529 Cutter Way Residential Project
Initial Study and
Mitigated Negative Declaration

Lead Agency:

City of Covina
Planning Department
125 East College Street
Covina, California 91723

Prepared by:

MIG, Inc.
1650 Spruce Street, Suite #106
Riverside, California 92507

April 1, 2022

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1 Introduction

The City of Covina (Lead Agency) received an application from Faith Church, LLC (Applicant) for construction of a residential development consisting of 63 multi-family residential units, 12 of which will be live-work units, in twelve buildings ranging in height from one to four stories (Project) on a 2.24-acre site in the City of Covina, California. The Project will require Site Plan Review, a Zone Change, and Planned Community Development (PCD) Overlay. The approval of the application of the residential development as well as the land use entitlements constitutes a "project" that is subject to review under the California Environmental Quality Act (CEQA) 1970 (Public Resources Code §§ 21000, *et seq.*), and the CEQA Guidelines (14 California Code of Regulations §§ 15000, *et. seq*.).

This Initial Study was prepared to assess the short-term, long-term, and cumulative environmental impacts that could result from the Project and to comply with CEQA Guidelines § 15063, which sets forth the required contents of an Initial Study. These include:

- A description of the Project, including the location of the Project (See Section 2);
- Identification of the environmental setting (See Section 2.11);
- Identification of environmental effects by use of a checklist, matrix, or other methods, provided that entries on the checklist or other form are briefly explained to indicate that there is some evidence to support the entries (See Section 4);
- Discussion of ways to mitigate significant effects identified, if any (See Section 4);
- Examination of whether the Project is compatible with existing zoning, plans, and other applicable land use controls (See Section 4.10); and
- The name(s) of the person(s) who prepared or participated in the preparation of the Initial Study (See Section 5).

1.1 – Purpose of CEQA

CEQA § 21000 of the California Public Resources Code provides as follows:

The Legislature finds and declares as follows:

a) The maintenance of a quality environment for the people of this state now and in the future is a matter of statewide concern.
b) It is necessary to provide a high-quality environment that at all times is healthful and pleasing to the senses and intellect of man.
c) There is a need to understand the relationship between the maintenance of high-quality ecological systems and the general welfare of the people of the state, including their enjoyment of the natural resources of the state.
d) The capacity of the environment is limited, and it is the intent of the Legislature that the government of the state take immediate steps to identify any critical thresholds for the health and safety of the people of the state and take all coordinated actions necessary to prevent such thresholds being reached.
e) Every citizen has a responsibility to contribute to the preservation and enhancement of the environment.
f) The interrelationship of policies and practices in the management of natural resources and waste disposal requires systematic and concerted efforts by public and private interests to enhance environmental quality and to control environmental pollution.
g) It is the intent of the Legislature that all agencies of the state government which regulate activities of private individuals, corporations, and public agencies which are found to affect the quality of the environment, shall regulate such activities so that major consideration is given to preventing

environmental damage, while providing a decent home and satisfying living environment for every Californian.

The Legislature further finds and declares that it is the policy of the state to:

h) Develop and maintain a high-quality environment now and in the future, and take all action necessary to protect, rehabilitate, and enhance the environmental quality of the state.
i) Take all action necessary to provide the people of this state with clean air and water, enjoyment of aesthetic, natural, scenic, and historic environmental qualities, and freedom from excessive noise.
j) Prevent the elimination of fish or wildlife species due to man's activities, insure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities and examples of the major periods of California history.
k) Ensure that the long-term protection of the environment, consistent with the provision of a decent home and suitable living environment for every Californian, shall be the guiding criterion in public decisions.
l) Create and maintain conditions under which man and nature can exist in productive harmony to fulfill the social and economic requirements of present and future generations.
m) Require governmental agencies at all levels to develop standards and procedures necessary to protect environmental quality.
n) Require governmental agencies at all levels to consider qualitative factors as well as economic and technical factors and long-term benefits and costs, in addition to short-term benefits and costs and to consider alternatives to proposed actions affecting the environment.

A concise statement of legislative policy, with respect to public agency consideration of Projects for some form of approval, is found in CEQA § 21002, quoted below:

> The Legislature finds and declares that it is the policy of the state that public agencies should not approve Projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such Projects, and that the procedures required by this division are intended to assist public agencies in systematically identifying both the significant effects of Projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects. The Legislature further finds and declares that in the event specific economic, social, or other conditions make infeasible such Project alternatives or such mitigation measures, individual Projects may be approved in spite of one or more significant effects thereof.

1.2 – Public Comments

Comments from all agencies and individuals are invited regarding the information contained in this Initial Study. Such comments should explain any perceived deficiencies in the assessment of impacts, identify the information that is purportedly lacking in the Initial Study or indicate where the information may be found. All materials related to the preparation of this Initial Study are available for public review on the City's website at: https://covinaca.gov/pc/page/projects-under-review. To request an appointment to review these materials, please contact:

Mercy Lugo, Senior Planner
125 East College Street
Covina, California 91723
mlugo@covinaca.gov
(626) 384-5450

Following a 30-day period of circulation and review of the Initial Study, all comments will be considered by the City of Covina prior to adoption. All materials related to the preparation of this Initial Study are available for public review. To request an appointment to review these materials, please contact the Planning Division.

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2.1 – Project Title

529 Cutter Way Residential Project

2.2 – Lead Agency Name and Address

City of Covina
Planning Department
125 East College Street
Covina, California 91723
(626) 384-5450

2.3 – Contact Person and Phone Number

Mercy Lugo, Senior Planner
mlugo@covinaca.gov

2.4 – Project Location

The Project site is located approximately 1.2 miles to the north of Interstate 10 (I-10), approximately 2.2 miles to the south of Interstate 210 (I-210), and approximately 3.6 miles to the east of Interstate 605 (I-605) in the City of Covina, Los Angeles County, California (See Exhibit 1, Regional Context Map). The Project site is comprised of a single parcel (APN# 8434-013-010) totaling 2.24 acres located at the northwest corner of Cutter Way and San Bernardino Road and between Vincent Avenue and Lark Ellen Avenue (See Exhibit 2, Project Vicinity Map).

- Latitude 34° 5' 22.91" North, Longitude 117° 55' 17.42" West

2.5 – Project Sponsor's Name and Address

Faith Community Church, LLC
529 Cutter Way
Covina, California 91723

2.6 – General Plan Land Use Designation

General Industrial

2.7 – Zoning District

(M-1) Light Manufacturing

2.8 – Project Description

The proposed Project includes a mixed-use development consisting of 63 residential units, 51 of which will be traditional multi-family units and 12 of which will be "Live/Work" units, located in twelve buildings on a 2.24-acre site in the City of Covina, California. The Project site is comprised of a single parcel

(APN# 8434-013-010) currently zoned (M-1) "Light Manufacturing" and designated "General Industrial" in the City's General Plan. The development is proposed for two distinct uses – a traditional multi-family residential area and a mixed-use Live/Work area (See Exhibit 3, Site Plan). Both will be incorporated adjacent to each other. The Project will also include a Planned Community Development (PCD) Overlay and Zone Change to M-1/PCD "Light Manufacturing/Planned Community Development" with specific development standards to allow for the Live/Work use.

The proposed units will be arranged into building blocks that will vary in height and number of stories (1 to 4 stories), with taller units located towards the rear of the property and decreasing in height as they reach the street property lines. Each proposed building will have varying heights depending on the types of units in each building block. While each building will have varying levels of building blocks, each building with have a maximum number of stories/height of either 3 stories/35-feet or 4 stories/45-feet. The floor area sizes for the dwelling units are planned to range from 650 square feet for the one-bedroom units to over 1,200 square feet for the three-bedroom units (See Exhibit 4, Floor Plans). The Live/Work units will be combination units composed of dwelling space on the upper floors and work space on the ground floor connected by an interior staircase (See Exhibit 5, Elevations). Approximately half of the floor space for each Live/Work Unit will be dedicated toward residential use and the other half dedicated toward small-scale industrial use. The building blocks are also staggered slightly from each other in order to provide views and light source for all tenants. This is also designed to provide visual interest to the site. Structures are primarily oriented north to south to best capture solar energy and natural lighting for energy conservation. An outdoor courtyard with amenities will be centrally-located within the property and a community center will be incorporated into this area. Stairs with ADA provisions will also be provided from the public right-of-way to the courtyard.

The Project will also include associated landscaping and drainage improvements as well as surface parking and a subterranean parking garage. The Project site contains a single-family home of approximately 2,647 square feet that was built in 1990. The single-family home is currently used as a temporary meeting place for the Faith Community Church of Covina and is not currently utilized by any persons as a residence. A breakdown of the number and type of proposed multi-family residential and Live/Work units is presented below along with details pertaining to the proposed Zone Change/PCD Overlay, parking, site access, landscaping, drainage, utilities, and Project construction.

<u>Building and Unit Counts</u>

Below is a list of the building numbers and unit counts for the proposed Project along with the height, number of stories, and total square footage of each building. (Note – the proposed community room will be located in Building 6; each proposed building will be comprised of units of differing stories and heights- individual building stories/heights reflect the highest floor/point for each building)

Building 1 – 4 Stories/ 45 Feet
Total Square Feet – 4,982
1 One-Bedroom Multi-Family Unit
2 Two-Bedroom Multi-Family Units
2 Two-Bedroom Live/Work Units

Building 2 – 4 Stories/ 45 Feet
Total Square Footage – 5,423
1 Two-Bedroom Multi-Family Unit
3 Two-Bedroom Live/Work Units

Building 3 – 4 Stories/ 45 Feet
Total Square Footage – 5,250
1 One-Bedroom Multi-Family Unit
2 Three-Bedroom Multi-Family Units
2 One-Bedroom Live/Work Units

Building 4 – 4 Stories/ 45 Feet
Total Square Footage – 7,098
1 One-Bedroom Multi-Family Unit
2 Two-Bedroom Multi-Family Units
3 Two-Bedroom Live/Work Units

Building 5 – 4 Stories/ 45 Feet
Total Square Footage – 5,775
1 One-Bedroom Multi-Family Unit
5 Two-Bedroom Multi-Family Units

Building 6 – 3 Stories/ 35 Feet
Total Square Footage – 5,191
1 Two Bedroom Multi-Family Unit
1 Three-Bedroom Multi-Family Unit
1 Two-Bedroom Live/Work Unit
Community Room

Building 7 – 4 Stories/ 45 Feet
Total Square Footage – 5,125
5 Two-Bedroom Multi-Family Units
1 One-Bedroom Live/Work Unit

Building 8 – 4 Stories/ 45 Feet
Total Square Footage – 4,275
3 Two-Bedroom Multi-Family Units
1 Three-Bedroom Multi-Family Unit

Building 9 – 4 Stories/ 45 Feet
Total Square Footage – 5,300
1 One-Bedroom Multi-Family Unit
4 Two-Bedroom Multi-Family Units
1 Three-Bedroom Multi-Family Unit

Building 10 – 4 Stories/ 45 Feet
Total Square Footage – 4,100
4 Two-Bedroom Multi-Family Units

Building 11 – 4 Stories/ 45 Feet
Total Square Footage – 7,450
2 One-Bedroom Multi-Family Units
6 Two-Bedroom Multi-Family Units

Building 12 – 4 Stories/ 45 Feet
Total Square Footage – 6,367
2 One-Bedroom Multi-Family Units
4 Two Bedroom Multi-Family Units

Total Unit Counts
One-Bedroom Multi-Family Units = 9
Two-Bedroom Multi-Family Units = 37
Three-Bedroom Multi-Family Units = 5
One-Bedroom Live/Work Units = 3
Two Bedroom Live/Work Units = 9
Total Multi-Family = 51
Total Live/Work = 12
Total Units = 63

Site Access

Vehicular access to the subterranean parking structure will be provided via a 48-foot wide driveway entrance at the eastern edge of the site on Cutter Way. Vehicular access to the surface parking near the northern portion of the site will be provided via a 28-foot wide driveway at the southwestern corner of the site on San Bernardino Road.

Parking

On-site parking will be provided primarily through a partial subterranean parking structure and surface parking near the northern portion of the site. The proposed Project will provide a total of 148 parking stalls for tenants, guests, property maintenance staff, and employees/visitors of the Live/Work units. The parking stalls will be divided between a partial (about 5 feet in depth) subterranean parking structure beneath the site and a surface parking area located at the north end of the Project site. The proposed subterranean parking garage will include 122 parking stalls, two of which will be ADA accessible. The proposed surface parking area will include 26 parking stalls, 4 of which will be ADA accessible stalls.

Landscaping

The proposed Project will include landscaping improvements that will consist of ornamental trees, grassy areas, and areas planted with flowers and ornamental bushes. The Project will include a total of 29,557 square feet of landscaped area which will comprise approximately 31% of the total lot coverage.

Drainage

Stormwater will be collected in a proposed onsite drainage system, treated in a proposed biofiltration system, and stored in one of two proposed subterranean stormwater retention chambers before eventually being conveyed into the existing municipal storm drain system under San Bernardino Road and Cutter Way. The stormwater retention basins will be located along the western portion of the site and in the northeast corner of the site. The development will also include landscaped areas which will serve as bio swales for runoff collection and treatment.

Utilities

The proposed Project will connect to existing water, sanitary sewer, electricity, and gas facilities. Water and sewer service are provided by the Los Angeles County Flood Control District. Electricity will be provided by Southern California and natural gas will be provided by the Southern California Gas Company. Utility undergrounding will be required via lateral connections. Smaller individual transformers serving two or three buildings will be used for cost efficiency. Transformers will be installed on 8-foot by 8-foot concrete pads throughout the site and within 100 feet of property lines. Site lighting fixtures will be pole- and wall-mounted and installed throughout the site for security, illumination, and aesthetics. Each individual apartment unit will be equipped with energy- and water-saving devices such as tankless toilets, tankless water heaters, and air condenser units for heating and cooling interior spaces. In addition, each dwelling unit will be equipped with washer and dryer and natural gas kitchen appliances.

Construction Details

The proposed Project would involve the demolition of the existing, approximately 2,647 square-foot single-family home and construction of the 12 mixed-use, multi-family residential buildings. Construction phasing associated the proposed Project is anticipated to include demolition, site preparation, grading, building construction, paving, and architectural coating. The Project will require the export (i.e., off-haul) of approximately 7,532 cubic yards of soil. Construction activities are anticipated to begin in early 2022. Based on default assumptions generated by the California Emissions Estimator Model (CalEEMod), which was used to estimate emissions associated with the proposed Project, construction activities are anticipated to last approximately 12 months. The proposed Project anticipated to require varying types of equipment throughout the various construction phases including, but not limited to: bulldozers, backhoes, loaders, graders, cranes, and forklifts. Table 1 (Construction Schedule) summarizes the proposed Project's construction phasing and the typical pieces of heavy-duty, off-road construction equipment that would be required during each phase.

Table 1
Construction Schedule

Construction Activity	Duration (Days)(A)	Typical Equipment Used(B)
Demolition	5	Concrete/Industrial Saw, Dozer, Backhoe
Site Preparation	3	Grader, Scraper, Backhoe
Grading	15	Grader, Dozer, Backhoe
Building Construction	220	Crane, Forklift, Generator, Backhoe, Welder
Paving	10	Paver, Roller, Paving Equipment
Architectural Coating	10	Air Compressor

Source: MIG, 2020 (See Appendix A).
(A) Days refers to total active workdays in the construction phase, not calendar days.
(B) The typical equipment list does not reflect all equipment that would be used during the construction phase. Not all equipment would operate eight hours per day each workday.

2.9 – *Surrounding Land Uses*

The Project site is bound to north and west by industrial uses, to the east by Cutter Way, and to the South by San Bernardino Road. To the west of the Project site are industrial park uses. To the east of the Project site, on the opposite side of Cutter Way, is a multi-family apartment complex and Las Palmas Middle School. To the south of the Project site, on the opposite side of San Bernardino Road, are industrial, commercial, and institutional uses. Surrounding uses are summarized in Table 2 (Surrounding Land Uses).

Table 2
Surrounding Land Uses

Direction	General Plan Designation	Zoning District	Existing Land Use
Project Site	General Industrial	(M-1) Light Manufacturing	Single-Family Residence/Church
North	General Industrial	(M-1) Light Manufacturing	Industrial Park
South	General Industrial	(M-1) Light Manufacturing	Industrial Parks; Convenience Markets; Jubilee Christian School
East	High-Density Residential; School	(RD-3000) Multi-Family Zone	Apartment; Middle School
West	General Industrial	(M-1) Light Manufacturing	Industrial Park

2.10 – Environmental Setting

The Project is located on a single parcel in a developed area in the City of Covina, Los Angeles County, California. The Project site is surrounded by industrial, residential, commercial, and institutional uses and the area is built-out and urbanized. Disturbed non-native vegetation and limited pavement is located on the site. The Project site is relatively flat with elevations ranging between approximately 449 feet above mean sea level (AMSL) in the southern portion of the site and 452 AMSL in the northern portion of the site.

- The site contains a single-family residence that was constructed in 1990 but is not occupied by any residents. The single-family residence is currently used as a temporary gathering place for the Faith Community Church of Covina.
- The front yard of the residence is currently used as parking for the Church.
- The site does not contain scenic resources.
- The site is not currently being used for agricultural purposes.
- On-site vegetation consists of disturbed non-native vegetation and pavement and does not provide suitable habitat for any sensitive, or special status species.
- There are no on-site water features indicative of potential riparian habitat or wetlands.

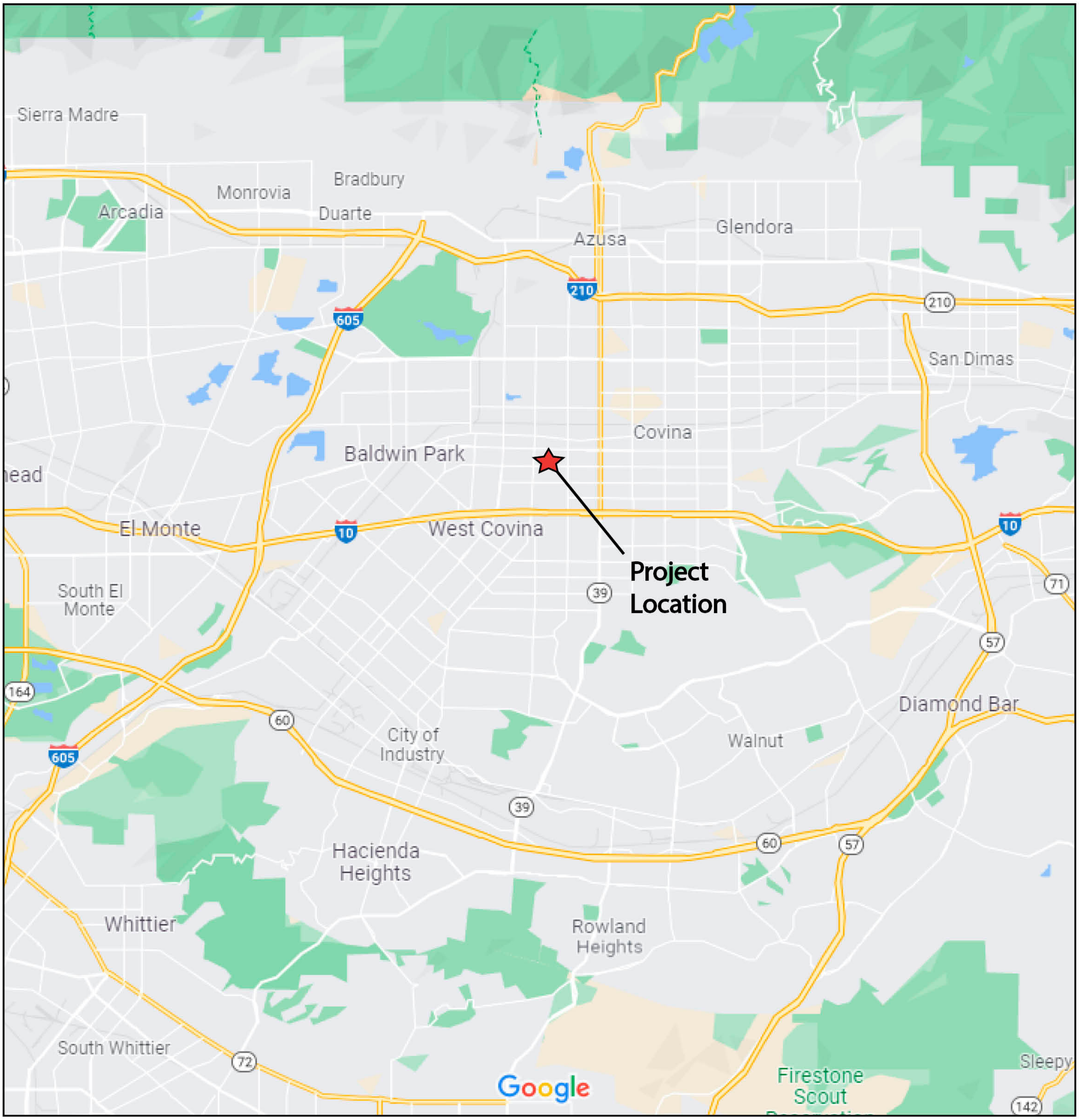
2.11 – Required Approvals

The City of Covina is the only land use authority for this Project requiring the following approvals:

- Site Plan Review
- Zone Change
- Planned Community Development Overlay

2.12 – Other Public Agency Whose Approval is Required

None



Source: Google Maps

Not to Scale

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Exhibit 1 Regional Context Map

529 Cutter Way Residential Project
Covina, California

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Source: Google Earth

- Project Site

Not to Scale

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Exhibit 2 Project Vicinity Map

529 Cutter Way Residential Project
Covina, California

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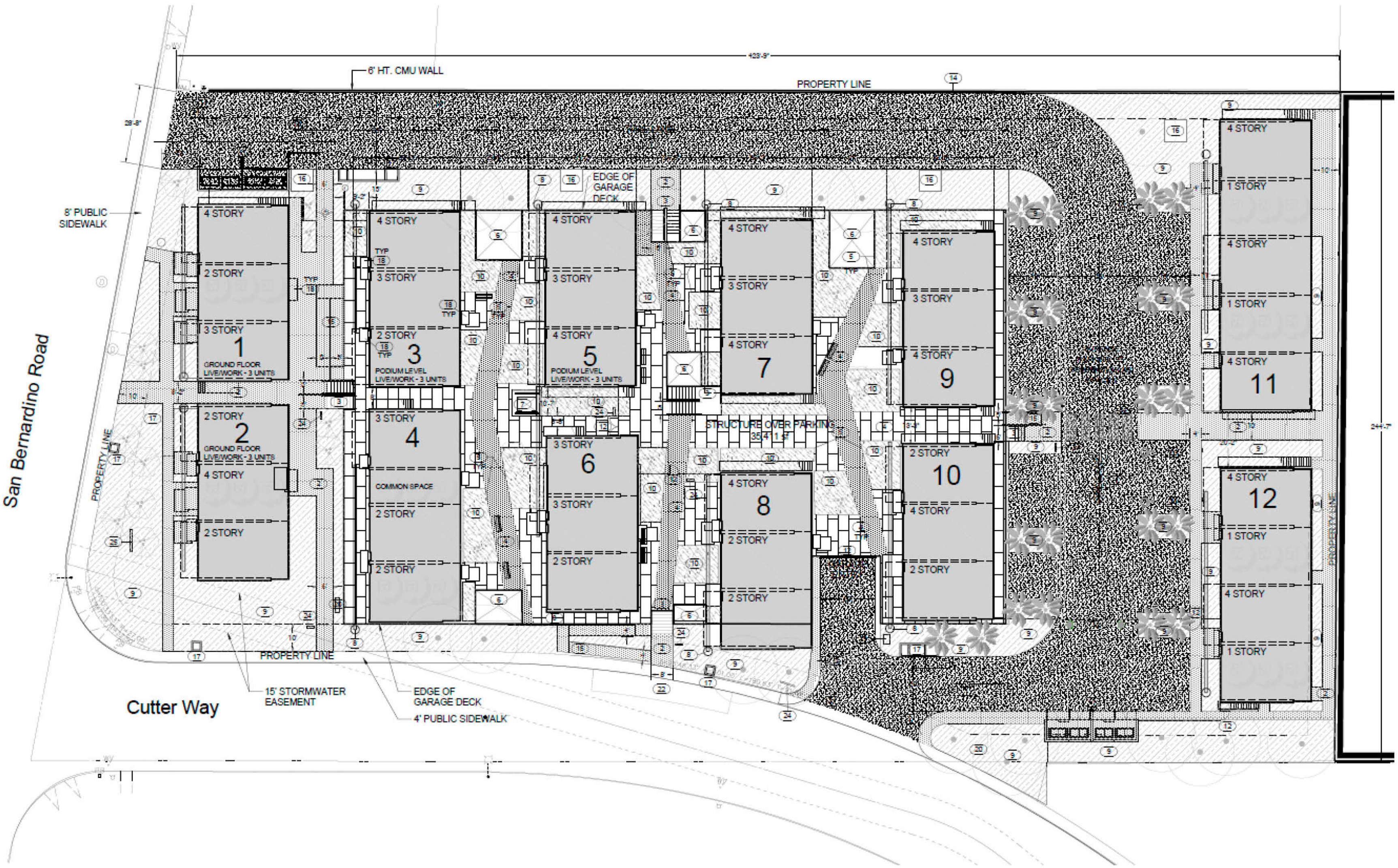

PROJECT SUMMARY

GROSS SITE AREA - 97,899 SF

HARDSCAPE AREA	32,944 SF
PODIUM AREA	35,398 SF
TOTAL	68,342 SF

LANDSCAPED AREA - 29,557 SF 31% TOTAL AREA

PARKING REQUIRED: TOTAL XX

ADA PARKING IN GARAGE	- 2
ADA PARKING AT GRADE	- 2
STANDARD PARKING SPACES	- XX

SITE MATERIALS

1. VEHICULAR PAVING - FIRE LANE; H20 LOADING CAPACITY
2. PEDESTRIAN PAVING - 4" DEPTH CONCRETE SIDEWALK
3. CONCRETE STEPS WITH STEEL HANDRAILS
4. ON-STRUCTURE CONCRETE AND WOOD PAVING ON ADJUSTABLE PEDESTALS
5. PLANTER WALL 24" HT. - CORTEN STEEL OR CONCRETE
6. OPEN TO BELOW
7. SERVICE ELEVATOR TO GARAGE
8. RAINWATER RUNNEL AND DOWNSPOUT TO STORMWATER TREATMENT
9. AT-GRADE PLANTING AREA
10. RAISED PLANTER ON-STRUCTURE WITH LIGHTWEIGHT SOIL. 30" SOIL DEPTH MAX.
11. TRASH ENCLOSURE; BOARD-FORM CONCRETE BACK AND SIDES. SWING DOORS.
12. 6' HT. SECURITY FENCE AND GATES
13. FIRE BFP
14. 6' HEIGHT SECURITY FENCE AT PROPERTY LINE
15. PEDESTRIAN ACCESS RAMP TO PODIUM LEVEL
16. UTILITY PAD FOR ELECTRICAL EQUIPMENT
17. STORMWATER FACILITY - SEE CIVIL DRAWINGS
18. PRECAST CONCRETE STEPS
19. MAILBOX
20. DOMESTIC WATER METER AND BFP
21. VIEW TRIANGLE
22. LOADING ZONE
23. ACCESSIBLE PARKING SPACE
24. WAYFINDING SIGNAGE
25. CITRUS MURAL - DESIGN TO BE DETERMINED

ABBREVIATIONS

TW	TOP OF WALL
OH	ROOF OVERHANG
BW	BOTTOM OF WALL
TS	TOP OF STEPS
FS	FINISHED SURFACE
FG	FINISHED GRADE
PA	PLANTING AREA
SA	STORMWATER PLANTER AREA
TYP	TYPICAL

Source: Logos Architecture

Exhibit 3 Site Plan

529 Cutter Way Residential Project

Covina, California

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BUILDING 1

GROSS SQUARE FOOTAGE = 4,982 SF.
UNIT TYPOLOGY:
LIVE- WORK AND TWO BEDROOM UNITS
OF LIVE WORK UNITS = 2
OF 1 BEDROOM UNITS = 1
OF 2 BEDROOM UNITS = 2
BUILDING HEIGHT = 45'-0"

Source: Logos Architecture

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Exhibit 4 Floor Plans (Building 1)

529 Cutter Way Residential Project
Covina, California

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BUILDING 2

GROSS SQUARE FOOTAGE = 5,423 SF.
UNIT TYPOLOGY:
LIVE- WORK AND ONE BEDROOM UNIT.
 # OF LIVE WORK UNITS = 3
 # OF 2 BEDROOM UNITS = 1
BUILDING HEIGHT = 35'-0"

Source: Logos Architecture

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Exhibit 4 Floor Plans (Building 2)

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Covina, California

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BUILDING 3

GROSS SQUARE FOOTAGE = 5,250 SF.
UNIT TYPOLOGY:
LIVE- WORK AND THREE BEDROOM UNIT.
OF LIVE WORK UNITS = 2
OF 3 BEDROOM UNITS = 2
OF 1 BEDROOM UNITS = 1
BUILDING HEIGHT = 45'-0"

Source: Logos Architecture

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Exhibit 4 Floor Plans (Building 3)

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Covina, California

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BUILDING 4

GROSS SQUARE FOOTAGE = 7,098 SF.
UNIT TYPOLOGY:
LIVE- WORK AND TWO BEDROOM UNIT.
OF LIVE WORK UNITS = 3
OF 2 BEDROOM UNITS = 2
OF 1 BEDROOM UNITS = 1
BUILDING HEIGHT = 35'-0"

Source: Logos Architecture

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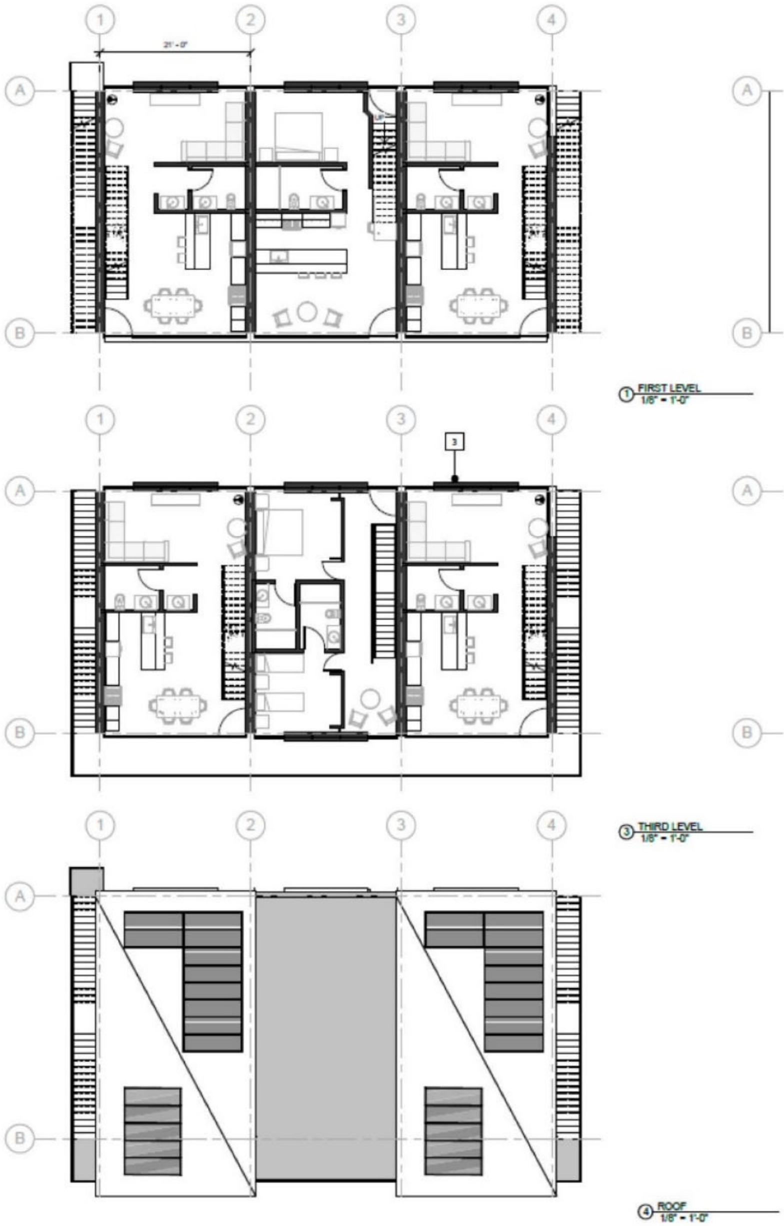

BUILDING 5

GROSS SQUARE FOOTAGE = 5,775 SF.
UNIT TYPOLOGY:
LIVE- WORK AND TWO BEDROOM UNITS
OF 2 BEDROOM UNITS = 5
OF 1 BEDROOM UNITS = 1
BUILDING HEIGHT = 45'-0"

Source: Logos Architecture

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Exhibit 4 Floor Plans (Building 5)

529 Cutter Way Residential Project
Covina, California

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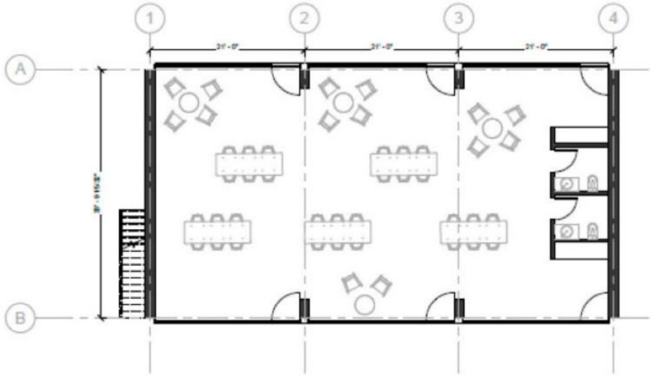
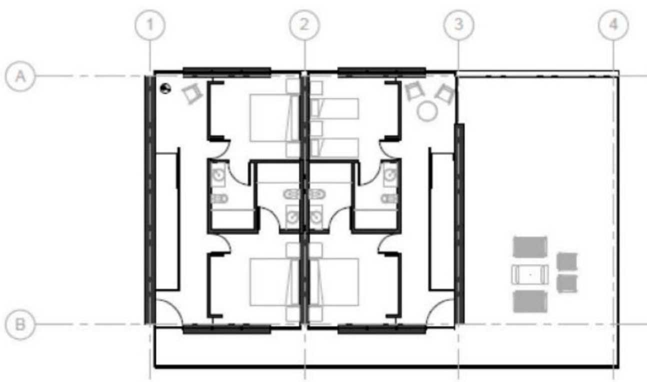


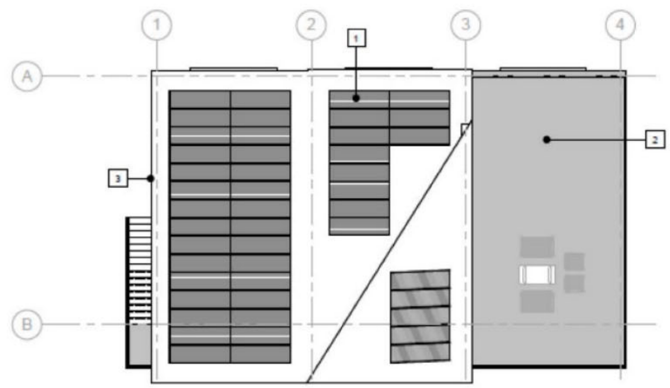
FIRST LEVEL
1/8" = 1'-0"

SECOND LEVEL
1/8" = 1'-0"

GROSS SQUARE FOOTAGE = 5,191 SF.
UNIT TYPOLOGY:
LIVE- WORK AND TWO BEDROOM UNIT.
OF 1 BEDROOM UNITS = 1
OF 2 BEDROOM UNITS = 1
OF 3 BEDROOM UNITS = 1
OF 3 COMMUNITY UNITS = 3
BUILDING HEIGHT = 35'-0"



THIRD LEVEL
1/8" = 1'-0"



ROOF LEVEL
1/8" = 1'-0"

Source: Logos Architecture

Exhibit 4 Floor Plans (Building 6)

529 Cutter Way Residential Project
Covina, California

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BUILDING 7

GROSS SQUARE FOOTAGE = 5,125 SF.
UNIT TYPOLOGY:
LIVE- WORK AND TWO BEDROOM UNITS
OF 1 BEDROOM UNITS = 1
OF 2 BEDROOM UNITS = 5
BUILDING HEIGHT = 45'-0"

Source: Logos Architecture

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Exhibit 4 Floor Plans (Building 7)

529 Cutter Way Residential Project
Covina, California

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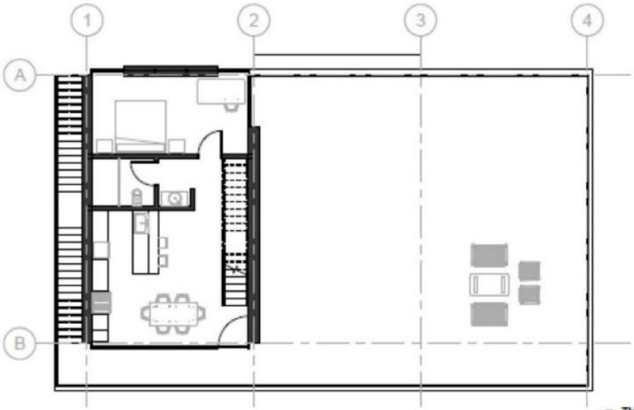
1 FIRST LEVEL 1/8" = 1'-0"

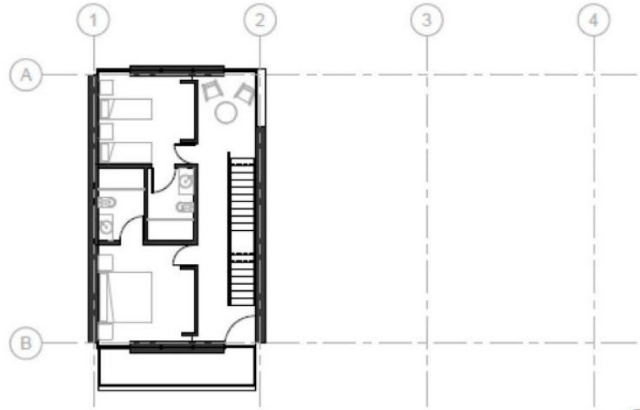
2 SECOND LEVEL 1/8" = 1'-0"

BUILDING 8

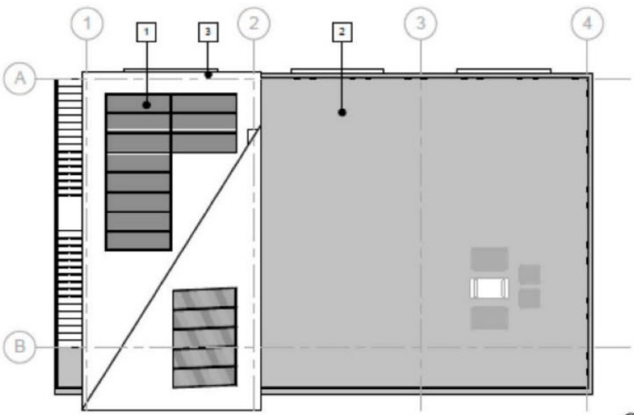
GROSS SQUARE FOOTAGE = 4,275 SF.
UNIT TYPOLOGY:
LIVE- WORK AND ONE BEDROOM UNIT.
 # OF 2 BEDROOM UNITS = 3
 # OF 3 BEDROOM UNITS = 1
BUILDING HEIGHT = 35'-0"



3 THIRD LEVEL 1/8" = 1'-0"



5 FOURTH LEVEL 1/8" = 1'-0"



4 ROOF 1/8" = 1'-0"

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BUILDING 9

GROSS SQUARE FOOTAGE = 5,300 SF.
UNIT TYPOLOGY:
LIVE- WORK AND TWO BEDROOM UNITS
OF 3 BEDROOM UNITS = 1
OF 2 BEDROOM UNITS = 4
OF 1 BEDROOM UNITS = 1
BUILDING HEIGHT = 45'-0"

Source: Logos Architecture

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Exhibit 4 Floor Plans (Building 9)

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Covina, California

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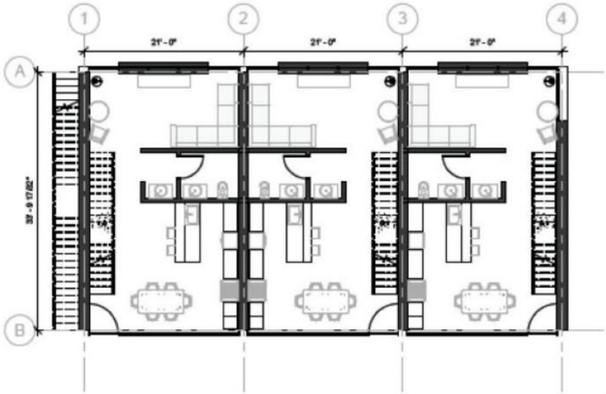


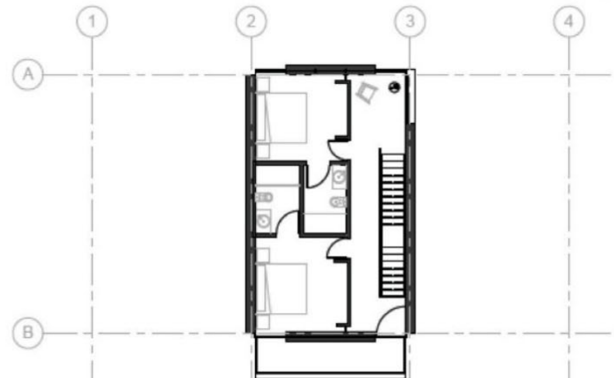
① FIRST LEVEL
1/8" = 1'-0"

② SECOND LEVEL
1/8" = 1'-0"

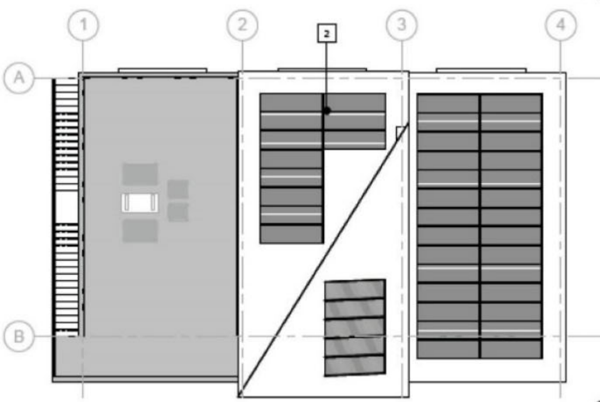
BUILDING 10

GROSS SQUARE FOOTAGE = 4,100 SF.
UNIT TYPOLOGY:
LIVE- WORK AND ONE BEDROOM UNIT.
 # OF 2 BEDROOM UNITS = 4
BUILDING HEIGHT = 35'-0"

③ THIRD LEVEL
1/8" = 1'-0"



⑤ FOURTH LEVEL
1/8" = 1'-0"



④ ROOF
1/8" = 1'-0"

Source: Logos Architecture

Exhibit 4 Floor Plans (Building 10)

529 Cutter Way Residential Project
Covina, California

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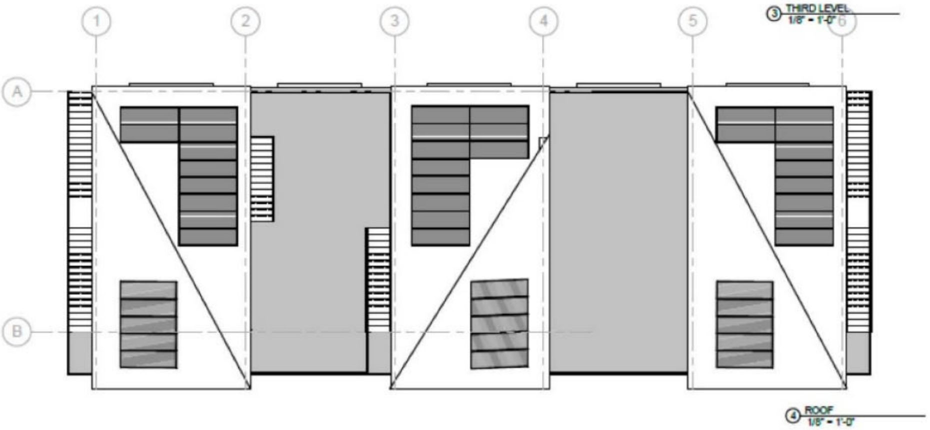

BUILDING 11
GROSS SQUARE FOOTAGE = 7,450 SF.
UNIT TYPOLOGY:
LIVE- WORK AND TWO BEDROOM UNITS
OF 2 BEDROOM UNITS = 6
OF 1 BEDROOM UNITS = 2
BUILDING HEIGHT = 45'-0"

Source: Logos Architecture

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Exhibit 4 Floor Plans (Building 11)

529 Cutter Way Residential Project
Covina, California

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BUILDING 12

GROSS SQUARE FOOTAGE = 5,400 SF.
UNIT TYPOLOGY:
LIVE- WORK AND TWO BEDROOM UNITS
OF 2 BEDROOM UNITS = 4
OF 1 BEDROOM UNITS = 2
BUILDING HEIGHT = 45'-0"

Source: Logos Architecture

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Exhibit 4 Floor Plans (Building 12)

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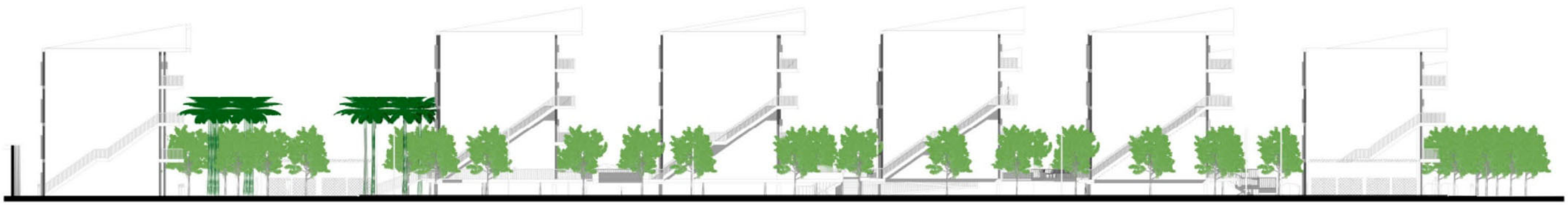
1 A-1.7 EAST ELEVATION 1/16" = 1'-0"



2 A-1.7 WEST ELEVATION 1/16" = 1'-0"

3 A-1.7 SOUTH ELEVATION 1/16" = 1'-0"

4 A-1.7 NORTH ELEVATION 1/16" = 1'-0"

Source: Logos Architecture

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Exhibit 5 Elevations

529 Cutter Way Residential Project

Covina, California

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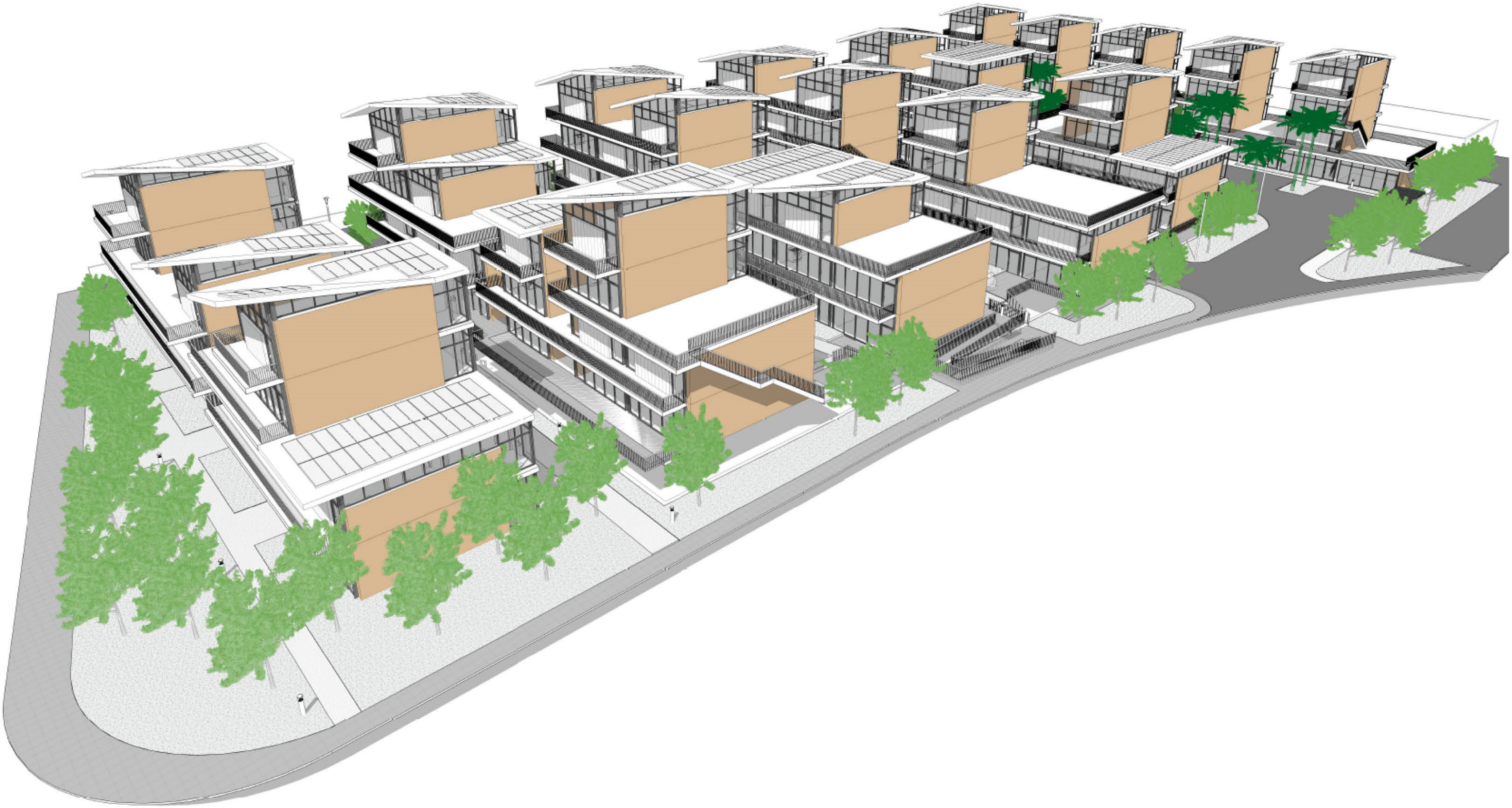

Source: Logos Architecture

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Exhibit 5 Elevations Cont.

