>
> *(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.*
>
> *(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.*
>
> *(4) A proposed hotel or motel, or both, having more than 500 rooms.*
>
> *(5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.*
>
> *(6) A mixed-use project that includes one or more of the projects specified in this subdivision.*
>
> *(7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project.*

Based on the following assumptions, SB 610 does apply to the Proposed Project.

- The Proposed Project is subject to California Environmental Quality Act (CEQA) and an Environmental Impact Report (EIR) is required.
- The Proposed Project, with its proposed 827 residential dwelling units, and other non-residential land uses, meets the definition of a "Project" as specified in Water Code section 10912(a) paragraph (1) as defined for residential development (see above).

The Proposed Project has not been the subject of a previously adopted WSA and has not been included in an adopted WSA for a larger project. Therefore, according to Water Code section 10910(a), a WSA is required for the Proposed Project. The Proposed Project is included in the General Plan Water Supply Report.

3.2 Does SB 221 Apply to the Proposed Project?

In 2001, SB 221 amended State law to require that approval by a city or county of certain residential subdivisions requires an affirmative written verification of sufficient water supply. Per California Government Code section 66473.7(a)(1), a subdivision means a proposed residential development of more than 500 dwelling units. The Proposed Project, with its proposed 827 residential dwelling units, is therefore subject to the requirements of SB 221. A verification of sufficient water supply (SB 221) report will be required prior to final approvals.

3.3 Who is the Identified Public Water System?

Water Code sections 10910 and 10912 states:

10910(b) The city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project subject to the California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources Code, shall identify any water system that is, or may become as a result of supplying water to the project identified pursuant to this subdivision, a public water system, as defined by Section 10912, that may supply water for the project.

10912 (c) "Public water system" means a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections…

The Proposed Project area is within the City's Sphere of Influence (SOI). Therefore, the City is the identified public water system for the Proposed Project.

3.4 Does the City have an adopted UWMP and does the UWMP include the projected water demand for the Proposed Project?

Water Code section 10910 states:

10910(c)(1) The city or county, at the time it makes the determination required under Section 21080.1 of the Public Resources Code, shall request each public water system identified pursuant to subdivision (b) to determine whether the projected water demand associated with a proposed project was included as part of the most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610).

The City's 2015 UWMP is incorporated by reference into this WSA. The City's existing potable and raw water demand is 16,253 AFY[2], which may be greater than normal due to stay-at-home orders and mandated closure of non-essential businesses in response to the pandemic. West Yost estimated the City's projected water demand for the future land use areas of the General Plan Update.

According to the General Plan Update, the Proposed Project is located within the City's SOI. The Proposed Project is included in the General Plan Water Supply Report demand projections.

The City's ability to meet the projected water demands for the Proposed Project is described in Section 7.0 of this WSA.

[2] Provided by City. July 2021.

4.0 CITY OF MANTECA WATER SERVICE AREA

This section presents the City's water service area including history and growth information for the City.

4.1 City of Manteca Water Service Area

The City is located in the flat plain at the northern end of California's San Joaquin Valley in south San Joaquin County. The City is located approximately 10 miles south of Stockton and 15 miles north of Modesto. Rich agricultural lands abut Manteca on the north, east, and south, while areas to the west are used primarily for industry. The Southern Pacific Railroad cuts the City diagonally from southeast to northwest. State Highway 120 crosses the southern portion of the City and provides a connection between Interstate 5, located about four miles to the west of the City, and Highway 99 along the eastern boundary of the City. This location creates a good setting for Bay Area commuter housing, as well as new commercial and industrial locations.

The City's water service planning area corresponds with the City SOI established in the City's 2023 General Plan. The 2023 General Plan includes a designation of area planned to be developed by 2023. The City's current water distribution service area coincides with the City limits. It is assumed that the City's water distribution system will extend to areas within the SOI beyond the existing City limits as those areas are approved for development and annexed into the City.

Presently, the City limits encompass an area of about 13,746 acres. The total existing developed land is made up of approximately 64 percent residential land uses, 18 percent commercial, industrial, and institutional land uses, and 18 percent agriculture, parks, landscape, and other land uses. Water demands not served by the City (e.g., agriculture, schools) rely on private groundwater wells and the South San Joaquin Irrigation District (SSJID) groundwater for their supply.

4.2 Current and Projected Population

Between 1980 and 2020 the City experienced an average annual population growth rate of 3.1 percent, from 24,925 persons in 1980 to 84,800 persons in 2020. During this period, peak population growth occurred between 1980 and 1990 with an average growth rate of over 5 percent. Recent population growth since 2010 has averaged about 2.4 percent per year.

By comparison, the City's boundary area has grown from about 6,300 acres in 1990 to about 13,400 acres in 2015, an annual average area growth rate of about 3.1 percent. The greatest growth in area occurred between 1990 and 2000. Since 2000, the City's area has grown about 1.8 percent per year.

For purposes of this WSA, the City elected to use the 1980-2020 average annual population growth rate of 3.1 percent to project the population of the water service area through 2045. It is assumed that this population growth includes population acquired through City annexations of the surrounding area, as well as City infill development. The current and projected water service area populations for the City are

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summarized in Table 4-1. According to California Department of Finance, the City's population in 2020 was 84,800[3].

Table 4-1. Historical and Projected Population for City of Manteca Water Service Area

Calendar Year	Estimated Population[(b)]
2020[(a)]	84,800
2025	98,833
2030	115,187
2035	134,248
2040	156,463
2045	182,354

(a) According to California Department of Finance, the City's 2020 population is estimated at 84,800.
(b) Population projected at the 1980-2020 average growth rate of 3.1%.

4.3 Climate

Climate and precipitation information are described in the City's 2015 UWMP. The City experiences hot summer temperatures with many days over 100°F during July and August. Nighttime temperatures during July and August drop into the fifties. The winter temperatures are much colder, with daytime highs in the forties and fifties. Winter lows are in the thirties and forties. Overnight freezes are infrequent. Spring and fall provide moderate temperature ranges. The mean annual precipitation is 14 inches.

Monthly climate data is provided in Figure 4-1. The evapotranspiration (ETo) data in Table 4-2 was obtained from the California Irrigation Management Information Service (CIMIS) for Station 70-Manteca in the San Joaquin Region. Rainfall and temperature data were obtained by City staff from the National Oceanic and Atmospheric Administration (NOAA) website.

As indicated by the data in Table 4-2, a greater quantity of water is evaporated during May through August in correlation to high temperatures and low humidity, which results in high water demand for landscape irrigation.

[3] California Department of Finance. Cities, Counties, and the State Population Estimates with Annual Percent Change. January 2021

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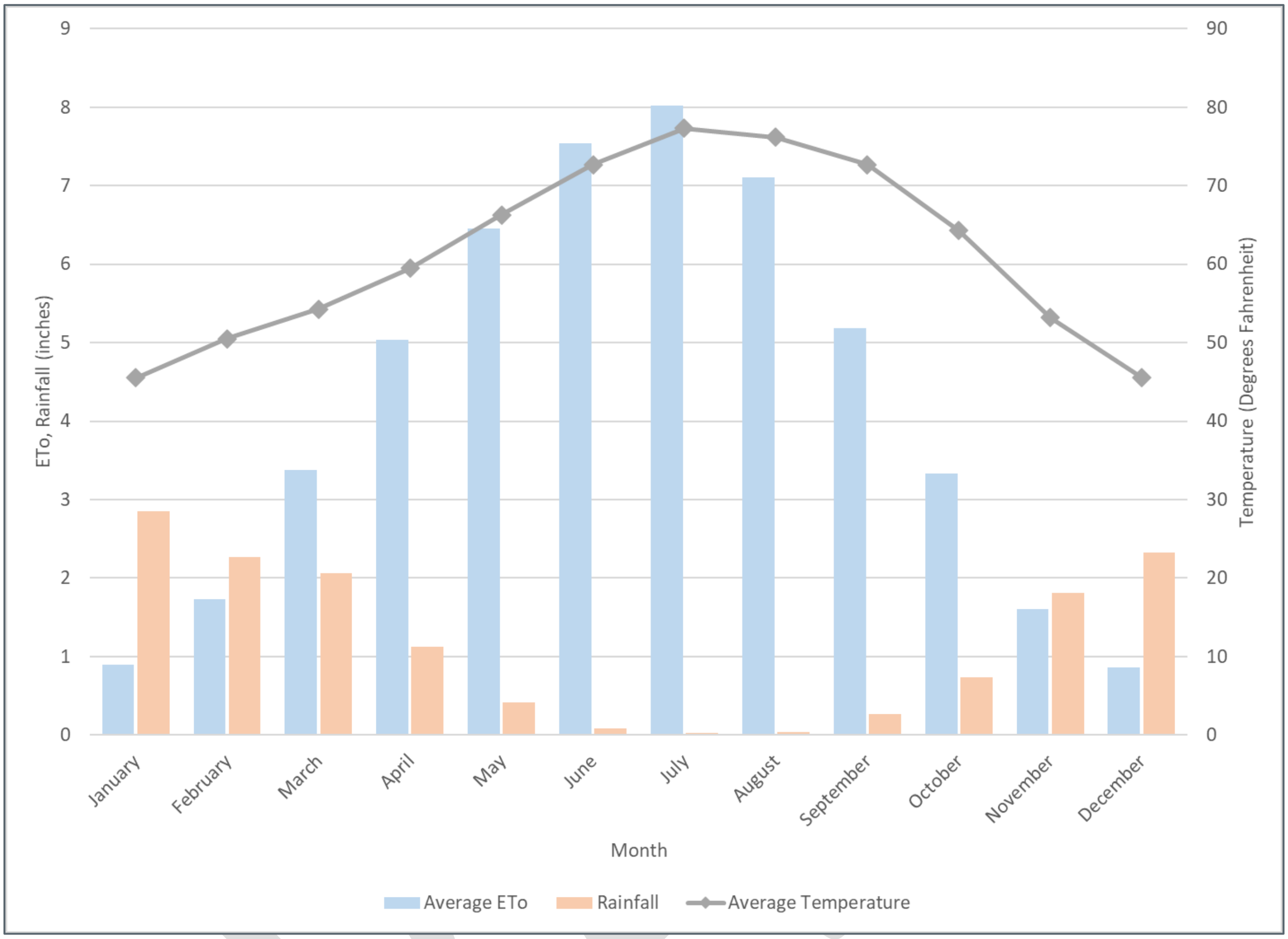

Source: California Department of Water Resources, California Irrigation Management Information System, Station 70, November 1987 – 2015. Rainfall and temperature data were obtained by City staff from the NOAA website.

Figure 4-1. City of Manteca Average Monthly Climate Data

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5.0 CITY OF MANTECA WATER DEMANDS

Water Code section 10910 states:

> *10910(c)(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g).*

As indicated in Section 3, the water demand for the Proposed Project was included in the City of Manteca General Plan Update Water Supply Report, attached as Appendix A. The Water Supply Report has been updated to reflect the current (September 2021) understanding of the City's General Plan Update. The General Plan Update land use is being updated and a revised version of the Water Supply Report will be provided in the coming months as that land use data are evaluated.

The following topics are covered in this section:

- Existing and Projected Water Demand
- Dry Year Water Demand

5.1 Existing and Projected Water Demand

City potable and raw water demand in 2020 was approximately 16,253 AF, which may have been caused by a higher daytime population than normal due to stay-at-home orders and mandated closure of non-essential businesses in response to the COVID-19 pandemic.

The projected water demand for future land use area for the buildout of the General Plan areas, which includes the Proposed Project in the City's General Plan Update, was calculated by multiplying the projected land uses by the unit water demand factor. The resulting water demand projection was 17,971 AFY.

Therefore, the projected potable and raw water demand at buildout of the General Plan is 34,224 AFY (16,253 AFY existing plus 17,971 AFY projected). Buildout of the General Plan planning area is projected to occur shortly before 2050.

The City's existing and projected potable and raw water demand is shown in Table 5-1. The 2020 data reflect actual 2020 demand. The projected water demands shown in Table 5-1 will be used throughout this WSA.

Table 5-1. City of Manteca Existing and Projected Total Water Demand in Normal Years, AFY

	2020, Current	2025	2030	2035	2040	2045
Total Water Demand	16,253	18,480	21,012	23,891	27,164	30,885

Sources: 2020 Water demand per City of Manteca, projected growth from City of Manteca General Plan Water Supply Report. September 2021.

The City's projected water demand at buildout (based on existing water demand and buildout of the General Plan Update, and the projected water demand of the Proposed Project) is summarized in Table 5-2. The City's preliminary water demand projections for future developments with approved water supply, as of March 2021, have been updated by West Yost to be based on water use factors that were adjusted for SB X7-7 (see Table 2-2). These revised demand projections for future developments within the City are included in Appendix A of this WSA.

Table 5-2. City of Manteca Projected Buildout Water Demand, AFY

	Total
Existing 2020 Water Demand	16,253
2040 General Plan Horizon Water Demand[1]	10,911
2045 Water Demand[2]	3,721
Buildout of General Plan[3]	3,339
Total Water Demand[4]	**34,224**

Notes: [1]2040 General Plan Horizon Water Demand represents incremental increase in water demand beyond existing demand.
[2] 2045 Water Demand represents incremental increase in water demand beyond existing and 2040 General Plan demand.
[3] General Plan Buildout represents incremental increase in water demand beyond the existing, 2040 General Plan, and 2045 water demand.
Sources: 2020 Water demand per City of Manteca, projected growth from West Yost, City of Manteca General Plan Water Supply Report. September 2021.

5.2 Dry Year Water Demand

The City currently has a water conservation program in place, as described in Chapter 8 of the City's 2015 UWMP. The City's Water Shortage Contingency Plan includes a five-stage plan describing water conservation measures to reduce water demand by up to 50 percent in the event of a water supply shortage or emergency. The water shortage stages, and their respective anticipated reduction in potable water demand, are shown in Table 5-3.

Table 5-3. Water Shortage Contingency Plan Projected Demand Reduction

Stage	Percent Supply Reduction
I	Up to 10 percent
II	11 – 20 percent
III	21 – 30 percent
IV	31 – 40 percent
V	41 – 50 percent

Source: City of Manteca 2015 UWMP, Table 8-1 Stages of WSCP

When comparing potable water supply to demand in the City's 2015 UWMP and in this WSA, the dry year water demands are assumed to not include implementation of the City's Water Shortage Contingency Plan. This is a conservative assumption as additional water conservation will likely occur as a result of the City's implementation of its Water Shortage Contingency Plan in response to dry years or other water supply shortages. Table 5-4 presents the projected future dry year potable water demand.

Table 5-4. Projected Future Dry Year Potable and Raw Water Demand

Hydrologic Condition	Demand Reduction[(a)]	2020	2025	2030	2035	2040	2045
Single Dry Year, AFY	0	16,253	18,480	21,012	23,891	27,164	30,885
Multiple Dry Year 1	0	16,253	18,480	21,012	23,891	27,164	30,885
Multiple Dry Year 2	0	16,253	18,480	21,012	23,891	27,164	30,885
Multiple Dry Year 3	0	16,253	18,480	21,012	23,891	27,164	30,885
Multiple Dry Year 4	0	16,253	18,480	21,012	23,891	27,164	30,885
Multiple Dry Year 5	0	16,253	18,480	21,012	23,891	27,164	30,885

(a) Conservatively assumes no demand reduction in dry years.

6.0 CITY OF MANTECA WATER SUPPLIES

Key topics addressed in this section include:

- Regulatory Background
- City's Surface Water Supply
- City's Groundwater Supply
- City's Potable Water Supply Availability and Reliability

6.1 Regulatory Background

Water Code section 10910 states:

10910(c)(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f) and (g).

10910(d)(1) The assessment required by this section shall include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts.

10910(d)(2) An identification of existing water supply entitlements, water rights, or water service contracts held by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall be demonstrated by providing information related to all of the following:

(A) Written contracts or other proof of entitlement to an identified water supply.

(B) Copies of a capital outlay program for financing the delivery of a water supply that has been adopted by the public water system.

(C) Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.

(D) Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.

10910(e) If no water has been received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts, the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall also include in its water supply assessment pursuant to subdivision (c), an identification of the other public water systems or water service contract-holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has identified as a source of water supply within its water supply assessments.

It is anticipated that water supply for the Proposed Project would be local groundwater and treated surface water from SSJID's South County Water Supply Program (SCWSP).

Proponents of the Proposed Project will provide their proportionate share of required funding to the City for the acquisition and delivery of treated potable water supplies to the Proposed Project area through connection fees and other means. This arrangement will be outlined within the Conditions of Approval between the project applicant and the City. The Conditions of Approval will be completed as part of the City's formal land use actions.

The summaries of the City's water supplies provided below have been taken, for the most part, from the City's 2015 Urban Water Management Plan (2015 UWMP), South San Joaquin Irrigation District 2020 UWMP (2020), and the Eastern San Joaquin Groundwater Subbasin Groundwater Sustainability Plan (2019).

6.2 Surface Water Supply

The principal component of future water supply for the City is deliveries from the SCWSP. The City, along with three other cities/retail water suppliers (Escalon, Lathrop, and Tracy), signed water supply agreements with SSJID to supply treated potable water to the participating cities.

The Nick C. DeGroot Water Treatment Plant (WTP) is commissioned for the SCWSP and is currently operated by SSJID. The WTP has a total Phase 1 capacity of 31,522 AFY and the Phase 2 capacity is anticipated to be 43,090 AFY. Phase 2 has not yet been implemented but is expected by 2040, according to the SSJID 2020 UWMP. Currently, the City is allotted 11,500 AFY under Phase 1 and 18,500 AFY under Phase 2. The term of the City's water supply agreement with SSJID is through December 2029. The City and SSJID signed a new contract to extend this contract through 2049. Historically, the City has not utilized its full allocation of surface water due to system constraints and State and SSJID supply limits in response to the drought conditions.

6.3 Groundwater Supply

Water Code section 10910 states:

10910(f) If a water supply for a proposed project includes groundwater, the following additional information shall be included in the water supply assessment.

10910(f)(1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.

10910(f)(2) A description of any groundwater basin or basins from which the proposed project will be supplied. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of *groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as over drafted or has projected that the basin will become over drafted if present management conditions continue, in the most current bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long term overdraft condition.*

10910(f)(3) A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historical use records.

A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historical use records.

10910(f)(4) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project.

A water assessment shall not be required to include the information required by this paragraph if the public water system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected water demand associated with the project was addressed in the description and analysis required by paragraph (4) of subdivision (b) of Section 10631.

The local groundwater basin and City groundwater use are described in the City's 2015 UWMP. A summary of the groundwater basin and historical and projected groundwater pumping are provided below.

6.3.1.1 Basin Description

The City's wells are located in the Eastern San Joaquin (ESJ) Subbasin, which is a subbasin of the San Joaquin Valley Groundwater Basin. The groundwater aquifers underlying the City have been identified to include four geologic formations. In increasing depth from the surface, the identified aquifers are Victor Formation, Laguna Formation, Mehrten Formation, and Valley Springs Formation. Due to the alluvial generation of these aquifers, there is significant variation in grain size, with lenses and strata of high yield gravel, permeable sandy material and lower permeability clays. In general, the strata slope from the hills east of the City downward to the west, providing good recharge from hill runoff as well as from the Stanislaus River. The City's wells primarily withdraw water from the Laguna and Victor Formations.

The basin is not adjudicated; however, a basin management plan has been created. The Eastern San Joaquin Groundwater Basin Groundwater Management Plan (ESJGB-GMP) (NSJCGB, 2004) was prepared in September 2004. According to Department of Water Resources (DWR) Bulletin 118 (DWR, 2006), the ESJ Subbasin is in a critical condition of overdraft[4]. Groundwater levels have been historically declining at an average rate of 1.7 feet per year. Groundwater overdraft in the overall basin and the City's

[4] The Eastern San Joaquin County Groundwater Subbasin was confirmed to be in critical condition of overdraft in the DWR Bulletin 118 Interim Update 2016.

groundwater withdrawal rate is of vital concern to the City as this poses a long-term risk to the reliability of the groundwater supply.

In 2014, the Sustainable Groundwater Management Act (SGMA) was signed into law to provide a framework for management of groundwater supplies by local agencies and restricts state intervention, if required. SGMA provides an opportunity for local agencies overlying the basin to form a Groundwater Sustainability Agency (GSA), which is the primary agency responsible for achieving sustainability. As part of the region's compliance with SGMA, the Eastern San Joaquin Groundwater Authority was formed in 2017, and includes representatives from Calaveras County Water District / Stanislaus County, California Water Service Company, Central Delta Water Agency, Central San Joaquin Water Conservation District, City of Lathrop, City of Lodi, City of Manteca, City of Stockton, Linden County Water District, Lockeford Community Services District, North San Joaquin Water Conservation District, Oakdale Irrigation District, San Joaquin County, South Delta Water Agency, South San Joaquin Groundwater Sustainability Agency, Stockton East Water District, and the Woodbridge Irrigation District GSA. This GSA adopted a Groundwater Sustainability Plan (GSP) in late 2019, because the Eastern San Joaquin Groundwater Subbasin has been identified as being in a state of critical overdraft and is considered a high priority. Two projects for the City that were identified in the GSP are the implementation of AMI, mentioned above, and the transfer of recycled water to agricultural uses to offset groundwater pumping.

6.3.1.2 Groundwater Production

The sustainable yield of the groundwater basin was estimated in the 2019 GSP[5] to be approximately 1 acre-foot per acre per year (715,000 AFY plus or minus 10 percent over the subbasin area of 1,195 square miles, an average of 0.935 AF/acre). In 2005, the City began receiving treated surface water from SCWSP and the City has had limited groundwater pumping since the implementation of the SCWSP. Although groundwater pumping in some years prior to 2005 has exceeded that rate, as part of the SCWSP, the City intends to limit groundwater pumping to that rate or less. Projected groundwater availability is therefore based on an assumption that up to 1 AFY of groundwater is available per acre of City service area.

The total groundwater pumping that occurs within the City boundaries include City-owned municipal wells and City-owned park irrigation wells, in addition to irrigation and domestic wells owned and operated by others. This section provides a summary of the estimated groundwater pumping that occurs within the current City limits and planning area. According to the City's 2015 UWMP, groundwater pumping data collection is on-going and there are potentially many groundwater pumping wells that are unmetered and unidentified.

6.3.1.2.1 City-Produced Groundwater

The City currently (2021) owns and operates 17 potable water wells and 31 irrigation wells. The City's annual potable groundwater production has steadily increased historically, reaching a peak of 14,900 acre-feet (AF) in 2004. Commissioning of the surface water treatment plant in 2005 decreased groundwater use considerably and currently supplies an average of 52 percent of the City's annual potable water supply. Since 2005, the City has constructed dedicated irrigation wells at many parks in an effort to reduce potable demand, which requires wellhead treatment at many wells for arsenic and other constituents to meet drinking water standards. In 2000, the City pumped about 1.2 AFY/acre, but has since decreased pumping to about 0.7 AFY/acre in 2010 and to about 0.5 AFY/acre in 2015. When the City

[5] "Eastern San Joaquin County Groundwater Subbasin. Groundwater Sustainability Plan." Eastern San Joaquin Groundwater Authority, November 2019.

annexes new areas, the safe yield remains unchanged; however, the volume of available groundwater increases with the annexation of land into the City. However, the 1 AFY/acre does not provide sufficient water supply for most projects.

6.3.1.2.2 Pumping by Others

Because there are numerous wells not owned by the City that are drawing from the ESJ Subbasin, this pumping could affect the amount of groundwater available to the City within the groundwater basin safe yield. Wells currently in operation not owned by the City include private domestic wells, agricultural wells, wells for school irrigation owned by the Manteca Unified School District (MUSD), and irrigation wells owned by SSJID, among others. Well completion reports obtained from DWR suggest that approximately 1,000 water wells have been constructed within the General Plan area since record keeping began in the 1960s; however, many may not have been registered as abandoned. It is anticipated that most domestic wells are no longer in use, though further investigation would be needed to verify this assumption.

It is known that MUSD and others own and operate wells within the City and its planning area. It is also assumed that pumping by MUSD and other known pumpers within the City and its planning area should be included in the groundwater safe yield accounting for purposes of this evaluation. Groundwater pumping by others may also be included in future updates of this initial estimate.

Metered pumping records for MUSD have not been provided. The MUSD is assumed to irrigate 25 percent of its parcels at 4 AFY/acre. According to the City's 2015 UWMP, the groundwater pumping from other ESJ entities were estimated as follows:

- Given that the MUSD has approximately 500 total acres, the total annual water use is estimated at approximately 500 AFY.
- According to SSJID pumping records for 2010 through 2015, an average of 4,860 AFY groundwater was pumped from SSJID-leased wells. Of this, an average of 2,860 AFY was pumped within the City of Manteca and the City's Planning Area. Therefore, groundwater pumping from SSJID-leased wells is projected to be 2,860 AFY.
- Other known industrial groundwater pumpers include Eckerts Cold Storage. The City treats over 130 AF of wastewater produced by Eckerts each year. Based upon this average, groundwater pumping is estimated at 150 AFY assuming a return-to-sewer ratio of approximately 85 percent.

6.3.1.3 Historical Groundwater Pumping

Historically, the City extracted groundwater at a rate as high as 1.6 AFY/acre, based on the developed City area. As discussed previously, the SCWSP allowed the City to reduce local groundwater extraction to less than the estimated basin safe yield of 1 AFY/acre.

Since 2006, after the commissioning of the SCWSP, the total groundwater pumping for the City of Manteca has ranged from 8,062 AFY to 10,374 AFY averaging about 8,700 AFY. Pumping amounts were generally consistent over the years 2011 to 2015, with a decrease in 2014 and 2015, likely attributable to statewide mandatory demand reduction regulations. With this exception, there were no limitations or challenges for obtaining groundwater during the last 5 years, and the available groundwater quantity was sufficient. Groundwater pumping by City wells from 2011 to 2015 is summarized in Table 6-1.

Table 6-1. Historical Groundwater Production

	2011	2012	2013	2014	2015
Groundwater Supply, AFY	9,156	10,374	9,922	6,546	7,249

Source: City of Manteca 2015 UWMP, Table 6-2*Groundwater Volume Pumped*

6.4 Potable Water Supply Availability and Reliability

The City's surface water and groundwater supply reliability as described in the City's 2015 UWMP is summarized below.

6.4.1 Surface Water Reliability

SSJID has existing agreements to provide surface water to agricultural interests, federal and state agencies, and cities in the south San Joaquin area. Some of these agreements are long-term, while others are as short as one week for agricultural deliveries.

Surface water reliability is in part reliant on storage and releases from upstream dams along the Stanislaus River with respect to the Nick C. DeGroot WTP intake location. While SSJID has surface water rights to approximately 600,000 AFY jointly held with the Oakdale Irrigation District (OID), the full allocation to SSJID and OID is subject to runoff from the Stanislaus River and other constraints per the 1988 Stipulation and Agreement with the U.S. Bureau of Reclamation that constructed and operates New Melones Reservoir on the Stanislaus River.

According to the 1988 Agreement, SSJID is entitled to 300,000 AFY during normal water years, however drought conditions and seasonal variations have the potential to reduce the allocation to SSJID and the contracted cities it delivers water to, including the City. The New Melones Reservoir inflow has a direct effect on surface water availability to SSJID. The following equation governs water supply availability to SSJID when inflows are less than 600,000 AF:

New Melones Inflow + [(600,000 - New Melones Inflow) / 3]

Currently, SSJID is expected to provide total supplies (including irrigation and potable) ranging from 225,000 AFY to 300,000 AFY, though the lowest supply on record was 225,000 AF in both 2014 and 2015 (2015 UWMP). In the event that shortages do occur, SSJID and OID share the deficiencies equally.

As mentioned in Section 6.2, the City is allotted 11,500 AFY from SSJID under Phase 1 and a total of 18,500 AFY under Phase 2. It is anticipated that SJJID will implement Phase 2 of the SCWSP by 2040, providing an additional 7,000 AFY in surface water supply to the City.

6.4.1.1 Reliability of SCWSP Deliveries

Under single year and multiple year dry period scenarios, deliveries to the City by SSJID could be reduced. The availability and reliability of the City's SCWSP surface water deliveries during dry years according to SSJID's 2020 UWMP are described below:

- For Single Dry Year reliability, the City has based its projected SSJID allocations on the single driest hydrologic year (Year 1977). With this assumption, it is anticipated that the City will receive between 79 and 100 percent of its normal year water supply during a single dry year.
- For Multiple Dry Years reliability, the City has based its projected SSJID allocations on the most recent five-year multiple dry year hydrologic cycle (Year 2012 through 2016). With this assumption, it is anticipated that the City will receive 100 percent of its normal year water supply during the first, second, and fifth years of a multiple dry year scenario and between 79 percent and 100 percent of its normal year supply during the third and fourth years of a multiple dry year scenario.

In December 2018, the SWRCB released an updated Water Quality Control Plan for the San Francisco Bay/Sacramento San Joaquin Delta Estuary with significant changes to the previous Bay Delta Water Quality Control Plan. The updated plan (Bay-Delta Plan Amendment) requires releases of approximately 40 percent of what would naturally flow in watersheds tributary to the San Joaquin River (including the Stanislaus River) during the February to June period. This means that surface water users on those watersheds would be restricted from using and storing water until 40 percent of unimpaired flows are rededicated for water quality and instream fishery purposes. For the Stanislaus River, the resulting surface water cutbacks would be significant. Because over a dozen lawsuits have been filed in both state and federal courts, the SSJID 2020 UWMP indicates that SSJID has opted to make no near-term planning assumptions related to the implementation of the Bay-Delta Plan Amendment for the purposes of its 2020 UWMP. Should conditions change or consequential resolution of the issues come to be, SSJID indicates it will revise and re-adopt a 2020 UWMP to reflect changes to its impacted water supply.

The projected surface water deliveries available to the City through 2045 as derived from the SSJID 2020 UWMP, are presented in Table 6-2. The City's 2020 UWMP is in progress and the water, sewer, recycled water, and stormwater master plans will be updated within the next one to two years.

The projected surface water deliveries available to the City are presented in Table 6-2.

Table 6-2. SCWSP Surface Water Deliveries to the City of Manteca during Hydrologic Normal, Single Dry, and Multiple Dry Years, AFY

	2025	2030	2035	2040	2045
Normal Year[a]	11,500	11,500	11,500	18,500	18,500
Single Dry Year	9,649	10,566	11,483	14,592	15,671
Multiple Dry Year 1	11,500	11,500	11,500	18,500	18,500
Multiple Dry Year 2	11,500	11,500	11,500	18,500	18,500
Multiple Dry Year 3	9,649	10,566	11,483	14,592	15,671
Multiple Dry Year 4	9,649	10,566	11,483	14,592	15,671
Multiple Dry Year 5	11,500	11,500	11,500	18,500	18,500

Source: Derived from SSJID 2020 UWMP, Table 7-2 Basis of Water Year Data.

6.4.2 Groundwater Reliability

There are many factors that can affect groundwater supply reliability, including current storage conditions, water quality, seasonal groundwater level variations and climate change. Reduced use by the

City, combined with seasonal variations such as intense wet seasons, can result in increased groundwater table elevation. Additionally, all wells are located in the western portion of the SSJID service area and draw from the Eastern San Joaquin Subbasin, the same basin that the City, the City of Lathrop, the City of Stockton, and other groundwater users draw from. For the purposes of this evaluation, only groundwater pumping estimated to be occurring within the City General Plan Update area is included.

While seasonal fluctuations do have a noticeable effect on groundwater elevation, the overall trend showed a decline over time until the City began to use imported surface water in 2005. Historical trends from California Statewide Groundwater Elevation Monitoring (CASGEM) indicate that the basin has experienced groundwater overdraft conditions. The introduction of surface water supply has helped groundwater elevation trends recover within the City by reducing pumping in the area.

Groundwater supply projections include approved proposed and entitled developments outside of the City boundaries, but within the planning area, and estimated groundwater pumping by others within the planning area. The projected groundwater supply reliability does not account for groundwater pumping outside the City planning area, nor undocumented privately owned domestic or irrigation wells. Groundwater use may increase as population increases, and groundwater use by others (including MUSD and agricultural users) may also increase in single dry years and multiple dry years (when surface water cutbacks occur). Constant groundwater demands from the MUSD and agricultural users have been assumed for all hydrologic scenarios.

The GSP indicates that the sustainable yield of the groundwater basin is approximately 1 AFY/acre (0.935 AFY/acre plus or minus 10 percent). For purposes of this WSA, West Yost assumes the City will limit groundwater use to approximately 24,877 AFY (the projected City area at Buildout of the General Plan planning area). The projected groundwater availability, assuming a constant growth rate through 2045, is shown in Table 6-3.

Table 6-3. Projected Groundwater Production during Hydrologic Normal, Single Dry, and Multiple Dry Years, AFY

	2020[a]	2025[b]	2030[b]	2035[b]	2040[b]	2045[b]
Assumed Groundwater Supply	10,060	11,760	13,747	16,069	18,784	21,957

(a) City of Manteca 2015 UWMP, Table 6-10.

(b) Based on 1 AFY of groundwater is available per acre of City surface area as discussed in Section 6.3 of this WSA. The projected groundwater production during 2025 to 2045 were interpolated using a constant growth rate and the 2020 (10,060) and General Plan Buildout (24,877) values. It is noted that General Plan Buildout is anticipated to occur between 2049 and 2050.

The 2020 value of 10,060 AFY accounts for the area within the City limits and then subtracts out other estimated groundwater uses within City limits. As development continues, the largest groundwater usage inside City limits, agricultural use, would decrease. The groundwater supply shown in Table 6-3 assumes the City's available ground water supply within the safe yield would increase as area outside the current City limits, and within the Planning Area, are annexed into the City for development.

6.5 Potable Water Infrastructure Evaluation

A technical memorandum describing the expected infrastructure that would be needed to serve the Project has been prepared by the project applicant. This infrastructure technical memorandum is included as Appendix B. The City's Water System Master Plan, currently in development, will identify infrastructure needed to serve buildout of the General Plan planning area.

DRAFT

7.0 DETERMINATION OF WATER SUPPLY SUFFICIENCY BASED ON THE REQUIREMENTS OF SB 610

Water Code section 10910 states:

> *10910(c)(4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.*

Pursuant to Water Code section 10910(c)(4) and based on the technical analyses described in this WSA, the total projected water supplies determined to be available for the Proposed Project during Normal, Single Dry, and Multiple Dry years during a 20-year projection will meet the projected water demand associated with the Proposed Project, in addition to existing and planned future uses.

A comparison of the City's projected potable and raw water supplies and demands is shown in Table 7-1 for Normal, Single Dry, and Multiple Dry Years.

As shown in Table 7-1, demand within the City's service area is not expected to exceed the City's supplies in any Normal year between 2020 and 2040.

For purposes of this WSA, no demand reductions are assumed during dry years. With this assumption, the City's water demands are not expected to exceed water supplies in Single Dry Years or Multiple Dry Years.

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Table 7-1. Summary of Potable and Raw Water Demand Versus Supply During Hydrologic Normal, Single Dry, and Multiple Dry Years

Hydrologic Condition		Supply and Demand Comparison, AFY			
		2025	2030	2035	2040
Normal Year					
Available Potable and Raw Water Supply[(a)]		23,260	25,247	27,569	37,284
Total Water Demand[(b)]		18,480	21,012	23,891	27,164
Potential Surplus (Deficit)		4,780	4,235	3,678	10,120
Supply Shortfall, Percent of Demand		-	-	-	-
Single Dry Year					
Available Potable and Raw Water Supply[(a)]		23,260	25,247	27,569	37,284
Total Water Demand[(b)]		18,480	21,012	23,891	27,164
Potential Surplus (Deficit)		4,780	4,235	3,678	10,120
Supply Shortfall, Percent of Demand		-	-	-	-
Multiple Dry Year					
Multiple Dry Year 1	Available Potable and Raw Water Supply[(a)]	23,260	25,247	27,569	37,284
	Total Water Demand[(b)]	18,480	21,012	23,891	27,164
	Potential Surplus (Deficit)	4,780	4,235	3,678	10,120
	Supply Shortfall, Percent of Demand	-	-	-	-
Multiple Dry Year 2	Available Potable and Raw Water Supply[(a)]	23,260	25,247	27,569	37,284
	Total Water Demand[(b)]	18,480	21,012	23,891	27,164
	Potential Surplus (Deficit)	4,780	4,235	3,678	10,120
	Supply Shortfall, Percent of Demand	-	-	-	-
Multiple Dry Year 3	Available Potable and Raw Water Supply[(a)]	21,409	24,313	27,552	33,376
	Total Water Demand[(b)]	18,480	21,012	23,891	27,164
	Potential Surplus (Deficit)	2,929	3,301	3,661	6,212
	Supply Shortfall, Percent of Demand	-	-	-	-
Multiple Dry Year 4	Available Potable and Raw Water Supply[(a)]	21,409	24,313	27,552	33,376
	Total Water Demand[(b)]	18,480	21,012	23,891	27,164
	Potential Surplus (Deficit)	2,929	3,301	3,661	6,212
	Supply Shortfall, Percent of Demand	-	-	-	-
Multiple Dry Year 5	Available Potable and Raw Water Supply[(a)]	23,260	25,247	27,569	37,284
	Total Water Demand[(b)]	18,480	21,012	23,891	27,164
	Potential Surplus (Deficit)	4,780	4,235	3,678	10,120
	Supply Shortfall, Percent of Demand	-	-	-	-

(a) Surface Water Supply from Table 6-2 plus Assumed Groundwater Supply from Table 6-3.
(b) Equals the City's total projected potable and raw water demand (from Table 5-1 and Table 5-4).

8.0 WATER SUPPLY ASSESSMENT APPROVAL PROCESS

Water Code sections 10910 and 10911 state:

> *10910 (g)(1) Subject to paragraph (2), the governing body of each public water system shall submit the assessment to the city or county not later than 90 days from the date on which the request was received. The governing body of each public water system, or the city or county if either is required to comply with this act pursuant to subdivision (b), shall approve the assessment prepared pursuant to this section at a regular or special meeting.*
>
> *10911 (b) The city or county shall include the water supply assessment provided pursuant to Section 10910, and any information provided pursuant to subdivision (a), in any environmental document prepared for the project pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.*

As indicated above, this WSA must be included in the Draft EIR being prepared for the Proposed Project.

In addition, SB 221 applies to residential subdivisions of over 500 dwelling units and requires that the water supplier provide a written verification that the water supply for the project is sufficient, prior to issuance of the final permits. Because the Proposed Project includes 827 residential dwelling units, it is subject to the requirements of SB 221 (Government Code section 66473.7) and a verification of sufficient water supply (SB 221) report will be required prior to final approvals.

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9.0 REFERENCES

City of Manteca 2015 Final Urban Water Management Plan, September 2016.

City of Manteca. Notice of Preparation of an Environmental Impact Report (EIR) for the Proposed Lumina at Machado Project, January 2021.

Eastern San Joaquin Groundwater Authority. Eastern San Joaquin Groundwater Subbasin Groundwater Sustainability Plan. November 2019.

South San Joaquin Irrigation District. 2020 Urban Water Management Plan. June 2021.

West Yost. City of Manteca - General Plan Update Water Supply Report. September 2021.

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Appendix A

City of Manteca - General Plan Update
Water Supply Report

DRAFT

WEST YOST
Water. Engineered.

6800 Koll Center Parkway
Suite 150
Pleasanton CA 94566

925.426.2580 phone
530.756.5991 fax
westyost.com

September 30, 2021

Project No.: 487-10-16-11
SENT VIA: EMAIL

Beth Thompson
Principal
De Novo Planning Group
1020 Suncast Lane #106
El Dorado Hills, CA 95762

SUBJECT: City of Manteca - General Plan Update Water Supply Report – Working Draft

Dear Beth:

The purpose of this letter report is to present the findings of the Water Supply Analysis of the City of Manteca (City) General Plan Update. In this letter report, we summarize the future land use currently being assumed in the on-going General Plan Update, project future demand at Buildout (projected to occur between 2049 and 2050) and compare the projected water demand to the water supply documented in the City's 2015 Urban Water Management Plan (UWMP), the 2019 Eastern San Joaquin Groundwater Subbasin Groundwater Sustainability Plan (GSP), and the South San Joaquin Irrigation District (SSJID) 2020 UWMP. The City is currently preparing the 2020 UWMP. As discussed, the future land use assumptions are subject to change and this letter report will be updated once the General Plan Land Use is final.

As indicated below, based on the assumptions presented in this letter report, the City would have sufficient water supplies to serve development of the proposed land uses.

GENERAL PLAN UPDATE LAND USE

The City of Manteca is located in the flat plain at the northern end of California's San Joaquin Valley in south San Joaquin County. The City is located approximately 10 miles south of Stockton and 15 miles north of Modesto. The Planning Area for the Manteca General Plan includes the entire city limits and the Planning Area inside the City's Sphere of Influence (SOI).

The location of the General Plan planning area in relation to the current City limits and Sphere of Influence is shown on Figure 1.

The proposed General Plan buildout, if approved, consists of low density residential, medium density residential, and high-density residential land uses, as well as various business, commercial, commercial mixed use, industrial, and park land uses.

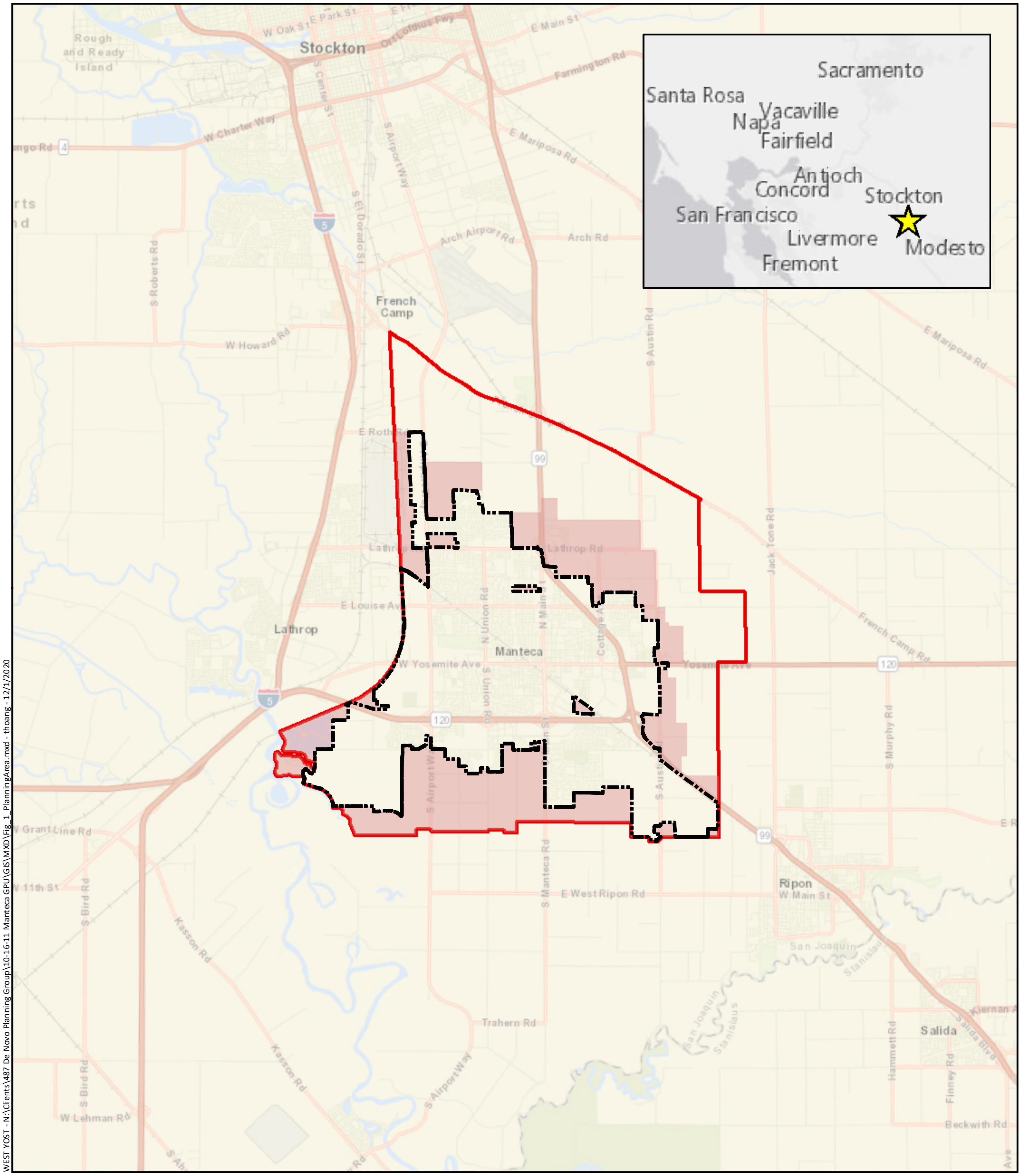
Proposed future land uses for buildout of the General Plan are summarized in Table 1 and shown on Figure 2.

Table 1. Proposed Future Land Uses for Buildout of the General Plan

Land Use	Development Projects, DU, SF	Development Projects, Acres	Remaining General Plan Buildout (less Development Projects), DU, SF	Remaining General Plan Buildout (less Development Projects), Acres	Full General Plan Buildout, DU, SF	Full General Plan Buildout, Acres
Residential Development						
Single Family Residential[(a)]	7,291	1,458	19,273	3,855	26,564	5,313
Multifamily Residential[(b)]	1,295	65	8,791	440	10,086	504
Total Housing Units	8,586	1,523	28,064	4,294	36,650	5,817
Non-Residential Development						
Commercial	3,052,187	70	8,063,995	185	11,116,182	255
Office	1,114,694	26	3,853,950	88	4,968,634	114
Industrial	4,438,868	102	14,744,350	338	19,183,218	440
Other (Agriculture)	41,396	1	149,007	3	190,403	4
Total Non-Residential	8,647,145	199	26,811,302	616	35,458,437	814
Total (Acres)		3,443		9,819		6,631

Source: City of Manteca, Draft Environmental Impact Report – Manteca General Plan Update, December 2020.

(a) Single Family Residential land use was assumed to be low density residential (2.1-8 du/ac).
(b) Multifamily Residential land use was assumed to be high density residential (15-25 du/ac).



City Limits
Sphere of Influence
Planning Area

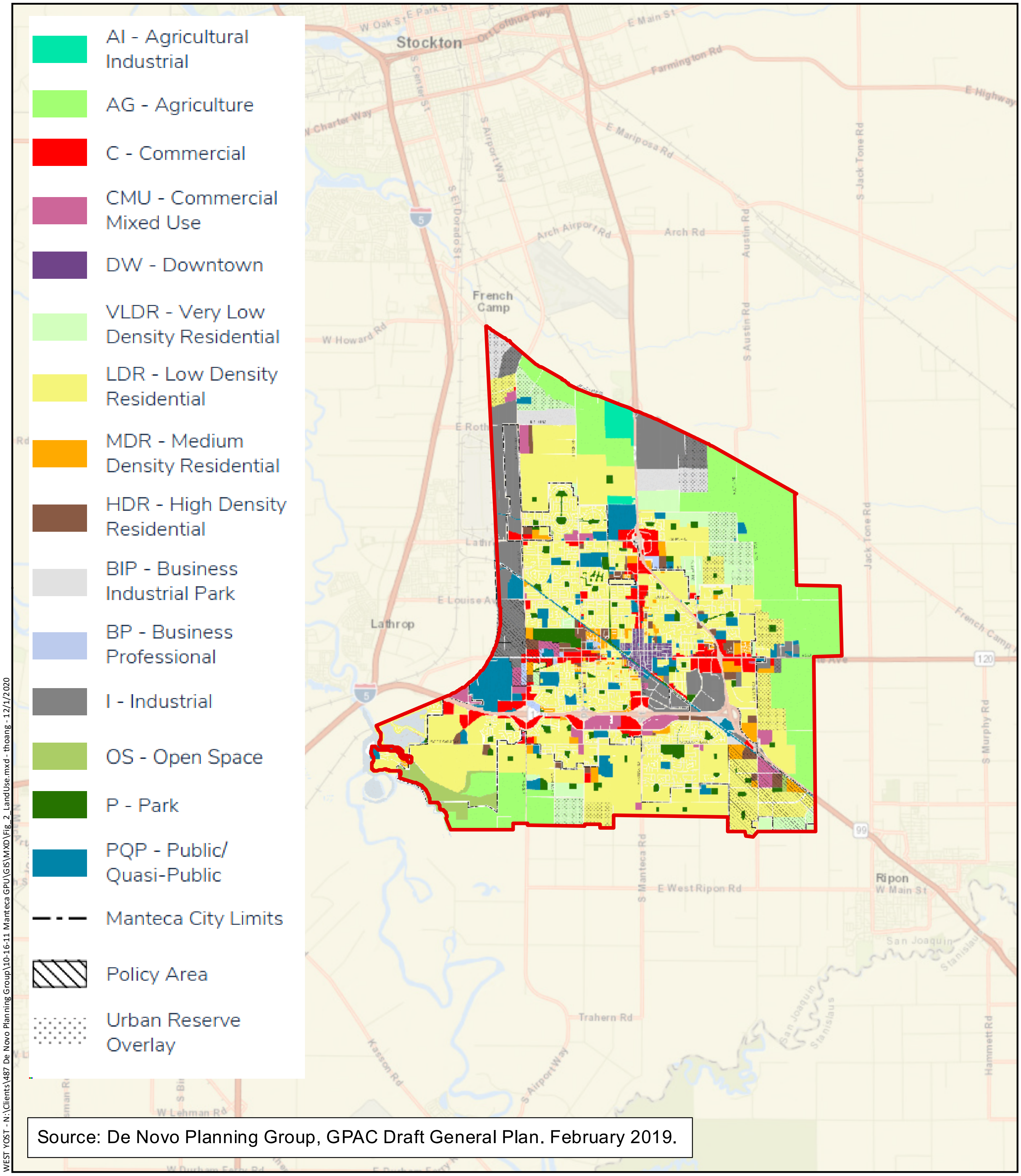
0 0.5 1
Scale in Miles

WEST YOST

Figure 1

Planning Area

De Novo Planning Group
Manteca General Plan Update



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Planning Area

N

0 0.5 1

Scale in Miles

Figure 2

Land Use

De Novo Planning Group

Manteca General Plan Update

PROJECTED WATER DEMAND

The projected water demand for the future land use areas was calculated by multiplying the projected land uses from Table 1 by the land use-based water demand factors shown in Table 2.