529 Cutter Way Residential Project
Covina, California

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3.1 – Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a 'Potentially Significant Impact' as indicated by the checklist on the following pages.

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

3.2 – Determination

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

Name: Mercy Lugo, Senior Planner   Date

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4.1 – Aesthetics

Except as provided in Public Resources Code Section 21099, would the Project:

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

a) **Less than Significant Impact.** Scenic vistas can be impacted by development in two ways. First, a structure may be constructed that blocks the view of a vista. Second, the vista itself may be altered (i.e., development on a scenic hillside). The City's General Plan (City of Covina 2000) does not designate any scenic vistas. The Project site is approximately 4.3 miles from the foot of the San Gabriel Mountains which is a prominent visual resource. Although less prominent, Lone Hill is located approximately 5 to the east of the Project area and the Covina Hills are located approximately 6 miles to the southeast. Views of these features are available from the Project site although partially obscured by buildings, trees telephone and power lines, cell towers or other structures typical in the City. Although such obstructions are usually minimal in nature, they do exist, and they are typical of any type of built/urbanized environment. Compliance with Municipal Code guidelines and regulations restricting height would ensure that views of scenic resources, including views of the San Gabriel Mountains to the north, would be preserved. Given the considerable distance of the Project site to these scenic features and the fact that these views are already affected by the existing built environment, the proposed Project would not be expected to have a significant impact on existing views. Because the Project site is not considered to be within or to comprise a portion of a scenic vista, and because the proposed development would not result in structures greater in height than currently exists in the vicinity, development of the Project would have less than significant impacts on scenic vistas.

b) **Less than Significant Impact.** The Project is located in an urbanized area and not adjacent to a designated state scenic highway or eligible state scenic highway as identified on the California Scenic Highway Mapping System.[1] At its nearest point just north of the I-210 freeway, SR-39 (an eligible state scenic highway) is located approximately 2.15 miles north of the Project Area in the City of Azusa. Due to the presence of intervening development and landscaping, the Project site would not be visible in southerly views along the segment of SR-39. From forest service lands located north of the City of Azusa, the proposed Project site would not be visible due to intervening terrain (SR-39 traverses the canyons of the San Gabriel Mountains and adjacent terrain limits the availability of particularly long views to the south). The nearest officially designated state scenic highway, SR-2, is located more than 14 miles north of the Project site in the San Gabriel Mountains and would not be visible to motorists. The Project site contains a single-family home that was built in 1990 and would be demolished as part of Project development. The home is not occupied by residents and is currently used as a temporary meeting place for the Faith Community Church of Covina. The home does not constitute an historic resource pursuant to Section 5024.1 of Public Resources Code (PRC) Article 2 (Historical Resources). Therefore, development of the proposed Project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway and potential impacts would be less than significant

c) **Less than Significant Impact.** Development of the Project could result in a significant impact if it caused substantial degradation of the existing visual character or quality of the site and its surroundings. Degradation of visual character or quality is defined by substantial changes to the existing site appearance through construction of structures such that they are poorly designed or conflict with the site's existing surroundings.

Construction of the proposed Project would result in short-term impacts to the existing visual character and quality of the area. Construction activities would require the use of equipment and storage of materials within the Project site. However, construction activities are temporary and would not result in any permanent visual impact.

Covina Municipal Code Section 17.54.090 (Light Manufacturing Zone – Building Height) restricts maximum building height in the M-1 Zone to 55 feet except by conditional use permit (CUP). Upon Project completion, the Project will consist of a multi-family residential development with 63 residential units in 12 buildings ranging in height from 42 feet to 55 feet. As such the Project includes a Planned Community Development (PCD) Overlay and Zone Change to M-1/PCD which will allow for the Project to exceed the maximum building height of 50 feet in the Municipal Code. Architecturally, the proposed structures would be designed in a modern industrial style. Elements used to achieve this style of design include steel-beam framing, exposed bricks and pipes, concrete flooring, and large open windows. These elements help give the space a "warehouse" feel which is the ultimate goal of this style of design. This style also incorporates raw materials to give the space an unfinished feel. The Project site currently contains a single-family home that was built in 1990, does not house any residents, and is currently used as a temporary meeting place for Faith Community Church of Covina.

The Project is adjacent to light industrial and commercial uses to the north, west, and south and multi-family residential uses and a school to the east. Surrounding uses are generally one to three stories in height depending on the specific use. The surrounding area is not visually distinct and does not portray a particular architectural theme or visual aesthetic. The proposed development would represent a new residential feature in the Project area and would also allow for small-scale industrial uses within specific residential units. Because of the residential and industrial uses in the immediate vicinity of the Project site, the addition of the Project would provide a new architectural aesthetic in an area that is older in character and would not conflict with the existing character. With design features included, as specified in the PCD Overlay, the Project would have less than significant impacts on the visual character of the site and its surroundings.

d) **Less than Significant Impact.** Excessive or inappropriately directed lighting can adversely impact night-time views by reducing the ability to see the night sky and stars. Glare can be caused from unshielded or misdirected lighting sources. Reflective surfaces (i.e., polished metal) can also cause glare. Impacts associated with glare range from simple nuisance to potentially dangerous situations (i.e., if glare is directed into the eyes of motorists). Sources of daytime glare are typically concentrated in commercial areas and are often associated with retail uses. Glare results from development and associated parking areas that contain reflective materials such as hi-efficiency window glass, highly polished surfaces, and expanses of pavement.

There are lighting sources adjacent to the Project site, including free-standing street lights, light fixtures on buildings, and pole-mounted lights. The residential development will include interior lighting and outdoor security lighting. Light spillover and glare would be avoided by requiring that light be designed to Project downward and prohibiting the creation of glare on adjacent properties per the requirements of Municipal Code Section 9.42.020B. Compliance with the Municipal Code standards for lighting and glare during construction and operation of the proposed Project would ensure that lighting and glare impacts would be less than significant.

4.2 – Agriculture and Forest Resources

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☑
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☑
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104 (g))?	☐	☐	☐	☑
d) Result in loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☑
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☑

a) **No Impact.** The City, including the Project site, was not part of the state Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP) study area (DOC 2018a).[2] There are no Class I (prime agriculture) soils within the City limits and limited Class II (potential prime agriculture) soils are located generally in the eastern portion of the community while the Project site is located in the western portion of the community. Most of the soils in the City range from Class III (limited agricultural use potential) to Class VII (unsuited for agriculture)(City of Covina 2000). There are no agricultural uses in the Project vicinity nor are there any parcels zoned for agricultural use. The Project area is primarily comprised of industrial, commercial, residential, and institutional uses and there is minimal vacant land Project area. The Project area is currently built out, no agricultural uses are located in the Project area, and the Project site currently contains a single-family home, so there would be no conversion of Prime Farmland, Unique Farmland, and Farmland of Statewide Importance to a non-agricultural use as a result of construction of the proposed Project. No impact would occur.

b) **No Impact.** No Williamson Act contracts are active for the Project site.[3] Therefore, there would be no conflict with existing zoning for agricultural use or a Williamson Act contract. No impact would occur.

c) **No Impact.** Public Resources Code § 12220(g) identifies forest land as *land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.* The Project site and surrounding properties are not currently being managed or used for forest land as identified in Public Resources Code § 12220(g). The Project site has already been disturbed by previous development and is surrounded by industrial, commercial, residential, and institutional uses. Therefore, development of this Project would have no impact on any timberland zoning.

d) **No Impact.** The Project site is developed, disturbed land with limited non-native vegetation; thus, there would be no loss of forestland or conversion of forestland to non-forest use as a result of this Project. No impact would occur.

e) **No Impact.** The Project site is a developed site within an urban environment. The Project is surrounded by industrial, commercial, residential, and institutional uses and surface streets. None of the surrounding sites contain existing forest uses. Therefore, development of the proposed Project would not change the existing environment in a manner that would result in the conversion of forestland to a non-forest use. No impact would occur.

4.3 – Air Quality

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☑	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☑	☐	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☑	☐	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☑	☐

An Air Quality and Construction Health Risk Assessment Report was prepared for the proposed Project by MIG, dated September 24, 2021. The information provided in this section is taken from this report (See Appendix A).

a) **Less than Significant Impact.** A significant impact could occur if the Project conflicts with or obstructs implementation of the South Coast Air Basin 2016 Air Quality Management Plan (AQMP). Conflicts and obstructions that hinder implementation of the AQMP can delay efforts to meet attainment deadlines for criteria pollutants and maintaining existing compliance with applicable air quality standards. Pursuant to the methodology provided in Chapter 12 of the 1993 SCAQMD CEQA Air Quality Handbook, consistency with the South Coast Air Basin 2016 AQMP is affirmed when a project (1) is consistent with the growth assumptions in the AQMP and (2) does not increase the frequency or severity of an air quality standards violation or cause a new violation.[4] Consistency review is presented below:

(1) Consistency Criterion 1 refers to the growth forecasts and associated assumptions included in the 2016 AQMP. The 2016 AQMP was designed to achieve attainment for all criteria air pollutants within the Basin while still accommodating growth in the region. Projects that are consistent with the AQMP growth assumptions would not interfere with attainment of air quality standards, because this growth is included in the projections used to formulate the AQMP. The CEQA Air Quality Handbook indicates that consistency with AQMP growth assumptions must be analyzed for new or amended General Plan elements, Specific Plans, and *Significant Projects which* include airports, electrical generating facilities, petroleum and gas refineries, designation of oil drilling districts, water ports, solid waste disposal sites,

and off-shore drilling facilities. The proposed Project is not a *Significant Project* but does include a Specific Plan. This Consistency Criterion refers to the growth forecasts and associated assumptions included in the 2016 AQMP. The 2016 AQMP was designed to achieve attainment for all criteria air pollutants within the Basin while still accommodating growth in the region. Projects that are consistent with the AQMP growth assumptions would not interfere with attainment of air quality standards, because this growth is included in the projections used to formulate the AQMP. Therefore, if the growth under the Project is consistent with the regional population, housing, and employment forecasts identified by SCAG in the RTP/SCS, plan implementation would be consistent with the AQMP, even if emissions could potentially exceed the SCAQMD's recommended daily emissions thresholds.

The proposed Project would result in the loss of one (1) single-family residential unit; however, the Project would not result in a population decrease because the single-family home is not currently occupied by any residents. The Project would result in 63 new multifamily residential units and 7,697 square feet of new non-residential floor area. According to the U.S. Census Bureau, there are approximately 3.14 persons per household in the City (U.S. Census Bureau 2019). As such, the residential component of the proposed Project would potentially result in approximately 197 additional residents in the City, assuming that all residents of the proposed Project would relocate to the City.

The estimated current population of the City is approximately 47,450 people (2019 population) (U.S. Census Bureau 2019). The additional 197 residents anticipated to result from development of the proposed Project would be approximately 0.39% of the current City population.[i] SCAG has projected that the City will have a population of 50,500 residents in 2045, which is approximately 24 years after anticipated Project buildout (SCAG 2020). As such, it is expected that the City's population will grow by approximately 3,050 residents between the present time and 2045.[ii] The proposed Project would contribute to approximately 6.2% of this anticipated growth.[iii] Due to the minor nature of the population growth that could result from the Project (0.39% over the current population) and because this growth falls well within the projected population growth for the City, the minor amounts of population growth that could be caused by the proposed project are not substantial.

The proposed Project would result in temporary and permanent increases in employment opportunities on the Project site as a result of the addition of non-residential floor area in the Live/Work units. Employment increases have the potential to cause population growth, as they may draw additional people and their households to the City. The temporary employment increases would be associated with construction jobs available during the construction period. However, given the relatively common nature of the construction anticipated, the demand for construction employment would likely be met within the existing and future labor market in the City of Covina and Los Angeles County. If construction workers live outside of the City, these workers would likely commute during the temporary construction period. During operation, the 12 proposed Live/Work units would have a total floor area of 16,795 square feet. As previously stated, approximately half of the floor space for each Live/Work unit is designated for non-residential use. Therefore, the proposed Project would have 7,697 square feet of non-residential floor space. Using the City of Los Angeles employment growth projections of 2.5 employees per 1,000 square feet of manufacturing uses and 3 employees per 1,000 square feet of research and development uses, the "Work" areas of the Live/Work portion of the Project would potentially generate between 19

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[i] 197 additional residents ÷ 47,450 residents = 0.00415 = 0.41%
[ii] 50,500 residents in 2045 – 47,450 residents in 2019 = 3,050 residents
[iii] 197 additional residents ÷ 3,050 residents = 0.0645 = 6.4%

and 23 new employees in the City of Covina (City of Los Angeles 2006).[iv] Because the proposed Project would be located in the densely populated Los Angeles metropolitan area, it is anticipated that the Live/Work jobs at the Project site would be filled by City residents or by residents of neighboring cities. Moreover, it is likely that some of the Live/Work units will be occupied by persons who own and operate their own business and do not employee and other persons. In the unlikely event that some of the new employees were to relocate to the City upon obtaining a job at the Project site, this would result in minor to negligible population growth relative to the City's existing and future population. As shown in Table 3, the implementation of the proposed Project would not exceed the growth assumptions contained in the AQMP. Therefore, the proposed Project would not exceed the growth assumptions contained in the AQMP.

Table 3
RTP/SCS and Specific Plan Growth Assumptions

Proposed Project	Population	Employment	Households
529 Cutter Way Specific Plan	*+197*	*23*	*+60*
RTC/SCS Growth 2020 - 2045	**+1,500**	**+2,600**	**+800**
Within Growth Assumptions?	**Yes**	**Yes**	**Yes**
Source: SCAG 2020			

(2) Consistency Criterion 2 refers to the CAAQS. In developing its CEQA significance thresholds, the SCAQMD considered the emission levels at which a project's individual emissions would be cumulatively considerable. As described below in Section **Error! Reference source not found.**, the proposed Project would not generate construction or operational emissions in excess of SCAQMD criteria air pollutant thresholds.

For the reasons described above, the proposed Project would not conflict with the SCAQMD 2016 AQMP. Impacts will be less than significant.

b) **Less than Significant with Mitigation Incorporated.** A project may have a significant impact if Project-related emissions would exceed federal, state, or regional standards or thresholds, or if Project-related emissions would substantially contribute to existing or Project air quality violations. The proposed Project would generate both short-term construction emissions and long-term operational emissions. As described in more detail below, the proposed Project would not generate emissions levels that exceed SCAQMD-recommended pollutant thresholds. Federal and State governments have established emission standards and limits for air pollutants which may reasonably be anticipated to endanger public health or welfare. These standards typically take one of two forms: standards or requirements that are applicable to specific types of facilities or equipment (e.g., petroleum refining, metal smelting), or concentration-based standards that are applicable to overall ambient air quality. Air quality conditions are best described and understood in the context of these standards; areas that meet, or attain, concentration-based ambient air quality standards are considered to have levels of pollutants in the ambient air that, based on the latest scientific knowledge, do not endanger public health or welfare.

[iv] 2.5 x 7.697 = 19.24
3 x 7.697 = 23.09

The U.S. EPA, CARB, and the SCAQMD assess the air quality of an area by measuring and monitoring the amount of pollutants in the ambient air and comparing pollutant levels against NAAQS and CAAQS. Based on these comparisons, regions are classified into one of the following categories:

Attainment. A region is "in attainment" if monitoring shows ambient concentrations of a specific pollutant are less than or equal to NAAQS or CAAQS. In addition, an area that has been re-designated from nonattainment to attainment is classified as a "maintenance area" for 10 years to ensure that the air quality improvements are sustained.

Nonattainment. If the NAAQS or CAAQS are exceeded for a pollutant, the region is designated as nonattainment for that pollutant. It is important to note that some NAAQS and CAAQS require multiple exceedances of the standard in order for a region to be classified as nonattainment. Federal and state laws require nonattainment areas to develop strategies, plans, and control measures to reduce pollutant concentrations to levels that meet, or attain, standards.

Unclassified. An area is unclassified if the ambient air monitoring data are incomplete and do not support a designation of attainment or nonattainment.

Table 4 (Summary of Ambient Air Quality Standards and Attainment Status) summarizes the Basin's attainment status for criteria pollutants. The Basin is currently in nonattainment for state and federal ozone, state PM_{10}, and state and federal $PM_{2.5}$ standards.

Table 4
Summary of Ambient Air Quality Standards and Attainment Status

Pollutant	Averaging Time[B]	California Standards[A]		National Standards[A]	
		Standard[C]	Attainment Status[D]	Standard[C]	Attainment Status[D]
Ozone	1-Hour (1979)	--	--	240 µg/m^3	Nonattainment
	1-Hour (Current)	180 µg/m^3	Nonattainment	--	--
	8-Hour (1997)	--	--	160 µg/m^3	Nonattainment
	8-Hour (2008)	--	--	147 µg/m^3	Nonattainment
	8-Hour (Current)	137 µg/m^3	Nonattainment	137 µg/m^3	Nonattainment
PM_{10}	24-Hour	50 µg/m^3	Nonattainment	150 µg/m^3	Attainment
	Annual Average	20 µg/m^3	Nonattainment	--	--
$PM_{2.5}$	24-Hour	--	--	35 µg/m^3	Nonattainment
	Annual Average (1997)	--	--	15 µg/m^3	Attainment
	Annual Average (Current)	12 µg/m^3	Nonattainment	12 µg/m^3	Nonattainment
Carbon Monoxide	1-Hour	23,000 µg/m^3	Attainment	40,000 µg/m^3	Attainment
	8-Hour	10,000 µg/m^3	Attainment	10,000 µg/m^3	Attainment
Nitrogen Dioxide	1-Hour	339 µg/m^3	Attainment	188 µg/m^3	Unclassifiable/ Attainment
	Annual Average	57 µg/m^3	Attainment	100 µg/m^3	Attainment
	1-Hour	655 µg/m^3	Attainment	196 µg/m^3	Attainment

Pollutant	Averaging Time(B)	California Standards(A)		National Standards(A)	
		Standard(C)	Attainment Status(D)	Standard(C)	Attainment Status(D)
Sulfur Dioxide	24-Hour	105 μg/m^3	--	367 μg/m^3	Unclassifiable/ Attainment
	Annual Average	--	--	79 μg/m^3	Unclassifiable/ Attainment
Lead	3-Months Rolling	--	--	0.15 μg/m^3	Nonattainment (Partial)
Hydrogen Sulfide	1-Hour	42 μg/m^3	Attainment	--	
Sulfates	24-Hour	25 μg/m^3	Attainment	--	
Vinyl Chloride	24-Hour	26 μg/m^3	Attainment	--	

Source: SCAQMD 2018b, modified by MIG.

(A) This table summarizes the CAAQS and NAAQS and the Basin's attainments status. This table does not prevent comprehensive information regarding the CAAQS and NAAQS. Each CAAQS and NAAQS has its own averaging time, standard unit of measurement, measurement method, and statistical test for determining if a specific standard has been exceeded. Standards are not presented for visibility reducing particles, which are not concentration-based. The Basin is unclassified for visibility reducing particles.

(B) Ambient air standards have changed over time. This table presents information on the standards previously used by the U.S. EPA for which the Basin does not meet attainment.

(C) All standards are shown in terms of micrograms per cubic meter (μg/m^3) rounded to the nearest whole number for comparison purposes (with the exception of lead, which has a standard less than 1 μg/m^3). The actual CAAQS and NAAQS standards specify units for each pollutant measurement.

(D) A= Attainment, N= Nonattainment, U=Unclassifiable.

Pollution problems in the Basin are caused by emissions within the area and the specific meteorology that promotes pollutant concentrations. Emissions sources vary widely from smaller sources such as individual residential water heaters and short-term grading activities to extensive operational sources including long-term operation of electrical power plants and other intense industrial use. Pollutants in the Basin are blown inward from coastal areas by sea breezes from the Pacific Ocean and are prevented from horizontally dispersing due to the surrounding mountains. This is further complicated by atmospheric temperature inversions that create inversion layers. The inversion layer in Southern California refers to the warm layer of air that lies over the cooler air from the Pacific Ocean. This is strongest in the summer and prevents ozone and other pollutants from dispersing upward. A ground-level surface inversion commonly occurs during winter nights and traps carbon monoxide emitted during the morning rush hour.

Construction Emissions

Construction of the proposed Project would generate equipment exhaust and dust emissions from demolition activities, ground disturbing activities such as site preparation and grading, and the use of gasoline- and diesel-fuel combustion in on- and off-site heavy duty construction equipment, worker vehicle trips, vendor vehicle trips, and haul truck trips, ground disturbing activities. The proposed Project's potential construction emissions were modeled using California Emissions Estimator Model (CalEEMod) Version 2016.3.2. The Project's construction activities, duration, and typical equipment used during construction are shown in Table 1. The construction phases, duration, and the type and amount of equipment used during construction was generated using CalEEMod default assumptions, and modified to reflect the following Project-specific characteristics:

- **Construction Phase** durations were altered as follows:
    - **Demolition Phase** was reduced from 20 days (default) to 5 days to reflect the limited nature of demolition activities (i.e., one single-family house);
    - **Grading Phase** was extended from 6 days (default) to 15 days to account for additional time that may be required to excavate for the subterranean parking garage;

- **Construction Equipment** was adjusted to reflect the quantity and daily runtime associated with equipment operation during development activities;
- **Demolition** of approximately 2,647 square feet of existing building space and associated debris hauling activities was added; and
- **Off-haul** of approximately 7,532 cubic yards of soil during the grading phase to account for spoils that would be generated while excavating for the subterranean parking garage was added.

The proposed Project's maximum daily construction emissions are shown in Table 5. The construction emissions estimates incorporate measures to control and reduce fugitive dust as required by SCAQMD Rule 403, as well as off-road construction equipment mitigation as recommended in Mitigation Measure AIR-1 to reduce diesel particulate matter. Please refer to Appendix A for CalEEMod output files and detailed construction emissions assumptions.

Table 5
Construction Emissions Estimates

Season	Maximum Daily Emissions (lbs/day)					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Summer 2021	45.3	18.0	15.3	0.1	3.9	1.8
Winter 2021	45.3	18.2	15.5	0.1	3.9	1.7
Summer 2022	45.3	1.5	2.4	<0.0(A)	0.3	0.1
Winter 2022	45.3	1.5	2.4	<0.0(A)	0.3	0.1
SCAQMD CEQA Threshold	**75**	**100**	**550**	**150**	**150**	**55**
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Source: MIG, 2021 (see Appendix A)
(A) <0.0 does not mean zero; rather, it means less than 0.05 but greater than zero.

As shown in Table 5, the proposed Project's maximum daily unmitigated construction emissions would be below the SCAQMD's regional pollutant thresholds for all pollutants with mitigation incorporated. Therefore, the construction of the proposed Project would not generate construction-related emissions that exceed SCAQMD CEQA thresholds.

Operational Emissions

Once operational, the proposed Project would generate emissions from the following sources:

- **Small "area" sources** including landscaping equipment and the use of consumer products such as paints, cleaners, and fertilizers that result in the evaporation of chemicals to the atmosphere during product use.
- **Energy use** in the form of natural gas combustion for building water and space heating needs.

- **Mobile sources** including trips made to and from the site by new residents and visitors.

Similar to construction emissions, criteria air pollutant emissions were estimated in CalEEMod, Version 2016.3.2 based on default model assumptions, with the following modifications made to reflect Project-specific characteristics:

- **Area Sources:** Woodstoves and fireplaces were removed pursuant to SCAQMD Rule 445.

The quantity of wood-burning fireplaces assumed by CalEEMod were added to natural-gas powered fireplaces.

- **Energy Use and Consumption:** Since CalEEMod default values are based on the energy efficiency standards contained in the 2016 CALGreen Code, the:
  - Default Title 24 electricity consumption intensity was adjusted downwards by a factor of 0.47 for residential land uses to reflect increased efficiency in the 2019 CALGreen Code (CEC, 2018).
  - Default energy efficiency value for light energy intensity was adjusted downwards by a factor of 0.7 for non-residential land uses to reflect increased lighting efficiency in the 2019 CALGreen Code (CEC, 2018).

- **Mobile Sources:** The default, weekday trip generation rate for the proposed land use was updated to reflect the trip generation rate provided in the TIS prepared for the proposed Project by Linscott, Law & Greenspan (See Appendix F).

Once operational, the proposed Project would generate emissions of regulated air pollutants from the sources described above. The proposed Project's maximum daily unmitigated operational emissions are shown in Table 6 (Operational Emissions Estimates). The emissions presented are for the proposed Project's first year of operation, which is presumed to be 2022.

Table 6
Operational Emissions Estimates

Source	Maximum Daily Pollutant Emissions (Pounds Per Day)[A]					
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Area	1.7	1.1	5.4	<0.0[B]	0.1	0.1
Energy	<0.0[B]	0.2	0.1	<0.0[B]	<0.0[B]	<0.0[B]
Mobile	0.7	3.4	9.4	<0.0[B]	2.8	0.8
Total Project Emissions[C]	*2.5*	*4.7*	*15.0*	<0.0[B]	*2.9*	*0.9*
SCAQMD CEQA Threshold	55	55	550	150	150	55
Threshold Exceeded?	No	No	No	No	No	No

Source: MIG, 2021 (See Appendix A)
(A) Emissions presented are worst-case emissions and may reflect summer or winter emissions levels. Maximum daily ROG, CO, SO_X emissions occur during the summer. Maximum daily NO_X emissions occur during the winter. In general, due to rounding, there is no difference between summer and winter PM_{10} and $PM_{2.5}$ emissions levels for the purposes of this table.
(B) <0.0 does not mean zero; rather, it means less than 0.05 but greater than zero.
(C) Totals may not equal due to rounding.

As shown in Table 6, the proposed Project's maximum daily unmitigated operational emissions would be below the SCAQMD's regional pollutant thresholds for all pollutants. Therefore, the construction of the proposed Project would not generate operations-related emissions that exceed SCAQMD CEQA thresholds.

Conclusion

The Basin is currently designated non-attainment for State and/or federal standards for ozone, PM_{10}, and $PM_{2.5}$ (see Table 4). As discussed in the preceding subsections, the proposed Project would not result in construction or operational emissions of criteria air pollutants that exceed SCAQMD thresholds of significance. In developing its CEQA significance thresholds, the SCAQMD considered the emission levels at which a project's individual emissions would be cumulatively considerable. The SCAQMD considers projects that result in emissions that exceed its CEQA significance thresholds to result in individual impacts that are cumulatively considerable and significant. Since the proposed Project would not individually exceed any SCAQMD CEQA significance thresholds, it would not result in a cumulatively considerable increase in regulated, nonattainment pollutants.

Although the preceding analysis determined the Project's emissions would not exceed the SCAQMD's daily thresholds, Mitigation Measure AIR-1 is recommended to help further reduce potential construction-related emissions.

Mitigation Measures

AIR-1 To reduce potential short-term adverse health risks associated with PM_{10} exhaust emissions, including emissions of diesel particulate matter (DPM), generated during project construction activities, the City shall require the Applicant and/or its designated contractors, contractor's representatives, or other appropriate personnel to apply the following construction equipment restrictions for the Project:

1. Electric-powered and liquefied or compressed natural gas equipment (including generators) shall be employed instead of diesel-powered equipment to the maximum extent feasible.
2. All construction equipment with a rated power-output of 50 horsepower or greater shall meet U.S. EPA and CARB Tier IV Final Emission Standards for PM_{10}. This may be achieved via the use of equipment with engines that have been certified to meet Tier IV emission standards, or through the use of equipment that has been retrofitted with a CARB-verified diesel emission control strategy (e.g., oxidation catalyst, particulate filter) capable of reducing exhaust PM_{10} emissions to levels that meet Tier IV standards.

As an alternative to using equipment that meets Tier IV Final Emissions Standards for off-road equipment with a rated power-output of 50 horsepower or greater, the Applicant may prepare and submit a refined construction health risk assessment to the City once additional Project-specific construction information is known (e.g., specific construction equipment type, quantity, engine tier, and runtime by phase). The refined health risk assessment shall demonstrate and identify any measures necessary such that the proposed Project's incremental cancerogenic health risk at nearby sensitive receptor locations is below the applicable SCAQMD threshold of 10 cancers in a million.

c) **Less than Significant with Mitigation Incorporated.** The health of some people is more affected by air pollution than for others. Sensitive air quality receptors include specific subsets of the general population that are susceptible to poor air quality and the potential adverse health effects associated with poor air quality. Both CARB and the SCAQMD consider residences, schools, parks and playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes to be sensitive air quality land uses and receptors. The potential sensitive air quality receptors adjacent or in close proximity to the perimeter of the project site (i.e., within 1,000 feet) include:

- Multi-family residential apartment complex on the opposite side of Cutter Way, approximately 50 feet from the eastern edge of the Project site,
- Jubilee Christian School (City of West Covina) on the opposite side of San Bernardino Road, approximately 90 feet from the southeastern edge of the Project site[v], and
- Las Palma Middle School on the opposite side of Cutter Way, approximately 120 feet from the northeastern edge of the Project site.

The existing sensitive air quality receptors located adjacent or in close proximity to the project site, are exposed to air pollution associated with motor vehicles travelling on the roadways in proximity of the site (e.g., San Bernardino Road). According to the SCAQMD's MATES IV Carcinogenic Risk Map, the existing carcinogenic risk in the vicinity of the Project is approximately 1,021 incremental cancer cases per million population.[vi] This estimate reflects regional modeling efforts that largely do not account for site specific emission rates and dispersion characteristics that typically result in refined and substantially lower health risk estimates.

CalEnviroScreen is a mapping tool that helps identify California communities that are most affected by many sources of pollution, and where people are often especially vulnerable to pollution's effects. The tool uses environmental, health, and socioeconomic information to produce scores for every census tract in the state. The scores are then mapped so that different communities can be compared. An area with a high score is one that experiences a much higher pollution burden than areas with low scores.

According to the Office of Environmental Health Hazard Assessment (OEHHA) CalEnviroScreen 3.0 Map, the proposed Project is in the census tract north of I-10 (Census Tract: 6037405701). This area shows an average pollution indicator percentile of 55% to 60% based on the CalEnviroScreen indicators (e.g., exposure, environmental effects, population characteristics, socioeconomic factors) (OEHHA, 2018). The average pollution indicator percentile drops to 45-50% south of San Bernardino Road, where the Jubilee Christian School is located. Census Tract 6037405701 has a population of 3,853 people. The CalEnviroScreen data indicates approximately 56 in 10,000 people in the Project site's census tract visited an emergency facility for asthma-related health issues. This rate places the Project site's census tract in the 76th percentile, meaning the asthma rate in this census tract is higher than 56% of the census tracts in the State (OEHHA 2018).

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[v] The warehouse that has been used for the Jubilee Christian School recently underwent environmental review to transition its use to an Amazon last-mile delivery center (City of West Covina 2021). The analysis contained in this Report conservatively assesses the potential for the proposed Project to adversely affect potential school receptors should unforeseen delays occur with transitioning the Jubilee Christian School to the Amazon last-mile delivery center.

[vi] The potential cancer risk for a given substance is expressed as the incremental number of potential cancer cases that could be developed per million people, assuming that the population is exposed to the substance at a constant annual average concentration over a presumed 70-year lifetime. These risks are usually presented in chances per million. For example, if the cancer risks were estimated to be 100 per million, the probability of an individual developing cancer due to a lifetime of exposure would be one hundred in a million, or one in ten thousand. In other words, this predicts an additional 100 cases of cancer in a population of a million people over a 70-year lifetime.

Since the Project area's census tract is not in the top 25% in scoring according to the CalEnviroScreen methodology, it is not considered a disadvantaged community pursuant to Senate Bill (SB) 535, which allocates funding from the state's Cap and Trade Program to disadvantaged communities (OEHHA, 2017a, 2017b).

Construction Health Risk Assessment

Based on the proposed Project's proximity to sensitive receptors (both residential as well as school receptors), a construction health risk assessment (HRA) was prepared to evaluate potential cancerogenic and non-cancerogenic health effects that could result from receptor to exposure to diesel particulate matter (DPM), a toxic air contaminant, that would be generated during the combustion of diesel fuels during Project construction. The construction HRA was prepared in accordance with applicable guidelines from the California Office of Environmental Health Hazard Assessment (OEHHA) and shows that the proposed Project would not result in potentially significant effects after the implementation of Mitigation Measure AIR-1.

The Environmental Protections Agency's (EPA) AERMOD dispersion model (version 19191) was used to predict pollutant concentrations at existing sensitive receptors near the project site. The AERMOD dispersion model is an EPA-approved and SCAQMD-recommended model for simulating the dispersion of pollutant emissions and estimating ground level concentrations of pollutants at specified receptor locations. AERMOD requires the user to input information on the source(s) of pollutants being modeled, the receptors where pollutant concentrations are modeled, and the meteorology, terrain, and other factors that affect the potential dispersion of pollutants. These variables are described below.

<u>Modeled Construction Sources/ Emission Rates</u>
On- and off-site construction emissions were modeled as a series of area and line area sources, respectively, as shown in Table 7 (AERMOD Source Parameters). As a conservative approach, PM_{10} construction exhaust emissions were presumed to be 100 percent DPM and be emitting entirely in one year (as opposed to one year and a few weeks, as accounted for in the CalEEMod modeling). An emissions rate for each source listed in Table 7 was derived from the CalEEMod emissions estimates presented above (See Appendix A). The annual emissions generated during construction of the proposed Project were converted to an average emission rate in terms of grams / second per hour of construction activity.

On-site DPM emissions from construction of the proposed Project were modeled as two area sources split between the northern portion of the site and southern portion of the site. The area sources were assigned a release height of five meters; this elevated source height reflects the height of the equipment exhaust pipes, plus an additional distance for the height of the exhaust plume above the exhaust pipes to account for the plume rise of the exhaust gases.[vii]

Off-site DPM emissions from vehicles were modeled as a line area source. All haul truck and vendor trips were assumed to travel to the site from westbound San Bernardino Road, turn right onto Cutter Way, receive fill / deliver materials, continue northbound on Cutter Way before heading westbound on

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[vii] The Sacramento Metro Air Quality Management District (SMAQMD) recommends a release height of 5 meters. Since the SCAQMD does not have a recommended release height for PM exhaust emissions generated by construction equipment, the SMAQMD's release heights have been used instead.

Industrial Park Street, and turn right onto northbound Vincent Avenue.[viii] Off-site truck travel emissions were treated as a line area source. The release height for the line area source was set to 4.12 meters, the approximate height of a truck exhaust.

Table 7
AERMOD Source Parameters

ID	Description	UTM Coordinates(A)		Size (m^2)
		X	Y	
PAREA1	Year 1 On-site PM_{10} Exhaust (North)	414960.36	3772546.88	4,746.3
PAREA2	Year 1 On-site PM_{10} Exhaust (South)	414958.83	3772482.55	4,226.0
ARLN1	Year 1 Off-site PM_{10} Exhaust	414692.31	3772671.76	1,224(B)

Source: MIG 2021, see Appendix A
(A) UTM coordinates represent the southwest corner of the source.
(B) Reflects length of line area source in meters.

Modeled Receptors
For construction activities, a 1,000-meter by 1,000-meter grid was generated with a receptor spacing of 50 meters. The grid's center coordinates were 414999.28 meters Easting and 3772478.80 meters Northing. The grid was converted to discrete Cartesian receptors. An additional ten (10) receptors were placed on top of residences in proximity to the project site, as well as on top of Las Palmas Middle School and Jubilee Christian School.

Health Risk Assessment Methodology
Health Risks were assessed according to the recommendations in the Office of Environmental Health Hazard Assessment's *Air Toxics Hot Spots Program Guidance Manual*. The ground level concentrations of pollutants produced by the project during construction, as estimated using AERMOD, were used to derive:

1. **Individual excess cancer risk.** Cancer risk is the calculated, pollutant-specific estimated probability of developing cancer based upon the dose and exposure to the TAC. Cancer risk is calculated using predefined cancer potency factors, ground level exposure concentration, duration of exposure, and other parameters such as age sensitivity. For the proposed Project, cancer risk was estimated for the inhalation pathway (i.e., breathing). In general, the inhalation dose is a function of the concentration of a chemical and the intake of that chemical. The dose can be calculated as follows:

$$\mathbf{RISK_{(Inh)} = DOSE_{air} \times CPF \times ASF \times (ED/AT) \times FAH \times 1{,}000{,}000}$$

Where:

Risk = Cancer Risk per million population; the incremental probability of an individual developing cancer as a result of inhalation exposure to a particular potential carcinogen (unitless)
Dose = Dose of chemical in the air (mg/kg-day)

[viii] Badillo Street and Azusa Avenue are designated truck routes in Section 10.44.010 in the City's Municipal Code. Thus, this analysis assumes these two roadways would primarily be used for hauling activities.

CPF = Inhalation cancer potency factor (mg/kg-day)
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (in years) for specified age group (unitless)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

The cancer potency factor for DPM is 1.1 mg/kg-day. The age sensitivity factor, exposure duration, and fraction of time spent at home for 3rd trimester, 0-2, 0-16, and 16-70 age bins were set to SCAQMD-recommended levels. The risk parameters used to calculate excess individual cancer risk for residential and student receptors are summarized in Table 8 (Residential Health Risk Assessment Parameters) and Table 9 (Student Health Risk Assessment Parameters), respectively.

Table 8
Residential Health Risk Assessment Parameters

Risk Assessment Parameter	Infant Receptor		Child Receptor	Adult Receptor
	3rd Trimester	0-2 Years	2-16 Years	16-30 Years
Daily Breathing Rate (L/kg-day)	361	1090	572	261
Exposure Frequency	0.96	0.96	0.96	0.96
DPM Inhalation Cancer Potency (mg/kg-day)	1.1	1.1	1.1	1.1
Age Sensitivity Factor	10	10	3	1
Exposure Duration (Years)	0.25	2	14	14
Averaging Time (Years)	70	70	70	70
Fraction of Time at Home(A)	1	1	1	0.73

Source: OEHHA, 2015
(A) Consistent with OEHHA guidance, the FAHs for 3rd trimester and ages 0-2 and 2-16 were set to "1", since there is school within the 1 x 10^{-6} risk isopleth (OEHHA 2015; pg. 8-5).

Table 9
Student Health Risk Assessment Parameters

Risk Assessment Parameter	Infant Receptor	Child Receptor
	2-9 Years	2-16 Years
Daily Breathing Rate (L/kg-day)	640	520
Exposure Frequency(A)	0.49	0.49
DPM Inhalation Cancer Potency (mg/kg-day)	1.1	1.1
Age Sensitivity Factor	3	3
Exposure Duration (Years)	7	14
Averaging Time (Years)	70	70
Fraction of Time at School(B)	0.42	0.42

Source: OEHHA, 2015
(A) Assumes children would be at school 180 days per year.
(B) Assumes children at the site from approximately 7:00 AM to 5:00 PM (accounts for before and after school care / activities; approximately 10 hours) (SCAQMD, 2017b).

2. **Noncancer hazard quotient.** The noncancer hazard quotient is the calculated pollutant-specific indicator for risk of developing an adverse health effect on specific organ system(s)

targeted by the identified TAC. The potential for exposure to result in chronic non-cancer effects is evaluated by comparing the estimated annual average air concentration (which is equivalent to the average daily air concentration) to the chemical-specific, non-cancer chronic reference exposure levels (RELs). The REL is a concentration below which there is assumed to be no observable adverse health impact to a target organ system. When calculated for a single chemical, the comparison yields a ratio termed a hazard quotient. To evaluate the potential for adverse chronic non-cancer health effects from simultaneous exposure to multiple chemicals, the hazard quotients for all chemicals are summed, yielding a hazard index. For an acute hazard quotient, the one-hour maximum concentration is divided by the acute REL for the substance. In general, the equations used to calculate chemical-specific hazard quotients and summed hazard index are:

$$Chronic\ HQ_i = C_i/REL_i$$
$$Chronic\ HI = \sum HQ_i$$

Where:

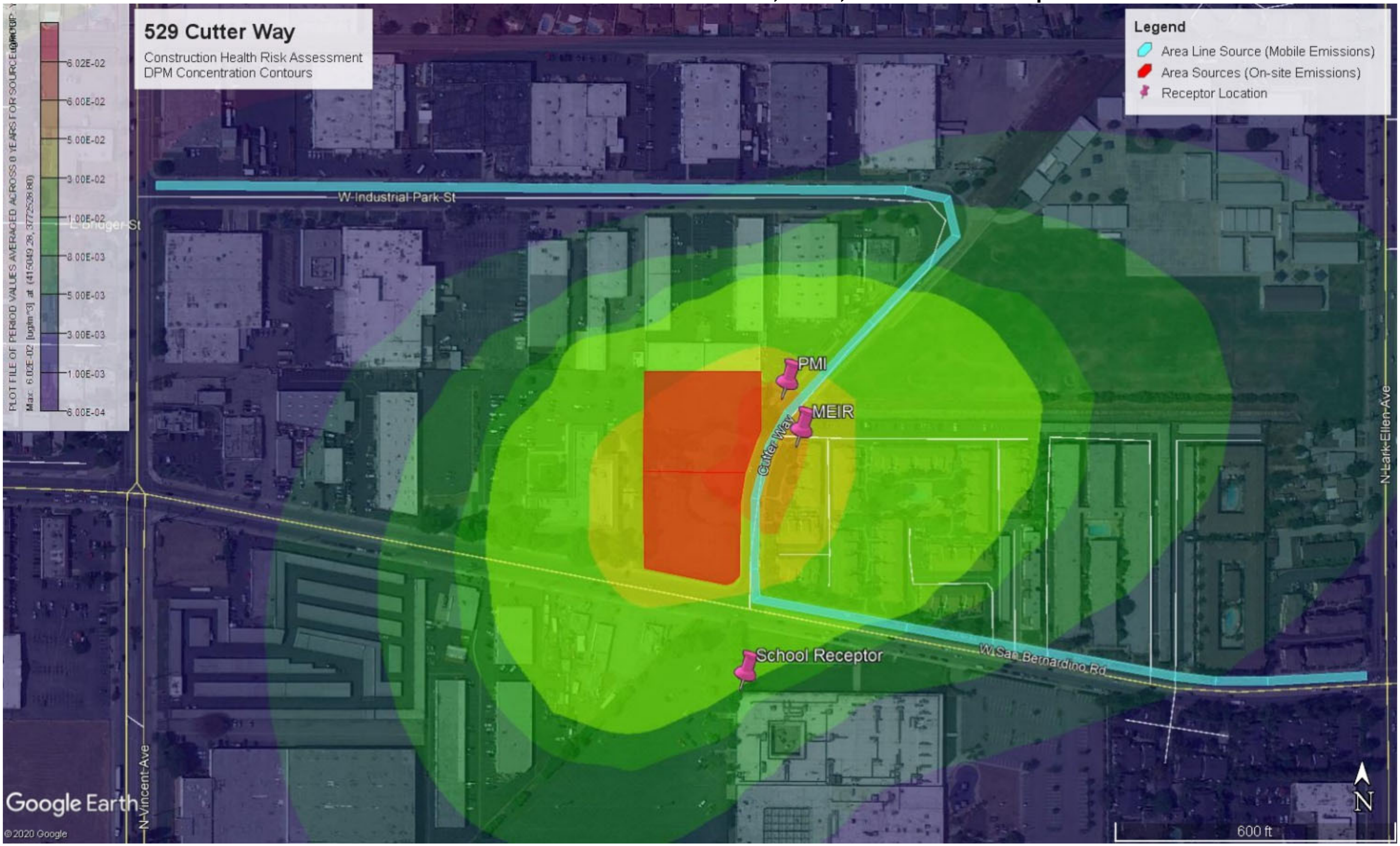
Chronic HQ_i	= Chronic Hazard quotient for $chemical_i$ (unitless)
Chronic HI	= Hazard Index (unitless)
C_i	= Annual average air concentration for $chemical_i$ (µg/m^3)
REL_i	= Chronic non-cancer Reference Exposure Level for $chemical_i$ (µg/m^3)

The chronical inhalation REL for DPM is 5 µg/m^3. No acute non-cancer impacts were estimated since there is no acute REL for DPM.

<u>Health Risk Assessment</u>
As previously described, sensitive receptors are located north, east, and south of the Project site. Project-related construction activities would emit PM_{10} from equipment exhaust. This analysis conservatively assumed all the project's PM_{10} emissions from equipment exhaust would be DPM, a TAC. The construction HRA evaluated DPM emissions associated with on- and off-road diesel fuel trucks and equipment. Gasoline-fuel vehicles emit various TACs in much smaller quantities and health toxicity compared to DPM. Thus, gasoline fueled emission sources were not included in the HRA. The proposed Project would involve different construction activities occurring at different intensities over an approximately one-year timeframe, with initial groundbreaking taking place as early as the beginning of 2021. Receptors would be exposed to varying concentrations of pollutants throughout the construction period.

The predicted locations of the annual, unmitigated point of maximum impact (PMI) and the maximum exposed individual receptor (MEIR) for DPM exposure are shown in Exhibit 6 (Construction Health Risk Assessment - PMI, MEIR, and Student Receptor) below. The predicted PMI is located in the Cutter Way right-of-way northeast of the Project site. Since the PMI for DPM exposure is located on land that is not occupied by a receptor on a permanent basis, lifetime excess cancer risks and chronic non-cancer health hazards, which are based on exposure to annual average pollutant concentrations, were not estimated for the modeled PMI location.

Exhibit 6
Construction Health Risk Assessment - PMI, MEIR, and Student Receptor



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As shown in Table 10, unmitigated construction exhaust emissions would have the potential to result in incremental cancerogenic health risk increases that are in excess of the SCAQMD's threshold of 10 excess cancers in a million. To reduce potential DPM (and PM_{10}) exhaust emissions generated by Project construction activities, Mitigation Measure AIR-1 has been incorporated into the proposed Project.

As shown in Table 10, Mitigation Measure AIR-1 would ensure construction emissions associated with equipment operation do not generate diesel particulate emissions that expose sensitive receptors to substantial pollutant concentrations (i.e., exceed applicable SCAQMD thresholds). The maximum annual average DPM concentration at any receptor location under mitigated conditions would be approximately 0.05 $\mu g/m^3$, which would occur at the MEIR location. Based on the chronic inhalation REL for DPM (5 $\mu g/m^3$), the calculated chronic hazard quotient during the maximum exposure to DPM concentration would be 0.01, which is below the SCAQMD's non-cancer hazard index threshold value of 1.0. Implementation of Mitigation Measure AIR-1 would substantially reduce the amount of DPM that MEIRs would be exposed to, and reduce the potential, incremental increase in cancerogenic health risk to a level that is below the SCAQMD's threshold. As a result, impacts would be less than significant.

Table 10
Maximum Increased Cancer Risk from Project Construction DPM Emissions

Year	Health Risk Increase	
	Unmitigated	**Mitigated**
Residential Child Receptor (0-2 Years of Age); MEIR(A)	81.0	9.0
Residential Adult Receptor	1.4	0.2
School Child Receptor (2-9 Years of Age)(B)	0.5	0.1
SCAQMD Significance Threshold	10	10
Threshold Exceeded?	**Yes(C)**	**No**

Source: MIG 2021 (See Appendix A)

(A) Maximum exposed residential receptor located at 415058.46 m E and 33724.97 m N.
(B) Maximum exposed student receptor located at 415020.02 m E and 3772340.00 m N.
(C) As show in the "Residential Child Receptor (0-2 Years of Age)", the SCAQMD's threshold would be exceeded by approximately 71.0 cancers in one million.

Localized Significance Thresholds

In addition to establishing thresholds of significance for emissions of criteria air pollutants on a regional level, the SCAQMD has also developed Localized Significance Thresholds (LSTs) that represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable Federal or State ambient air quality standards, which would result in significant adverse localized air quality effects. The LST methodology takes into account a number of factors, including (1) existing ambient air quality in each Source Receptor Area (SRA); (2) how many acres the project would disturb in a day; and (3) how far project construction and operational activities would take place from the nearest sensitive receptor. Unlike the regional emission significance thresholds, LSTs have only been developed for NO_X, CO, PM_{10} and $PM_{2.5}$. This Report evaluates the proposed Project's potential to expose sensitive receptors to substantial pollutant concentrations pursuant to the SCAQMD Final Localized Significance Thresholds Methodology. This methodology provides screening tables for one through five-acre project scenarios, depending on the amount of site disturbance during a day, using the SCAQMD's Fact Sheet for Applying CalEEMod to Localized Significance Thresholds.

Construction LST's

The proposed Project's maximum daily construction emissions are compared against the SCAQMD's-recommended LSTs. Consistent with the SCAQMD's LST methodology, the emissions included in the construction LST analysis are onsite emissions only, and the LST thresholds against which these onsite emissions are compared are based on the Project size, in acre. The LST thresholds are for SRA 9 (East San Gabriel Valley), the SRA in which the proposed Project is located, and are based on a receptor distance of 25 meters (82 feet), the closest LST receptor distance threshold recommended for use by the SCAQMD, and a project site of 2 acres. The emissions presented in Table 11 (LST Construction Analysis) incorporate certain best available control measures the Project would be subject to pursuant to SCAQMD Rule 403, Fugitive Dust. Specifically, the CalEEMod project file applies an approximate 61 percent reduction in PM_{10} and $PM_{2.5}$ fugitive dust emissions through site watering (three times daily) and replacement of ground cover. These estimated reductions are consistent with the reductions realized by implementation of the numerous best available control measures contained in SCAQMD Rule 403. As shown in Table 11, the maximum daily onsite emissions generated during all construction phases associated with the Project would be below the SCAQMD's LST thresholds for a two-acre site (a conservative comparison since the Project area is slightly larger than two acres in size) at a distance of 82 feet (approximately 25 meters), the closest LST receptor distance threshold recommended for use by the SCAQMD. Impacts will be less than significant.

Table 11
LST Construction Analysis

Construction Phase	**Maximum Daily Emissions (Pounds per Day)$^{(A)}$**			
	NO_X	**CO**	**$PM_{10}$$^{(B)}$**	**$PM_{2.5}$$^{(C)}$**
Demolition	3.8	12.2	0.4	0.2
Site Preparation	1.3	11.9	0.6	0.1
Grading	1.1	10.9	2.6	1.4
Building Construction	1.0	6.1	<0.0$^{(C)}$	<0.0$^{(C)}$
Paving	1.3	13.3	<0.0$^{(C)}$	<0.0$^{(C)}$
Architectural Coating 2021	1.5	1.8	0.1	0.1
Architectural Coating 2022	1.4	1.8	0.1	0.1
SCAQMD Threshold (2-Acre)	**128**	**953**	**7**	**5**
Threshold Exceeded?	**No**	**No**	**No**	**No**

Source: MIG 2021 (see Appendix A)
(A) Emissions presented are worst-case total emissions and may reflect summer or winter emissions levels.
(B) PM emissions assume compliance with SCAQMD Rule 403 best available control measures for site watering and replacing ground
cover.
(C) <0.0 does not mean zero; rather, it means greater than zero but less than 0.05.

Operation LST's

Operation-related LSTs become of concern when there are substantial on-site stationary sources such as smoke stacks or furnaces that could impact surrounding receptors. The Project's maximum daily operational emissions are compared against the SCAQMD's-recommended LSTs in Table 12 (LST Operational Analysis). Consistent with the SCAQMD's LST methodology, the emissions included in the operational LST analysis are onsite emissions only, and the LST thresholds against which these onsite emissions are compared are based on the Project size, in acres. The LST thresholds are for SRA 9 (East San Gabriel Valley), the SRA in which the Project is located and are based on a receptor distance of 82 feet (approximately 25 meters), the closest LST receptor distance threshold recommended for use by the SCAQMD. As shown in Table 12, the maximum daily onsite emissions generated during operation of the proposed Project would not exceed the SCAQMD's recommended LST thresholds. Impacts will be less than significant.

Table 12
LST Operational Analysis

Emissions	Maximum Onsite Pollutant Emissions (Pounds Per Day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Area Sources	1.1	5.4	0.1	0.1
Energy Sources	0.2	0.1	<0.0(B)	<0.0(B)
Mobile Sources(A)	0.1	0.2	0.1	<0.0(B)
Total Emissions(C)	1.4	5.7	0.2	0.1
SCAQMD LST Threshold(D)	**128**	**953**	**2**	**2**
Threshold Exceeded?	No	No	No	No

Source: MIG 2021 (see Appendix A).
(A) Mobile source emissions estimates reflect potential onsite vehicle emissions only and were derived by assuming 2% of operational mobile source emissions in **Error! Reference source not found.** will occur onsite.
(B) <0.0 does not mean zero; rather, it means less than 0.05, but less than zero.
(C) Emissions presented are worst-case emissions and may reflect summer or winter emissions levels. In general, due to rounding, there is no difference between summer and winter emissions levels for the purposes of this table.
(D) LST threshold is conservatively based on a 5.0-acre project size and 25-meter (82-foot) receptor distance.

Carbon Monoxide Hot Spots

A CO hotspot is an area of localized CO pollution that is caused by severe vehicle congestion on major roadways, typically near high volume intersections. Several screening procedures have been developed by air districts throughout the state to assess whether a project may result in a CO impact. For example, the Bay Area Air Quality Management District (BAAQMD) developed a screening threshold in 2010 which states that any project involving an intersection experiencing 44,000 vehicles per hour would require detailed analysis. Additionally, the SCAQMD's 2003 AQMP and *1992 Federal Attainment Plan for Carbon Monoxide* demonstrated that CO levels were below the CAAQS at an intersection with a daily traffic volume of up to approximately 100,000 vehicles per day. The proposed Project would add approximately 326 new vehicle trips to the roadway system per day (See Appendix F). The worst-case hourly intersection volume in the Project vicinity would be at the Badillo Street and Vincent Avenue intersection under future plus Project conditions with a total of 3,861 vehicles per hour during the PM peak hour. This is well below the BAAQMD screening threshold, and surrounding roadway segments would not have traffic volumes exceeding 100,000 vehicles per day. The proposed Project would not cause intersection volumes to exceed any daily (100,000) or hourly (44,000) screening vehicle volumes maintained by the SCAQMD and other regional air districts and, therefore, would not result in significant CO concentrations.

d) **Less than Significant Impact.** According to the SCAQMD CEQA Air Quality Handbook, land uses associated with odor complaints include agricultural operations, wastewater treatment plants, landfills, and certain industrial operations (such as manufacturing uses that produce chemicals, paper, etc.). The proposed Project does not include such sources but would result in the construction of a new apartment complex and parking garage that could generate odors related to vehicle parking and refuse collection (e.g., oils, lubricants, fuel vapors, short-term waste odors). These activities would not generate sustained odors that would affect substantial numbers of people. Impacts would be less than significant.

4.4 – Biological Resources

Would the Project:

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

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☑

a) **Less than Significant Impact.** According to the California Department of Fish and Wildlife BIOS viewer, a total of six sensitive wildlife species and no sensitive plant species were identified as occurring within the Baldwin Park 7.5-Minute Quadrangle, within which the Project site is located.[5] These species include western yellow-billed cuckoo (*Coccyzus americanus accidentalis*), bank swallow (Riparia riparia), willow flycatcher (*Empidonax traillii*), least Bell's vireo (*Vireo bellii pusillus*), Santa Ana sucker (*Catostomus santaanae*), and Crotch bumble bee (*Bombus crotchii*). While it is possible for these species to exist in the Project area, given the highly disturbed nature of the Project site and surrounding area, it is highly unlikely that any plant or wildlife species listed by the State and/or Federal government as endangered or threatened occur at the Project site. Based on site visits, there is limited ornamental landscaping and trees on site; however, there is no identifiable natural habitat on site. Construction of the mixed-use, multi-family residential development will include replacement of existing ornamental landscaping with similar landscaping upon Project completion. Therefore, less than significant impacts would occur with construction of the Project.

b-c) **No Impact.** The Project site consists of a single parcel comprising approximately 2.24 acres. The site is developed with a single-family home. According to the federal National Wetlands Inventory, the Project site does not contain any riparian habitat or wetlands and the Project would not disturb any offsite wetlands.[6] There is no vegetation or on-site water features indicative of potential wetlands. No impact would occur.

d) **Less than Significant with Mitigation Incorporated.** The Project site consists of a single parcel developed with a single-family home. The site is bounded by roadways to the east and south, and commercial and industrial uses to the north and west, preventing the use of the Project site and surrounding area as a wildlife corridor. There are no substantial vegetated areas or waterbodies located onsite that could serve as habitat. However, there are a number of trees on the Project site that have the potential to provide habitat for nesting birds. Vegetation communities on the Project Site have the potential to provide nesting habitat for bird species protected by the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC) Sections 3503 and 3513. There is potential for ground- and tree-nesting birds to establish nests on the Project Site prior to project construction. Destruction of, or disturbance to, an active nest is prohibited. Construction activities including site mobilization, tree removal other vegetation clearing activities, grubbing, grading, and noise/vibration from the operation of heavy equipment also has the potential to result in significant direct (i.e., death or physical harm) and/or indirect (i.e., nest abandonment) impacts to nesting birds. Implementation of Mitigation Measure BIO-1 would be required to reduce potential impacts to nesting birds to a less than significant level.

<u>Mitigation Measures</u>

BIO-1: **Pre-Construction Nesting Bird Survey.** If vegetation removal is scheduled during the nesting season (typically February 1 to September 1), then a focused survey for active nests shall be conducted by a qualified biologist (as determined by a combination of academic training and professional experience in biological sciences and related resource management activities) no more than five (5) days prior to the beginning of project-related activities (including but not limited to equipment mobilization and staging, clearing, grubbing, vegetation removal, and grading). Surveys shall be conducted in proposed work areas, staging and storage areas, and soil, equipment, and material stockpile areas. For passerines and small raptors, surveys shall be conducted within a 250-foot radius surrounding the work area (in areas where access is feasible). For larger raptors, such as those from the genus *Buteo*, the survey area shall encompass a 500-foot radius. Surveys shall be conducted during weather conditions suited to maximize the observation of possible nests and shall concentrate on areas of suitable habitat. If a lapse in project-related work of five (5) days or longer occurs, an additional nest survey shall be required before work can be reinitiated. If nests are encountered during any preconstruction survey, a qualified biologist shall determine if it may be feasible for construction to continue as planned without impacting the success of the nest, depending on conditions specific to each nest and the relative location and rate of construction activities. If the qualified biologist determines construction activities have potential to adversely affect a nest, the biologist shall immediately inform the construction manager to halt construction activities within minimum exclusion buffer of 50 feet for songbird nests, and 200 to 500 feet for raptor nests, depending on species and location. Active nest(s) within the Project Site shall be monitored by a qualified biologist during construction if work is occurring directly adjacent to the established no-work buffer. Construction activities within the no-work buffer may proceed after a qualified biologist determines the nest is no longer active due to natural causes (e.g. young have fledged, predation, or other non-anthropogenic nest failure).

e) **Less than Significant Impact.** The Project site consists of a single parcel developed with a single-family home. The Project includes the removal of several ornamental trees. The City of Covina Municipal Code (CMC) Chapter 17.83 (Tree Preservation) specifies heritage trees are protected that meet one or more of the following criteria:

1. Trees of the following species with a trunk diameter, as measured at standard height, of at least 10 inches for a single-trunk tree or with a combined diameter of at least 22 inches for multiple-trunk trees:

   a. Quercus, all species (oaks).

2. Individual trees or groups of trees designated as heritage tree(s) by the city council pursuant to CMC 17.83.150.

Development of the proposed Project would be required to comply with these requirements. Removal of any trees protected under the CMC 17.83.150 would continue to comply with City requirements. With adherence to existing regulations, no anticipated conflicts with any local policies or tree policies would occur. Therefore, development of the proposed Project will not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Impacts will be less than significant.

f) **No Impact.** The Project site is not within any Habitat Conservation Plan area and no impacts would occur.[7]

4.5 – Cultural Resources

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?	☐	☐	☐	☑
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?	☐	☐	☑	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☑	☐

a) **No Impact.** CEQA guidelines state "a project that may cause a substantial adverse change in the significance of a historical resource…may have a significant effect on the environment." Furthermore, substantial adverse change is defined by the California Public Resource Code as "demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired" (PRC §5020.1[q]). Any project that proposes such impacts would result in a loss of integrity and as such would constitute a "substantial adverse change in the significance of a historical resource." The Project site encompasses approximately 2.24 acres and is bounded by streets to the east and south and commercial and industrial uses to the north and west. The Project includes demolition of the existing single-family home on the site. However, this single-family home was built in 1990 and does not hold any historical significance. The Project will not result in an adverse change in the significance of a historical resource as defined in CEQA §15064.5. No impact will occur.

b) **Less than Significant with Mitigation Incorporated.** Given the urbanized nature of the Project vicinity, previously undiscovered archaeological resources are not anticipated to be uncovered during Project construction activities. However, in accordance with Assembly Bill 52 (AB 52), which added various provisions to the California Public Resources Code (PRC) that concern Tribal Cultural Resources, including Section 21080.3.1(d), the City contacted local tribes requesting to be notified of Projects. Responses were received from two local tribes: the San Manuel Band of Mission Indians and the Gabrieleño Band of Mission Indians-Kizh Nation. The San Manuel Band of Mission Indians noted that the Project is outside its tribal territory and did not request consultation. The Gabrieleño Band of Mission Indians-Kizh Nation requested consultation and inclusion of Mitigation Measures Mitigation Measures CUL-1 through CUL-4, which have been incorporated to ensure that buried archaeological resources are properly treated. With implementation of Mitigation Measures CUL-1 through CUL-4, impacts to archaeological resources will be less than significant.

<u>Mitigation Measures</u>

CUL-1: **Retain a Native American Monitor/Consultant:** The Project Applicant shall be required to retain and compensate for the services of a Tribal monitor/consultant who is both approved by the Gabrieleño Band of Mission Indians-Kizh Nation Tribal Government and is listed under the NAHC's Tribal Contact list for the area of the project location. This list is provided by the NAHC. The monitor/consultant will only be present on-site during the construction phases that involve ground disturbing activities. Ground disturbing activities are defined by the Gabrieleño Band of Mission Indians-Kizh Nation as activities that may include, but are not limited to, pavement removal, pot-holing or auguring, grubbing, tree removals, boring, grading, excavation, drilling, and trenching, within the project area. The Tribal Monitor/consultant will complete daily monitoring logs that will provide descriptions of the day's activities, including construction activities, locations, soil, and any cultural materials identified. The on-site monitoring shall end when the project site grading and excavation activities are completed, or when the Tribal Representatives and monitor/consultant have indicated that the site has a low potential for impacting Tribal Cultural Resources.

CUL-2: **Unanticipated Discovery of Tribal Cultural and Archaeological Resources:** Upon discovery of any archaeological resources, cease construction activities in the immediate vicinity of the find until the find can be assessed. All archaeological resources unearthed by project construction activities shall be evaluated by the qualified archaeologist and tribal monitor/consultant approved by the Gabrieleño Band of Mission Indians-Kizh Nation. If the resources are Native American in origin, the Gabrieleño Band of Mission Indians-Kizh Nation shall coordinate with the landowner regarding treatment and curation of these resources. Typically, the Tribe will request reburial or preservation for educational purposes. Work may continue on other parts of the project while evaluation and, if necessary, mitigation takes place (CEQA Guidelines Section15064.5 [f]). If a resource is determined by the qualified archaeologist to constitute a "historical resource" or "unique archaeological resource", time allotment and funding sufficient to allow for implementation of avoidance measures, or appropriate mitigation, must be available. The treatment plan established for the resources shall be in accordance with CEQA Guidelines Section 15064.5(f) for historical resources and archaeological resources.

CUL-3: **Public Resources Code Sections 21083.2(b) for unique archaeological resources.** Preservation in place (i.e., avoidance) is the preferred manner of treatment. If preservation in place is not feasible, treatment may include implementation of archaeological data recovery excavations to remove the resource along with subsequent laboratory processing and analysis. Any historic archaeological material that is not Native American in origin shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, they shall be offered to a local school or historical society in the area for educational purposes.

CUL-4: **Resource Assessment & Continuation of Work Protocol:** Upon discovery, the tribal and/or archaeological monitor/consultant/consultant will immediately divert work at minimum of 150 feet and place an exclusion zone around the burial. The monitor/consultant(s) will then notify the Tribe, the qualified lead archaeologist, and the construction manager who will call the coroner. Work will continue to be diverted while the coroner determines whether the remains are Native American. The discovery is to be kept confidential and secure to prevent any further disturbance. If the finds are determined to be Native American, the coroner will notify the NAHC as mandated by state law who will then appoint a Most Likely Descendent (MLD).

c) **Less than Significant with Mitigation Incorporated.** No known human remains are anticipated to be located on or beneath the Project site. However, in the unlikely event that human remains are uncovered the contractor is required to halt work in the immediate area of the find and to notify the County Coroner, in accordance with Health and Safety Code § 7050.5, who must then determine whether the remains are of forensic interest. If the Coroner, with the aid of a supervising archaeologist, determines that the remains are or appear to be of a Native American, he/she must contact the Native American Heritage Commission for further investigations and proper recovery of such remains, if necessary. The Gabrieleño Band of Mission Indians-Kizh Nation requested inclusion of Mitigation Measures Mitigation Measures CUL-5 through CUL-8, which have been incorporated to ensure that buried archaeological resources are properly treated. With implementation of Mitigation Measures CUL-5 through CUL-8, impacts to buried human remains will be less than significant.

Mitigation Measures

CUL-5: **Unanticipated Discovery of Human Remains and Associated Funerary Objects:** Native American human remains are defined in PRC 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness. Funerary objects, called associated grave goods in PRC 5097.98, are also to be treated according to this statute. Health and Safety Code 7050.5 dictates that any discoveries of human skeletal material shall be immediately reported to the County Coroner and excavation halted until the coroner has determined the nature of the remains. 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) and PRC 5097.98 shall be followed.

CUL-6: **Kizh-Gabrieleno Procedures for burials and funerary remains:** If the Gabrieleno Band of Mission Indians-Kizh Nation is designated MLD, the following treatment measures shall be implemented. To the Tribe, the term “human remains” encompasses more than human bones. In ancient as well as historic times, Tribal Traditions included, but were not limited to, the burial of funerary objects with the deceased, and the ceremonial burning of human remains. These remains are to be treated in the same manner as bone fragments that remain intact. Associated funerary objects are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later; other items made exclusively for burial purposes or to contain human remains can also be considered as associated funerary objects.

CUL-7: **Treatment Measures:** Prior to the continuation of ground disturbing activities, the land owner shall arrange a designated site location within the footprint of the project for the respectful reburial of the human remains and/or ceremonial objects. In the case where discovered human remains cannot be fully documented and recovered on the same day, the remains will be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of steel plate is not available, a 24-hour guard should be posted outside of working hours. The Tribe will make every effort to recommend diverting the project and keeping the remains in situ and protected. If the project cannot be diverted, it may be determined that burials will be removed. The Tribe will work closely with the qualified archaeologist to ensure that the excavation is treated carefully, ethically and respectfully. If data recovery is approved by the Tribe, documentation shall be taken which includes at a minimum detailed descriptive notes and sketches. Additional types of documentation shall be approved by the Tribe for data recovery purposes. Cremations will either be removed in bulk or by means as necessary to ensure completely recovery of all material. If the discovery of human remains includes four or more burials, the location is considered a cemetery and a separate treatment plan shall be created. Once complete, a final report of all activities is to be submitted to the Tribe and the NAHC. The Tribe does NOT authorize any scientific study or the utilization of any invasive diagnostics on human remains. Each occurrence of human remains and associated funerary objects will be stored using opaque cloth bags. All human remains, funerary objects, sacred objects and objects of cultural patrimony will be removed to a secure container on site if possible. These items should be retained and reburied within six months of recovery. The site of reburial/repatriation shall be on the project site but at a location agreed upon between the Tribe and the landowner at a site to be protected in perpetuity. There shall be no publicity regarding any cultural materials recovered.

CUL-8: **Professional Standards:** Archaeological and Native American monitoring and excavation during construction projects will be consistent with current professional standards. All feasible care to avoid any unnecessary disturbance, physical modification, or separation of human remains and associated funerary objects shall be taken. Principal personnel must meet the Secretary of Interior standards for archaeology and have a minimum of 10 years of experience as a principal investigator working with Native American archaeological sites in southern California. The Qualified Archaeologist shall ensure that all other personnel are appropriately trained and qualified.

4.6 – Energy

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☑	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☑	☐

An *Energy and Greenhouse Gas Impact Analysis Report* was prepared by MIG, dated September 24, 2021, which evaluates and documents the potential greenhouse gas (GHG) and energy impacts associated with the construction and operation of the proposed Project. The information provided herein is largely taken from this report (See Appendix B). As discussed in the report, implementation of the proposed Project would result in the consumption of electricity, natural gas, and petroleum fuels during construction and operation of the multifamily residential development. A summary of the methodologies used to estimate the proposed Project's energy consumption is shown in Table 13 (Summary of Energy Quantification Methodologies). An analysis of potential energy impacts related to the proposed Project is provided in the following sections.

Table 13
Summary of Energy Quantification Methodologies

Consumption Source	Methodology	Key Data Inputs
Heavy-Duty Off-Road Construction Equipment	CalEEMod and Carl Moyer Program Emission Factors	Size of Project Site, Size and Type of Proposed Structure
Off-site Vehicle Trips During Construction	CalEEMod and EMFAC2017	Vehicle Classification, Fuel Type, Number of Trips, and Trip Distance
Operational Electricity and Natural Gas	CalEEMod	Size and Type of Proposed Structure, Climate Zone, and Energy Efficiency
Operational Mobile Sources	CalEEMod and EMFAC2017	Vehicle Classification, Fuel Type, Number of Trips, and Trip Distance

Construction Energy Use

Implementation of the proposed Project would increase the demand for petroleum-based fuel during construction. Both on- and off-site equipment would be powered by gasoline and/or diesel fuels. Heavy-duty, off-road construction equipment (e.g., bulldozers, loaders, etc.) would consume diesel fuel during construction of the proposed Project. The Project's on-site diesel fuel consumption was estimated using the type, quantity, and runtime of equipment generated by CalEEMod and multiplying through by a fuel consumption factor contained in the CARB *Carl Moyer Program Guidelines (2017 Revisions)* (CARB, 2017b; Table D-21). Please refer to Appendix B, Sheet 2 of the Project *Energy and Greenhouse Gas Impact Analysis Report* for a breakdown of fuel consumption by phase and equipment type. Gasoline and diesel fuel would be consumed by construction workers commuting to and from the Project site, as well as vendor deliveries and haul trucks used to remove demolition debris from the site. Petroleum consumption from these trip types were estimated by deriving an average fuel consumption rate for various vehicle types in CARB EMission FACtor (EMFAC) Model 2017 (v1.0.3) vehicle classifications operating in the South Coast sub-area of Los Angeles County (for year 2021) and multiplying them number of trips accounted for in CalEEMod. Worker trips were assumed to be a mix of light duty autos (LDA) and light-duty trucks (LDT1 and LDT2). Vendor trips were assumed to be a mix of medium heavy-duty trucks (MHDT) and HHDT, and haul trips were assumed to be HHDT. Please see Appendix B, Sheet 3 *Energy and Greenhouse Gas Impact Analysis Report* for a breakdown of fuel consumption information by trip type.

Operational Energy Use

Electricity and natural gas emissions from Project operation were estimated using CalEEMod, V. 2016.3.2. The consumption estimates are based on default model assumptions based on the residential building square footage (66,369 square feet),[ix] non-residential building square footage (35,411 square feet), climate (Zone 9), and building systems energy efficiency requirements, as modified to account for the following project-specific characteristics:

- Since CalEEMod default values are based on the energy efficiency standards contained in the 2016 CALGreen Code, the:
    - Default Title 24 electricity consumption intensity was adjusted downwards by a factor of 0.47 for residential land uses to reflect increased efficiency in the 2019 CALGreen Code (CEC, 2018).
    - Default energy efficiency value for light energy intensity was adjusted downwards by a factor of 0.7 for non-residential land uses to reflect increased lighting efficiency in the 2019 CALGreen Code (CEC, 2018).

The modeling did not include the photovoltaic (PV) system that would be installed on the building's roof nor did it include the energy efficient appliances and building systems (e.g., tankless water heaters) the building would feature and therefore, is considered a conservative estimate of energy source emissions (i.e., likely to overestimate). Mobile source consumption estimates were generated using consumption factors derived from CARB's EMFAC Model 2017 (v1.0.3) and annual vehicle miles traveled (VMT) as estimated in CalEEMod, which reflect the weekday trip generation for the site (i.e., 326 trips per weekday) as detailed in the Traffic Impact Study prepared for the Project by Linscott, Law & Greenspan (Linscott, Law & Greenspan 2020).[x] Estimates of petroleum consumption were then generated by multiplying the annual VMT estimate by a weighted fuel consumption factor for LDA, LDT1, and LDT2 from EFMAC2017 for the South Coast sub-area of Los Angeles County.

The proposed Project's trip generation rates are shown in Table 14 (Project Trip Generation), below.

[ix] This value includes the approximately 2,500 square foot community center that would be part of Building 6.

[x] As the latest version of the model, EMFAC2017 represents CARB's current understanding of motor vehicle travel activities and their associated emission levels. Though not approved yet by the U.S. EPA, it has been used in this analysis since, since it reflects the most updated information available from CARB.

Table 14
Project Trip Generation

Land Use	Size	Daily Trip Ends Volumes(A)	AM Peak Hour Volumes(A)			PM Peak Hour Volumes(A)		
			In	**Out**	**Total**	**In**	**Out**	**Total**
Apartment(B)	49 DU	266	5	13	18	13	9	22
Live/Work(B)	11 DU	60	1	2	4	3	2	5
	Total	**326**	**6**	**16**	**22**	**16**	**11**	**27**

Source: ITE "Trip Generation Manual", 10th Edition, 2017.
(A) Trips are one-way traffic movements, entering or leaving.
(B) ITE Land Use Code 221 (Multifamily Housing [Mid-Rise]) trip generation average rates.
- Daily Trip Rate: 5.44 trips/dwelling unit; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 0.36 trips/dwelling unit; 26%inbound/74% outbound
- PM Peak Hour Trip Rate: 0.44 trips/dwelling unit; 61% inbound/39% outbound

a) **Less than Significant Impact.** As discussed above, implementation of the Project would increase the demand for energy at the Project site during construction and operation. However, the proposed multifamily residential buildings would be designed to increase energy efficiency, and the energy consumption associated with development activities would be necessary. As described in detail below, the proposed Project would not use energy in a wasteful, inefficiency, or unnecessary manner.

Construction Energy Consumption

Electricity
Temporary electric power would be required for lighting and electronic equipment (e.g., computers) located in trailers used by the construction crew. However, the electricity used for such activities would be temporary and would have a negligible contribution to the Project's overall energy consumption. Impacts will be less than significant.

Natural Gas
Natural gas consumption is not anticipated during construction of the Project. Fuels used for construction would generally consist of diesel and gasoline, which are discussed in the next subsection. Any amount of natural gas that may be consumed during Project construction would be nominal and would have a negligible contribution to the Project's overall energy consumption. Impacts will be less than significant.

Diesel and Gasoline Fuel
Diesel and gasoline fuels, also referred to as petroleum in this subsection, would be consumed throughout construction of the Project. Fuel consumed by construction equipment would be the primary energy resource consumed over the course of construction, and VMT associated with the transportation of construction materials (e.g., deliveries to the site and off haul of soil) and worker trips to and from the site would also result in petroleum consumption. Whereas on-site, heavy-duty construction equipment and delivery trucks would predominantly use diesel fuel, construction workers would generally rely on gasoline-powered vehicles to commute to and from the Project site. The operation of heavy-duty, off-road equipment associated with Project construction would consume approximately 15,469 gallons of diesel fuel. Worker, vendor, and hauling trips associated with Project construction are estimated to consume approximately 11,174 and 7,160 gallons of gasoline and diesel fuel, respectively. In total, Project construction is estimated to require approximately 11,174 gallons of gasoline and 22,629 gallons of diesel (totals may not equal due to rounding).

On- and off-road petroleum-powered vehicles/equipment would be subject to various rules and regulations at the federal and state levels. On the federal level, on-road vehicles would be subject to the SAFE Vehicles Rule. On the state level, off-road equipment at the site would also be required to comply with CARB's Airborne Toxic Control Measures, which restricts heavy-duty diesel vehicle idling to five minutes. In addition, the efficiency of petroleum use is related to numerous other state-wide regulations and programs, such as the LCFS (on- and off-road vehicles/equipment) and ACC Program (on-road vehicles). On the local level (i.e., immediate Project-level) Mitigation Measure AIR-1, contained in the *Air Quality and Construction Health Risk Assessment Report* prepared for the proposed Project, would require the use of late engine model years (i.e., equipment meeting U.S. EPA and CARB Tier IV Final Emission Standards) and use of electric-powered and liquefied or compressed natural gas equipment in lieu of diesel-powered equipment (e.g., generators) to the maximum extent feasible. Since petroleum use during construction would be temporary and is a necessary component when conducting development activities, it would not be wasteful or inefficient. Impacts will be less than significant.

Operational Energy Consumption

Electricity

During operation of the new multifamily residential land use, the Project would consume electricity from appliance operation, general building systems (e.g., lighting, HVAC equipment), and outdoor lighting. Based on estimates generated by CalEEMod, the proposed Project would consume approximately 459,266 kWh per year of electricity. The proposed Project would be required to comply with the standards contained in the CalGreen Code (i.e., Part 11 of the Title 24 Building Code) that requires the installation of a PV system and other efficient electricity building features. The proposed Project site plan calls for the proposed buildings to be oriented in a north-south direction to best capture solar energy and natural lighting for energy conservation, and would include rooftop solar PV and solar thermal electricity and hot water heating systems. In addition, each individual apartment unit would be equipped with energy-saving and space-saving devices such as the tankless water closets, tankless water heaters and air condenser units for heating and cooling interior spaces. These Project design features would help reduce electricity consumption associated with operation of the proposed Project.

The proposed Project would also indirectly benefit from other, regulatory actions taken at the state level. For example, SB 100 requires 60% of the power purchased by California come from renewable sources by 2030. SB 100 further requires all retail electricity be carbon-free by 2045. Based on these state-wide mandates, electricity consumed at the site will become more and more green (e.g., not requiring the burning of fossil fuels), which will lead to the more efficient use of energy resources. Although electricity would increase at the site under implementation of the Project, the proposed facility would be designed to the 2019 Title 24 Building Code standards, and include other green building features (e.g., a more efficient water heating system) that go beyond the requirements of the CalGreen Code. For these reasons, the electricity consumed by the Project is not considered to be inefficient or wasteful. Impacts will be less than significant.

Natural Gas

Natural gas consumption would be required during operation of the Project for various purposes, such as hot water and building HVAC. Based on estimates generated by CalEEMod, the proposed project would consume approximately 849,020 kBtu per year of natural gas. Although natural gas consumption would increase at the site under implementation of the Project, the building envelope, HVAC, lighting, and other systems, would be more efficient than the structure at the site currently. In addition, the Project would be subject to statewide mandatory energy requirements outlined in the 2019 Title 24 Building Code, as discussed above under "Electricity". For these reasons, the natural gas that would be consumed by the Project is not considered to be inefficient or wasteful. Impacts will be less than significant.

<u>Gasoline, Diesel, and Natural Gas Fuels</u>
Gasoline and diesel would be consumed during operation of the proposed Project. Both forms of petroleum fuel would be consumed from future residents traveling to and from the site. As estimated in CalEEMod, the proposed Project is anticipated to generate approximately 1,154,021 VMT on an annual basis. Based on the average fuel economy for LDA, LDT1, and LDT2 vehicle classifications, vehicle trips associated with the proposed Project would consume approximately 41,649 and 193 gallons of gasoline and diesel, respectively, on an annual basis.

There are numerous regulations in place that require and encourage fuel efficiency. For example, CARB has adopted an approach to passenger vehicles by combining the control of smog-causing pollutants and GHG emissions into a single, coordinated package of standards. The approach also includes efforts to support and accelerate the number of plug-in hybrids and ZEVs in California. In addition, per the requirements identified in SB 375, CARB adopted a regional goal for the SCAG region of reducing per-capita GHG emissions from 2005 levels by 8% by 2020 and 19% by 2035 for light-duty passenger vehicles. Accordingly, operation of the Project is expected to decrease the amount of petroleum it consumes in the future due to advances in fuel economy.

Although the Project would increase petroleum use in the region during construction and operation, the use would be a small fraction of the statewide use, and would have its overall fuel consumption decrease over time. As such, petroleum consumption associated with the Project would not be considered inefficient or wasteful. Impacts will be less than significant.

b) **Less than Significant Impact.** The proposed Project would not conflict with nor obstruct a state or local plan adopted for the purposes of increasing the amount of renewable energy or energy efficiency. As discussed above, the Project would be subject to the California Title 24 Building Code energy efficiency standards for residential and non-residential buildings and feature many green building features (e.g., north-south orientation of buildings, tankless water heaters, PV system, etc.) to help reduce energy consumption. Equipment and vehicles associated with construction and operation of the Project would also be subject to fuel standards at the state and federal level. The Project would support the goals and policies contained in the City of Covina Energy Action Plan (EAP), such as Goal 3, Maximize the efficiency of all new buildings, because it would maximize the energy efficient design (e.g., north-south arrangement of the Project; Policy 3.1) and include energy-efficient appliances and equipment (Policy 3.2). The Project would not conflict with nor obstruct a state or local plan for renewable energy or energy efficiency. Impacts will be less than significant.

4.7 – Geology and Soils

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☑	☐
ii) Strong seismic ground shaking?	☐	☐	☑	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☑	☐
iv) Landslides?	☐	☐	☐	☑
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☑	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☑	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1997), creating substantial direct or indirect risks to life or property?	☐	☐	☑	☐

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☑
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☑	☐	☐

A Preliminary Geotechnical Interpretive Report dated August 26, 2019 was prepared for the proposed Project by Earth Strata Geotechnical Services, and is included as Appendix C. Sub-surface exploratory boring was performed on August 22, 2019 and September 21, 2019. Eight borings were performed, up to 51 feet in depth, including at four perimeter points for the proposed building, two at the north end and one at the southeast corner of the property.

a.i) **Less than Significant Impact.** Although the Project site is located in seismically active Southern California, the site is not located within an Alquist-Priolo Earthquake Fault Zone.[8] No active faults have been identified at the ground surface on the Project site. Impacts would be less than significant.

a.ii) **Less than Significant Impact.** The Project site is located in an area of high regional seismicity. The Sierra Madre fault, approximately 4 miles to the north, is the closest known active fault to the Project site. Ground shaking originating from earthquakes along other active faults in the region is expected to induce lower horizontal accelerations due to smaller anticipated earthquakes and/or greater distances to other faults. The Project is subject to the seismic design criteria of the California Building Code (CBC). The 2016 California Building Code (California Building Code, California Code of Regulations, Title 24, Volume 2) contains seismic safety provisions with the aim of preventing building collapse during a design earthquake, so that occupants would be able to evacuate after the earthquake. A design earthquake is one with a two percent chance of exceedance in 50 years, or an average return period of 2,475 years. Adherence to these requirements will reduce the potential of the proposed buildings from collapsing during an earthquake, thereby minimizing injury and loss of life. Although structures may be damaged during earthquakes, adherence to seismic design requirements will minimize damage to property within the structures because the structure is designed not to collapse. The CBC is intended to provide minimum requirements to prevent major structural failure and loss of life. Adherence to existing regulations will reduce the risk of loss, injury, and death; impacts due to strong ground shaking would be less than significant with construction of the proposed Project.

a.iii) **Less than Significant Impact.** Liquefaction generally occurs as a “quicksand” type of ground failure caused by strong ground shaking. The primary factors influencing liquefaction potential include groundwater, soil type, relative density of the sandy soils, confining pressure, and the intensity and duration of ground shaking. The California Geological Survey (CGS) has not yet conducted seismic hazard mapping in the area of the Project site. According to the Preliminary Geotechnical Interpretive Report prepared for the proposed Project, soils found on-site are susceptible to liquefaction. Much of the site was found to be of an Artificial Fill, Undocumented (Afu) soil within the first three (3’-0”) feet of depth exploration. Quaternary Young Alluvial Fan deposits (Qyf) are encountered from 3 feet below surface to the full depth of the exploration. To mitigate the loose soils, remedial removals of 14 to 16 feet below the existing grade were recommended to diminish the potential hydro-consolidation, and for slope stability. The removals will extend a minimum of 5 feet outside the building footprints. Potential shoring and/or a geo-grid system are recommended for the protection of public utilities/infrastructure.

Rough earthwork calculations for the site anticipate a raw cut of 8,222 cubic yards and 690 cubic yards of fill to rough grade and properly drain the site. Raw export is calculated at 7,532 cubic yards. The proposed structures will be supported by compacted fill and competent alluvium, with groundwater at a depth of approximately 290 feet. As such, the potential for earthquake induced liquefaction and lateral spreading beneath the proposed structures is considered very low to remote due to the recommended compacted fill, relatively low groundwater level, and the dense nature of the deeper onsite earth materials. Based on the results of the Preliminary Geotechnical Interpretive Report and the conditions encountered at the site, adverse impacts due to the risk of liquefaction are less than significant.

a.iv) **No Impact.** Landslides are mass movements of the ground that include rock falls, relatively shallow slumping and sliding of soil, and deeper rotational or transitional movement of soil or rock. As discussed, in the Preliminary Geotechnical Interpretive Report landslide debris was not observed during subsurface exploration and no ancient landslides are known to exist on the site. No landslides are known to exist, or have been mapped, in the vicinity of the site. Geologic mapping of the site conducted during our investigation, and review of aerial imagery of the site, reveal no geomorphic expressions indicative of landsliding. No oversteepened slopes exist on the site or are proposed. Therefore, there would be no impact from landslides on the Project and no mitigation is required.

b) **Less than Significant Impact.** Topsoil is used to cover surface areas for the establishment and maintenance of vegetation due to its high concentrations of organic matter and microorganisms. Little native topsoil is likely to occur on the site because of previous development activities. Construction of the proposed Project would have the potential to expose surficial soils to wind and water erosion during construction activities. Wind erosion would be minimized through soil stabilization measures required by South Coast Air Quality Management District (SCAQMD) Rule 403 (Fugitive Dust), such as daily watering. Water erosion would also be prevented through the City's standard erosion control practices (Municipal Code Section 8.50) required pursuant to the California Building Code and the National Pollution Discharge Elimination System (NPDES), such as silt fencing or berms. Following Project construction, the site would be covered completely by paving, the residential buildings, and landscaping. Impacts related to soil erosion would be less than significant with implementation of existing regulations.

c) **Less than Significant Impact.** Impacts related to liquefaction and landslides are discussed above in Sections 4.7.a. Lateral spreading is the downslope movement of surface sediment due to liquefaction in a subsurface layer. The downslope movement is due to gravity and earthquake shaking combined. Such movement can occur on slope gradients of as little as one degree. Lateral spreading typically damages pipelines, utilities, bridges, and structures. Lateral spreading of the ground surface during a seismic activity usually occurs along the weak shear zones within a liquefiable soil layer and has been observed to generally take place toward a free face (i.e., retaining wall, slope, or channel) and to lesser extent on ground surfaces with a very gentle slope. According to the Preliminary Geotechnical Interpretive Report, the proposed structures will be supported by compacted fill and competent alluvium, with groundwater at a depth of approximately 290 feet. As such, the potential for earthquake induced lateral spreading beneath the proposed structures is considered very low to remote due to the recommended compacted fill, relatively low groundwater level, and the dense nature of the deeper onsite earth materials. The Project site is not identified as being located on a geologic unit or soil that has been identified as being unstable or having the potential to result on-site or off-site landslide, lateral spreading, subsidence, liquefaction or collapse. The Project site is relatively flat and consists of non-native alluvial soils. The Project is required to be constructed in accordance with the CBC. Compliance with existing CBC regulations would limit hazard impacts arising from unstable soils to less than significant levels. Therefore, the Project would not likely result in landslides, lateral spreading, subsidence, liquefaction or collapse and no mitigation is required.

d) **Less than Significant Impact.** According to the Preliminary Geotechnical Interpretive Report, preliminary laboratory test results indicate onsite earth materials exhibit an expansion potential of very low as classified in accordance with 2016 CBC Section 1803.5.3 and ASTM D4829. Additional, testing for expansive soil conditions will be conducted upon completion of rough grading. The Project would be required to be in conformance with the California Building Code, City regulations, and other applicable standards. Conformance with standard engineering practices and adherence to design criteria would reduce impacts related to expansive soil potential to a less than significant level.

e) **No Impact.** The Project proposes to connect to the existing municipal sewer system. The Project would connect to this system and would not require use of septic tanks. No impact would occur.

f) **Less than Significant with Mitigation Incorporated.** Given the urbanized nature of the Project vicinity, previously recorded paleontological resources are not anticipated to be uncovered during Project construction activities. However, in the event that previously undiscovered paleontological resources are discovered during ground-disturbing activities, Mitigation Measures GEO-1 through GEO-4 have been incorporated to ensure that paleontological resources are properly treated. With implementation of Mitigation Measures GEO-1 through GEO-4, impacts to paleontological resources will be less than significant.

Mitigation Measures

GEO-1: **Conduct Paleontological Sensitivity Training for Construction Personnel.** The Applicant shall retain a professional paleontologist, who meets the qualifications set forth by the Society of Vertebrate Paleontology, shall conduct a Paleontological Sensitivity Training for construction personnel prior to commencement of excavation activities. The training will include a handout and will focus on how to identify paleontological resources that may be encountered during earthmoving activities, and the procedures to be followed in such an event; the duties of paleontological monitors; notification and other procedures to follow upon discovery of resources; and, the general steps a qualified professional paleontologist would follow in conducting a salvage investigation if one is necessary.

GEO-2: **Conduct Periodic Paleontological Spot Checks During Grading and Earth-Moving Activities.** The Applicant shall retain a professional paleontologist, who meets the qualifications set forth by the Society of Vertebrate Paleontology, shall conduct periodic Paleontological Spot Checks beginning at depths below six (6) feet to determine if construction excavations have extended into older Quaternary deposits. After the initial Paleontological Spot Check, further periodic checks will be conducted at the discretion of the qualified paleontologist. If the qualified paleontologist determines that construction excavations have extended into the older Quaternary deposits, construction monitoring for Paleontological Resources will be required. The Applicant shall retain a qualified paleontological monitor, who will work under the guidance and direction of a professional paleontologist, who meets the qualifications set forth by the Society of Vertebrate Paleontology. The paleontological monitor shall be present during all construction excavations (e.g., grading, trenching, or clearing/grubbing) into the older Pleistocene alluvial deposits. Multiple earth-moving construction activities may require multiple paleontological monitors. The frequency of monitoring shall be based on the rate of excavation and grading activities, proximity to known paleontological resources and/or unique geological features, the materials being excavated (native versus artificial fill soils), and the depth of excavation, and if found, the abundance and type of paleontological resources and/or unique geological features encountered. Full-time monitoring can be reduced to part-time inspections if determined adequate by the qualified professional paleontologist.

GEO-3: Cease Ground-Disturbing Activities and Implement Treatment Plan if Paleontological Resources Are Encountered. In the event that paleontological resources and or unique geological features are unearthed during ground-disturbing activities, ground-disturbing activities shall be halted or diverted away from the vicinity of the find so that the find can be evaluated. A buffer area of at least 50 feet shall be established around the find where construction activities shall not be allowed to continue until appropriate paleontological treatment plan has been approved by the Applicant and the City. Work shall be allowed to continue outside of the buffer area. The Applicant and City shall coordinate with a professional paleontologist, who meets the qualifications set forth by the Society of Vertebrate Paleontology, to develop an appropriate treatment plan for the resources. Treatment may include implementation of paleontological salvage excavations to remove the resource along with subsequent laboratory processing and analysis or preservation in place. At the paleontologist's discretion and to reduce construction delay, the grading and excavation contractor shall assist in removing rock samples for initial processing.