Table 2. Water Use Factors by Land Use Type

Land Use Designation	Water Use Factor, Gallons Per Day per Acre (gpd/acre)	
	2005 Water Master Plan[(a)]	Adjusted for SBX7-7[(b)]
Very Low Density Residential (VLDR)	1,700	1,360
Low Density Residential (LDR)	2,800	2,240
Medium Density Residential (MDR)	3500	2,800
High Density Residential (HDR)	6,500	5,200
Industrial	300	240
Neighborhood Commercial	2,200	1,760
Business Industrial Park	300	240
Commercial Mixed-Use	2,200	1,760
General Commercial	1,500	1,200
Open Space	4,000	3,200
Parks	4,000	3,200
Public/Quasi-Public	300	240

(a) Based on unit water demand factors established in the City of Manteca 2005 Water Master Plan. These factors assume a per capita water use of approximately 225 GPCD and do not account for conservation measures.
(b) Based on a 20 percent reduction of factors shown in the City of Manteca 2005 Water Master Plan. These factors assume that the City is able to meet its per capita water use target of 179 GPCD.

The resulting water demand projection is shown in Table 3.

Table 3. Projected Water Demand of Future Land Uses at Buildout of the General Plan

Proposed Land Use	Area, acres[(a)]	Water Demand Factor, gpd per acre[(b)]	Water Demand, acre-feet
Single Family Residential	5,313	2,240	13,330
Multi-Family Residential	504	5,200	2,937
Industrial	440	240	118
Office	114	1,760	225
General Commercial	255	1,200	343
Agricultural	4	-	-
Subtotal	6,631	-	16,954
Unaccounted-for Water[(c)]	-	-	1,017
Total	-	-	**17,971**

(a) See Table 1.
(b) See Table 2.
(c) Six percent of water demand per 2015 UWMP.

City potable and raw water demand in 2020 was approximately 16,253 AF, which may have been caused by a higher daytime population than normal due to stay-at-home orders and mandated closure of non-essential businesses in response to the COVID-19 pandemic. **Therefore, the projected potable and raw water demand at buildout of the General Plan is 34,224 AFY (16,253 AFY existing plus 17,971 AFY projected).**

WATER SUPPLY SUMMARY

The City's water supplies are documented in the City's 2015 UWMP and the SSJID 2020 UWMP and are summarized below.

The projected surface water deliveries available to the City in 2045, near Buildout of the General Plan, as documented in the SSJID 2020 UWMP, are presented in Table 4.

Table 4. SCWSP Surface Water Deliveries to the City of Manteca during Hydrologic Normal, Single-Dry, and Multiple-Dry Years in 2045

Hydrologic Condition	Percent of Normal Supply	Projected Water Delivery, AFY
Normal Year	100	18,500
Single Dry Year	85	15,671
Multiple Dry Year 1	100	18,500
Multiple Dry Year 2	100	18,500
Multiple Dry Year 3	85	15,671
Multiple Dry Year 4	85	15,671
Multiple Dry Year 5	85	18,500

Source: Derived from SSJID 2020 UWMP, Table 7-2 Basis of Water Year Data.

The GSP indicates that the sustainable yield of the groundwater basin is approximately 1 AFY/acre (715,000 AFY plus or minus 10 percent over the subbasin area of 1,195 square miles, an average of 0.935 AF/acre). For purposes of this Report, West Yost assumes the City will limit groundwater use to approximately 24,877 AFY (based on the projected City area at Buildout of the General Plan planning area). The projected groundwater availability is shown in Table 5. The groundwater pumping shown in Table 5 assumes the City would increase groundwater pumping as land is incorporated and removed from agricultural production.

Table 5. Projected Groundwater Production during Hydrologic Normal, Single-Dry and Multiple-Dry Years in 2040[(a)]

Planning Area	Projected Groundwater Production, AFY
Current City Limits	11,577
Additional Future Planning Area	13,300
Maximum Groundwater Supply	**24,877**

(a) Based on assumption that 1 AFY of groundwater is available per acre of City surface area from the Eastern San Joaquin Groundwater Subbasin Groundwater Sustainability Plan (November 2019). City area at Buildout of the General Plan Planning Area is from the City's Draft Environmental Impact Report – Manteca General Plan Update, December 2020.

The City's total potable and raw water supply is shown in Table 6.

Table 6. Summary of Potable and Raw Water Supply During Hydrologic Normal, Single-Dry and Multiple-Dry Years[(a)]

Hydrologic Condition	Potable and Raw Water Supply at Buildout of the General Plan Area, AFY
Normal Year	43,377
Single Dry Year	40,548
Multiple Dry Year 1	43,377
Multiple Dry Year 2	43,377
Multiple Dry Year 3	40,548
Multiple Dry Year 4	40,548
Multiple Dry Year 5	43,377

(a) Surface Water Supply from Table 4 plus Assumed Groundwater Supply from Table 5.

The General Plan indicates that the City does not intend to expand recycled water use at this time. The City currently uses undisinfected secondary effluent to irrigate fodder crops in the land adjacent to the City's wastewater treatment plant. However, there is no infrastructure in place to deliver tertiary treated recycled water to retail customers. Although a Recycled Water Master Plan is being prepared with the intent that the City would use recycled water to offset potable water demands for outdoor uses in the future, recycled water infrastructure is not planned to be constructed in time to serve the buildout of the General Plan. Therefore, recycled water supplies are not assumed to be an available water supply for this letter report.

COMPARISON OF WATER SUPPLY AND DEMAND AT BUILDOUT

A comparison of the available water supply and projected demands at buildout of the General Plan is shown in Table 7.

Table 7. Comparison of Potable and Raw Water Demand Versus Supply During Hydrologic Normal, Single Dry, and Multiple Dry Years

Hydrologic Condition	Supply and Demand Comparison, AFY
	Buildout of General Plan Area
Normal Year	
Available Potable and Raw Water Supply[(a)]	43,377
Total Water Demand[(b)]	34,224
Potential Surplus (Deficit)	9,153
Supply Shortfall, Percent of Demand	-
Single Dry Year	
Available Potable and Raw Water Supply[(a)]	40,548
Total Water Demand[(b)]	34,224

Table 7. Comparison of Potable and Raw Water Demand Versus Supply During Hydrologic Normal, Single Dry, and Multiple Dry Years		
		Supply and Demand Comparison, AFY
Hydrologic Condition		Buildout of General Plan Area
Potential Surplus (Deficit)		6,324
Supply Shortfall, Percent of Demand		-
Multiple Dry Year		
Multiple Dry Year 1	Available Potable and Raw Water Supply[(a)]	43,377
	Total Water Demand[(b)]	34,224
	Potential Surplus (Deficit)	9,153
	Supply Shortfall, Percent of Demand	-
Multiple Dry Year 2	Available Potable and Raw Water Supply[(a)]	43,377
	Total Water Demand[(b)]	34,224
	Potential Surplus (Deficit)	9,153
	Supply Shortfall, Percent of Demand	-
Multiple Dry Year 3	Available Potable and Raw Water Supply[(a)]	40,548
	Total Water Demand[(b)]	34,224
	Potential Surplus (Deficit)	6,324
	Supply Shortfall, Percent of Demand	-
Multiple Dry Year 4	Available Potable and Raw Water Supply[(a)]	40,548
	Total Water Demand[(b)]	34,224
	Potential Surplus (Deficit)	6,324
	Supply Shortfall, Percent of Demand	-
Multiple Dry Year 5	Available Potable and Raw Water Supply[(a)]	43,377
	Total Water Demand[(b)]	34,224
	Potential Surplus (Deficit)	9,153
	Supply Shortfall, Percent of Demand	-

(a) From Table 6.
(b) Existing plus projected demand. See paragraph under Projected Water Demand.

As indicated in Table 7, based on the assumptions presented in this report, the City would have sufficient water supplies to serve development of the proposed land uses.

Thank you for this opportunity to be of continued service to you and the City of Manteca. Please let us know if you have any questions or require further information.

Sincerely,
WEST YOST

Jim Connell, PE
Principal Engineer
RCE #63052

Appendix B

Lumina WSA Distribution Memorandum

DRAFT

Signature Homes
Lumina at Machado Ranch
Memorandum

Water Supply Assessment – Proposed Water System Reference Analysis
October 28, 2021

I. Project Site and Description

The Project Site is located adjacent to the Manteca City limits and within the Manteca Sphere of Influence (SOI). The City of Manteca will be the water purveyor for the proposed Project. The City's water system service area includes all areas within the City limits. The proposed Tentative Map and associated documents were designed utilizing the City of Manteca's 2005 Water Master Plan and the most current version of the City of Manteca Standard Plans and Specifications. The proposed Project Site project will extend the existing water system in accordance with these documents.

II. Proposed Potable Water System

The Project Site would be served by a new potable water distribution system. Development of the proposed potable water system will require the installation of additional water mains within the proposed roadways to comply with the 2005 City of Manteca Master Water Plan. Additionally, a potable well site would be installed within the subdivision adjacent to Airport Way. The proposed on-site water distribution system will have various points-of-connection to existing City mains. The Project will connect to the existing water main lines in Woodward Avenue, Airport Way, and at various stub streets from the existing Terra Ranch Subdivision to the west. The Project will extend a 12" water main line in Airport Way to the southern limits of the project. Additionally, an internal looped system of water lines will be installed within the Project Site including a 12" water main line bisecting the project to maintain adequate design flows through the site. (See Attached "Lumina at Machado Ranch Potable Water System Exhibit" for further reference).

III. Proposed Non-Potable Water System

The Project Site would include the development of an on-site non-potable water distribution system that would eventually provide irrigation water to planned parks, open space, and landscaped areas. This system will include a non-potable irrigation well which will be constructed by the project. All landscape irrigation is to be installed with non-potable components.

Connection from all irrigation systems to the non-potable water service will be provided in the proposed streets. This connection is to be provided per the requirements of the City Water Division with an isolation valve to allow the system to utilize water from either the proposed non-potable irrigation well or from the City non-potable system. In the future, when the non-potable system is charged by the City, the irrigation will be provided by the non-potable water system with the irrigation well remaining as a back-up only. Irrigation shall be designed to maximize efficiency and meet the requirements of the City Parks Maintenance Division (See Attached "Lumina at Machado Ranch Non-Potable Water System Exhibit" for further reference).

IV. Proposed Phasing and Modeling Analysis

A water system analysis will be prepared during future design of the Construction Documents to ensure that the final designs are compliant with City of Manteca fire flow and pressure standards for the Project Site. The proposed design and modeling analysis will verify that adequate fire flow and peak domestic demands are met in accordance with City Standards for each individual phase of the Project. The following design scenarios will be analyzed and included with the future construction documents for the Project:

- Fire Flow Design Scenario
- Fire Flow plus Peak Hour Domestic Demand Design Scenario

V. Future Potable Well Site Details, Timing, and PFIP Fees

Section II provides a description of the proposed potable well site as shown in the attached exhibits. The potable well site is adjacent to the proposed 12" water main line extension in Airport Way and the internal 12" water main lines. Additionally, the potable well site has been over-sized per direction of City staff to provide sufficient area for both the potable well and potential groundwater treatment facilities that maybe required.

All potable wells in the City of Manteca are designed and constructed under the strict direction of City staff. The timing and need for the potable well are to be determine by City staff in in accordance with the current City of Manteca Water System Master Plans and Models. Additionally, the Project Site will pay all applicable City of Manteca Well Water PFIP fees which includes the Groundwater Supply Fee (currently $1,173 per lot) which will generate approximately $970,071 for the construction of the potable well.

VI. Conclusion

The proposed Project Site will provide an adequate potable and non-potable water distribution systems in strict accordance with City of Manteca Standards and Specification. Furthermore, the Project will provide an oversized lot to facility the construction of a future potable well. Finally, the project site will construct a non-potable irrigation well to reduce the landscape demand from the project.

Anthony P. de Melo PE #71387
NorthStar Engineering Group, Inc.

LUMINA AT MACHADO RANCH
POTABLE WATER SYSTEM EXHIBIT
MANTECA, CALIFORNIA

SEPTEMBER 28, 2021

NorthStar Engineering Group, Inc.
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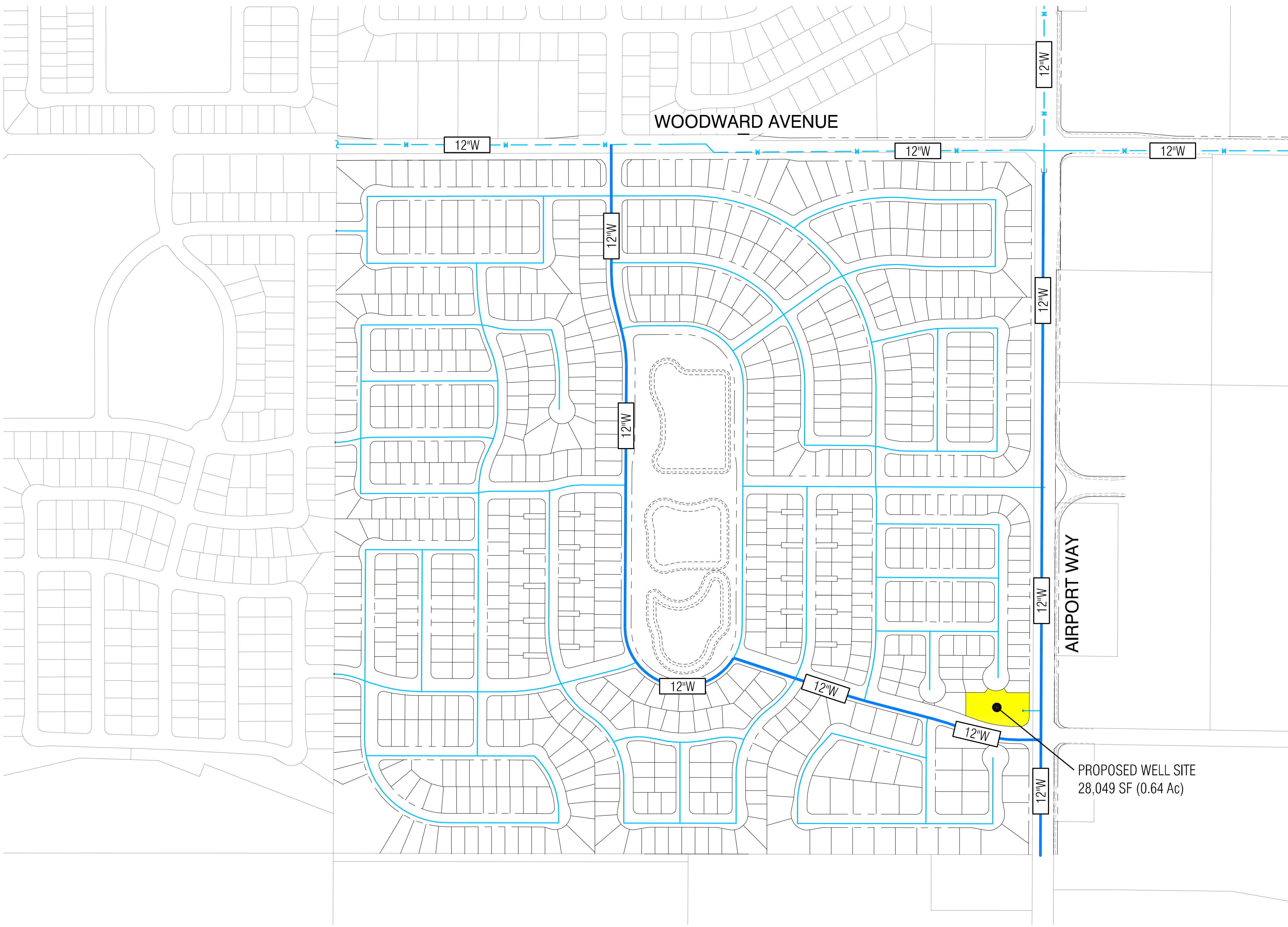
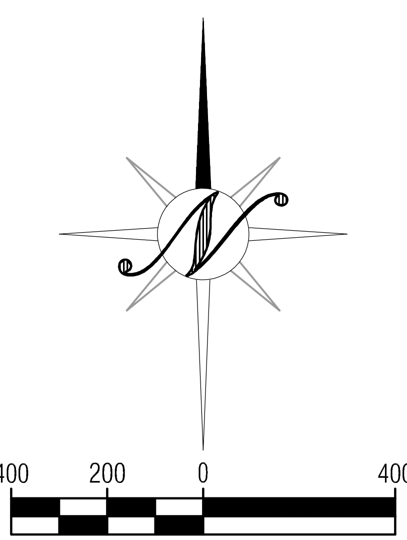
620 12th Street Modesto, CA 95354
(209) 524-3525 Phone (209) 524-3526 Fax

EX. W1.1



LEGEND

EX. 12" WATER
PROPOSED 8" WATER
PROPOSED 12" WATER



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PLOTTED: 9/28/2021 3:03 PM PLOTTED BY: Phurban
DWGNAME: F:\18-2299 Machado Property\Planning\Exhibits\Water System Exhibits\Potable Water System Exhibit (2021_09-28).dwg

LUMINA AT MACHADO RANCH
NON-POTABLE WATER SYSTEM EXHIBIT

MANTECA, CALIFORNIA

SEPTEMBER 28, 2021

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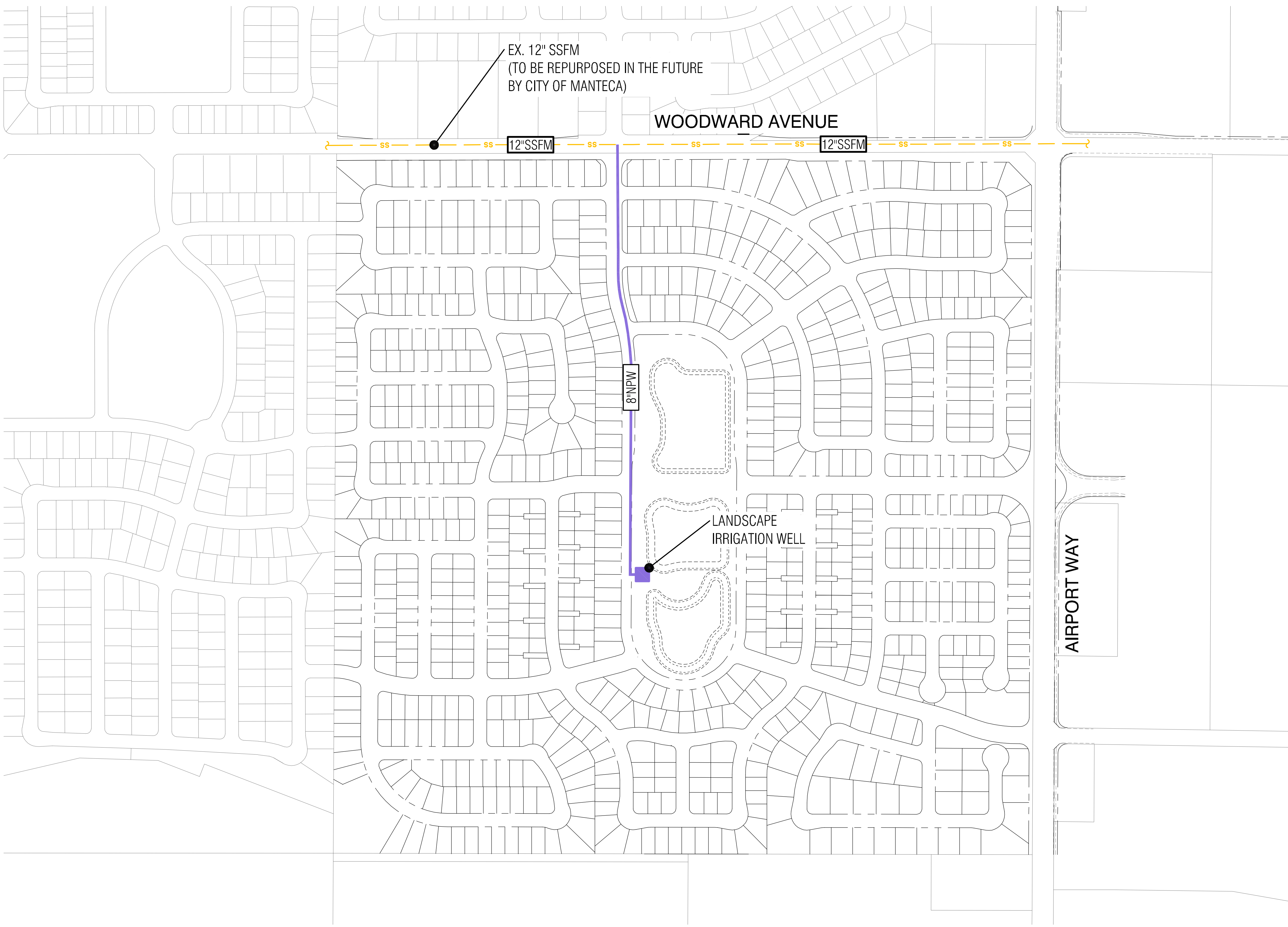
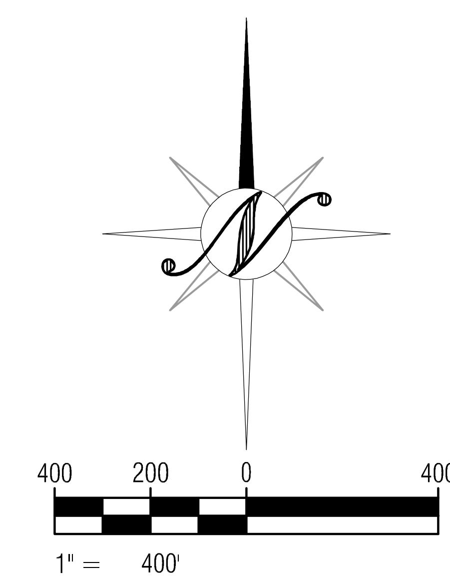
EX. W1.2



LEGEND

— — SS — —	EX. 12" SANITARY SEWER FORCE MAIN
———	PROPOSED 8" NON-POTABLE WATER



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Concord
1001 Galaxy Way, Suite 310
Concord CA 95420
925-949-5800

Davis
2020 Research Park Drive, Suite 100
Davis CA 95618
530-756-5905

Eugene
1650 W 11th Avenue, Suite 1-A
Eugene OR 97402
541-431-1280

Lake Forest
23692 Birtcher Drive
Lake Forest CA 92630
949-420-3030

Lake Oswego
5 Centerpointe Drive, Suite 130
Lake Oswego OR 97035
503-451-4500

Oceanside
804 Pier View Way, Suite 100
Oceanside CA 92054
760-795-0365

Phoenix
4505 E Chandler Boulevard, Suite 230
Phoenix AZ 85048
602-337-6110

Pleasanton
6800 Koll Center Parkway, Suite 150
Pleasanton CA 94566
925-426-2580

Sacramento
8950 Cal Center Drive, Bldg. 1, Suite 363
Sacramento CA 95826
916-306-2250

San Diego
11939 Rancho Bernardo Road, Suite 100
San Diego CA 92128
858-505-0075

Santa Rosa
2235 Mercury Way, Suite 105
Santa Rosa CA 95407
707-543-8506

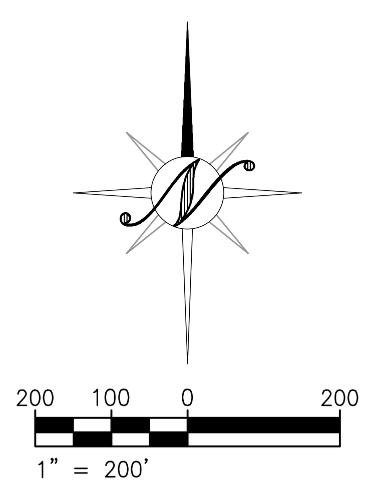
Appendix H

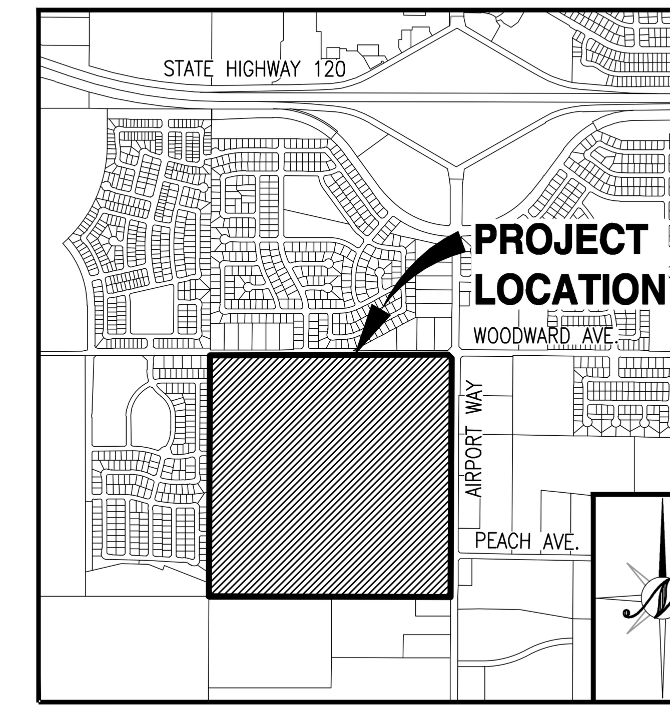
Tentative Subdivision Map

LUMINA AT MACHADO RANCH

TENTATIVE SUBDIVISION MAP

MANTECA, CALIFORNIA





VICINITY MAP

NTS

SHEET INDEX

1. TM1.1 COVER SHEET
2. TM1.2 TYPICAL STREET CROSS SECTIONS
3. TM1.3 OFF-SITE GEOMETRIC PLAN – WOODWARD AVENUE
4. TM1.4 OFF-SITE GEOMETRIC PLAN – AIRPORT WAY
5. TM1.5 SITE PLAN DETAILS
6. TM1.6 LEVEE SEEPAGE BERM PLAN AND CROSS SECTIONS
7. TM2.1 DIMENSION PLAN (NORTH)
8. TM2.2 DIMENSION PLAN (SOUTH)
9. TM3.1 UTILITY PLAN (NORTH)
10. TM3.2 UTILITY PLAN (SOUTH)
11. TM3.3 PRELIMINARY BASIN AND STORMWATER MANAGEMENT PLAN
12. TM4.1 PHASING PLAN

PROJECT INFORMATION

A. REGULATORY AGENCY:	CITY OF MANTECA 1001 W. CENTER STREET MANTECA, CA. 95337
B. APPLICANT:	SIGNATURE HOMES 4670 WILLOW ROAD, SUITE 200 PLEASANTON, CA 94588 T: (925) 463–1122 CONTACT: GARY GALINDO
C. ENGINEER:	NORTHSTAR ENGINEERING GROUP, INC 620 12th STREET MODESTO CA, 95354 T: (209) 524–3525 F: (209) 524–3526 CONTACT: TONY DE MELO
D. ASSESSOR'S PARCEL NUMBERS:	241–32–018
E. EXISTING GP/ZONING:	LDR / AG–40
F. PROPOSED GP/ZONING:	LDR WITH PD OVERLAY
G. TOTAL PROJECT SIZE:	161.2± GROSS ACREAGE
H. TOTAL NUMBER OF LOTS:	827
I. DENSITY:	5.1 UNITS PER GROSS ACRE
J. TYPICAL LOT SIZE:	SEE LOT TABLE

GENERAL NOTES

1. ALL IMPROVEMENTS SHALL BE CONSTRUCTED AS PER THE CITY OF MANTECA STANDARD PLANS AND SPECIFICATIONS EXCEPT AS NOTED.
2. STORM DRAINAGE TO BE CONVEYED TO ON–SITE STORM DRAINAGE BASIN AND PUMP STATION WHICH WILL DISCHARGED TO CITY OF MANTECA STORM DRAINAGE SYSTEM IN WOODWARD AVENUE. ALL IMPROVEMENTS TO BE CONSTRUCTED TO THE CITY OF MANTECA STANDARDS.
3. ALL STORM DRAINAGE IMPROVEMENTS AS PART OF FUTURE IMPROVEMENTS PLANS AND STUDIES SHALL CONFORM TO THE REQUIREMENTS SET FORTH IN NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT 2013–0001–DWQ AND THE MULTI–AGENCY POST–CONSTRUCTION STORMWATER STANDARDS MANUAL APPROVED OR ADOPTED PRIOR TO THE TIME OF THIS TENTATIVE MAP APPLICATION BEING DEEMED COMPLETE.
5. SANITARY SEWER SYSTEM TO BE CONSTRUCTED TO THE CITY OF MANTECA STANDARDS.
6. WATER SYSTEM TO BE CONSTRUCTED TO THE CITY OF MANTECA STANDARDS.
7. STREET LIGHTING SHALL BE INSTALLED PER CITY OF MANTECA STANDARD SPECIFICATIONS.
8. PUBLIC UTILITIES ARE TO BE INSTALLED UNDER GROUND IN EASEMENTS.
9. THE SUBDIVIDER HEREBY RESERVES THE RIGHT TO FILE "MULTIPLE SUBDIVISION MAPS" AS SET FORTH BY THE SUBDIVISION MAP ACT, ARTICLE 4, SECTION 66456.1., AND FILE PARCEL MAPS FOR REASON OF SALE. ALL PARCEL LINES SHALL CONFORM TO THIS TENTATIVE MAP.
10. PUBLIC UTILITY EASEMENTS WILL BE PROVIDED ALONG ALL STREET FRONTAGES.
11. ALL EXISTING STRUCTURES AND TREES ARE TO BE REMOVED. SEPTIC TANKS, LEACH FIELDS, AND WELLS ON SITE WILL BE REMOVED OR ABANDONED AS PER CITY OF MANTECA REQUIREMENTS.
12. APPLICANT SHALL PROVIDE ACCESS AGREEMENT IN PERPETUITY FOR CITY TO INSPECT ALL POST–CONSTRUCTION BMP'S INSTALLED ON PRIVATE PROPERTY.
13. ALL LOT SETBACK REQUIREMENTS ARE TO BE IN ACCORDANCE WITH THE MACHADO PROPERTY SUBDIVISION PLANNED DEVELOPMENT.
14. THIS TENTATIVE MAP SHALL MEMORIALIZE THE APPROVALS TO REMOVE THE REQUIREMENTS OF CITY STANDARD DETAIL ST–8A, ST–8B, AND THE MUNICIPAL CODE TO MAINTAIN A 20' SETBACK FOR RESIDENTIAL CORNER LOT DRIVEWAYS AND THE CURB RETURNS AT THE INTERSECTS OF TWO RESIDENTIAL STREETS. RESIDENTIAL STREETS SHALL BE DEFINED IN ACCORDANCE WITH CITY STANDARD ST–2 WITH A 36–FOOT–WIDE CURB TO CURB CROSS–SECTION. ALL RESIDENTIAL STREETS THAT INTERSECT COLLECTOR OR ARTERIAL STREETS ARE REQUIRED TO PROVIDE A 20' SETBACK FOR RESIDENTIAL CORNER LOT DRIVEWAYS OR INSTALL BULB–OUTS AS SHOWN ON SHEET TM1.5.
15. OFF–SITE MAJOR STREETS TO BE CONSTRUCTED IN ACCORDANCE WITH PHASING PLAN SHOWN ON SHEET TM4.1.

LOT TABLE

LOT TYPE	TOTAL
MOTOR CT.	77
45 x 75	104
50 x 80	287
50 x 100	202
60 x 100	120
80 x 100	37
TOTAL	827

LEGAL DESCRIPTION

THE LAND DESCRIBED HEREIN IS SITUATED IN THE STATE OF CALIFORNIA, COUNTY OF SAN JOAQUIN, CITY OF MANTECA, AND IS DESCRIBED AS FOLLOWS:

THE SOUTHEAST QUARTER OF SETCITON 12, TOWNSHIP 2 SOUTH, RANGE 6 EAST, MOUNT DIABLO BASE AND MERIDIAN.

APN: 241–320–18

PLOTTED: 06/23/2021 10:11 PLOTTED BY: Btaylor
DWGNAME: F:\18–2299 Machado Property\Planning\Tentative Map\TM1.1 CVR.dwg

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REVISIONS

NO.	DESCRIPTIONS	DATE	APPROVED

COVER SHEET

LUMINA AT MACHADO RANCH
MANTECA, CALIFORNIA

NorthStar Engineering Group, Inc.
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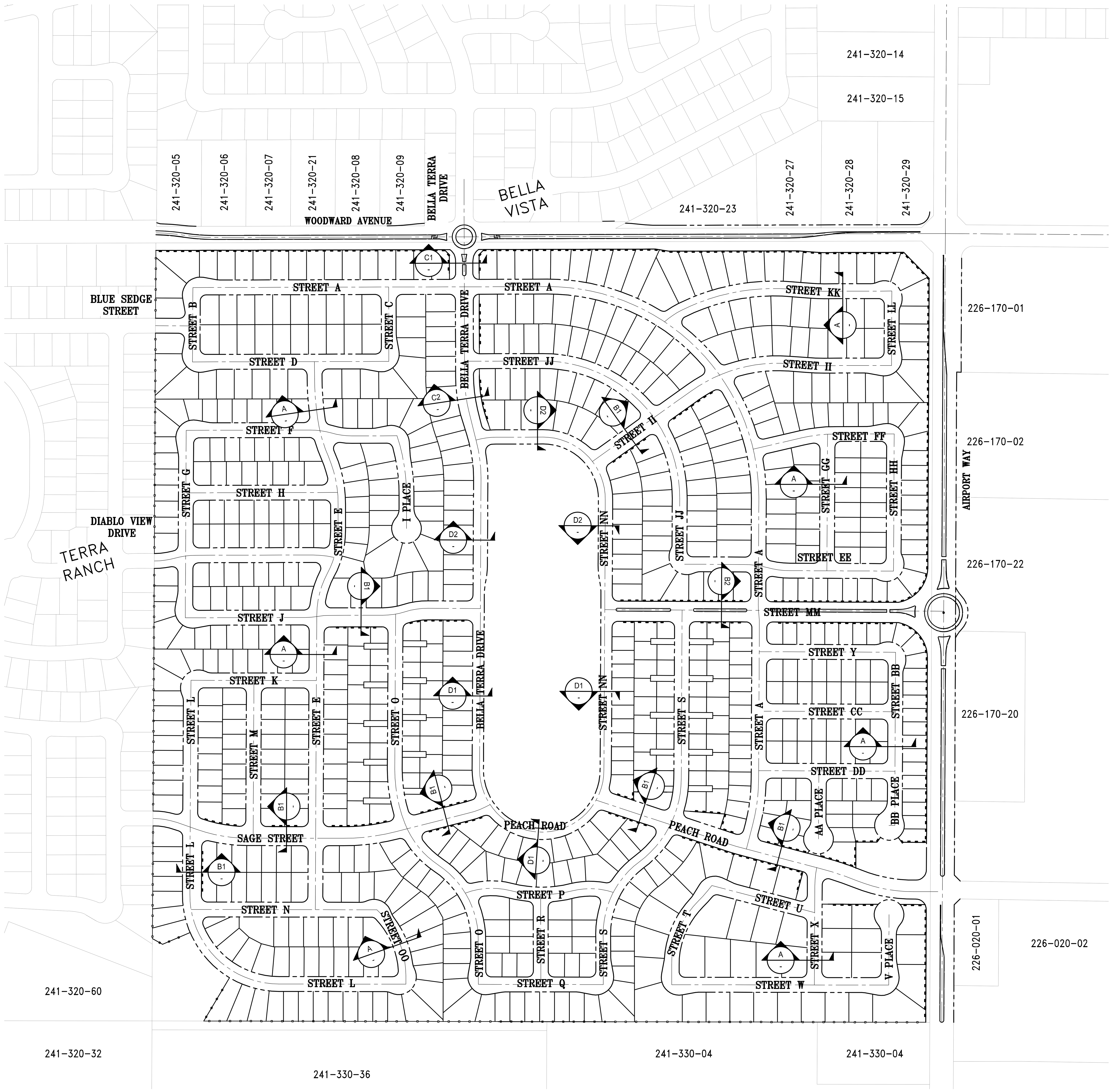
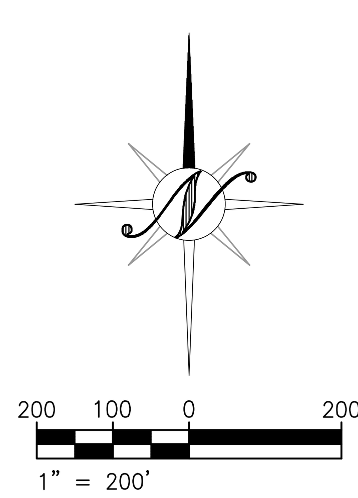
620 12th Street Modesto, CA 95354
(209) 524–3525 Phone (209) 524–3526 Fax

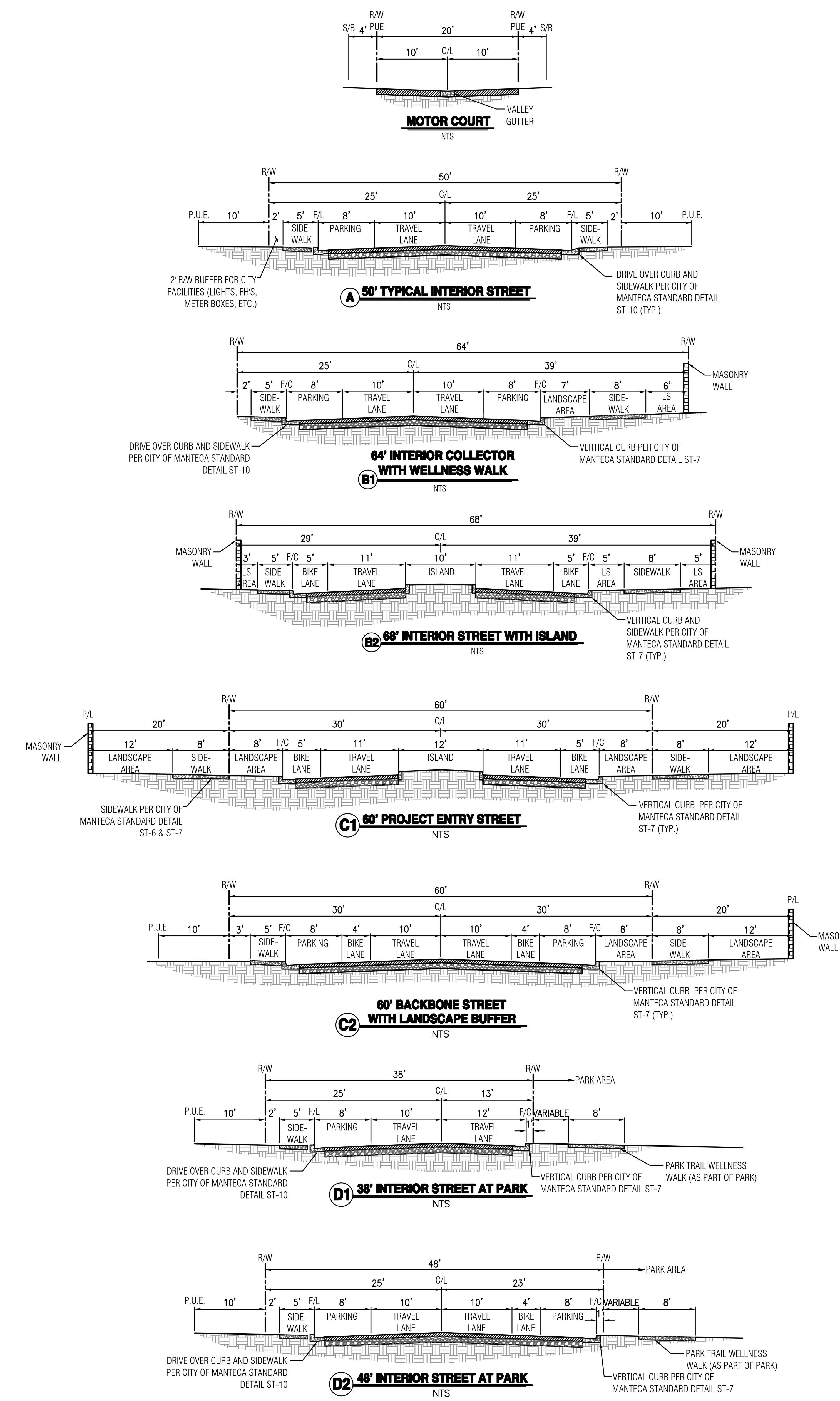
JOB #:	18–2299
DATE:	06/22/2021
SCALE:	AS SHOWN
DRAWN:	BT/DLR
DESIGN:	PMH/BT
CHK'D:	TPD

SHEET NUMBER

TM1.1







CROSS SECTION NOTE:

OFF-SITE AIRPORT WAY AND WOODWARD AVENUE CROSS SECTIONS ARE PROVIDED ON SHEETS TM1.3 AND TM1.4

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TYPICAL STREET CROSS SECTIONS

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SHEET NUMBER

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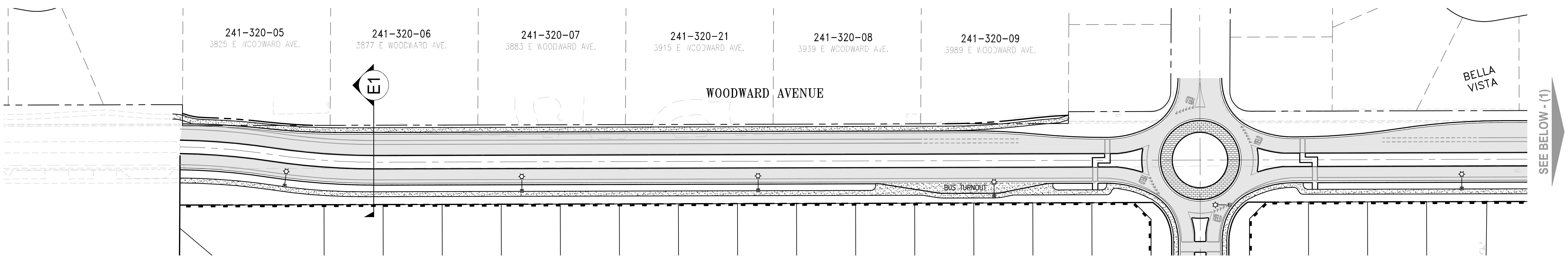
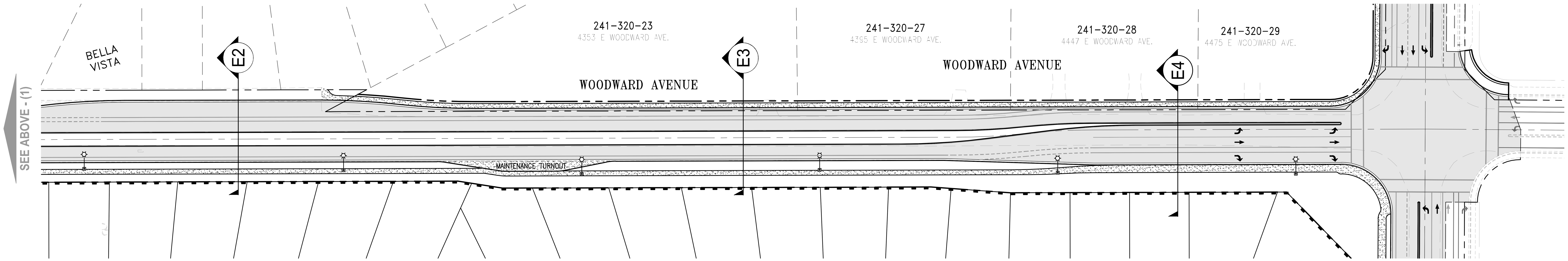


WOODWARD AVENUE



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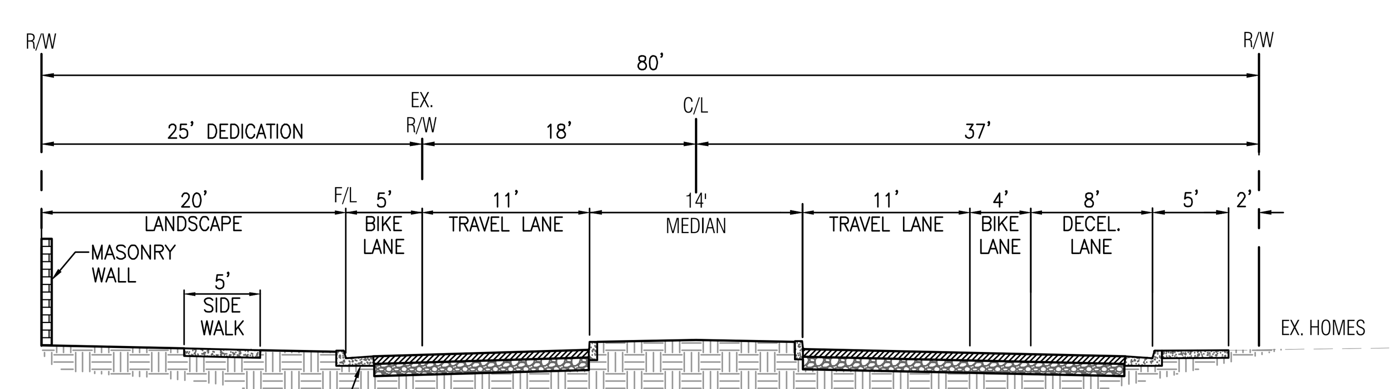
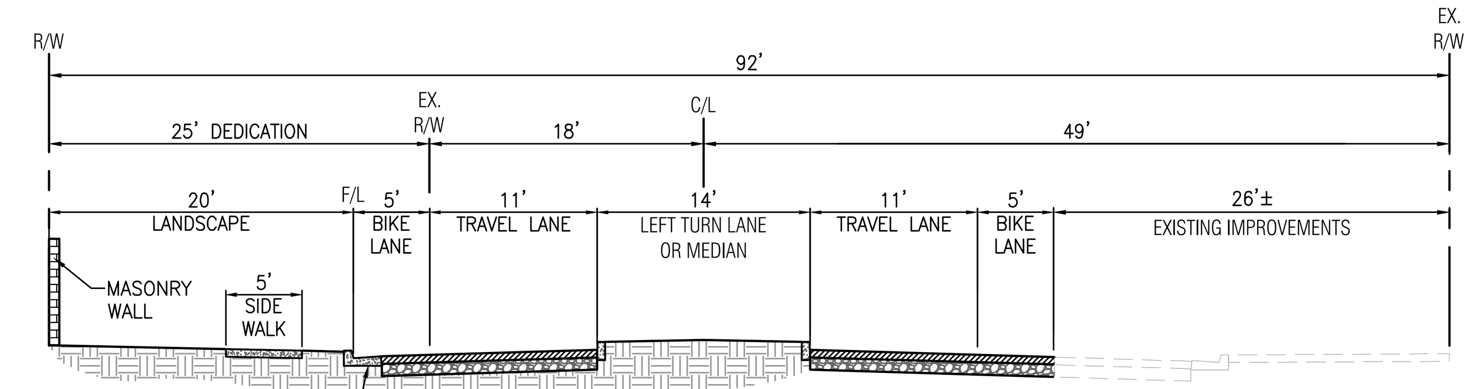


E1 WOODWARD AVENUE
NTS



E2 WOODWARD AVENUE
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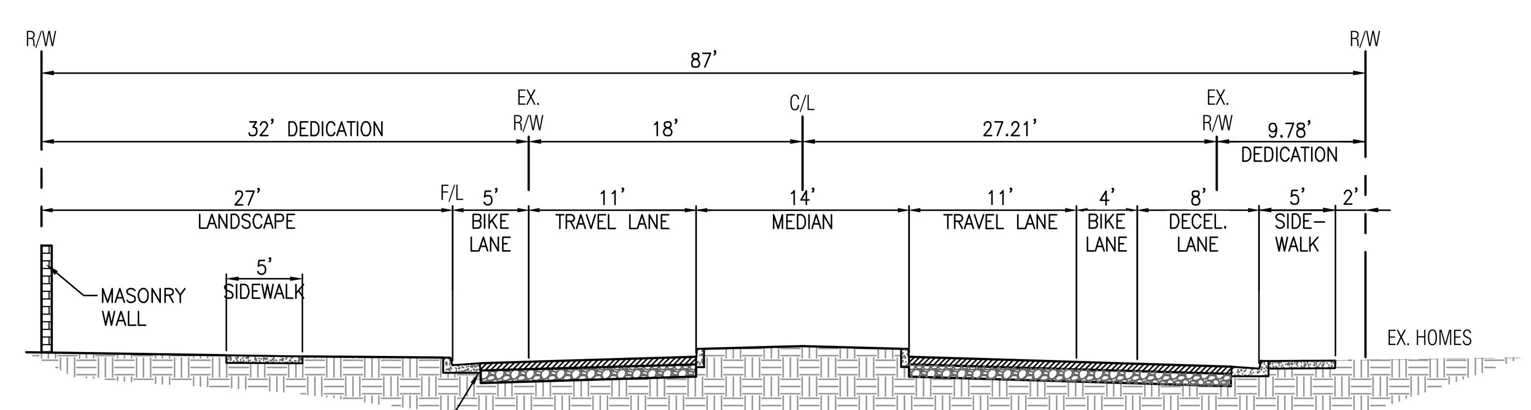