GEO-4: Prepare Report Upon Completion of Monitoring Services. Upon completion of the above activities, the professional paleontologist shall prepare a report summarizing the results of the monitoring and salvaging efforts, the methodology used in these efforts, as well as a description of the fossils collected and their significance. The report shall be submitted to the Applicant, the City, the Natural History Museums of Los Angeles County, and representatives of other appropriate or concerned agencies to signify the satisfactory completion of the Project and required mitigation measures.

4.8 – Greenhouse Gas Emissions

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☑	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☑	☐

An *Energy and Greenhouse Gas Impact Analysis Report* was prepared by MIG, dated September 24, 2021, which evaluates and documents the potential greenhouse gas (GHG) and energy impacts associated with the construction and operation of the proposed Project. The information provided herein is largely taken from this report (See Appendix B).

a) **Less than Significant Impact.** Climate change is the distinct change in measures of climate for a long period of time.[9] Climate change is the result of numerous, cumulative sources of greenhouse gas emissions all over the world. Natural changes in climate can be caused by indirect processes such as changes in the Earth's orbit around the Sun or direct changes within the climate system itself (e.g., changes in ocean circulation). Human activities can affect the atmosphere through emissions of greenhouse gases (GHG) and changes to the planet's surface. Human activities that produce GHGs are the burning of fossil fuels (coal, oil and natural gas for heating and electricity, gasoline and diesel for transportation); methane from landfill wastes and raising livestock, deforestation activities; and some agricultural practices.

Greenhouse gases differ from other emissions in that they contribute to the "greenhouse effect." The greenhouse effect is a natural occurrence that helps regulate the temperature of the planet. The majority of radiation from the Sun hits the Earth's surface and warms it. The surface in turn radiates heat back towards the atmosphere, known as infrared radiation. Gases and clouds in the atmosphere trap and prevent some of this heat from escaping back into space and re-radiate it in all directions. This process is essential to supporting life on Earth because it warms the planet by approximately 60° Fahrenheit. Emissions from human activities since the beginning of the industrial revolution (approximately 250 years ago) are adding to the natural greenhouse effect by increasing the gases in the atmosphere that trap heat, thereby contributing to an average increase in the Earth's temperature. Greenhouse gases occur naturally and from human activities.

Greenhouse gases produced by human activities include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Since 1750, it is estimated that the concentrations of carbon dioxide, methane, and nitrous oxide in the atmosphere have increased over 36 percent, 148 percent, and 18 percent, respectively, primarily due to human activity. Emissions of greenhouse gases affect the atmosphere directly by changing its chemical composition while changes to the land surface indirectly affect the atmosphere by changing the way the Earth absorbs gases from the atmosphere.

Thresholds of Significance

In order to provide guidance to local lead agencies on determining the significance of GHG emissions in their CEQA documents, the SCAQMD convened the first GHG Significance Threshold Working Group (Working Group) meeting on April 30, 2008. To date, the Working Group has convened a total of 15 times, with the last meeting taking place on September 28, 2010. Based on the last Working Group meeting, the SCAQMD identified an interim, tiered approach for evaluating GHG emissions intent on capturing 90 percent of development projects where the SCAQMD is not the lead agency. The following describes the basic structure of the SCAQMD's tiered, interim GHG significance thresholds:

- Tier 1 consists of evaluating whether or not the project qualifies for applicable CEQA exemptions.
- Tier 2 consists of determining whether or not a project is consistent with a greenhouse gas reduction plan. If a project is consistent with a greenhouse gas reduction plan, it would not have a significant impact.
- Tier 3 consists of using screening values at the discretion of the Lead Agency; however, the Lead Agency should be consistent for all projects within its jurisdiction. The following thresholds were proposed for consideration:
    - 3,000 $MTCO_2e$ per year for all land use types; or
    - 3,500 $MTCO_2e$ per year for residential; 1,400 $MTCO_2e$ per year for commercial; 3,000 $MTCO_2e$ per year for mixed use projects.
- Tier 4 has three options for projects that exceed the screening values identified in Tier 3:
    - Option 1: Reduce emissions from business-as-usual by a certain percentage (currently undefined); or
    - Option 2: Early implementation of applicable AB 32 Scoping Measures; or
    - Option 3: For plan-level analyses, analyze a project's emissions against an efficiency value of 6.6 $MTCO_2e$/year/service population by 2020 and 4.1 $MTCO_2e$/year/service population by 2035. For project-level analyses, analyze a project's emissions against an efficiency value of 4.8 and 3.0 $MTCO_2e$/year/service population for the 2020 and 2035 calendar years, respectively.

The SCAQMD's interim Tier 3 3,000 $MTCO_2e$ per year for all land use types was intended to address GHG emissions through the Year 2020, consistent with AB 32 GHG emissions reduction goals at the state level. Since the proposed Project would become operational as early as 2022 (i.e., two years after 2020), the 3,000 $MTCO_2e$ per year interim threshold is not directly applicable to the proposed Project. As such, in addition to the 3,000 $MTCO_2e$ per year interim threshold, this analysis also uses a Project-specific GHG emissions goal of 1,800 $MTCO_2e$ per year, which demonstrates progress towards the state's next GHG emission reduction goal in 2030 (i.e., 40 percent below 1990 levels by 2030).[xi]

[xi] The 1,800 $MTCO_2e$ per year goal was developed by taking the SCAQMD's Tier 3 threshold of 3,000 $MTCO_2e$ per year, which was the threshold to reduce emissions back to 1990 levels, and reducing it by 40 percent (3,000 $MTCO_2e$/yr * (1 - 0.4) = 1,800 $MTCO_2e$/yr). This reduction is consistent with the GHG reductions required under SB 32. This linear reduction approach oversimplifies the threshold development process. The City is not adopting nor proposing to use 1,800 MTCO2e as a CEQA GHG threshold for general use; rather, it is only intended for to provide additional context and information on the magnitude of the proposed Project's GHG emissions.

The construction and operation of the proposed Project would generate GHG emissions. This section describes the Project's emissions sources and the methodologies used to estimate potential Project emissions levels. A summary of the methodologies used to estimate the proposed Project's potential GHG emissions levels is shown Table 15 (Summary of Emissions Quantification Methodologies).

Table 15
Summary of Emissions Quantification Methodologies

Emissions Source	Methodology	Key Data Inputs
Construction Activities	CalEEMod	Size of Project Lot, Size of Building to be Demolished, Quantity of Cut to be Exported
Area, Energy, Water and Wastewater, and Solid Waste Sources	CalEEMod	Size and Type of Proposed Structure, Climate Zone, and Energy Efficiency
Mobile Sources	CalEEMod	Number of Trips and Trip Distance

Short-Term Emissions

Construction of the proposed Project would generate equipment exhaust and dust emissions from demolition activities, ground disturbing activities such as site preparation and grading, and the use of gasoline- and diesel-fuel combustion in on- and off-site heavy duty construction equipment, worker vehicle trips, vendor vehicle trips, and haul truck trips, ground disturbing activities. The proposed Project's potential construction emissions were modeled using CalEEMod, Version 2016.3.2. The Project's construction activities, duration, and typical equipment used during construction are shown in the previous Table 1. The construction phases, duration, and the type and amount of equipment used during construction was generated using CalEEMod default assumptions, and modified to reflect the following Project-specific characteristics:

- **Construction Phase** durations were altered as follows:
  - **Demolition Phase** was reduced from 20 days (default) to 5 days to reflect the limited nature of demolition activities (i.e., one single-family house);
  - **Grading Phase** was extended from 6 days (default) to 15 days to account for additional time that may be required to excavate for the subterranean parking garage;
- **Construction Equipment** was adjusted to reflect the quantity and daily runtime associated with equipment operation during development activities;
- **Demolition** of approximately 2,647 square feet of existing building space and associated debris hauling activities was added; and
- **Off-haul** of approximately 7,532 cubic yards of soil during the grading phase to account for spoils that would be generated while excavating for the subterranean parking garage was added.

Long-Term Emissions

Once operational, the proposed Project would generate GHG emissions from the following sources:

- **Small "area" sources** including landscaping equipment and the use of consumer products such as paints, cleaners, and fertilizers that result in the evaporation of chemicals to the atmosphere during product use.
- **Energy use** in the form of natural gas combustion for building water and space heating needs.

- **Mobile sources** including resident trips to and from the site.
- **Water and wastewater sources** include the imbedded electricity consumption required to supply water to the Project site and treat wastewater produced by individuals working or visiting the site.
- **Solid Waste** including the transport of and disposal of waste generated at the Project site.

Area, energy, mobile, water and wastewater, and waste source emissions were modeled using CalEEMod, V. 2016.3.2. The emissions estimates are based on default model assumptions with, the following modifications made to reflect Project-specific characteristics:

- **Area Sources:** Woodstoves and fireplaces were removed pursuant to SCAQMD Rule 445. The quantity of wood-burning fireplaces assumed by CalEEMod were added to natural-gas powered fireplaces.
- **Energy Use and Consumption:** Since CalEEMod default values are based on the energy efficiency standards contained in the 2016 CALGreen Code, the:
  - Default Title 24 electricity consumption intensity was adjusted downwards by a factor of 0.47 for residential land uses to reflect increased efficiency in the 2019 CALGreen Code.
  - Default energy efficiency value for light energy intensity was adjusted downwards by a factor of 0.7 for non-residential land uses to reflect increased lighting efficiency in the 2019 CALGreen Code.
- **GHG Electricity Intensity Values.** The SCE GHG intensity value for CO_2 emissions was reduced based on an increase in renewable energy mix from 20% under Year 2012 conditions (the CalEEMod default data year) to approximately 39% under anticipated conditions in 2022 (based on SCE's RPS in 2017 and future RPS standards that will need to be met, such as SB 100). This adjustment reduced the estimated amount of CO_2 produced by the SCE energy mix from approximately 702 pounds/megawatt-hour (lbs/MWh) to 427 lbs/MWh.
  - Electricity generation emission factors for CH_4 (0.033 lbs/MWh) and N_20 (0.004 lbs/MWh) were obtained from the U.S. EPA's EGRID database for year 2016, the last year for which data was available at the time this EIR was prepared.
- **Mobile Sources:** The default, weekday trip generation rate for the proposed land use was updated to reflect the trip generation rate provided in the TIS prepared for the proposed Project by Linscott, Law & Greenspan (Linscott, Law & Greenspan 2020).

The modeling did not include: 1) the proposed solar PV system that would be installed, 2) the green building systems and appliances (e.g., tankless water heaters), 3) site design (e.g., building orientation), or 4) credit for GHG emissions that are generated by existing operations at the site, which would help reduce net energy consumption and associated GHG emissions. Therefore, this analysis is considered to have a conservative estimate of energy source emissions (i.e., likely to overestimate).

Greenhouse Gas Emissions Inventory

As previously stated, the proposed Project would generate GHG emissions from both short-term construction and long-term operational activities. However, as described in more detail below, the proposed Project would not generate short-term or long-term emissions that exceed the SCAQMD GHG interim threshold of 3,000 $MTCO_2e$ per year or the Project-specific goal of 1,8000 $MTCO_2e$ per year. Construction activities would generate GHG emissions primarily from equipment fuel combustion as well as worker, vendor, and haul trips to and from the Project site during demolition, site preparation, grading, building construction, paving, and architectural coating activities. Construction activities would cease to emit GHG upon completion, unlike operational emissions that would be continuous year after year until the Project is decommissioned. Accordingly, the SCAQMD recommends amortizing construction GHG emissions over a 30-year period and including with operational emissions estimates. This normalizes construction emissions so that they can be grouped with operational emissions and compared to appropriate thresholds, plans, etc. The proposed Project's total construction emissions, as estimated using CalEEMod V.2016.3.2, are shown in Table 16 (Project Construction GHG Emissions).

Table 16
Project Construction GHG Emissions

Source	Annual GHG Emissions (MT / Year)			
	CO_2	CH_4	N_2O	TOTAL $MTCO_2e$
2021	318.2	<0.0(A)	0.0	319.4
2022	0.4	<0.0(A)	0.0	0.4
Construction Total	318.6	<0.0(A)	0.0	319.8
Amortized GHG Estimate(B)	10.6	<0.0(A)	0.0	10.7

Source: MIG, 2021 (see Appendix A)
(A) <0.0 does not mean zero; rather is means less than 0.05, but greater than zero.
(B) Emissions are amortized over the life of the Project, which is presumed to be 30 years.

Once operational, the proposed Project would generate emissions of GHG from area, energy, mobile, water/wastewater, and solid waste sources. The proposed Project's operational GHG emissions are shown in Table 17 (Project Operational GHG Emissions).

Table 17
Project Operational GHG Emissions

Emission Source	GHG Emissions (MT / Year)			
	CO_2	CH_4	N_2O	CO_2e
Area	15.4	<0.0(A)	<0.0(A)	15.5
Energy	134.3	<0.0(A)	<0.0(A)	135.0
Mobile	489.4	<0.0(A)	0.0	490.0
Waste	6.1	0.4	0.0	15.0
Water	16.9	0.1	<0.0(A)	21.1
Amortized Construction	10.6	<0.0(A)	0.0	10.7
Total(B)	**672.7**	**0.5**	**<0.0(A)**	**687.4**
SCAQMD 2020 Interim Threshold				***3,000***
Project-specific 2030 GHG Emissions Goal				***1,800***
SCAQMD Interim Threshold or Project-specific Goal Exceeded?				***No***

Source: MIG 2021 (see Appendix A).
(A) <0.0 does not mean zero; rather is means less than 0.05, but greater than zero.
(B) Totals may not equal due to rounding.

As shown in Table 17, the proposed Project's potential increase in GHG emissions would be below the SCAQMD's 2020 interim threshold for all land uses of 3,000 $MTCO_2e$ per year, as well as the Project-specific goal of 1,800 $MTCO_2e$ that demonstrates progress toward the State's 2030 GHG emission reduction goals. Therefore, the proposed Project would not generate GHG emissions that have the potential to exceed SCAQMD thresholds. Impacts will be less than significant.

b) **Less than Significant Impact.** The proposed Project would not conflict with CARB's Scoping Plan or the regional RTP/SCS. The Project's consistency with these plans is described in more detail below.

CARB Scoping Plan

The *2017 Climate Change Scoping Plan* is CARB's primary document used to ensure State GHG reduction goals are met. The 2017 Climate Change Scoping Plan's primary objective is to identify the measures needed to achieve the 2030 reduction target established under Executive Order B-30-15 and SB 32. The major elements of the plan are generally geared toward actions either CARB or other state entities will pursue, such as, but not limited to:

- Implementation of the Post-2020 Cap and Trade Program
- Implementation of the LCFS, with an increased stringency (18 percent by 2030);
- Implementation of SB 350, which expands the RPS to 50 percent and doubles energy efficiency savings; and
- Implementing the proposed Short-Lived Climate Pollutant Strategy, which focuses on reducing CH_4 and hydrocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by the year 2030.

Many of the measures identified in the *2017 Scoping Plan Update* are not applicable at the proposed Project level, such as the Cap-and-Trade Program that applies to all large industrial GHG emitters (industrial sources emitting more than 25,000 MTCO2e/year), or the reduction in GHG emissions associated with electricity utility generators. Although most of these measures would be implemented at the State level, the GHG reductions achieved by these state measures would be realized at the local level. For example, regardless of actions taken by the City, emissions generated through gasoline combustion in motor vehicles within the City of Covina would produce less GHG in 2030 than they do now.

In addition to State measures, Appendix B to CARB's *2017 Scoping Plan Update* identifies potential actions that could be undertaken at a local level to support the State's climate goals. This appendix is organized into two categories Category A applies to code and broad planning documents and is not applicable to the proposed Project. Category B includes measures that could be considered for individual projects. The proposed Project is consistent with many of the suggested measures in Appendix B through required compliance with SCAQMD rules and the California Green Building Standards Code. The Project, therefore, would not conflict with the goals of the *2017 Scoping Plan Update*. Impacts would be less than significant.

Southern California Association of Governments RTP/SCS

As described in the Project *Energy and GHG Analysis Report*, the "Connect SoCal" program is the growth strategy and transportation plan whose primary intent is to demonstrate how the SCAG region will meet its GHG reduction target through the year 2045. Many of the measures included in the RTP/SCS are focused on: the expansion of, and access to, mass transit (e.g., light rail, commuter rail, bus rapid transit, etc.); planning growth around livable corridors; and locating new housing and job growth in high quality transit areas. Collectively, these land use plans, in conjunction with measures at the state-level to improve fuel efficiency standards, are designed to meet CARB's goal for the SCAB region for reducing per capita GHG emissions in the region by eight percent by 2020—compared with 2005 levels—and by 19 percent by 2035.

The proposed Project is not located in a TPA or a HQTA; however, the Project would be located adjacent to Foothill Transit Route 190 which, per the information provided in the Project TIS, is served by approximately one bus every 15 minutes in either direction during the AM and PM peak hours. The proposed Project would also feature many green elements, which would help reduce VMT and GHG emissions in general. For example, the proposed Project would include a community room and would be located adjacent to two schools. This would help reduce potential trips associated with community gatherings, and trips to and from school. Furthermore, the proposed Project would feature sustainable elements, such as tankless water heaters and reduced energy consumption associated with building orientation. Therefore, although the proposed Project is not in TPA or HQTA, as identified in Connect SoCal, it is still in proximity to bus transit and features green elements. This supports the overarching goals of Connect SoCal. Therefore, the proposed Project would not conflict with or otherwise obstruct implementation of Connect SoCal. Impacts will be less than significant.

City of Covina Energy Action Plan

The proposed Project would not conflict with nor obstruct a state or local plan adopted for the purposes of reducing the emissions of greenhouse gases. The proposed Project would be subject to the California Title 24 Building Code energy efficiency standards for residential and non-residential buildings and feature many green building features (e.g., north-south orientation of buildings, tankless water heaters, PV system, etc.) to help reduce GHG emissions. Equipment and vehicles associated with construction and operation of the Project would also be subject to fuel standards at the state and federal level. The Project would support the goals and policies contained in the City of Covina EAP, such as Goal 3, Maximize the efficiency of all new buildings, because it would maximize the energy efficient design (e.g., north-south arrangement of the Project; Policy 3.1) and include energy-efficient appliances and equipment (Policy 3.2). Therefore, the Project would not conflict with nor obstruct a state or local plan for renewable energy or energy efficiency. Impacts will be less than significant.

4.9 – Hazards and Hazardous Materials

Would the Project:

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

a) **Less than Significant Impact.** The Project could result in a significant hazard to the public if it includes the routine transport, use, or disposal of hazardous materials or places housing near a facility, which routinely transports, uses, or disposes of hazardous materials. The Project is located within area comprised of light industrial, commercial, and residential uses, and surface streets. The nearby light industrial uses include office industrial developments and are not associated with large manufacturing, storage, or distribution processes. The Project would not place housing near any hazardous materials facilities. The routine use, transport, or disposal of hazardous materials is primarily associated with industrial uses, which require such materials for manufacturing operations or produce hazardous wastes as by-products of production applications. The Project includes a live/work component that will allow some tenants to use their units for light industrial uses; however, these uses will be limited to small arts and crafts operations (research and development, broadcasting and/or telecommunication, etc.). The Project does not propose or facilitate any activity involving significant use, routine transport, or disposal of hazardous substances.

Construction of the Project would require the use and transport of hazardous materials such as asphalt, paints, and other solvents. Construction activities could also produce hazardous wastes associated with the use of such products. Construction would require ordinary construction activities and would not require a substantial or uncommon amount of hazardous materials to complete. All hazardous materials are required to be utilized and transported in accordance with their labeling pursuant to federal and state law. Routine construction practices include good housekeeping measures to prevent/contain/clean-up spills and contamination from fuels, solvents, concrete wastes and other waste materials. Impacts related to construction would be less than significant.

With regard to Project operation, widely used hazardous materials common at residential uses include paints and other solvents, cleaners, and pesticides. Operation of the proposed Project would also involve the use of cleaning solutions for daily operation and paints for routine maintenance and re-coating of structures. The remnants of these and other products are disposed of as household hazardous waste (HHW) that includes used dead batteries, electronic wastes, and other wastes that are prohibited or discouraged from being disposed of at local landfills. The light industrial component of the Live/Work units will be restricted to activities that do not generate any hazardous materials other than HHW. Through compliance with existing regulations and the PCD Overlay, use of common household hazardous materials and their disposal does not present a substantial health risk to the community. Therefore, impacts associated with the routine transport, use, or disposal of hazardous materials or wastes would be less than significant.

b) **Less than Significant Impact.** According to the State Water Resources Control Board, there are no open cases of leaking underground storage tanks (LUST) within one-quarter mile of the Project site.[10] The property located at the southeast corner of San Bernardino Road and Vincent Street is the site of a former gas station and a former LUST cleanup site. However, this case has been closed since 1997; therefore, the likelihood of petroleum product contamination existing on, or migrating onto the site, is considered low. There would be a less than significant impact related to the release of hazardous materials into the environment as a result of development of the proposed Project.

Construction of the Project would require the use and transport of hazardous materials such as asphalt, paints, and other solvents. Construction activities could also produce hazardous wastes associated with the use of such products. Construction of the proposed mixed-use multi-family residential development would require ordinary construction activities and would not require a substantial or uncommon amount of hazardous materials to complete. All hazardous materials are required to be utilized and transported in accordance with their labeling pursuant to federal and state law. Routine construction practices include good housekeeping measures to prevent/contain/clean-up spills and contamination from fuels, solvents, concrete wastes and other waste materials. Impacts would be less than significant.

Activities associated with the demolition of the existing single-family home may pose a hazard with regard to asbestos containing materials (ACM) and lead-based paints. ACM were used on a widespread basis in building construction prior to and into the 1980s; therefore, it is assumed that ACM is not present on the Project site since the home was constructed in 1990 after use of asbestos was banned. However, if for some reason asbestos is encountered during demolition activities, the materials would be handled in accordance with the specific regulations/guidelines described below.

Asbestos generally does not pose a threat when it remains intact. When asbestos is disturbed it becomes airborne. SCAQMD Rule 1403 (Asbestos Emissions from Demolition/Renovation Activities) requires work practices that limit asbestos emissions from building demolition and renovation activities, including the removal and disturbance of ACM.[11] This rule is designed to protect uses and persons adjacent to demolition or renovation activity from exposure to asbestos emissions. Rule 1403 requires a certified inspector to survey any facility being demolished or renovated for the presence of all friable and Class I and Class II non-friable ACM. The applicant must also notify SCAQMD of their intent to perform demolition or renovation of any buildings that may contain asbestos prior to demolition and requires that all ACM is removed prior to any demolition. Rule 1403 also establishes notification procedures, removal procedures, handling and clean-up procedures, storage, disposal, landfilling requirements, and warning label requirements, including HEPA filtration, the “glovebag” method, wetting, and some methods of dry removal that must be implemented when disturbing appreciable amounts of ACM (more than 100 square feet of surface area). All ACM shall be disposed of at a waste disposal site operated in accordance with Rule 1403. The applicant will also ensure the safety of construction workers involved in the ACM removal by complying with all California Asbestos Standards in Construction, including, but not limited to minimum air circulations, use of respirators, wetting of materials, clothing laundering, construction and demolition equipment requirements, and shielding specifications. Adherence to SCAQMD Rule 1403 would ensure that impacts related to the release of ACM are less than significant.

Exposure of construction workers to lead-based paint during demolition activities is also of concern, similar to exposure to asbestos. Exposure of surrounding land uses to lead from demolition activities is generally not a concern because demolition activities do not result in appreciable emissions of lead.[12] The primary emitters of lead are industrial processes. Any lead-based paint utilized on the exterior and interior of the existing single-family home would generally remain inside the structure or close to the exterior of the building and would be removed during demolition. Improper disposal of lead-based paint could contaminate soil and subsurface groundwater in and under landfills not properly equipped to handle hazardous levels of this material. Due to the age of the buildings it is assumed that lead-based paint is present. Therefore, 8 CCR Section 1532.1 (California Construction Safety Orders for Lead) must be followed for the demolition of all existing structures requiring exposure assessment and compliance measures to keep worker exposure below action levels. The Project is also subject to Title 22 requirements for the disposal of solid waste contaminated with excessive levels of lead. Testing, monitoring, containment, and disposal of lead-based materials will comply with all Cal/OSHA standards and regulations under California Construction Safety Orders for Lead section 1532. Adherence to standard regulation would ensure that impacts related to the release of lead based paints would be less than significant.

With regard to operation, the proposed Live/Work units would not be permitted to partake in any light industrial operations that involve the use of hazardous materials or generate hazardous waste that could create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. With compliance with existing regulations, the Project would not pose a significant risk to the environment or humans. Impacts would be less than significant.

c) **Less than Significant Impact.** Las Palmas Middle School is located immediately to the northeast of the Project site on the opposite side of Cutter Way. However, as mentioned above, the Project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. Impacts will be less than significant.

d) **No Impact.** The Project is not located on a site listed on the state *Cortese List*, a compilation of various sites throughout the state that have been compromised due to soil or groundwater contamination from past uses. [13] Based upon review of the *Cortese List*, the Project site is not:

- listed as a hazardous waste and substance site by the Department of Toxic Substances Control (DTSC),[14]
- listed as a leaking underground storage tank (LUFT) site by the State Water Resources Control Board (SWRCB),[15]
- listed as a hazardous solid waste disposal site by the SWRCB,[16]
- currently subject to a Cease and Desist Order (CDO) or a Cleanup and Abatement Order (CAO) as issued by the SWRCB,[17] or
- developed with a hazardous waste facility subject to corrective action by the DTSC.[18]

Therefore, no impact will occur in relation to hazardous materials sites.

e) **No Impact.** There are no public airports, private airstrips, or heliports within two miles of the Project site.[19] The nearest airport is El Monte Airport, located approximately 6.5 miles to the west of the Project site. No impact related to airport operations would occur.

g) **Less than Significant Impact.** Per state Fire and Building Codes, sufficient space will have to be provided around the proposed buildings for emergency personnel and equipment access and emergency evacuation. All Project elements, including landscaping and parking, would be sited with sufficient clearance from existing and proposed structures so as not to interfere with emergency access to and evacuation from the site. The Project will be required to comply with the California Fire Code regulations for set-backs and clearance. Access to the subterranean garage will be provided via a 48-foot wide driveway entrance at the eastern edge of the site on Cutter Way. Access to the surface parking near the northern portion of the site as well as areas between the proposed buildings will be provided via a 28-foot wide driveway at the southwestern corner of the site on San Bernardino Road. The driveways will be constructed to California Fire Code specifications and would allow emergency access and evacuation from the site. The Project would not impair implementation of or physically interfere with an adopted emergency response plan or evacuation plan because no permanent public street or lane closures are proposed. Construction work in the street associated with the Project would be limited to lateral utility connections and would require nominal potential traffic diversion. Project impacts would be less than significant.

h) **No Impact.** Generally, the greatest potential for wildfire hazards occurs in areas adjacent to abundant natural vegetation. The Project site is located within an area characterized by urban/suburban development which does not include large areas of undeveloped vegetated land. There are no wildland conditions in the urbanized area where the Project site is located. The California Department of Forestry and Fire Protection (CAL FIRE) has prepared maps showing Very High Fire Hazard Severity Zones within the State. The Project area is not identified as an area within a Very High Fire Hazard Severity Zone.[20] Therefore, no wildland fire impacts would occur.

4.10 – Hydrology and Water Quality

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☑	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☑	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) result in substantial erosion or siltation on- or off-site;	☐	☐	☑	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☑	☐
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☑	☐
iv) impede or redirect flood flows?	☐	☐	☑	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☑	☐

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☑	☐

a) **Less than Significant Impact.** A project normally would have an impact on surface water quality if discharges associated with the project would create pollution, contamination, or nuisance as defined in Water Code § 13050, or that cause regulatory standards to be violated as defined in the applicable National Pollutant Discharge Elimination System (NPDES) stormwater permit or Water Quality Control Plan for the receiving water body. For the purpose of this specific issue, a significant impact could occur if the proposed Project would discharge water that does not meet the quality standards of the agencies that regulate surface water quality and water discharge into stormwater drainage systems. Significant impacts could also occur if the Project does not comply with all applicable regulations with regard to surface water quality as governed by the State Water Resources Control Board (SWRCB). These regulations include preparation of a Stormwater Pollution Prevention Plan (SWPPP) to reduce potential water quality impacts during construction activity (Covina Municipal Code Section 8.50.100) and the implementation of post-construction best management practices (BMPs) such as detention basins, infiltration ponds, porous pavement, sand and organic filters, etc. (Covina Municipal Code Section 8.50.060).

Construction Impacts

Three general sources of potential short-term, construction-related stormwater pollution associated with the Project include: 1) the handling, storage, and disposal of construction materials containing pollutants; 2) the maintenance and operation of construction equipment; and 3) earth-moving activities which, when not controlled, may generate soil erosion via storm runoff or mechanical equipment. All new development Projects equal to one acre or more are subject to Los Angeles County NPDES Permit No. CAS004001. The proposed mixed-use, multi-family residential development would disturb approximately 2.24 acres of land and therefore will be subject to NPDES permit requirements during construction activities. In addition, pursuant to Municipal Code Section 8.50.100, a Storm Water Pollution Prevention Plan (SWPPP) will be prepared and submitted for the proposed Project. All construction projects must apply BMPs that include drainage controls such as detention ponds, dikes, filter berms, and down drains to prevent runoff, and utilizing plastic covering to prevent erosion. Compliance with City discharge requirements would ensure that construction of the Project would not violate any water quality standards or discharge requirements, or otherwise substantially degrade water quality. Impacts would be less than significant with implementation of existing regulations.

Operational Impacts

The proposed Project would not generate hazardous wastewater that would require any special waste discharge permits. All wastewater associated with the proposed buildings' interior plumbing systems would be discharged into the local sewer system for treatment at the regional wastewater treatment plant. Impacts associated with operation of the proposed Project would be less than significant with implementation of existing regulations.

A Preliminary Drainage Study was prepared by Thomas Hawksworth, RCE 68771 of Blue Peak Engineering, dated January 17, 2020 (See Appendix D). According to the Preliminary Drainage Study, generally, the existing site drains as sheet flows from the northwest portion of the site to the south/southeast portion of the site. In addition, there are three drainage sub-areas on the Project site. As described in the Study, Drainage Sub-Area A1, generally the southern undeveloped portion of the site, slopes from the northwest to the south where it sheet flows to the right-of-way for W San Bernardino Road. From there, runoff is conveyed via curb and gutter to a publicly owned catch basin near the middle of the southern property line. An 18” pipe conveys storm water from this catch basin to the east to an existing 5’-10” x 7’-0” reinforced concrete box (RCB) owned and maintained by Los Angeles County Flood Control District. Storm water from the RCB continues downstream to the Big Dalton Wash, Walnut Creek Channel, San Gabriel River and San Gabriel River Estuary before ultimately discharging to the Pacific Ocean (San Pedro Bay). Drainage Sub-Area A2 includes the single-family home, drive aisles and parking lot. Storm water from this area sheet flows to the right-of-way for Cutter Way. From there, runoff is conveyed via curb and gutter to the south and then west along W San Bernardino Road to the same existing catch basin described in Drainage Sub-Area A1. Drainage continues as described above. Drainage Sub-Area A3, generally the northern undeveloped portion of the site, slopes from the northwest to the southeast where it sheet flows to the right-of-way for Cutter Way. From there, runoff is conveyed via curb and gutter to the south and then west along W San Bernardino Road to the same existing catch basin described in Drainage Sub-Area A1. Drainage continues as described above.

Proposed construction will increase impervious areas on the Project site as the site currently consists of mostly impervious surfaces. The approximately 2.24-acre site will be replaced with multi-family residential buildings and associated pavement, parking, and landscaping. Runoff from the developed site would result in increased potential water contamination from urban pollutants that are commonly found in surface parking lots, ornamental landscape planters and from atmospheric buildup on rooftops. The post-developed drainage pattern of the Project site will generally maintain the existing drainage patterns, with runoff ultimately discharging to the RCB. The developed site will include four drainage sub-areas. Drainage Sub-Area B1 includes the southeast corner of the property. Runoff from this area will sheet flow to a graded swale which terminates at an area drain in the landscaping between the proposed Building 2 and the sidewalk along W San Bernardino Road. Storm water will be piped to a water treatment planter (Modular Wetland System or MWS) and then piped to an underground storage system. From the storage system, storm water will be piped to a proposed connection to the existing 18” pipe (as described in Drainage Sub-Area A1) in W San Bernardino Road. Discharge from the storage system will be controlled based on allowable rates of discharge provided by Los Angeles County Public Works. Drainage Sub-Area B2 includes the majority of the site.

Roof runoff from the proposed buildings will be discharged at the curb face. Surface level runoff from this area will sheet flow to curb and gutter and valley gutters that convey storm water to the southwest corner of the property. At the southwest corner of the site, runoff will be collected by a water treatment planter (MWS) and then piped to an underground storage system. From the storage system, storm water will be piped south to the existing public catch basin in W San Bernardino Road (as described in Drainage Sub-Area A1). Discharge from the storage system will be controlled based on allowable rates of discharge provided by Los Angeles County Public Works. Drainage Sub-Area B3 includes the northeast corner of the property. Roof runoff from the proposed Building 12 will be discharged at the curb face. Surface level runoff from this area will sheet flow to curb and gutter and valley gutters that convey storm water to a water treatment planter (MWS) near the proposed driveway along Cutter Way. From the MWS, storm water will then be piped to an underground storage system. From the storage system, storm water will be piped east to the existing RCB in Cutter Way (as described in Drainage Sub-Area A1). Discharge from the storage system will be controlled based on allowable rates of discharge provided by Los Angeles County Public Works. Finally, Drainage Sub-Area B4 only includes the landscaping along Cutter Way and the new sidewalk connection from the public right-of-way to the site. Runoff from this area will discharge to the curb and gutter in Cutter Way and will be conveyed south and then west along San Bernardino Road to the same existing catch basin described in Drainage Sub-Area A1.

Based on the exemptions listed in section 8.2 of the Los Angeles County LID Manual, projects are exempt if the project “discharges directly or through a storm drain into concrete or otherwise engineered channel (i.e., channelized or armored with rip-rap, shotcrete), which, in turn, discharge into receiving water that is not susceptible to hydromodifications impacts.” The proposed Project directly discharges into a concrete storm drain, tributary to a concrete channel. The Project’s receiving waters are entirely concrete lined until it reaches the ultimate outfall, San Pedro Bay. Therefore, the Project is exempt from hydromodification.

Using the Los Angeles County Hydrology Manual, the existing and proposed runoff for the Project was calculated for the 100-Year Storm Event. The runoff calculations are shown in the following tables. Based on LACFCD’s project 275-519-D1.7, the allowable flow rates for discharge into the County’s facilities is 0.98 cfs per acre. This allowable rate was used to determine allowable discharge from each Drainage Sub-Area. With the detention storage proposed for each Drainage Sub-Area, post-developed runoff flow rates will be less than the allowable rates provided by the County. Therefore, no mitigation is required. As shown in the calculations in the Preliminary Drainage Study, runoff from the Project will be decreased with the proposed storm drain infrastructure as part of the development of the Project. Since the Project will be able to maintain a runoff less than that of the Los Angeles County allowable flow rates, no adverse effects will occur to the downstream conveyance system. In addition, BMP’s will be installed that satisfy the City’s water quality requirements, which will reduce the post-developed flow rates further as well as significantly reduce the pollutants generated from the project. With compliance with existing regulations, impacts will be less than significant.

b) **Less than Significant Impact.** If the Project removes an existing groundwater recharge area or substantially reduces runoff that results in groundwater recharge such that existing wells would no longer be able to operate, a potentially significant impact could occur. As described in Section 4.7.a.iii, groundwater at the site was estimated to be at a depth of approximately 290 feet. In general, groundwater does not occur in this area within 100 to 200 feet of the ground surface. Project-related grading would only go a few feet below the surface and would not reach the depth of the groundwater table. No disturbance of groundwater is anticipated. The proposed building footprints and pavement areas would increase impervious surface coverage on the site, thereby reducing the total amount of potential infiltration onsite. However, infiltration of irrigation water through soil and water from runoff through soft-bottom channels would ensure continued groundwater recharge in Covina as impervious surfaces increase. The Project site is not utilized for groundwater recharge and will include landscaped areas that would allow for infiltration. Because this site is not managed for groundwater supplies and would provide landscaped areas for continued infiltration, this change in infiltration would not have a significant effect on groundwater table level. Impacts related to development of the proposed Project would be less than significant.

c.i) **Less than Significant Impact.** Potentially significant impacts to the existing drainage pattern of the site or area could occur if development of the Project results in substantial on- or off-site erosion or siltation. There is currently an 18” pipe that conveys storm water from an on-site catch basin to the east to an existing 5’-10” x 7’-0” reinforced concrete box (RCB) owned and maintained by Los Angeles County Flood Control District. Storm water from the RCB continues downstream to the Big Dalton Wash, Walnut Creek Channel, San Gabriel River and San Gabriel River Estuary before ultimately discharging to the Pacific Ocean (San Pedro Bay). A proposed stormwater biofiltration system will be provided to remove sediments and hydrocarbons from water runoff before entering the chamber. The post-developed drainage pattern of the Project site will generally maintain the existing drainage patterns, with runoff ultimately discharging to the RCB. Therefore, the drainage pattern would not be substantially altered in a manner that could cause increases in erosion off-site. Erosion and siltation reduction measures would be implemented during construction. At the completion of construction, the site would consist of impervious surfaces and would therefore not be prone to substantial erosion. No streams cross the Project site, so the Project would not alter any stream course. Impacts would be less than significant.

c.ii) **Less than Significant Impact.** As discussed in Section 4.10.c.i above, a river or stream does not lie within the proposed Project site. Additionally, the Project would not lead to a substantial alteration of existing drainage patterns in the area. Therefore, the impact is less than significant.

c.iii) **Less than Significant Impact.** Construction of the proposed Project would increase the net area of impervious surfaces on the site; therefore, increased discharges to the City's existing storm drain system would likely occur. As discussed above, there is currently an 18" pipe that conveys storm water from an on-site catch basin to the east to an existing 5'-10" x 7'-0" reinforced concrete box (RCB) owned and maintained by Los Angeles County Flood Control District. Storm water from the RCB continues downstream to the Big Dalton Wash, Walnut Creek Channel, San Gabriel River and San Gabriel River Estuary before ultimately discharging to the Pacific Ocean (San Pedro Bay). A proposed stormwater biofiltration system will be provided to remove sediments and hydrocarbons from water runoff before entering the chamber. The post-developed drainage pattern of the Project site will generally maintain the existing drainage patterns, with runoff ultimately discharging to the RCB. Permits to connect to the existing storm drainage system would be obtained prior to construction. All drainage plans are subject to City review and approval. These requirements would apply to the proposed Project. Therefore, the increase in discharges would not impact local storm drain capacity. The proposed Live/Work units would not be permitted to take part in any light industrial use that could have the potential to generate polluted runoff and therefore would not result in substantial pollutant loading such that treatment control BMPs would be required to protect downstream water quality. Post-construction BMP's would also ensure the Project would not result in substantial pollutant loading. Therefore, impacts related to the proposed Project Change would be less than significant.

c.iv) **Less than Significant Impact.** According to flood maps prepared by the Federal Emergency Management Agency, the Project site is located in Zone X, which is an area determined to be outside the 0.2% annual chance floodplain.[21] Therefore, the Project is not located within a 100-year flood floodplain and would not impede or redirect flood flows. Impacts will be less than significant.

d) **No Impact.** As discussed in Section 4.10.c.iv above, the Project site is not located within a 100-year flood floodplain. No impact would occur. The Project site is not subject to tsunami due to its elevation (over 450 feet) and distance from the ocean (over 30 miles). The proposed Project is not located within the vicinity of any water bodies and would not have the potential to be affected by seiche waves. The Project is located approximately 5.5 miles from the Santa Fe Dam and 6.4 miles from the Puddingstone Reservoir. In the event of a dam failure, flood waters are expected to reach the City of Covina in 20 minutes and rushing waters would overflow the banks of the Walnut Creek by approximately one-quarter on each side, walnut creek is approximately 1.26 miles from the Project site. There are reservoir-serving dams north and northeast of Covina in the San Gabriel Mountains that if they failed they would potentially impact the City of Covina. Existing flood control systems pervade the upper and central portions of the City of Covina which would most likely distribute the incoming residual waters if upstream structures were to fail. The Los Angeles County Public Works Department operates and maintains a state-of-the-art ALERT computer system to monitor meteorological conditions in the County and Southern California in real time, i.e., as they occur. The system includes a network of field sensors that monitor and receive precipitation amounts including rainfall data from the Corps of Engineers' Los Angeles Telemetry System. These systems allow for system level real time checks that provide for emergency management planning. The City of Covina likewise operates an Emergency Management system in the event of dam failures. The proposed Project does not include modifications to a dam system or levees that would alter the hazard planning completed by the City of Covina. With adherence to existing policies, regulations and ordnances the proposed Project would have a less than significant impact.

e) **Less than Significant Impact.** The Regional Board's Basin Plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. Specifically, the Basin Plan (i) designates beneficial uses for surface and ground waters, (ii) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy, and (iii) describes implementation programs to protect all waters in the region. Development of the Project would be required to adhere to requirements of the water quality control plan, including all existing regulation and permitting requirements. This would include the incorporation of best management practices (BMPs) to protect water quality during construction and operational periods. Development of the Project would also be subject to all existing water quality regulations and programs, including all applicable construction permits. Existing General Plan policies related to water quality would also be applicable to the Project. Implementation of these policies, in conjunction with compliance with existing regulatory programs, would ensure that water quality impacts related to the Project would be less than significant.

4.11 – Land Use and Planning

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☑
b) Cause a significant environmental impact due to a conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☑	☐

a) **No Impact.** The Project site is currently developed with a single-family home and is surrounded by industrial and commercial uses to the north, west, and east and multi-family residential and institutional uses to the east. The site is currently designated General Industrial in the City's General Plan and the City's Zoning Code for (M-1) Light Manufacturing. The Project includes a Zone Change and Planned Development Overlay which would allow for the Live/Work component. The Project does not involve construction of any roadway, flood control channel, or other structure that would physically divide any portion of the community. Therefore, no impact would occur.

b) **Less than Significant Impact.** The site is currently designated General Industrial in the City's General Plan and the City's Zoning Code for (M-1) Light Manufacturing. The Project includes a Zone Change and Planned Development Overlay which would allow for the Live/Work component. The Project does not conflict with the intent or implementation of this land use designation as it provides diversification in structure location, uses, and other site qualities while ensuring compatibility with uses and future developments on the surrounding areas. Furthermore, the Project would maintain the integrity of the industrial and commercial areas to the north, west, and south in terms of density, use, and design. Similar residential uses are located to the east of the site. The Project does not include any feature that would circumvent any mitigating policies in the Covina General Plan. Therefore, impacts would be less than significant.

4.12 – Mineral Resources

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☑
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☑

a-b) **No Impact.** The Project site is located in an almost completely urbanized area characterized by industrial and commercial development and some multi-family residential development. According to the General Plan, the term minerals refer to aggregate resources, or rock, sand, and gravel, energy-producing fields, including oil, gas, and geothermal substances, and (for both) appurtenant mining operations.[22] Concerning aggregate resources, there are presently no mining activities in the City and none are expected in the future because of Covina's built-out character, land use restrictions, and the potentially negative environmental and "quality of life" impacts (e.g., noise, dust, and heavy truck traffic) typically associated with such operations. In fact, the Covina Zoning Ordinance prohibits the extraction or production of aggregates. And although, according to mineral-related State information on file in the City Planning Division, two subsurface areas in northern Covina probably contain certain mineral deposits, State officials presently have declared the areas insignificant because urbanization and potentially negative incursions preclude any extraction. From a geological standpoint, Covina lies in the San Gabriel alluvial fan, of which the underlying sedimentary material was derived from rocks exposed in the San Gabriel Mountains to the north. The potential value of the San Gabriel alluvial fan as a source of quality sand and gravel for use as construction material has been recognized for years. There are presently eight aggregate production operations in the area, including a major facility in Irwindale, just west of Covina. However, the Project site does not contain one of these operations. Also, the State Division of Oil and Gas has indicated that there are no significant energy-producing minerals— or oil, gas, or geothermal fields—in the City. Therefore, there is currently no drilling or production of any of these elements. As was the case with aggregates, such drilling/production is and will continue to be expressly prohibited because of potentially negative land use, operational, and other incursions. Therefore, impacts related to the proposed Project would not occur.

4.13 – Noise

Would the Project result in:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☑	☐	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☑	☐	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☐	☑

A *Noise Impact Analysis Report* was prepared by MIG dated September 24, 2021, which evaluated and documented the potential l noise impacts associated with the construction and operation of the proposed Project. The information provided herein is largely taken from this report (See Appendix E).

Fundamentals of Sound and Environmental Noise

Noise can be defined as unwanted sound. Sound (and therefore noise) consists of energy waves that people receive and interpret. Sound pressure levels are described in logarithmic units of ratios of sound pressures to a reference pressure, squared. These units are called *bels*. In order to provide a finer description of sound, a *bel* is subdivided into ten *decibels*, abbreviated dB. To account for the range of sound that human hearing perceives, a modified scale is utilized known as the A-weighted decibel (dBA). Since decibels are logarithmic units, sound pressure levels cannot be added or subtracted by ordinary arithmetic means. For example, if one automobile produces a sound pressure level of 70 dBA when it passes an observer, two cars passing simultaneously would not produce 140 dBA. In fact, they would combine to produce 73 dBA. This same principle can be applied to other traffic quantities as well. In other words, doubling the traffic volume on a street or the speed of the traffic will increase the traffic noise level by 3 dBA. Conversely, halving the traffic volume or speed will reduce the traffic noise level by 3 dBA. A 3 dBA change in sound is the beginning at which humans generally notice a *barely perceptible* change in sound and a 5 dBA change is generally *readily perceptible*.[23]

Noise consists of pitch, loudness, and duration; therefore, a variety of methods for measuring noise have been developed. According to the California General Plan Guidelines for Noise Elements, the following are common metrics for measuring noise:[24]

L_{EQ} (Equivalent Energy Noise Level): The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over given sample periods. L_{EQ} is typically computed over 1-, 8-, and 24-hour sample periods.

CNEL (Community Noise Equivalent Level): The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels in the evening from 7:00pm to 10:00pm and after addition of ten decibels to sound levels in the night from 10:00pm to 7:00am.

L_{DN} (Day-Night Average Level): The average equivalent A-weighted sound level during a 24-hour day, obtained after the addition of ten decibels to sound levels in the night after 10:00pm and before 7:00am.

CNEL and L_{DN} are utilized for describing ambient noise levels because they account for all noise sources over an extended period of time and account for the heightened sensitivity of people to noise during the night. L_{EQ} is better utilized for describing specific and consistent sources because of the shorter reference period.

Local Regulations

The City of Covina's existing General Plan and Municipal Code establish standards related to noise and vibration control.

City of Covina General Plan Noise Element
The City of Covina Noise Element includes several noise control programs designed to protect the City's citizens from the adverse effects of uncontrolled noise by controlling noise at its source, as well as attenuating noise between the source and the receiver. The General Plan includes the following noise control programs relevant to the proposed Town Center Specific Plan (City of Covina 2000):

Policy Area 1: Transportation Noise Sources

- Policy 1.1: Examine the noise environment of proposed residential or other noise-sensitive uses located within all 60 L_{dn} noise contours to ensure compatibility and, pertaining to residential activities, adherence to applicable State noise insulation standards.
- Policy 1.2: Attempt to mitigate or eliminate the possible noise problems of proposed residential or other noise-sensitive uses located within all 65 L_{dn} noise contours to ensure compatibility and, pertaining to residential activities, adherence to applicable State noise insulation standards.
- Policy 1.3: Consider "noise-sensitive uses" to include, but not be limited to, all residential housing types, public and private primary and secondary schools, libraries, parks/recreation areas, hospitals/medical facilities, nursing homes, and churches.
- Policy 1.4: Consider establishing acceptable limits of noise levels for various land uses throughout the community, in accordance with State guidelines, as a means of determining noise-compatible land uses.
- Policy 1.6: Require noise-reduction techniques and features in site planning, architectural design, project landscaping, building materials, and/or construction, where necessary or required by law.

- Policy 1.17: Continue to permit higher than normal block walls along the rear property lines of residential parcels that back up to the Metrolink right-of-way to mitigate train-related noises and consider other appropriate concessions.

Policy Area 2: Commercial and Industrial Noise Sources

- Policy 2.1: Consider establishing acceptable limits of noise levels for various land uses throughout the community, in accordance with State guidelines, as a means of determining noise-compatible land uses.
- Policy 2.2: Discourage the location of noise-sensitive land uses in noise environments.
- Policy 2.3: Consider "noise-sensitive uses" to include, but not be limited to, all residential housing types, public and private primary and secondary schools, libraries, parks/recreation areas, hospitals/medical facilities, nursing homes, and churches.
- Policy 2.4: Require noise-reduction techniques and features in site planning, architectural design, project landscaping, building materials, and/or construction, where necessary or required by law.
- Policy 2.13: Ensure that condominium/townhouse and apartment structures are constructed soundly to prevent adverse noise transmission onto adjacent dwelling units.
- Policy 2.19: Continue enforcing the Covina Noise Ordinance and maintaining coordination among City departments/ divisions involved in noise abatement.
- Policy 2.22: Evaluate and make recommendations on potential noise impacts of permanent developments and uses through environmental or noise-related studies or analyses and, for minor work, by observing project plans as well as the potential noise impacts of temporary activities and special events.
- Policy 2.24: Require that commercial uses developed as part of a mixed-use project (e.g., residential dwelling units situated above commercial businesses) not be noise-intensive, except where determined to be appropriate through appropriate features and mitigation.
- Policy 2.25: Require that mixed use structures be designed to prevent the transfer of noise and vibration from the commercial activity to the residential use.

Policy Area 3: Miscellaneous Stationary Noise Sources

- Policy 3.2: Encourage the installation of quiet residential air conditioners and outside appliances and devices, with proper installation procedures.

Policy Area 4: Construction Noise Sources and General Matters

- Policy 3.1: Continue implementing the Covina Noise Ordinance to regulate the hours of operation and excessive noise associated with on-site construction activities, particularly activities occurring in or near residential uses, permitting exceptions only under special circumstances.
- Policy 3.2: Where necessary, require the construction of barriers to shield noise-sensitive uses from intrusive, construction-related noise.
- Policy 3.3: Require that construction activities incorporate feasible and practical techniques, measures, and procedures that minimize the noise impacts on all adjacent uses.

Policies 1.4 and 2.1 indicate the City will consider adopting acceptable limits of noise levels for various land uses throughout the community, in accordance with State guidelines. The most recent version of State's recommended land use compatibility guidelines, released in OPR's 2017 General Plan

Guidelines, is presented in Table 18, General Plan Land Use Compatibility Guidelines, below. To date, the City has not adopted the guidelines into its General Plan or Zoning Code.

Table 18
General Plan Land Use Compatibility Guidelines

Land Use Category	Community Noise Equivalent Level (in dBA, CNEL)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential – Low Density Single Family, Duplex, Mobile homes	50-60	55-70	70-75	75-85
Residential – Multi Family	50-65	60-70	70-75	70-85
Transient Lodging – Motels, Hotels	50-65	60-70	70-80	80-85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-70	60-70	70-80	80-85
Auditoriums, Concert Halls, Amphitheaters	--	50-70	--	65-85
Sports Arenas, Outdoor Spectator Sports	--	50-75	--	70-85
Playground, Neighborhood Parks	50-70	--	67.5-77.5	72.5-85
Golf Course, Riding Stables, Water Recreation, Cemeteries	50-70	--	70-80	80-85
Office Buildings, Business Commercial and Professional	50-70	67.5-77.5	75-85	--
Industrial, Manufacturing, Utilities, Agriculture	50-70	70-80	75-85	--

Land Use Compatibility Interpretation:	
Normally Acceptable:	*Specific land use is satisfactory based upon the assumption buildings involved are of normal conventional construction, without any special noise insulation requirements.*
Conditionally Acceptable:	*New construction or development should be undertaken only after a detailed analyses of noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.*
Normally Unacceptable:	*New construction or development should be generally discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.*
Clearly Unacceptable:	*New development should generally not be undertaken.*
Source: OPR, 2017	

<u>*City of Covina Municipal Code*</u>
The City's existing Municipal Code regulates unnecessary, excessive, and annoying noise and vibration generated by certain sources of noise. The City's code is intended to maintain quiet residential areas that exhibit low noise levels, and to implement programs that reduce noise in residential areas where noise levels are above acceptable values.

Municipal Code Title 9, Public Peace, Morals, and Safety, Chapter 9.40, Noise, includes the following standards related to noise:

- Section 9.40.030, Loud Party, provides an example of prohibited noise. It states: It is unlawful for any person to make, continue or cause to be made or continued any unnecessary, loud or unusual noise which is a threat to the public peace, health, safety or general welfare of others due to a party, gathering or unruly assemblage at a premises.

- Section 9.40.040, Exterior Noise Level Limits, stipulates the allowable noise level or sound level referred to in Section 9.40.030 shall be higher of the following:

  A) Actual measured ambient level; or
  B) The sound level limit as indicated below:
    - Residential Estate or Agricultural
      - 50 dBA between 7AM and 10PM
      - 40 dBA between 10PM and 7AM

    - Residential Low Density
      - 55 dBA between 7AM and 10PM
      - 45 dBA between 10PM and 7AM
    - Residential Medium- and High-Density
      - 60 dBA between 7AM and 10PM
      - 50 dBA between 10PM and 7AM
    - Commercial
      - 65 dBA between 7AM and 10PM
      - 55 dBA between 10PM and 7AM
    - Industrial
      - 70 dBA between 7AM and 10PM
      - 60 dBA between 10PM and 7AM

- Section 9.40.060, Interior Noise Level Limits, provides that the interior noise standards for residential dwellings, as presented, shall apply to all dwellings with windows in their closed configuration unless the unit does not have adequate heating, air conditioning and mechanical ventilation.

    - Residential (All Densities)
      - 35 dBA L_{eq} (1-hr) between 10 PM and 7 AM
      - 45 dBA L_{eq} $(1\text{-hr})_r$ between 7 AM and 10 PM

  Section 9.40.060 further specifies that the above standards shall not be exceeded by 5 dBA Leq for a cumulative period of more than one minute or more in any hour, or 10 dBA or the maximum measured ambient for any period of time. Subsection F states all newly constructed residential dwellings located in areas that are exposed to ambient noise levels in excess of 60 dBA DNL be designed and built so all habitable rooms comply with these standards.

- Section 9.40.080, General Guidelines, sets forth factors that are considered when determining whether a noise, sound, or vibration is a prohibited noise source within the City.

- Section 9.40.090, Controlled Hours of Operation, states that it is unlawful for any period to operate, permit, use, or cause to operate any of the following other than between the hours of 7AM and 8PM of any one day:

    - Powered model vehicles;

  - Loading and unloading vehicles such as garbage trucks, forklifts, or cranes in a residential area or within 500 feet of a residence;
  - Domestic power tools;
  - Law equipment, including, but not limited to: lawn mowers, edgers, cultivators, chainsaws, and leaf blowers in any residential area or within 500 feet of any residence;
  - Equipment associated with the repair and maintenance of any real property.

- Section 9.40.110, Construction, states that it is unlawful to operate equipment or perform outside construction or repair work within 500 feet of a residential land use between the hours of 8 PM of any one day and 7 AM of the next day, or on Sundays or public holidays such that a reasonable person of normal sensitivity residing in the area is caused discomfort or annoyance, unless a permit has been obtained in advance.
- Section 9.40.120, Loud and Unusual Noises, prohibits the operation of any device that creases a vibration that is above the vibration perception threshold of an average individual at or beyond the property boundary of the source if on a private property or at 150 feet from the source if on a public space or public right-of-way. Per Section 9.40.020(30) the threshold of perception is considered by the City to be 0.01 in/sec.

Existing Noise Environment

The City's General Plan Noise Element describes that Covina has a relatively high percentage of commercial and industrial areas that contribute to the City's strong, diverse economic base (City of Covina, 2000). These lands uses can be located near residential areas, which makes certain neighborhoods susceptible to noise problems. Chapter 2 of the Noise Element identifies the following major noise sources in the City: San Bernardino Freeway, primary and secondary arterial streets (as classified under previous General Plan), the Metrolink Commuter Rail Line, aircraft overflights, commercial and industrial activities, and various stationary sources. The General Plan specifically identifies that San Bernardino Road is associated with higher traffic volumes and traffic-related noise levels, and that noise complaints from residential land uses along the Metrolink line have been reported. The segment of San Bernardino Road near Cutter Way is also a City-designated truck route (City of Covina, 2020, Section 10.44).

The proposed Project is located at the intersection of Cutter Way and San Bernardino Road, in an area of mixed industrial, commercial, residential, and institutional land uses. San Bernardino Road is generally considered a secondary highway or collector roadway consisting of four traffic lanes. Traffic noise modeling conducted for the General Plan Noise Element indicated that 2010 traffic noise levels would be above 65 DNL within 165 feet of San Bernardino Road (City of Covina, 2000, Table 2). These future traffic volumes would generate noise levels of 65 CNEL at distance of 220 and 108 feet from the road centerline, respectively.

<u>*Ambient Noise Levels at the Project Site*</u>
MIG conducted ambient noise level monitoring at and near the proposed Project site from approximately 9:15 AM on Wednesday, July 29, 2020 to approximately 9:15 AM on Thursday, July 30, 2020 (see Appendix E).[xii] The ambient noise levels were digitally measured and stored using two (2) Larson Davis

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[xii] State-wide shelter in place orders due to the COVID-19 pandemic have generally reduced commercial activities and vehicle traffic on major roadways; however, as documented in this Report, the ambient noise environment measured at the Project site is not considered to be affected by these orders by more than 1 dBA.

SoundTrack LxT sound level meters that meet American National Standards Institute requirements for a Type 1 integrating sound level meter. Each sound meter was calibrated immediately before and after the monitoring period using a reference one kilohertz (1kH) check frequency and 114 dB sound pressure level and found to be operating within normal parameters for sensitivity. Measurements were continuously collected over the sample period in 1-minute intervals. This interval was selected to capture short-term noise events and increases in noise levels above typical background conditions. Weather conditions during the monitoring were generally clear and sunny during the daytime. Temperatures ranged from the low 60's (overnight) to the high 90's (in the later afternoon). Winds were generally light and variable and ranged from calm conditions during the nighttime and morning to approximately 5- to 10-miles per hour during later afternoon periods. The ambient noise monitoring included one (1) long-term (LT) measurements and one (1) short-term (ST) measurement at locations selected to:

- Provide direct observations and measurements of existing noise sources at and in the vicinity of the proposed Project;
- Determine typical ambient noise levels at and in the vicinity of the proposed Project; and
- Evaluate potential Project noise levels at nearby sensitive receptors.

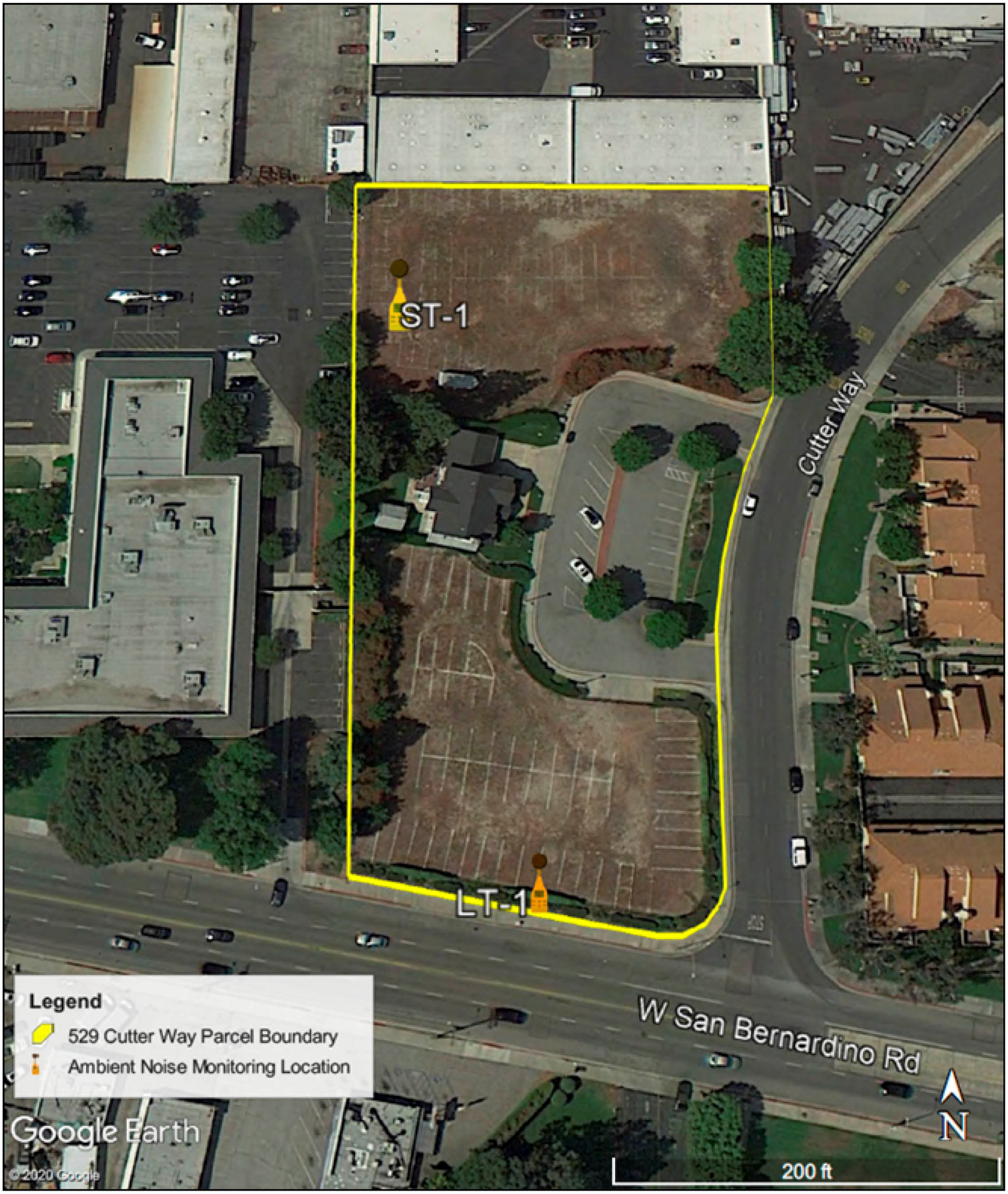
The ambient noise monitoring locations described below are shown in Exhibit 7 (Ambient Noise Monitoring Locations).

- **Location LT-1** was near the southern boundary Project site, approximately 50 feet from the centerline of San Bernardino Road. Ambient noise levels at this location were measured from approximately 9:15 AM on Wednesday, July 29th to 9:15 AM on Thursday, July 30th. The ambient noise levels measured at location LT-1 are considered representative of the noise levels at the southern part of the site and its surroundings.
- **Location ST-1** was near the northeastern corner of the Project site, approximately 385 feet from the centerline of San Bernardino Road. Ambient noise levels at this location were measured from 9:30 AM to 11:30 AM on Wednesday, July 29th. The ambient noise levels measured at location ST-1 are considered representative of existing noise levels associated with the adjacent M-1 lands to the north and west of the Project site.

Based on observations made during the ambient noise monitoring, the existing noise environment in the Project vicinity consists primarily of vehicle traffic on San Bernardino Road, as well as adjacent commercial/industrial activities. Table 19 and Table 20 summarize the results of the ambient noise monitoring conducted for the Project. Refer to Appendix E for detailed ambient noise monitoring results.

Table 19
Summary of Measured Long-Term Ambient Noise Levels (dBA)

				Measured Leq Range (dBA)(A)			
Day/Site	**Duration**	**Lmin**	**Lmax**	**Daytime (7 AM to 7 PM)**	**Evening (7 PM to 10 PM**	**Nighttime (10 PM to 7 AM)**	**DNL**
Wednesday, July 29 to Thursday, July 30, 2020							
LT-1	24 hours	39.0	92.3	64.5-67.5	61.5-64.4	53.7-63.3	67.1
Source: MIG, 2021 (See Appendix E)							
(A) Values are the lowest and highest measured values during the listed time period.							



Source: Google Earth, MIG, Inc.

http://www.migcom.com • 951-787-9222

Exhibit 7 Ambient Noise Monitoring Locations

529 Cutter Way Residential Project
Covina, California

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Table 20
Summary of Measured Short-Term Ambient Noise Levels (dBA)

Day/Site	Duration	L_{min}	L_{max}	Measured Noise Level (dBA)					
				L_{eq}	$L_{1.6}$	$L_{8.3}$	L_{25}	L_{50}	L_{90}
Wednesday, July 29, 2020(A)									
LT-1	2-Hours	42.1	86.4	64.8	73.5	69.4	65.6	60.6	51.5
ST-1	2-Hours	47.1	64.0	55.5	58.0	57.2	56.3	55.3	53.5
Source: MIG, 2021 (See Appendix E) (A) Measurements occurred from 9:30 AM to 11:30 AM									

As shown in Table 19, the measured ambient noise levels at the Project site are moderate to high in magnitude near the southern part of the site (67.1 DNL). Based on observations during the monitoring, vehicle traffic on San Bernardino Road and Cutter Way are the predominant noise source at and near the Project site, and the ambient noise level measured at the site is consistent with traffic noise modeling conducted for the City's General Plan.

As shown in Table 20, measured ambient noise levels on the interior of the site were approximately nine (9) dBs lower than measurements near San Bernardino Road. This is because noise monitoring location ST-1 was farther away from San Bernardino Road than location LT-1. In addition, location ST-1 was behind the existing site residence. The monitoring also indicates that minimum and maximum noise levels at locations LT-1 and ST-1 occurred at different times, indicating that noise generating activities in one area of the site (i.e., vehicle traffic on San Bernardino Road) may not influence other areas (due to distance, shielding, etc.).

Based on the above, the ambient noise levels at the Project site are assumed to be approximately 67.1 DNL at the southern property line, 60 DNL in the center of the site (approximately 350 feet from the center line of San Bernardino Road), and 55 DNL in the northern part of the site.

Metrolink Noise and Vibration Levels
The proposed Project site is located approximately 690 feet south of the Metrolink rail corridor. Rail-related noise comes from several potential sources. A locomotive engine's propulsion system generates noise from mechanical and electrical systems. The interaction of wheels with the track produces various noises, particularly where the wheel encounters a flaw or defect along smooth wheel / track surfaces. Finally, train horn or bells and railroad crossing warning devices generate short but loud alerts pursuant to federal safety regulations.

The Metrolink San Bernardino Line is a commuter rail line with eastbound and westbound service at the Covina Station (approximately 1.8 miles east of the Project site) every 19 to 37 minutes Monday to Friday, with peak hourly weekday activity occurring during the AM and PM commuter periods. During these periods, approximately four Metrolink trains can pull into the station per hour. There are approximately 38 Metrolink trains that pull into the station on a weekday basis, 20 trains during Saturday service, and 14 trains during Sunday service. Weekday service runs for approximately 18 hours per day and weekend service for approximately 12-17 hours per day. The Metrolink rail line crosses Lark Ellen Avenue and Vincent Avenue at grade, with guards and warning bells provided for safety; these crossings are located more than 1,200 feet away from the Project site. In addition to the Metrolink trains, freight trains also use the rail corridor.

The City's General Plan identifies that noise levels associated with the Metrolink Rail corridor are less than 60 DNL at a distance 350 feet from the rail corridor. Although rail corridor noise is audible at the Project site, the rail corridor is more than 650 feet north of the Project site, with numerous buildings located between the rail corridor and the site. The rail corridor, therefore, does not substantially contribute to the measurable ambient noise environmental at the Project site (less than 50 DNL). The Metrolink does not generate noticeable vibration levels at the Project site due to the distance between the rail corridor and the site.

The Influence of Shelter in Place Orders on Ambient Noise Monitoring

As shown in Table 19 and Table 20, the ambient noise level measured at and near the proposed Project site (67.1 DNL at a distance of 50 feet from the centerline of San Bernardino Road) are generally consistent with traffic noise modeling estimates contained in the City's General Plan; however, the General Plan Noise Element and associated traffic noise modeling were conducted in 2000 for future year conditions.

The ambient noise monitoring conducted for this Project measured noise levels based on actual traffic volumes on San Bernardino Road and Cutter Way. The supplemental traffic analysis prepared for the Project indicates October 2020 traffic volumes on Cutter Way and San Bernardino Road were lower than 2019 counts because of school and business closures due to the COVID-19 pandemic (See Appendix F). Accordingly, State public health orders limiting gatherings, school openings, nonessential travel, and other activities intended to control the spread of COVID-19 are assumed to have artificially reduced measured ambient noise levels collected for this Report (LT-1 and ST-1). The difference in 2019/2020 traffic volumes was approximately 31% less for San Bernardino Road and 34% less for Cutter Way.

The California Department of Transportation (Caltrans) considers a doubling of total traffic volume to result in a three (3) dBA increase in traffic-related noise levels. An approximately 33% increase in traffic volumes would, therefore, result in an approximately change in measured noise levels of 1.0 dBA, assuming the vehicle fleet mix does not change substantially (Caltrans, 2013). Therefore, for the purposes of this analysis, a 1.0 dBA adjustment is applied to measured ambient noise levels within approximately 350 feet of the centerline of San Bernardino Road. This would increase ambient noise levels at the Project site from 67.1 DNL to 68.1 DNL at the southern property line and from 60 DNL to 61 DNL in the center of the site.[xiii]

Noise Sensitive Receptors

Noise sensitive land uses and receptors are buildings or areas where unwanted sound or increases in sound may have an adverse effect on people or land uses. The City's General Plan identifies that residences, schools, libraries, parks/recreation areas, hospitals/medical facilities, nursing homes, and churches are examples of noise sensitive land uses. The noise sensitive receptors near the proposed Project site include:

- The multi-family residential land use east of the Project site, across Cutter Way (approximately 50 feet from the Project site boundary); and
- Las Palmas Middle School, located east of the Project site, across Cutter Way (approximately 120 feet from the Project site boundary).

[xiii] As identified in the supplemental traffic analysis, daily traffic volumes on Cutter Way were less than 600 vehicles in 2019 and 2020. This traffic volume level is not considered to be a substantial contributor to the ambient noise environment (i.e., adjacent industrial operations and traffic on San Bernardino Road are considered to be primary drivers to the overall ambient noise environment at and in the vicinity of the Project site.

a) **Less than Significant Impact with Mitigation Incorporated.** The construction and operation of the proposed Project would generate noise. Below is an analysis of the proposed Project's potential noise-related impacts from construction and operation.

Construction Noise Impacts

During site preparation, grading, and paving activities construction equipment would operate throughout the site, moving closer to one property line and farther away from another. Potential construction noise and vibration levels were estimated for worst-case equipment operations (70 feet to the adjacent multi-family residential exterior use patios to the east of the Project site) and average equipment operations based on the distance from the center of the site to sensitive exterior use areas. As shown in Table 21 (Typical Construction Equipment Noise Levels (dBA)), a single bulldozer provides a sound level of 81 dBA Leq at a distance of 50 feet; when two identical sound levels are combined, the noise level increases to 84 dBA Leq and when three identical sound levels are combined, the noise level increases to 86 dBA Leq. These estimates assume no shielding or other noise control measures are in place at or near the work areas.

A summary of predicted construction noise levels is presented in Table 22 (Summary of Predicated Construction Noise Levels). As shown in Table 22, the worst-case Leq and Lmax noise levels associated with the operation of a dozer, excavator, or scraper, etc. are predicted to be approximately 82 and 85 dBA, respectively, at a distance of 50 feet from the equipment operating area. At an active construction site, it is not uncommon for two or more pieces of construction equipment to operate in the same area at the same time. The concurrent operation of two or more pieces of construction equipment would result in noise levels of 85 dBA Leq and 88 dBA Lmax at a distance of 50 feet from equipment operating areas. These maximum noise levels could occur for a short period of time (approximately 1 month). As demolition (5 days) site preparation (3 days) and grading (15 days) is completed and building construction begins, work activities would occur further from property lines, require less heavy-duty equipment (e.g., grader), and generate lower construction noise levels. Typical construction activities would generate noise levels (65 – 72 dBA Leq) at adjacent property lines that are similar to the existing ambient noise environment on San Bernardino Road (64.5 - 67.5 Leq during the daytime).

The City's Municipal Code does not establish a numeric limit for temporary construction noise levels; however, Section 9.40.110 sets forth that construction activities may not occur within 500 feet of a residential land use between 8:00 PM any one day and 7:00 AM the next day, or on Sundays or public holidays. In addition, although the Municipal Code does not establish numeric noise limits for construction noise sources, Section 9.40.100, Noise Sensitive Areas, does limit noise levels near in-use schools to the City's low-density residential noise standards established in Municipal Code Sections 9.040.040 and 9.04.050 and shown in Table 23 (Comparison of Predicted Construction Noise Levels to Municipal Code Standards).

Table 21
Typical Construction Equipment Noise Levels (dBA)

Equipment	Reference Noise Level at 50 Feet (Lmax)(A)	Percent Usage Factor(B)	Predicted Noise Levels (L_{eq}) at Distance[C]						
			25 Feet	50 Feet	70 Feet	100 Feet	200 Feet	300 Feet	350 Feet
Backhoe	80	40	82	76	73	70	64	60	59
Bulldozer	85	40	87	81	78	75	69	65	64
Compact Roller	80	20	79	73	70	67	61	57	56
Concrete Mixer	85	40	87	81	78	75	69	65	64
Crane	85	16	83	77	74	71	65	61	60
Delivery Truck	85	40	87	81	78	75	69	65	64
Excavator	85	40	87	81	78	75	69	65	64
Generator	82	50	85	79	76	73	67	63	62
Paver	85	50	88	82	79	76	70	66	65
Pneumatic Tools	85	50	88	82	79	76	70	66	65
Scraper	85	40	87	81	78	75	69	65	64
Tractor	84	40	86	80	77	74	68	64	63

Sources: Caltrans 2013, FHWA, 2010, and MIG, 2021.
(A) Lmax noise levels based on manufacturer's specifications.
(B) Usage factor refers to the amount of time the equipment produces noise over the time period.
(C) Estimate does not account for any atmospheric or ground attenuation factors. Calculated noise levels based on Caltrans 2013: Leq (hourly) = Lmax at 50 feet – 20log (D/50) + 10log (UF), where: Lmax = reference Lmax from manufacturer or other source; D = distance of interest; UF = usage fraction or fraction of time period of interest equipment is in use.

Table 22
Summary of Predicted Construction Noise Levels

Scenario	Estimated Duration[A]	Single Equipment Use[B]		Multiple Equipment Use[C]	
		$L_{eq(h)}$	L_{max}	$L_{eq(h)}$	L_{max}[D]
Worst-Case Construction (70 feet from multi-family residential patio to the east)	1 Month	79	82	82	85
Typical Construction (200 feet from multi-family residential patio to the east)	11 Months	70	73	73	76
Typical Construction (300 feet from Las Palmas Middle School property to the northeast)	11 Months	66	69	69	72
Typical Construction (350 feet from Amazon warehouse property to the south)	11 Months	65	68	68	71

Source: MIG, 2021 (see Appendix E).
(A) Estimated duration represents the period of time site preparation, grading, and paving activities would occur.
(B) Values represent highest estimated noise level for one piece of construction equipment (see Table 21).
(C) Values represent highest estimated noise level for two pieces of construction equipment.
(D) Combined Lmax noise levels are unlikely to actually occur since equipment would not operate in the same area under the same engine load conditions. In actuality, one piece of equipment would be slightly farther away and operating under less than maximum load conditions.

Table 23
Comparison of Predicted Construction Noise Levels to Municipal Code Standards

Receiving Land Use(A)	Predicted Construction Noise Levels(B)		Receiving Land Use Standard(C)				
	L_{eq}	L_{max}	L_{eq}	L_{25}	L_{08}	L_{02}	L_{max}
Multi-Family Residential (worst-case)	82	85	60	65	70	75	80
Multi-Family Residential (typical)	73	76	60	65	70	75	80
Las Palmas Middle School (typical)	69	72	55	60	65	70	75
Amazon Warehouse (typical)	68	71	-	-	-	-	-

(A) The City's Municipal Code does not set construction noise source limits for multi-family residential land uses; however, this land use is included for informational purposes.
(B) See Table 22.
(C) Standards per City Municipal Code Section 9.40.040, 9.40.050, and 9.40.100. The standard for Las Palmas Middle School is based on the low-density residential land use. The Amazon Warehouse is located in the City of West Covina. The West Covina municipal code does not set receiving land use noise limits.

As shown in Table 23, the proposed Project's predicted worst-case construction noise levels could exceed L_{eq}, L_{25}, and L_{08} receiving land use standards established by the Municipal Code for Las Palmas Middle School. The Project could also temporarily increase noise levels above ambient levels at the multifamily residential patios to the east of the Project site between 8 dBA to 25 dBA, depending on the patio's proximity to San Bernardino Road. This increase would represent an approximately doubling to quadrupling of loudness in these residential exterior use areas. This is considered a potentially significant impact. To reduce the proposed Project's construction noise levels at adjacent residential and school property lines, the Project Applicant will be required to implement **Mitigation Measure NOI-1**. **Mitigation Measure NOI-1** will require the use of construction management and equipment controls to reduce potential noise from construction activities and is consistent with the requirement of General Plan Policies 4.1, 4.2 and 4.3. This measure restricts work hours in accordance with the Municipal Code, requires staging and stationary noise sources to be located as far from neighboring land uses as possible, and requires a temporary noise barrier be erected along the eastern property line capable of reducing noise levels by 15 dB. This measure would ensure the proposed Project's construction noise levels comply with the requirements of Municipal Code Section 9.40.100 and lower noise levels at exterior noise areas associated with the multi-family residential development located east of the Project site such that a substantial temporary increase in noise would not occur. Thus, with **Mitigation Measure NOI-1**, the proposed Project's potential construction noise levels would be rendered a less than significant impact.

Mitigation Measures

NOI-1: **Reduce Construction Noise Levels.** To reduce potential noise levels associated with construction of the proposed Project, the Applicant and/or its designated contractor, contractor's representatives, or other appropriate personnel shall:

- *Notify Adjacent Land Use of Construction Activities.* This notice shall be provided at least one week prior to the start of any construction activities, describe the noise control measures to be implemented by the Project, and include the name and phone number of a designated contact for the Applicant and the City of Covina responsible for handling construction-related noise complaints. This notice shall be provided to:

- The owner/occupants of properties that directly border the Project site to the north and west;
- The owners/occupants of multi-family dwelling units directly to the east of the Project sit (across Cutter Way) that have an exterior wall or patio area that fronts Cutter Way; and,
- Las Palmas Middle School.

- *Restrict work hours/equipment noise.* All work shall be subject to the requirements in City Municipal Code Section 9.40.110.A. Construction activities, including deliveries, shall only during the hours of 7:00 AM to 8:00 PM, Monday through Saturday, unless otherwise authorized by City permit. The Applicant and/or its contractor shall post a sign at all entrances to the construction site informing contractors, subcontractors, construction workers, etc. of this requirement. The sign shall also provide a name (or title) and phone number for an appropriate on-site and City representative to contact to submit a noise complaint.

- *Construction Traffic and Site Access.* Construction traffic, including soil hauling, shall follow City-designated truck routes Construction site access shall occur via San Bernardino Road instead of Cutter Way. Access to the site using Cutter Way may only occur after the noise barrier installed along the Project site's eastern boundary has been removed.

- *Construction equipment selection, use, and noise control measures.* The following measures shall apply during construction activities:
  - To the extent feasible, contractors shall use the smallest size equipment capable of safely completing work activities.
  - Construction staging shall occur as far away from the adjacent residential and school properties on Cutter Way as possible.
  - All stationary noise-generating equipment such as pumps, compressors, and welding machines shall be located as far from adjacent residential and school properties on Cutter Way as possible.
  - Heavy equipment engines shall be covered, and exhaust pipes shall include a muffler in good working condition.
  - Pneumatic tools shall include a noise suppression device on the compressed air exhaust.
  - The Applicant and/or his contractor shall connect to existing electrical service at the site to avoid the use of stationary power generators.
  - No radios or other amplified sound devices shall be audible beyond the property line of the construction site.

- *Construct/Install Temporary Noise Barrier.* During all demolition, site preparation, building foundation excavation, parking garage excavation, mass grading work, and building foundation work, the Applicant shall install and maintain a physical noise barrier capable of achieving a 15 dB reduction in construction noise levels. Potential barrier options capable of achieving a 15 dB reduction in construction noise levels include:
  - An 8-foot-high concrete, wood, or other barrier installed at-grade (or mounted to structures located at-grade, such as a K-Rail) along the Project's eastern property line. Such a wall/barrier shall consist of solid material (i.e., free of openings or gaps other than weep holes) that have a minimum rated transmission loss value of 25 dB.
  - Commercially available acoustic panels (8-foot-high) or other products such as acoustic barrier blankets installed along the Project's eastern property line that

have a minimum sound transmission class (STC) or transmission loss value of 25 dB. The rated STC or transmission loss value of the barrier would be confirmed by the manufacturer's specifications prior to installation.

- Any combination of noise barriers and commercial products capable of achieving a 15 dB reduction in construction noise levels at the adjacent residential and school properties on Cutter Way.

The noise barrier may be removed following the completion of building foundation work (i.e., it is not necessary once framing and typical building construction begins provided no other grading, foundation, etc. work is still occurring on-site). In-lieu of the barrier recommendations above, the Applicant may prepare and submit to the City for review and approval an updated construction noise impact analysis, based on the final site plan and final selected construction equipment, demonstrating that selected equipment and/or alternative noise control measures will result in noise levels at least 15 dB below the estimates in Table 5-4 of the Project's Noise Impact Analysis Report (Table 23 of this document).

Operational Noise Impacts

Once constructed, the proposed Project would generate noise from on-site and off-site activities. On-site activities would include vehicle travel, use of outdoor recreation and amenity spaces, landscaping activities, mechanical equipment such as air conditioning units, and other miscellaneous site operations. Off-site noise activities would include vehicle travel on Cutter Way and San Bernardino Road.

On-Site Noise Generation Analysis

Residential land uses are not considered to be a substantial noise generating land use type. The proposed Project site is generally directly bordered by light manufacturing (M-1) lands that have an allowable base ambient noise level of 70 dBA L_{eq} during the daytime and 60 dBA L_{eq} during the nighttime per Municipal Code Sections 9.40.040. Multi-family residential dwelling units and the Las Palmas Middle School are located across Cutter Way. These land uses have lower allowable ambient noise levels (55 dBA L_{eq} during the daytime for Las Palmas Middle School and 60 dBA L_{eq} during the daytime for multi-family residential dwellings).

The proposed Project's on-site noise sources would not have the potential to generate noise levels that exceed these standards for the following reasons:

- On-site vehicle travel would occur along perimeter access drive at low speed and would not generate substantial noise levels;
- The schematic design site plan for the Project includes a six-foot-tall CMU wall on the site's western boundary, which would reduce on-site vehicle travel noise levels along the perimeter access drive by at least 5 dBA;
- The at-grade parking area would have capacity for 25 vehicles and be located between on-site buildings that would serve to block noise levels from the parking area from reaching most property line locations; and
- The proposed Project does not involve substantial mechanical equipment associated residential dwelling units;
- Live/Work units would not involve substantial operations or noise generating activities (units would be small in size, not more than 1,200 square feet in size); and
- The proposed Project does not involve substantial nighttime activities.

For the reasons outlined above, the proposed Project would not result in noise levels that exceed City standards or otherwise result in a substantial permanent increase in ambient noise levels in the vicinity of the Project.

Off-Site Operational Noise Analysis
The proposed Project would generate vehicle trips that would be distributed onto the local roadway system and potentially increase noise levels along travel routes. Caltrans considers a doubling of total traffic volume to result in a three (3) dBA increase in traffic-related noise levels (Caltrans, 2013). If the proposed Project would not result in a doubling of traffic volumes on the local roadway system, it would not result in a substantial permanent increase in traffic-related noise levels.

The proposed Project would result in a net increase in trip generation equal to 326 total daily trips, including 27 trips during the PM peak hour (See Appendix F). These trips would end up on Cutter Way or San Bernardino Road which have estimated ADT levels equal to at least 402 and 11,729 respectively. The addition of 326 daily trips to either of these roadways (which is unlikely to occur) would result in at most an 81% increase in traffic volumes on Cutter Way and a 3% increase on San Bernardino Road. Even under PM peak hour conditions, the proposed Project would not double traffic volumes on either roadway (Cutter Way and San Bernardino had PM peak hour traffic volumes equal to 35 vehicles and 1,119 vehicles, respectively. Since the proposed Project would result in substantially less than a doubling of peak hour and daily traffic volumes on roadways used to access the site it would not result in a substantial, permanent increase in off-site noise levels on Cutter Way or San Bernardino Road. Impacts will be less than significant.

Other Noise Effects
The California Supreme Court in *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369 (2015) ruled that CEQA review is focused on a project's impact on the environment "and not the environment's impact on the project." Per this ruling, a Lead Agency is not required to analyze how existing conditions might impact a project's future users or residents; however, a Lead Agency may elect to disclose information relevant to a project even if it not is considered an impact under CEQA. Furthermore, the City's Municipal Code and General Plan Noise Element set noise standards for receiving land uses which require evaluation for consistency and compliance even if such evaluation is not required by CEQA. This section analyzes the existing noise environment and the degree to which the existing environment is compatible and consistent with City goals, policies, and standards for the proposed Project's noise environment.

Review Standards

The existing noise environment described in the previous section was reviewed against the following goals, policies and standards set by the City in its Municipal Code and General Plan. Would the project:

- Expose people living or working in the project area to existing noise levels that exceed the standards established in:
    - The City of Covina Municipal Code Section 9.04.060; and
    - The City of Covina General Plan Noise Element Policy 1.2.

Land Use Compatibility - Exterior Noise Exposure
As described above, the ambient noise levels at the Project site are assumed to range between 67 to 68 DNL (at the southern property line) to approximately 55 to 60 CNEL (near the center and northern part of the site). These ambient noise levels are considered representative of the conditions that could be present at the Project site at the time the proposed Project is occupied by residential receptors. The

City of West Covina prepared an Initial Study / Mitigated Negative Declaration (IS/MND) in July 2021 for the Amazon Delivery Station proposed to the south of the Project site (at the same location where the Faith Church used to operate). The traffic noise levels associated with operation of that project were estimated to result in traffic noise levels of 66.0 dBA CNEL at a distance of 80 feet from San Bernardino Road. The southernmost facades of Buildings 1 and 2 proposed by the Project would be located slightly closer to San Bernardino than 80 feet from the center line (these buildings would be approximately 60 feet from the San Bernardino Road center line). The use of 67 to 68 DNL as the noise environment at the proposed Project's building facades accounts for this reduced distance and provides an accurate assessment of potential noise levels. In addition, based on the preceding discussion, the analysis contained in this Report is also consistent with the findings of other environmental analyses conducted for recent projects in the vicinity of the Project site.

On the southern portion of the site, these values exceed the City's 60 DNL Noise Study Zone thresholds, which generally recognizes where noise insulation may be required for multi-family residential units, as well the City's 65 DNL Noise Mitigation Zone, which generally establishes the areas where new or expanded noise-sensitive development should be permitted only if appropriate mitigation measures, such as barriers or additional sound insulation, are included in the Project. Specifically, based on the Project site plan, Buildings 1 and 2 would front San Bernardino Road and include exterior balconies that front San Bernardino Road; Building 4 would also front San Bernardino Road and include balconies (on the eastern side of the building) that front San Bernardino Road. There are no other common or private exterior use areas that front San Bernardino Road. Due to the site layout, Buildings 1 and 2 effectively shield all other buildings from traffic noise levels associated with San Bernardino Road (with the exception of the eastern part of Building 4). Cutter Way does not generate substantial traffic noise levels and ambient noise monitoring data indicates noise levels in the center to northern parts of the site (adjacent to existing light manufacturing lands) do not exceed 60 DNL.

City General Plan Policy 1.2 requires the City to attempt to mitigate or eliminate the possible noise problems of proposed residential or other noise-sensitive uses located within all 65 DNL noise contours to ensure compatibility and, pertaining to residential activities, adherence to applicable State noise insulation standards, which require interior noise levels attributable to exterior noise sources not exceed 45 dBA DNL. Based on the ambient noise levels that would be experienced at exterior patio areas in Buildings 1, 2, and 4 (67 to 68 DNL), special design features would be required to ensure these areas are not exposed noise levels above 65 DNL. The necessary attenuation (up to 3 dB) could be achieved using a wood / plexiglass balcony assembly reaching a total height of 5 feet above the balcony floor.

Interior Noise Level Compatibility

The California Building Standards Code establishes that interior noise levels attributable to exterior noise sources shall not exceed 45 DNL or CNEL (as established by the local General Plan) for residential developments. In addition, the City's Municipal Code (Section 9.40.060) establishes 45 dBA Leq and 35 dBA Leq interior daytime and nighttime noise standard for residential developments, respectively. As described previously, daily noise exposure levels at the exterior façade of Project Buildings 1, 2, and 4, which front San Bernardino Road, could be up to 68 DNL. Standard construction techniques for new residential development typically provide a minimum exterior to interior noise attenuation (i.e., reduction) of 25 to 32 dBA with windows closed, which is sufficient to meet the 45 CNEL interior noise standard established by local and state requirements. The U.S. Department of Housing and Urban Development (HUD) Noise Guidebook and supplement includes information on noise attenuation provided by building materials and different construction techniques. As a reference, a standard exterior wall consisting of 5/8-inch siding, wall sheathing, fiberglass insulation, two by four wall studs on 16-inch centers, and 1/2-inch gypsum wall board with single strength windows provides approximately 35 dBs of attenuation between exterior and interior noise levels. This reduction may be slightly lower (2-3 dBs) for traffic noise due to the specific frequencies associated with traffic noise but will still be sufficient to meet the 45 DNL standard for dwelling units near San Bernardino Road. Increasing window space may also decrease attenuation, with a reduction of 10 dBs possible if windows occupy 30% of the exterior wall façade. These estimates generally assume window assemblies do not account for more than 20% to 30% of the exterior façade surface area; however, the schematic design for the proposed Project indicates a storefront window wall system is proposed for most exterior building facades, including Buildings 1, 2, and 4. The exterior to interior noise transmission rating for this assembly, therefore, would need to be confirmed to ensure interior noise levels meet the 45 CNEL interior noise standard established by local and state requirements.

The CALGreen Code establishes additional standards for interior noise levels that may apply to residential developments if a building is located within a 65 DNL noise contour of an airport, freeway, railroad, industrial source, etc. or otherwise exposed to a noise level of 65 dBA on an hourly Leq basis. As summarized above, the proposed Project would place Buildings 1, 2, and 4 within the 65 DNL contour associated with San Bernardino Road; these buildings would also be subject to hourly L_{eq} noise levels above 65 dBA. The proposed Project, therefore, would be subject to the prescriptive or performance standard requirements of the CALGreen code, which requires that exterior wall and roof-ceiling assemblies exposed to the noise source meet specific STC and OITC ratings.

The City's Municipal Code (Section 9.40.060) also establishes a 35 dBA L_{eq} interior nighttime noise standard for residential developments. As shown in Table 19 above, nighttime noise levels at ambient monitoring location LT-1 ranged from 53.7 - 63.3 dBA Leq, with an overall nighttime average of 58.8 dBA L_{eq}. This indicates exterior to interior noise reduction of approximately 19 to 29 dBA is required to achieve the City's nighttime interior noise standard for residential developments. The STC and OITC exterior wall and roof assembly requirements set forth by the CALGreen code generally require the assembly to have an STC of 40 or an OITC of 30, which should be sufficient to meet the City's nighttime interior; however, the final exterior assemblies would need to be reviewed and confirmed.

To reduce the potential for exterior and interior noise and land use compatibility issues with City goals, policies, and standards that may occur as a result of the existing ambient noise environment at and in the vicinity of the proposed Project, MIG has incorporated the following existing noise environment reduction measures into the proposed Project as **Mitigation Measure NOI-2**. Incorporation of **Mitigation Measure NOI-2** would ensure the proposed Project's is designed and constructed in a manner that is compatible with the existing ambient noise environment and consistent with State noise requirements and City goals, policies, and standards for residential noise exposure.

<u>Mitigation Measures</u>

NOI-2 **Document Compliance with Applicable Noise Standards.** Prior to the issuance of a building permit for the Project, the City shall review and approve an acoustical analysis, prepared by or on behalf of the Project Applicant by a qualified acoustical consultant, and based on the final Project design, that:

- Identifies the exterior noise levels at all building façades and exterior use areas, including private balconies, with a direct line of sight to San Bernardino Road; and
- Identifies the final site and building design measures that would:
  - Attenuate exterior use areas such that noise levels do not exceed 65 DNL. For balconies, this may be achieved through the use of plexiglass or other similar shields that extend from the balcony floor or wall assembly to a sufficient height capable of achieving a minimum 4 dBA reduction in exterior noise levels (or other reduction determined to be necessary based on updated exterior noise levels identified in the acoustical analysis).

- Comply with applicable CALGreen building code requirements for buildings located within a 65 DNL roadway noise contour and subject to hourly noise levels of 65 dBA Leq.
- Provide the necessary exterior to interior noise reduction need to achieve a 45 dBA Leq interior daytime noise level (per City Municipal Code Section 9.40.060), a 35 dBA Leq interior nighttime noise level (per City Municipal Code Section 9.40.060), and a 45 DNL (per State building code requirements). All standards are to be met with closed windows. Potential noise insulation design features capable of achieving these requirements may include, but are not limited to, sound barriers, enhanced exterior wall, ceiling, and roof noise insultation, use of enhanced window, door, roof assemblies with above average sound transmission class or outdoor/indoor transmission class values, and/or use of mechanical, forced air ventilation systems to permit a windows closed condition.

b) **Less than Significant Impact.** Vibration is the movement of mass over time. It is described in terms of frequency and amplitude and unlike sound; there is no standard way of measuring and reporting amplitude. Vibration can be described in units of velocity (inches per second) or discussed in decibel (dB) units in order to compress the range of numbers required to describe vibration. Vibration impacts to buildings are generally discussed in terms of peak particle velocity (PPV) that describes particle movement over time (in terms of physical displacement of mass). For purposes of this analysis, PPV will be used to describe all vibration for ease of reading and comparison. Vibration can impact people, structures, and sensitive equipment.[25] The primary concern related to vibration and people is the potential to annoy those working and residing in the area. Vibration with high enough amplitudes can damage structures (such as crack plaster or destroy windows). Groundborne vibration can also disrupt the use of sensitive medical and scientific instruments such as electron microscopes. Common sources of vibration within communities include construction activities and railroads. Operation of the Project does not include uses that cause vibration.