E3 WOODWARD AVENUE
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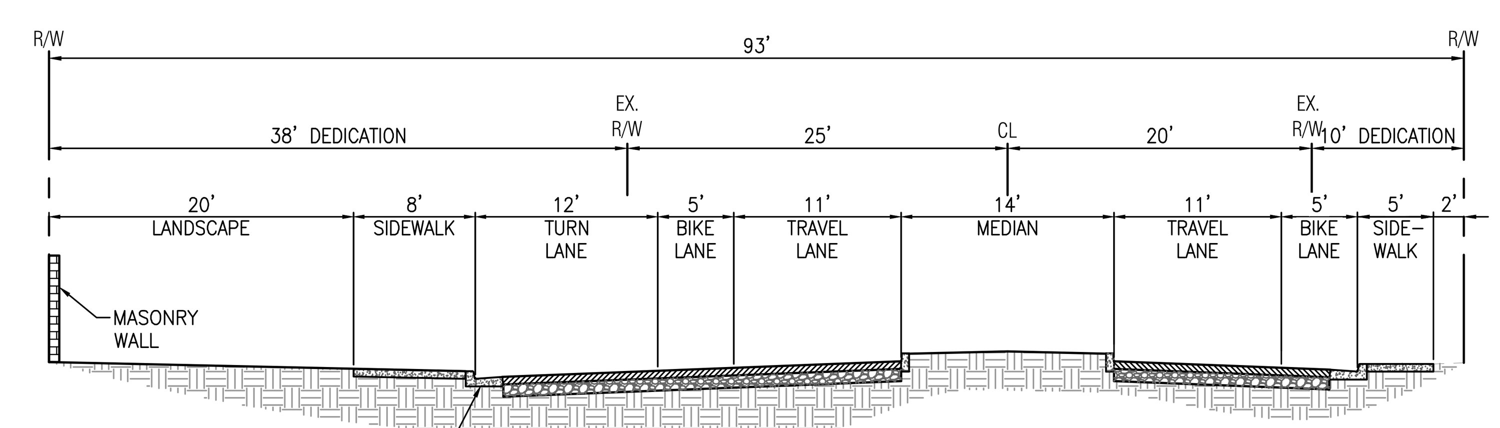

E4 WOODWARD AVENUE
NTS

50 25 0 50
1" = 50'

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OFF-SITE GEOMETRICS PLAN
WOODWARD AVENUE
LUMINA AT MACHADO RANCH
MANTECA, CALIFORNIA

NorthStar Engineering Group, Inc.
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SHEET NUMBER
TM 1.3

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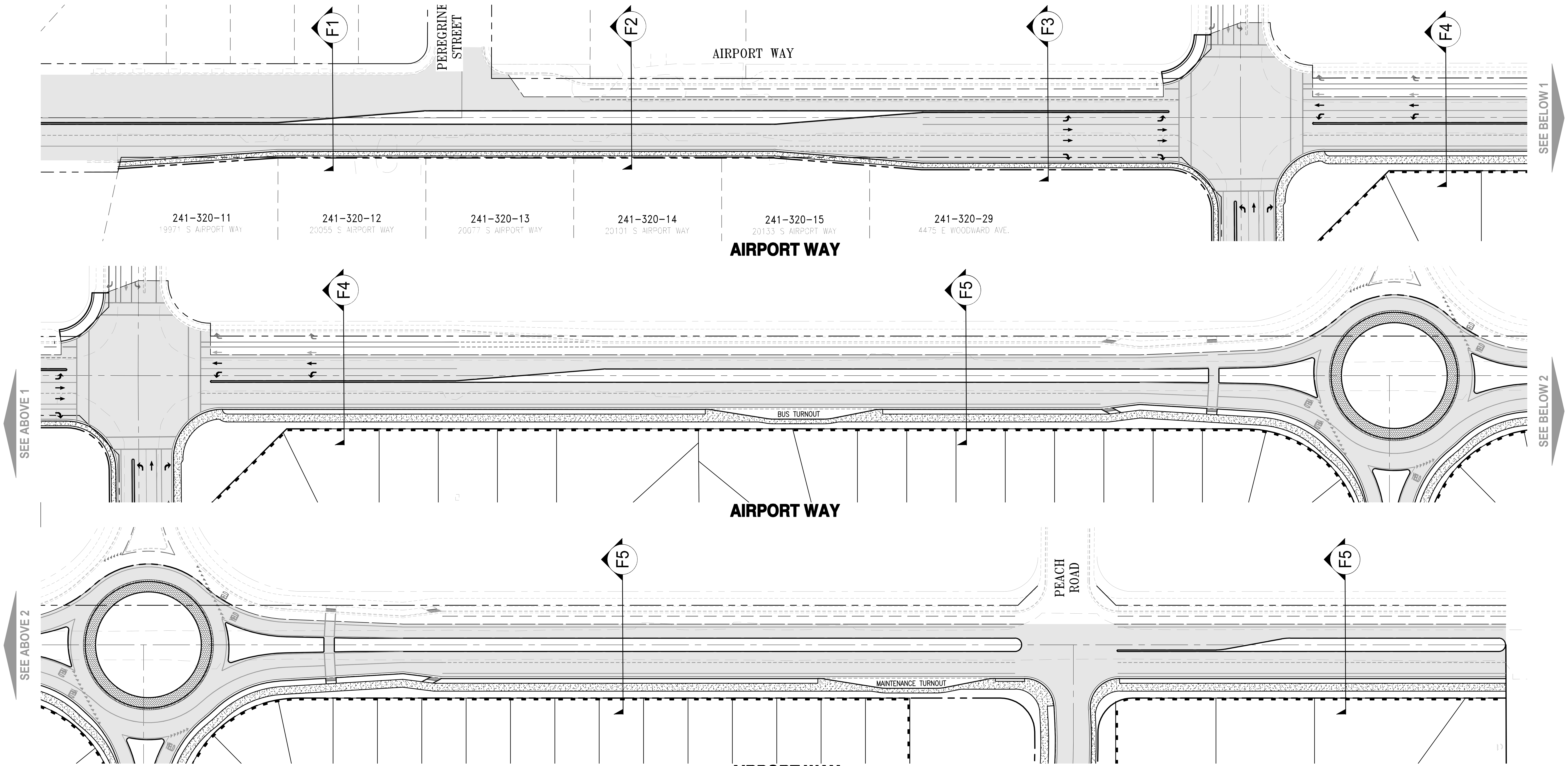
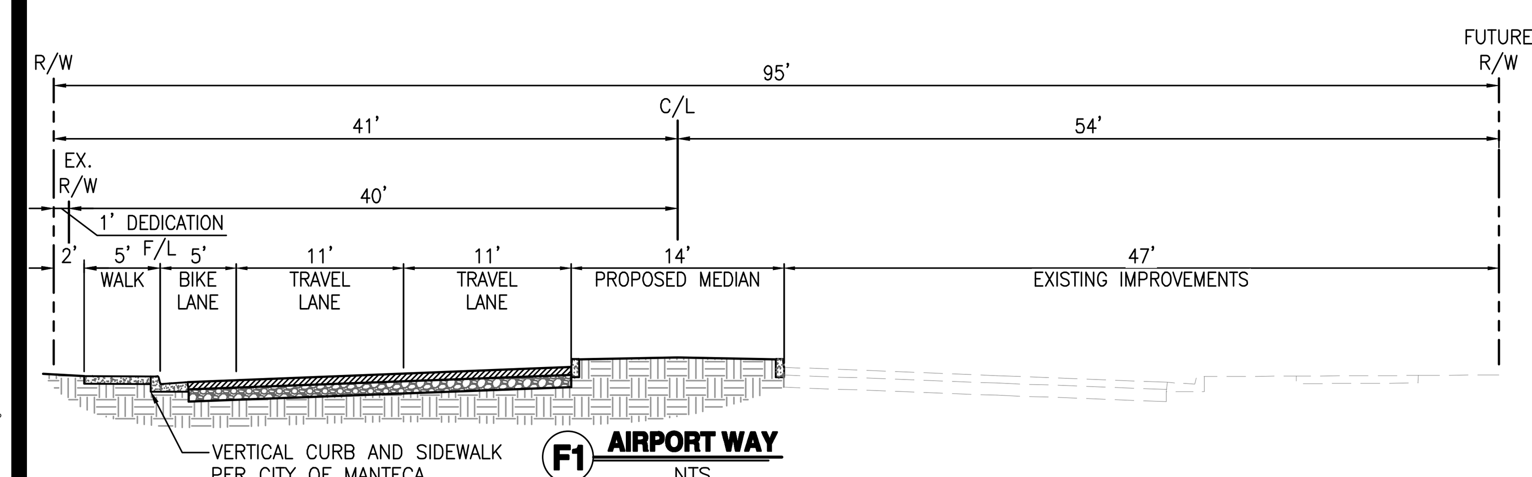
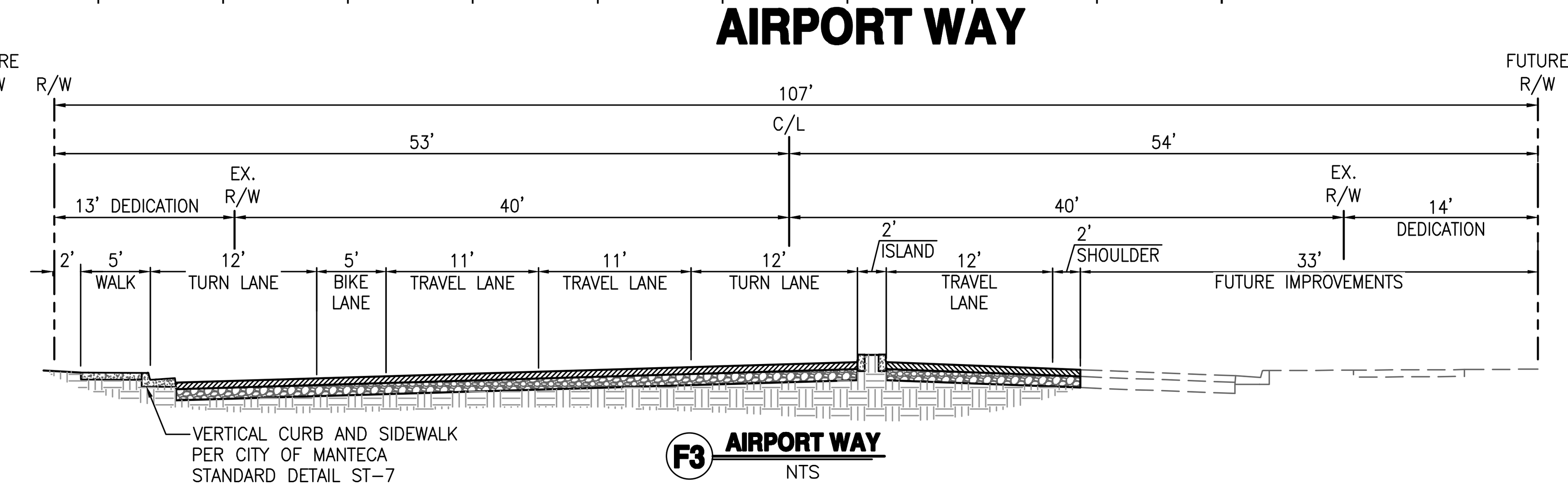


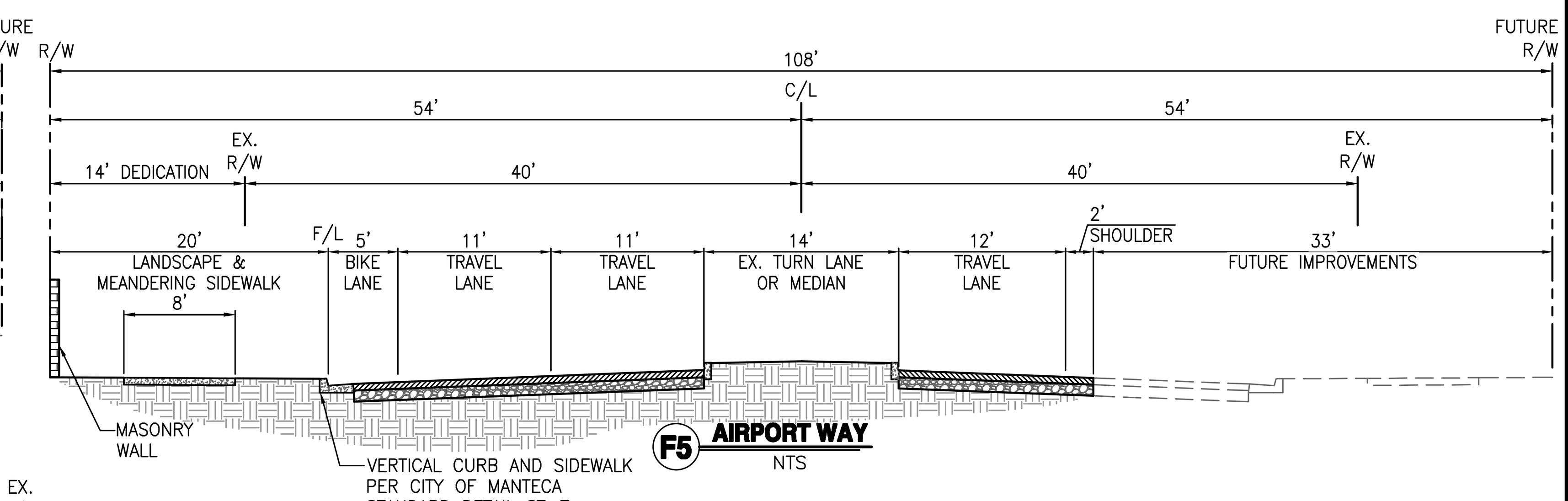
AIRPORT WAY

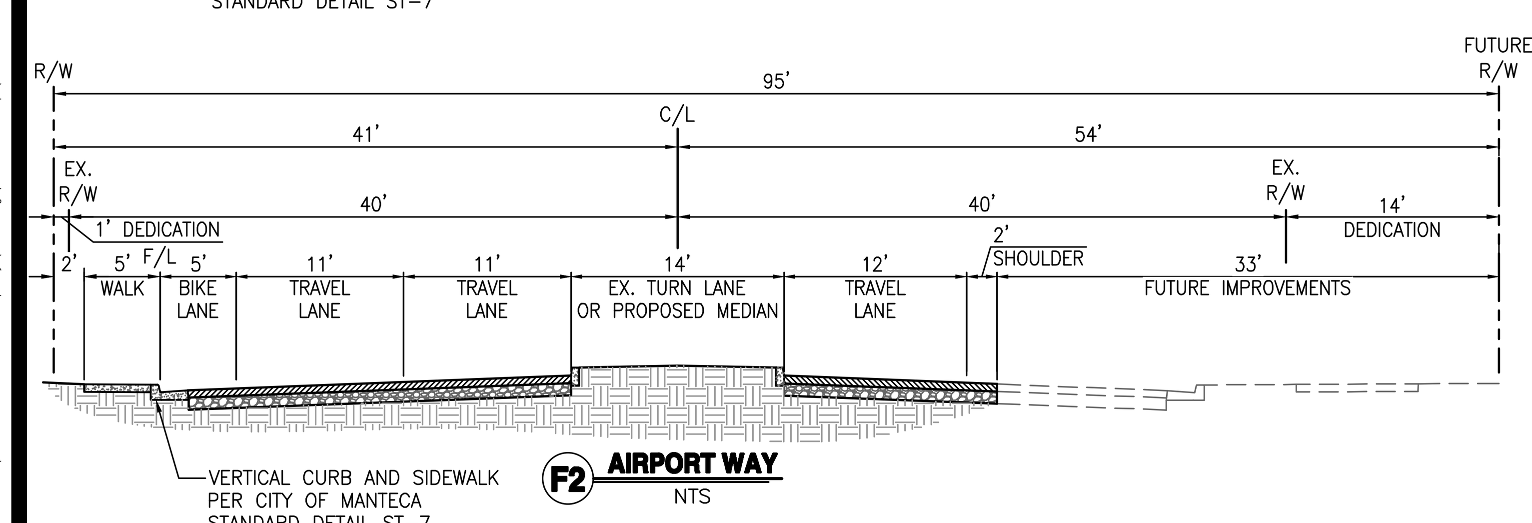
AIRPORT WAY

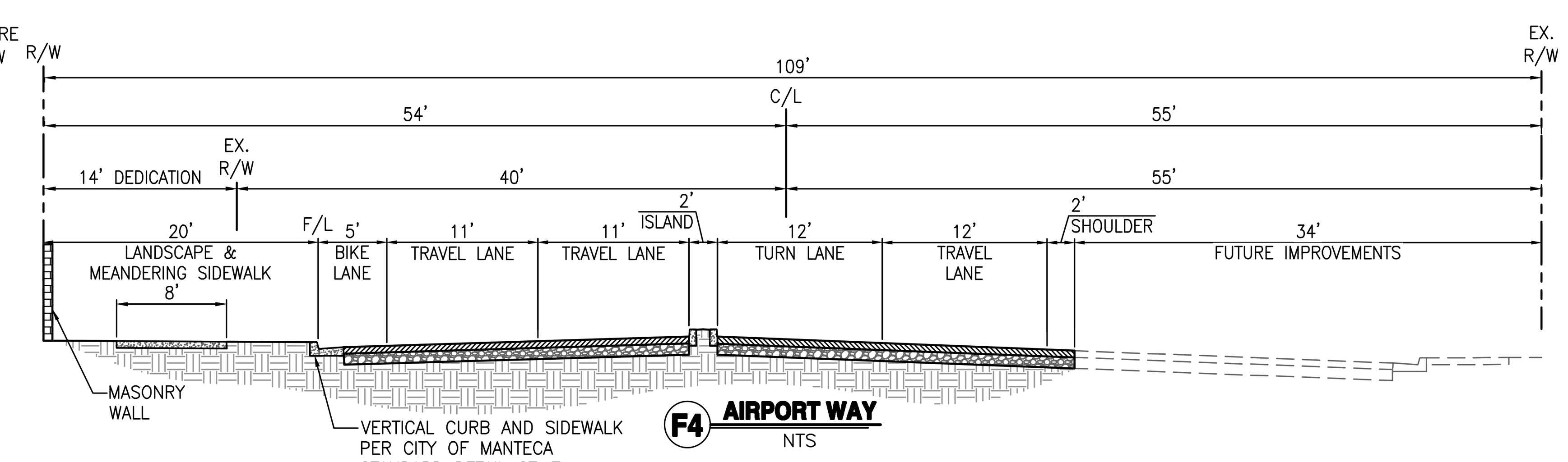
AIRPORT WAY

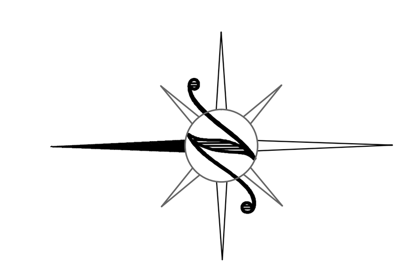












50 25 0 50
1" = 50'

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OFF-SITE GEOMETRICS PLAN
AIRPORT WAY

LUMINA AT MACHADO RANCH
MANTECA, CALIFORNIA

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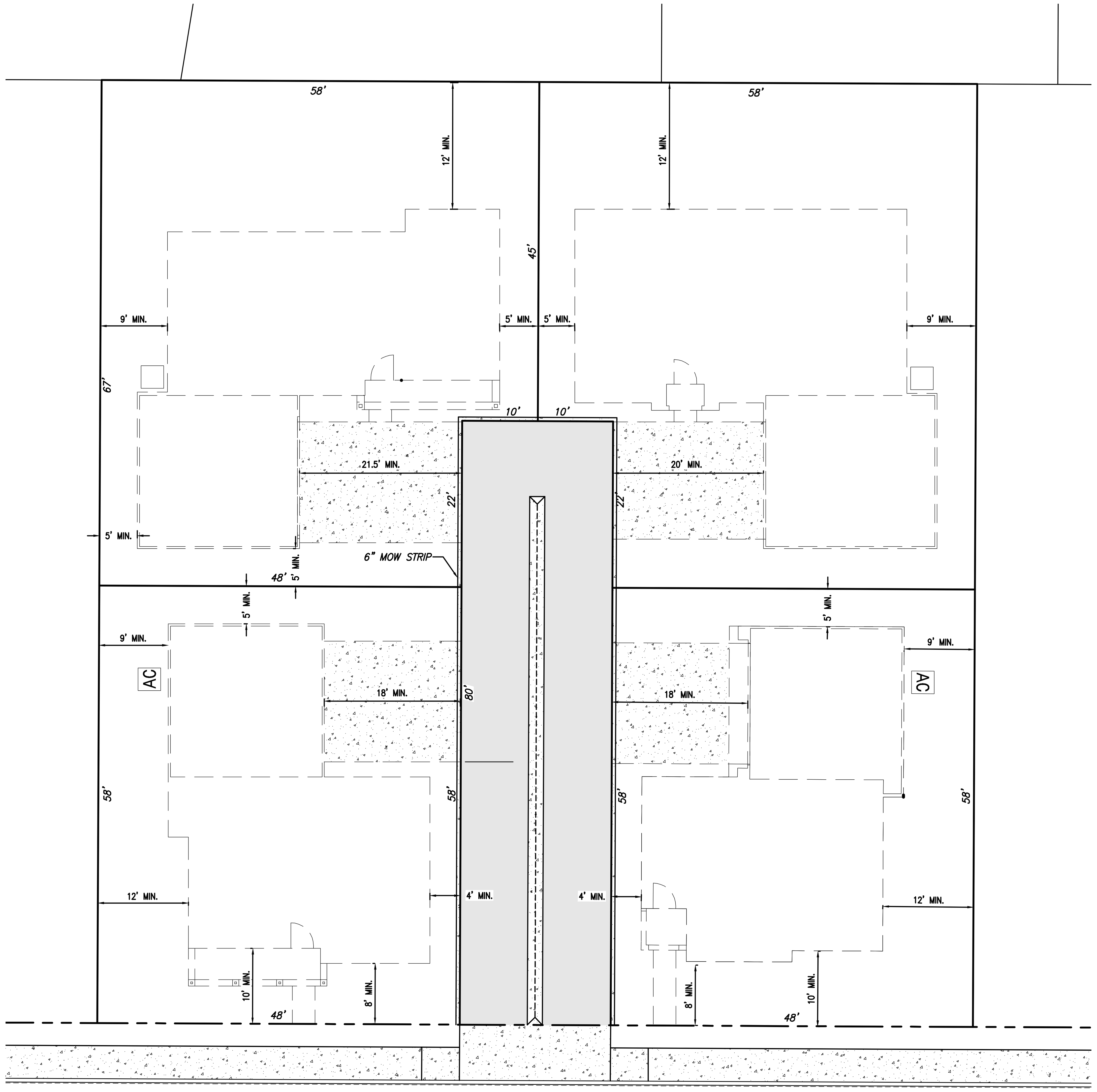
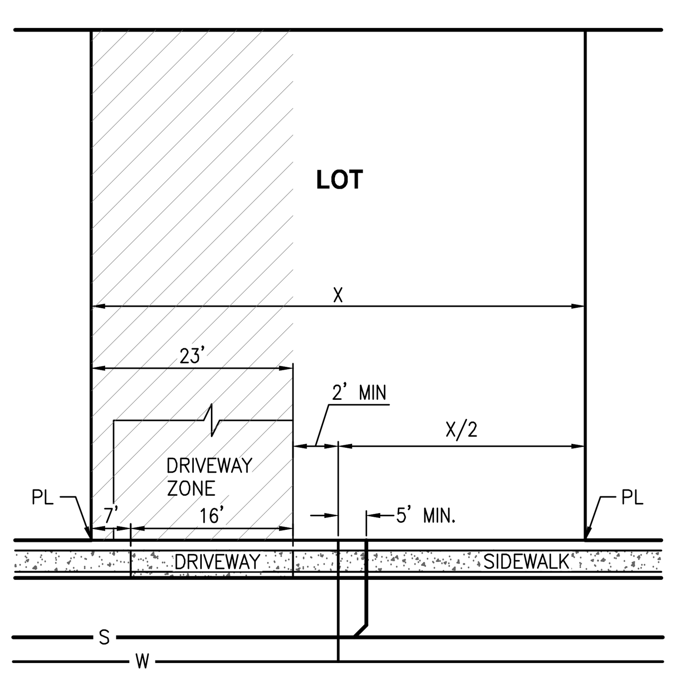
SHEET NUMBER

TM 1.4



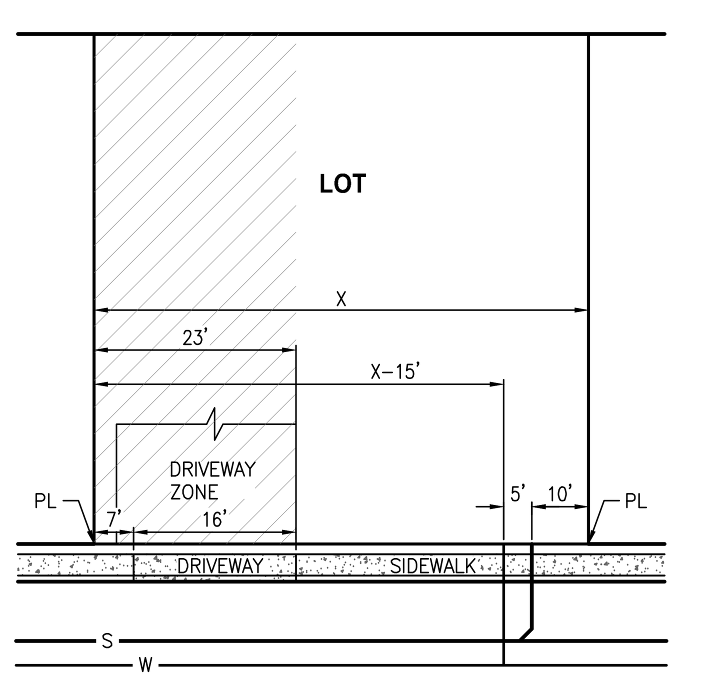
1 CLUSTER MINIMUM LOT SIZE AND SETBACKS
SCALE: 1" = 10'



NOTES:

1. SEWER LATERALS MAY BE INSTALLED ON EITHER SIDE OF THE WATER CONNECTION.
2. SEWER AND WATER SERVICES AT THE END OF A CUL-DE-SAC MAY BE LOCATED NO CLOSER THAN 2 ½ FEET FROM THE SIDE LOT LINE.

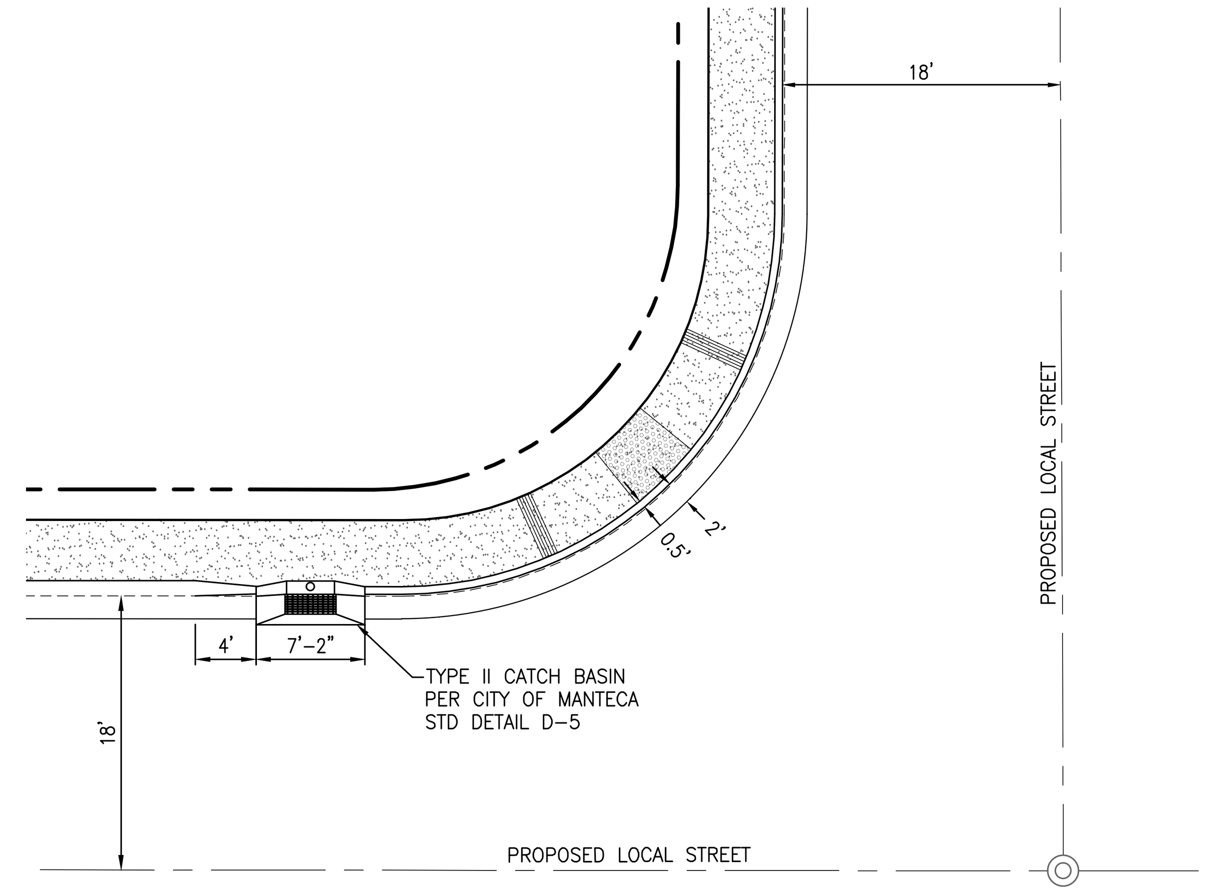
2 LOT UTILITY LAYOUT (PER CITY OF MANTECA STANDARD DETAIL E-8)
NTS



NOTES:

1. SEWER LATERALS MAY BE INSTALLED ON EITHER SIDE OF THE WATER CONNECTION.
2. SEWER AND WATER SERVICES AT THE END OF A CUL-DE-SAC MAY BE LOCATED NO CLOSER THAN 2 ½ FEET FROM THE SIDE LOT LINE.

3 ALTERNATE UTILITY LAYOUT FOR SMALL LOTS (50' AND LESS)
NTS



4 TYPICAL CURB RETURN
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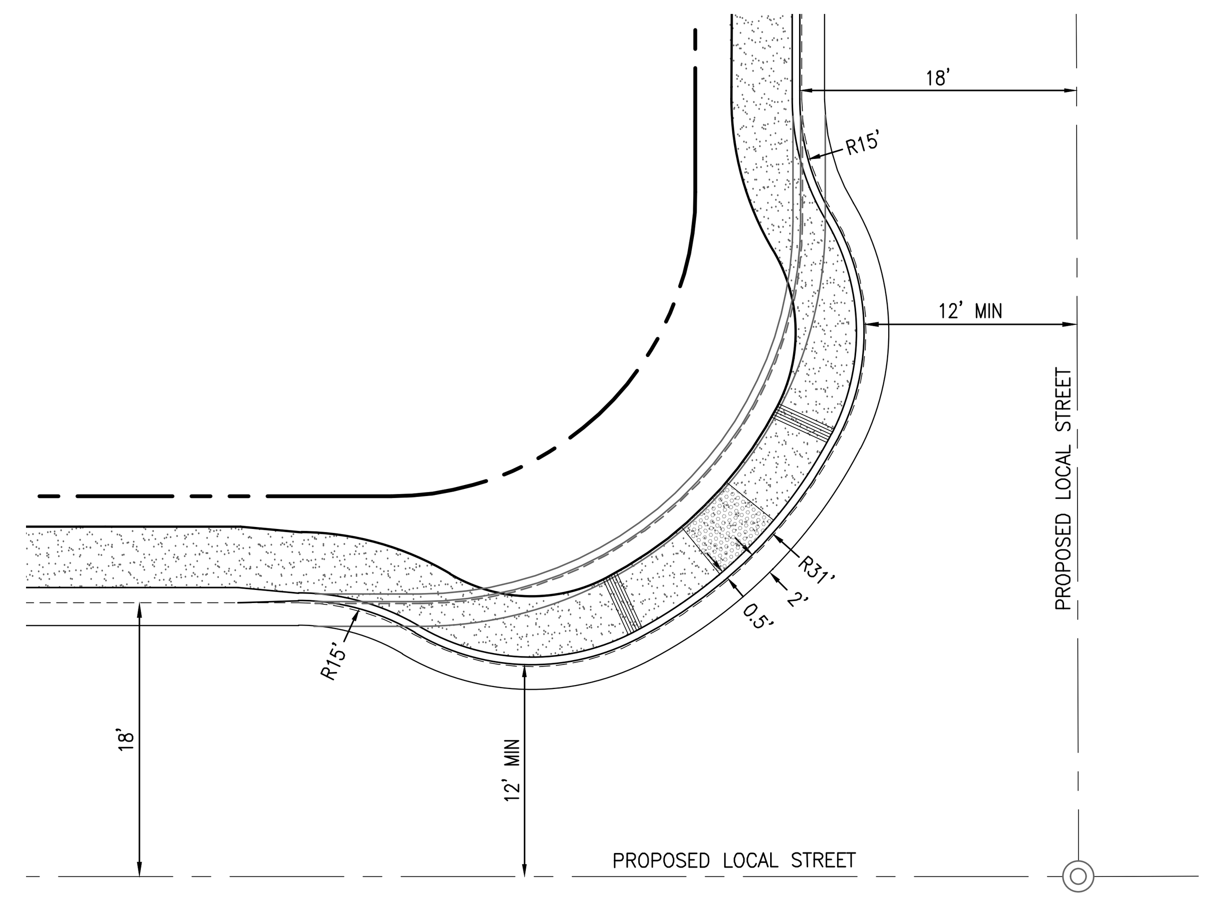

5 TYPICAL TRAFFIC CALMING CURB RETURN
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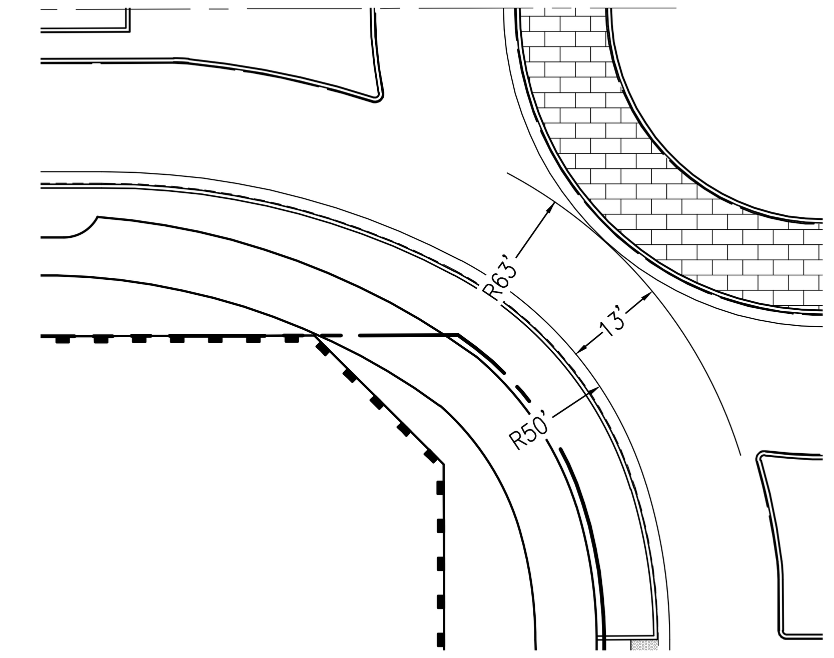

6 WOODWARD AVENUE ROUNDABOUT DETAIL
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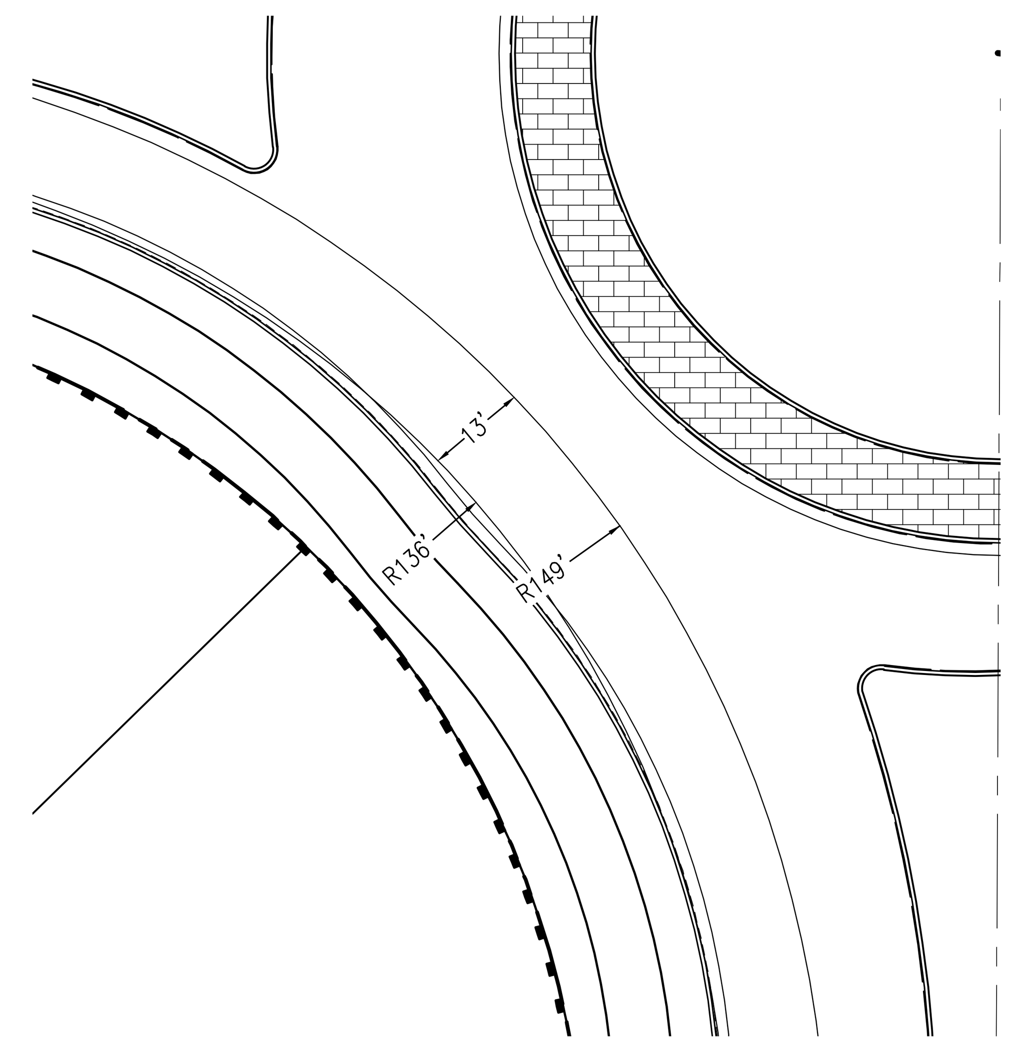

7 AIRPORT WAY ROUNDABOUT DETAIL
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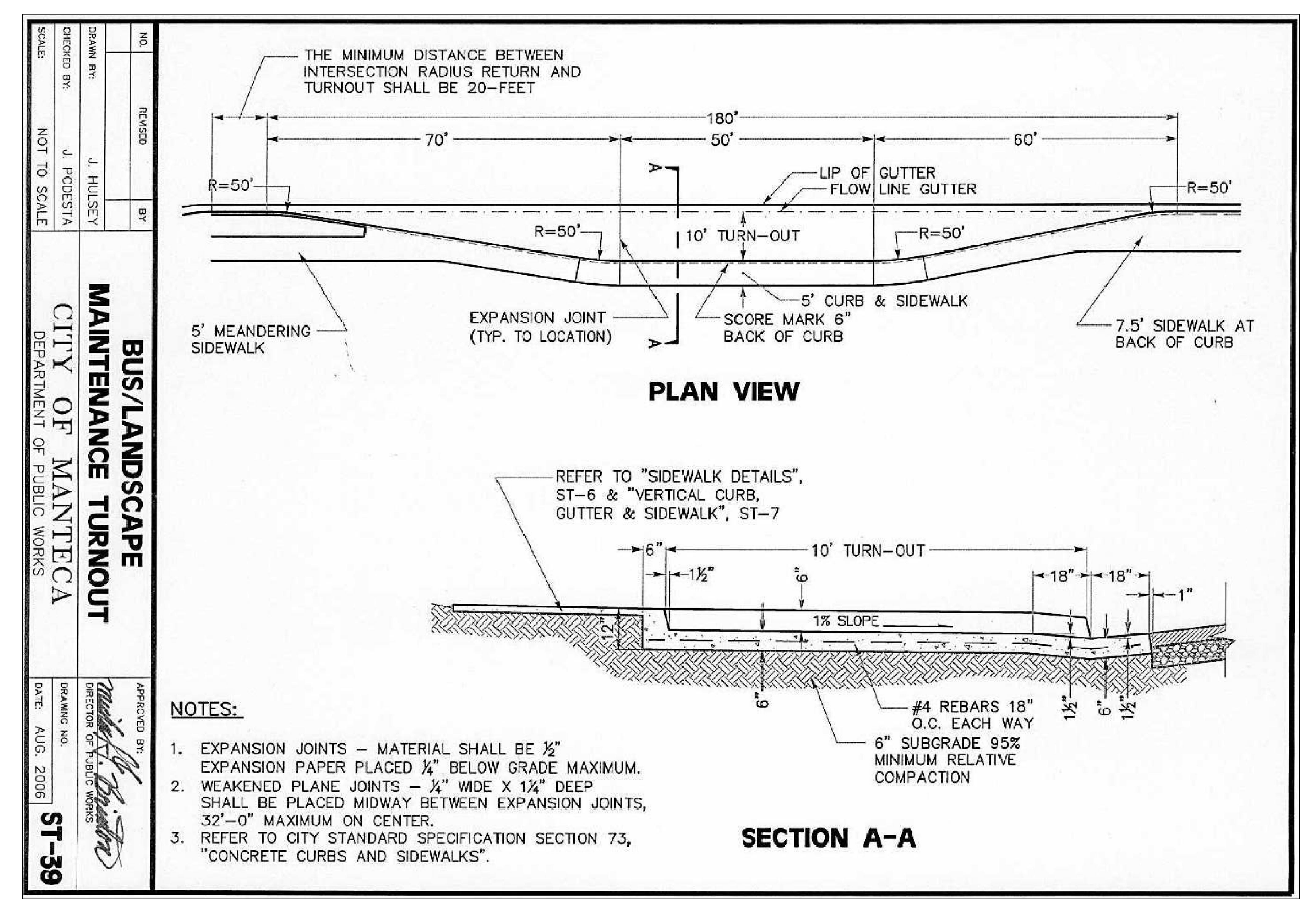

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SITE PLAN DETAILS

LUMINA AT MACHADO RANCH

MANTECA, CALIFORNIA

North Star Engineering Group, Inc.
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620 12th Street Modesto, CA 95354
(209) 524-3525 Phone (209) 524-3526 Fax

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CHK'D:	TPD

SHEET NUMBER

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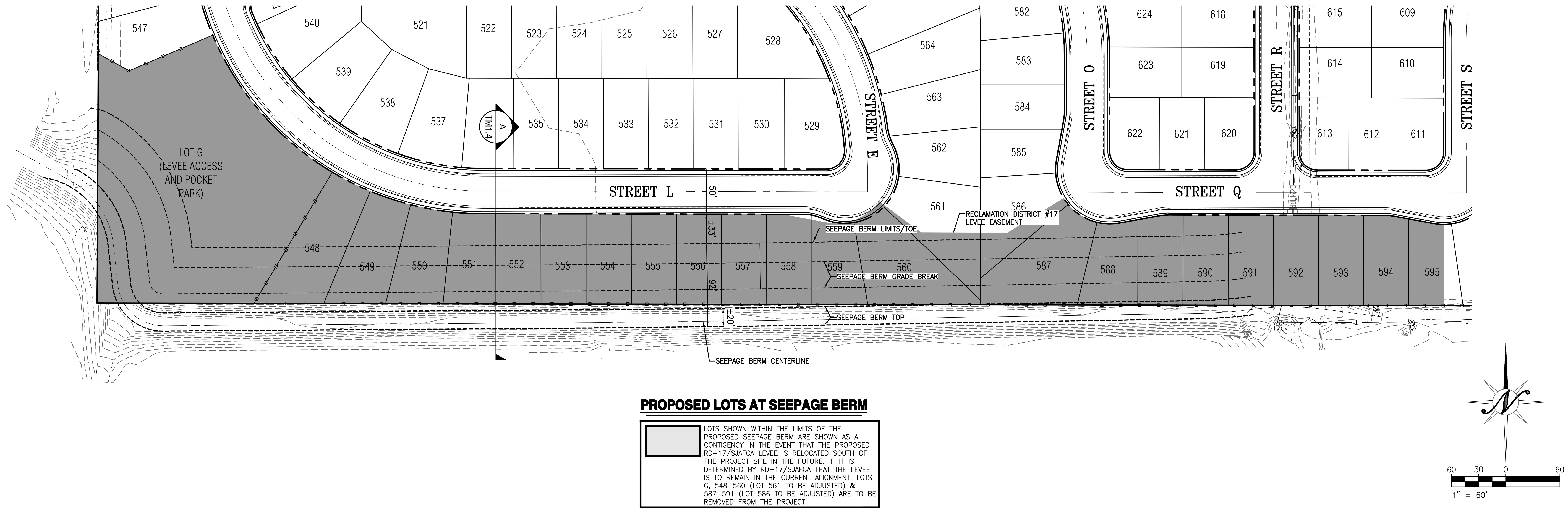
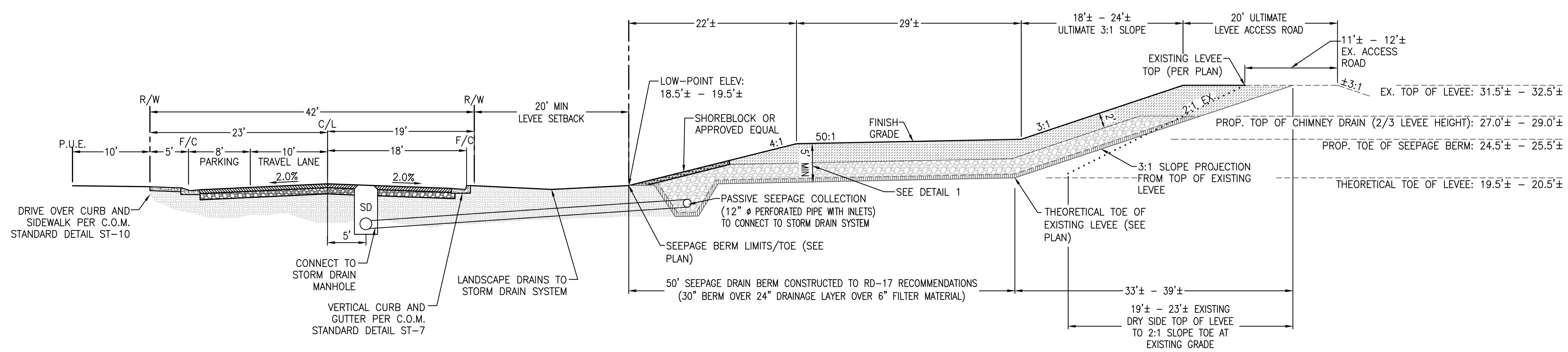


PROPOSED LOTS AT SEEPAGE BERM

LOTS SHOWN WITHIN THE LIMITS OF THE PROPOSED SEEPAGE BERM ARE SHOWN AS A CONTIGENCY IN THE EVENT THAT THE PROPOSED RD-17/SJAFCA LEVEE IS RELOCATED SOUTH OF THE PROJECT SITE IN THE FUTURE. IF IT IS DETERMINED BY RD-17/SJAFCA THAT THE LEVEE IS TO REMAIN IN THE CURRENT ALIGNMENT, LOTS G, 548-560 (LOT 561 TO BE ADJUSTED) & 587-591 (LOT 586 TO BE ADJUSTED) ARE TO BE REMOVED FROM THE PROJECT.