Groundborne vibration generated by construction projects is usually highest during pile driving, rock blasting, soil compacting, jack hammering, and demolition-related activities. Next to pile driving, grading activity has the greatest potential for vibration impacts if large bulldozers, large trucks, or other heavy equipment are used. Development of the Project would not require the use of equipment such as pile drivers, which are known to generate substantial construction vibration levels. According to the Caltrans vibration manual, large bulldozers, vibratory rollers (used to compact earth), and loaded trucks utilized during grading activities can produce vibration, and depending on the level of vibration, could cause annoyance at uses within the Project vicinity or damage structures. Caltrans has developed a screening tool to determine of vibration from construction equipment is substantial enough to impact surrounding uses. The Caltrans vibration manual establishes thresholds for vibration impacts on buildings and humans.

Caltrans' Transportation and Construction Vibration Guidance Manual provides a summary of vibration human responses and structural damage criteria that have been reported by researchers, organizations, and governmental agencies (Caltrans, 2020). These thresholds are summarized in Table 26 (Vibration Damage Potential Threshold Criteria) and Table 27 (Vibration Annoyance Potential Threshold Criteria).

Table 24
Vibration Damage Potential Threshold Criteria

Structural Integrity	Maximum PPV (in/sec)	
	Transient	Continuous
Historic and some older buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial and commercial structures	2.00	0.50
Source: Caltrans 2013		

Table 25
Vibration Annoyance Potential Threshold Criteria

Human Response	PPV Threshold (in/sec)	
	Transient	Continuous
Slightly perceptible	0.035	0.012
Distinctly perceptible	0.24	0.035
Strongly perceptible	0.90	0.10
Severely/Disturbing	2.0	0.7 (at 2 Hz) to 0.17 (at 20 Hz)
Very disturbing	--	3.6 (at 2 Hz) to 0.4 (at 20 Hz)
Source: Caltrans 2013		

Construction Vibration

Project construction activities would involve the use of large equipment capable of generating groundborne vibrations. Since Project-specific construction equipment information is not available at this time, potential construction-related vibration impacts can only be evaluated based on the typical construction activities associated with a multi-family residential development project. Table 28 (Potential Groundborne Vibration Levels) presents the estimated, worst-case vibration levels that could occur from the operation of the typical large and/or vibration-inducing construction equipment used to develop a multi-family residential land use project. The equipment assumptions used in this Report are based on, and consistent with, the CalEEMod construction phasing, equipment usage, and operating schedules used to evaluate the proposed Project's potential construction air quality impacts

Table 26
Potential Groundborne Vibration Levels

Equipment	PPV[A] (Inches/Second) at Distance			
	25 Feet	60 Feet	80 Feet	270 Feet
Vibratory Roller	0.210	0.080	0.058	0.015
Large Bulldozer	0.089	0.034	0.025	0.006
Small Bulldozer	0.030	0.011	0.008	0.002
Loaded Truck	0.076	0.029	0.021	0.006
Jackhammer	0.035	0.013	0.010	0.003

Source: MIG (See Appendix E)
[A] Estimated PPV calculated as: PPV(D)=PPV(ref*(25/D^1.3 where PPV(D)= Estimated PPV at distance; PPVref= Reference PPV at 25 ft; D= Distance from equipment to receiver; and n= ground attenuation rate (1.1 for hard, compacted soils).

The potential for ground-borne vibration and noise is typically greatest when vibratory or large equipment such as rollers, impact drivers, or bulldozers are in operation. For the proposed Project, these types of equipment would primarily operate during site preparation, grading, and paving work.

This equipment would, at worst-case and for very limited period of times, operate adjacent to the site's property lines and within approximately 25 and 60 feet of the commercial-industrial buildings immediately north and west of the Project site, respectively. Equipment could also operate within 80 feet of the multifamily residential building façades located east of the Project site; however, most site work would occur at least 150 feet from all adjacent buildings. Accordingly, similar to the construction noise analysis presented above, potential construction vibration levels were estimated for worst-case equipment operations (25 feet from adjacent buildings) and average equipment operations based on the distance from the center of the site to adjacent buildings (approximately 230 feet to the north, 220 feet to the east, and 160 feet to the west). A summary of predicted construction vibration levels is presented in Table 27 (Summary of Predicted Construction Vibration Levels).

Table 27
Summary of Predicted Construction Vibration Levels

Scenario	Estimated Duration(A)	Maximum PPV, Vibratory Roller (inches/second)(B)	Maximum PPV, Typical Equipment (inches/second)(B)
Worst-Case Construction (25 feet from north commercial-industrial building)(C)	1 week	0.210	0.089
Typical Construction (160 feet from east commercial-industrial building)	1 to 2 months	0.019	0.008
Typical Construction (220 feet from west residential building)	1 to 2 months	0.012	0.005
Typical Construction (230 feet from north commercial-industrial building)	1 to 2 months	0.012	0.005

Source: FTA, 2018 and MIG (see Appendix E).
(A) Estimated duration represents the period of time site preparation, grading, and paving activities would occur. For the worst-case construction scenario, the duration assumes equipment would not operate within 25 feet of the same building location for more than 1 week.
(B) Values represent highest estimated ground-borne vibration level for vibratory roller and typical construction equipment (see Appendix E).
(C) Construction activities may occur closer than 25 feet from a property line for short periods of time (hours) that are not representative of overall construction activities. The worst-case construction scenario reflects the duration that heavy equipment may operate in the same general area near a building.

City Municipal Code Section 9.40.120J and Section 9.40.020.30 set forth that the operation of any device that creates a vibration level above 0.01 in/sec is disturbing to the average individual. As shown in Table 27, the proposed Project's construction activities would have the potential to generate groundborne vibration levels that could exceed this threshold. Nearly all construction equipment is capable of generating ground-borne vibration levels that exceed 0.01 in/sec at distance of 25 feet (worst-case construction scenario based on the northern industrial-commercial building); however, at typical operating distances, most construction equipment would not produce ground-borne vibration levels that exceed the City's perception threshold of 0.01 in/sec.6 The exception to this is the potential use of specific vibration-generating equipment such as a vibratory roller; this equipment could generate vibration levels above 0.01 in/sec at distances up to 260 feet from the operating area. The proposed Project does not propose the use of other vibration-generating equipment, such as a pile driving equipment. In addition, it is noted that potential construction vibration levels would not result in structural damage because the estimated vibration levels are substantially below commonly accepted thresholds for potential damage to residential buildings (0.3 to 0.5 in/sec). The use of construction equipment that would generate ground-borne vibration levels above the City's perception threshold of 0.01 in/sec is considered a potentially significant impact. To reduce the proposed Project's potential construction vibration levels at adjacent buildings, the Project Applicant shall be required to implement Mitigation **Measure NOI-3** into the Project.

Mitigation Measure

NOI-3 **Reduce Construction Vibration Levels.** To reduce potential noise levels associated with construction of the proposed Project, the Applicant and/or its designated contractor, contractor's representatives, or other appropriate personnel shall:

- *Notify Adjacent Land Use of Construction Activities.* This notice shall be provided at least one week prior to the start of any construction activities, describe the vibration control measures to be implemented by the Project, and include the name (or title) and phone number of a designated contact for the Applicant and the City of Covina responsible for handling construction-related vibration complaints. This notice shall be provided to all building owners/occupants within 120 feet of the Property site boundary.
- *Prohibit Vibratory Equipment.* The use of large vibratory rollers (small plate compactors are acceptable) and vibratory pile driving equipment are prohibited during construction. Any deep foundation piers or caissons shall be auger drilled.
- *Prepare Vibration Mitigation Plan.* Prior to the start of construction activity, the City or its contractor shall prepare a Construction Vibration Response Plan for the project which:
  - Identifies the name (or title) and contact information (including phone number and email) of the Contractor and City-representatives responsible for addressing construction vibration-related issues.
  - Contains a detailed schedule of substantial earth moving activities expected to occur at the site.
  - Includes procedures describing how the construction contractor will receive, respond, and resolve to construction vibration complaints. At a minimum, upon receipt of a vibration complaint, the Contractor and/or City representative described in the first sub-bullet above shall identify the vibration source generating the complaint, determine the cause of the complaint, and take steps to resolve the complaint by reducing groundborne vibration levels to a peak particle velocity to levels less than 0.01 in/sec . Such measures may include the use of non-impact drivers, use of rubber-tired equipment instead of track equipment, or other measures that limit annoyance from ground-borne vibration levels.

The implementation of **Mitigation Measure NOI-3** would limit the potential for ground-borne vibration during construction activities, require advanced notice to adjacent property owners and building occupants, and develop procedures designed to limit potential annoyance and interference with daily activities at adjacent buildings. This measure would ensure the proposed Project's construction noise levels comply with the requirements of Municipal Code Section 9.40.120J and ensure that construction-related ground-borne vibration levels would not be disturbing, excessive, or offensive at any nearby building locations or cause damage to any adjacent building. Thus, with Mitigation Measure NOI-2, the proposed Project's potential construction noise levels would be rendered a less than significant impact.

c) **No Impact.** There are no public airports, private airstrips, or heliports within two miles of the Project site.[26] The closest airport, San Gabriel Valley Airport, is located more than six (6) miles west of the Project. The Project, therefore, would not expose people living or working at the Project site to excessive airport-related noise levels.

4.14 – Population and Housing

Would the Project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☑	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☑	☐

a) **Less than Significant Impact.** The Project would provide housing for up to 197 people and would provide for the employment of up to 23 people. No new expanded infrastructure is proposed that could accommodate additional growth in the area that is not already possible with existing infrastructure. No impact would occur.

b) **Less than Significant Impact.** The Project site consists of a single parcel with a single-family home. The single-family home is not occupied by any residents and is currently used as a temporary meeting place for the Faith Community Church of Covina. The proposed mixed-use, multi-family residential development would provide housing for up to 197 people. The Project would not displace substantial numbers of residential units necessitating the construction of replacement housing elsewhere. Less than significant impact would occur.

4.15 – Public Services

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

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Fire protection?	☐	☐	☑	☐
b) Police protection?	☐	☐	☑	☐
c) Schools?	☐	☐	☑	☐
d) Parks?	☐	☐	☑	☐
e) Other public facilities?	☐	☐	☑	☐

a) **Less than Significant Impact.** The City of Covina contracts with the Los Angeles County Fire Department to provide fire protection services and emergency response services. There are three fire stations within the City: Fire Station 152, located at 807 West Cypress Street; Fire Station 153, located at 1577 East Cypress Street; and Fire Station 154, located at 401 North Second Avenue. Fire Station 152, located approximately 0.9 mile to the northeast, is closest to the Project site and would be the first responder to the site. Fire Station 152 is staffed daily with a three-person engine company consisting of one fire captain, one fire fighter specialist (engineer), and one fire fighter. Station 153, located approximately 3.7 miles east of the site, is staffed daily with a four-person “quint”, which is a combination ladder truck/pumper engine, consisting of one fire captain, one fire fighter specialist, and two fire fighters. Fire Station 154, located approximately 1.9 miles east of the site, has a three-person assessment engine staffed with one fire captain, one fire fighter specialist, and one fire fighter paramedic, and a paramedic squad staffed with two fire fighter paramedics. Daily on-duty staffing consists of 5 uniformed employees. Fire Station 154 also has a two-person paramedic squad staffed daily with two fire fighters/paramedics. In the event that Fire Station 152 cannot meet the immediate needs of a call for services independently or does not have capability to address the full extent of a larger incident, Fire Stations 153 and 154 or the closest available Los Angeles County Fire Department resources could respond or provide support. Based on the proximity of the Project site to the Fire Stations in the City, it is expected that the response times would be within the national standard of five minutes or less for fires and basic life support, and eight minutes or less for advanced life support. At the time of this writing, the Los Angeles County Fire Department does not have plans to expand facilities, staff, or equipment at Fire Stations 152, 153, or 154. As discussed in Section 4.14 (Population and Housing), the proposed Project would increase the land use intensity of the project site, resulting in up to 197 residents and 24 employees on the site. Under existing conditions, the Project site does not support any employees or residents. The increase in City residents and employees would represent an incremental increase in demand for fire services within the City. However, the proposed Project would be subject to current Los Angeles County Fire Department requirements for fire sprinkler systems, fire alarm systems, fire flow, and equipment and firefighter access, as well as fire code requirements. Compliance with the fire code standards would be ensured through the plan check process prior to the issuance of building permits and would reduce the potential demand for fire services at the Project site. The proposed Project would not have any significant effects to service demands. Due to the limited increase in demand that would be attributable to the proposed Project, the availability of fire services within proximity to the Project site, and required compliance with fire code standards, the construction or expansion of existing fire facilities would not be required as a result of developing the proposed Project. Therefore, the proposed Project would not result in substantial adverse physical impacts associated with the provision of new or physically altered facilities. Impacts would be less than significant.

b) **Less than Significant Impact.** Police protection services in the City are provided by the City of Covina Police Department. The Covina Police Department is located at 444 North Citrus Avenue, which is located approximately 1.8 miles from the Project site. The Project site is in the department's West Service Area.[27] There are 88 budgeted full-time employees of the Police Department, of which 59 are sworn officers (1 Chief, 2 Captains, 4 Lieutenants, 9 Sergeants, and 43 Police Officers). As discussed in Section 4.14 (Population and Housing), the proposed Project would increase the land use intensity of the project site, resulting in up to 197 residents and 24 employees on the site. The increased land use intensity at the Project site could increase the frequency of emergency and non-emergency calls to the Covina Police Department from the Project site, as compared with existing conditions. The proposed Project would employ defensible design, lighting, and landscaping, as well as open fencing for views of the site, and site design would minimize dead spaces hidden from public view to prevent loitering. These aspects of the Project could lessen the demand for police protection services at the Project site. Furthermore, police units are continuously mobile, and service calls are responded to by the nearest available mobile unit. In the City of Covina, the response time for Priority One Call for service is 4 minutes and 41 seconds. Priority One calls include robbery, assault with a deadly weapon, traffic collisions with injuries, etc. and the proposed Project is located within close proximity of the Police Department. At the time of this writing, the department does not have plans to expand facilities, staff, or equipment. While new development may place increased demand on police protection services, the proposed Project would not result in the construction or expansion of police facilities. The current staffing and facilities would be sufficient to serve the proposed Project. The proposed Project would not, therefore, result in substantial adverse physical impacts associated with the provision of new or physically altered facilities. Impacts would be less than significant.

c) **Less than Significant Impact.** The Project site is served by the Covina Valley Unified School District. The Project site is within the attendance boundaries of the following schools: Manzanita Elementary School (4131 North Nora Avenue), Las Palmas Middle School (641 North Lark Ellen Avenue), and Northview High School (1016 West Cypress Street).[28] The need for new school facilities is typically associated with a population increase that generates an increase in enrollment large enough to cause new schools to be constructed. As discussed in Section 4.14 (Population and Housing), the proposed Project would increase the land use intensity of the project site, resulting in approximately 197 residents on the site. Using the state's Student Yield Factor for Unified School Districts[29], which is 0.7 students per dwelling unit, the proposed Project would result in approximately 44 new students in the District.[xiv] While the proposed Project would increase the number of students, it would not do so to the extent that new school facilities would be required, due to the minor increase in students. Further, the site would

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[xiv] 63 dwelling units × 0.7 students per dwelling unit = 44 students

be served by different school facilities, which would lessen the number of students that each school would support. Existing facilities would be sufficient to accommodate the potential increase in enrollment attributable to the proposed Project. Development impact fees may be levied for both residential and commercial construction, pursuant to Education Code Section 17620 and California Government Code Section 65995. As stated in California Government Code Section 65996, payment of school impact fees in accordance with California Government Code Section 65995 and/or Education Code Section 17620 is deemed to constitute full and complete mitigation for potential impacts to schools caused by development. For these reasons, impacts related to the need for new school facilities as a result of implementing the proposed project would be less than significant.

d) **Less than Significant Impact.** The residents, employees, and visitors of the proposed Project could use nearby park facilities. Nearby recreation facilities include Palm View Park (10 acres, located 0.5 mile south of the project site); Del Norte Park (17.5 acres, located 1.1 mile southwest of the Project site in West Covina); and Irwindale Park (10.5 acres, located 1.1 miles northwest of the Project site in Irwindale). There is a total of 72.5-acres of accessible parkland/open space in the City of Covina. Additionally, the 11-acre Walnut Creek Park, which is owned by the County of Los Angeles, lies within the boundaries of the City. At the time of General Plan adoption in 2000, the City had 1.3 acres of open space for every 1,000 residents. This ratio is considered significantly below the National Park and Recreation Association's guideline of 2.5–4.0 acres of parkland for every 1,000 residents.[30] While the City is currently deficient in parkland acreage, implementation of the proposed Project would not substantially exacerbate this issue. While the proposed Project would incrementally increase the population in the City, the amount of growth would be minor relative to the City's existing and future population (see Section 4.14 for details) and would, therefore, not significantly exacerbate the City's parkland deficiency. Furthermore, the Project applicant would be required to pay development fees that would help support recreational facilities in the City. Payment of fees would help address any incremental increase in demand for recreational facilities that may be caused by the Project. Additionally, the design of the Project includes open space areas that may serve to alleviate any potential minor increases in the use of nearby park facilities. (Specifically, the proposed Project would include an outdoor courtyard area and private patio areas). For these reasons, impacts to park facilities from implementation of the proposed Project would be less than significant.

e) **Less than Significant Impact.** Other public facilities and services provided within the City include library services and City administrative services. Library services are provided by the Covina Public Library, located at 234 North Second Avenue, 1.9 miles east of the Project site. The residents, employees, and visitors of the proposed Project could use the City's library services, but the increase in use would not be significant relative to citywide demand. As described in Section 4.14, the proposed Project would not be expected to generate substantial population growth within the City. In the unlikely event that the proposed Project were to cause population growth in the City, this growth would be minor (approximately 0.39% of the population, given worst-case-scenario conditions). Thus, it is anticipated that existing library and City administrative services would accommodate any negligible increase in demand due to implementation of the proposed Project. As such, impacts to other public facilities in the area would be less than significant.

4.16 – Recreation

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

a) **Less than Significant Impact.** The residents, employees, and visitors of the proposed Project could use nearby park facilities. Nearby recreation facilities include Palm View Park (10 acres, located 0.5 mile south of the project site); Del Norte Park (17.5 acres, located 1.1 mile southwest of the Project site in West Covina); and Irwindale Park (10.5 acres, located 1.1 miles northwest of the Project site in Irwindale). There is a total of 72.5-acres of accessible parkland/open space in the City of Covina. Additionally, the 11-acre Walnut Creek Park, which is owned by the County of Los Angeles, lies within the boundaries of the City. At the time of General Plan adoption in 2000, the City had 1.3 acres of open space for every 1,000 residents. This ratio is considered significantly below the National Park and Recreation Association's guideline of 2.5–4.0 acres of parkland for every 1,000 residents.[31] As such, the City is currently deficient in parkland acreage. As described in Section 4.15, the Project applicant would be required to pay development fees that would help support recreational facilities in the City. The proposed new dwellings would be subject to DIF fees and Citywide facilities CFD. These parks funding mechanisms will offset the incremental increase in demand for park facilities from implementation of the Project. Payment of fees would help address any incremental increase in demand in recreational facilities that may be caused by the Project. Additionally, the design of the Project includes open space areas that may serve to alleviate any potential minor increase in the use of nearby park facilities. (Specifically, the proposed Project would include an outdoor courtyard area and private patio areas). For these reasons, development of the proposed Project would not substantially exacerbate the City's parkland deficiency. (While the proposed Project would incrementally increase the population in the City, the amount of growth would be minor relative to the City's existing and future population.) Impacts to park facilities from implementation of the proposed Project would be less than significant.

b) **No Impact.** The proposed Project includes development of mixed-use, multi-family structures on a site that is currently developed with a single-family home. The proposed development includes some open space areas (specifically, an outdoor courtyard and private residential patios). The effects of constructing these open space areas are included as part of the Project and, therefore, have been analyzed for their potential environmental effects in this IS/MND. No significant, adverse environmental effects would occur as a result of the proposed Project. As described above in Section 4.16(a), the proposed Project would not require construction or expansion of recreational facilities. As such, no impact would occur.

4.17 – Transportation

Would the Project:

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

A *Transportation Impact Study* was prepared for the Project by Linscott, Law, & Greenspan Engineers (LLG), dated September 10, 2020 (See Appendix F).[32] The *Transportation Impact Study* identifies and evaluates the potential transportation impacts of the proposed Project. A *Supplemental Analysis* was also prepared for the Project by LLG, dated November 18, 2020, to address comments received by the City of West Covina regarding Project site access, driveway sight distance, traffic signal warrants analysis, and Vehicle Miles Traveled (VMT) analysis (See Appendix G). This information in this section was taken from these studies.

a) **Less than Significant Impact.** According to the traffic impact study, the Project is estimated to generate 326 additional daily trips, with 22 AM peak hour trips and 27 PM peak hour trips. Based on the analysis conducted for the proposed Project, no study area intersections were determined to have a direct significant impact due to the proposed Project. The traffic Study area was established in consultation with City of Covina staff through the Scoping Letter Agreement process. The transportation analysis study area is generally comprised of those locations which have the greatest potential to experience significant traffic impacts due to the proposed project as defined by the Lead Agency. The locations selected for analysis were based on vicinity to the site, the forecast project peak hour vehicle trip generation, anticipated distribution of project vehicular trips, and the existing nearby intersection and corridor operations. The eight study intersections included for analysis are as follows:

1. Vincent Avenue/ Cypress Street
2. Vincent Avenue/ Industrial Park Street (unsignalized)
3. Vincent Avenue/ San Bernardino Road
4. Vincent Avenue/ Badillo Street
5. Cutter Way/ San Bernardino Road (unsignalized)

6. Lark Ellen Avenue/ Cypress Street
7. Lark Ellen Avenue/ San Bernardino Road
8. Lark Ellen Avenue/ Badillo Street

Six of the study intersections selected for analysis are currently controlled by traffic signals, with the remaining two study intersections, Vincent Avenue/Industrial Park Street and Cutter Way/San Bernardino Road, controlled with two-way stop signs. The intersection volume-to-capacity, delay and Level of Service calculations for the study intersections were used to evaluate the potential traffic-related impacts associated with area growth, cumulative projects and the proposed project. It should be noted that additional intersections in the project vicinity were not selected for analysis because they do not satisfy the aforementioned criteria, and as such, they are not anticipated to experience significant impacts due to project-generated traffic volumes.

Cumulative Development Projects

The forecast of future pre-project conditions was prepared in accordance with procedures outlined in Section 15130 of the CEQA Guidelines. Specifically, the CEQA Guidelines provide two options for developing the future traffic volume forecast:

"(A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the [lead] agency, or

(B) A summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect. Such plans may include: a general plan, regional transportation plan, or plans for the reduction of greenhouse gas emissions. A summary of projections may also be contained in an adopted or certified prior environmental document for such a plan. Such projections may be supplemented with additional information such as a regional modeling program. Any such document shall be referenced and made available to the public at a location specified by the lead agency."

Accordingly, the transportation analysis provides a highly conservative estimate of future pre-project traffic volumes as it incorporates both the "A" and "B" options outlined in the CEQA Guidelines for purposes of developing the forecast.

<u>*Related Projects*</u>
A forecast of on-street traffic conditions prior to occupancy of the proposed Project was prepared by incorporating the potential trips associated with other known development projects (related projects) in the area. With this information, the potential impact of the proposed Project can be evaluated within the context of the cumulative impact of all ongoing development. The related projects research was based on information on file at the City of Covina Community Development Department, the City of West Covina Planning Department, and the County of Los Angeles Department of Regional Planning. The related projects in the study area are presented in Table 6-1 of the Project *Transportation Impact Study*, and the locations of the related projects are shown in Figure 6-1 of the study (See Appendix F). Traffic volumes expected to be generated by the related projects were calculated using rates provided in the ITE *Trip Generation Manual*. The related projects' respective traffic generation for the weekday AM and PM peak hours, as well as on a daily basis for a typical weekday, is summarized in Table 6-1 of the Project *Transportation Impact Study*. As shown in Table 6-1, the related projects are expected to generate a combined total of 14,147 daily trips during a typical weekday, 1,046 vehicle trips (552 inbound trips and 494

outbound trips) during the weekday AM peak hour, and 1,224 vehicle trips (588 inbound trips and 636 outbound trips) during the weekday PM peak hour.

Ambient Traffic Growth Factor
In order to account for unknown related projects not included in this analysis, the existing traffic volumes were increased at an annual rate of one percent (1.0%) per year to the year 2023 (i.e., the anticipated year of project build-out). The ambient growth factor was based on general traffic growth factors provided in the *2010 Congestion Management Program* (the "CMP manual"). The general traffic growth factors provided in the CMP manual for the Regional Statistical Area (RSA) 26, which includes the Covina and West Covina areas, has an annual traffic volume growth rate of approximately 0.46% per year between years 2010 and 2020. Thus, application of a one percent (1.0%) annual growth factor allows for a conservative, worst- case forecast of future traffic volumes in the area. Further, it is noted that the CMP manual's traffic growth rate is intended to anticipate future traffic generated by development projects in the project vicinity. Thus, the inclusion in this traffic analysis of both a forecast of traffic generated by the known related projects and the use of an ambient growth traffic factor based on CMP traffic model data results in a conservative estimate of future traffic volumes at the study intersections.

Traffic Forecasting Methodology

In order to estimate the traffic impact characteristics of the proposed project, a multi-step process has been utilized. The first step of the forecasting process is trip generation, which estimates the total arriving and departing traffic volumes on a peak hour and daily basis. The traffic generation potential is typically forecast by applying the appropriate vehicle trip generation equations or rates to the project development tabulation.

The second step of the forecasting process is trip distribution, which identifies the origins and destinations of inbound and outbound project traffic volumes. These origins and destinations are typically based on demographics and existing/anticipated travel patterns in the study area.

The third step is traffic assignment, which involves the allocation of project traffic to study area streets and intersections. Traffic assignment is typically based on minimization of travel time, which may or may not involve the shortest route, depending on prevailing operating conditions and travel speeds. Traffic distribution patterns are indicated by general percentage orientation, while traffic assignment allocates specific volume forecasts to individual roadway links and intersection turning movements throughout the study area.

With the forecasting process complete and project traffic assignments developed, the impact of the proposed project is isolated by comparing operational (i.e., Levels of Service) conditions at selected key intersections using existing and expected future traffic volumes with and without forecast project traffic. The need for site-specific traffic improvements can then be evaluated and the significance of the project's impacts identified.

Project Trip Generation

Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Traffic volumes expected to be generated by the proposed Project during the weekday AM and PM peak hours, as well as on a daily basis for a weekday, were estimated using rates published in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual.* Traffic volumes expected to be generated by the proposed Project were based upon rates per dwelling unit. ITE Land Use Code 221 (Multifamily Housing [Mid-Rise]) trip generation average rates were used to forecast the traffic volumes expected to be generated by the proposed Project development site. The trip generation rates and forecast of the vehicular trips anticipated to be generated by the proposed Project are presented in Table 28 (Project Trip Generation). The Project trip generation forecast was submitted for review and approval by City staff. As summarized in Table 28, the proposed Project is expected to generate 22 vehicle trips (6 inbound trips and 16 outbound trips) during the weekday AM peak hour. During the weekday PM peak hour, the proposed Project is expected to generate 27 vehicle trips (16 inbound trips and 11 outbound trips). Over a 24-hour period, the proposed project is forecast to generate 326 daily vehicle trip ends (163 inbound trips and 163 outbound trips) during a typical weekday. While this level of commuter peak hour trip generation is relatively low (i.e., less than one vehicle entering or exiting the project site every two [2] minutes during the commute peak hours), it is conservative in that no reductions have been incorporated in the forecast to account for future residents who utilize transit, walk or bike to/from their destinations.

Table 28
Project Trip Generation

Land Use	**Size**	**Daily Trip Ends Volumes**(A)	**AM Peak Hour Volumes**(A)			**PM Peak Hour Volumes**(A)		
			In	**Out**	**Total**	**In**	**Out**	**Total**
Apartment(B)	49 DU	266	5	13	18	13	9	22
Live/Work(B)	11 DU	60	1	2	4	3	2	5
	Total	**326**	**6**	**16**	**22**	**16**	**11**	**27**

Source: ITE "Trip Generation Manual", 10th Edition, 2017.
(A) Trips are one-way traffic movements, entering or leaving.
(B) ITE Land Use Code 221 (Multifamily Housing [Mid-Rise]) trip generation average rates.
- Daily Trip Rate: 5.44 trips/dwelling unit; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 0.36 trips/dwelling unit; 26%inbound/74% outbound
- PM Peak Hour Trip Rate: 0.44 trips/dwelling unit; 61% inbound/39% outbound

Project Trip Distribution and Assignment
Project traffic volumes both entering and exiting the site have been distributed and assigned to the adjacent street system based on the following considerations:

- The site's proximity to major traffic corridors (i.e., San Bernardino Road, Badillo Street, Vincent Avenue, and Lark Ellen Avenue, etc.);
- Expected traffic flow patterns based on adjacent roadway channelization and presence of traffic signals;
- Existing intersection traffic volumes;
- Proposed ingress/egress planned for the proposed project;
- Nearby population and employment centers; and
- Input from City staff.

Transportation Impact Analysis Methodology

As previously noted, six of the eight study intersections are currently signalized. The signalized intersections were evaluated using the Intersection Capacity Utilization (ICU) method of analysis which determines Volume-to-Capacity (*v/c*) ratios on a critical lane basis (i.e., based on the individual *v/c* ratios for key conflicting traffic movements). The overall intersection *v/c* ratio is subsequently assigned a Level of Service (LOS) value to describe intersection operations. Level of Service varies from LOS A (free flow) to LOS F (jammed condition). As directed by the City of Covina's *Traffic Impact Analysis Guidelines* (May 2014), the ICU calculations use a lane capacity of 1,600 vehicles per hour (vph) for left-turn, through-, and right-turn lanes, and a dual turn-lane capacity of 2,880 vph. A clearance interval of 0.05 also is included in the ICU calculations. The remaining two study intersections are unsignalized. The respective *Highway Capacity Manual* (HCM) methodologies outlined in Chapter 19 for unsignalized/two-way stop-controlled (TWSC) intersections were utilized for the analysis of the unsignalized locations. The TWSC methodology estimates the average control delay for each minor-street movement (or shared movement) as well as major-street left-turns and determines the LOS for each constrained movement. Average control delay for any particular movement is a function of the capacity of the approach and the degree of saturation. The average control delay is measured in seconds per vehicle and includes delay due to deceleration to a stop at the back of the queue from free-flow speed, move-up time within the queue, stopped delay at the front of the queue, and delay due to acceleration back to free-flow speed.

Impact Criteria and Thresholds

The relative impact of the added project traffic volumes to be generated by the proposed project during the weekday AM and PM peak hours was evaluated based on analysis of existing and future operating conditions at the study intersections, without and with the proposed project. The previously discussed capacity analysis procedures were utilized to evaluate the future *v/c* or delay relationships and service level characteristics at each study intersection. As indicated in the Project transportation impact study, two (2) of the eight (8) study intersections are located within the City of Covina, two (2) study intersections are located solely in the unincorporated area of the County of Los Angeles, three (3) study intersections are shared between the Cities of Covina and West Covina, and one (1) intersection is shared between the City of Covina and the unincorporated area of the County of Los Angeles. Each study intersection was evaluated for potential traffic impacts with application of the significant traffic impact criteria based on the intersection's respective jurisdiction (e.g., study intersections in the City of Covina were evaluated for potential traffic impacts using the criteria of the City of Covina, etc.). For intersections that are shared between jurisdictions, the criteria for both jurisdictions were applied. The impact criteria for each of the three jurisdictions are discussed in detail below.

City of Covina Impact Criteria and Thresholds

The significance of the potential impacts of project-generated traffic at the City of Covina study intersections was identified using the traffic impact criteria set forth in the City of Covina's *Traffic Impact Analysis Guidelines* (May 2014). According to the City's traffic study guidelines, a significant transportation impact is determined based on the impact threshold criteria presented in Table 29 (City of Covina Intersection Impact Threshold Criteria).

Table 29
City of Covina Intersection Impact Threshold Criteria

SIGNALIZED INTERSECTION IMPACT THRESHOLD CRITERIA		
Pre-Project *v/c*	**Level of Service**	**Project Related Increase in *v/c***
0.71 to 0.80	C	equal to or greater than 0.04
0.81 to 0.90	D	equal to or greater than 0.02
0.91 or more	E/F	equal to or greater than 0.01
UNSIGNALIZED INTERSECTION IMPACT THRESHOLD CRITERIA		
Pre-Project Delay	**Level of Service**	**Project Related Increase in Delay**
≥ 25.0 seconds	A/B/C	LOS D or worse
> 25.0 seconds	D/E/F	equal to or greater than 5.0 seconds
Source: Linscott, Law, & Greenspan Engineering, 2020.		

The City's traffic study guidelines require mitigation of project traffic impacts whenever traffic generated by the proposed development exceeds the criteria above.

City of West Covina Impact Criteria and Thresholds
The significance of the potential impacts of project-generated traffic at the City of West Covina study intersections was identified using the traffic impact criteria as summarized below. According to the City of West Covina, a significant transportation impact is determined based on the impact threshold criteria presented in Table 30 (City of West Covina Intersection Impact Threshold Criteria).

Table 30
City of West Covina Intersection Impact Threshold Criteria

Final *v/c*	Level of Service	Project Related Increase in v/c
> 0.800	D, E, F	equal to or greater than 0.02
Source: Linscott, Law, & Greenspan Engineering, 2020.		

Similar to the City of Covina, the City of West Covina's method requires mitigation of project traffic impacts whenever traffic generated by the proposed development exceeds the criteria above.

County of Los Angeles Impact Criteria and Thresholds
For the County of Los Angeles study intersections, the significance of the potential project generated traffic impacts was identified using the traffic impact analysis guidelines set forth in the County of Los Angeles Department of Public Works' *Traffic Impact Analysis Report Guidelines*, January 1997. According to the County's published guidelines, the impact is considered significant if the project-related increase in the *v/c* ratio equals or exceeds the threshold criteria presented in Table 31 (County of Los Angeles Intersection Impact Threshold Criteria.

Table 31
County of Los Angeles Intersection Impact Threshold Criteria

Final *v/c*	Level of Service	Project Related Increase in v/c
> 0.70 – 0.80	C	equal to or greater than 0.04
> 0.80 – 0.90	D	equal to or greater than 0.02
> 0.90	E and F	equal to or greater than 0.01
Source: Linscott, Law, & Greenspan Engineering, 2020.		

Pursuant to the County's *Traffic Impact Analysis Report Guidelines*, the ICU calculations for the County study intersections also utilize a lane capacity of 1,600 vehicles per hour (vph) per lane and 2,880 vph for dual left-turn and right-turn lanes. A clearance interval of 0.10 is included in the ICU calculations for the County study intersections.

Transportation Impact Analysis Scenarios
Morning and evening peak hour traffic conditions were analyzed for the following scenarios:

- Existing (2020) Conditions
- Existing (2020) with Project Conditions
- Future (2023) without Project Conditions
- Future (2023) with Project Conditions

Transportation Impact Analysis

The transportation impact analysis prepared for the study intersections using the ICU and HCM methodologies and the significance criteria for the respective jurisdictions is summarized in Table 32 (Summary of Volume to Capacity Ratios and Levels of Service).

<u>*Existing Conditions*</u>
As indicated in column [1] of Table 32, all of the study intersections are presently operating at LOS D or better during the weekday AM and PM peak hours under existing conditions. As previously mentioned, the existing traffic volumes at the study intersections during the weekday AM and PM peak hours are displayed in *Figures 5-1* and *5-2* of the Project *Transportation Impact Study* (See Appendix F).

<u>*Existing With Project Conditions*</u>
As shown in column [2] of Table 32, application of the respective jurisdiction's threshold criteria to the "Existing With Project" scenario indicates that the proposed project is not expected to create significant impacts at any of the study intersections. Incremental, but not significant, impacts are noted at the study intersections. Because there are no significant impacts, no traffic mitigation measures are required or recommended for the study intersections under the "Existing With Project" condition. The existing with project traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in Figures 9-1 and 9-2 of the Project *Transportation Impact Study* (See Appendix F).

<u>*Future Without Project Conditions*</u>
The future cumulative baseline conditions were forecast based on the addition of traffic generated by the completion and occupancy of the related projects, as well as the growth in traffic due to the combined effects of continuing development, intensification of existing developments and other factors (i.e., ambient growth). The *v/c* ratios and delays at the study intersections are incrementally increased with the addition of ambient traffic and traffic generated by the related projects listed in Table 6-1 of the Project *Transportation Impact Study* (See Appendix F). As presented in column [3] of Table 32, all of the study intersections are expected to continue operating at LOS D or better during the weekday AM and PM peak hours with the addition of growth in ambient traffic and related projects traffic under the Future Without Project condition. The Future Without Project (existing, ambient growth, related projects) traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in Figures 9-3 and 9-4 of the Project *Transportation Impact Study*.

<u>*Future With Project Conditions*</u>
As shown in column [4] of Table 32, application of the respective jurisdiction's threshold criteria to the "Future With Proposed Project" scenario indicates that the proposed project is not expected to create significant impacts at any of the study intersections. Incremental, but not significant, impacts are noted at the study intersections. Because there are no significant impacts, no traffic mitigation measures are required or recommended for the study intersections under the "Future With Proposed Project" condition. The future with project (existing, ambient growth, related projects and project) traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in Figures 9-5 and 9-6 of the Project *Transportation Impact Study*.

<u>*Conclusion*</u>
It is concluded that the proposed project is not anticipated to result in a significant traffic impact at any of the study intersections for existing and future conditions based on application of the impact threshold criteria for the City of Covina, City of West Covina, and the County of Los Angeles. Incremental but not significant impacts are noted at the study intersections evaluated in this analysis. As no significant impacts are expected due to the proposed project, no traffic mitigation measures are required or recommended.

Table 32
Summary of Volume to Capacity Ratios and Levels of Service

No.	Intersection	Peak Hour	[1] Year 2020 Existing V/C or Delay	[1] Year 2020 Existing LOS	[2] Year 2020 Existing w/ Project V/C or Delay	[2] Year 2020 Existing w/ Project LOS	[2] Change V/C or Delay [(2)-(1)]	[2] Change Sig. Imp.?	[3] Year 2023 Future w/out Project V/C or Delay	[3] Year 2023 Future w/out Project LOS	[4] Year 2023 Future w/ Project V/C or Delay	[4] Year 2023 Future w/ Project LOS	[4] Change V/C or Delay [(4)-(3)]	[4] Change Sig. Imp.?
1	Vincent Avenue/ Cypress Street [c]	AM PM	0.684 0.755	B C	0.685 0.756	B C	0.001 0.001	No No	0.709 0.783	C C	0.710 0.783	C C	0.001 0.000	No No
2	Vincent Avenue/ Industrial Park Street [a, c, d]	AM PM AM PM	14.1 26.3 0.430 0.377	B D A A	14.1 26.1 0.432 0.379	B D A A	0.0 -0.2 0.002 0.002	No No No No	14.5 28.7 0.443 0.389	B D A A	14.6 28.5 0.445 0.391	B D A A	0.1 -0.2 0.002 0.002	No No No No
3	Vincent Avenue/ San Bernardino Road [a]	AM PM	0.679 0.646	B B	0.680 0.649	B B	0.001 0.003	No No	0.716 0.681	C B	0.717 0.685	C B	0.001 0.004	No No
4	Vincent Avenue/ Badillo Street [a, b]	AM PM	0.715 0.806	C D	0.716 0.806	C D	0.001 0.000	No No	0.746 0.843	C D	0.747 0.843	C D	0.001 0.000	No No
5	Cutter Way/ San Bernardino Road [a, b, d]	AM PM AM PM	21.8 16.7 0.390 0.332	C C A A	24.7 17.8 0.398 0.337	C C A A	2.9 1.1 0.008 0.005	No No No No	25.1 18.9 0412 0.354	D C A A	29.1 20.4 0.420 0.358	D C A A	4.0 1.5 0.008 0.004	No No No No
6	Lark Ellen Avenue/ Cypress Street [c]	AM PM	0.703 0.772	C C	0.703 0.773	C C	0.000 0.001	No No	0.727 0.799	C C	0.727 0.801	C D	0.000 0.002	No No
7	Lark Ellen Avenue/ San Bernardino Road [a]	AM PM	0.645 0.672	B B	0.647 0.673	B B	0.002 0.001	No No	0.678 0.711	B C	0.680 0.712	B C	0.002 0.001	No No
8	Lark Ellen Avenue/ Badillo Street [a, b]	AM PM	0.605 0.683	B B	0.606 0.684	B B	0.001 0.001	No No	0.631 0.713	B C	0.632 0.714	B C	0.001 0.001	No No

[a] City of Covina intersection impact threshold criteria is as follows:

Signalized intersections:

Level of Service	Pre-Project V/C	Project-Related Increase in V/C
C	> 0.700 - 0.800	equal to or greater than 0.040
D	> 0.800 - 0.900	equal to or greater than 0.020
E/F	> 0.900	equal to or greater than 0.010

Unsignalized intersections:

Level of Service	Pre-Project Delay	Project-Related Increase in Delay
A/B/C	≤ 25.0 sec.	LOS D or worse
D/E/F	> 25.0 sec.	equal to or greater than 5.0 seconds

[b] City of West Covina intersection impact threshold criteria is as follows:

Level of Service	Final V/C	Project-Related Increase in V/C
D/E/F	> 0.800	equal to or greater than 0.020

[c] According to the County of Los Angeles Department of Public Works' *Traffic Impact Analysis Report Guidelines* , January 1, 1997, page 6: an impact is considered significant if the project-related increase in the volume-to-capacity ratio (v/c) equals or exceeds the thresholds shown below:

Level of Service	Pre-Project ICU	Project-Related Increase in V/C
C	> 0.700 - 0.800	equal to or greater than 0.040
D	> 0.800 - 0.900	equal to or greater than 0.020
E/F	> 0.900	equal to or greater than 0.010

[d] Unsignalized intersection. Two-way stop controlled.

Traffic Signal Warrant Analyses

Traffic signal warrant analyses have been prepared by LLG to determine whether traffic signals are warranted at the Cutter Way/San Bernardino Road intersection (i.e., under the existing with project completion scenario) (See Appendix G). The warrant analysis is consistent with the signal warrants outlined in Chapter 4C of the *California Manual on Uniform Traffic Control Devices*4 (MUTCD). It is important to note that the satisfaction of a traffic signal warrant is not necessarily justification for the installation of a traffic signal. Delay, congestion, approach conditions, driver confusion, future land use or other evidence of the need for right-of-way assignment beyond that which could be provided by stop sign control may be demonstrated. Conversely, if a traffic signal warrant is not met, these and other factors (e.g., corner sight distance) may be just cause for consideration of a traffic signal installation. The lead agency/agencies must carefully consider all aspects related to installation of traffic controls.

Traffic signal warrants were prepared for the Cutter Way/San Bernardino Road intersection. Specifically, Warrant No. 1 (Eight Hour Vehicular Volume), Warrant No. 2 (Four Hour Vehicular Volume), Warrant No. 3 (Peak Hour Volume) were prepared for existing with project traffic conditions, and Warrant No. 6 (Coordinated Signal System), Warrant No. 7 (Crash Experience), and Warrant No. 8 (Roadway Network) were prepared based on a review of existing roadway and collision records. The traffic signal warrant worksheets are provided in of the Project *Supplemental Analyses* performed by LLG (See Appendix G).

In reviewing the traffic signal warrant analysis, it is important to note the following:

- The Cutter Way/San Bernardino Road intersection was assumed as a two-way stop controlled intersection with the stop sign facing the Cutter Way southbound approach.
- For the signal warrant analyses, the minor street approach volumes consist of the southbound volumes for Cutter Way. The major street approach volumes consist of the eastbound and westbound volumes on San Bernardino Road.
- The traffic signal warrant calculations were based on existing AM and PM peak period volumes that were previously conducted in November 2019 and utilized for the *Transportation Impact Study*.
- Automatic 24-hour machine traffic counts were conducted at the following locations in October 2020 for the subject locations.

  - San Bernardino Road, west of Cutter Way
  - San Bernardino Road, east of Cutter Way
  - Cutter Way, north of San Bernardino Road

  The October 2020 traffic volumes at this location were compared to the November 2019 traffic volumes and adjusted upwards to account for the closures of schools and businesses due to the on-going pandemic. The year 2020 traffic volumes at this location were increased by 100% during the morning period and 20% during the afternoon/evening period.

The following sections provide detailed discussions of the traffic signal warrants prepared for the subject intersection.

Warrant 1: Eight-Hour Vehicular Volume
The Eight Hour Vehicular Volume warrant consists of three conditions: Condition A - the Minimum Vehicular Volume, Condition B – the Interruption of Continuous Traffic, and the Combination of Conditions A and B.

The Minimum Vehicular Volume warrant (Condition A) is intended for application where a large volume of intersecting traffic is the principal reason for consideration of a signal installation. The warrant is satisfied when for each of any eight hours of an average day the traffic volumes provided in the table for Warrant 1 under Condition A exist on the major street and on the higher-volume minor street approach to the intersection.

The Interruption of Continuous Traffic warrant (Condition B) applies to operating conditions where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or hazard in entering or crossing the major street. The warrant is satisfied when, for each of any eight hours of an average day, the traffic volumes given in the table exist on the major street and on the higher-volume minor street approach to the intersection, and the signal installation will not seriously disrupt progressive traffic flow.

The Combination of Conditions A and B warrant applies at locations where Conditions A and B are not satisfied but where Conditions A and B are satisfied to the extent of 80 percent or more of the stated numerical values.

As shown in the worksheets provided in Attachment B of the Project *Supplemental Analyses,* Conditions A and B associated with Warrant No. 1-Eight Hour Vehicular Volume are not met for the existing with project condition for the subject intersection. Therefore, Warrant No. 1 is <u>not satisfied</u> for the subject intersection.

<u>*Warrant 2: Four-Hour Vehicular Volume*</u>
The Four-Hour Vehicular Volume Warrant is satisfied when, for each of any four hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher volume minor street approach (one direction only) all fall above the curve in Figure 4C-1 of the Project *Supplemental Analyses* performed by LLG (See Appendix G) for the combination of approach lanes. The lower threshold for a minor street approach with one lane is 80 vehicles per hour while a minor street with two or more lanes is 115 vehicles per hour. As shown in the worksheet contained in *Attachment B* of the Project *Supplemental Analyses*, the signal warrant is met when the plotted points fall above the appropriate curve.

As indicated in Figure 4C-1 provided in *Attachment B*, the plotted points for the four highest hours of the day during existing with project condition fall below the applicable curve for the subject intersection. Thus, Warrant No. 2 is <u>not satisfied</u> for the Cutter Way/San Bernardino Road intersection.

<u>*Warrant 3: Peak Hour Volume*</u>
The Peak Hour Volume Warrant consists of Part A and Part B and is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The Peak Hour volume warrant applies when one of the following criteria are satisfied (Part A or Part B):

- Part A. If all three of the following conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:

  \- The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds 4 vehicle-hours for a one-lane approach, or 5 vehicle-hours for a two-lane approach, and - The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes, and

- The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.