A **TYPICAL LEVEE SECTION**

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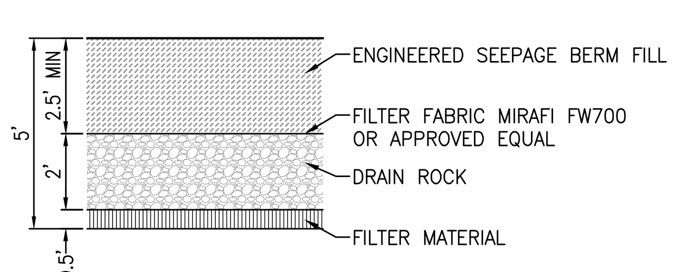

1 **SEEPAGE BERM FILL DETAIL**

NTS

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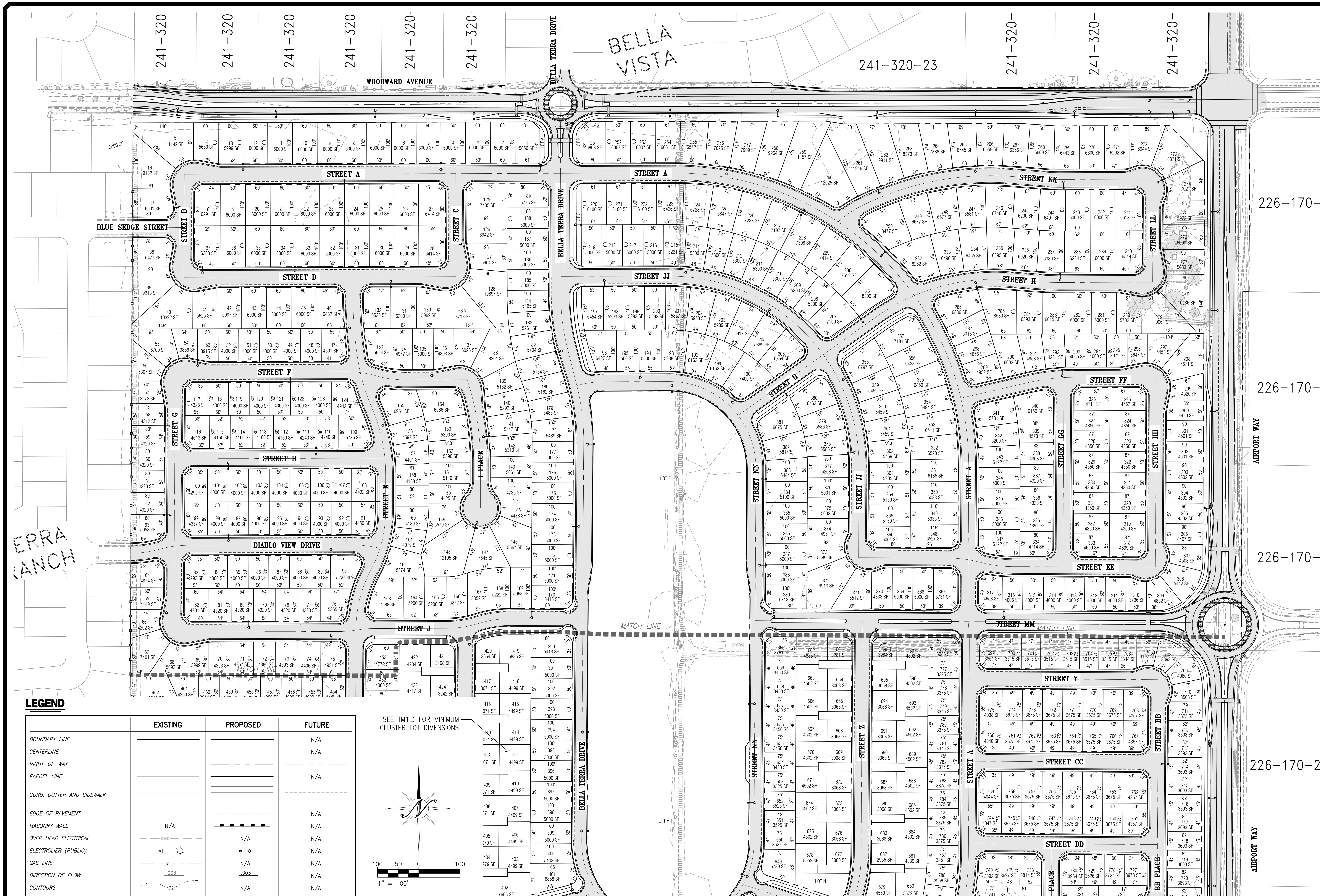

SEE SHEET TM 2.2

LEGEND

	EXISTING	PROPOSED	FUTURE
BOUNDARY LINE			N/A
CENTERLINE			
RIGHT-OF-WAY			
PARCEL LINE			N/A
CURB, GUTTER AND SIDEWALK			
EDGE OF PAVEMENT			N/A
MASONRY WALL	N/A		N/A
OVER HEAD ELECTRICAL	OHE	N/A	N/A
ELECTROLIER (PUBLIC)			N/A
GAS LINE	G	N/A	N/A
DIRECTION OF FLOW	.003	.003	N/A
CONTOURS	32	N/A	N/A
FENCE (CHAINLINK OR VINYL)			N/A
SIGN			N/A
SERVICE POLE	SP	N/A	N/A

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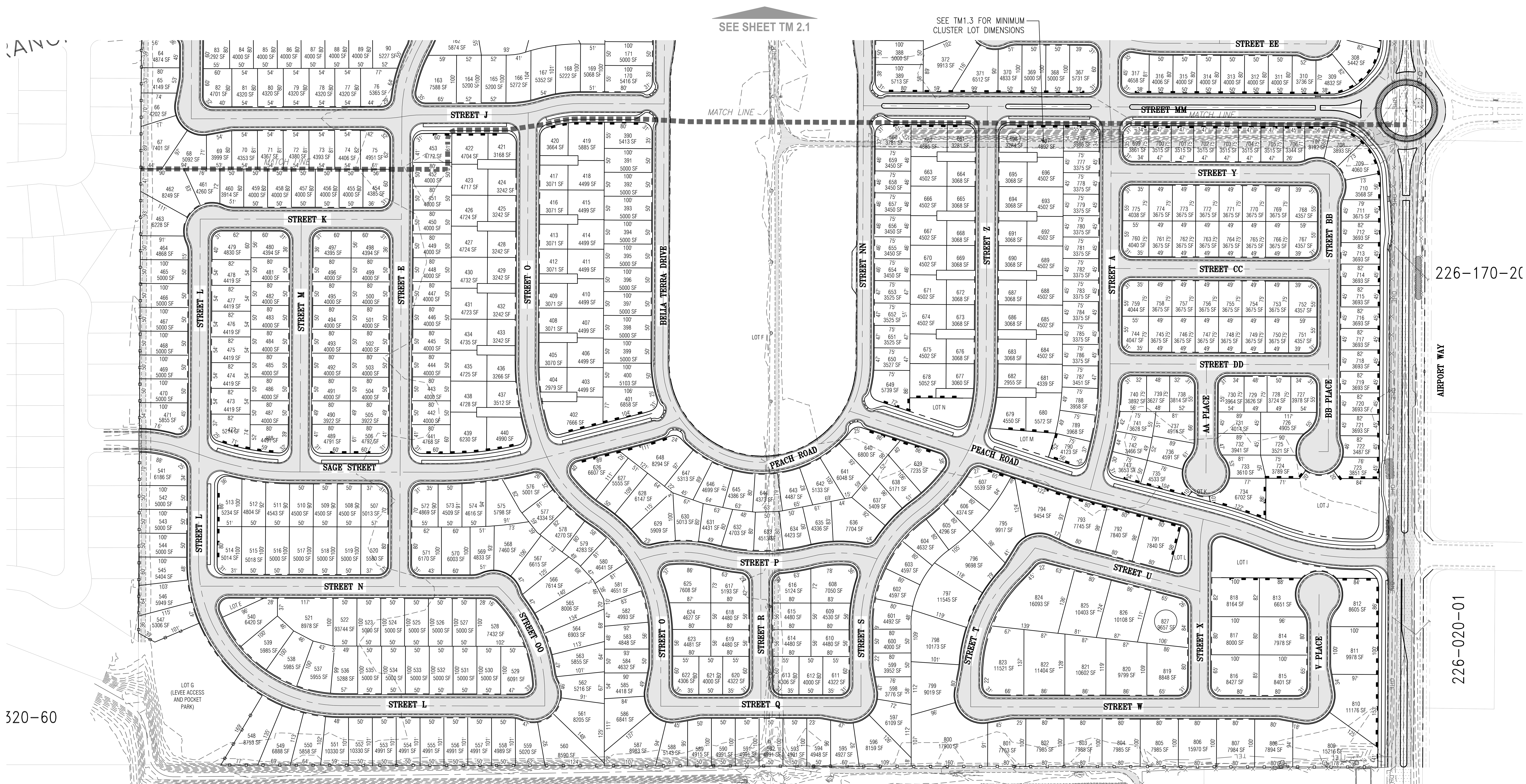

LEGEND

	EXISTING	PROPOSED	FUTURE
BOUNDARY LINE			N/A
CENTERLINE			N/A
RIGHT-OF-WAY			
PARCEL LINE			N/A
CURB, GUTTER AND SIDEWALK			
EDGE OF PAVEMENT			N/A
MASONRY WALL	N/A		N/A
OVER HEAD ELECTRICAL	OHE	N/A	N/A
ELECTROLIER (PUBLIC)			N/A
GAS LINE	G	N/A	N/A
DIRECTION OF FLOW	.003	.003	N/A
CONTOURS	32	32	N/A
FENCE (CHAINLINK OR VINYL)			N/A
SIGN		N/A	N/A
SERVICE POLE	SP	N/A	N/A

100 50 0 100

1" = 100'

DIMENSION PLAN (SOUTH)

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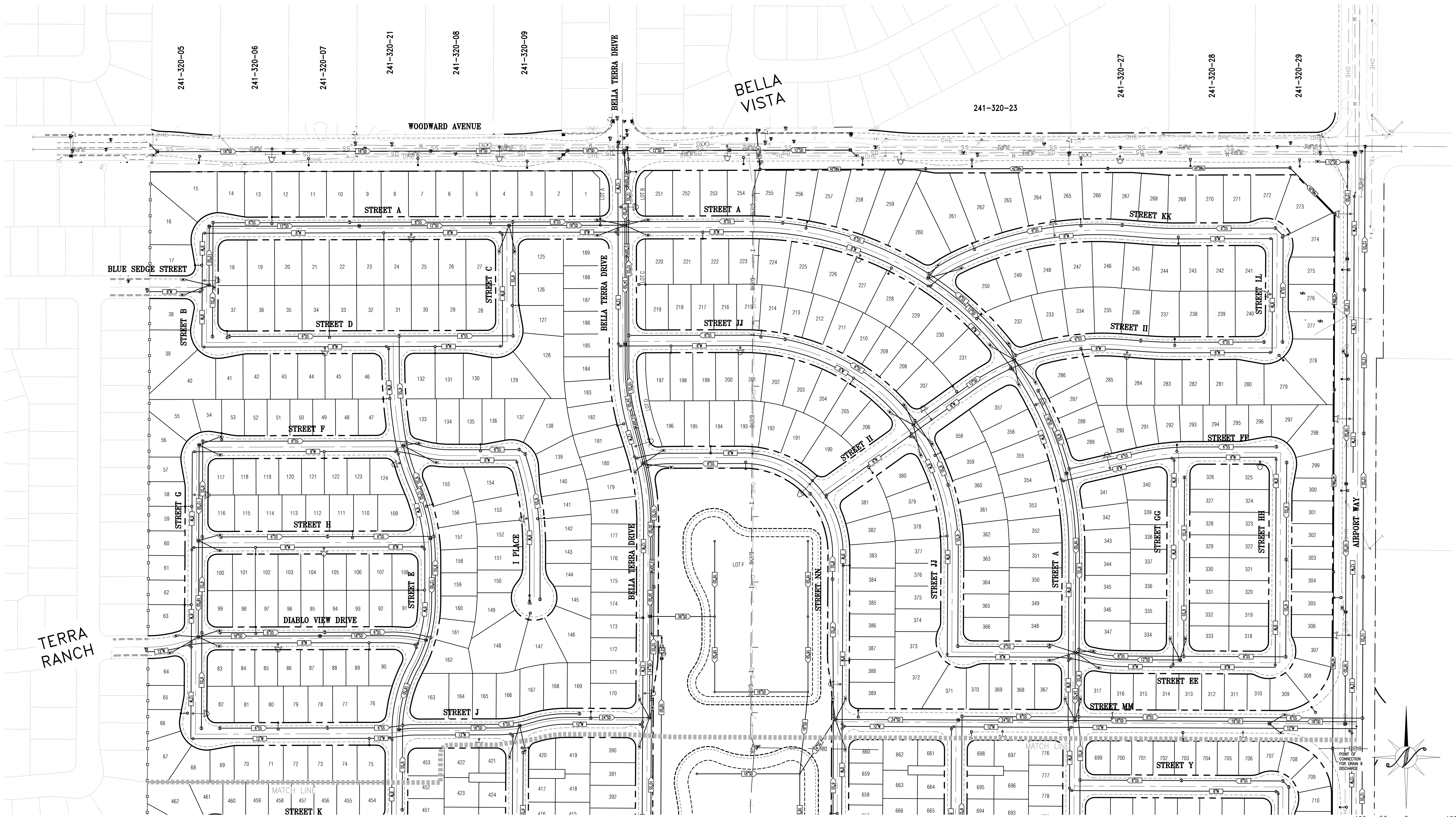

SEE SHEET TM 3.2

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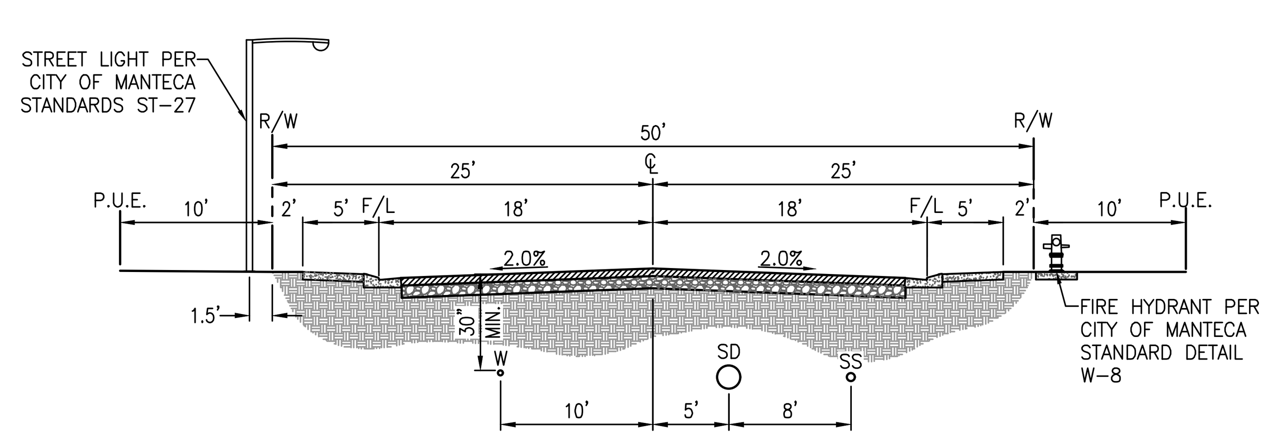
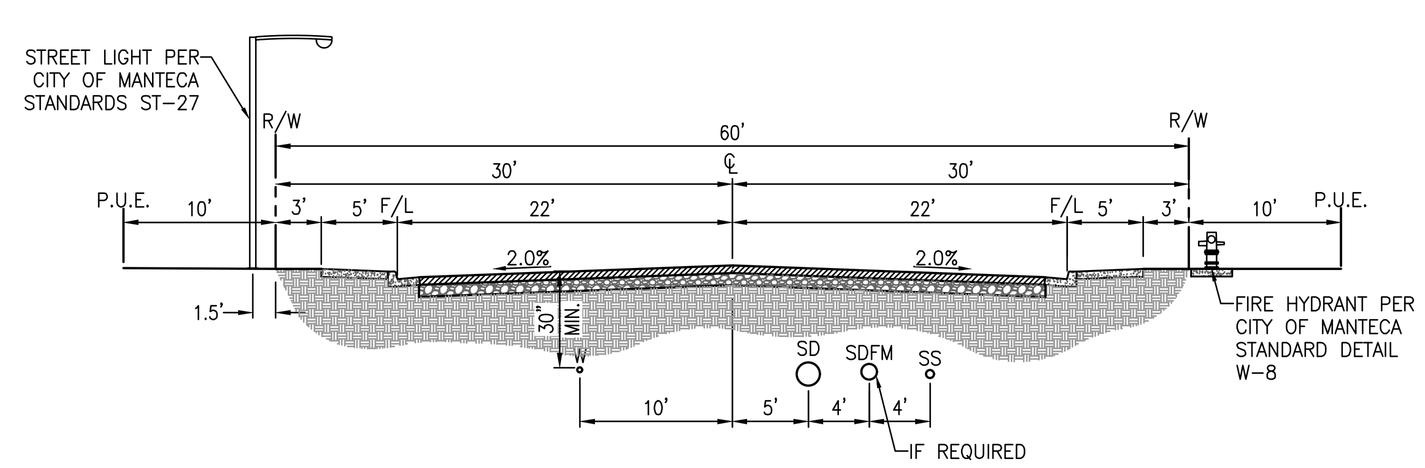
1" = 100'



UT1 50' TYPICAL INTERIOR STREET UTILITY ALIGNMENT
NTS



UT2 60' TYPICAL INTERIOR STREET UTILITY ALIGNMENT
NTS

LEGEND

	EXISTING	PROPOSED
BOUNDARY LINE		
CENTERLINE		
RIGHT-OF-WAY		
PARCEL LINE		
GAS LINE	G	N/A
EDGE OF PAVEMENT		
STORM DRAIN (MAIN)	SD Ex12"SD	12"SD
FORCE MAIN	SD 12"FM SD	12"SDFM
DRAINAGE SWALE		
STORM DRAIN MAINTENANCE HOLE		

LEGEND (CONTINUED)

	EXISTING	PROPOSED
CURB INLET		
WATER (POTABLE)	W Ex8"W	8"W
WATER (NON-POTABLE)	W Ex8"NP	8"NP
WATER VALVE	WV	WV
WATER BLOW-OFF VALVE	N/A	BO
FIRE HYDRANT		
SEWER MAINTENANCE HOLE		
SEWER (MAIN)	SS Ex12"SS	12"SS
IRRIGATION LINE	I Ex48"IRR	42"DBo
IRRIGATION VALVE	ICV	N/A
IRRIGATION STRUCTURE		

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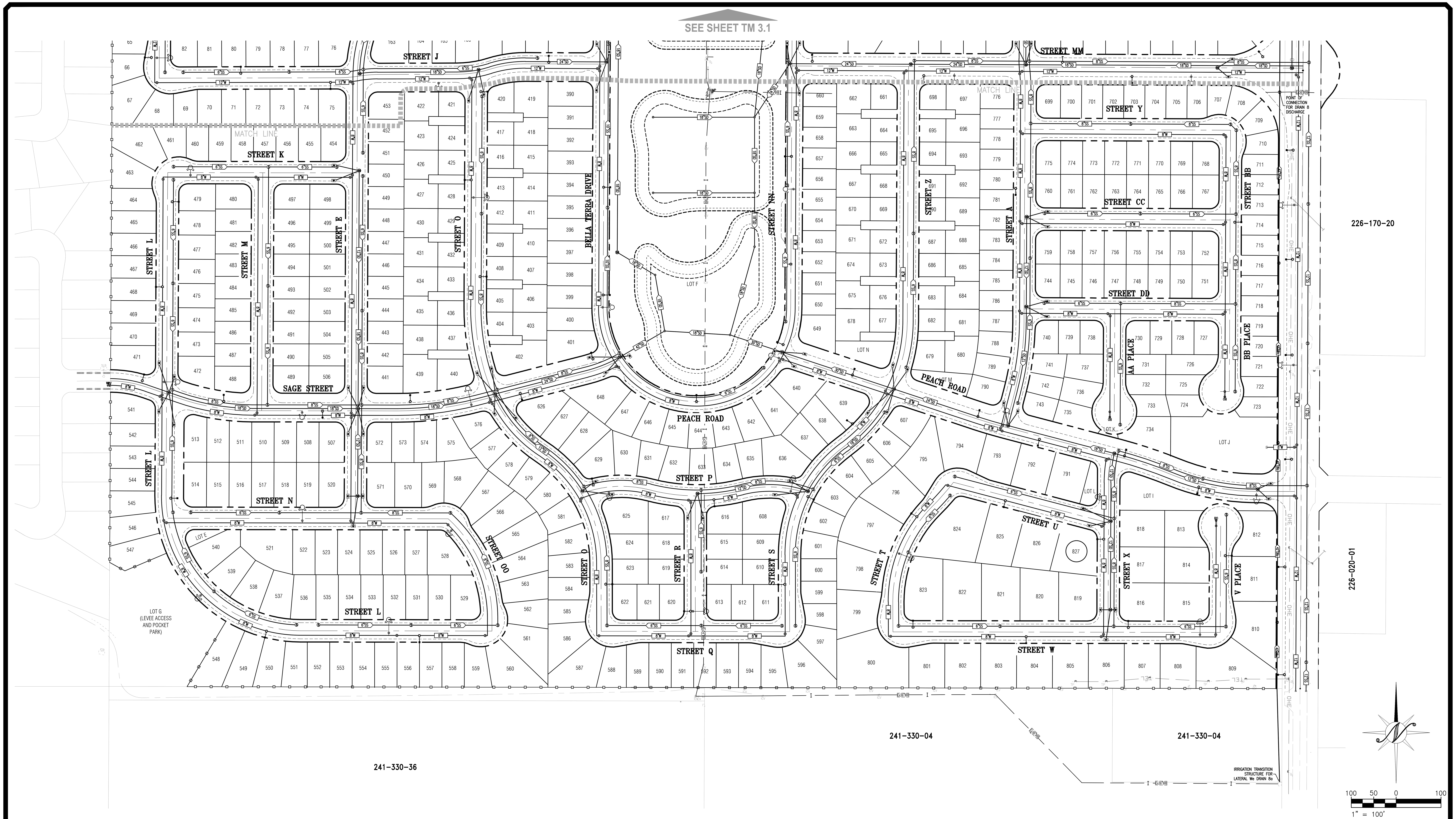

LEGEND

	EXISTING	PROPOSED
BOUNDARY LINE		
CENTERLINE		
RIGHT-OF-WAY		
PARCEL LINE		
CURB, GUTTER AND SIDEWALK		
EDGE OF PAVEMENT		
STORM DRAIN (MAIN)	SD Ex12"SD	12"SD
FORCE MAIN	SD 12"FM SD	12"SDFM
DRAINAGE SWALE		
STORM DRAIN MAINTENANCE HOLE	SD	SD

LEGEND (CONTINUED)

	EXISTING	PROPOSED
CURB INLET		
WATER (POTABLE)	W Ex8"W	8"W
WATER (NON-POTABLE)	W Ex8"NP	8"NP
WATER VALVE	WV	WV
WATER BLOW-OFF VALVE	N/A	BO
FIRE HYDRANT		
SEWER MAINTENANCE HOLE	S	S
SEWER (MAIN)	SS Ex12"SS	12"SS
IRRIGATION LINE	I Ex48"IRR	42"D8a
IRRIGATION VALVE	ICV	N/A
IRRIGATION STRUCTURE	I	I

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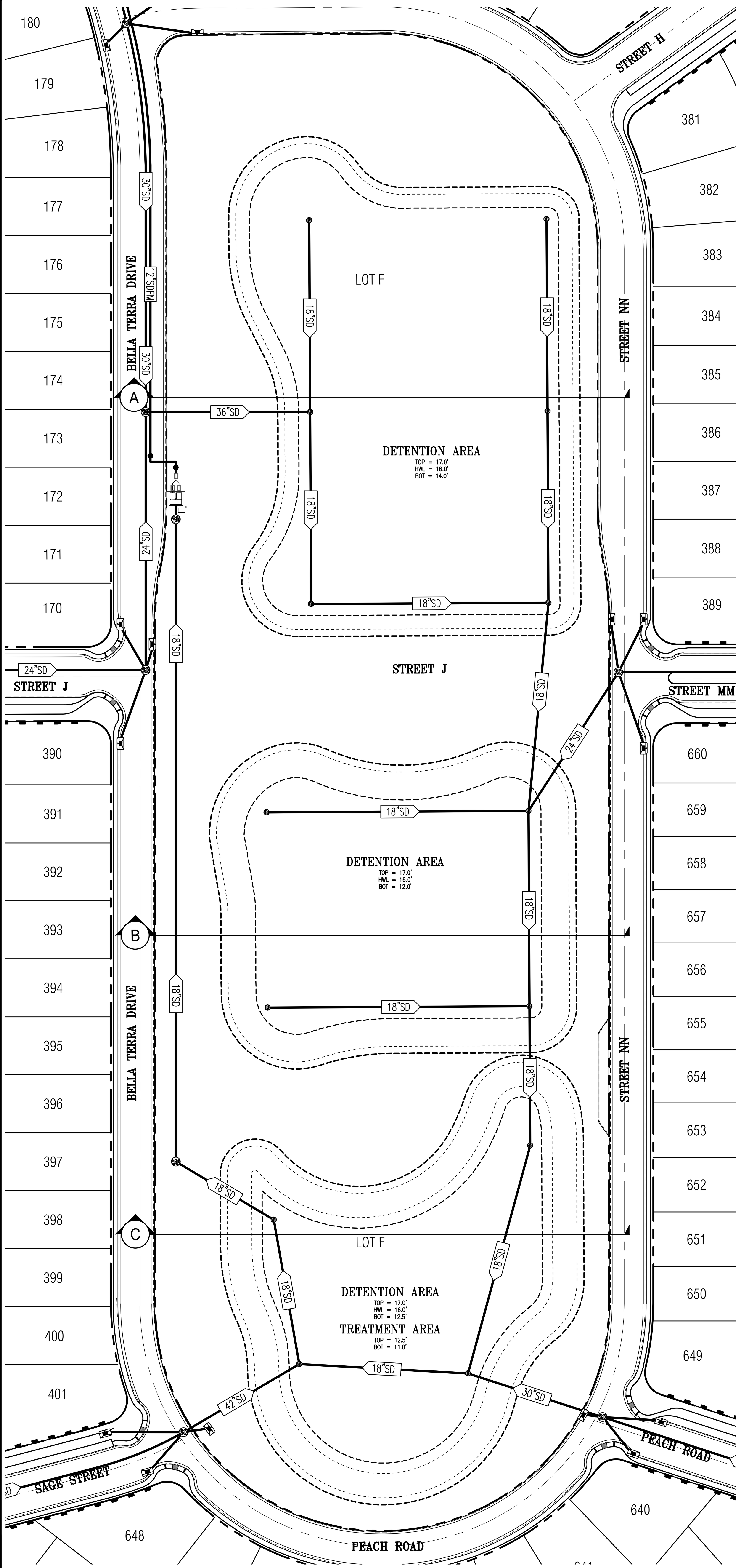

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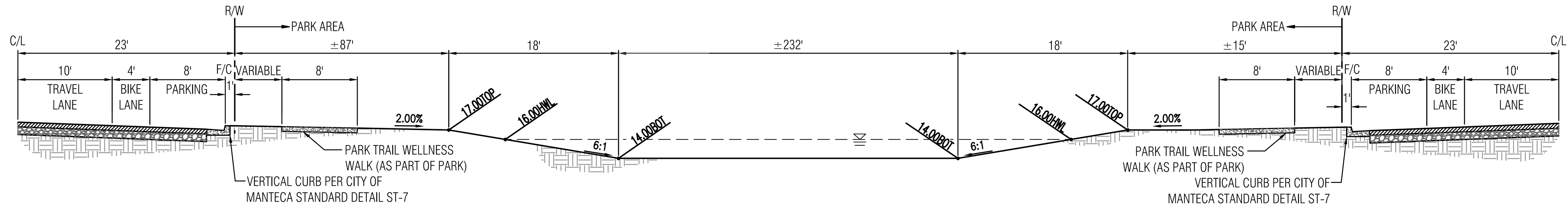
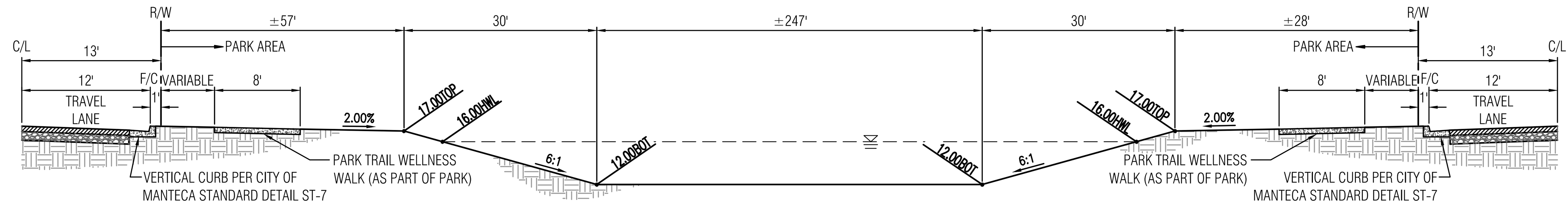


A BASIN 1 CROSS SECTION
NTS



B BASIN 2 CROSS SECTION
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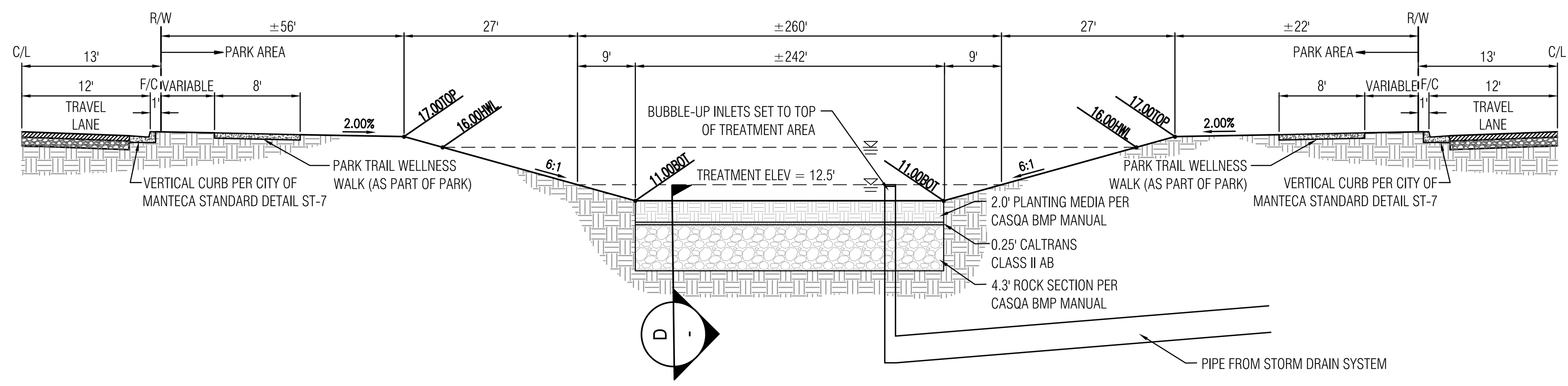


C BASIN 3 CROSS SECTION
NTS

BASIN 1 VOLUME CALCULATIONS

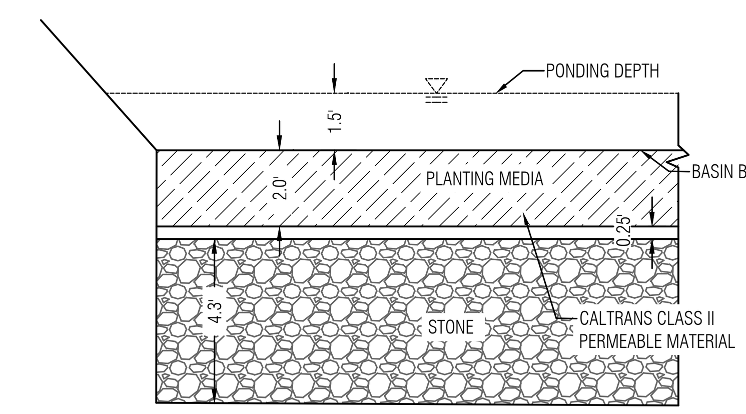
DESCRIPTION	UNIT	QUANTITY
STORAGE BASIN BOTTOM	ELEVATION	14.0'
STORAGE BASIN BOTTOM	AREA	88,375 SF
STORAGE BASIN HWL	ELEVATION	16.0'
STORAGE BASIN HWL	AREA	103,908 SF
TOTAL BASIN	VOLUME	4.41 AC-FT

BASIN 2 VOLUME CALCULATIONS

DESCRIPTION	UNIT	QUANTITY
STORAGE BASIN BOTTOM	ELEVATION	12.0'
STORAGE BASIN BOTTOM	AREA	49,771 SF
STORAGE BASIN HWL	ELEVATION	16.0'
STORAGE BASIN HWL	AREA	72,887 SF
TOTAL BASIN	VOLUME	5.60 AC-FT

BASIN 3 VOLUME CALCULATIONS

DESCRIPTION	UNIT	QUANTITY
BIORETENTION BOTTOM	ELEVATION	11.0'
BIORETENTION BOTTOM	AREA	44,255 SF
BIORETENTION TOP	ELEVATION	12.5'
BIORETENTION TOP	AREA	53,253 SF
BIORETENTION AREA	VOLUME	1.68 AC-FT
STORAGE BASIN BOTTOM	ELEVATION	12.5'
STORAGE BASIN BOTTOM	AREA	53,253 SF
STORAGE BASIN HWL	ELEVATION	16.0'
STORAGE BASIN HWL	AREA	76,291 SF
STORAGE BASIN AREA	VOLUME	5.18 AC-FT
TOTAL BASIN	VOLUME	6.85 AC-FT



NOTES:
1. PLANTING MEDIA SPECIFICATIONS PER BIORETENTION TECHNICAL SPECIFICATIONS OF CITY OF MANTECA POST CONSTRUCTION STORMWATER STANDARDS MANUAL
2. STONE TO BE 1"-2.5" DIAMETER STONE

D BIORETENTION BASIN SECTION
NTS

BASIN - Design Calculations - Permanent Basin
Per City of Manteca Design Standards

Volume Requirements:
Design Frequency = 10 Year
Runoff, R = 3.56 inches 0.30 ft Urbanized Areas

PHASE 1	C	R (ft)	A (ac)	V (ac-ft)	C*A	Comp C
Off-Site Roadways*	0.70	0.30	1.26	0.26	0.88	
Single Family Residential	0.30	0.30	32.50	2.89	9.75	
Park / Open Space	0.15	0.30	1.26	0.06	0.19	
Stormwater Basin	1.00	0.30	2.49	0.74	2.49	
	Total		37.51	3.95	13.31	0.35

Required Volume of Storage (100%) = 3.95 ac-ft 6,371 cy

PHASE 1 AND 2	C	R (ft)	A (ac)	V (ac-ft)	C*A	Comp C
Off-Site Roadways*	0.70	0.30	4.89	1.02	3.42	
Single Family Residential	0.30	0.30	73.46	6.54	22.04	
Park / Open Space	0.15	0.30	9.10	0.41	1.37	
Stormwater Basin	1.00	0.30	4.27	1.27	4.27	
	Total		91.73	9.23	31.10	0.34

Required Volume of Storage (100%) = 9.23 ac-ft 14,885 cy

TOTAL	C	R (ft)	A (ac)	V (ac-ft)	C*A	Comp C
Off-Site Roadways*	0.70	0.30	6.18	1.28	4.33	
Single Family Residential	0.30	0.30	138.28	12.31	41.48	
Park / Open Space	0.15	0.30	13.62	0.61	2.04	
Stormwater Basin	1.00	0.30	6.23	1.85	6.23	
	Total		164.31	16.04	54.08	0.33

Required Volume of Storage (100%) = 16.04 ac-ft 25,885 cy

Stormwater Design Volume (SDV) Requirements:

DMA Impervious Ratio 0.33
P_6 = 0.37 in

	C	A (ac)	C*A
Off-Site Roadways	0.70	6.18	4.33
On-Site Single Family Residential	0.30	138.28	41.48
Park / Open Space	0.15	13.62	2.04
Stormwater Basin	1.00	6.23	6.23
	Composite C =		0.33

$P_0 = (a \times C) \times P_6$

a = 1.963
C = 0.33
P_6 = 0.37 in

P_0 = 0.24 in

SDV = A x P_0 / 12

A = 164.31 ac
P_0 = 0.24 in

SDV = 3.27 ac-ft

Bioretention Area Requirements:

SDV =	3.27	ac-ft	
d_{pz} =	1.50	ft	Depth of Ponding Zone
n_{pm} =	0.1	-	Porosity of planting media
d_{pm} =	2.0	ft	Depth of planting media
n_{gl} =	0.35	-	Porosity of gravel layer
d_{gl} =	4.3	ft	Depth of gravel layer
A=	1.02	ac	Bioretention Area Required

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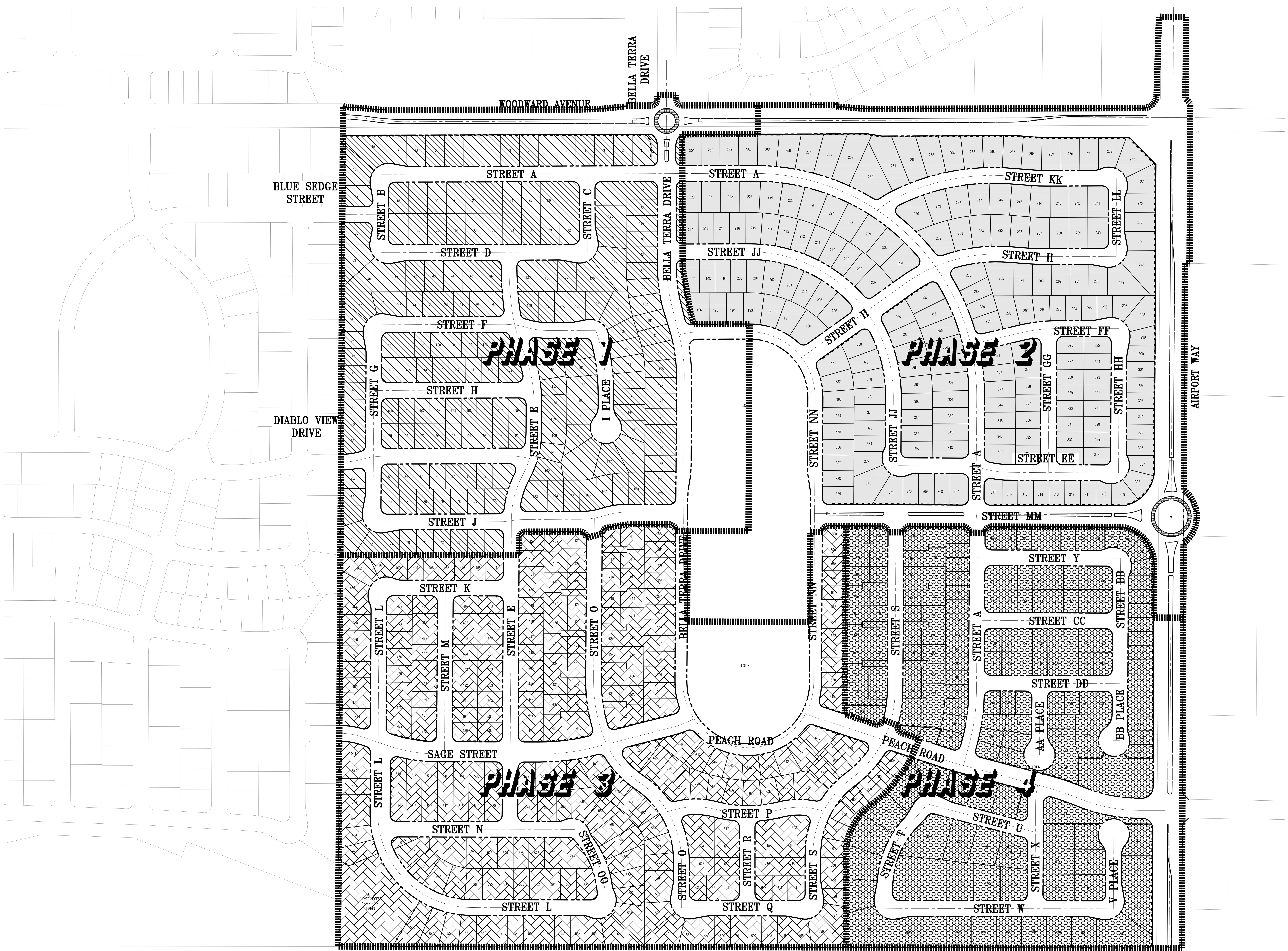

PHASE LEGEND

LAND USE	# OF LOTS
PHASE 1	189
PHASE 2	200
PHASE 3	271
PHASE 4	167
TOTAL	827

PHASE BOUNDARY

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PHASING PLAN

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TM4.1

Appendix I

Design Guidelines

Lumina

AT MACHADO RANCH

Design Guidelines June 2021

Lumina AT MACHADO RANCH

PREPARED FOR

SIGNATURE HOMES

SIGNATURE HOMES

4670 Willow Rd., Suite 200

Pleasanton, CA 94588

Contact: Stephen Miller

925.872.3876

PREPARED BY

ARCHITECTS . PLANNERS . DESIGNERS

WHA.

ORANGE COUNTY . LOS ANGELES . BAY AREA

680 Newport Center Dr, Suite 300

Newport Beach, CA 92660

Contact: Julia Malisos

949.250.0607

TABLE OF CONTENTS

CHAPTER 1 INTRODUCTION

CHAPTER 2 LAND USE

CHAPTER 3 PRODUCT

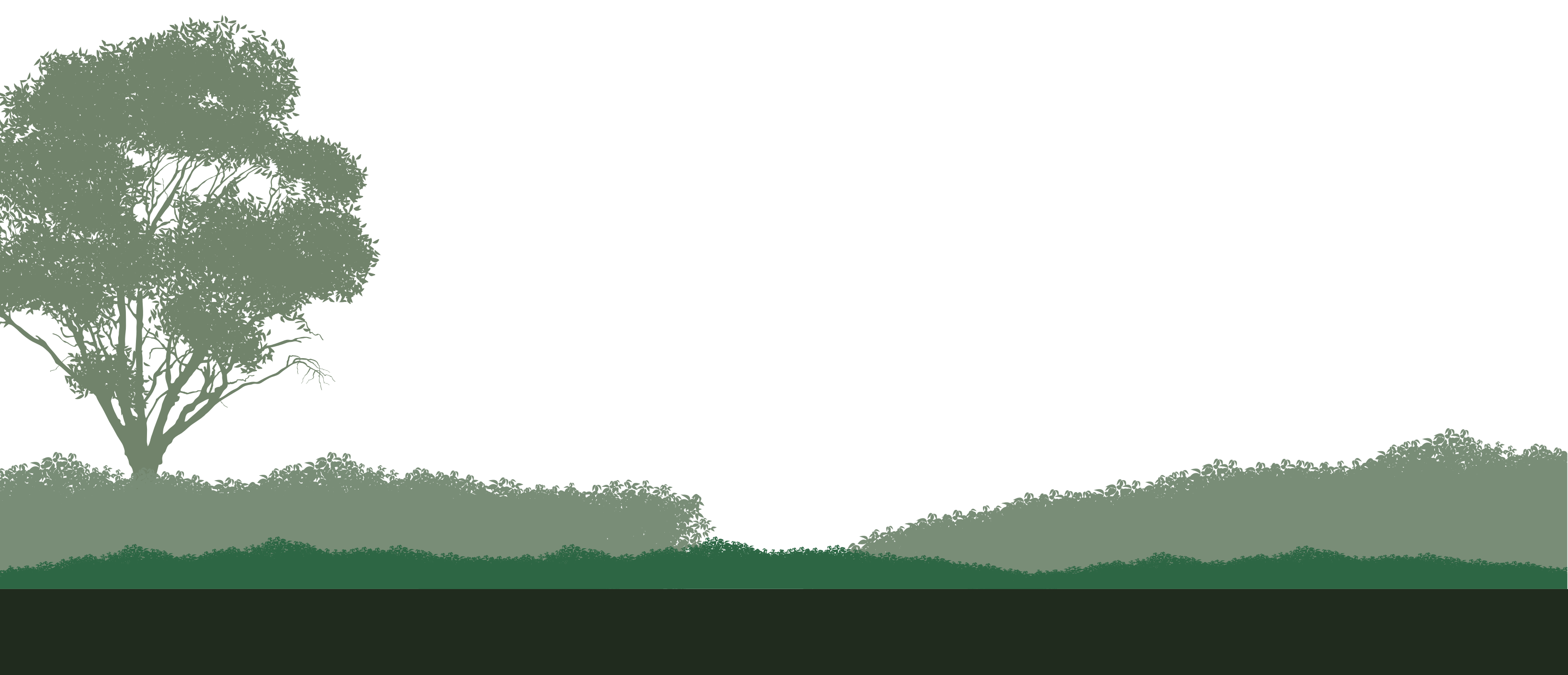
CHAPTER 4 CIRCULATION

CHAPTER 5 NEIGHBORHOOD DESIGN

CHAPTER 6 STYLES

CHAPTER 7 LANDSCAPE

CHAPTER 8 DESIGN REVIEW



CHAPTER 1 INTRODUCTION

1.1 HEART AND HOME

Finding balance between work, family, wellness and relaxation is something we all strive to achieve, and coming home to Lumina at Machado Ranch helps make that goal a little easier. Nestled in the Central Valley, the City of Manteca brands itself as the "Family City." Lumina at Machado Ranch is a new Manteca community that strives to support this motto. Family often lies at the heart of happiness, and the heart of this community that enhances happiness is the 10.87-acre community park.

Lumina at Machado Ranch has been designed to honor the park, making it the heart of the community and allowing people to recreate in an interactive people-centric environment. With homes oriented towards the park or out to the neighborhood streets, Lumina at Machado Ranch will provide the warmth of a traditional community-focused neighborhood that emphasizes streets as social spaces and a park that invigorates those who live there. The result is a residential community that encourages a superior quality of life, affordability by design, and a place people love to call home.

Lumina at Machado Ranch offers a variety of home options for a wide range of buyers, wanting to live in a neighborhood that focuses on families and activities that encourage health and well-being.

The project implements a varied lot development program ranging from small lots to large executive lots, strengthening the ability to house a broad spectrum of potential residents. Lumina will provide much needed attainable housing for the community along with executive housing and a varied mix in between. The thoughtful variation in the architectural design of the home sizes provides a greater diversity of housing in a single planned community. While some homes are built with small lot standards, the benefits are vast including private yards, full driveways, and quality streetscenes. With beautiful California living, backyards are provided as an extension of living space and the central park enables an extension of community through a large gathering space for recreation.

From motorcourt clusters to more conventional lot sizes, these options attract diverse buyer profiles and price points.

The overarching vision for Lumina at Machado Ranch is:

- **Form and Function**
- **Health and Well-Being**
- **Home**

1.2 PROJECT CONTEXT AND CONNECTIVITY

Lumina at Machado Ranch is proposed to be annexed into the City of Manteca. The project site is located at the southern end of Manteca's city limits, approximately a 1/2 mile south of State Highway 120. State Highway 120 runs east/west and when going west, connects to Interstate 5. Eastbound, State Highway 120 connects to State Route 99. With the project site in close proximity to these routes, regional access is convenient by automobile.

Lumina at Machado Ranch is intended to be cohesive with the existing community fabric, providing a circulation design that connects to adjacent neighborhoods and street networks.

The project site is located near commercial centers such as the Promenade Shops at Orchard Valley and Stadium Center, as well as recreation uses such as Big League Dreams and various neighborhood parks.

Refer to Figure 1.1: Community Context.

Figure 1.1: Community Context

1.3 COMMUNITY FRAMEWORK

When creating a community and analyzing the fine aesthetic details, the framework assists in bringing out the features for enhancement and celebration. Lumina at Machado Ranch has a number of elements that have been studied to ensure the design of the community is cohesive, unique, and visually pleasing. The framework of this community brings the following elements to attention:

- Visible Edges: Community boundaries that can be seen from outside of the project boundary. Details such as varied roof design and rear elevation architecture is of focus to ensure the community does not look monotonous from the surrounding neighborhoods.
- Project Entries: Entries are the first impression when arriving to a community. These are visual opportunities for impact and placemaking.
- Primary Corner Homes: These homes are located in highly visible areas such as the Community Park intersections or near the major entries. Design features shall be provided on both the front and the street-side elevation.
- Community Parks/Open Space: Passive or active recreation spaces. These open spaces are also utilized for detention.
- Celebration Plaza: A Celebration Plaza is an opportunity to provide a designated location for community events such as food trucks, art fairs, farmer’s markets, or block parties.
- Wellness Walks: Designated streets with enhanced and extended sidewalks and landscape. These Walks are intended to encourage walking and other forms of recreation and community interaction. Features such as small markers can be installed to identify particular walking loops and benches or other respite areas can be integrated. The Community Park will also include various pedestrian paths.