- Part B of Warrant No. 3 is satisfied when the plotted point, representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher volume minor street approach (one direction only) for one hour of an average day, falls above the curve in Figure 4C-3 of the Project *Supplemental Analyses* for the applicable number of approach lanes. The lower threshold for a minor street approach with one lane is 100 vehicles per hour while a minor street with two or more lanes is 150 vehicles per hour for a minor street approach. As shown in the worksheets contained in *Attachment B* of the Project *Supplemental Analyses*, the signal warrant is met when the plotted point falls above the appropriate curve.

As shown on the attached Figure 4C-3 provided in *Attachment B* of the Project *Supplemental Analyses*, the plotted point for the peak hour falls below the applicable curve for the subject study intersection. As shown in *Attachment B* of the Project *Supplemental Analyses*, the volume on the same minor-street approach (one direction only) does not equal or exceed 100 vehicles per hour for one moving lane of traffic. Therefore, Part B of Warrant No. 3-Peak Hour is <u>not satisfied</u> for the existing with project condition for the Cutter Way/San Bernardino Road intersection.

<u>Warrant 6: Coordinated Signal System</u>
The Coordinated Signal System warrant applies when all of the following criteria are satisfied:

- The distance to the nearest traffic signal is greater than 1,000 feet, and
- On an isolated one-way street or street with one way traffic significance adjacent signals are so far apart that necessary platooning and speed control would be lost; or
- On a two-way street, where the adjacent signals do not provide the necessary degree of platooning and speed control, proposed signals could constitute a progressive signal system.

Warrant 6 is satisfied if the distance to the nearest traffic signal is greater than 1,000 feet; if the adjacent signals did not provide the necessary degree of platooning and the proposed and adjacent signals could constitute a progressive signal system. For the Cutter Way/San Bernardino Road intersection, the distance to the nearest traffic signal to the west (at Vincent Avenue/San Bernardino Road) and east (at Lark Ellen Avenue/San Bernardino Road) is approximately 1,327 feet and 1,380 feet, respectively. Thus, there are signalized intersections to the east and west on San Bernardino Road that are more than the 1,000-foot threshold for the subject intersection. However, the adjacent signals are observed to provide the necessary degree of platooning and speed control. Thus, Warrant 6 is <u>not satisfied</u> for the subject intersection.

<u>Warrant 7: Crash Experience</u>
The Crash Experience Warrant is intended for application where the severity and frequency of collisions are the primary reasons to consider installation of a traffic signal. The Crash Experience warrant applies when the following criteria are satisfied:

- Adequate trial of alternatives or less restrictive remedies has failed to reduce the collision frequency, and
- Five (5) or more reported collisions within the most recent 12-month period. Each collision needs to be susceptible to correction by a traffic control signal and involve personal injury or property damage apparently exceeding the applicable requirements for a reportable collision, and

- A minimum of 80 percent is satisfied for Warrant 1, Minimum Vehicular Volume or Warrant 2, Interruption of Continuous Traffic, or Warrant 4, Pedestrian Volume (such that pedestrian volumes are greater than or equal to 152 for any hour or greater than or equal to 80 for any four hours).

Research was conducted of available collision records in order to determine the existing collision history at the subject study intersection. Collision records for the Cutter Way/San Bernardino Road intersection were requested for the most recent five-year period, from 2015 to 2020 from the City of Covina. Based on the traffic collision history summary provided by City staff as contained in *Attachment C* of the Project *Supplemental Analyses*, for the five-year period between 2005 and 2020, no more than four (4) traffic collisions during a 12-month period were reported at this location. As shown in the collision data, a total of nine (9) collisions occurred over the most recent five-year period at this location. Furthermore, since neither Warrant 1 nor Warrant 2 is satisfied by at least 80 percent, Warrant 7 is <u>not satisfied</u> for the Cutter Way/San Bernardino Road intersection.

<u>Warrant 8: Roadway Network</u>
Warrant 8 applies when the minimum entering volumes on all approaches of the intersection are greater than 1,000 vehicles per hour and the common intersection of two or more major routes meets the threshold criteria. While the total entering volumes are greater than the 1,000 vehicles per hour threshold for the subject intersection, Cutter Way (north leg of the intersection) is not a major roadway. Thus, Warrant 8 is <u>not satisfied</u> for the subject intersection.

Pedestrian Access

The Project has been designed to encourage pedestrian activity and walking as a transportation mode. Walkability is a term for the extent to which walking is readily available as a safe, connected, accessible and pleasant mode of transport. There are several criteria that are widely accepted as key aspects of the walkability of urban areas that should be satisfied. The underlying principle is that pedestrians should not be delayed, diverted, or placed in danger. The widely accepted characteristics of walkability are as follows:

- Connectivity: People can walk from one place to another without encountering major obstacles, obstructions, or loss of connectivity.
- Convivial: Pedestrian routes are friendly and attractive, and are perceived as such by pedestrians.
- Conspicuous: Suitable levels of lighting, visibility and surveillance over its entire length, with high quality delineation and signage.
- Comfortable: High quality and well-maintained footpaths of suitable widths, attractive landscaping and architecture, shelter and rest spaces, and a suitable allocation of space for pedestrians.
- Convenient: Walking is a realistic travel choice, partly because of the impact of the other criteria set forth above, but also because walking routes are of a suitable length as a result of land use planning with minimal delays.

A review of the proposed Project pedestrian walkway network indicates that these five primary characteristics are accommodated as part of the design of the proposed Project. The interior of the Project site is planned to provide a combination of landscape and hardscape improvements that facilitate internal accessibility and encourage active transportation. The Project site is accessible from nearby commercial uses (e.g., retail, restaurants, etc.) and other amenities, along San Bernardino Road, as well as nearby public bus transit stops and sidewalks on San Bernardino Road and Cutter Way. Therefore, significant impacts to pedestrian facilities and access will not occur as a result of the proposed Project.

Bicycle Access

Bicycle access to the proposed Project will be provided by the existing street network. Currently, there are no formal, designated on-street or off-street bicycle facilities in the Project vicinity, although bicycle parking is provided along major corridors in the vicinity such as near the Project site. The proposed facilities within a quarter-mile radius include:

- San Bernardino Road:	Class II Bike Lane west of Hollenbeck Avenue and east of Second Avenue, Class III Bike Route from Hollenbeck Avenue to Second Avenue
- Badillo Street:	Class II Bike Lane from Lark Ellen Avenue to Cypress Street

The Project is well-located to further facilitate and encourage bicycling as a mode of transportation as these facilities are constructed. The existing and proposed bicycle facilities in the Project vicinity are illustrated in Figure 3-1 of the Project Transportation Impact Study prepared by LLG (See Appendix F). Significant impacts to bicycle facilities and access will not occur as a result of the proposed Project.

b) **Less than Significant Impact.** On September 27, 2013, Governor Brown signed Senate Bill (SB) 743 (Steinberg, 2013). Among other things, SB 743 creates a process to change the methodology to analyze transportation impacts under California Environmental Quality Act (CEQA - Public Resources Code section 21000 and following), which could include analysis based on project vehicle miles traveled (VMT) rather than impacts to intersection Level of Service (LOS). Under SB 743, the focus of transportation analysis pursuant to CEQA shifts from driver delay, or LOS, to reduction of vehicle miles traveled, reduction in greenhouse gas emissions, creation of multimodal networks and promotion of mixed-use developments.

On December 30, 2013, the State of California Governor's Office of Planning and Research (OPR) released a preliminary evaluation of alternative methods of transportation analysis. The intent of the original guidance documentation was geared first towards projects located within areas that are designated as transit priority areas, to be followed by other areas of the State. OPR updated the technical advisory that accompanies the revised CEQA Guidelines in April 2018 and submitted the proposed updates to the CEQA Guidelines to the California Natural Resources Agency (NRA). In December 2018, the California Natural Resources Agency certified and adopted amendments to the CEQA Guidelines implementing SB 743 with an implementation date of July 1, 2020.

The updated CEQA Guidelines allow for Lead Agency discretion in establishing methodologies and thresholds provided there is substantial evidence to demonstrate that the established procedures promote the intended goals of the legislation. Where quantitative models or methods are unavailable, Section 15064.3 allows agencies to assess VMT qualitatively using factors such as availability of transit and proximity to other destinations. The *Technical Advisory on Evaluating Transportation Impacts in CEQA* ("*Technical Advisory*") provides considerations regarding methodologies and thresholds with a focus on office, residential, and retail developments as these projects tend to have the greatest influence on VMT. As of the preparation of this assessment, many jurisdictions including the City of Covina have now implemented updated procedures for VMT analysis.

VMT Screening Assessment

Pursuant to current statutes, the City of Covina has adopted vehicle miles traveled (VMT) as the metric for determining environmental impacts and has recently released its *Transportation Study Guidelines on Vehicle Miles Traveled and Level of Service Assessment*, dated October 2020 (See Appendix G). The guidelines outline the steps for complying with the new CEQA VMT analysis as well as the applicable General Plan consistency requirements related to Level of Service (LOS). The guidelines have established screening criteria pertaining to project trip generation forecasts, project land use types (i.e., local serving retail, affordable housing, etc.), proximity to transit, and locality within a low VMT-generating area. The guidelines provide the following three (3) types of potential screening criteria that may be applied to screen projects from project-level assessment:

- Transit Priority Areas Screening
- Low VMT-generating Areas Screening
- Project Type Screening

As outlined in the City's guidelines, residential and office development projects located within a low VMT-generating area may be presumed to have a less than significant impact absent any substantial evidence to the contrary. Other employment-related and mixed-use land use projects may also qualify for the screening if the project can reasonably be expected to generate VMT per resident, per worker or per service population that is similar to the existing land uses in the low VMT-generating area. As the proposed Project is residential and is located within the low VMT-generating area within the City as illustrated in *Figure 2* of the Project *Supplemental Analyses performed by LLG* and the SGVCOG VMT Evaluation Tool worksheet (refer to *Attachment A* of the Project *Supplemental Analyses*), direct application of this screening criteria indicates that it may be presumed to result in a less than significant project impact with respect to VMT. The proposed Project is consistent with the existing multifamily residential use located on the east side of Cutter Way north of San Bernardino Road. As shown in the attached worksheet from the VMT Evaluation Tool, the screening was prepared utilizing both VMT metrics (i.e., within the Tier 1 Traffic Analysis Zone [TAZ] for the Total VMT per service population and within the Tier 2 TAZ for home-based VMT per capita). Thus, the project is screened out from the preparation of a VMT assessment based on this screening criteria. As the proposed Project is residential in nature and is located within the low VMT-generating area within the City as confirmed in the SGVCOG VMT Evaluation Tool worksheet, direct application of this screening criteria indicates that project may be presumed to result in a less than significant impact with respect to VMT.

c) **Less than Significant Impact.** A significant impact would occur if the Project substantially increased an existing hazardous design feature or introduced incompatible uses to the existing traffic pattern. A sight Distance Review and Project Driveway Vehicle Queuing Analysis were included in the Project *Supplemental Analyses* performed by LLG to determine if the proposed Project would substantially increase an existing hazardous design feature or introduced incompatible uses to the existing traffic pattern (See Appendix G).

Sight Distance Review

A review has been conducted so as to evaluate the adequacy of sight distances at the project driveway intersections with San Bernardino Road and Cutter Way which are being planned to serve as access points to and from the project site. The critical sight distance was determined to be between exiting motorists and motorists traveling on San Bernardino Road and Cutter Way. Specifically, sight distance analyses have been prepared at the subject driveway locations in order to determine the adequacy of motorists' lines of sight and focuses on the northbound and southbound approaching vehicles on Cutter Way and the eastbound and westbound approaching vehicles on San Bernardino Road as well as the exiting left-turn and/or right-turn vehicles at the project site driveways (i.e., intersection sight distance). The sight distance analysis is based on the criteria set forth in the American Association of State Highway and Transportation Officials' (AASHTO) *A Policy on Geometric Design of Highways and Streets*. Stopping sight distance is the distance that a driver of a vehicle, traveling at a certain speed, is able to bring the vehicle to a stop after an object on the road becomes visible. Sight distance is also provided for intersections (including private streets and driveways) to allow the drivers of stopped vehicles a sufficient view of the intersecting roadway to decide when to enter the intersecting roadway or to cross it. If available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major roadway, then drivers have sufficient sight distance to anticipate and avoid collisions.

Description of Study Location

San Bernardino Road is currently designated as a Secondary Highway and Cutter Way is designated as a Local Street in the City's General Plan Circulation Element. At its intersection with Cutter Way, San Bernardino Road provides two eastbound through travel lanes and two westbound through travel lanes, with a two-way left-turn lane provided between Vincent Avenue and Cutter Way. The posted speed limit along San Bernardino Road is 40 miles per hour (mph) and along Cutter Way is 25 mph in the site vicinity.

Intersection Sight Distance at Project Driveways

According to Table 9-7 (*Design Intersection Sight Distance-Case B1-Left Turn from Stop*) of the AASHTO document, a design speed of 25 mph would require a minimum stopping sight distance of 155 feet and an intersection sight distance of 280 feet for passenger cars. Also, a design speed of 40 mph would require a minimum stopping sight distance of 305 feet and an intersection sight distance of 445 feet for passenger cars. It is noted that the sight distance values summarized in Table 9-7 of the AASHTO document are for a stopped vehicle to turn left onto a two-lane roadway without a median such as Cutter Way. San Bernardino Road provides two travel lanes in each direction along with a two-way left-turn lane and is posted for a speed limit of 40 mph along the project frontage. Adjustments were made to account for the additional lane and the two-way left-turn lane for this portion of San Bernardino Road. As such, the minimum adjusted intersection sight distance of 470 feet for passenger cars was utilized for the sight distance analysis. No adjustments were necessary for Cutter Way. As such, the minimum intersection sight distances of 280 feet and 470 feet for passenger cars were utilized for the sight distance analyses for the Cutter Way and San Bernardino Road project driveways, respectively.

Figures 3 and *4* of the Project *Supplemental Analyses* provide a conceptual plan of the Cutter Way and San Bernardino Road project driveways, respectively, along with the adjacent street system. Also displayed are the minimum required intersection sight distances. According to AASHTO guidelines, *Figures 3* and *4* show that when an exiting motorist's vehicle (i.e., front bumper) is set back such that 15 feet exists between the edge of the travel way to the motorists' eye at the project driveway, a line of sight to meet the stated minimums currently exist for the critical cases, which is Case B1 – Left Turn from Stop. This is based on the AASHTO guidelines that when determining sight lines, the front of the stopped vehicle at the major street approach be set back 6.5 feet from the edge of the travel way (or equal to a distance of 15 feet between the edge of the travel way and the driver's eye at the project driveway). The lines of sight should be clear of any tall landscaping, signage, or objects (i.e., be less than 36 inches in height) so as to maintain clear lines of sight between exiting motorists and oncoming motorists. As shown in *Figure 3* of the Project *Supplemental Analyses*, an adequate line is sight is provided for southbound motorists approaching the Cutter Way project driveway. While the intersection sight distance of less than 280 feet is provided for the oncoming northbound (approaching) vehicles on Cutter Way (i.e., 240 feet), these vehicles are controlled by the intersection of Cutter Way/San Bernardino Road and thus will not be traveling at the posted speed, just north of intersection. As illustrated in *Figure 4*, based on the design speed of 40 mph along San Bernardino Road, the sight distance analyses contained herein, and strict application of the AASHTO guidelines, it can be concluded that the existing intersection sight distance currently meets the minimum requirements for exiting project driveway motorists and oncoming westbound and eastbound (approaching) vehicles on San Bernardino Road.

In order to maintain the clear lines of sight at the project driveways, it is therefore recommended that red curb markings and signage be installed so as to remove any on-street parking on the west side of Cutter Way along the property frontage to San Bernardino Road. It is also recommended that the existing red curb markings and “No Stopping Any Time” signage restriction along the north side of San Bernardino Road along the project frontage be maintained. With the removal of on-street parking along this segment of Cutter Way and maintenance of the existing stopping restriction on San Bernardino Road, adequate intersection sight distances would exist between exiting motorists at the project driveways and oncoming (approaching) vehicles on Cutter Way and San Bernardino Road.

Project Driveway Vehicle Queuing Review

A vehicle queuing analysis was prepared for the Cutter Way/San Bernardino Road intersection, in order to evaluate the project’s potential queuing impacts on the adjacent roadway. Specifically, the key traffic movements reviewed include the eastbound left-turn movement on San Bernardino Road at the San Bernardino Road/Cutter Way intersection. As noted previously, San Bernardino Road was restriped to provide a two-way left-turn lane along with two lanes in each direction between Vincent Avenue and Cutter Way. In forecasting future vehicle queues, the HCS7 software considers traffic volume data, lane configurations, and available vehicle storage lengths for the respective traffic movements. For purposes of this analysis, the Cutter Way/San Bernardino Road intersection currently operates as a two-way stop-controlled intersection, with the stop-sign facing the minor street approach (i.e., Cutter Way).

This analysis has been prepared using the future with project weekday AM peak hour and PM peak hour traffic volume forecasts. The HCM analysis provides a forecast of the 95th percentile vehicle queue for the analysis time periods. The 95th percentile queue is the maximum back of vehicle queue with 95th percentile traffic volumes and is typically utilized for design purposes. Table 33 (Summary of Left-Turn Vehicle Queuing Analysis Future Year 2023 With Project Condition Weekday AM and PM Peak Hours) provides a summary of the forecast vehicle queuing anticipated for the eastbound left-turn movement at the Cutter Way/San Bernardino Road intersection during the weekday AM and PM peak hours under the future with project condition. Based on this analysis, vehicular queuing is expected to be fully accommodated within the two-way left-turn lane provided along San Bernardino Road, west of Cutter Way. Summary data worksheets of the queuing analyses are contained in Attachment D of the Project *Supplemental Analyses*.

Table 33
Summary of Left-Turn Vehicle Queuing Analysis Future Year 2023
With Project Condition Weekday AM and PM Peak Hours

Location	Peak Hour	Available Storage[1] (Feet)	Future Year 2023 With Project Condition	
			95th Percentile Queue[2] (Feet)	Exceeds Storage? (Yes/No)
Cutter Way/ San Bernardino Road (EB Left-Turn)	AM PM	194 194	25 25	No No

Source: Highway Capacity Manual 6th Edition; LLG, 2020 (See Appendix G).
[1] Available storage measured via Google Earth aerial imagery and the San Bernardino Road median striping exhibit provided by the City, dated 11/14/2019.
[2] The 95th percentile queue is the maximum back of queue with 95th percentile traffic volumes. An average vehicle length of 25 feet (including vehicle separation) was assumed for analysis purposes. A minimum of 25 feet (i.e., one vehicle) was reported for queues of less than 25 feet.

Conclusion

Based on the sight distance analysis, it is proposed that red curb markings and signage be installed to prohibit on-street parking along the west side of Cutter Way along the Project's frontage to San Bernardino Road. It is recommended that the red curb markings and "No Stopping Any Time" signage restriction along the north side of San Bernardino Road along the project frontage be maintained. With the removal of on-street parking along this segment of Cutter Way and maintenance of the existing restriction along San Bernardino Road, adequate intersection sight distances would exist between exiting motorists at the Project driveways and oncoming (approaching) vehicles on Cutter Way and San Bernardino Road. These recommendations have been incorporated as Project Conditions of Approval. Impacts related to sight distances will be less than significant with incorporation of these recommendations.

A vehicle queuing analysis was prepared for the Cutter Way/San Bernardino Road intersection, in order to evaluate the Project's potential queuing impacts on the adjacent roadway. Based on the summary of the forecast vehicle queuing anticipated for the eastbound left-turn movement at the Cutter Way/San Bernardino Road intersection during the weekday AM and PM peak hours, vehicular queuing is expected to be fully accommodated within the two-way left-turn lane provided along San Bernardino Road, west of Cutter Way. Impacts related to vehicle queuing will not occur.

d) **Less than Significant Impact.** A significant impact would occur if the design of the Project would not satisfy emergency access requirements of the Covina Fire Department or in any other way threaten the ability of emergency vehicles to access and serve the Project site or adjacent uses. The Project access points have been designed to comply with the emergency access requirements of the Covina Fire Department. Compliance with these requirements has been confirmed by City staff as part of the development application and review process. Impacts will be less than significant.

4.18 – Tribal Cultural Resources

Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a Cultural Native American tribe, and that is:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Listed or eligible for listing in the California Register of Historical resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	☐	☑	☐	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☑	☐	☐

a -b) **Less than Significant Impact with Mitigation Incorporated.** Assembly Bill (AB) 52 specifies that a project that may cause a substantial adverse change to a defined Tribal Cultural Resources (TCR) may result in a significant effect on the environment. AB 52 requires tribes interested in development Projects within a traditionally and culturally affiliated geographic area to notify a lead agency of such interest and to request notification of future Projects subject to CEQA prior to determining if a negative declaration, mitigated negative declaration, or environmental impact report is required for a project. The lead agency is then required to notify the tribe within 14 days of deeming a development application subject to CEQA complete to notify the requesting tribe as an invitation to consult on the Project. AB 52 identifies examples of mitigation measures that will avoid or minimize impacts to TCR. The bill makes the above provisions applicable to Projects that have a notice of preparation or a notice of intent to adopt a negative declaration/mitigated negative declaration circulated on or after July 1, 2015. AB 52 amends Sections 5097.94 and adds Sections 21073, 21074, 2108.3.1., 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3 to the California Public Resources Code (PRC), relating to Native Americans.

In accordance with Assembly Bill 52 (AB 52), which added various provisions to the California Public Resources Code (PRC) that concern Tribal Cultural Resources, including Section 21080.3.1(d), the City contacted local tribes requesting to be notified of Projects. Responses were received from two local tribes: the San Manuel Band of Mission Indians and the Gabrieleño Band of Mission Indians-Kizh Nation. The San Manuel Band of Mission Indians noted that the Project is outside its tribal territory and did not request consultation. The Gabrieleño Band of Mission Indians-Kizh Nation requested inclusion of three (3) Mitigation Measures to reduce impacts buried archaeological resources and five (5) Mitigation Measures to reduce impacts to buried human remains. These eight (8) measures are incorporated into the Cultural Resources section of this document as Mitigation Measures CUL-1 through CUL-8. In addition, Mitigation Measures TCR-1 through TCR-4 are incorporated herein to further address potential impacts related to TCR's encountered during Project implementation. Mitigation Measure TCR-1 requires that a qualified tribal representative conduct tribal cultural resources sensitivity training for construction personnel. Mitigation Measure TCR-2 requires that a qualified Native American monitor be present during all construction excavations into non-fill sediments. If tribal cultural resources are encountered, Mitigation Measure TCR-3 requires that all ground-disturbing activities must be halted or diverted away from the find and that a buffer of at least 50 feet be established around the find until an appropriate treatment plan is coordinated. Mitigation Measure TCR-4 requires that the Native American monitor prepare a final report at the conclusion of monitoring activities. With implementation of Mitigation Measures CUL-1 through CUL-8 and TCR-1 through TCR-4, impacts to Tribal Cultural Resources will be less than significant.

<u>Mitigation Measures</u>

TCR-1: **Conduct Tribal Cultural Resources Sensitivity Training for Construction Personnel.** The Applicant shall retain a qualified professional Tribal monitor who meets U.S. Secretary of the Interior's Professional Qualifications and Standards, to conduct Tribal Cultural Resources Sensitivity Training for construction personnel prior to commencement of excavation activities. The training session shall be carried out by a Tribal monitor, under the direction of a qualified professional archaeologist who meets the U.S. Secretary of the Interior's Professional Qualifications and Standards. The training session will include a handout and will focus on how to identify tribal cultural resources that may be encountered during earthmoving activities and the procedures to be followed in such an event, the duties of Tribal monitors, and, the general steps a qualified professional Tribal monitor would follow in conducting a salvage investigation if one is necessary.

TCR-2: **Conduct Periodic Tribal Cultural Resources Spot Checks During Grading and Earth-Moving Activities.** The Applicant shall retain a qualified professional who meets the U.S. Secretary of the Interior's Professional Qualifications and Standards to conduct periodic Tribal Cultural Resource Spot Checks beginning at depths below two (2) feet to determine if construction excavations have exposed or have a high probability of exposing tribal cultural resources. After the initial Spot Check, further periodic checks will be conducted at the discretion of the qualified Tribal monitor. If the qualified Tribal monitor determines that construction excavations have exposed or have a high probability of exposing Tribal artifacts, construction monitoring for tribal cultural resources will be required. The Applicant shall retain a qualified Tribal monitor, who will work under the guidance and direction of a professional archaeologist, who meets the qualifications set forth by the U.S. Secretary of the Interior's Professional Qualifications and Standards. The Tribal monitor shall be present during all construction excavations (e.g., grading, trenching, or clearing/grubbing) into non-fill sediments. Multiple earth-moving construction activities may require multiple Tribal monitors. The frequency of monitoring shall be based on the rate of excavation and grading activities, proximity to known tribal cultural resources, the materials being excavated (native versus artificial fill soils), the depth of excavation, and if found, the abundance and type of tribal cultural resources encountered. Full-time monitoring can be reduced to part-time inspections if determined adequate by the Project Tribal monitor.

TCR-3: **Cease Ground-Disturbing Activities and Implement Treatment Plan if Tribal Cultural Resources Are Encountered.** In the event that tribal cultural resources are unearthed during ground-disturbing activities, ground-disturbing activities shall be halted or diverted away from the vicinity of the find so that the find can be evaluated. A buffer area of at least 50 feet shall be established around the find where construction activities will not be allowed to continue until a qualified Tribal monitor has examined the newly discovered artifact(s) and has evaluated the area of the find. Work shall be allowed to continue outside of the buffer area. All tribal cultural resources unearthed by Project construction activities shall be evaluated by a qualified professional who meets the U.S. Secretary of the Interior's Professional Qualifications and Standards. Should the newly discovered artifacts be determined to be prehistoric, Native American Tribes/Individuals should be contacted and consulted, and Native American construction monitoring should be initiated. The Applicant and City shall coordinate with the Tribal monitor to develop an appropriate treatment plan for the resources. The plan may include implementation of Tribal data recovery excavations to address treatment of the resource along with subsequent laboratory processing and analysis.

TCR-4: **Prepare Report Upon Completion of Monitoring Services.** The Tribal monitor, under the direction of a qualified professional archaeologist who meets the U.S. Secretary of the Interior's Professional Qualifications and Standards, shall prepare a final report at the conclusion of Tribal monitoring (if required). The report shall be submitted to the Applicant, the South Central Costal Information Center, the City, and representatives of other appropriate or concerned agencies to signify the satisfactory completion of the Project and required mitigation measures. The report shall include a description of resources unearthed, if any, evaluation of the resources with respect to the California Register and CEQA, and treatment of the resources.

4.19 – Utilities and Service Systems

Would the Project:

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

a) **Less than Significant Impact.** The Project would require water, wastewater collection and treatment, storm water drainage, electrical power, natural gas, and telecommunication facilities. An analysis of impacts related to these services is provided below.

<u>*Water*</u>
The Project site currently contains an unoccupied single-family home. The proposed Project would include the development of 63 new mixed-use, multi-family residences with 12 units being Live/Work units consisting of a total of 63,869 square feet of residential floor area. As such, the proposed Project would increase the intensity of uses on the Project site, resulting in increased water use. CalEEMod default water usage rates were used to estimate the anticipated water demand of the proposed project.

Based on the CalEEMod generation rates, water use per day during Project operation would be approximately 21,026 gallons per day (See Appendix A). The Project site is within the water service boundaries of the City's Water Utility Division. The City's Water Utility Division serves potable water to more than 3,000 customers in the City of Covina and portions of the City of West Covina, as well as an unincorporated portion of Los Angeles County. According to the City's 2015 Urban Water Management Plan (UWMP), the reliable quantities of projected water supply for Year 2020 and Year 2025 are 5,705 acre-feet per year (ac-ft/yr) and 5,762 ac-ft/yr, respectively.[33] As estimated above, the Project would consume approximately 21,026 gallons of water per day, which equates to approximately 7.67 million gallons of water per year, or 23.55 ac-ft/yr. The estimated water consumption of the proposed Project is well within the Water Utility Division's projected water supply for 2020 and 2025 and would not, therefore, significantly impact existing water service. Further, the Project site would be redeveloped in compliance with the California Green Building Code (which implements water efficiency standards for appliances and fixtures), which would further reduce project water usage. For these reasons, the proposed Project would not require or result in the construction of new water facilities. Impacts would be less than significant

Wastewater

The proposed Project would connect to water service provided by the City's Water Utility Division and would deliver sewage into the City's sewer collection system operated and maintained by the Sewers Maintenance Division of the City's Public Works Department. The Sanitation Districts of Los Angeles County (LACSD) manages, operates, and maintains the larger sewer trunk lines into which the City's collection system feeds. Wastewater generation on site is estimated to be equivalent to indoor water demand. As such, the project would generate approximately 10,925 gallons of wastewater per day (See Appendix A). Although the proposed Project would include construction of water and wastewater distribution and collection facilities necessary to serve the development (i.e., pipes, valves, meters, etc.), Los Angeles Regional Water Quality Control Board wastewater treatment requirements (as well as State Water Resources Control Board Division of Drinking Water potable water treatment requirements) are applicable to the service providers rather than the proposed Project itself. The Water Utility Division and its water providers, as well as the Sewers Maintenance Division and the LACSD, are required to treat potable water and wastewater in accordance with federal, state and local regulations. For example, sewage generated by the proposed Project would be treated in accordance with applicable waste discharge requirements prior to being discharged. Both the City of Covina and the County of Los Angeles are subject to compliance with State Water Resources Control Board Order No. 2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, as amended. State Water Resources Control Board Order No. 2006-0003-DWQ establishes performance criteria and effluent limitations to ensure that treated effluent discharges do not violate basin plan objectives for receiving waters. The order ensures that the City and the LACSD properly maintain and manage sewer systems and reduce frequency and severity of sanitary sewer overflows and their potential impacts on public health, safety, and the environment. The water and sewer fees paid by the Project applicant would be used by the utility providers, at least in part, to fund projects and programs necessary to meet their regulatory obligation with respect to treatment requirements, treatment capacity, and supply reliability. Because the proposed Project would be serviced by regional water/sewer providers (rather than proposing on-site treatment), the potential impact with respect to wastewater treatment requirements would be less than significant.

Stormwater

Construction of the proposed Project would increase the net area of impervious surfaces on the site; therefore, increased discharges to the City's existing storm drain system would likely occur. As described under Sections 4.10(a) and 4.10(c), the drainage patterns of the site would not substantially change relative to existing conditions. There is currently an 18" pipe that conveys storm water from an on-site catch basin to the east to an existing 5'-10" x 7'-0" reinforced concrete box (RCB) owned and maintained by Los Angeles County Flood Control District. Storm water from the RCB continues downstream to the Big Dalton Wash, Walnut Creek Channel, San Gabriel River and San Gabriel River Estuary before ultimately discharging to the Pacific Ocean (San Pedro Bay). A proposed stormwater biofiltration system will be provided to remove sediments and hydrocarbons from water runoff before entering the chamber. The post-developed drainage pattern of the Project site will generally maintain the existing drainage patterns, with runoff ultimately discharging to the RCB. Permits to connect to the existing storm drainage system would be obtained prior to construction. All drainage plans are subject to City review and approval. These requirements would apply to the proposed Project. Therefore, the increase in discharges would not impact local storm drain capacity. Additionally, new landscaping planters would be installed on the Project site further reducing the amount of runoff from the site. In accordance with the City's Stormwater Quality and Urban Runoff Control Ordinance and with the current Los Angeles Municipal NPDES permit, the Project applicant would be required to prepare and comply with a Low Impact Development Plan. Compliance with the City's Stormwater Quality and Urban Runoff Control Ordinance would reduce the peak volume of stormwater runoff discharged into the City's storm drain system and would ensure that stormwater is retained on-site, to the extent feasible. As such, the proposed Project would not require the construction or expansion of off-site storm water drainage facilities, as the Project would not contribute a substantial amount of new stormwater runoff relative to existing conditions. Impacts would be less than significant.

Electric Power
The project site would be serviced by Southern California Edison (SCE). The Project site would connect to the existing power grid. New electrical connections to the Project site would be installed via undergrounded lines. Although the Project would require new electrical line tie-ins for service, it would not result in the need for new electrical substations or electrical generating facilities. SCE conditions of approval would apply to the proposed Project. Therefore, the Project would have a less than significant impact.

Natural Gas
The Southern California Gas Company (Gas Company) would provide natural gas services to the Project site. The majority of the gas supply is transported via transmission pipelines owned by private companies. The Project site would utilize the existing Gas Company distribution grid to service the Project. All new connections and service installations would be reviewed and approved by the Gas Company and the City Public Works Department. Although the Project would require new natural gas service connections, it would not result in the need for new natural gas supplies or infrastructure. Therefore, the Project would have a less than significant impact.

Telecommunication Facilities
The Project site is supported by telecommunication services for a variety of providers. Spectrum Communication provides residential and business services to the Project area. Fiber optic cables and high-speed connection services from wireless providers such as Spectrum Communications are available to service the Project site. The Project site would be required to comply with all Federal, State and local regulations for installation and wiring of telecommunications to the Project. With adherence to existing City and state Electrical, Building and Safety code requirements, the Project would have a less than significant impact.

b) **Less than Significant Impact.** As discussed in Section 4.19(a), the proposed Project operation is anticipated to require approximately 7.67 million gallons of water per day. The Proposed Project would connect to municipal water service provided by the City of Covina Water Utility Division. The primary water provider for the City of Covina is the Covina Irrigating Company, which obtains water from the Main San Gabriel Groundwater Basin and from the San Gabriel River. Metropolitan Water District of Southern California serves as the City's back-up water supplier. Metropolitan Water District's primary sources of water are the Colorado River and Northern California. This water is provided to the City through Three Valleys Municipal Water District. The estimated water consumption of the proposed Project is well within the Water Utility Division's projected water supply for 2020 and 2025. Thus, the Water Utility Division would have sufficient supplies to serve the proposed Project and no new or expanded entitlements would be required. The proposed Project would also be required to pay development impact fees to offset any Project impacts to existing infrastructure and fund future expansion. Further, the Project site would be redeveloped in compliance with the California Green Building Code (which implements water efficiency standards for appliances and fixtures), which would further reduce project water usage. For these reasons, impacts would be considered less than significant.

c) **Less than Significant Impact.** As previously discussed in Section 4.19(a), the proposed Project would connect to water service provided by the City's Water Utility Division and would deliver sewage into the City's sewer collection system operated and maintained by the Sewers Maintenance Division of the City's Public Works Department and treated by the LACSD. Both water reclamation plants serving the City and thus the Project site are served by the SJCWRP and the JWPCP reclamation plants. The wastewater generated by the proposed Project would be nominal and would not exceed current capacities of these wastewater plants. As such, impacts would be less than significant.

d) **Less than Significant Impact.** Significant impacts could occur if the proposed Project would exceed the existing permitted landfill capacity or violates federal, state, and local statutes and regulations. Solid waste disposal services for the project site would be provided by Athens Services (Athens). Athens offers waste and recycling collection, green waste recycling programs, organics waste composting, special waste transportation, and transfer and materials recovery services to the City as well as many other areas in Southern California. The proposed Project would include the development of multi-family residential units, limited light industrial uses, and surface and subterranean parking areas. Based on the default CalEEMod solid waste generation rates, the proposed project would generate approximately 164 pounds of solid waste per day (See Appendix A). Solid waste generated by the proposed Project would be collected by Athens and transported to a local or regional landfill. The increase in solid waste generation from implementation of the proposed Project would be minimal. Regional landfills in the Los Angeles area are anticipated to have sufficient capacity to accommodate the minor increase in solid waste generation attributable to the proposed Project. Additionally, the Environmental Services Division of the City requires that at least 75% of all building and demolition materials (wood, metal, electrical, piping, glass, drywall, asphalt, concrete) be recycled for purposes of compliance with the California Integrated Waste Management Act of 1989.[34] Required compliance with this regulation would reduce the project's solid waste generation during construction. Combined remaining capacities at the landfills would be adequate to accommodate the proposed Project. For these reasons, solid waste impacts resulting from the construction and operation of the proposed Project would be considered less than significant.

e) **Less than Significant Impact.** The Project applicant is required to comply with all local, state, and federal requirements for integrated waste management (e.g., recycling, green waste) and solid waste disposal. The Project would be required to comply with the City's Recycling and Waste Handling Requirement for construction and demolition debris, which requires at least 75% of all building and demolition materials to be recycled.[35] Athens Services currently transports all of Covina's commercial and multi-family residential recycling to a Material Recovery Facility, where recyclable materials are sorted and then diverted from local landfills.[36] The light industrial uses that would operate in the Live/Work portion of the site would not generate hazardous waste of any kind. Covina businesses and apartment complexes that are serviced by Athens Services are already in compliance with AB 341. No impact would occur.

4.20 – Wildfire

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

a) **No Impact.** There are no wildland conditions in the urbanized area where the Project site is located. The California Department of Forestry and Fire Protection (CAL FIRE) has prepared maps showing Very High Fire Hazard Severity Zones within the State. The Project area is not identified as an area within a Very High Fire Hazard Severity Zone.[37] There are no wildland conditions in the urbanized area where the Project site is located. Therefore, the Project will not substantially impair an adopted emergency response plan or emergency evacuation plan and no impact will occur.

b) **No Impact.** As discussed above, the Project site is not located within a fire hazard zone, as identified on the latest Fire Hazard Severity Zone (FHSZ) maps prepared by the California Department of Forestry and Fire Protection (CALFIRE). There are no wildland conditions in the urbanized area where the Project site is located. Therefore, the Project will not exacerbate wildfire risks, thereby exposing project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. No impact will occur.

c) **No Impact.** The Project site is not located within or near any State Responsibility Areas. As a result, none of the Project improvements would exacerbate fire risk or will result in a temporary or ongoing impact from wildfires requiring the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. No impact will occur.

d) **No Impact.** The Project Site is not located within or near any State Responsibility Areas. The Project site is also not located in any FEMA 100-year flood floodplain. No impact would occur.

4.21 – Mandatory Findings of Significance

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the Project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☑	☐	☐
b) Does the Project have impacts that are individually limited, but cumulatively considerable?	☐	☑	☐	☐
c) Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☑	☐	☐

a) **Less than Significant with Mitigation Incorporated.** The proposed Project would not substantially impact any scenic vistas, scenic resources, or the visual character of the area, as discussed in Section 4.1 and would not result in excessive light or glare. The Project site is located within a developed area with no natural habitat. The Project would not significantly impact any sensitive plants, plant communities, fish, wildlife or habitat for any sensitive species. There would be no impact to migratory or nesting birds with implementation of Mitigation Measure BIO-1. Adverse impacts to historic resources would not occur with mitigation incorporation. Construction-phase procedures would be implemented in the event any important cultural, archaeological, or paleontological resources are discovered during grading, consistent with Mitigation Measures CUL-1 through CUL-8 and GEO-1 through GEO-4. This site is not known to have any association with an important example of California's history or prehistory. Based on the preceding analysis of potential impacts in the responses to items 4.1 thru 4.20, no evidence is presented that this Project would degrade the quality of the environment. Impacts related to degradation of the environment, biological resources, and cultural resources would be less than significant with mitigation incorporated.

b) **Less than Significant with Mitigation Incorporated.** The Project would not result in any significant impacts with implementation of the Mitigation Measures shown in Section 5 for air quality, biological resources, cultural/tribal cultural resources, paleontological resources, and noise. A Mitigation Monitoring and Reporting Program has been prepared for each of these environmental issue areas in order to reduce impacts to less than significant levels. Standard conditions would also be imposed upon the Project. Other new development projects within the City would also be subject to these requirements as well. All other impacts of the Project were determined either to have no impact or to be less than significant, without the need for mitigation. Cumulatively, the Project would not result in any significant impacts that would substantially combine with impacts of other current or probable future impacts. Therefore, the Project, in conjunction with other future projects, would not result in any cumulatively considerable impacts.

c) **Less than Significant with Mitigation Incorporated.** Based on the analysis of the Project's impacts in the responses to items 4.1 thru 4.20, there is no indication that the proposed Project could result in substantial adverse effects on human beings. While there would be a variety of temporary adverse effects during construction related to noise these would be reduced to less than significant levels through mitigation. Long-term effects include increased vehicular traffic, traffic-related noise, use of household hazardous materials, emissions of criteria pollutants and greenhouse gas emissions, and increased demand on emergency response services. The analysis herein concludes that direct and indirect environmental effects would at worst require mitigation to reduce to less than significant levels. Environmental effects would result in less than significant impacts. Based on the analysis in this Initial Study, the City finds that direct and indirect impacts to human beings would be less than significant with mitigation incorporated.

AIR-1 To reduce potential short-term adverse health risks associated with PM_{10} exhaust emissions, including emissions of diesel particulate matter (DPM), generated during project construction activities, the City shall require the Applicant and/or its designated contractors, contractor's representatives, or other appropriate personnel to apply the following construction equipment restrictions for the Project:

3. Electric-powered and liquefied or compressed natural gas equipment (including generators) shall be employed instead of diesel-powered equipment to the maximum extent feasible.
4. All construction equipment with a rated power-output of 50 horsepower or greater shall meet U.S. EPA and CARB Tier IV Final Emission Standards for PM_{10}. This may be achieved via the use of equipment with engines that have been certified to meet Tier IV emission standards, or through the use of equipment that has been retrofitted with a CARB-verified diesel emission control strategy (e.g., oxidation catalyst, particulate filter) capable of reducing exhaust PM_{10} emissions to levels that meet Tier IV standards.

As an alternative to using equipment that meets Tier IV Final Emissions Standards for off-road equipment with a rated power-output of 50 horsepower or greater, the Applicant may prepare and submit a refined construction health risk assessment to the City once additional Project-specific construction information is known (e.g., specific construction equipment type, quantity, engine tier, and runtime by phase). The refined health risk assessment shall demonstrate and identify any measures necessary such that the proposed Project's incremental cancerogenic health risk at nearby sensitive receptor locations is below the applicable SCAQMD threshold of 10 cancers in a million.

BIO-1: **Pre-Construction Nesting Bird Survey.** If vegetation removal is scheduled during the nesting season (typically February 1 to September 1), then a focused survey for active nests shall be conducted by a qualified biologist (as determined by a combination of academic training and professional experience in biological sciences and related resource management activities) no more than five (5) days prior to the beginning of project-related activities (including but not limited to equipment mobilization and staging, clearing, grubbing, vegetation removal, and grading). Surveys shall be conducted in proposed work areas, staging and storage areas, and soil, equipment, and material stockpile areas. For passerines and small raptors, surveys shall be conducted within a 250-foot radius surrounding the work area (in areas where access is feasible). For larger raptors, such as those from the genus *Buteo*, the survey area shall encompass a 500-foot radius. Surveys shall be conducted during weather conditions suited to maximize the observation of possible nests and shall concentrate on areas of suitable habitat. If a lapse in project-related work of five (5) days or longer occurs, an additional nest survey shall be required before work can be reinitiated. If nests are encountered during any preconstruction survey, a qualified biologist shall determine if it may be feasible for construction to continue as planned without impacting the success of the nest, depending on conditions specific to each nest and the relative location and rate of construction activities. If the qualified biologist determines construction activities have potential to adversely affect a nest, the biologist shall immediately inform the construction manager to halt construction activities within minimum exclusion buffer of 50 feet for songbird nests, and 200 to 500 feet for raptor nests, depending on species and location. Active nest(s) within the Project Site shall be monitored by a qualified biologist during construction if work is occurring directly adjacent to the established no-work buffer. Construction activities within the no-work buffer may proceed after a qualified biologist determines the nest is no longer active due to natural causes (e.g., young have fledged, predation, or other non-anthropogenic nest failure).

CUL-1: **Retain a Native American Monitor/Consultant:** The Project Applicant shall be required to retain and compensate for the services of a Tribal monitor/consultant who is both approved by the Gabrieleño Band of Mission Indians-Kizh Nation Tribal Government and is listed under the NAHC's Tribal Contact list for the area of the project location. This list is provided by the NAHC. The monitor/consultant will only be present on-site during the construction phases that involve ground disturbing activities. Ground disturbing activities are defined by the Gabrieleño Band of Mission Indians-Kizh Nation as activities that may include, but are not limited to, pavement removal, pot-holing or auguring, grubbing, tree removals, boring, grading, excavation, drilling, and trenching, within the project area. The Tribal Monitor/consultant will complete daily monitoring logs that will provide descriptions of the day's activities, including construction activities, locations, soil, and any cultural materials identified. The on-site monitoring shall end when the project site grading and excavation activities are completed, or when the Tribal Representatives and monitor/consultant have indicated that the site has a low potential for impacting Tribal Cultural Resources.

CUL-2: **Unanticipated Discovery of Tribal Cultural and Archaeological Resources:** Upon discovery of any archaeological resources, cease construction activities in the immediate vicinity of the find until the find can be assessed. All archaeological resources unearthed by project construction activities shall be evaluated by the qualified archaeologist and tribal monitor/consultant approved by the Gabrieleño Band of Mission Indians-Kizh Nation. If the resources are Native American in origin, the Gabrieleño Band of Mission Indians-Kizh Nation shall coordinate with the landowner regarding treatment and curation of these resources. Typically, the Tribe will request reburial or preservation for educational purposes. Work may continue on other parts of the project while evaluation and, if necessary, mitigation takes place (CEQA Guidelines Section15064.5 [f]). If a resource is determined by the qualified archaeologist to constitute a "historical resource" or "unique archaeological resource", time allotment and funding sufficient to allow for implementation of avoidance measures, or appropriate mitigation, must be available. The treatment plan established for the resources shall be in accordance with CEQA Guidelines Section 15064.5(f) for historical resources and archaeological resources.

CUL-3: **Public Resources Code Sections 21083.2(b) for unique archaeological resources.** Preservation in place (i.e., avoidance) is the preferred manner of treatment. If preservation in place is not feasible, treatment may include implementation of archaeological data recovery excavations to remove the resource along with subsequent laboratory processing and analysis. Any historic archaeological material that is not Native American in origin shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, they shall be offered to a local school or historical society in the area for educational purposes.

CUL-4: **Resource Assessment & Continuation of Work Protocol:** Upon discovery, the tribal and/or archaeological monitor/consultant/consultant will immediately divert work at minimum of 150 feet and place an exclusion zone around the burial. The monitor/consultant(s) will then notify the Tribe, the qualified lead archaeologist, and the construction manager who will call the coroner. Work will continue to be diverted while the coroner determines whether the remains are Native American. The discovery is to be kept confidential and secure to prevent any further disturbance. If the finds are determined to be Native American, the coroner will notify the NAHC as mandated by state law who will then appoint a Most Likely Descendent (MLD).

CUL-5: **Unanticipated Discovery of Human Remains and Associated Funerary Objects:** Native American human remains are defined in PRC 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness. Funerary objects, called associated grave goods in PRC 5097.98, are also to be treated according to this statute. Health and Safety Code 7050.5 dictates that any discoveries of human skeletal material shall be immediately reported to the County Coroner and excavation halted until the coroner has determined the nature of the remains. 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) and PRC 5097.98 shall be followed.