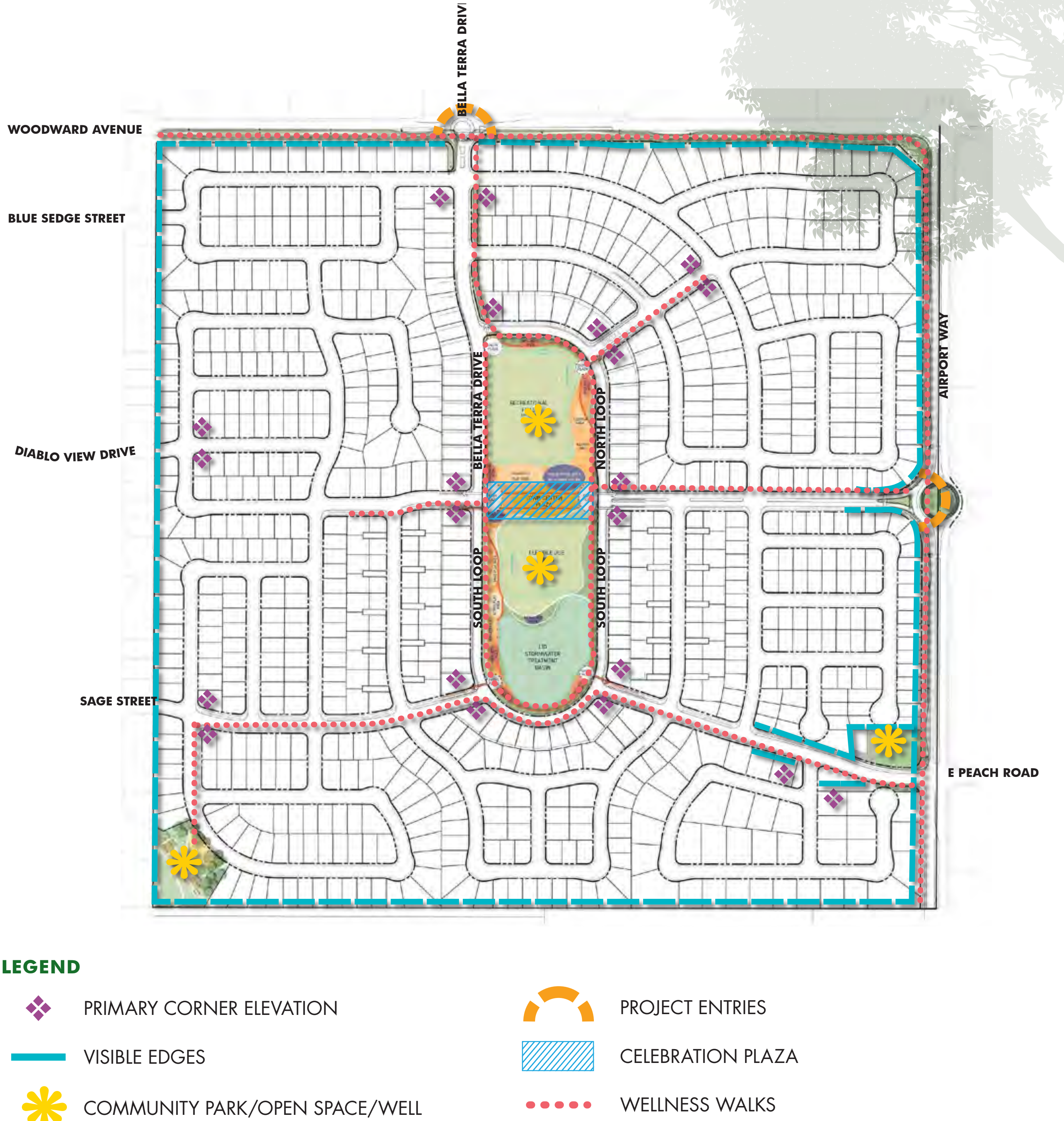
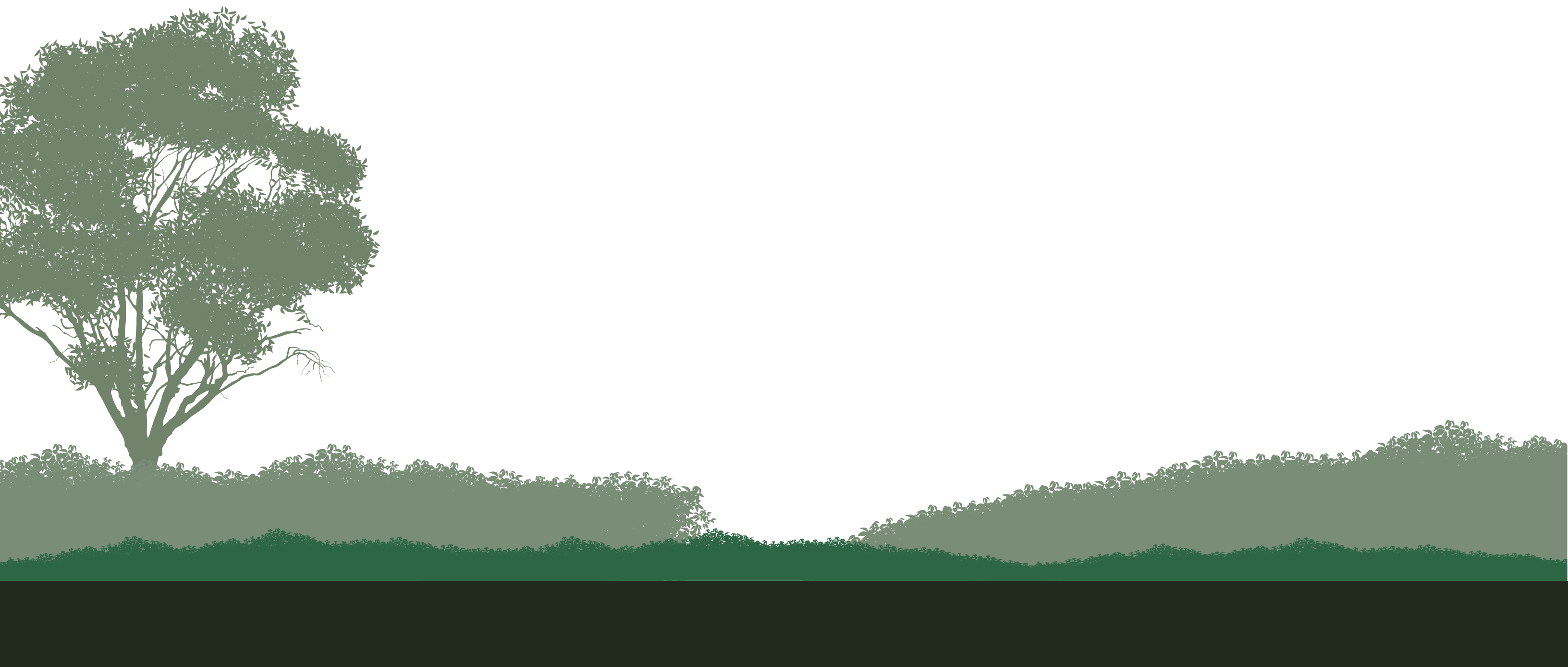


Figure 1.2: Community Framework



CHAPTER 2 LAND USE

To meet market needs and buyer preferences, Lumina at Machado Ranch provides community-oriented housing that is focused around a central park. Providing recreational opportunities that both contribute to wellness and encourage social interaction is a Lumina community goal. The Levee Park and Wellness Walks in addition to the central park, work to achieve this goal. With thoughtful design, such amenities in addition to diversity in the housing stock, can be accomplished. This Chapter discusses compliance with the General Plan and requested zoning deviations in order to implement the Lumina at Machado Ranch vision.

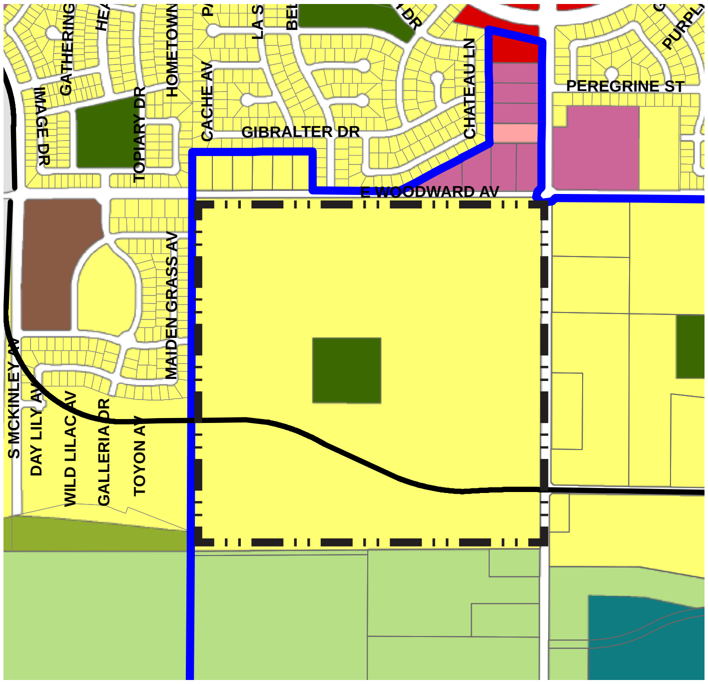
2.1 LAND USE AND ZONING

The project site has an existing General Plan designation of Low Density Residential (LDR) and an existing zoning designation of AG-40. With the annexation, Lumina at Machado Ranch will continue to have the LDR General Plan designation while modifying its zoning designation to Planned Development. At build-out, Lumina will have an overall average density of 5.1 dwelling units per acre. This is within the City's LDR designation, that permits densities between 2.1 and 8.0 dwelling units per acre.

The zoning designation has been changed from AG-40 to Planned Development. Consistent with Manteca Municipal Code Section 17.10.140, Lumina is implementing a Planned Development designation enabling greater opportunity to enhance the neighborhood and product diversity. Varied lot types and enhanced street sections streghten the community aesthetic and provide a stronger pedestrian connection to the large central park. The Planned Development mechanism provides a process that enables the creation of interesting physical environments. This planning mechanism also encourages new development of underutilized land, allowing City needs to be addressed such as housing demand. Thus, Lumina requests the PD designation to implement unique development standards and community open spaces, giving the land its best and highest use.

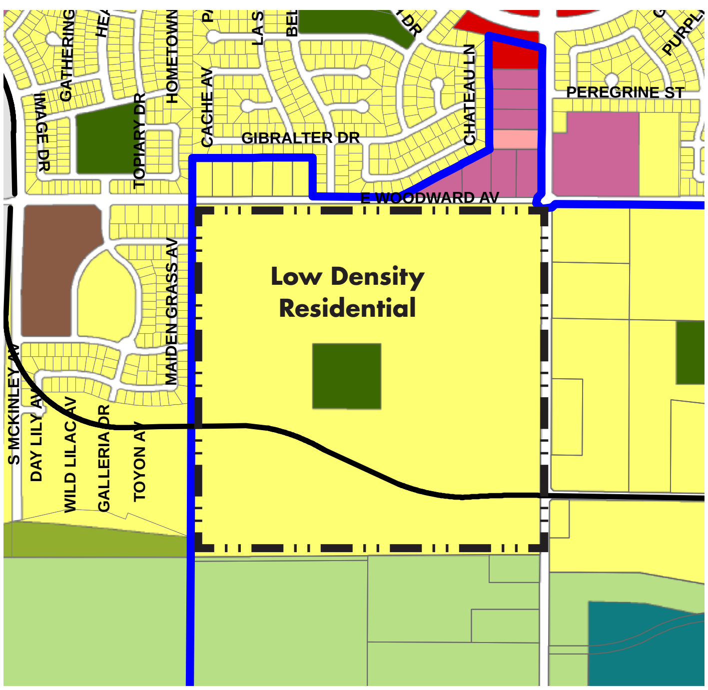
The project is consistent with the General Plan and with the Planned Development requirements of the Manteca Municipal Code. The project fits with the surrounding uses and lessens intensity adjacent to farmland with lower density lots and an enhanced landscape buffer on Airport Way. This extended landscape area provides an increased building setback from existing uses to the new homes. Additionally, Lumina homes will be one and two-story, which is consistent with the surrounding neighborhoods. Architectural elevation styles proposed are in context with existing neighborhoods, tree-lined streets will soften the built environment, and the overall Lumina aesthetic will complement the City's existing fabric.

Any deviations from the City's standards and all guidelines set forth in this document contribute to a quality project that is compatible with the surroundings, preserves site resources where feasible, minimizes hazards, and provides a public benefit.



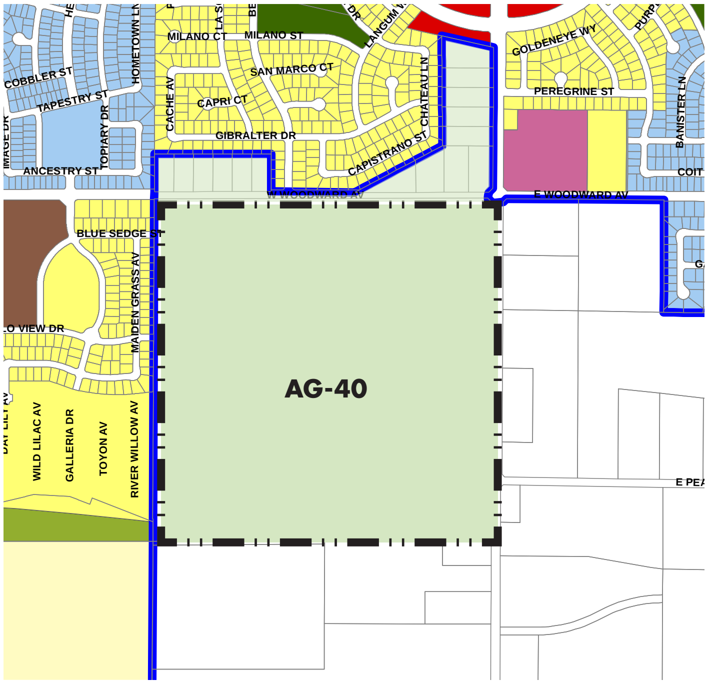
LEGEND	
	NC (Neighborhood Commercial)
	CMU (Commercial Mixed Use)
	GC (General Commercial)
	VLDR (Very Low Density Res. .5 - 2 du/ac)
	LDR (Low Density Res. 2.1 - 8 du/ac)
	HDR (High Density Res. 15.1 - 25 du/ac)
	OS (Open Space)
	P (Park)
	P (Public/Quasi Public)
	City Limit
	Project Area

Figure 2.1: Existing General Plan



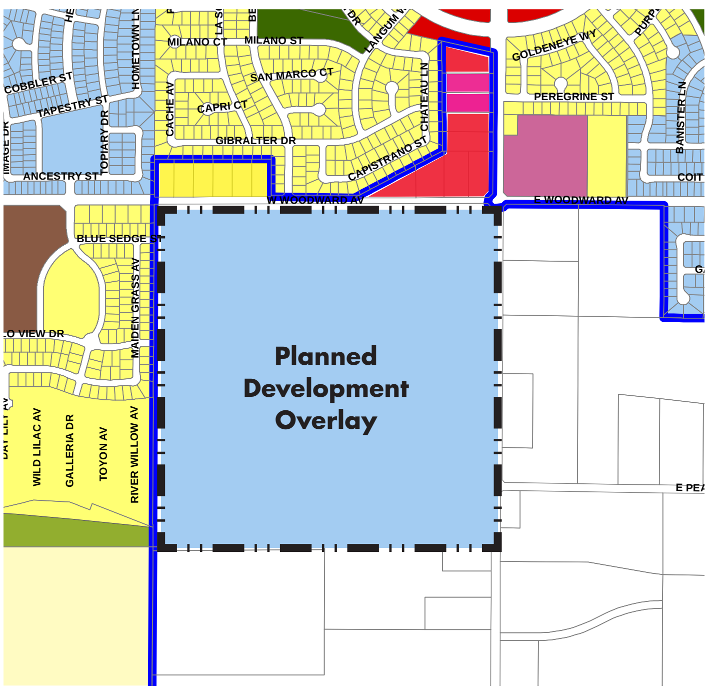
LEGEND	
	NC (Neighborhood Commercial)
	CMU (Commercial Mixed Use)
	GC (General Commercial)
	VLDR (Very Low Density Res. .5 - 2 du/ac)
	LDR (Low Density Res. 2.1 - 8 du/ac)
	HDR (High Density Res. 15.1 - 25 du/ac)
	OS (Open Space)
	P (Park)
	P (Public/Quasi Public)
	City Limit
	Project Area

Figure 2.2: Proposed General Plan (No Change)



LEGEND	
	CMU (Mixed Use Commercial)
	GC (General Commercial)
	R-E (Residential Estate)
	R-1 (One-Family Dwelling)
	R-3 (Multiple Family Dwelling)
	OS (Open Space)
	P (Park)
	PD (Planned Development Overlay)
	City Limit
	Project Area (SJC Existing Zoning: AG-40)
	SJC Existing Zoning: AG-40

Figure 2.3: Existing Zoning



LEGEND	
	CMU (Mixed Use Commercial)
	GC (General Commercial)
	R-E (Residential Estate)
	R-1 (One-Family Dwelling)
	R-3 (Multiple Family Dwelling)
	OS (Open Space)
	P (Park)
	PD (Planned Development Overlay)
	City Limit
	Project Area

Figure 2.4: Proposed Zoning

2.2 DEVIATIONS

The Planned Development designation enables unique housing typologies to be developed by permitting deviations from the existing zoning code.

The majority of the development, with the exception of the motorcourts and minimum driveway standards, implements lot setbacks in accordance with the Small-Lot Single-Family Standards (MMC Section 17.26.040).

The "Motorcourt" housing typology is being implemented to bring a more affordable product to Manteca. This lot arrangement is a unique home type that is not typically found in the City, but is successful throughout California. The architecture will resemble the same level of quality as other more conventional products, including front doors along the streets, full driveways, and private yards. This document requires that all motorcourt homes adjacent to the Lumina public streets have front doors only facing the street, garages must be accessed within the motorcourt drive. This will provide a varied and enhanced streetscene, bringing the architecture into prominence.

The other deviation from the City's zoning code is the front yard setback to the garage. Lumina at Machado Ranch states 18 - 20 feet rather than only 20 feet in order to further encourage movement and variation along the streetscene. Smaller driveways minimize driveway paving, which minimizes construction materials, costs, and unnecessary impervious surface.

2.3 PLANNED DEVELOPMENT BENEFITS

Implementing a Planned Development enables creative design for the betterment of the community. Lumina at Machado Ranch has taken the opportunity to create more open space than is required by Code and consolidated it into larger parks to encourage resident interaction. This section discusses the open space available due to the smaller lot development as a result of the Planned Development zoning designation.

Lumina at Machado focuses on providing attainable housing, but most importantly, a community that provides high quality housing with amenities for those that live there. Thus, the included parks and Wellness Walks provide opportunities for residents to have a more engaging and active lifestyle.

UPLAND PARK AREA

Based on total project area, Lumina at Machado Ranch requires one acre of Upland Park Area. However, since the Code permits smaller lot configurations, Lumina at Machado Ranch is able to provide close to five acres of Upland Park Area and more than three acres of parkland per 1000 people.

COMMUNITY PARKS

The central park is composed of 10.87 acres. The levee park is composed of 1.28 acres. These two spaces are intended to be used all year round. Additionally, there is an open space area at the southern end of the central park area that is considered Low Impact Development (LID) area. This area is used during storm events, but for the other times of the year, it can be used for recreation. The LID area contributes over 8 additional open space acres.

Park furnishings and programming shall be installed in the central park and shall include the following:

- Benches
- Picnic Areas
- Shade Structures
- Sports Fields/Courts
- Tot Lot
- Event Lawn

2.4 THE LAND PLAN

Lumina at Machado Ranch places emphasis on open space, welcoming residential enclaves, and creating a public realm within the community. It has been designed to offer a diverse mix of lot types among its 827 homes.

- 6 product types
- 10.87 acres of programmed park
- LID

Refer to Table 2.1: Land Use Summary and Figure 2.5: Land Use Allocation.

Table 2.1: Land Use Summary

ENCLAVE/LOT SIZE		NO. OF LOTS	APPROXIMATE ACREAGE	DENSITY
	Motorcourt	77	7.82	9.8 du/ac
	45′ x 75′	104	9.00	11.6 du/ac
	50′ x 80′	287	30.39	9.7 du/ac
	50′ x 100′	202	26.25	7.4 du/ac
	60′ x 100′	120	18.83	6.4 du/ac
	80′ x 100′ SF	37	8.17	4.5 du/ac
	Central Park	-	10.87	-
	Levee Park	-	1.28	-
	Road Dedications, Street R/W, & Misc. Landscape Areas	-	48.58	-
	Total	**827**	**161.19**	**5.1 du/ac**

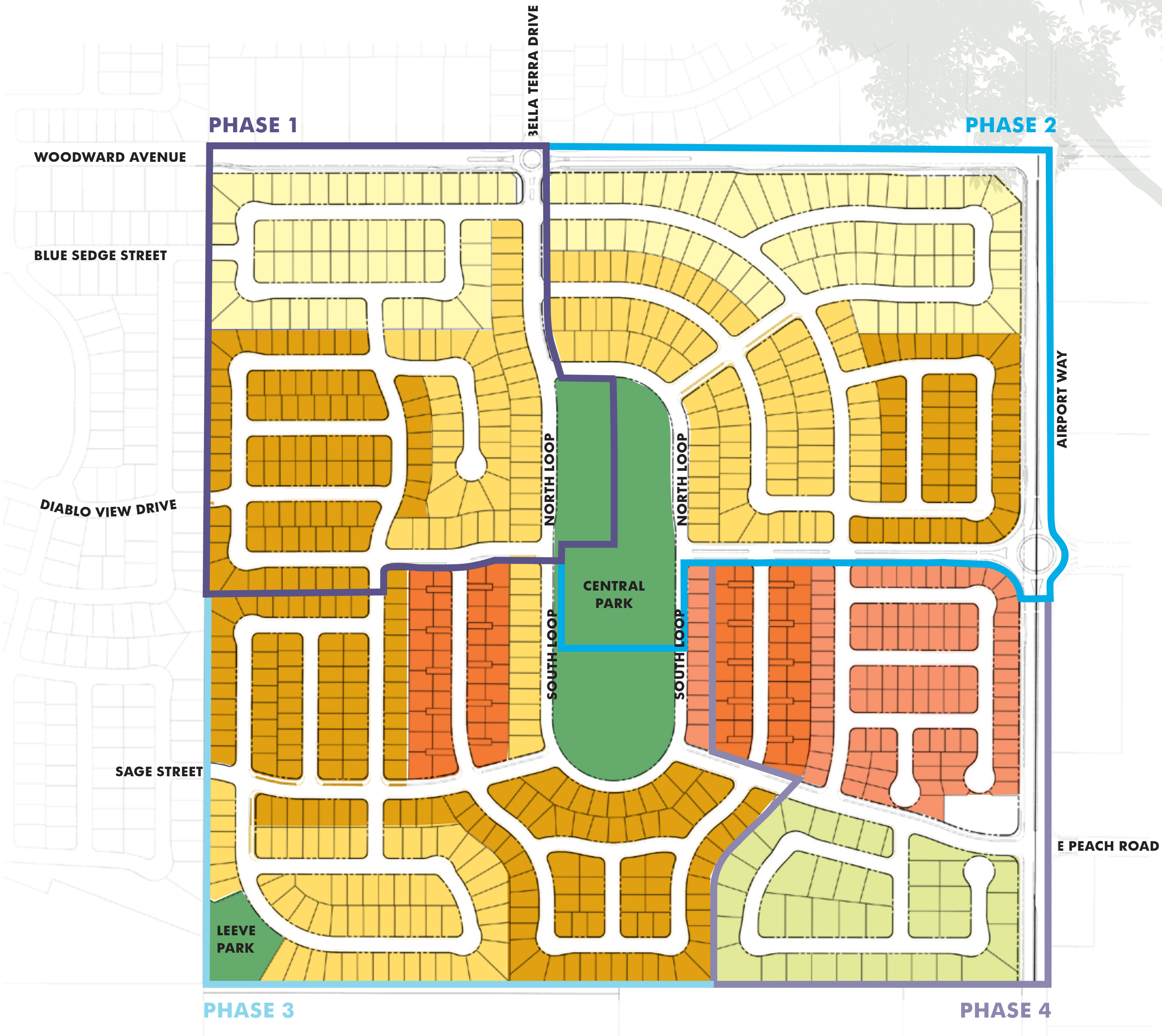
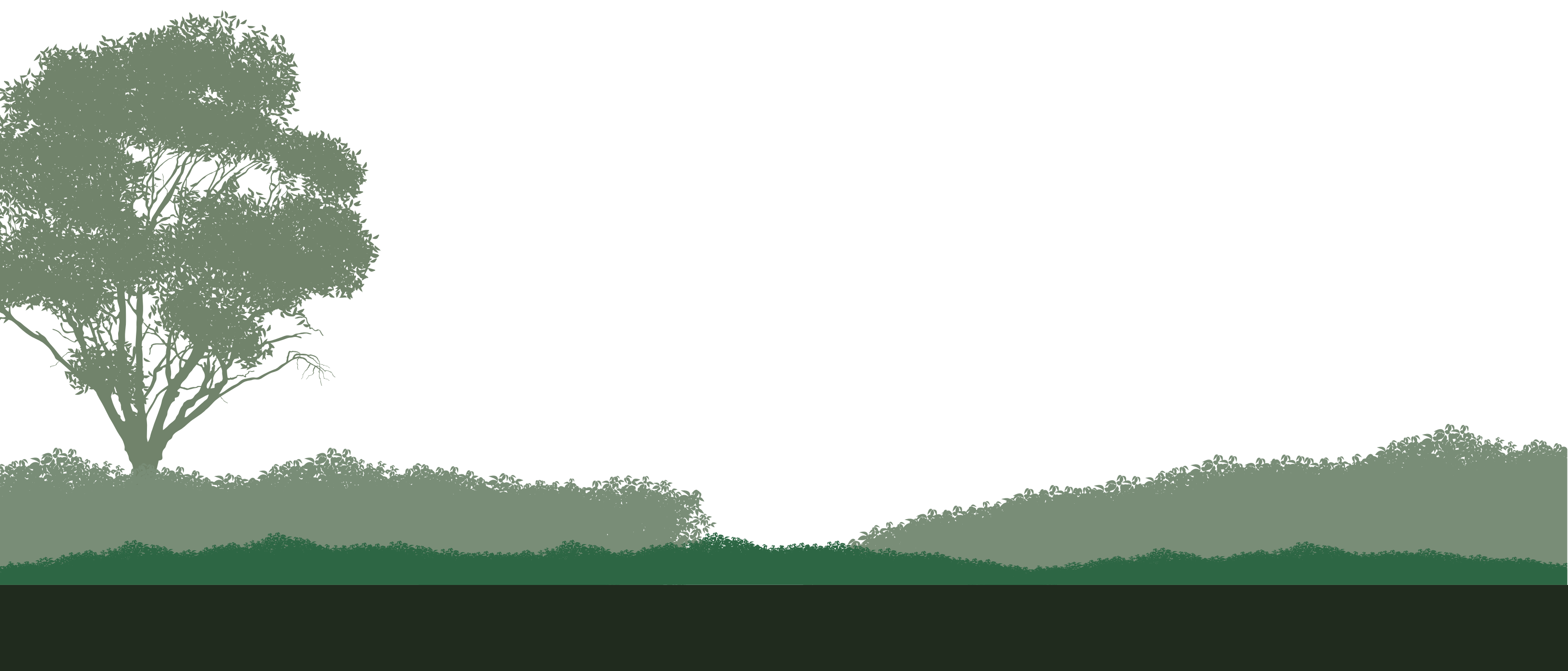


Figure 2.5: Land Use Allocation



CHAPTER 3 **PRODUCT**

Architectural diversity has been implemented to help create a visually interesting community, while size and product location have been organized into construction phases. Phasing creates a strategic plan for development. Both general and specific product requirements are provided in Chapter 3 to help establish the quality and value of the phases.

3.1 PRODUCT CRITERIA

The following sections apply to the products proposed in this document. Any new product proposed after the adoption of this document, shall be reviewed by the City of Manteca Community Development Department and the Lumina Design Review Board (Refer to Chapter 8).

3.2 PHASING

The community is proposed to be built out in four phases. Such phases consist of a grouping of various lot sizes so that variety is consistently being built throughout construction. This is intended to minimize unnecessary over-inundation of any one product which avoids stagnation and reinforces buyer options every step of the way. Phasing can be adjusted at any time based on market conditions and buyer preference.

Refer to Table 3.1: Product Statistics Table by Phase and Figure 3.1: Phasing Plan.

Table 3.1 Product Statistics Table By Phase

	PRODUCT TYPE	MIN. LOT SIZE (SF)	NO. OF HOMES
PHASE 1	50′ x 80′	4,000	86
	50′ x 100′	5,000	49
	60′ x 100′	6,000	54
		Subtotal	189
PHASE 2	50′ x 80′	4,000	51
	50′ x 100′	5,000	83
	60′ x 100′	6,000	66
		Subtotal	200
PHASE 3	Motorcourt	N/A	39
	45′ x 75′	3,375	12
	50′ x 80′	4,000	150
	50′ x 100′	5,000	70
		Subtotal	271
PHASE 4	Motorcourt	N/A	38
	45′ x 75′	3,375	91
	80′ x 100′	8,000	37
		Subtotal	167
		Total Homes	**827**

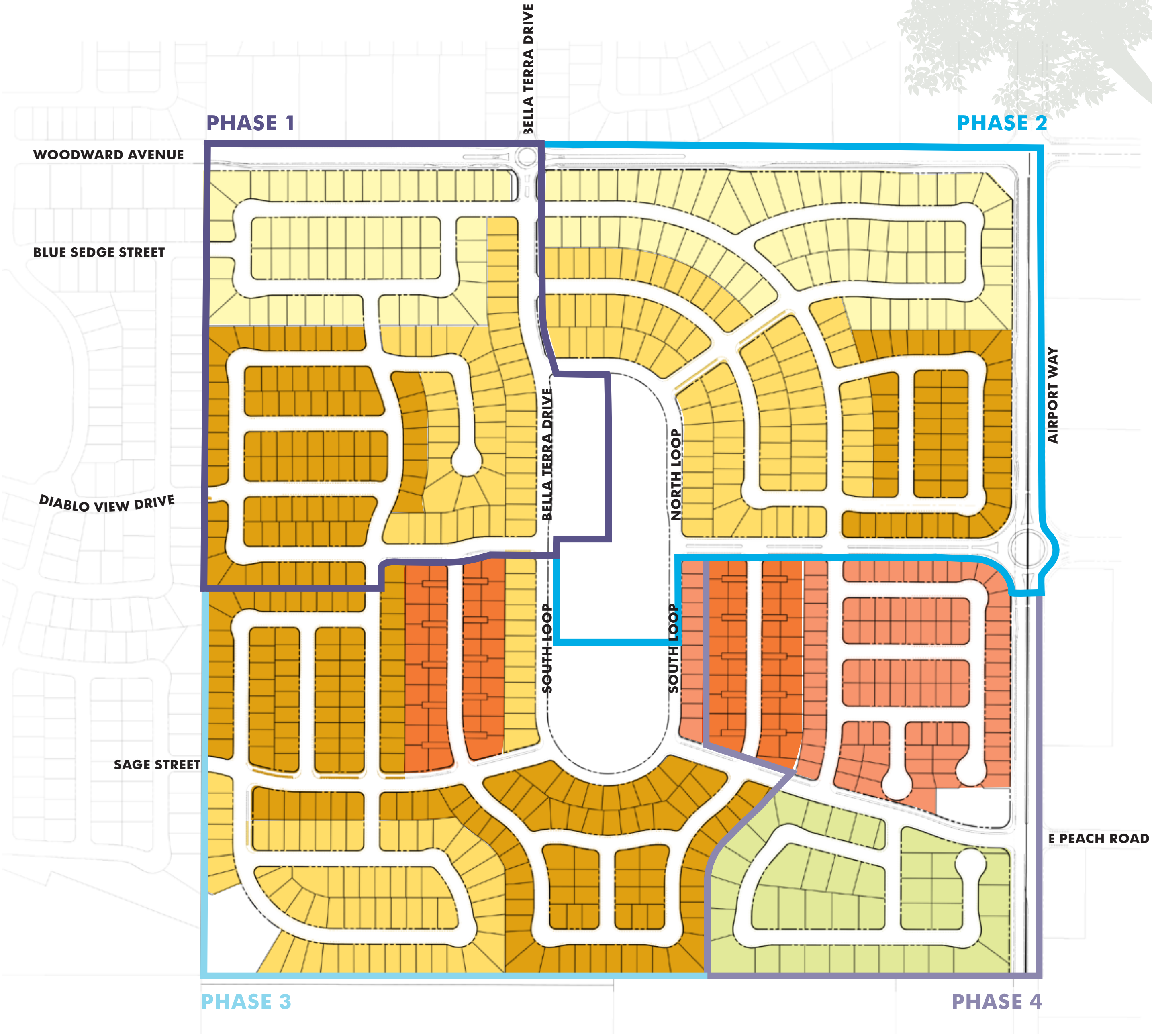
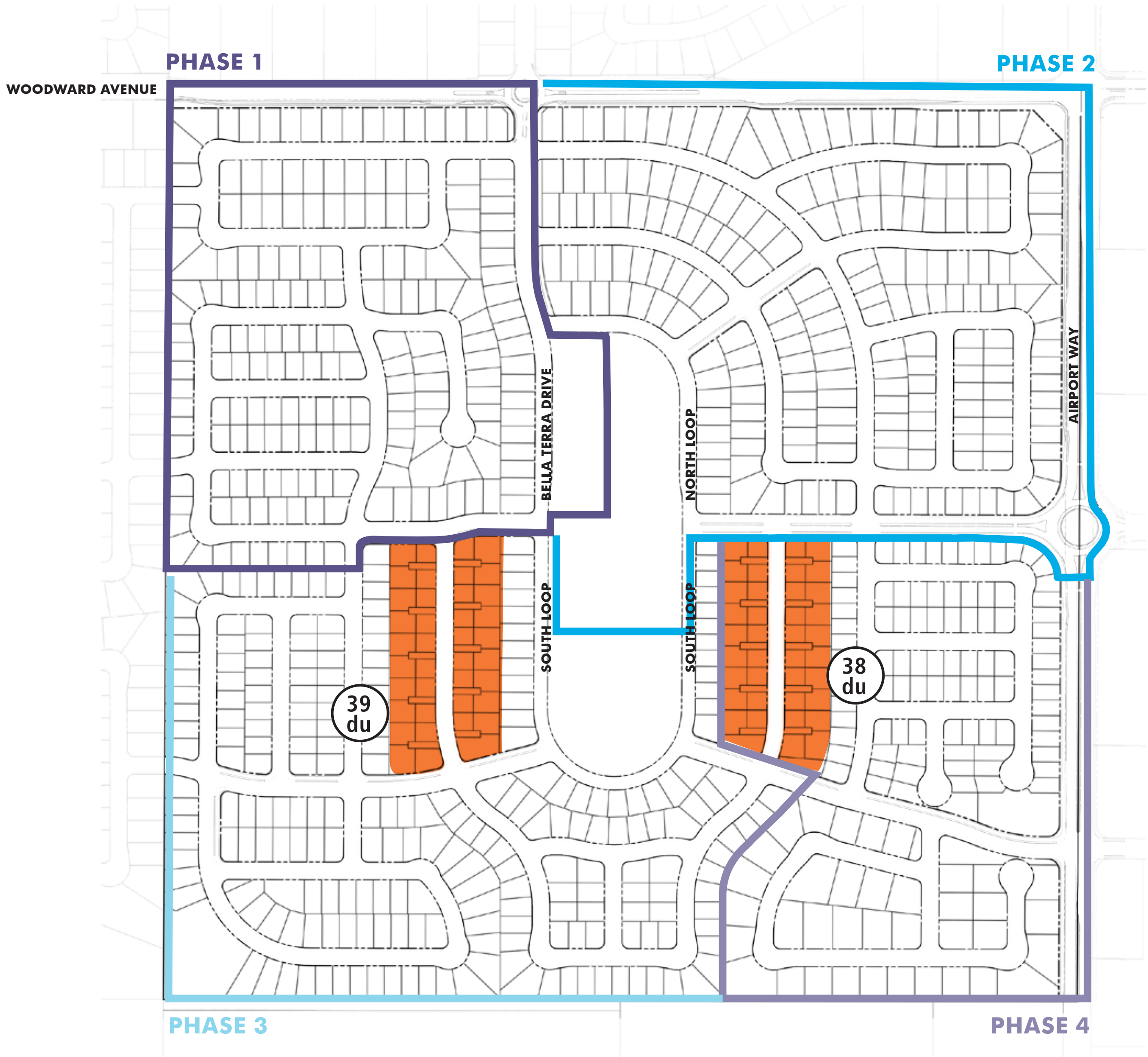


Figure 3.1: Phasing Plan

Lumina AT MACHADO RANCH



MOTORCOURT

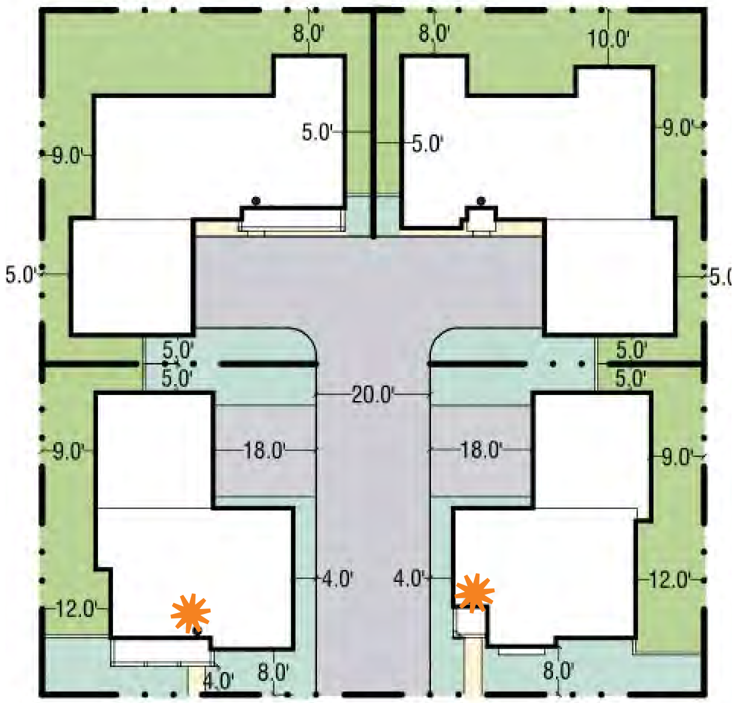
Phase 3
± **39 Homes**

Phase 4
± **38 Homes**

Legend

- Primary Corner Lot
- Visible Edge
- Primary Corner Wall/Pilaster

MOTORCOURT LOT REQUIREMENTS	
Lot Width (min)	40′
Lot Depth (min)	45′
Setbacks (min)	From Property Line to Structure
Front (min)	4′ to porch; 18′ to garage
Rear (min)	8′ min; 10′ average
Side (min)	4′ interior side (within court); 8′ street side
Building Separation (min)	10′
Outdoor Living Area (min)	200 SF, 10′ wide dimension (min)
Garage Requirements	18′ minimum driveway apron
Drive Aisle Width	20′ minimum
Building Height	30′
Product Diversity (min)	Up to 79 Homes: 3 floorplans 3 elevation styles 3 color schemes per elevation 80+ Homes: 3 floorplans 4 elevation styles 3 color schemes per elevation
Guest Parking	0.5 guest space/unit required (minimum) Guest spaces permitted on driveway apron On-street parking permitted



LEGEND

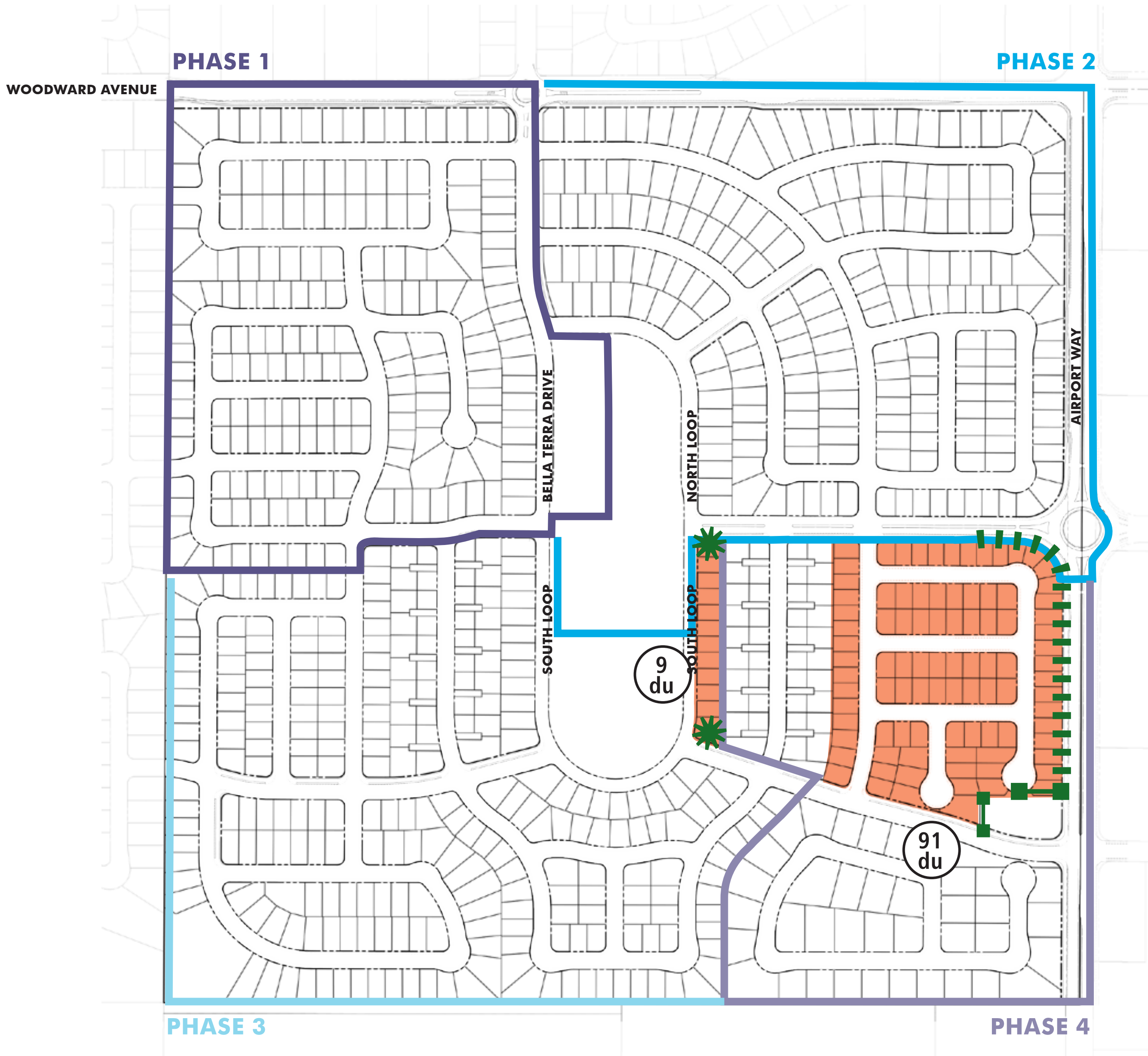
Privately Maintained Yard

HOA Maintained Yard*

*The HOA will maintain the courts/driveways and front yard landscaping.

Front Doors (only) shall face the street, garage doors shall be accessed in motorcourt.

Figure 3.2: Motorcourt Lot Criteria



45' X 75' LOTS

Phase 3

± **9 Homes**

Phase 4

± **91 Homes**

Legend

- Primary Corner Lot
- Visible Edge
- Primary Corner Wall/Pilaster

45' X 75' LOT REQUIREMENTS	
Lot Width (min)	45'
Lot Depth (min)	75'
Setbacks Front (min) Rear (min) Side (min) Front to Garage Face Building Separation (min)	From Property Line to Structure 10' to porch; 15' to living space 10' to living space 5'/0' interior side; 10' street side 18' - 20' (garage frontage undulation encouraged) 10'
Outdoor Living Area (min)	300 SF, min 10' wide dimension
Building Height	30'
Product Diversity (min)	Up to 79 Homes: 3 floorplans 3 elevation styles 3 color schemes per elevation 80+ Homes: 3 floorplans 4 elevation styles 3 color schemes per elevation
Guest Parking	2 guest spaces permitted on driveway apron On-street parking permitted

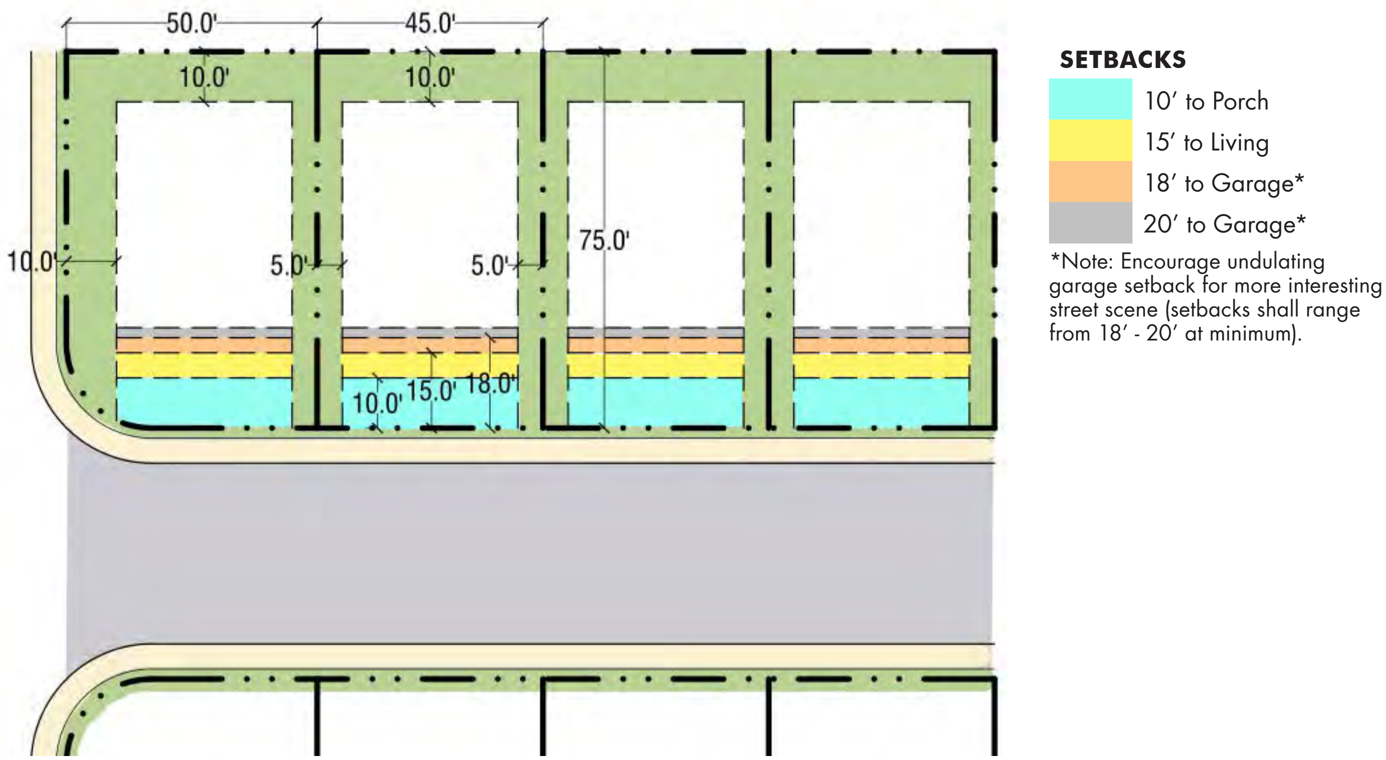
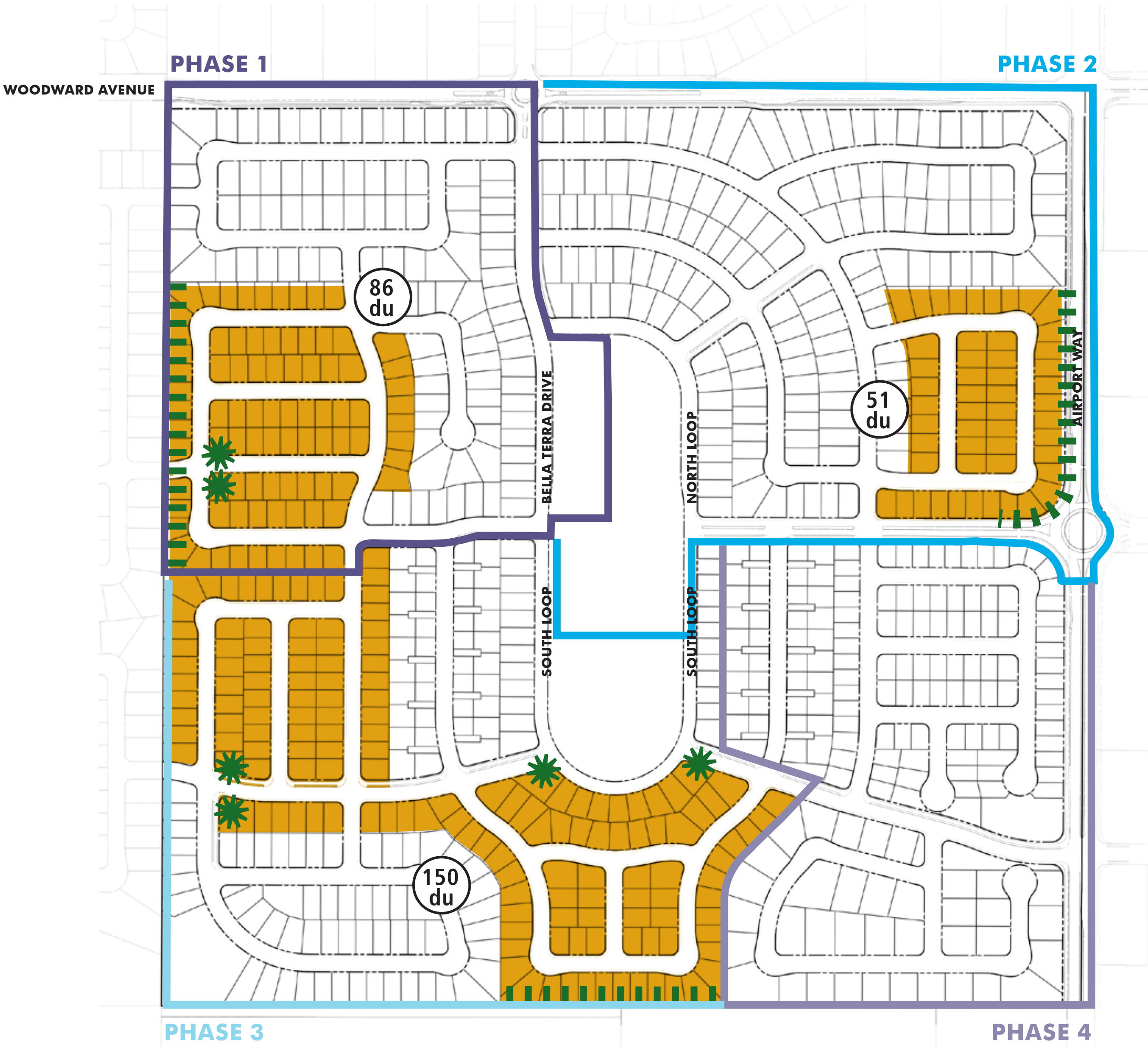


Figure 3.3 : 45' x 75' Lot Criteria

Lumina AT MACHADO RANCH



50' X 80' LOTS

Phase 1
± **86 Homes**

Phase 2
± **51 Homes**

Phase 3
± **150 Homes**

Legend

- Primary Corner Lot
- Visible Edge
- Primary Corner Wall/Pilaster

50' X 80' LOT REQUIREMENTS	
Lot Width (min)	50'
Lot Depth (min)	80'
Setbacks	From Property Line to Structure
Front (min)	10' to porch; 15' to living space
Rear (min)	10' to living space
Side (min)	5' interior side; 10' street side
Front to Garage Face (min)	18' - 20' (garage frontage undulation encouraged)
Building Separation (min)	10'
Outdoor Living Area (min)	300 SF, min 10' wide dimension
Building Height	30'
Product Diversity (min)	Up to 79 Homes: 3 floorplans 3 elevation styles 3 color schemes per elevation 80+ Homes: 3 floorplans 4 elevation styles 3 color schemes per elevation
Guest Parking	2 guest spaces permitted on driveway apron On-street parking permitted

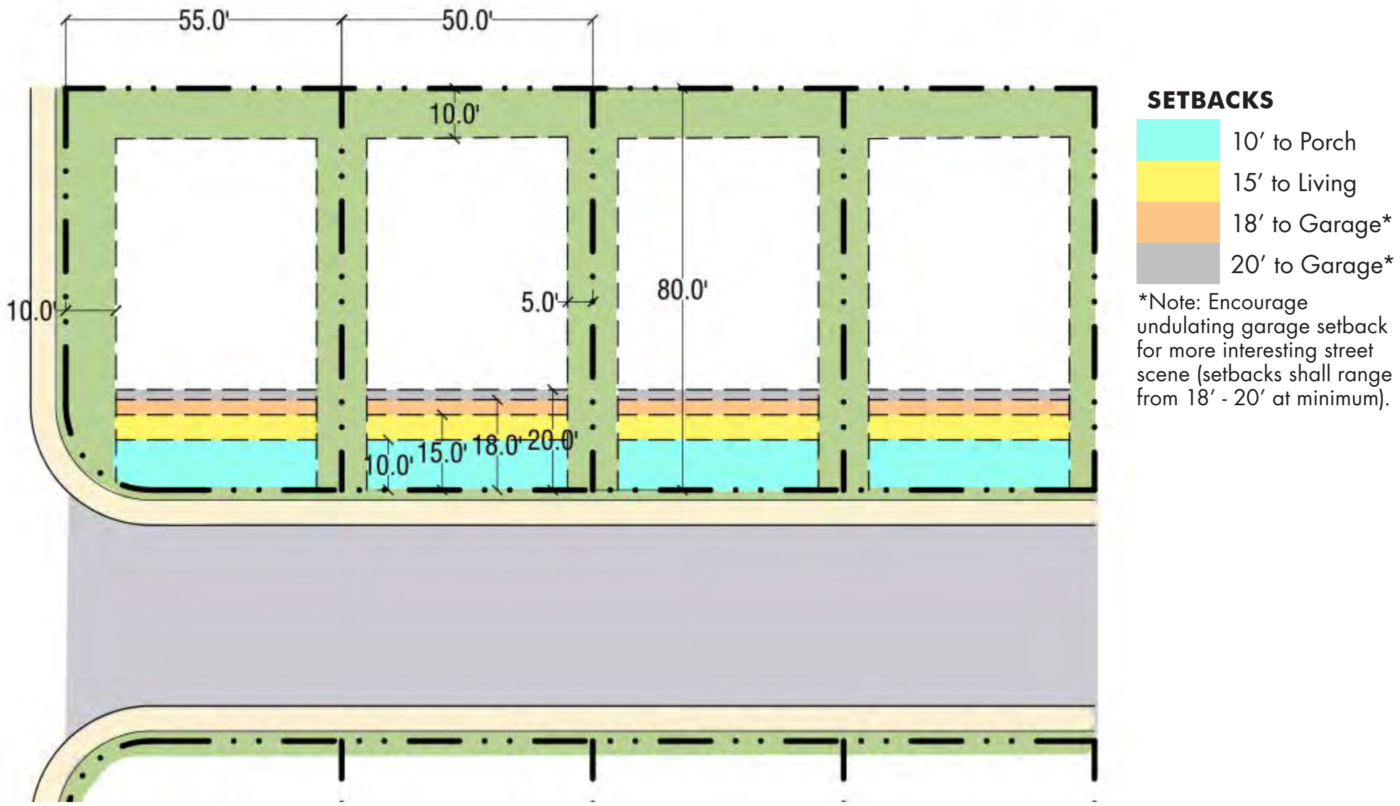
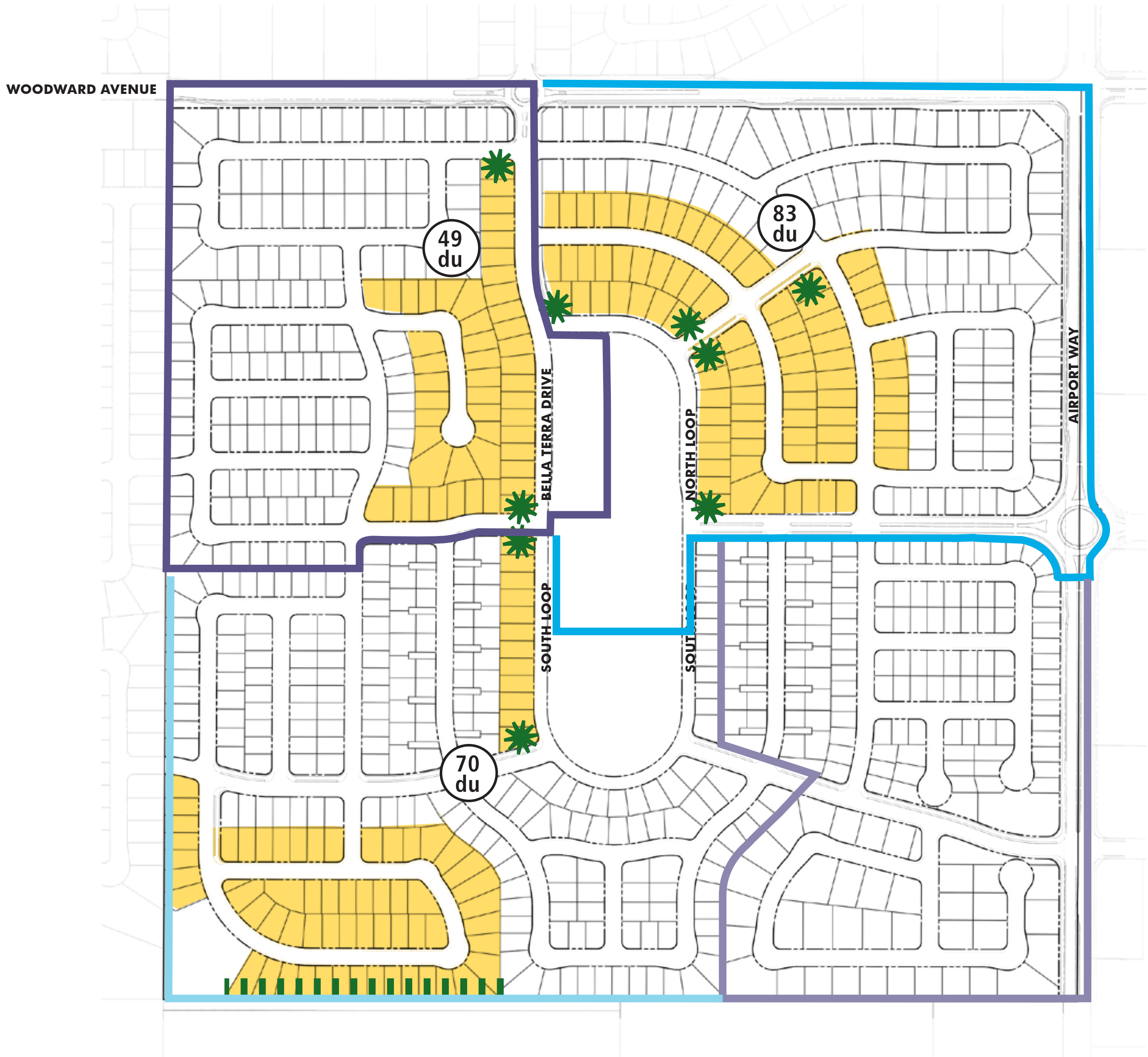


Figure 3.4: 50' x 80' Lot Criteria

Lumina AT MACHADO RANCH



50' X 100' LOTS

Phase 1
± **49 Homes**

Phase 2
± **83 Homes**

Phase 3
± **70 Homes**

Legend

- Primary Corner Lot
- Visible Edge
- Primary Corner Wall/Pilaster

50' X 100' LOT REQUIREMENTS	
Lot Width (min)	50'
Lot Depth (min)	100'
Setbacks	From Property Line to Structure
Front (min)	10' to porch; 15' to living space;
Rear (min)	15' (min); 20' average
Side (min)	5' interior side; 10' street side
Front to Garage Face (min)	18' - 20' (garage frontage undulation encouraged)
Building Separation (min)	10'
Outdoor Living Area (min)	400 SF, min 10' wide dimension
Building Height	30'
Product Diversity (min)	Up to 79 Homes: 3 floorplans 3 elevation styles 3 color schemes per elevation 80+ Homes: 3 floorplans 4 elevation styles 3 color schemes per elevation
Guest Parking	2 guest spaces permitted on driveway apron On-street parking permitted

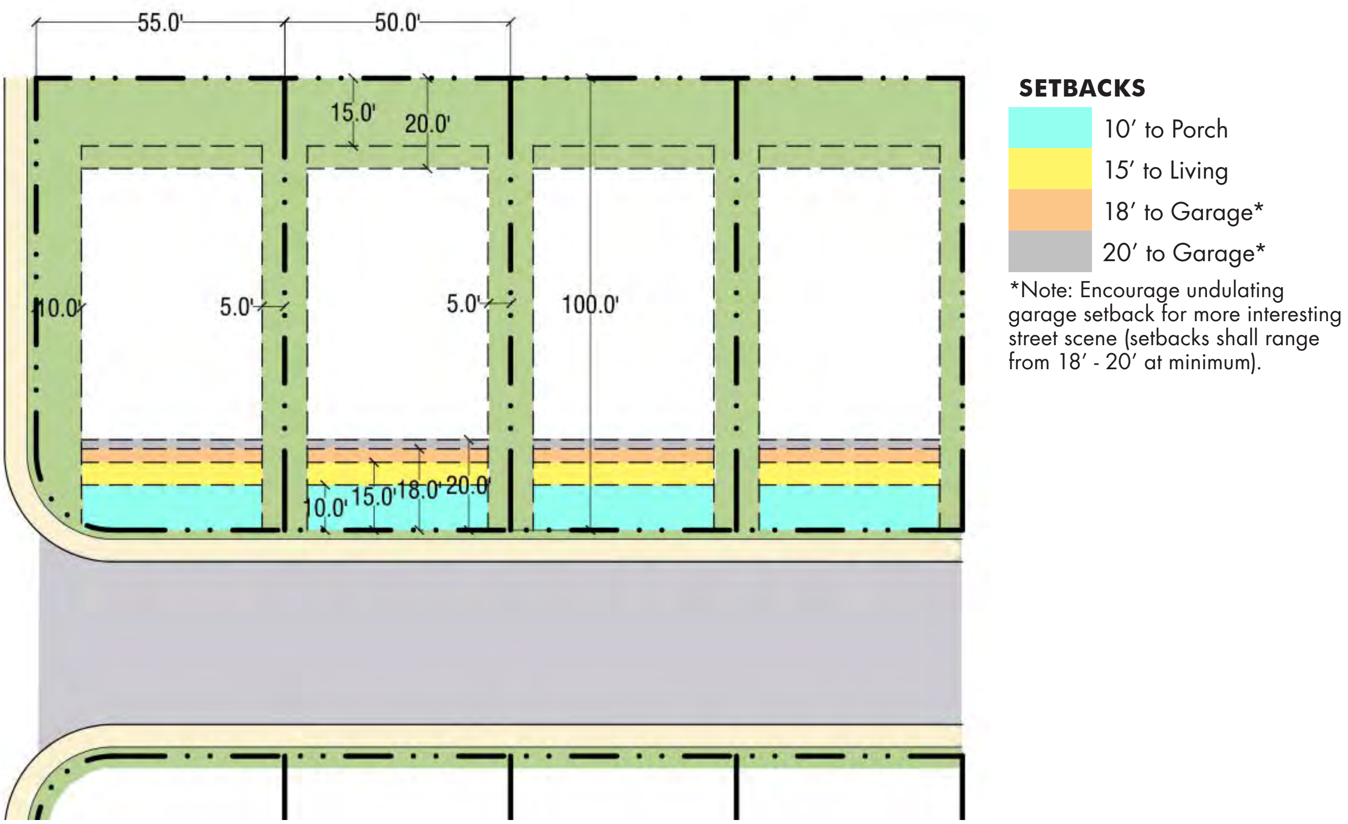
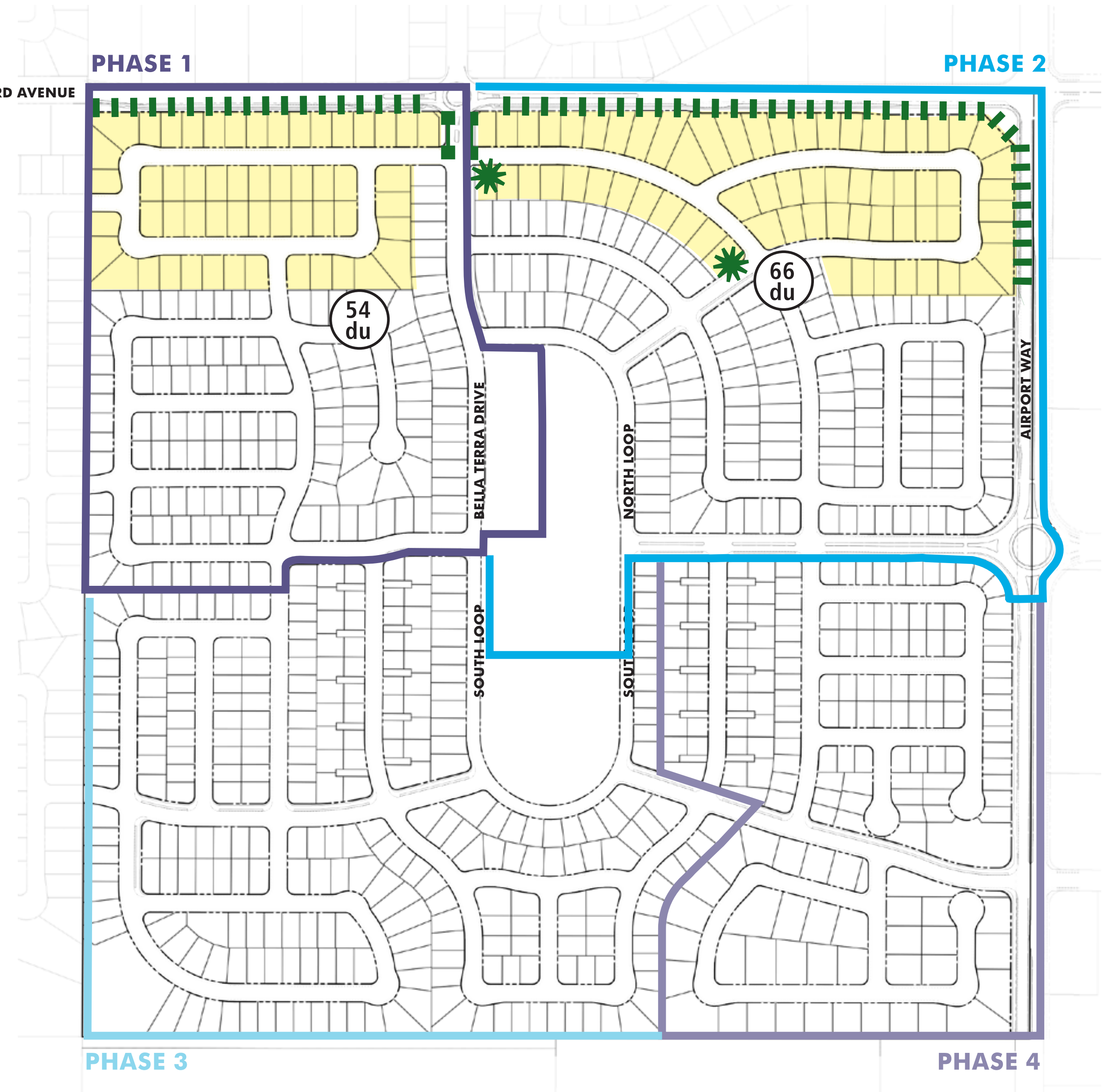


Figure 3.5: 50' x 100' Lot Criteria

Lumina AT MACHADO RANCH



60' X 100' LOTS

Phase 1

± **54 Homes**

Phase 2

± **66 Homes**

Legend

- Primary Corner Lot
- Visible Edge
- Primary Corner Wall/Pilaster

60' X 100' LOT REQUIREMENTS	
Lot Width (min)	60'
Lot Depth (min)	100'
Setbacks	From Property Line to Structure
Front (min)	10' to porch; 15' to living space
Rear (min)	15' (min); 20' average
Side (min)	5' interior side; 10' street side
Front to Garage Face (min)	18' - 20' (garage frontage undulation encouraged)
Building Separation (min)	10'
Outdoor Living Area (min)	600 SF, min 10' wide dimension
Building Height	30'
Product Diversity (min)	Up to 79 Homes: 3 floorplans 3 elevation styles 3 color schemes per elevation 80+ Homes: 3 floorplans 4 elevation styles 3 color schemes per elevation
Guest Parking	2 guest spaces permitted on driveway apron On-street parking permitted

SETBACKS

- 10' to Porch
- 15' to Living
- 18' to Garage*
- 20' to Garage*

*Note: Encourage undulating garage setback for more interesting street scene (setbacks shall range from 18' - 20' at minimum).

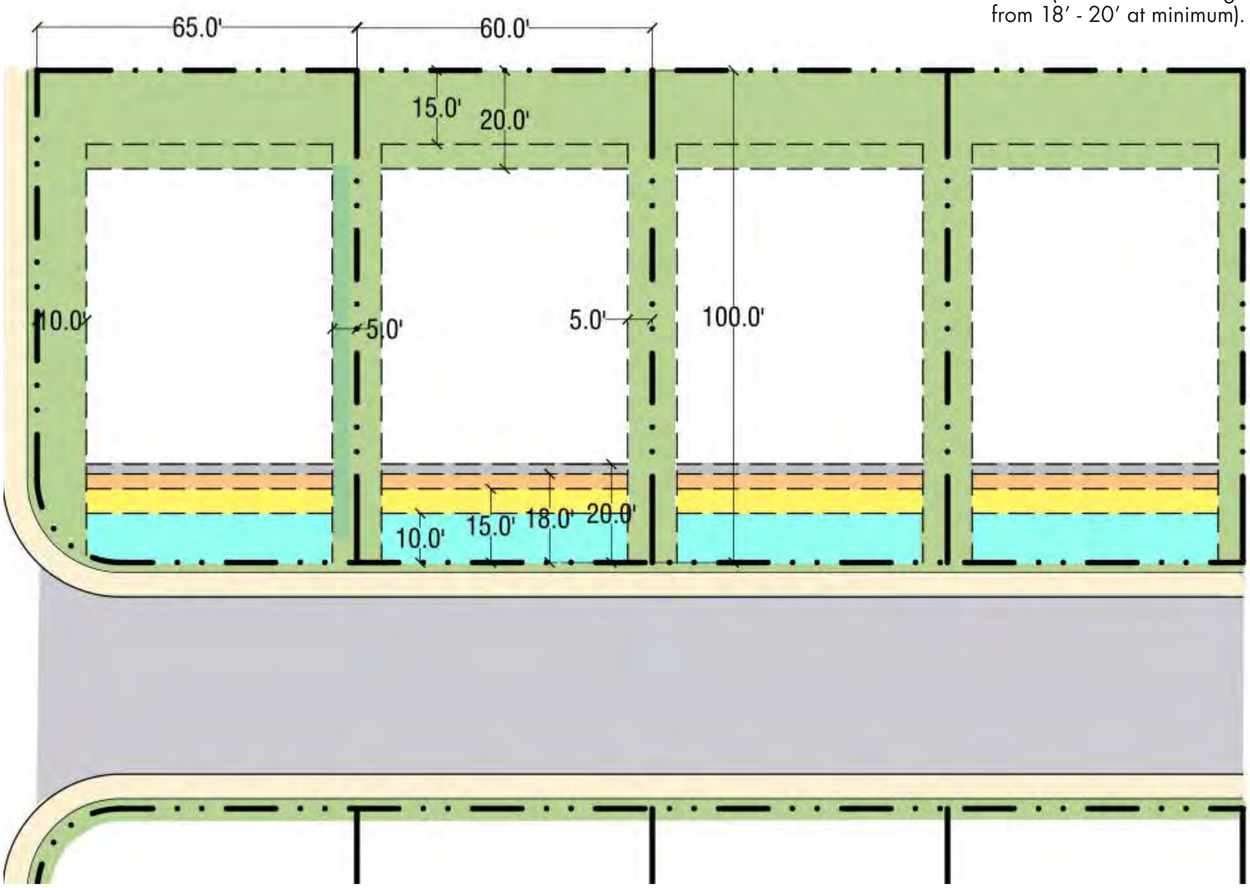
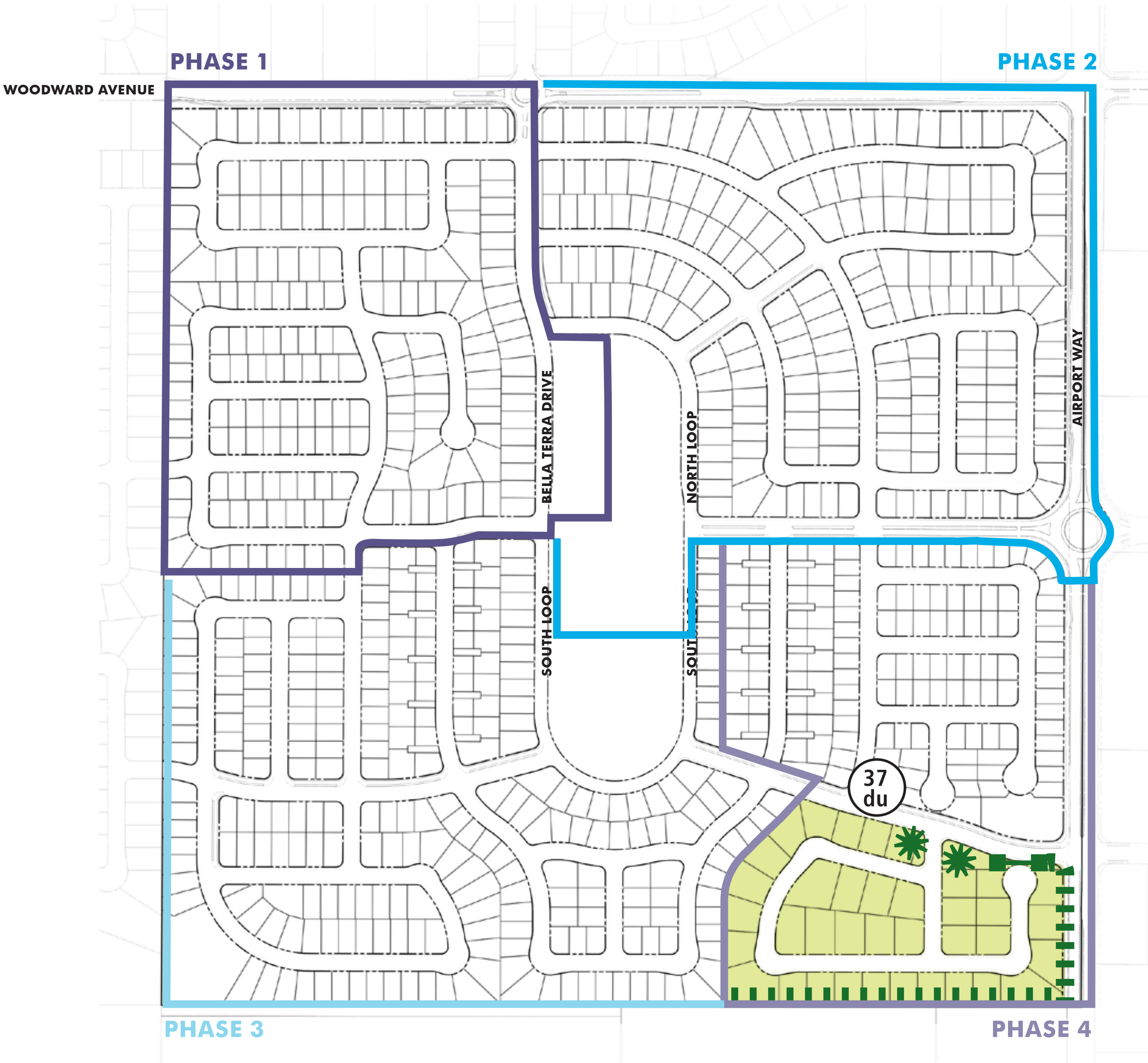


Figure 3.6: 60' x 100' Lot Criteria

Lumina AT MACHADO RANCH



80' X 100' LOTS (MIN.)

Phase 4

± **37 Homes**

Legend

- Primary Corner Lot
- Visible Edge
- Primary Corner Wall/Pilaster

80’ X 100’ LOT REQUIREMENTS	
Lot Width (min)	80’
Lot Depth (min)	100’
Setbacks	From Property Line to Structure
Front (min)	15’ to living space; 10’ to porch
Rear (min)	10’ to living space, 20’ average
Side (min)	10’ interior side; 15’ street side
Front to Garage Face (min)	18’ - 20’ (garage frontage undulation encouraged)
Building Separation (min)	20’
Outdoor Living Area (min)	1,000 SF, min 10’ wide dimension
Building Height	30’
Product Diversity (min)	3 floorplans, 4 elevation styles
Guest Parking	2 guest spaces permitted on driveway apron On-street parking permitted

SETBACKS

- 10’ to Porch
- 15’ to Living
- 18’ to Garage*
- 20’ to Garage*

*Note: Encourage undulating garage setback for more interesting street scene (setbacks shall range from 18’ - 20’ at minimum).

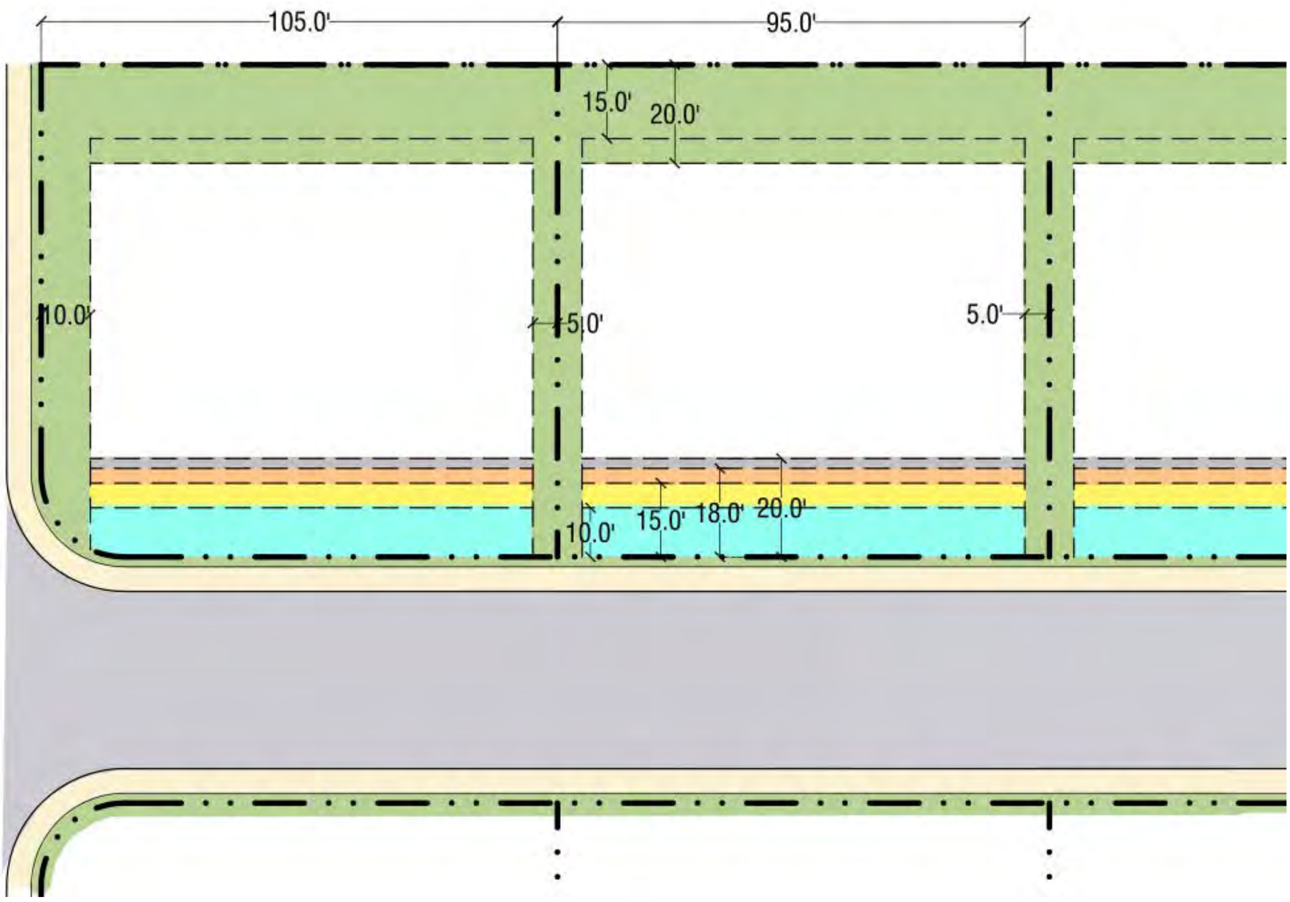
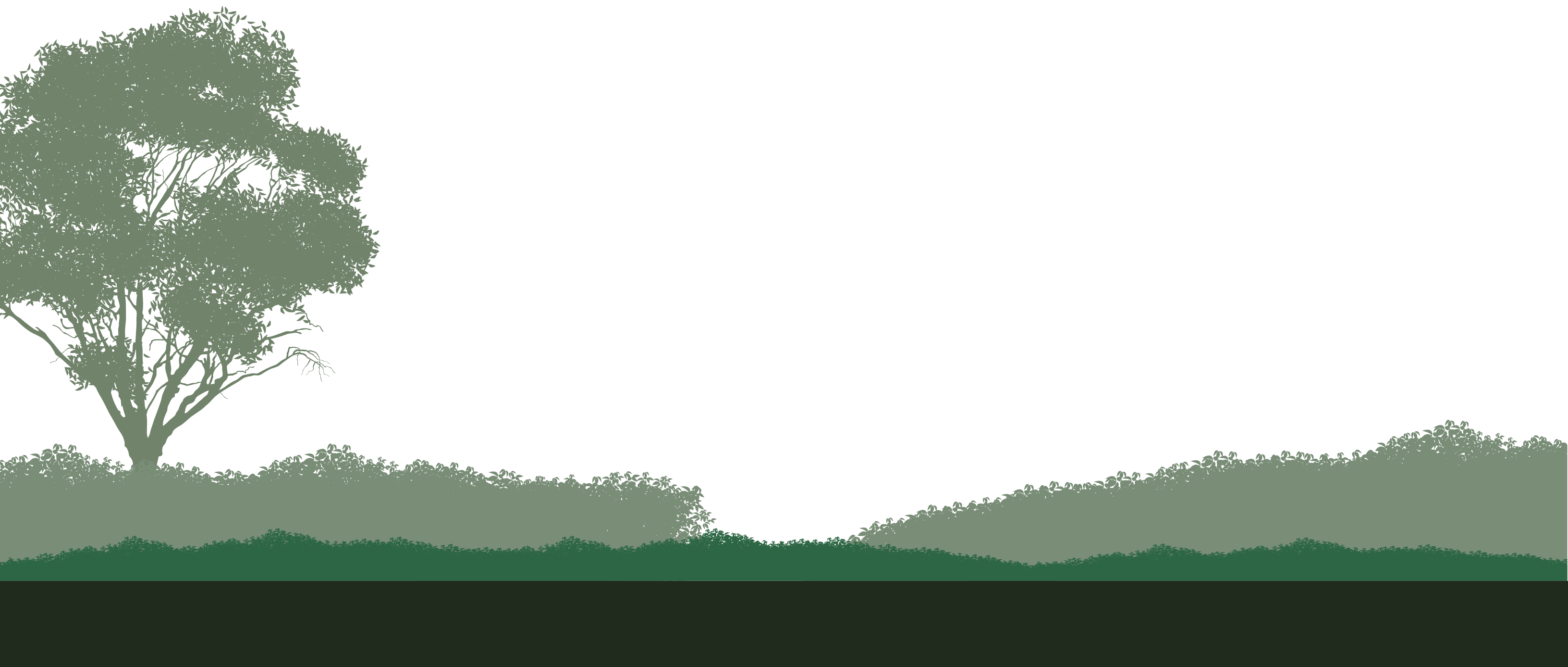


Figure 3.7: 10,000 SF Lot Criteria



CHAPTER 4 CIRCULATION

Lumina at Machado Ranch consists of both a curvilinear and a grid street pattern. This is to promote a more intimate neighborhood feel, identification between individual product areas, and more awareness of being in a residential community. Encouraging social engagement on the streets is a goal of Lumina and is promoted through the incorporation of Wellness Walks, varied architecture and lots sizes, shade trees, and a destination central park.

4.1 COMMUNITY ACCESS

Streets in Lumina at Machado Ranch will connect into the greater Manteca community. Access will occur from Woodward Avenue and Airport Way as well as from the adjacent Terra Ranch neighborhood. The street network of Lumina is intended to contribute to the aesthetics of the community, with residents experiencing varied streetscenes and thoughtful street design.

The main project entrance is from Woodward Avenue. It will connect directly to the existing Bella Terra Drive, and provide an enhanced landscape feature to celebrate the community entry. This street is a direct route to the park.

The entrances off of Airport Way are designed to reduce impacts to adjacent property owners, by incorporating an enhanced landscape buffer and defining entry features.

The intersection and entry point at Peach Road is intended to be a Lumina secondary access so as to reduce excessive visitor traffic. As such, the entry features are de-emphasized to feel less like a primary community entrance.

The major entrance on Airport Way will consist of a round-a-bout that extends easterly, linking future developments. The extended landscape buffer along Airport Way will contribute to the community entry presence, and consists of widths beyond City requirement. The enhanced landscape buffer is intended to soften the transition from the existing easterly uses to the Lumina project.

Where there are connection points from Terra Ranch, the Lumina streets will join, providing roadway continuity and linkage to this adjacent community.

Refer to Figure 4.1: Community Access.

Figure 4.1: Community Access

4.2 RESIDENTIAL STREETS

Lumina at Machado Ranch provides a varied street network facilitating circulation through the community as well as connectivity beyond its boundaries. Refer to Figure 4.2: Community Circulation to identify the street sections in the following discussion.

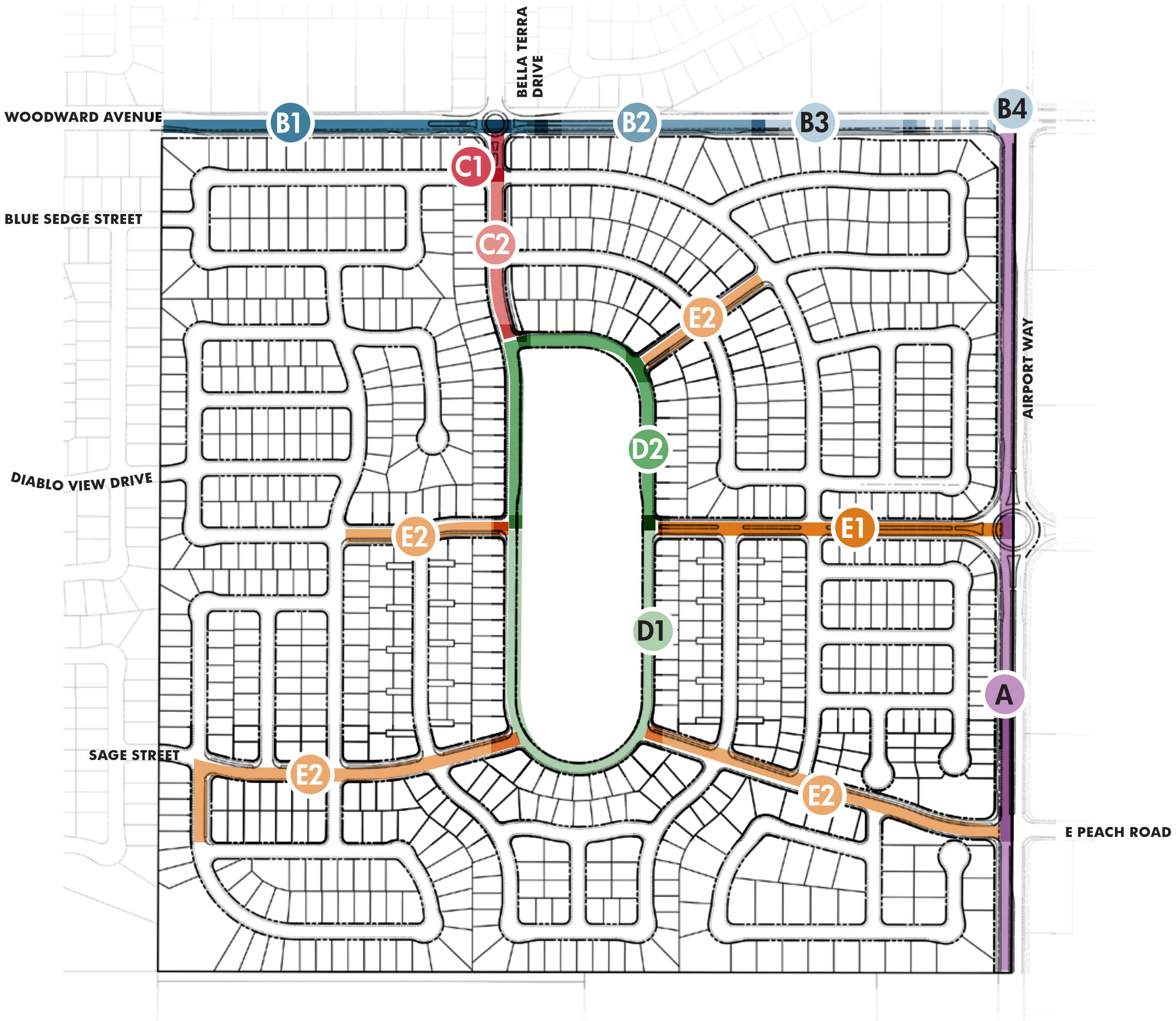


Figure 4.2: Community Circulation

4.1.2 STREET CLASSIFICATIONS

This section discusses street types within Lumina at Machado Ranch as well as the exterior streets along the project boundary.

Airport Way

The Manteca General Plan describes Airport Way as a four-lane Major Street. Although described as a Rural Road, it expands to become an Arterial north of Woodward Avenue. Airport Way borders the project along the eastern boundary, and has a 108-foot future right-of-way, inclusive of travel lanes, a raised center median, and a Class II bike lane. A 20-foot extended landscape buffer and meandering sidewalk will be installed along the Lumina edge. This enhanced landscape condition will provide a pleasant walking experience and soften the community masonry wall.

Refer to Figure 4.3: Airport Way Section.

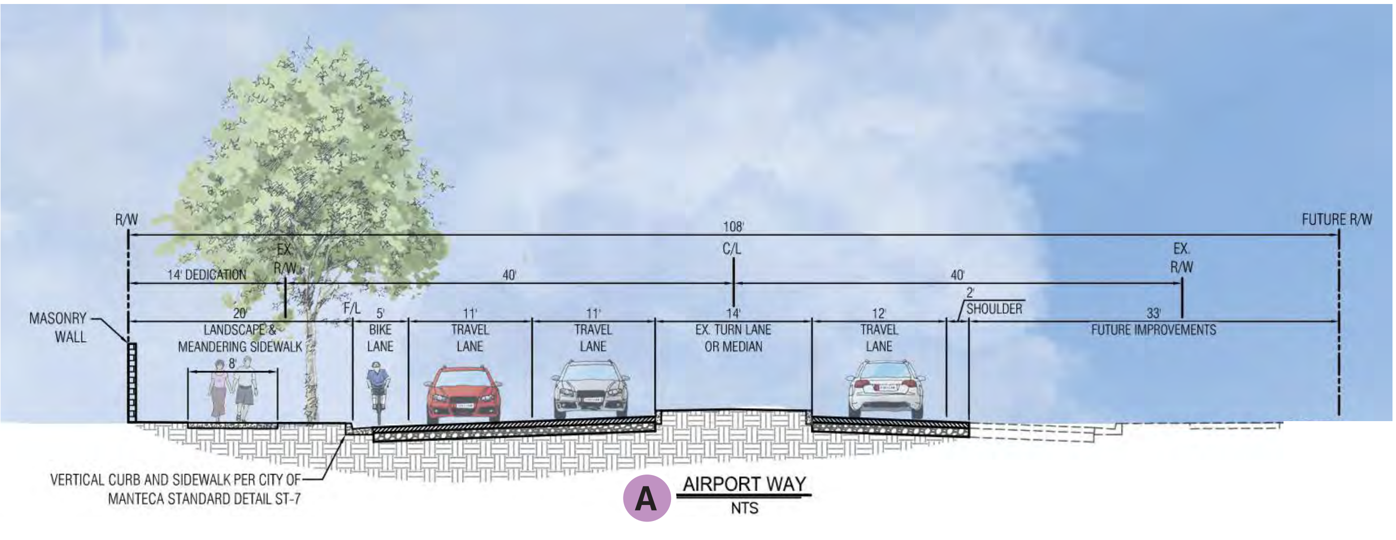


Figure 4.3: Airport Way Section

Woodward Avenue

The Manteca General Plan designates Woodward Avenue as a two-lane Major Street. Woodward Avenue, which can also be considered a Collector Street, is located at the northern edge of the project. There are three sections for this street as it moves along the project boundary. The sections include a right-of-way range from 80 feet to 100 feet. Woodward Avenue has a central median or a turn lane, and Class II bike lanes. The 20-foot landscape buffer along the project edge provides a pleasant walking experience and softens the community masonry wall. Refer to Figures 4.4a and 4.4b: Woodward Avenue Sections.

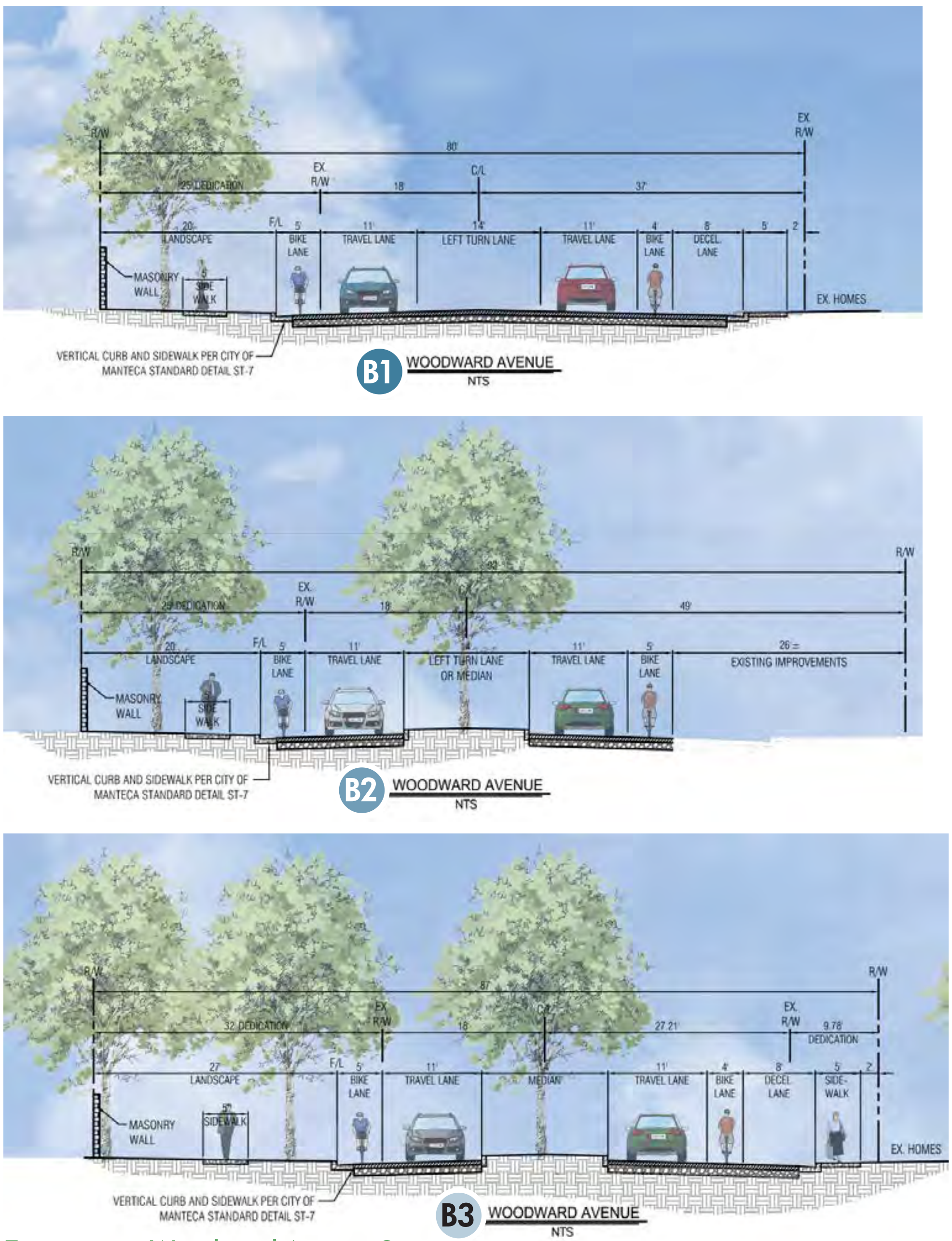


Figure 4.4a: Woodward Avenue Sections

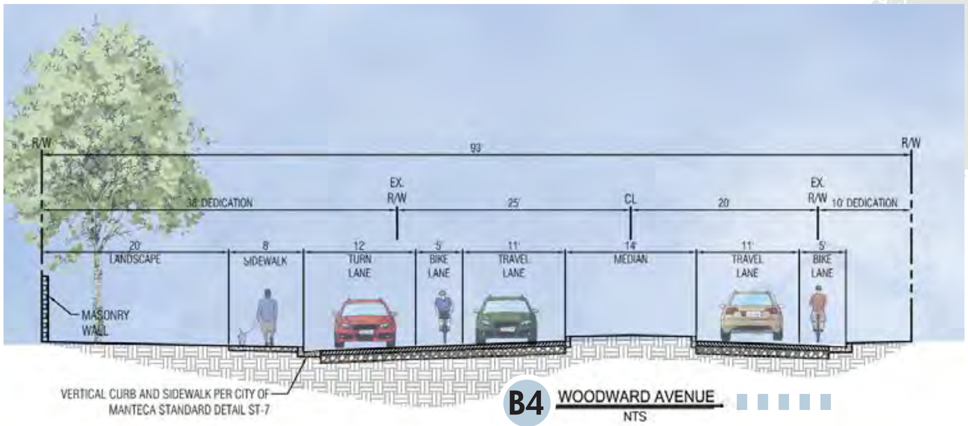


Figure 4.4b: Woodward Avenue Sections

Project Entry Street

The Project Entry Street is classified as a Residential Street. It has a 60-foot right-of-way and 12-foot center median. There is one 16-foot travel lane in each direction and an 8-foot landscape parkway from the curb to the edge of the right-of-way. Beyond the right-of-way, there is an additional 20-foot buffer along the east side of the street that includes enhanced landscape and a 5-foot meandering sidewalk. Refer to Figure 4.5: Entry Street Section.

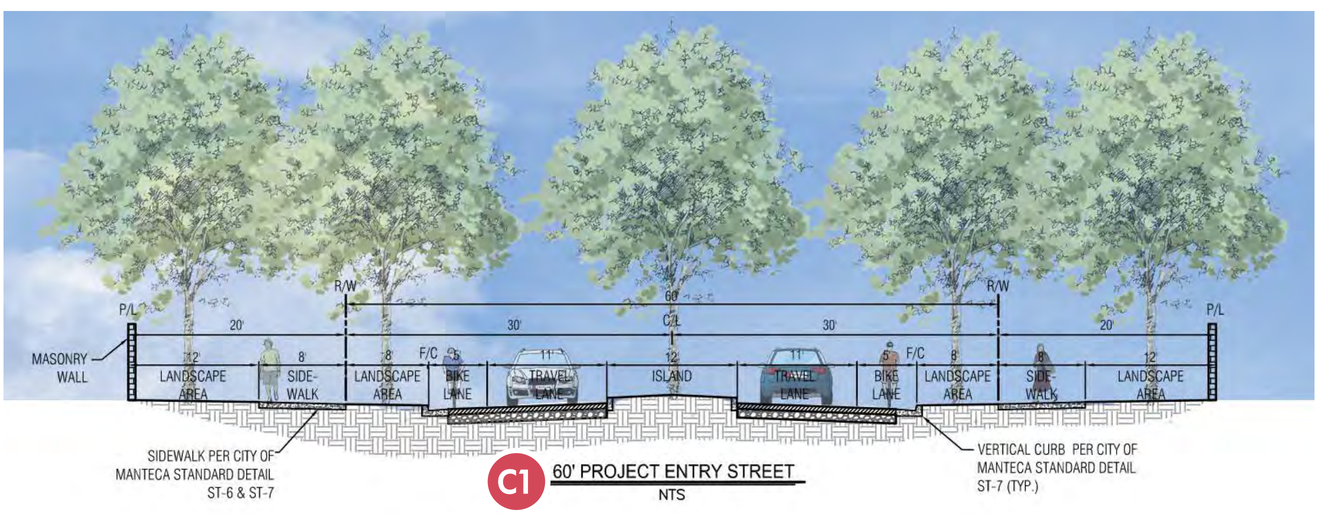


Figure 4.5: Entry Street With Median Section

Backbone Street

The Backbone Street within Lumina has a 60-foot right-of-way. It includes 10-foot travel lanes in each direction. 8 feet on each side of the curb accommodates parking. Landscape on one side is a combination of a 5-foot sidewalk, 3-foot landscape strip, and a 10 foot PUE. On the other side of the street there is 8 feet of landscaping, an 8 foot sidewalk and an 12 foot landscape area. Figure 4.6: Backbone Street with Expanded Landscape Section.

Figure 4.6: Backbone Street with Expanded Landscape Section

Interior Streets

There is a range of street sections in Lumina at Machado Ranch. Depending on location, streets will contain either 38-, 48-, 50-, or 68-foot rights-of-way.

The majority of the interior streets are 50 feet wide, inclusive of 10-foot travel lanes with parking on both sides. 5-foot sidewalks will also be included on both sides, and streets will be lined with trees from residential yards. A 2-foot public utility easements will be located within the right-of-way for City utilities. Refer to Figure 4.7: Community Interior Street Section.

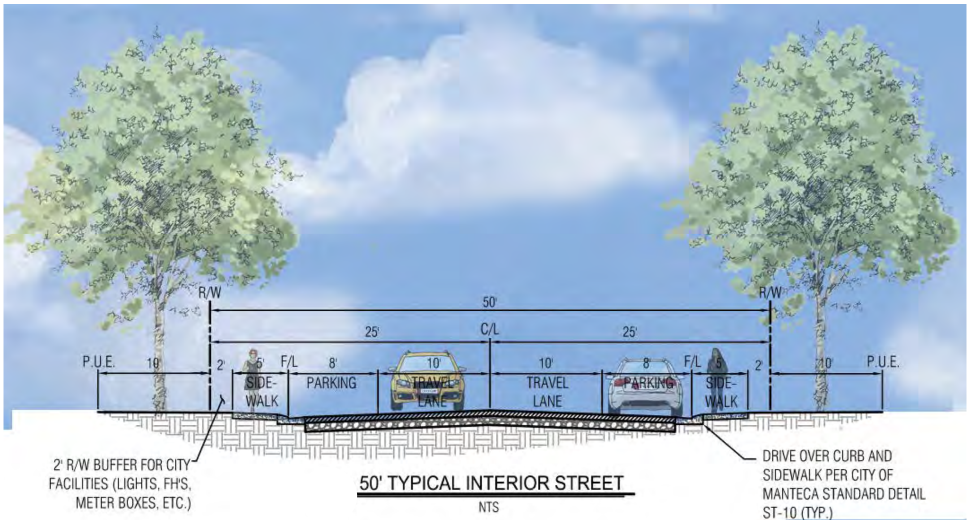
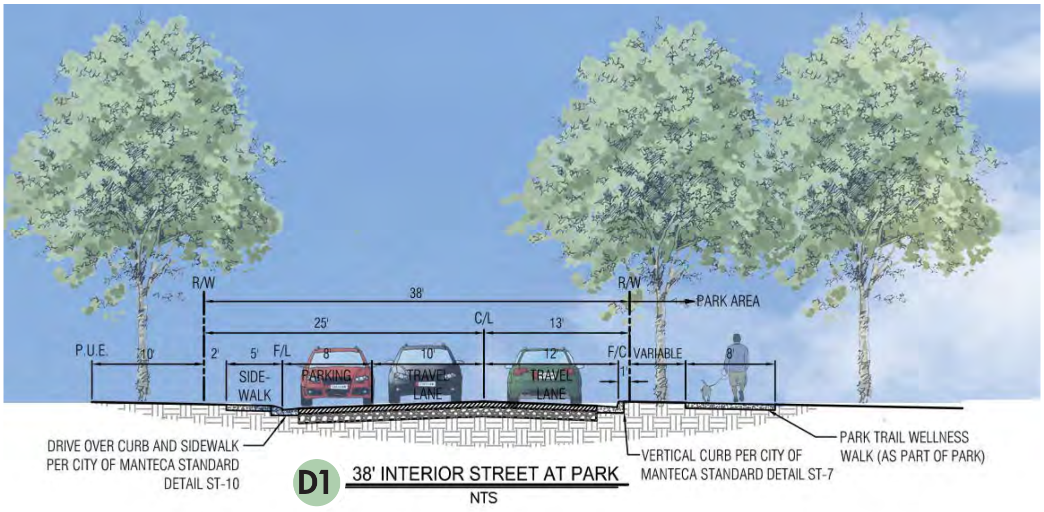


Figure 4.7: Community Interior Street Section

Two interior street sections run along the Community Park. The northern streets have a 48-foot right-of-way, with 10-foot travel lanes, space for a bike lane, and parking in each direction. The southern streets have a 38-foot right-of-way, with 10 to 12-foot travel lanes, and parking on one side. Both sections have a 5-foot sidewalk that runs along the residential side of the street, while the park side relies on sidewalks designed into the open space. This street will be the hub of the Wellness Walks for which all neighborhood Wellness Walks connect to. Refer to Figure 4.8: Interior Street at Park Sections.



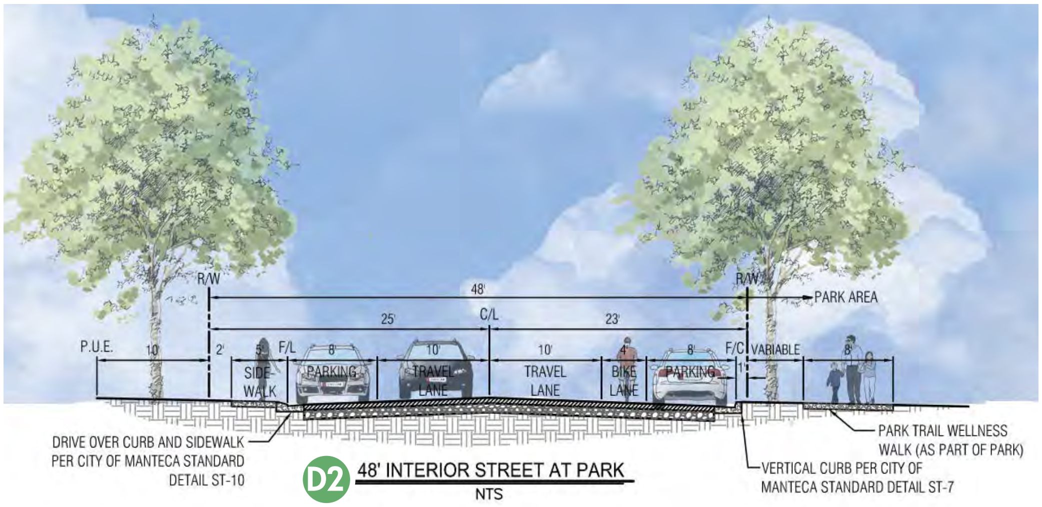


Figure 4.8: Interior Street at Park Sections

The network that ties the Lumina at Machado Ranch neighborhood together are the Wellness Walks. Specific streets in the Lumina community have been designated as Wellness Walks. These 64 and 68-foot right-of-way streets are given enhanced treatments with a widened sidewalk. The parkways are curb adjacent and 5 to 7 feet wide. The Wellness Walk sidewalk is 8 feet wide. This sidewalk is 3 feet wider than the other sidewalks within the community. There is an additional 5 to 6 feet of landscaped area between the sidewalk and residential lot lines. To clearly define the Wellness Walks throughout the community, these expanded pedestrian areas only occur on one side of the street. The purpose is for wayfinding and to encourage social interaction. Refer to Figure 4.9: Interior Streets with Wellness Walk Sections, and Figures 4.12, 4.13, and 4.14.

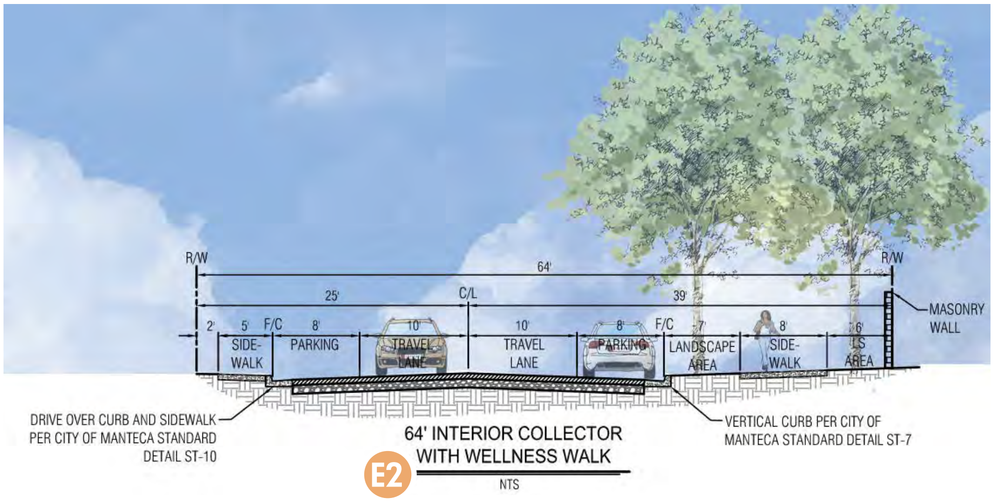
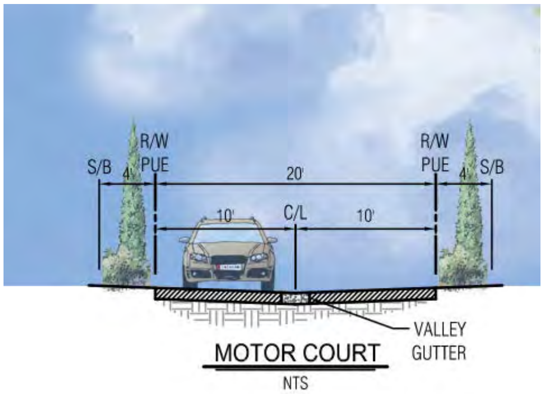
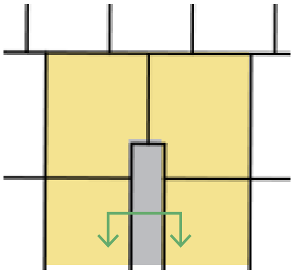


Figure 4.9: Interior Streets with Wellness Walk Sections

Motorcourts

Motorcourts provide a unique condition where private garages and homes are accessed from a shared private driveway. Motorcourts allows for full private driveway aprons in front of each garage door, enabling convenient guest parking. Parking is prohibited on the shared driveway. Refer to Figure 4.10: Motorcourt Section.





Motorcourt plan view

Figure 4.10: Motorcourt Section

4.2.3 ROUND-A-BOUTS

Round-abouts are traffic calming measures and a way to create entry statements. At Lumina at Machado Ranch, a round-about is proposed at the intersection of Street J and Airport Way. This design feature creates an enhanced sense of arrival and slows cars as they move through the intersection. Refer to Figure 4.11: Conceptual Round-about Design.

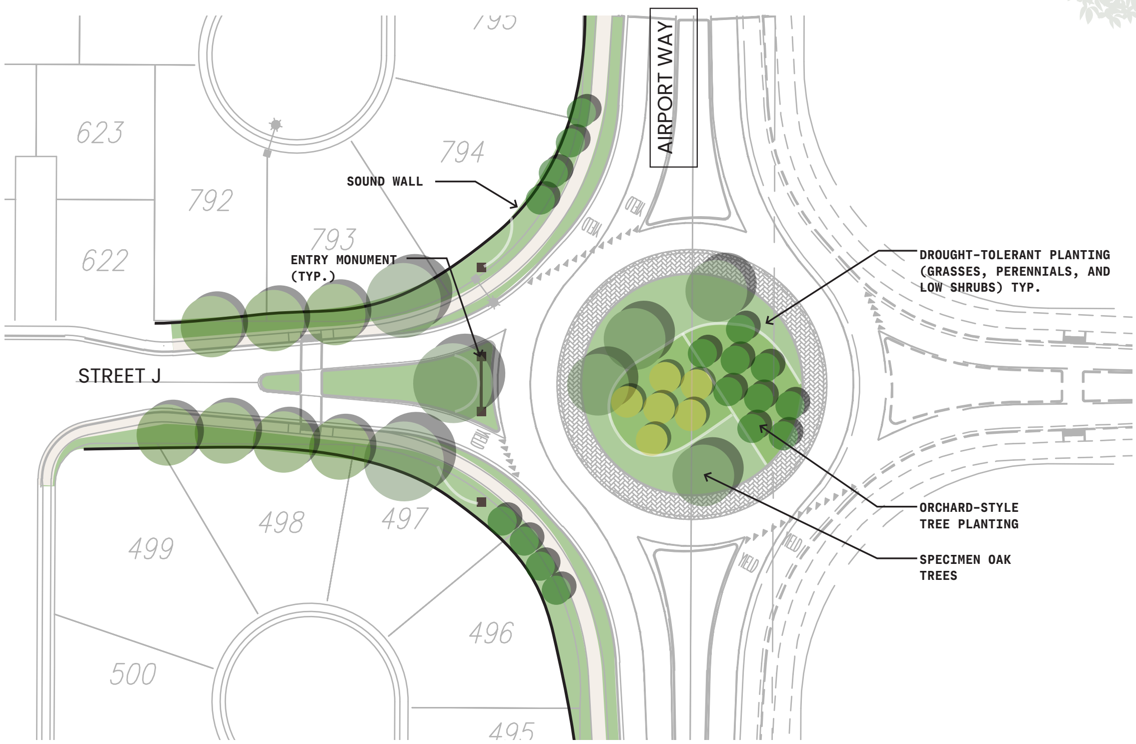


Figure 4.11: Conceptual Round-about Design

4.3 NON VEHICULAR CIRCULATION

Lumina at Machado Ranch has been designed to accommodate both vehicular and pedestrian circulation. The streets are laid out in both grid and curvilinear designs for visual interest, traffic calming, and easy wayfinding.

A goal of Lumina at Machado Ranch is to provide a community-oriented neighborhood that encourages residents to be outdoors and walk their community, not only for exercise and recreational purposes, but for social interaction. This community is meant for all ages and strives to have everyone engaged in their neighborhood.

As mentioned, the circulation network includes Wellness Walks. These designated pedestrian ways provide 8-foot wide sidewalks and landscaped parkways. Shade trees shall line the Wellness Walks to create pleasing streetscapes and greater comfort in the warmer months. The widened sidewalks facilitate strollers, scooters, dogs, and any toys that get people out and moving. The Wellness Walks have been strategically designated to encourage activity toward and in the park. Additional pedestrian trails are focused in the Levee Park and Trail.

The following design features shall be implemented to enhance pedestrian activity:

- Landscape and streets trees to provide a visually pleasing street scene and shade.
- Where possible, provide pedestrian connections from surrounding arterials, neighborhoods, and trails.
- Design sidewalks and paths to meet accessibility requirements.
- Provide street lighting to enhance nighttime visibility.
- Install street and park furniture at appropriate resting spots or social spaces.

Figure 4.12: Wellness Walks

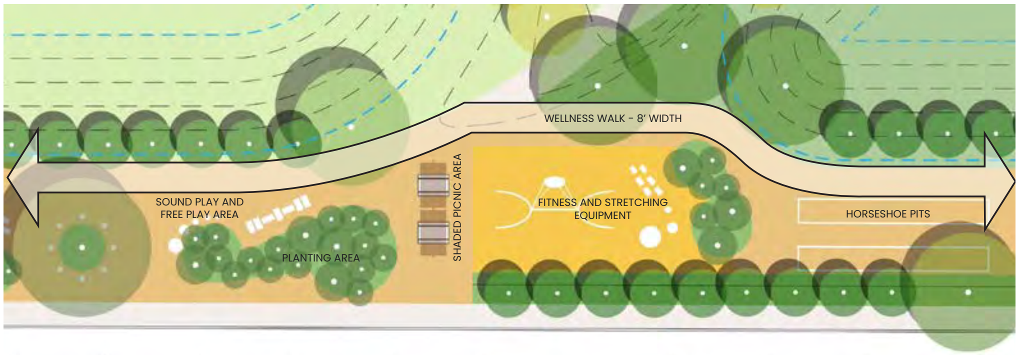


Figure 4.13: Wellness Walk Diagram (in central park)

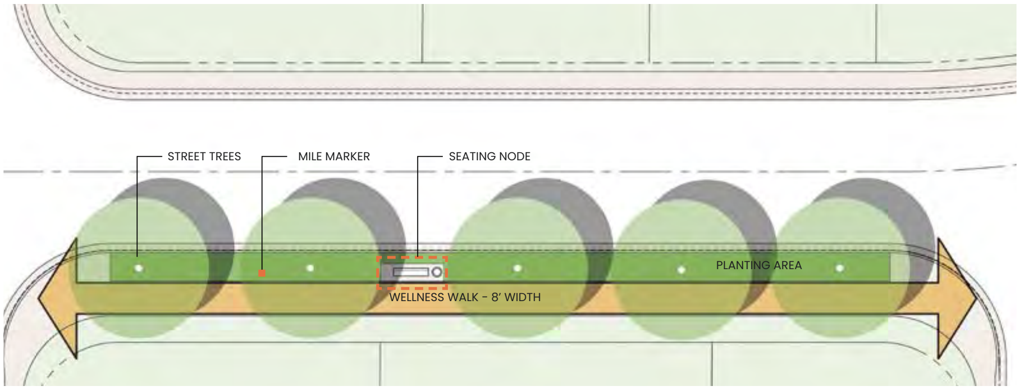


Figure 4.14: Wellness Walk Diagram (along streets)

CHAPTER 5
NEIGHBORHOOD DESIGN

High-quality architectural design is required for Lumina at Machado Ranch. These guidelines are intended to provide specific guidance to a builder and their design team. They are not intended to be restrictive, but instead encourage innovation, character, and superior design techniques.

5.1 NEIGHBORHOOD ORGANIZATION

The Lumina at Machado Ranch enclaves are focused toward the street or the park, therefore the enclaves shall:

- Provide connections to the open space using either street trees or other identifying elements that inform the user they are on a route leading to the park.
- Orient homes toward the park, whenever feasible.
- Provide all homes with an outdoor living space such as a yard, courtyard, porch, or patio so as to encourage outdoor living.

5.2 VISIBLE EDGES

Homes located along the outside edges of Lumina at Machado Ranch, along major roads, and around the park have an impact on how residents and visitors view the community. They shall be designed to provide the following:

- Main roof span should have variety between plans (front-to-rear, side-to-side, gables and hipped roofs), where appropriate.
- Single-story alternative massing and other massing offsets.
- Color and material variety consistent with architectural style.

Visible edge conditions

Corner lot detailing

5.3 CORNER LOTS

Corner lots have high visibility and are important to the design quality of Lumina at Machado Ranch. Typically, corner lots are wider to accommodate the side yard setback and allow for side porches. To encourage variety more than one plan shall be used as a corner plan.

5.3.1 PRIMARY CORNER LOTS

- Use one-story elements on the visible side where possible.
- Provide the same level of architecture as the front elevation.
- Exposure of the architecture a key consideration, where possible expose 1/3 the length of the home.
- Consider wrap-around porches, courtyards, or entry doors oriented toward the side street.

Wrapping materials and continuing elevation details on both sides

Wrapping porch around corner

5.4 STREETSCAPE DESIGN

- Orient homes toward the street with clearly defined entries facing the street.
- Provide a direct pedestrian path between the home and the sidewalk.
- When including front porches, create meaningful space of at least 5 feet deep.
- Use low courtyard walls or fences of 36 inches in height, when desired.
- Provide night-lighted home address numbers.
- Vary building massing and articulation throughout Lumina for more interesting streetscenes and neighborhood character.

5.4.2 MOTORCOURT TREATMENTS

The use of Motorcourts should be upgraded from purely functional, simple garage-access ways to a space that residents experience daily. Design of drive courts shall address the functional and aesthetic features of the space to create a pleasant homecoming for residents. At least two of the following shall be implemented along the drive court:

- Stepped massing (recessed or cantilevered) offsets of at least 1 foot.
- Window trim, colors and appropriate details from the front elevation.
- Rear privacy walls and pedestrian gates designed and located for ease of unit access.
- Enhanced garage door patterns or finishes; garage door shall complement the design vocabulary of the home/neighborhood.
- Planting areas between garages.

5.5 STREETSCAPE DIVERSITY

Each enclave shall contain a number of different plans and elevations for visual interest. Different plans are defined as those with significant variation in floor plans, massing, and minor variations in size or the number of bedrooms. In order to ensure architectural diversity, like elevations cannot be plotted adjacent to or immediately across the street from one another.

- Prohibit the same plan and elevation style on two adjacent homes and on the one lot most directly across from it.
- Prohibit the same color scheme on two adjacent homes and on the three lots most directly across from it.
- Provide variation in garage orientation (paired or unpaired) in the front elevation and massing to allow homes to undulate along the streetscape

Refer to Figure 5.1:Plan/Elevation Style Plotting and Figure 5.2: Color Scheme Plotting

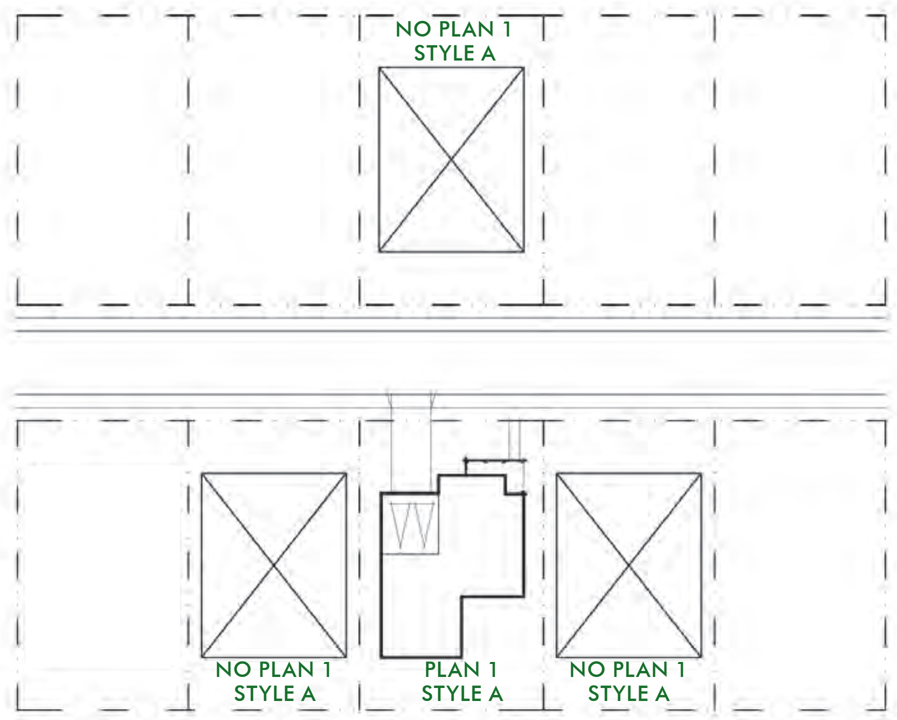


Figure 5.1: Plan/Elevation Styles Plotting

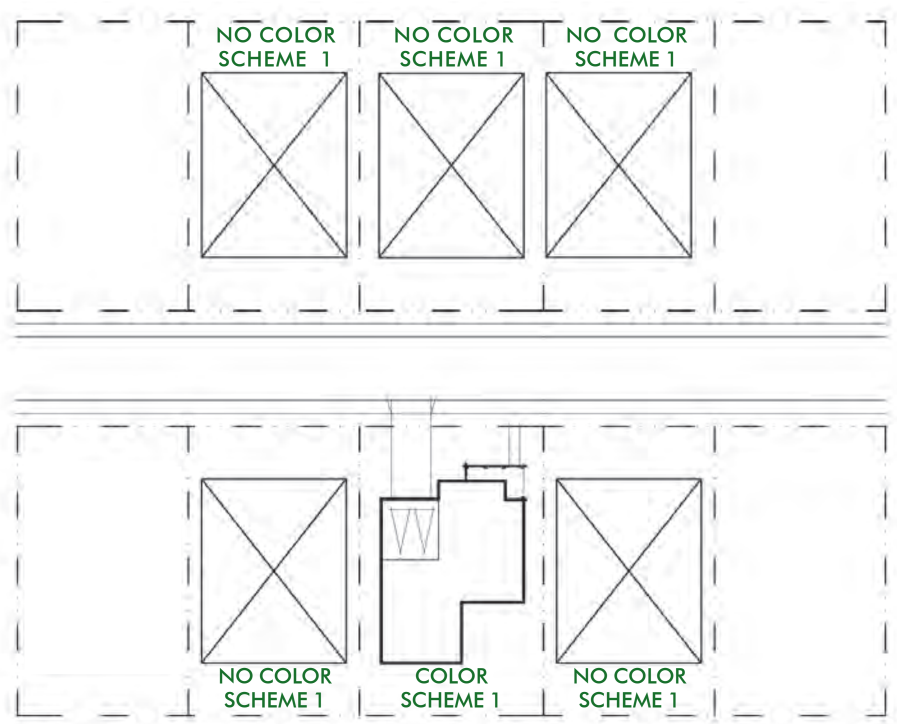


Figure 5.2: Color Scheme Plotting

5.6 BUILDING FORM AND MASSING

Larger residential buildings should be broken down into smaller components to reduce the appearance of one singular mass through a variety of architectural techniques and treatments such as:

- Varied roof forms, pitches, and heights.
- One-story elements.
- Changes in materials and color.
- Clearly defined entry features.

5.6.2 STAGGERED FRONT YARD MASSING

In order to ensure visual interest and charm within the streetscene, detached homes are required to provide a staggered array of massing along the street and varied garage locations. The techniques used shall vary depending on product type, ranging from massing setbacks at the second story on smaller lots to ground floor setbacks on moderate and large lots. The staggering should be achieved without sacrificing backyard area.

5.7 GARAGES

Garage doors shall be considered an architectural detail similar to lighting and fixtures. Thus, the aesthetic of the garage doors are of high design importance and shall be compatible and enhance the architectural style. Providing variation in color or style of the garage doors can enhance the street scene. The following applies to all homes:

5.7.1 FRONT-FACING GARAGES

- Plot and reverse plans when possible so that garages and/or entries are adjacent to each other. Occasionally, break this pattern so that it will not become overly repetitious or reflect the massing directly across the street.
- De-emphasize the visual prominence of garage doors through one of the following:
  - Setback garage from the front facade.
  - Side-entry garages to minimize doors facing the street.
  - Articulate the garage door with windows or paneling.

5.7.2 GARAGE SIZES

- 20′ x 20′ clear minimum 2-car garage dimension and 16′ wide door or 2 single doors.
- Tandem garages are recommended to be 36′ deep.

5.7.3 DRIVEWAYS

- Consider colored concrete or washed concrete to minimize glare
- Minimize widths as much as possible
- Taper driveways when garage face is more then 30 feet from back of sidewalk

5.7.4 GARAGE DOORS

- Recess garage doors from the wall plane.
- Design garage door patterns consistent with the style of the home.
- Provide different style door patterns for each architectural style.

5.7.5 THREE-CAR GARAGES

- Permit front facing three-car garages only on lots wider than 55′.
- Consider locating garages on more than one side of the house.

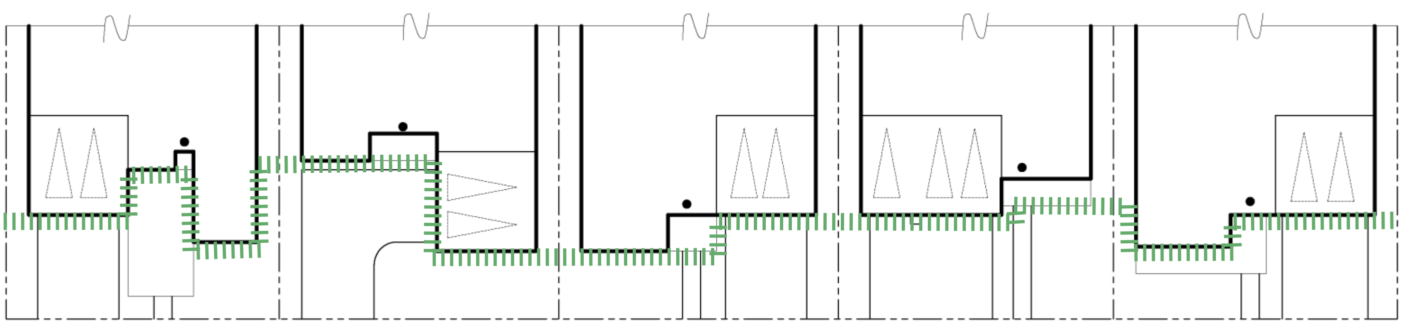


Figure 5.3: Example of Staggered Front Yards and Varied Garage Configurations/Locations

5.8 COLOR AND MATERIALS

The use of color and materials is an essential ingredient to quality development. Successful applications of colors and materials improve the character and essence of the community.

The primary goal of color and materials palettes is to further enhance and define the architectural styles within this document. Equally important is the balance of diversity and harmony; variety of color and materials must be achieved within the context of a harmonious community.

Selected colors and materials should be appropriate to the styles they represent and used to further differentiate from the other styles.

Architectural screens, fences and accessory structures should be compatible in material, color and texture to the main buildings.

5.8.1 MATERIALS & FINISHES

Specific materials shall be identified for each architectural style. The chosen materials shall represent the specific architectural style enhancing the community aesthetic.

- Use complementary building materials that promote a harmonious appearance and provide interest and variety consistent with the architectural styles; and
- Where possible, use style-appropriate concrete roof tile blends; prohibit overly dramatic blends with extreme contrast.

Material finishes should express permanence and quality.

- Create a more solid and permanent appearance with stone or other masonry materials, particularly as accents;
- Avoid frequent changes in materials;
- Detail finishes properly with the architectural style; and
- Use high-quality, durable, low-maintenance materials.

5.8.3 STUCCO

Stucco finishes should project high quality and be appropriate to the architectural style. Heavy Lace and Spanish Texture stucco finishes are prohibited.

Smooth stucco application

5.8.4 STUCCO DETAILS

All stucco trim details (such as window surrounds, window sills, roof eaves, column details, lintels, etc.) must be constructed with a level of precision and accuracy to express the authentic execution of the style;

- Use clean, crisp and smooth stucco details.
- Use a different trim stucco finish or color from the wall stucco finish.
- No rough, "blob"-like and uneven stucco finish. .
- Carefully locate stucco control joints if applicable on elevation designs.

5.8.5 MATERIAL WRAPPING

Architectural elements must not end at the corner of a building and shall wrap around the corner and extend to a logical terminus point that is incorporated into the overall architectural design.

5.8.6 ROOF MATERIALS

Roof materials, colors, and treatments should correspond to the individual character or style of the architecture and be compatible with the overall look of the neighborhood.

5.8.7 ORNAMENTAL DETAILS

Use details that appear as functional elements and/or match the architectural style.

Color and Material Applications

5.8.8 GUTTERS & DOWNSPOUTS

Integrate gutters and downspouts into the home design when used.

5.8.9 WINDOWS

Typically the location of windows is determined by the practical considerations of room layout, furniture placement, views, and privacy. Design of them should be a focus as windows play an important role in the exterior architectural character.

Within the appropriate style requirements, group and coordinate windows with other design elements to create a sense of composition and order;

- Where appropriate to style and window form, the use of multiple window panes is encouraged.
- Use appropriate scale and proportion in window design to enhance the elevation style, using shutters, trim, or other element to help convey character.

5.8.10 SHUTTERS

All shutters shall comply with the following:

- Mount shutters on finished wall material, embedded shutters prohibited.
- Match shutter size to the recessed opening window width.
- Shutters not required on every window, they should be used purposefully.

5.9 RESIDENTIAL LIGHTING

Appropriate lighting is essential in creating an inviting evening atmosphere for the community. All lighting shall be non-obtrusive.

- Limit all exterior lighting to the minimum necessary for safety and tasteful design aesthetic.
- Shield all exterior lighting to minimize glare and light spill onto adjacent properties.
- Use exterior entry lights that complement the architectural style.
- Use low voltage lighting whenever possible in common areas.

Properly proportioned shutters to window size.

Lighting enhances architecture and provides functionality

5.10 ENTRIES

Entries should create a welcoming impression, and identify individual unit entries.

- Wherever possible, site plans should orient the front door image and principal access toward the street or common area.
- Incorporate appropriate roof elements, columns, feature windows and/or architectural forms in the entry statement to emphasize the building character and the location of individual doorways.
- If front entry location is not immediately obvious due to building configuration, direct and draw the observer to it with added elements such as signs, lighting and landscape.

Landscape, lighting and direct front door location make for a welcoming entry.

5.11 ADDRESSES

Addresses must be a minimum of 6″ high and clearly visible from the nearest emergency vehicle right-of-way. Homes served by drive courts shall also have address numbers at the rear of the building.

Residential addresses must be mounted next to a light source and clearly illuminated by lighting during low-light periods.

Address placement.

5.12 NON ARCHITECTURAL ELEMENTS

5.12.1 MECHANICAL EQUIPMENT

Mechanical equipment shall be screened from view. Mechanical equipment includes:

- HVAC equipment
- Gas and electric meters
- Cable/TV panels
- Pool and spa equipment
- Exterior landscape/lighting equipment

Mechanical equipment is prohibited in patio/porch areas. When feasible, mechanical equipment shall be placed on the side of the home for minimal public visibility. Other screening methods may include but are not limited to landscaping and/or low walls.

5.12.2 TECHNOLOGY

Homes where fiber optics are available in the street, shall connect the fiber optics to the home.

5.12.3 SOLID WASTE

Space shall be provided for the refuse storage bins out of view from the street.

5.13 SOLAR

To ensure effective solar installations while preserving a high quality aesthetic, thoughtful design and strategy for the homes and the technology is recommended.

Simple Roof Forms: Provide uncomplicated roof forms that allow adequate space to place Photovoltaic (PV) panels in an organized pattern and gives sufficient roof area for properly sized installations.

Visible Edge Consideration: Minimize panel visibility at prominent neighborhood edges, when feasible.

Architectural Solutions: Apply elevation styles that accommodate solar-friendly roofs.

CHAPTER 6 STYLES

6.1 INTRODUCTION

The style information herein provides the tools to create attractive architectural design. This Chapter shall serve as a guide for designers and builders when creating architectural plans.

Styles have been suggested to create visually variety in the neighborhoods while encouraging a cohesive community theme.

Composition and details should hold true to the vernaculars of each style choice. As such, the provided menus of common features define typical characteristics of each recommended architectural style. These tables assist designers with making design choices that strengthen the authenticity of the elevations. The menu of common features are suggestions to enable authentic details; not all elements are needed for every home but a variety shall be used to complete the design.

Additional styles may be proposed; however, they shall follow the same principles and attention to detail as the specific styles listed in this Chapter.

Durable materials and quality construction methods are encouraged for longevity and aesthetics.

6.2 AUTHENTIC ADAPTATIONS

Recognizable authentic architecture is based on traditional forms, materials, and details that reasonably express the heritage of a particular style. Historically derived, or authentically adapted, elevations continue to focus on forms and details, but allow for the integration of modern materials, colors, and artistic interpretation to generate a contemporary, yet recognizable, expression of an architectural style.

Historically adapted elevations combine these notions into physical reinterpretation of an architectural style that can be executed as:

- Modern details and materials applied to traditional architectural forms.
- Modern or progressive forms clad in traditional materials and details.
- Exaggeration or emphasis of a prominent characteristic with modern or progressive expression.

Elevations should express a recognizable architectural style from the Lumina at Machado Ranch collection of styles but can use artistic design to incorporate new, modern or progressive forms, details and materials in the modern context of architecture. The chosen approach to adaptation, for example the use of traditional forms with contemporary materials and color, should be used as appropriate to the neighborhood in which it resides.

Any of the styles may be expressed as an authentic adapted or historically derived elevation using any, all, or a sampling of elements.

6.3 AMERICAN TRADITIONAL

The American Traditional style is a combination of the early English and Dutch houses found on the Atlantic coast. Their origins were adaptations of classical styles. Details from these original styles are loosely combined in many examples. Current interpretations have maintained the simple elegance of the early prototypes with added refinements and new design details.

Another identifying feature of this style is the monumented entry with decorative crown (pediment) supported by pilasters or columns projecting forward of the otherwise flat facade to form an entry.

ELEMENTS	MENU OF COMMON FEATURES
Roof Components	3.5:12 to 8:12 roof pitch 0″ to 24″ overhang Gable or hip roofs
Roof Materials	Flat concrete shake tile or flat concrete slate tile
Architectural Components	Entry feature with traditional pediments and substantial portico stoop or surround Front porches
Wall Materials	Medium sand float stucco finish (16/20) Horizontal siding or brick accents
Trim & Details	Head and sill trim Columns with base and capital trim Shaped corbels Shutters Low-walled entry courtyards or porches Cornice emphasized by dentils or decorative molding Exposed rafter tails
Windows	Vertically proportioned windows with divided lites
Doors & Gates	Garage and front door patterns to complement style
Color & Material Palette	Concrete Roof Tile Colors: cool or warm grays, gray greens, taupes and browns Stucco & Siding Colors: whites, off-whites, gray-blues, cool or warm grays, earthy greens, taupes, beiges and light-value subdued yellows Trim Colors: whites and off-whites Accent Colors: dark, saturated jewel tones, grays and blacks Brick Colors: cool or warm earth tones, orange-reds and reds or used brick

6.4 CALIFORNIA BUNGALOW

The Bungalow style is a derivative of the American Craftsman style. California was first introduced to the Bungalow style at the turn of the twentieth century, they were particularly popular in Southern California. Bungalows became popular in suburban neighborhoods all throughout California and nationwide.

Bungalows often exhibit horizontal lines, ample porches, and lower pitched gable roofs. Common exterior materials included shingles for the roof, and siding and stucco on the walls. Typically, ornamentation is sparse, but wood, brick or stone accents embellish the elevations. Current design techniques include veneers and simulated wood materials as they are more durable.

ELEMENTS	MENU OF COMMON FEATURES
Roof Components	4:12 to 6:12 roof pitch 0" to 24" overhangs Basic gabled roof - side to side with cross gables
Roof Materials	Flat concrete tile - shingle appearance
Architectural Components	Front porch
Wall Materials	Medium sand float stucco finish (16/20) Horizontal siding or shingle accents
Trim & Details	Entry porches with heavy square columns Trim at windows and doors Gable end outlookers Surface mounted fixtures on front elevations must complement architectural style Open eave overhangs
Windows	Vertically proportioned windows with divided lites
Doors & Gates	Garage and front door patterns to complement style
Color & Material Palette	Concrete Roof Tile Colors: weathered wood tones including warm grays, taupes, browns and rusty-reds Stucco Colors: light to mid value grays, earthy greens, taupes, beiges Siding Colors: mid to dark value wood stain-like gray-blues, gray-greens, browns or rusts Trim Colors: off-whites or mid to dark value wood stain-like colors Accent Colors: slate blues, dark, earthy greens, browns, burgundies and rusts Brick & Stone Colors: cream colors, natural grays and warm earth tones

6.5 FARMHOUSE

The Farmhouse style captures the spirit of the California agrarian living. Homes reflect an airy connection to the outdoors with simple forms and vertical windows. The style uses a play of materials from light to earthy stone colors and a mix of old traditional and new progressive materials. The style is based on familiar farmhouse shapes. Gable and cross gable roof forms are accented by shed dormers. Use of materials connect the style to the agricultural past with stucco, stone and siding materials and metal roof accents.

ELEMENTS	MENU OF COMMON FEATURES
Roof Components	4:12 to 6:12 roof pitch 0" to 18" overhangs Front facing gables Dormers
Roof Materials	Flat concrete tile Metal standing seam roof accents
Architectural Components	Porch or covered entry Awnings
Wall Materials	Medium sand float stucco finish (16/20) Board and batten accents
Trim & Details	Porches with simple columns and railings Fully trimmed windows Shutters
Windows	Vertical windows with simple divided lites Square window accents
Doors & Gates	Garage and front door patterns to complement style
Color & Material Palette	Concrete Roof Tile Colors: cool or warm grays, gray-greens, taupes, browns and rusts Metal Roofing Colors: grays, blacks, bronze-tones or galvanized-look finishes Stucco colors: whites, off-whites, grays, light blues, cool or warm grays, light greens, taupes, beiges and mid-value subdued yellows Siding Colors: whites, off-whites, grays, mid value blues, cool or warm grays, mid value greens, taupes, beiges and mid-value subdued yellows Trim Colors: whites and off-whites Accent Colors: mid to dark value grays, blues, greens, rusty-reds, oranges and saturated yellows Stone Colors: cream colors, natural grays and warm earth tones coordinated with palettes

6.6 MONTEREY

The Monterey style is a combination of the original Spanish Colonial adobe construction methods with the basic two-story New England colonial house. Prior to this innovation in Monterey, all Spanish colonial houses were of single-story construction.

First built by Thomas Larkin in 1835, this style introduced two-story residential construction and shingle roofs to California. This Monterey style and its single-story counterpart eventually had a major influence on the development of modern architecture in the 1930s.

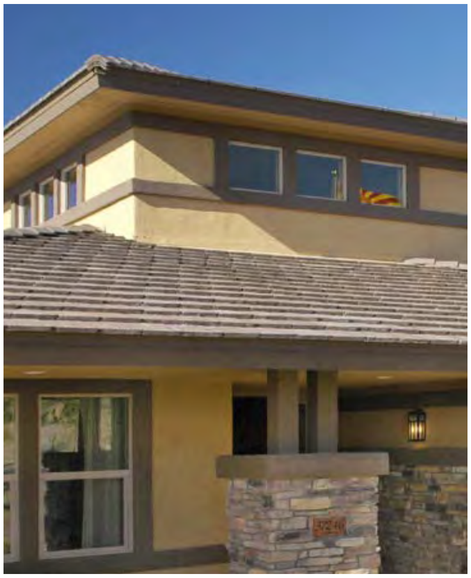
ELEMENTS	MENU OF COMMON FEATURES
Roof Components	4:12 to 6:12 roof pitch 0" to 18" overhangs Gables
Roof Materials	Concrete "S" tile
Architectural Components	Shutters Upper balcony with simple railing and post elements
Wall Materials	Medium sand float stucco finish (16/20)
Trim & Details	Window trim at top and bottom may extend past the window edges at sides Brick veneer skirt or accents Potshelves Decorative corbels and/or outlookers
Windows	Vertical windows with simple divided lites Focal window
Doors & Gates	Garage and front door patterns to complement style
Color & Material Palette	Concrete Roof Tile Colors: hues of terracotta and orange-red reminiscent of clay tile Stucco Colors: whites and off-whites to mid value warm tones Trim Colors: mid to dark value warm tones simulating wood stain colors Accent Colors: subdued shades of blue, green, burgundy or rust Metal Railing Colors: hues of bronze or black Brick Colors: terracottas, orange-reds, browns or taupes and white brick, painted or slurry coated

6.7 PRAIRIE

The roots of Prairie architecture began in the late 1800s with the "Oak Park" and "River Forest" houses of Frank Lloyd Wright. The Prairie School of architecture came to California with its own unique interpretation. The style is characterized by horizontal expressions and proportions. Horizontal proportions provide an "earthy" feel while the lower pitched roof often seems to float with its deep overhangs.

The Prairie style in its vernacular form spread throughout the country, along with Wright's belief that a building should fulfill its primary function, but also exude character, life, spirit, beauty, and a vibrant environment. This style is bold and elegant. It's a bit contemporary but with all of the warmth and richness of form and material. Asymmetrical compositions of multiple finishes in a balanced presentation of horizontal

ELEMENTS	MENU OF COMMON FEATURES
Roof Components	3:12 to 4:12 roof pitch 0” to 30” overhangs Hip roof typical Emphasize eave details Enclosed eave soffits
Roof Materials	Flat concrete tile
Architectural Components	Recessed porches or stoop entries
Wall Materials	Medium sand float stucco finish (16/20) Horizontal siding, stone or brick accents
Trim & Details	Heavy columns with stone or brick base accent Tapered or double-post porch columns on brick piers Banding or belt course on second floor
Windows	Vertically proportioned windows Grouped windows with belt course Wood or stucco trim
Doors & Gates	Garage and front door patterns to complement style
Color & Material Palette	Concrete Roof Tile Colors: subtle blends of earthy browns, greens or reds Stucco & Siding Colors: light to mid value, warm, nature-based hues Trim Colors: mid to dark value warm tones simulating wood stain colors Accent Colors: dark value organic greens, browns or reds Brick & Stone Colors: light to mid value warm earth tones

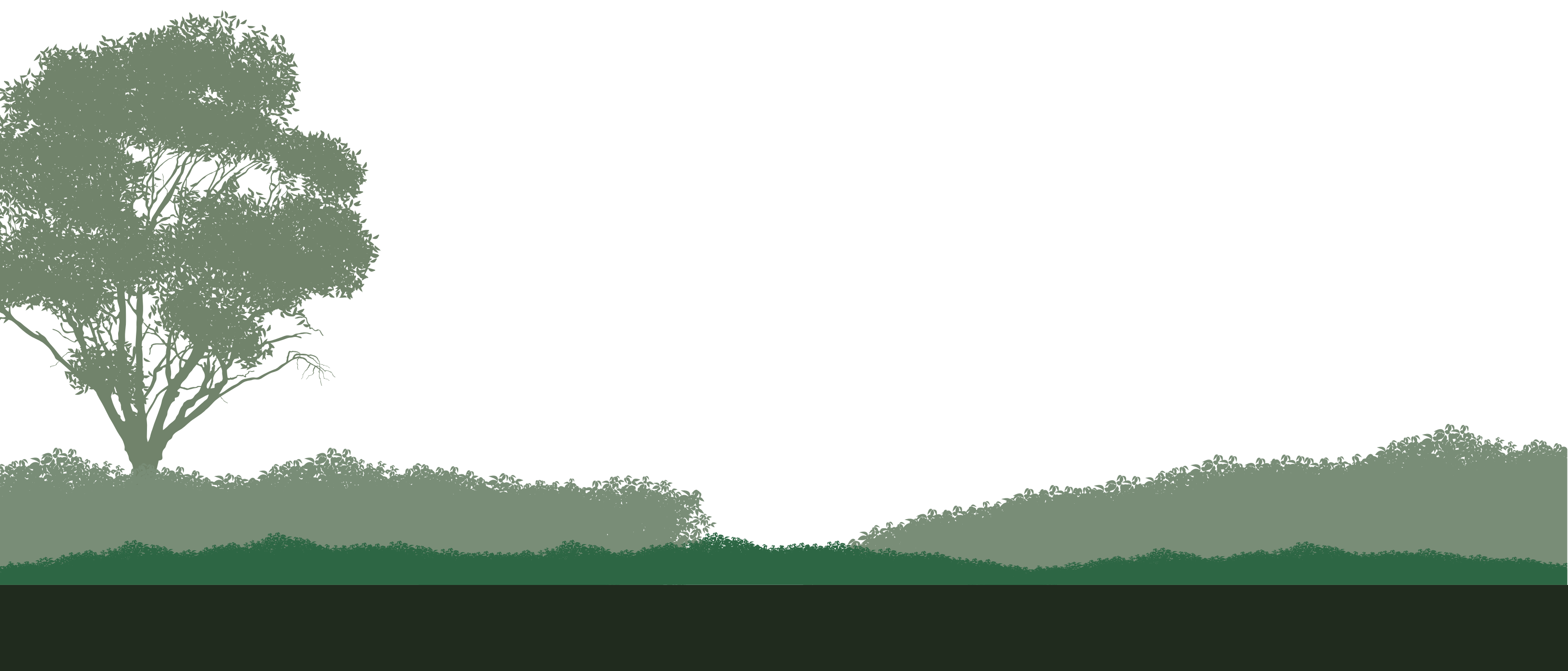


6.8 SPANISH

The Spanish style attained wide-spread popularity after the Panama-California exposition of 1914 in San Diego. The Spanish style's most notable characteristics include the use of "S" or barrel tile roofs, stucco walls, feature entry doors, and porticos, highlighted ornamental iron work and carefully proportioned windows appropriate to its wall mass.

Key features of this style were adapted to the California lifestyle. Plans were informally organized around a courtyard with the front elevation very simply articulated and detailed. The charm of this style lies in the directness, adaptability, and contrast of materials and textures.

ELEMENTS	STANDARDS	ENHANCEMENTS
Roof Components	3.5:12 to 5:12 roof pitch 0″ to 18″ overhangs Rafter tails, shaped tails preferred Parapets with barrel tile caps Gables	
Roof Materials	Concrete “S” tile	
Architectural Components	Recessed openings at front and corner elevations Porches, balconies or verandas	
Wall Materials	Medium sand float stucco finish (16/20) Decorative ceramic tile or brick accents	
Trim & Details	Header and sill trim Closed or exposed eaves Decorative wrought iron details	
Windows	Vertically proportioned windows Focal window	
Doors & Gates	Front entry doors without a porch, deeply recessed from front facade Rectangular or arched surrounds (following door or design) Garage and front door patterns to complement style	
Color & Material Palette	Concrete Roof Tile Colors: hues of terracotta and orange-reds reminiscent of clay tile Stucco Colors: whites and off-whites to light value warm tones Trim Colors: mid to dark value warm tones simulating wood stain colors and warm, light to mid value colors reminiscent of precast concrete as appropriate to details Accent Colors: saturated to muted shades of blue, green, burgundy, rust or gold Brick Colors: terracottas, orange-reds, browns or taupes Decorative Metal Colors: hues of bronze or black Decorative Ceramic Tile Colors: colors consistent with historic Malibu tiles	



CHAPTER 7 LANDSCAPE

7.1 INTRODUCTION

Landscape design strengthens streetscape appearance and makes pedestrian activity more enticing. Landscape features soften the built environment and enhance the overarching community theme.

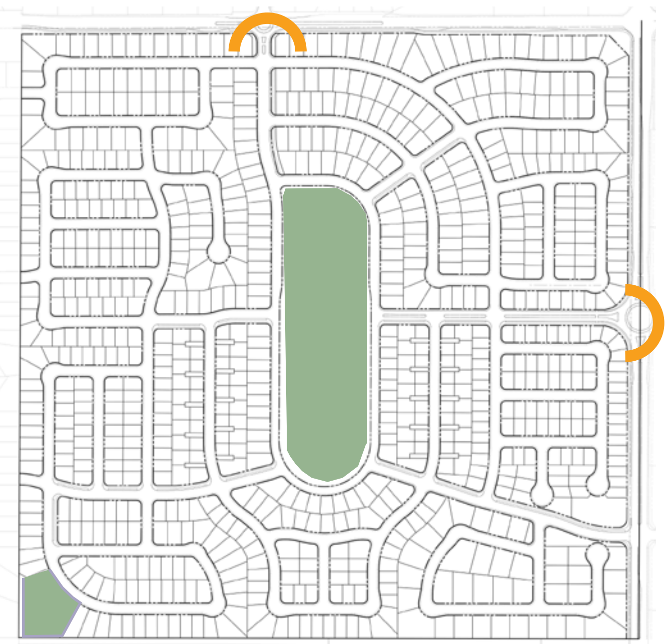
Wellness Walks along prominent community streets connect the planning areas to the open spaces. By utilizing small lot standards and motor court design, more opportunity to give land back to the streetscape for active living is enabled.

The community plant palette shall be climate appropriate and pleasing to the eye. Irrigation shall be designed to maximize efficiency and implement water conservation measures.

7.2 COMMUNITY ENTRIES

Community entries shall be designed as special statements reflective of the project's character to establish identity for residents and visitors.

- Use monument signage and landscape features such as trellis and pilasters to further enhance the project entry.
- Landscape shall include flowering trees and other enhanced landscape to emphasize the community entries.
- Visibility and safety shall be considered when selecting corner and median plantings.
- Accent lighting for trees and community signage shall be included for nighttime wayfinding and pleasing design.



Community Entry Locations

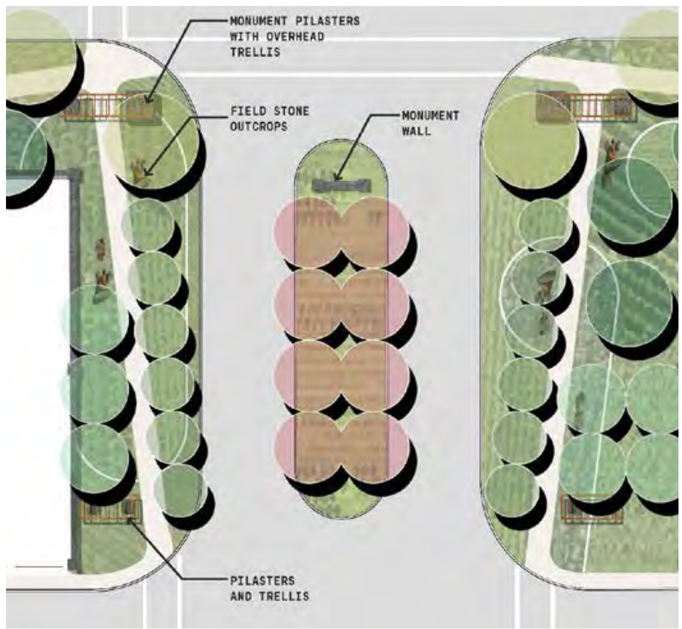


Figure 7.1: Conceptual Entry Plan - Woodward Avenue

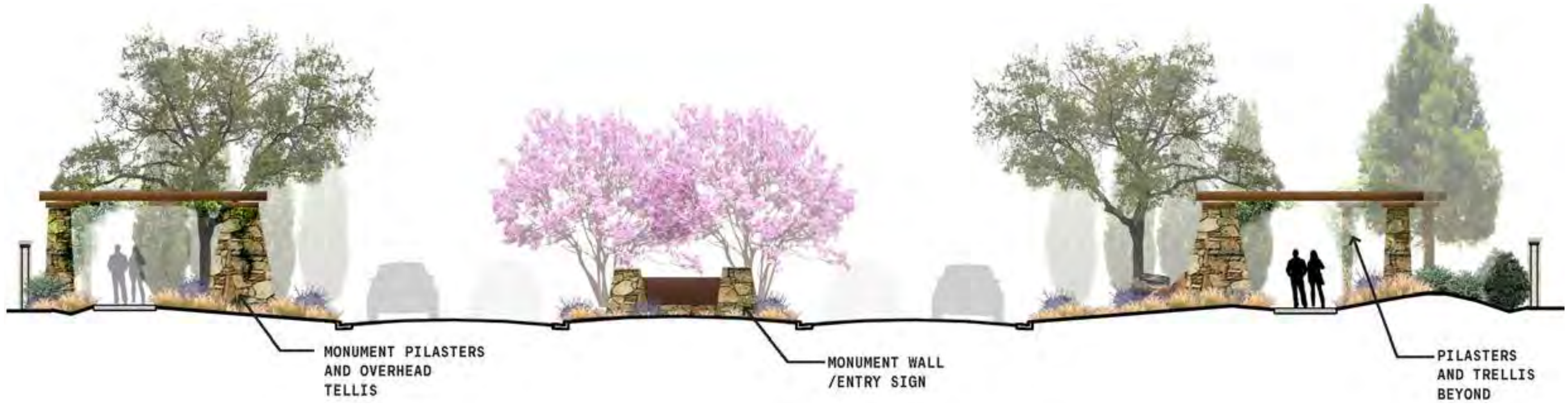


Figure 7.2: Conceptual Entry Elevation - Woodward Avenue

7.3 PARKS AND OPEN SPACE

The Community Park is the focus of Lumina at Machado Ranch. Various passive and active uses are proposed for the park which also provides a destination for walking. Wellness Walks are provided throughout the community that radiant from the Community Park out into each neighborhood. Please see Sections 4.12 and 4.2 for discussion on the Wellness Walks.

The Bella Terra Drive entrance provides connectivity from Woodward Avenue to the Community Park. The extended landscape buffer provides a visually pleasing and comfortable pedestrian route from the northern boundary to the Community Park.

Going westbound on J Street after entering through the landscaped round-about, J Street contains a median, an 8′ wellness walk, and landscape planting opportunities for a visually pleasing entrance. This streetscape encourages pedestrian activity and with the center median, exhibits a main primary community entry.

The Levee Park provides connectivity to the Levee Trail. A short walk from the Community Park, residents and visitors can access the Levee for further pedestrian activity. Refer to Figure 7.3: Parks and Open Space.

Figure 7.3: Parks and Open Space

7.4 COMMUNITY PARK

The heart and soul of Lumina at Machado Ranch is the park located at the center of the project. The Central Park will become the living room for the community; where residents and visitors play, relax, and connect with family and neighbors. Featuring both active and passive uses, the Community Park will bring people out in a fun and healthy environment. All park elements shall meet the requirements of the City of Manteca.

- A variety of play/exercise opportunities shall be available for the residents.
- Recreation areas may be dual use with storm water retention and filtration.
- Facilities shall be compliant with ADA and current codes at the time of installation.
- Irrigation shall be designed to maximize efficiency and meet the requirements of the City Parks Maintenance Department.

Refer to Figure 7.4: Conceptual Park Plan.

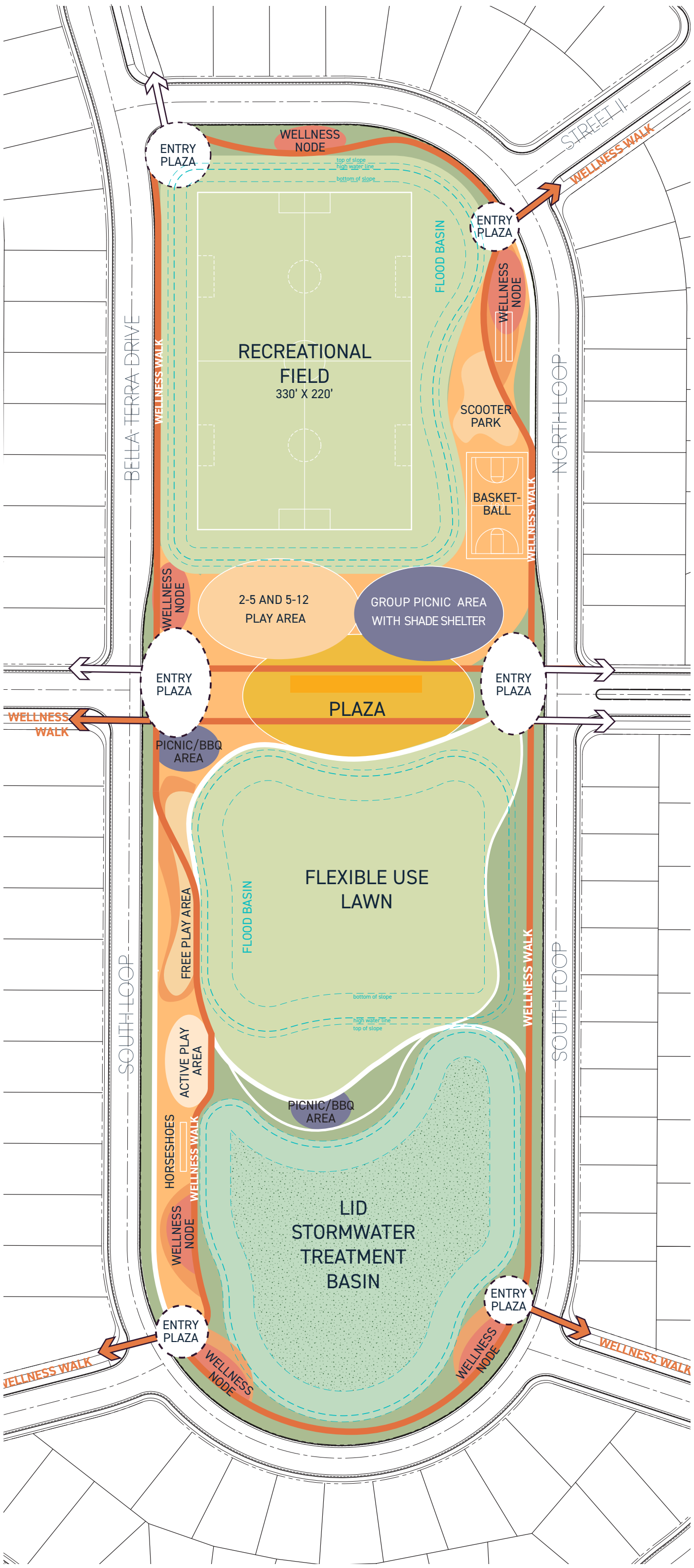


Figure 7.4: Conceptual Park Plan

7.5 LEVEE POCKET PARK

The Levee Pocket Park provides access to the existing levee path. This park will also feature a tot lot, seating area with orchard-style planting, and an oak grove.

The project will construct a portion of the RD17 Levee along with a berm that runs the majority of the project's southern boundary. These improvements create a natural barrier to the adjacent farmland.

Refer to Figure 7.5: Conceptual Levee Park Plan.

Figure 7.5: Conceptual Levee Pocket Park Plan

7.6 COMMUNITY WALLS AND FENCING

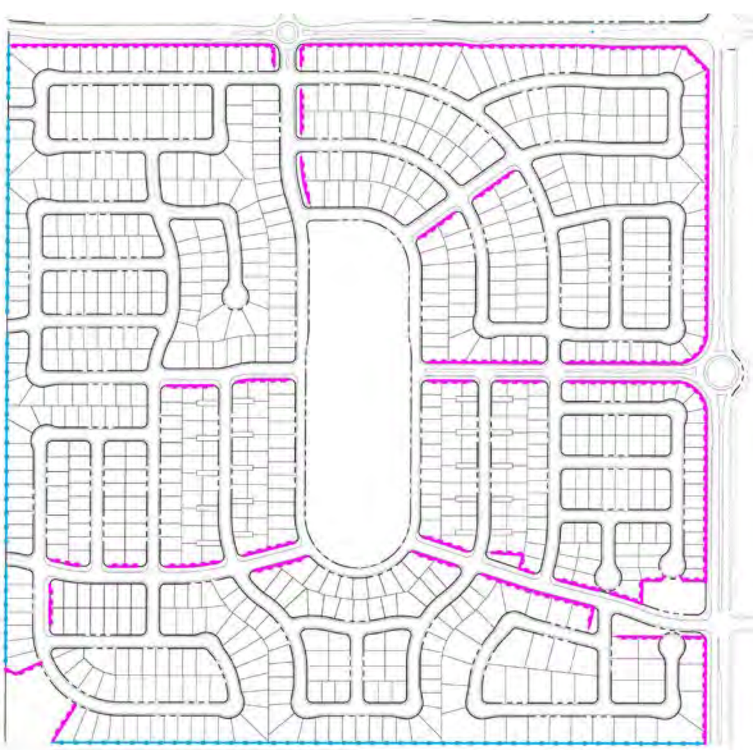
Besides landscaping, walls can add to the character of the community. Community walls and fences shall enhance the aesthetic and provide privacy. These design elements shall enhance the Lumina at Machado Ranch design theme and add to the visual cohesiveness of the community.

- Walls adjacent to the neighborhood edge and between landscape lots and residential lots shall be considered the Community Wall.
- Community Walls shall be split face masonry wall, with decorative pilasters and precast caps.
- Community walls shall be 6′, additional 6″ permitted for cap. Measurement shall be taken from finished grade.
- Good neighbor fences shall not exceed 6′.
- Fencing adjacent to the front yard and side yard of a corner home shall not exceed 42″ in height.
- Exceptions to wall heights may be permitted based on noise analysis determination.

Refer to Figures 7.6, 7.7 and 7.8.

Good Neighbor Fence Example

Masonry Wall Example



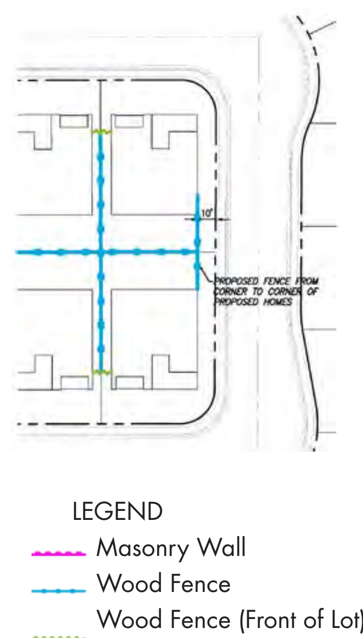


Figure 7.6: Conceptual Wall and Fence Plan

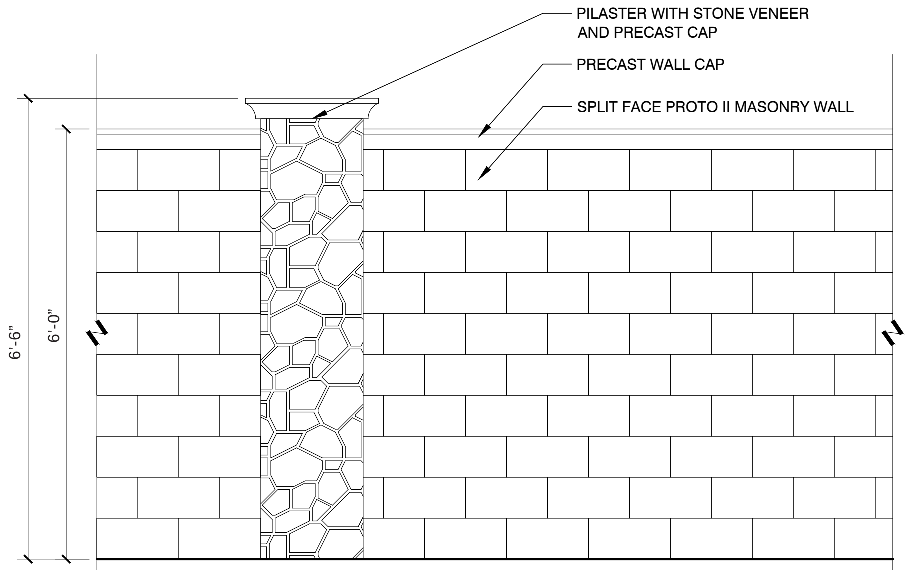


Figure 7.7: Conceptual Masonry Privacy Wall Detail

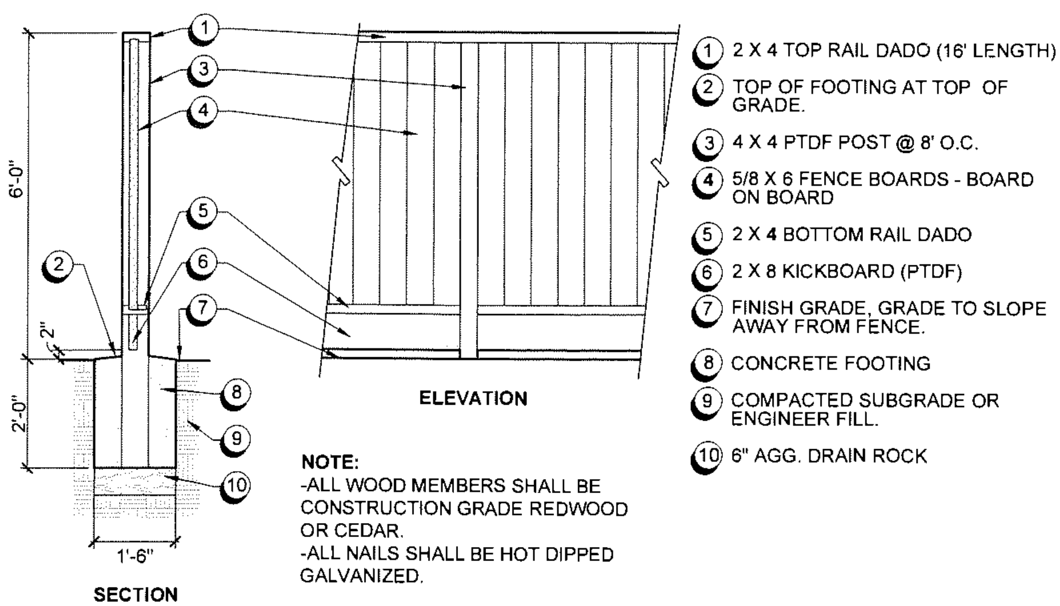


Figure 7.8: Conceptual Good Neighbor Fence Detail

7.7 COMMUNITY SIGNAGE

Community signage shall be provided at major community entries. Signage shall be consistent with the project theme and enhance the community streetscape.

Monument signs can either be located at the project entry corners or in a medians.

Street signage such as street signs, stop signs, etc., shall coordinate with the type and style of the streetlights and other applicable elements. Street signage shall be approved by the City of Manteca.

Example Signage/Monumention Material

Example Monument Design

7.8 LIGHTING

Lighting shall be provided as required per the City of Manteca requirements for safe, secure, and well-lit streets and pedestrian walkways. Lighting shall be encouraged that reflects a pedestrian scale, reduces nighttime glare and light spill, and adds to the ambiance of the community. Lighting within the open space areas shall be located to minimize light spill into adjacent homes.

- Standard height for street lighting is 20′ per the MMC, lighting shall comply with City standard.

Unobtrusive lighting with soft down-lit pools of light is encouraged. Lighting locations shall be specified on the lighting plan included in the improvements plans and additionally described in the park improvement plans.

7.9 PARK FURNISHINGS

Furnishings contribute to the community theme and character. A unified family of furnishings shall be selected for cohesiveness. All park furnishings, play equipment and components will comply with City standards.

Conceptual Park Furnishings

7.10 COMMUNITY PLANT PALETTE

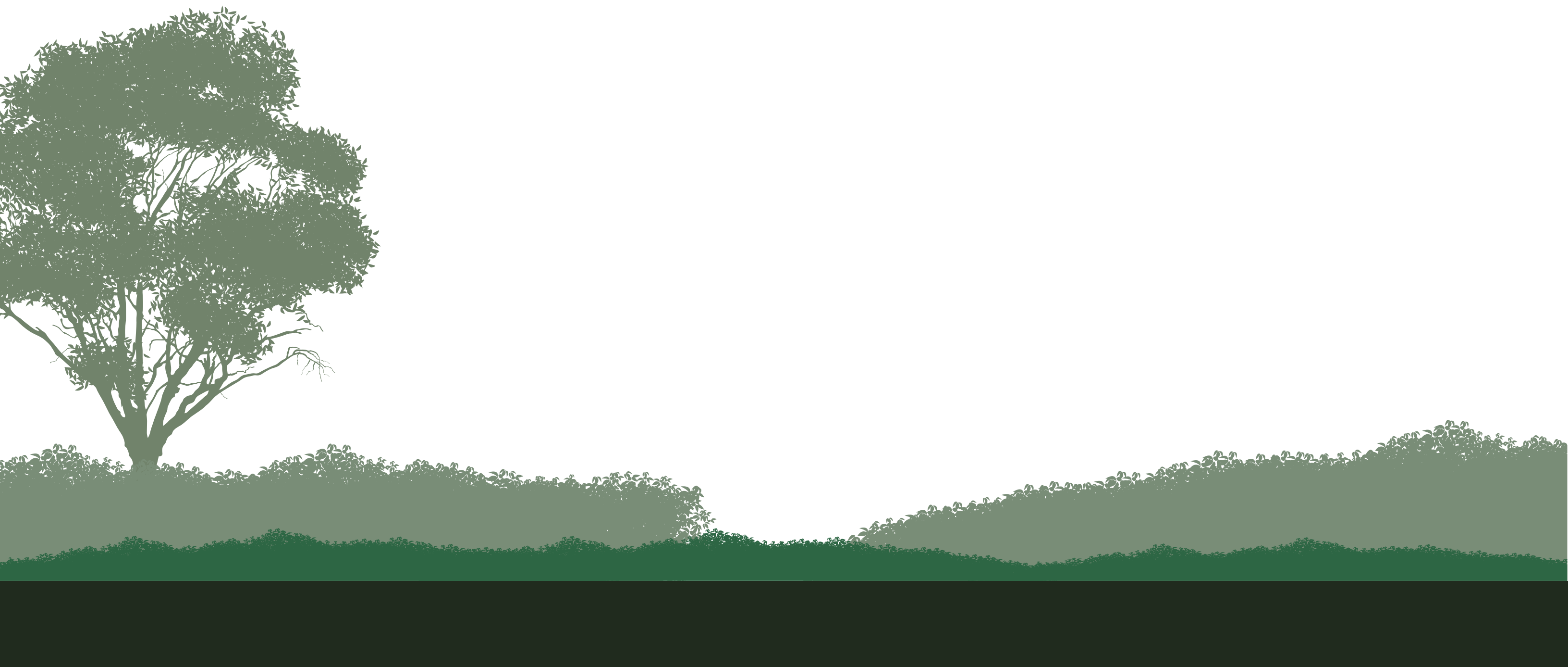
The plant palette is put in place to enhance the community aesthetic. Landscape features shall be cohesive throughout the community so as to reflect an overall community theme, but varied to provide visual interest.

The plant palette will comply with the City's approved Plant List. All landscape plans will be processed through the City of Manteca.

7.10.1 COMMUNITY TREES

Trees perform several functions in residential landscape. They provide shade for parked cars, pedestrians, and homes, they unify the neighborhood landscape, and they are the thread that sews the individual streets into a cohesive community.

- Corner lots shall include trees along all frontages, but not encroaching into the line of sight at corners for vehicular, bicycle and pedestrian safety.
- Trees shall be located in concert with streetlights, utility pedestals and driveways.
- Street trees shall enhance the streetscape and contribute to the community identity and character.
- Each homes is required to have one tree per front yard of each home.
- Street Trees shall vary in species along each block to provide a diverse and adaptable urban forest that can be resilient to changes in climate and disease for the long term benefit of the community.
- Streets trees shall be chosen from the City Approved Plant Palette.



CHAPTER 8 DESIGN REVIEW

The Design Review process has been developed to ensure quality homes that will stand the test of time. This process is in place to encourage elevated design standards and employ design methods that enhance community safety. These requirements are intended to be a road map to develop a home or a product line that contributes to the entirety of Lumina at Machado Ranch.

8.1 DESIGN REVIEW PROCESS

The review process of proposed plans will help to ensure the vision of Lumina at Machado Ranch. Design review is required for all projects requiring a building permit in Lumina at Machado Ranch. Production home design shall be reviewed by the The Lumina Design Review Board (LDRB). Prior to issuance of a building permit for any structure, two levels of review are required; the first by the LDRB and the second by the City.

The LDRB will review and work with the applicant to construct a quality project. The LDRB will be composed of three members from Signature Homes (Master Developer). The board has the authority to review and approve all plans and specifications submitted to them for any proposed improvement. They do not review and approve: a.) engineering design, b.) compliance with zoning and building ordinances, c.) compliance with public utility requirements, d.) any easement compliance, or e.) preservation of any views. Results of the private committee's review shall be required before submittal to the City of Manteca for planning or building permits.

The goal of both the City's and the private board's review is to retain the cohesiveness of the architectural and landscape architectural character and to enhance the desirability and attractiveness of this planned development. The plans will be examined for compliance with the Design Guidelines and the relationship with other site improvements.

Model home locations, temporary sales signage, landscaping, lighting, parking, etc. shall be approved by the LDRB.

This process is for submittal of new home plans, model complex site plans (including location approval), model landscape plans and production home landscape plans.

Once the plans have been accepted by the LDRB, the board will schedule an applicant meeting within 10 working days. During this session, the submittal will be reviewed and details such as building sighting, landscape, and community development concepts will be discussed.

The LDRB will review the submittal for conformance with the intent of the Design Guidelines. A memorandum will be prepared describing the findings of the review. Items will be identified as either significant or minor. Significant items will require re-submittal; minor items require a signed statement from the applicant that the minor items will be corrected in the construction documents prior to the submittal to the City of Manteca

After the review session, the LDRB will respond to the applicant within 15 working days. The response letter will include either an approval or an approval with modifications. If significant modifications are requested, a second design review will be scheduled to work through the remaining concerns.

Complete re-submittal is only required if the original submittal fails to meet the intent of the

Design Guidelines, as determined by the LDRB. For incomplete submittals only the missing or incomplete items will be required in the re-submittal.

The LDRB will review the re-submittal. A memorandum will be prepared describing the board's findings regarding the resubmittal. The resubmittal will be reviewed at the next scheduled meeting of the LRDB pursuant to the document submittal timeline, unless other arrangements are agreed upon.

Once the LDRB approves, then development plans can be submitted to the Manteca Planning Division for City processing.

Upon the final certificate of occupancy being issued by the City to the developer/builder, the design review process/responsibilities will transfer solely to the City of Manteca's Community Development Department. Any modifications post initial construction shall be reviewed and processed by the City.

Refer to Figure 8.1: Design Review Process.

8.1.2 MODIFICATION TO DESIGN GUIDELINES

If a significant modification to the Design Guidelines is requested, a Master Plan Amendment may be required by the City of Manteca.

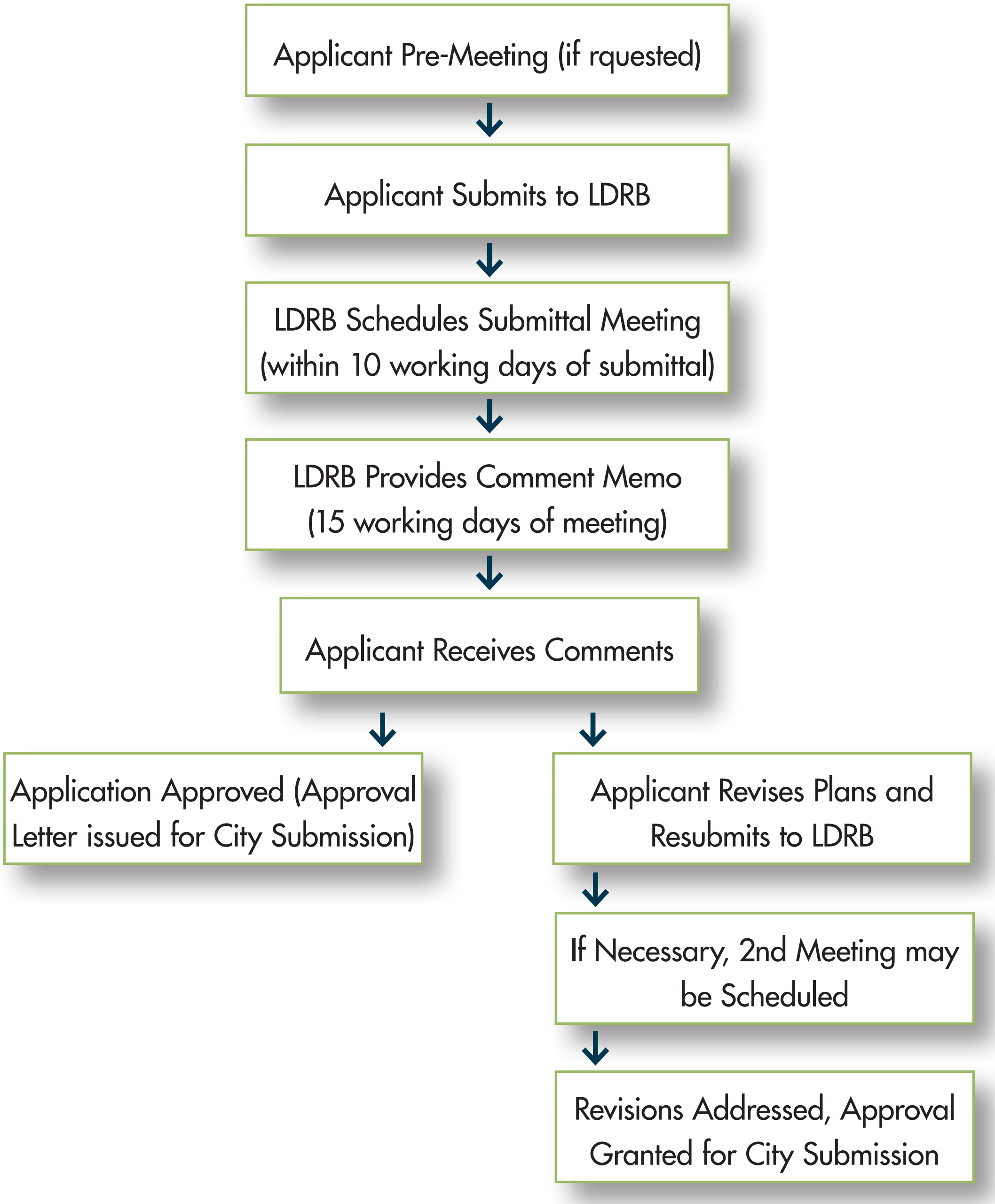


Figure 8.1: Design Review Process

REQUIRED APPLICATION INFORMATION

Lumina at Machado Ranch Applicant Information
(include this form with each application)

Date		Lot Number(s)	
Proposed Project Name		APN Number(s)	
Size of Project (Acres)		Total Units	

Applicant

Contact		Telephone	
Address		Fax	
City/State/Zip		E-mail	

Architect

Contact		Telephone	
Address		Fax	
City/State/Zip		E-mail	

Landscape Architect

Contact		Telephone	
Address		Fax	
City/State/Zip		E-mail	

Civil Engineer

Contact		Telephone	
Address		Fax	
City/State/Zip		E-mail	

8.2 APPLICATION CHECKLIST FOR ONE HOME

- ☐ Site Plan
  - ☐ APN
  - ☐ Setbacks
  - ☐ Building footprints
  - ☐ Scale and north arrow
  - ☐ Fully dimensioned
- ☐ Schematic Floor Plans and Elevations
  - ☐ Floor plans for all levels include:
    - Square footage of proposed building
    - Number of bedrooms and bathrooms
    - Any accessory structures
    - Dimensions
  - ☐ Front Elevations (colored)
    - Dimensions
    - Material Call-outs
- ☐ Self-Certified Design Guidelines Checklist

Please see the following pages for the requirements for submission.

Basic submittal standards:

- Scaled with a graphic scale.
  - 1/8 or 1/4 scale for floor plans
  - 1:40 to 1:100 site plans
- North arrow
- Applicant's name
- (2) Printed copies at 24" x 36"
- Digital files on a USB drive or Sharefile/Dropbox

A Builder may request a pre-submittal meeting with the LDRB prior to its formal submittal of plans. The purpose of this meeting is for the LDRB to provide guidance to the Builder in an effort to minimize the processing time and avoid wasted effort during the submittal process. It is not required that materials be submitted prior to the meeting, however it is recommended. The Builder and its Architect should attend the meeting and should at a minimum provide plans sets with dimensioned elevations and floor plans.

8.3 APPLICATION CHECKLIST FOR MULTIPLE HOMES

- ☐ Site Plan
  - ☐ Setbacks
  - ☐ Statistical summary (e.g. lot coverage, open space)
  - ☐ Building footprints
  - ☐ Driveways, walks & fencing
  - ☐ Scale and north arrow
  - ☐ Fully dimensioned
- ☐ Project Map
  - ☐ Lot/Parcel Numbers
- ☐ Schematic Floor Plans and Elevations
  - ☐ Building Floor Plans for all levels include:
    - Square footage of proposed building(s)
    - Number of bedrooms and bathrooms
    - Dimensions
  - ☐ Front Elevations (colored)
    - Of each architectural style proposed
    - Dimensions with plate heights
    - Material call-outs
- ☐ If applicable: streetscape, enhancements, and or pocket parks
- ☐ Self-Certified Design Guidelines Checklist

Please see the following pages for the requirements for submission.

Basic submittal standards:

- Scaled with a graphic scale.
  - 1/8 or 1/4 scale for floor plans
  - 1:40 to 1:100 site plans
- North arrow
- Applicant's name
- (2) Printed copies at 24" x 36"
- Digital files on a USB drive or Sharefile/Dropbox

A Builder may request a pre-submittal meeting with the LDRB prior to its formal submittal of plans. The purpose of this meeting is for the LDRB to provide guidance to the Builder in an effort to minimize the processing time and avoid wasted effort during the submittal process. It is not required that materials be submitted prior to the meeting, however it is recommended. The Builder and its Architect should attend the meeting and should at a minimum provide plans sets with dimensioned elevations and floor plans.

8.4 SELF-CERTIFIED DESIGN GUIDELINES CHECKLIST

Intent and purpose. The purpose of this section is to provide overt and professionally appropriate standards for the evaluation of design features in Manteca. The criteria are not intended to restrict imagination, innovation or variety, but rather to assist in focusing on design principles which can result in creative solutions that will enhance real and perceived safety in Manteca, develop a satisfactory visual appearance, preserve taxable values, and promote the public health, safety and welfare.

If the project does not comply with individual criteria listed in the Design Guidelines Checklist, the applicant must present a feasible alternative design solution that meets the intent of the listed requirement.

Table 8.1: Self-Certified Design Guideline Checklist

Guideline	Yes	No	Comments (LRDB)	Comments (CITY)
NATURAL SURVEILLANCE				
a. Utilizes lighting to eliminate dark spaces.				
b. Utilizes walls and fencing where appropriate to delineate public and private space.				
c. Illuminated doorways that open to the outside.				
d. Front door is visible from the street.				
e. Install windows in living areas to provide visibility of the property.				
f. Place windows, doors, and walkways to ensure the opportunity for easy observation of surrounding areas.				
g. Selected landscaping to allow unobstructed views of vulnerable doors and windows from the street and other properties.				
h. Install windows on all four sides of buildings to allow surveillance.				
i. Homes adjacent to public spaces are positioned to have visibility into the public realm.				
j. Common open space and playgrounds are visible and open to the street.				
k. Proposed landscaping minimizes blind spots or hiding spots.				

Guideline	Yes	No	Comments (LRDB)	Comments (CITY)
l. Street lighting in high pedestrian traffic areas are positioned to help recognize potential threats at night.				
m. Community parks have lighting for safety, and avoid spaces that could create user vulnerability.				
n. Discourage crime by creating an inhospitable environment for criminals.				
o. Lots, streets, and houses are designed to encourage interaction between neighbors.				

- Unobstructed view and pathway to front door.
- View window at front yard.
- Manicured landscape providing aesthetic value while not inhibiting visibility.
- Illuminated front entry and garage.

- Visibility from homes into public space.
- Delineation between private and public space.

Guideline	Yes	No	Comments (LRDB)	Comments (CITY)
NATURAL ACCESS CONTROL				
a. Walkways and landscaping direct visitors to the proper entrance and away from private areas.				
b. Balcony railings and patio enclosures are as low as possible using non-opaque materials.				
c. Community entrances and parks are defined with landscaping and monumentation.				
d. Community access limited without completely disconnecting the subdivision from adjacent subdivisions.				
e. Streets designed to calm traffic and discourage cut-through or high-speed traffic.				
f. Walkways in locations safe for pedestrians, and use them to define pedestrian realm.				

- Entry monumentation.
- Defined pedestrian walkways and crossing.
- Low profile landscaping and view fence enabling visibility into park.

Guideline	Yes	No	Comments (LRDB)	Comments (CITY)
TERRITORIAL REINFORCEMENT				
a. Property boundaries, public space, and private areas defined with plantings, pavement treatments, porches, fences or walls.				
b. Provide clearly defined entries and entryways into front yards or porches that create an obvious progression from public to private space.				
c. Home entrances accentuated with architectural elements, lighting and/or landscaping.				
d. Homes have entry features or front doors oriented towards the street.				
e. Private outdoor spaces such as yards, decks, and patios are delineated from public space.				
f. Sidewalks, landscaping, porches or front yards distinguish between public and private areas.				
g. Addresses are clearly visible from the street.				

- Public sidewalk and path to front door is clearly understood.
- Low-wall in front yard distinguishing between public realm and private residence.
- Front door lighting.
- Windows at front of home for visibility out to front.

Guideline	Yes	No	Comments (LRDB)	Comments (CITY)
RELATIONSHIP OF BUILDINGS TO SITE				
a. Project reflects the character of the site upon which it is located.				
b. The site is planned to accomplish a desirable transition with the streetscape, and to provide for required landscaping, safe pedestrian movement, and vehicular circulation.				
c. Setback requirements and lot standards are met per Chapter 3.				
d. Fence and wall plans are consistent with the intended use.				
e. The design of fences and screen walls give specific consideration to the relief of monotony, such as breaking up major lengths by landscaping or jogs.				
f. Newly installed utility services, and service revisions necessitated by exterior alterations are underground.				
g. Mechanical equipment on residential lots are screened from public view, as much as possible.				
h. Sidewalks designed to meet ADA requirements.				

- Streetscape provides interesting aesthetic with varied architecture, landscape, and sidewalks.
- Utilities and mechanical equipment not visible.

Guideline	Yes	No	Comments (LRDB)	Comments (CITY)
RELATIONSHIP OF PROJECT TO ADJOINING AREA				
a. Demonstrates a visual comparability and harmony between homes along the residential streetscape. Monotony avoided.				
b. Pedestrian scale of the buildings.				
c. Landscape used to soften spaces around buildings and streets.				
d. Primary building forms are the dominating form while secondary formal elements include porches, dormers, or other significant (and style appropriate) design features.				
e. The architectural style of the house(s) enhance the neighborhood character.				
f. The architectural style of the homes and buildings meet the guidelines as set forth in Chapter 6.				

- Good neighbor fences installed between homes.
- Sidewalks and street lighting for pedestrian movement.
- Colors are compatible with adjacent homes and the surrounding landscape.
- Single-story elements create pedestrian scale.

Guideline	Yes	No	Comments (LRDB)	Comments (CITY)
LANDSCAPE AND SITE TREATMENT				
a. Preserve and enhance where natural or existing topographic patterns contribute to beauty and utility of a development.				
b. Landscaping is an integral part of the overall site design, not functioning simply as camouflage for unused or unusable spaces.				
c. Landscape plan addresses the functional aspects of landscaping such as drainage, erosion prevention, wind barriers, provisions for shade, energy and water conservation, sound absorption, dust abatement and glare reduction.				
d. Landscape proposed enhances streetscene and open spaces, provides shade and pleasing aesthetic.				
e. Plant materials selected for interest in its structure, texture, and color, and for its ultimate growth. Plants that are indigenous to the area and others that will be hardy, harmonious to the design, and of attractive appearance are used.				
f. Parking areas and streets are enhanced with landscape and trees.				

- Defined pedestrian walkways and crossing.
- Parking pockets softened with landscape.
- Park has visibility and shade.
- Homes have windows and doors facing the park and street.

Guideline	Yes	No	Comments (LRDB)	Comments (CITY)
g. Planting and selection of landscape material allows for clear sight lines, and places of concealment are not fostered.				
h. High traffic zones, including pedestrian walkways, have appropriate landscape treatments to minimize maintenance and upkeep issues.				
i. Where landscaping is used as screening, it is equally effective in winter and summer.				
j. In areas where general planting will not grow in a healthy, thriving manner, other materials are used, such as steel tube fences, low walls, pavement, or decomposed granite. Suitable plants are combined with hardscape materials.				
k. Landscape screening is of a height and density so that it provides the full desired effect within twenty-four months' growing time.				
l. Unless for screening, shrubs are limited to two-feet in height and mature trees are limbed up to six-feet above the ground.				
m. Provide attractive and durable fencing whenever possible.				

- Good neighbor fencing.
- Low profile landscaping and view fence enabling visibility into park.
- Landscape treatments along walkways that allow for unobstructed paths of travel.

Guideline	Yes	No	Comments (LRDB)	Comments (CITY)
LIGHTING				
a. Site and architectural plans include the location of fixtures, their design, and the nature and level of the illumination they will provide.				
b. Sidewalks and pathways are lit with ornamental lighting fixtures. All pedestrian scale lighting fixtures are a maximum height of 12 feet.				
c. All exterior lighting balances the need for energy conservation with needs for safety, security and decoration.				
d. Exterior lighting is designed as an integral part of the building and landscape design. All exterior lighting is prevented from projecting light upward either by placement beneath building eaves or by an integral shield of the fixture's interiors as recommended by the manufacturer.				
e. Lighting is limited to illumination of surfaces intended for pedestrians, vehicles, or key architectural/landscape features.				
f. Where decorative floodlighting is used, fixtures are located or shielded so that their presence is minimized.				
g. All exterior lighting is part of the architectural and landscape design concept. Fixtures, standards and all exposed accessories are concealed or harmonious with other project design materials.				

- Pedestrian scale light fixtures along sidewalk.
- Pathway lighting to facilitate wayfinding in low-light periods.
- Low voltage lights to enhance landscape features.
- Lighting in public spaces.
- Energy efficient lighting that minimizes light trespass.

Guideline	Yes	No	Comments (LRDB)	Comments (CITY)
h. The height of exterior lighting fixtures do not exceed the predominant height of the principal building to which they relate.				
i. Exterior lighting is not designed to permit an adverse effect upon neighboring properties. Light cutoff angles for all sources of illumination prevent unnecessary glare.				
j. Street lights where overnight parking is available on-street.				
k. Lighting systems provide night time vision for motorists to increase visibility of pedestrians, other vehicles and objects.				
l. Lighting systems designed for pedestrians to see one another, and to see risks involved in walking at night.				
m. Lighting system will enhance the ability for surveillance and observation.				
n. Lighting system minimizes glare, shadow, light pollution and light trespass.				
o. Utilizes lighting in the landscaping both for security and aesthetics.				

- Variety of lighting including landscape lighting and wall-mounted lighting.
- Lit entry.
- Light to illuminate address.

Guideline	Yes	No	Comments (LRDB)	Comments (CITY)
BUILDING DESIGN				
a. Appearance of project is based on quality of its design and relationship to surroundings.				
b. Buildings are in scale and harmonious with neighboring developments.				
c. Materials are in harmony with overall neighborhood.				
d. Variety of elevation styles, building materials, and colors are used to enhance street scene.				
e. Materials are of durable quality.				
f. There are definite transitions between changes of material and plane while maintaining an overall simple geometry for the building mass.				
g. Structural materials are compatible within themselves and harmonious with the overall neighborhood.				
h. All windows across a facade are related in design, operating type, and proportions.				
i. Exterior building components such as windows, doors, eaves, and parapets have balanced proportions.				
j. All sides of residential structures have received design consideration and have received appropriate amount of enhancement. Enhancements do not need to occur on all four sides of a home, most important is when visible from public right-of-way.				

- Details and functional elements are consistent with architectural style.
- Enhancements are not overused but purposeful.
- Windows and trim/shutters are proportionate.
- Variety of styles and colors.

Guideline	Yes	No	Comments (LRDB)	Comments (CITY)
k. All projections and mechanical details such as louvers, exposed flashing, flues, vents, gutters and downspouts are recognized as architectural features and match the color of the adjacent surface, or a complementary color.				
l. Refuse storage areas are screened from public view with materials compatible with the home aesthetic.				
m. Monotony of design is avoided. Variations of detail, form, and siting is used to provide visual interest. In multiple building projects, variable siting of individual buildings are used to prevent a monotonous appearance.				
n. Roof profiles define the form, scale and proportion of the home, and reduce bulk. Space for solar has been accounted for.				
o. Windows are used as architectural elements that add relief to the façade and wall surface as well as allows natural light into the homes.				
p. Front doors and garage doors reflect the architectural style of the home.				
q. Windows employ design details, if appropriate to the architecture, such as divided lites or shutters.				
r. A variety of roof colors is used within the development. Multi-color complex roof tile blends discouraged.				

- Variation in homes.
- Mix of colors and materials working harmoniously from one house to the next.
- Roof profile appropriate to architectural style.
- Roofs are simple but not monotonous.
- Defined entries.