CUL-6: **Kizh-Gabrieleno Procedures for burials and funerary remains:** If the Gabrieleno Band of Mission Indians-Kizh Nation is designated MLD, the following treatment measures shall be implemented. To the Tribe, the term “human remains” encompasses more than human bones. In ancient as well as historic times, Tribal Traditions included, but were not limited to, the burial of funerary objects with the deceased, and the ceremonial burning of human remains. These remains are to be treated in the same manner as bone fragments that remain intact. Associated funerary objects are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later; other items made exclusively for burial purposes or to contain human remains can also be considered as associated funerary objects.

CUL-7: **Treatment Measures:** Prior to the continuation of ground disturbing activities, the land owner shall arrange a designated site location within the footprint of the project for the respectful reburial of the human remains and/or ceremonial objects. In the case where discovered human remains cannot be fully documented and recovered on the same day, the remains will be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of steel plate is not available, a 24-hour guard should be posted outside of working hours. The Tribe will make every effort to recommend diverting the project and keeping the remains in situ and protected. If the project cannot be diverted, it may be determined that burials will be removed. The Tribe will work closely with the qualified archaeologist to ensure that the excavation is treated carefully, ethically and respectfully. If data recovery is approved by the Tribe, documentation shall be taken which includes at a minimum detailed descriptive notes and sketches. Additional types of documentation shall be approved by the Tribe for data recovery purposes. Cremations will either be removed in bulk or by means as necessary to ensure completely recovery of all material. If the discovery of human remains includes four or more burials, the location is considered a cemetery and a separate treatment plan shall be created. Once complete, a final report of all activities is to be submitted to the Tribe and the NAHC. The Tribe does NOT authorize any scientific study or the utilization of any invasive diagnostics on human remains. Each occurrence of human remains and associated funerary objects will be stored using opaque cloth bags. All human remains, funerary objects, sacred objects and objects of cultural patrimony will be removed to a secure container on site if possible. These items should be retained and reburied within six months of recovery. The site of reburial/repatriation shall be on the project site but at a location agreed upon between the Tribe and the landowner at a site to be protected in perpetuity. There shall be no publicity regarding any cultural materials recovered.

CUL-8: **Professional Standards:** Archaeological and Native American monitoring and excavation during construction projects will be consistent with current professional standards. All feasible care to avoid any unnecessary disturbance, physical modification, or separation of human remains and associated funerary objects shall be taken. Principal personnel must meet the Secretary of Interior standards for archaeology and have a minimum of 10 years of experience as a principal investigator working with Native American archaeological sites in southern California. The Qualified Archaeologist shall ensure that all other personnel are appropriately trained and qualified.

GEO-1: **Conduct Paleontological Sensitivity Training for Construction Personnel.** The Applicant shall retain a professional paleontologist, who meets the qualifications set forth by the Society of Vertebrate Paleontology, shall conduct a Paleontological Sensitivity Training for construction personnel prior to commencement of excavation activities. The training will include a handout and will focus on how to identify paleontological resources that may be encountered during earthmoving activities, and the procedures to be followed in such an event; the duties of paleontological monitors; notification and other procedures to follow upon discovery of resources; and, the general steps a qualified professional paleontologist would follow in conducting a salvage investigation if one is necessary.

GEO-2: **Conduct Periodic Paleontological Spot Checks During Grading and Earth-Moving Activities.** The Applicant shall retain a professional paleontologist, who meets the qualifications set forth by the Society of Vertebrate Paleontology, shall conduct periodic Paleontological Spot Checks beginning at depths below six (6) feet to determine if construction excavations have extended into older Quaternary deposits. After the initial Paleontological Spot Check, further periodic checks will be conducted at the discretion of the qualified paleontologist. If the qualified paleontologist determines that construction excavations have extended into the older Quaternary deposits, construction monitoring for Paleontological Resources will be required. The Applicant shall retain a qualified paleontological monitor, who will work under the guidance and direction of a professional paleontologist, who meets the qualifications set forth by the Society of Vertebrate Paleontology. The paleontological monitor shall be present during all construction excavations (e.g., grading, trenching, or clearing/grubbing) into the older Pleistocene alluvial deposits. Multiple earth-moving construction activities may require multiple paleontological monitors. The frequency of monitoring shall be based on the rate of excavation and grading activities, proximity to known paleontological resources and/or unique geological features, the materials being excavated (native versus artificial fill soils), and the depth of excavation, and if found, the abundance and type of paleontological resources and/or unique geological features encountered. Full-time monitoring can be reduced to part-time inspections if determined adequate by the qualified professional paleontologist.

GEO-3: **Cease Ground-Disturbing Activities and Implement Treatment Plan if Paleontological Resources Are Encountered.** In the event that paleontological resources and or unique geological features are unearthed during ground-disturbing activities, ground-disturbing activities shall be halted or diverted away from the vicinity of the find so that the find can be evaluated. A buffer area of at least 50 feet shall be established around the find where construction activities shall not be allowed to continue until appropriate paleontological treatment plan has been approved by the Applicant and the City. Work shall be allowed to continue outside of the buffer area. The Applicant and City shall coordinate with a professional paleontologist, who meets the qualifications set forth by the Society of Vertebrate Paleontology, to develop an appropriate treatment plan for the resources. Treatment may include implementation of paleontological salvage excavations to remove the resource along with subsequent laboratory processing and analysis or preservation in place. At the paleontologist's discretion and to reduce construction delay, the grading and excavation contractor shall assist in removing rock samples for initial processing.

GEO-4: **Prepare Report Upon Completion of Monitoring Services.** Upon completion of the above activities, the professional paleontologist shall prepare a report summarizing the results of the monitoring and salvaging efforts, the methodology used in these efforts, as well as a description of the fossils collected and their significance. The report shall be submitted to the Applicant, the City, the Natural History Museums of Los Angeles County, and representatives of other appropriate or concerned agencies to signify the satisfactory completion of the Project and required mitigation measures.

NOI-1: **Reduce Construction Noise Levels.** To reduce potential noise levels associated with construction of the proposed Project, the Applicant and/or its designated contractor, contractor's representatives, or other appropriate personnel shall:

- *Notify Adjacent Land Use of Construction Activities.* This notice shall be provided at least one week prior to the start of any construction activities, describe the noise control measures to be implemented by the Project, and include the name and phone number of a designated contact for the Applicant and the City of Covina responsible for handling construction-related noise complaints. This notice shall be provided to:
    - The owner/occupants of properties that directly border the Project site to the north and west;
    - The owners/occupants of multi-family dwelling units directly to the east of the Project sit (across Cutter Way) that have an exterior wall or patio area that fronts Cutter Way; and,
    - Las Palmas Middle School.
- *Restrict work hours/equipment noise.* All work shall be subject to the requirements in City Municipal Code Section 9.40.110.A. Construction activities, including deliveries, shall only during the hours of 7:00 AM to 8:00 PM, Monday through Saturday, unless otherwise authorized by City permit. The Applicant and/or its contractor shall post a sign at all entrances to the construction site informing contractors, subcontractors, construction workers, etc. of this requirement. The sign shall also provide a name (or title) and phone number for an appropriate on-site and City representative to contact to submit a noise complaint.
- *Construction Traffic and Site Access.* Construction traffic, including soil hauling, shall follow City-designated truck routes Construction site access shall occur via San Bernardino Road instead of Cutter Way. Access to the site using Cutter Way may only occur after the noise barrier installed along the Project site's eastern boundary has been removed.
- *Construction equipment selection, use, and noise control measures.* The following measures shall apply during construction activities:
    - To the extent feasible, contractors shall use the smallest size equipment capable of safely completing work activities.
    - Construction staging shall occur as far away from the adjacent residential and school properties on Cutter Way as possible.

- All stationary noise-generating equipment such as pumps, compressors, and welding machines shall be located as far from adjacent residential and school properties on Cutter Way as possible.
- Heavy equipment engines shall be covered, and exhaust pipes shall include a muffler in good working condition.
- Pneumatic tools shall include a noise suppression device on the compressed air exhaust.
- The Applicant and/or his contractor shall connect to existing electrical service at the site to avoid the use of stationary power generators.
- No radios or other amplified sound devices shall be audible beyond the property line of the construction site.

- *Construct/Install Temporary Noise Barrier.* During all demolition, site preparation, building foundation excavation, parking garage excavation, mass grading work, and building foundation work, the Applicant shall install and maintain a physical noise barrier capable of achieving a 15 dB reduction in construction noise levels. Potential barrier options capable of achieving a 15 dB reduction in construction noise levels include:
  - An 8-foot-high concrete, wood, or other barrier installed at-grade (or mounted to structures located at-grade, such as a K-Rail) along the Project's eastern property line. Such a wall/barrier shall consist of solid material (i.e., free of openings or gaps other than weep holes) that have a minimum rated transmission loss value of 25 dB.
  - Commercially available acoustic panels (8-foot-high) or other products such as acoustic barrier blankets installed along the Project's eastern property line that have a minimum sound transmission class (STC) or transmission loss value of 25 dB. The rated STC or transmission loss value of the barrier would be confirmed by the manufacturer's specifications prior to installation.
  - Any combination of noise barriers and commercial products capable of achieving a 15 dB reduction in construction noise levels at the adjacent residential and school properties on Cutter Way.

The noise barrier may be removed following the completion of building foundation work (i.e., it is not necessary once framing and typical building construction begins provided no other grading, foundation, etc. work is still occurring on-site). In-lieu of the barrier recommendations above, the Applicant may prepare and submit to the City for review and approval an updated construction noise impact analysis, based on the final site plan and final selected construction equipment, demonstrating that selected equipment and/or alternative noise control measures will result in noise levels at least 15 dB below the estimates in Table 5-4 of the Project's Noise Impact Analysis Report (Table 23 of this document).

NOI-2 **Document Compliance with Applicable Noise Standards.** Prior to the issuance of a building permit for the Project, the City shall review and approve an acoustical analysis, prepared by or on behalf of the Project Applicant by a qualified acoustical consultant, and based on the final Project design, that:

- Identifies the exterior noise levels at all building façades and exterior use areas, including private balconies, with a direct line of sight to San Bernardino Road; and
- Identifies the final site and building design measures that would:
  - Attenuate exterior use areas such that noise levels do not exceed 65 DNL. For balconies, this may be achieved through the use of plexiglass or other similar shields

that extend from the balcony floor or wall assembly to a sufficient height capable of achieving a minimum 4 dBA reduction in exterior noise levels (or other reduction determined to be necessary based on updated exterior noise levels identified in the acoustical analysis).

- Comply with applicable CALGreen building code requirements for buildings located within a 65 DNL roadway noise contour and subject to hourly noise levels of 65 dBA Leq.
- Provide the necessary exterior to interior noise reduction need to achieve a 45 dBA Leq interior daytime noise level (per City Municipal Code Section 9.40.060), a 35 dBA Leq interior nighttime noise level (per City Municipal Code Section 9.40.060), and a 45 DNL (per State building code requirements). All standards are to be met with closed windows. Potential noise insulation design features capable of achieving these requirements may include, but are not limited to, sound barriers, enhanced exterior wall, ceiling, and roof noise insultation, use of enhanced window, door, roof assemblies with above average sound transmission class or outdoor/indoor transmission class values, and/or use of mechanical, forced air ventilation systems to permit a windows closed condition.
-

NOI-3 **Reduce Construction Vibration Levels.** To reduce potential noise levels associated with construction of the proposed Project, the Applicant and/or its designated contractor, contractor's representatives, or other appropriate personnel shall:

- *Notify Adjacent Land Use of Construction Activities.* This notice shall be provided at least one week prior to the start of any construction activities, describe the vibration control measures to be implemented by the Project, and include the name (or title) and phone number of a designated contact for the Applicant and the City of Covina responsible for handling construction-related vibration complaints. This notice shall be provided to all building owners/occupants within 120 feet of the Property site boundary.
- *Prohibit Vibratory Equipment.* The use of large vibratory rollers (small plate compactors are acceptable) and vibratory pile driving equipment are prohibited during construction. Any deep foundation piers or caissons shall be auger drilled.
- *Prepare Vibration Mitigation Plan.* Prior to the start of construction activity, the City or its contractor shall prepare a Construction Vibration Response Plan for the project which:
  - Identifies the name (or title) and contact information (including phone number and email) of the Contractor and City-representatives responsible for addressing construction vibration-related issues.
  - Contains a detailed schedule of substantial earth moving activities expected to occur at the site.
  - Includes procedures describing how the construction contractor will receive, respond, and resolve to construction vibration complaints. At a minimum, upon receipt of a vibration complaint, the Contractor and/or City representative described in the first sub-bullet above shall identify the vibration source generating the complaint, determine the cause of the complaint, and take steps to resolve the complaint by reducing groundborne vibration levels to a peak particle velocity to levels less than 0.01 in/sec . Such measures may include the use of non-impact drivers, use of rubber-tired equipment instead of track equipment, or other measures that limit annoyance from ground-borne vibration levels.

TCR-1: **Conduct Tribal Cultural Resources Sensitivity Training for Construction Personnel.** The Applicant shall retain a qualified professional Tribal monitor who meets U.S. Secretary of the Interior's Professional Qualifications and Standards, to conduct Tribal Cultural Resources Sensitivity Training for construction personnel prior to commencement of excavation activities. The training session shall be carried out by a Tribal monitor, under the direction of a qualified professional archaeologist who meets the U.S. Secretary of the Interior's Professional Qualifications and Standards. The training session will include a handout and will focus on how to identify tribal cultural resources that may be encountered during earthmoving activities and the procedures to be followed in such an event, the duties of Tribal monitors, and, the general steps a qualified professional Tribal monitor would follow in conducting a salvage investigation if one is necessary.

TCR-2: **Conduct Periodic Tribal Cultural Resources Spot Checks During Grading and Earth-Moving Activities.** The Applicant shall retain a qualified professional who meets the U.S. Secretary of the Interior's Professional Qualifications and Standards to conduct periodic Tribal Cultural Resource Spot Checks beginning at depths below two (2) feet to determine if construction excavations have exposed or have a high probability of exposing tribal cultural resources. After the initial Spot Check, further periodic checks will be conducted at the discretion of the qualified Tribal monitor. If the qualified Tribal monitor determines that construction excavations have exposed or have a high probability of exposing Tribal artifacts, construction monitoring for tribal cultural resources will be required. The Applicant shall retain a qualified Tribal monitor, who will work under the guidance and direction of a professional archaeologist, who meets the qualifications set forth by the U.S. Secretary of the Interior's Professional Qualifications and Standards. The Tribal monitor shall be present during all construction excavations (e.g., grading, trenching, or clearing/grubbing) into non-fill sediments. Multiple earth-moving construction activities may require multiple Tribal monitors. The frequency of monitoring shall be based on the rate of excavation and grading activities, proximity to known tribal cultural resources, the materials being excavated (native versus artificial fill soils), the depth of excavation, and if found, the abundance and type of tribal cultural resources encountered. Full-time monitoring can be reduced to part-time inspections if determined adequate by the Project Tribal monitor.

TCR-3: **Cease Ground-Disturbing Activities and Implement Treatment Plan if Tribal Cultural Resources Are Encountered.** In the event that tribal cultural resources are unearthed during ground-disturbing activities, ground-disturbing activities shall be halted or diverted away from the vicinity of the find so that the find can be evaluated. A buffer area of at least 50 feet shall be established around the find where construction activities will not be allowed to continue until a qualified Tribal monitor has examined the newly discovered artifact(s) and has evaluated the area of the find. Work shall be allowed to continue outside of the buffer area. All tribal cultural resources unearthed by Project construction activities shall be evaluated by a qualified professional who meets the U.S. Secretary of the Interior's Professional Qualifications and Standards. Should the newly discovered artifacts be determined to be prehistoric, Native American Tribes/Individuals should be contacted and consulted, and Native American construction monitoring should be initiated. The Applicant and City shall coordinate with the Tribal monitor to develop an appropriate treatment plan for the resources. The plan may include implementation of Tribal data recovery excavations to address treatment of the resource along with subsequent laboratory processing and analysis.

TCR-4: **Prepare Report Upon Completion of Monitoring Services.** The Tribal monitor, under the direction of a qualified professional archaeologist who meets the U.S. Secretary of the Interior's Professional Qualifications and Standards, shall prepare a final report at the conclusion of Tribal monitoring (if required). The report shall be submitted to the Applicant, the South Central Costal Information Center, the City, and representatives of other appropriate or concerned agencies to signify the satisfactory completion of the Project and required mitigation measures. The report shall include a description of resources unearthed, if any, evaluation of the resources with respect to the California Register and CEQA, and treatment of the resources.

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529 Cutter Way Apartments Project

Air Quality and Construction Health Risk Assessment Report

September 24, 2021

CEQA Lead Agency:

City of Covina
Planning Department
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Covina, California 91723

Project Applicant:

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List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	Full Phrase or Description
§	Section
°C	Degrees Celsius
°F	Degrees Fahrenheit
µm	Micrometer
AB	Assembly Bill
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
AMSL	Above Mean Sea Level
APN	Assessor Parcel Number
AQMP	Air Quality Management Plan
BACT	Best Available Control Technology
Basin	South Coast Air Basin
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
Cal-EPA	California Environmental Protection Agency
CARB	California Air Resources Board
CAS	Chemical Abstract Service
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
City	City of Covina
CMU	Concrete Masonry Unit
CO	Carbon Monoxide
CP	Cancer Potency
CRB	Cancer Burden
DPM	Diesel Particulate Matter
GVWR	Gross Vehicle Weight Rating
H_2S	Hydrogen Sulfide
HAP	Hazardous Air Pollutants
HI	Hazard Index
HIA_R	Hazard Index Acute Residential Exposure Scenario
HIC_R	Hazard Index Chronic Residential Exposure Scenario
LDA	Light Duty Auto

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	Full Phrase or Description
LDT1 / LDT2	Light Duty Trucks
m^3	Cubic Meter
MATES IV	Multiple Air Toxics Exposure Study in the South Coast Air Basin
MICR	Maximum Incremental Cancer Risk
MP	Multi-Pathway Adjustment factor
MPO	Metropolitan Planning Organization
MY	Model Year
NAAQS	National Ambient Air Quality Standards
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NOx	Oxides of Nitrogen
O_3	Ozone
OEHHA	Office of Environmental Health Hazard Assessment
PM	Particulate Matter
PM_{10}	Coarse Particulate Matter
$PM_{2.5}$	Fine Particulate Matter
ppm	Parts Per Million
PRC	Public Resources Code
PV	Photovoltaic
Q_{tpy}	Emissions Rate (tons per year)
REL	Reference Exposure Level
Report	Air Quality and Construction Health Risk Assessment Report
ROG	Reactive Organic Gases
RTP	Regional Transportation Plan
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SO_4^{2-}	Sulfates
SO_x	Sulfates
SRA	Source Receptor Area

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	Full Phrase or Description
TAC	Toxic Air Contaminant
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds

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EXECUTIVE SUMMARY

This Air Quality and Construction Health Risk Assessment Report (Report) evaluates and documents the potential air quality impacts associated with the construction and operation of the proposed 529 Cutter Way mixed-use, multi-family residential Project (proposed Project) located at 529 Cutter Way in the City of Covina, California 91723.

This Report is consistent with the guidance and recommendations contained in the South Coast Air Quality Management District's (SCAQMD) California Environmental Quality Act (CEQA) Air Quality Handbook, as amended and supplemented (SCAQMD 2018). This Report is intended to assist the CEQA Lead Agency (City of Covina) with its review of the proposed Project's potential air quality impacts in compliance with the State CEQA Statutes and Guidelines, particularly in respect to the air quality issues identified in Appendix G of the State CEQA Guidelines.

S.1 PROPOSED PROJECT DESCRIPTION

The proposed Project involves the construction and operation of a mixed-use development consisting of 60 residential units, 49 of which will be traditional multi-family units and 11 of which will be "Live/Work" units, located in twelve buildings on an approximately 2.24-acre site in the City of Covina, California. The Project site is comprised of a single parcel (APN# 8434-013-010) zoned (M-1) "Light Manufacturing" and designated "General Industrial" in the City's General Plan. The Project includes a Zone Change and Planned Community Development (PCD) Overlay.

The development is proposed for two distinct uses – a traditional multi-family residential area and a mixed-use Live/Work area. The proposed units will be arranged into building blocks that will vary in height and number of stories (1 to 4 stories), with taller units located towards the rear of the property and decreasing in height as they reach the street property lines. Each proposed building will have varying heights depending on the types of units in each building block. The Project will also include associated landscaping improvements as well as surface parking and a subterranean parking garage. The Project site currently has an approximately 2,647-square foot single-family home constructed on it that was built in 1990. The single-family home is currently used as an administrative office for the Faith Community Church of Covina and is not currently utilized by any persons as a residence.

S.2 POTENTIAL CONSTRUCTION AIR QUALITY IMPACTS

The proposed Project's construction emissions were estimated using the California Emissions Estimator Model (CalEEMod), Version (V.) 2016.3.2. CalEEMod is a computer program recommended for use by the SCAQMD for use in preparing emission estimates for land use and development projects. The modeling indicates maximum daily emissions during construction activities would be below all applicable SCAQMD regional and local thresholds for regulated air pollutants.

Based on the proposed Project's proximity to sensitive receptors (both residential as well as school receptors), a construction health risk assessment (HRA) was prepared to evaluate potential cancerogenic and non-cancerogenic health effects that could result from receptor to exposure to diesel particulate matter (DPM), a toxic air contaminant, that would be generated during the combustion of diesel fuels during Project construction. The construction HRA was prepared in accordance with applicable guidelines from the California Office of Environmental Health Hazard Assessment (OEHHA) and shows that the proposed

Project would not result in potentially significant effects after the implementation of recommended Mitigation Measure AIR-1.

S.3 POTENTIAL OPERATIONAL AIR QUALITY IMPACTS

The proposed Project would generate criteria air pollutant and fugitive dust from a variety of sources during operation, including area, energy, and mobile sources. The emissions from these sources were quantified using CalEEMod. The operational air quality impact analysis indicates the proposed Project would not generate criteria air pollutant or fugitive dust emissions that exceed the SCAQMD's recommended regional CEQA thresholds of significance.

S.4 CONSISTENCY WITH APPLICABLE PLANS

The proposed Project would not result in population or employment growth or associated emissions that conflict with the SCAQMD's 2016 Air Quality Management Plan.

S.5 ODORS

The proposed Project would involve construction and operational activities that could generate odors typical of many construction and residential land use operations. These types of odors (e.g., exhaust) are typical of the area and would be quick to disperse. The proposed Project would not result in the creation of objectionable odors that would affect a substantial number of people.

S.6 RECOMMENDED MITIGATION MEASURES

The following mitigation measure is necessary to ensure the proposed Project does not generate TAC emissions that have the potential to result in substantial adverse health effects at receptor locations near the proposed Project:

Mitigation Measure AIR-1: Reduce DPM Emissions. To reduce potential short-term adverse health risks associated with PM_{10} exhaust emissions, including emissions of diesel particulate matter (DPM), generated during project construction activities, the City shall require the Applicant and/or it's designated contractors, contractor's representatives, or other appropriate personnel to apply the following construction equipment restrictions for the Project:

1. Electric-powered and liquefied or compressed natural gas equipment (including generators) shall be employed instead of diesel-powered equipment to the maximum extent feasible.
2. All construction equipment with a rated power-output of 50 horsepower or greater shall meet U.S. EPA and CARB Tier IV Final Emission Standards for PM_{10}. This may be achieved via the use of equipment with engines that have been certified to meet Tier IV emission standards, or through the use of equipment that has been retrofitted with a CARB-verified diesel emission control strategy (e.g., oxidation catalyst, particulate filter) capable of reducing exhaust PM_{10} emissions to levels that meet Tier IV standards.

As an alternatively to using equipment that meets Tier IV Final Emissions Standards for off-road equipment with a rated power-output of 50 horsepower or greater, the Applicant may prepare and submit a refined construction health risk assessment to the City once additional Project-specific construction information is known (e.g., specific construction equipment type, quantity, engine tier, and runtime by phase). The refined health risk assessment shall demonstrate and identify any measures necessary such that the proposed Project's incremental cancerogenic health risk at nearby sensitive receptor locations is below the applicable SCAQMD threshold of 10 cancers in a million.

The above measure would ensure construction emissions associated with equipment operation do not generate diesel particulate emissions that expose sensitive receptors to substantial pollutant concentrations (i.e., exceed applicable SCAQMD thresholds).

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1 INTRODUCTION

Faith Community Church, LLC has submitted an application to the City of Covina for a Zone Change and Planned Community Development (PCD) Overlay, Environmental Review, and Site and Architectural Review for its proposed 529 Cutter Way mixed-use, multi-family residential project (proposed Project). The proposed Project would be located on a single parcel containing an unoccupied single-family home, in the western portion of the City of Covina, in Los Angeles County. It would involve the construction and operation of a new mixed-use development consisting of 49 traditional multi-family residential dwelling units and 11 non-traditional “Live/Work” units consisting of a combination of residential floor space and non-residential floor space intended for light industrial operations such as arts and crafts, 3D printing, textiles, research and development, telecommunications, etc.

MIG, Inc. (MIG) has prepared this Air Quality and Construction Health Risk Assessment Report (Report) to evaluate the potential construction- and operational-related air quality impacts of the proposed Project. MIG has prepared this report using Project-specific information contained in Faith Community Church’s entitlement applications, as well as supplemental information provided by Faith Community Church, LLC and the South Coast Air Quality Management District (SCAQMD). Where necessary, MIG has supplemented available information with standardized sources of information, such as model assumptions pertaining to construction equipment activity levels. In general, this Report evaluates the potential “worst-case” conditions associated with the proposed Project’s construction and operational emissions levels to ensure a conservative (i.e., likely to overestimate) assessment of potential air quality impacts is presented.

This Report is intended for use by the City of Covina to assess the potential air quality impacts of the proposed Project in compliance with the California Environmental Quality Act (CEQA; PRC §21000 et seq.) and the State CEQA Guidelines (14 CCR §15000 et seq.), particularly with respect to the air quality issues identified in Appendix G of the State CEQA Guidelines.

1.1 REPORT ORGANIZATION

This Report is organized as follows:

- Chapter 1, Introduction, explains the contents of this Report and its intended use.
- Chapter 2, Proposed Project Description, provides an overview of the construction and operational activities associated with the proposed Project.
- Chapter 3, Air Quality Setting and Regulatory Framework, provides pertinent background information on air quality, describes the existing air quality setting of the proposed Project, and provides information on the federal, state, and local regulations that govern the proposed Project’s air quality setting and potential air quality impacts.
- Chapter 4, Air Quality Impact Assessment, identifies the potential construction and operational air quality impacts of the proposed Project and evaluates these effects in accordance with Appendix G of the State CEQA Guidelines.
- Chapter 5, Report Preparers and References, list the individuals involved, and the references used, in the preparation of this Report.

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2 PROPOSED PROJECT DESCRIPTION

Faith Community Church is proposing to develop the 529 Cutter Way mixed-use, multi-family residential project (proposed Project). The proposed Project would consist of the construction and operation of 12 new buildings containing 60 multi-family residential units, 11 units of which will be Live/Work units, on existing industrial land in the western part of the City of Covina. The Project would support mostly multi-family residential operations with some light industrial and commercial operations.

2.1 PROJECT LOCATION

The proposed Project would be located at 529 Cutter Way in the City of Covina (Assessor Parcel Number (APN) 8434-013-010; see Figure 2-1: Aerial View of Project Site). The Project site consists of approximately 2.24-acres of land currently developed with an unoccupied single-family home and classified as (M-1) Light Manufacturing by the City's Zoning Code and designated as General Industrial by the City's General Plan (City of Covina, 2000).

2.1.1 SURROUNDING LAND USES

In general, the proposed Project site is surrounded by industrial, commercial, and institutional land uses in the cities of Covina and West Covina. The site is bound on the north by industrial and commercial uses, on the east by Cutter Way, on the south by San Bernardino Road, and on the west by industrial and commercial uses. To the west and north of the site are light industrial/industrial office park and commercial uses. A multi-family residential apartment complex is located to the east of the site, on the opposite side of Cutter Way. Las Palmas Middle School is located to the north of this apartment complex (northeast of the Project site). On the south side of San Bernardino Road are light industrial/industrial park and commercial uses in the City of Covina and the Jubilee Christian School in the City of West Covina. The underlying land use zoning and General Plan designations for the Project area are similar to the Project site, generally consisting of Light Manufacturing/General Industrial (M-1), with areas to the east consisting of Multi-Family/High-Density Residential (RD-3000). Interstate 10 (I-10) is located approximately 1.15 miles south of the site. Las Palmas Middle School is located 145 feet (0.03 miles) northeast of the site and Jubilee Christian School is located 100 feet (0.02 miles) southeast of the site.

2.2 EXISTING SITE DESCRIPTION AND OPERATIONS

The proposed Project site has historically been used for residential uses. Currently, the site contains an approximately 2,647-square foot single-family home built in 1990 along with associated landscaping and parking. The single-family home is not currently occupied by any residents, and the home is used as a temporary gathering place for Faith Community Church of Covina. Under the proposed Project, Faith Community Church would demolish the single-family home and remove the landscaping and parking.

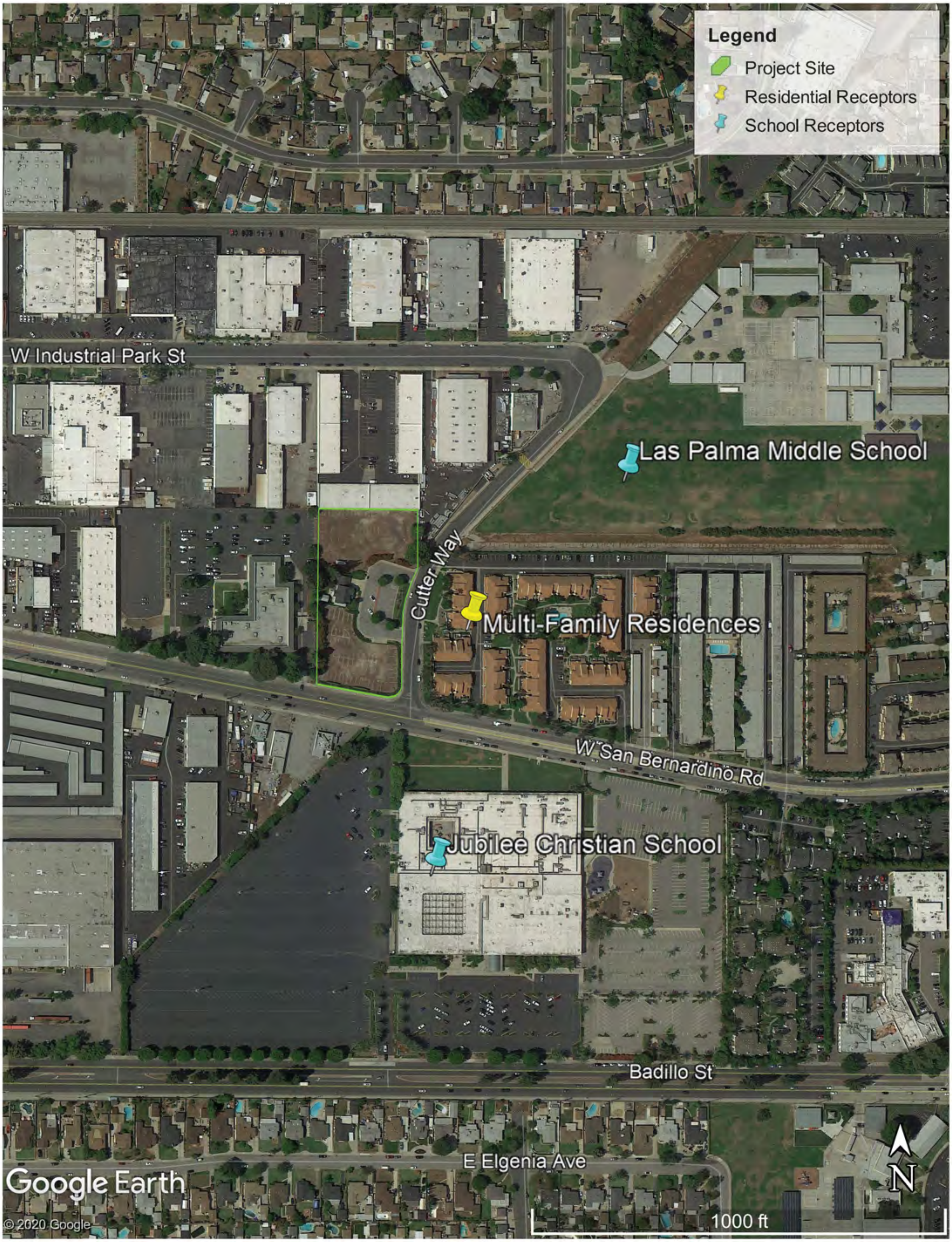


Figure 2-1 Aerial View of the Project Site

2.3 PROPOSED SITE DEVELOPMENT AND OPERATIONS

The proposed Project would involve the development of 12 buildings containing 60 multi-family residential units, 11 of which will be Live/Work units. The Project will also include both surface and subterranean parking and landscaping areas (see Figure 2-2: Site Plan). Each proposed building will be comprised of building blocks. While each proposed building will have varying levels of building blocks, each building will have a maximum number of stories/height of either three (3) stories/35-feet or four (4) stories/45-feet. An outdoor courtyard with amenities will be centrally located within the property, and a community center will be incorporated into Building 6, which is located on the north side of Building 6 and abuts the courtyard area. Construction of the proposed Project is anticipated to begin at the beginning of 2021, at the earliest, and take approximately 12 months to complete. In total, the proposed Project would result in the development of approximately 63,869 square feet of residential building space, an additional approximately 2,500 square feet of building space for shared work, approximately 32,389 square feet of landscaping, and approximately 30,112 square feet of hardscape. The proposed project would also accommodate an approximately 35,411 square foot subterranean parking garage.

2.3.1 SITE LAYOUT

The site plan calls for the proposed buildings to be arranged in a north-south pattern to best capture solar energy and natural lighting for energy conservation with the outdoor courtyard centrally located. Monumental stairs (with ADA provisions) from the public way to the courtyard are introduced. The buildings would front Cutter Way and San Bernardino Road but would be setback at least approximately 10 and 12 feet from these roadways, respectively. The subterranean parking would be centrally located below the middle of the site and the surface parking would be located along the northern edge of the property. A combination freight and passenger elevator from the garage floor level to the courtyard level is included for the ease of movement of people and goods.

2.3.2 NEW RESIDENTIAL BUILDING DESCRIPTIONS

As discussed above, the Project will include 12 buildings ranging in height with each building having a height of three (3) or four (4) stories (Logos Architecture, 2020). Some buildings will include both the traditional multi-family residential units and the non-traditional Live/Work units, while others will only include the traditional multi-family residential units. The floor area sizes for the dwelling units are planned to range from 650 square feet for the one-bedroom units to over 1,200 square feet for the three-bedroom units. The Live/Work units will be combination units composed of dwelling space on the upper floors and workspace on the lower floors connected by an interior staircase.

The apartment dwelling units are to be supplied with gas, water, and heating via a private service system with separate utility meters in order to recoup initial start-up costs from tenants. The Project will include rooftop solar photovoltaic (PV) and solar thermal electricity and hot water heating systems. No central plant is required for this development. Smaller individual transformers serving two or three buildings will be used for cost efficiency. Transformers will be installed on 8ft by 8ft concrete pads throughout the site and within 100 feet of property lines. Site lighting fixtures will be pole and wall mounted and installed throughout the site for security, illumination and aesthetics. Each individual apartment unit will be equipped with energy-saving and space-saving devices such as tankless water closets, tankless water heaters, and air condenser units for heating and cooling interior spaces. These items are proposed for the convenience, efficiency, and maintenance that these products will offer to both landlord and tenant. In addition, each dwelling unit will be equipped with washer and dryer and natural gas kitchen appliances.

Figure 2-2 Site Plan

2.3.3 PARKING AND SITE ACCESS

On-site parking will be provided primarily through a partial subterranean parking structure and surface parking near the northern portion of the site. Direct vehicular access to the subterranean parking structure will be provided via a 48-foot wide driveway entrance at the eastern edge of the site on Cutter Way. This driveway will also allow for access to the surface parking in the northern portion of the site. A secondary access point will be provided via a 28-foot wide driveway at the southwestern corner of the site on San Bernardino Road. The proposed Project will provide a total of 127 parking stalls for tenants, guests, property maintenance staff, and employees/visitors of the Live/Work units. The parking stalls will be divided between a partial (about 5 feet in depth) subterranean parking structure beneath the site and a surface parking area located at the north end of the Project site. The proposed subterranean parking garage will include 102 parking stalls, two of which will be ADA accessible. The proposed surface parking area will include 25 parking stalls, two of which will be ADA accessible stalls.

2.3.3.1 Emergency Fire / Site Access

In consultation with the Los Angeles County Fire Department, Faith Community Church is providing a fire access road located around the perimeter of the site which will be accessible from both Cutter Way and San Bernardino Road. This access road will make for easy access to any dwelling unit.

2.3.4 OTHER SITE IMPROVEMENTS

The proposed Project would include other site improvements, including new perimeter fencing and new landscaping. Landscaped areas will have approximately 32,389 square feet land coverage. Project plans call for the development of a 6-foot concrete masonry unit (CMU) wall to be constructed along the Project site's western property line.

2.3.5 OPERATIONAL TRIP GENERATION ESTIMATES

Once, operational, the proposed Project would generate trips to and from the site from the newly proposed residential land uses. The proposed Project's trip generation potential, as provided for in the Project's Traffic Impact Study prepared by Linscott, Law & Greenspan, is summarized in Table 2-1 (Linscott, Law & Greenspan 2020).

Table 2-1: Project Trip Generation Rates

Vehicle Type	Throughput		AM Peak Hour Volumes	PM Peak Hour Volumes	Average Daily Traffic (ADT)
	Quantity	Unit			
Apartment	49	Unit	18	22	266
Live/Work	11	Unit	4	5	60
Total	-	-	22	27	326
Source: Linscott, Law & Greenspan 2020, modified by MIG.					

2.3.6 PROJECT CONSTRUCTION

The proposed Project would involve the demolition of the existing, approximately 2,647 square-foot single-family home, and the construction of the 12 mixed-use, multi-family residential buildings.

Construction phasing associated the proposed Project is anticipated to include demolition, site preparation, grading, building construction, paving, and architectural coating. The Project will require the export (i.e., off-haul) of approximately 7,532 cubic yards of soil. Construction activities are anticipated to begin in early 2021. Based on default assumptions generated by the California Emissions Estimator Model (CalEEMod), which was used to estimate emissions associated with the proposed Project, construction activities are anticipated to last approximately 12 months. The proposed Project anticipated to require varying types of equipment throughout the various construction phases including, but not limited to: bulldozers, backhoes, loaders, graders, cranes and forklifts. Table 2-2 summarizes the proposed Project's construction phasing and the typical pieces of heavy-duty, off-road construction equipment that would be required during each phase.

Table 2-2: Construction Activity, Duration, and Typical Equipment

Construction Activity	Duration (Days)(A)	Typical Equipment Used(B)
Demolition	5	Concrete/Industrial Saw, Dozer, Backhoe
Site Preparation	3	Grader, Scraper, Backhoe
Grading	15	Grader, Dozer, Backhoe
Building Construction	220	Crane, Forklift, Generator, Backhoe, Welder
Paving	10	Paver, Roller, Paving Equipment
Architectural Coating	10	Air Compressor

Source: MIG, 2021 (See Appendix A).

(A) Days refers to total active workdays in the construction phase, not calendar days.

(B) The typical equipment list does not reflect all equipment that would be used during the construction phase. Not all equipment would operate eight hours per day each workday.

3 AIR QUALITY SETTING AND REGULATORY FRAMEWORK

This chapter provides information on the environmental and regulatory air quality setting of the proposed Project. Information on existing air quality conditions, federal and state ambient air quality standards, and pollutants of concern was obtained from the U.S. Environmental Protection Agency (U.S. EPA), CARB, and SCAQMD.

3.1 REGIONAL ENVIRONMENTAL SETTING

Air quality is a function of pollutant emissions and topographic and meteorological influences. The amount of pollutants emitted into the air and the physical features and atmospheric conditions of a geographic region interact to affect the movement and dispersion of pollutants and determine the quality of its air.

The U.S. EPA and CARB are the federal and state agencies charged with maintaining air quality in the nation and state, respectively. The U.S. EPA delegates much of its authority over air quality to CARB. CARB has geographically divided the state into 15 air basins for the purposes of managing air quality on a regional basis. An air basin is a CARB-designated management unit with similar meteorological and geographic conditions. The proposed Project is located in the City of Covina, in Los Angeles County, within the South Coast Air Basin (Basin). The Basin includes Orange County and the non-desert portions of Los Angeles, San Bernardino, and Riverside Counties.

3.1.1 REGULATED AIR POLLUTANTS

The U.S. EPA has established National Ambient Air Quality Standards (NAAQS) for six common air pollutants: ozone (O_3), particulate matter (PM), which consists of “inhalable coarse” PM (particles with an aerodynamic diameter between 2.5 and 10 microns in diameter, or PM_{10}) and “fine” PM (particles with an aerodynamic diameter smaller than 2.5 microns, or $PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. The U.S. EPA refers to these six common pollutants as “criteria” pollutants because the agency regulates the pollutants on the basis of human health and/or environmentally-based criteria. CARB has established California Ambient Air Quality Standards (CAAQS) for the six common air pollutants regulated by the federal Clean Air Act (the CAAQS are more stringent than the NAAQS) plus the following additional air pollutants: hydrogen sulfide (H_2S), sulfates (SO_X), vinyl chloride, and visibility reducing particles. A description of the regulated air pollutants associated with the proposed Project is provided below.

- Ground-level ozone, or smog, is not emitted directly into the atmosphere. It is created from chemical reactions between oxides of nitrogen (NO_X) and volatile organic compounds (VOCs), also called reactive organic gases (ROG), in the presence of sunlight (U.S. EPA, 2017a). Thus, ozone formation is typically highest on hot sunny days in urban areas with NO_X and ROG pollution. Ozone irritates the nose, throat, and air pathways and can cause or aggravate shortness of breath, coughing, asthma attacks, and lung diseases such as emphysema and bronchitis.
  - ROG is a CARB term defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, and includes several low-reactive organic compounds which have been exempted by the U.S. EPA (CARB, 2004).
  - VOC is a U.S. EPA term defined as any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate,

which participates in atmospheric photochemical reactions. The term exempts organic compounds of carbon which have been determined to have negligible photochemical reactivity such as methane, ethane, and methylene chloride (CARB, 2004).

- Particulate matter (PM), also known as particle pollution, is a mixture of extremely small solid and liquid particles made up of a variety of components such as organic chemicals, metals, and soil and dust particles (U.S. EPA, 2016a).
  - PM_{10}, also known as inhalable coarse, respirable, or suspended PM_{10}, consists of particles less than or equal to 10 micrometers in diameter (approximately $1/7^{th}$ the thickness of a human hair). These particles can be inhaled deep into the lungs and possibly enter the blood stream, causing health effects that include, but are not limited to, increased respiratory symptoms (e.g., irritation, coughing), decreased lung capacity, aggravated asthma, irregular heartbeats, heart attacks, and premature death in people with heart or lung disease (U.S. EPA, 2016a).
  - $PM_{2.5}$, also known as fine PM, consists of particles less than or equal to 2.5 micrometers in diameter (approximately $1/30^{th}$ the thickness of a human hair). These particles pose an increased risk because they can penetrate the deepest parts of the lung, leading to and exacerbating heart and lung health effects (U.S. EPA, 2016a).
- Carbon Monoxide (CO) is an odorless, colorless gas that is formed by the incomplete combustion of fuels. Motor vehicles are the single largest source of carbon monoxide in the Basin. At high concentrations, CO reduces the oxygen-carrying capacity of the blood and can aggravate cardiovascular disease and cause headaches, dizziness, unconsciousness, and even death (U.S. EPA, 2016b).
- Nitrogen Dioxide (NO_2) is a by-product of combustion. NO_2 is not directly emitted but is formed through a reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_X and are major contributors to ozone formation. NO_2 also contributes to the formation of particulate matter. NO_2 can cause breathing difficulties at high concentrations (U.S. EPA, 2016c).
- Sulfur Dioxide (SO_2) is one of a group of highly reactive gases known as oxides of sulfur (SO_X). Fossil fuel combustion in power plants and industrial facilities are the largest emitters of SO_2. Short-term effects of SO_2 exposure can include adverse respiratory effects such as asthma symptoms. SO_2 and other SO_X can react to form PM (U.S. EPA, 2016d).
- Sulfates (SO_4^{2-}) are the fully oxidized ionic form of sulfur. SO_4^{2-} are primarily produced from fuel combustion. Sulfur compounds in the fuel are oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. Sulfate exposure can increase risks of respiratory disease (CARB, 2009).

In addition to criteria air pollutants, the U.S. EPA and CARB have classified certain pollutants as hazardous air pollutants (HAPs) or toxic air contaminants (TACs), respectively. These pollutants can cause severe health effects at very low concentrations, and many are suspected or confirmed carcinogens. The U.S. EPA has identified 187 HAPs, including such substances as arsenic and chlorine; CARB considers all U.S. EPA designated HAPs, as well as particulate emissions from diesel-fueled engines (DPM) and other substances, to be a TAC. Since CARB's list of TACs references and includes U.S. EPA's list of HAPs, this document uses the term TAC when referring to HAPs and TACs. A description of the TACs associated with the proposed Project and its vicinity is provided below.

- Gasoline-Powered Mobile Sources. According to the SCAQMD's *Multiple Air Toxics Exposure Study in the South Coast Air Basin* (SCAQMD, 2015), or MATES IV, gasoline-powered vehicles emit TACs, such as benzene, which can have adverse health risks. Gasoline-powered sources emit TACs in much smaller amounts than diesel-powered vehicles. The MATES IV study identifies that diesel emissions account for between 68% to 80% of the total air toxics and cancer risk in the Basin.

- Diesel Particulate Matter (DPM). Diesel engines emit both gaseous and solid material; the solid material is known as DPM. Almost all DPM is less than 1 micrometer (μm) in diameter, and thus is a subset of $PM_{2.5}$. DPM is typically composed of carbon particles and numerous organic compounds. Diesel exhaust also contains gaseous pollutants, including VOCs and NO_X. The primary sources of diesel emissions are ships, trains, trucks, rail yards and heavily traveled roadways. These sources are often located near highly populated areas, resulting in greater DPM related health consequences in urban areas. The majority of DPM is small enough to be inhaled into the lungs and what particles are not exhaled can be deposited on the lung surface and in the deepest regions of the lungs where the lung is most susceptible to injury. In 1998, CARB identified DPM as a toxic air contaminant based on evidence of a relationship between diesel exhaust exposure and lung cancer and other adverse health effects. DPM also contributes to the same non-cancer health effects as $PM_{2.5}$ exposure (CARB 2016a).

Common criteria air pollutants, such as ozone precursors, SO_2, and PM, are emitted by a large number of sources and have effects on a regional basis (i.e., throughout the Basin); other pollutants, such as HAPs, TACs, and fugitive dust, are generally not as prevalent and/or emitted by fewer and more specific sources. As such, these pollutants have much greater effects on local air quality conditions and local receptors.

3.1.2 REGIONAL AIR POLLUTANT EMISSIONS LEVELS

CARB's estimate of the amount of emissions generated within the Basin in 2012, the most recent year for which data is available, is summarized in Table 3-1.

Table 3-1: South Coast Air Basin Emissions Summary

Emissions Source	2012 Pollutant Emissions (Tons Per Day)						
	ROG	NO_X	$PM_{2.5}$	PM_{10}	PM	CO	SO_X
Stationary(A)	97	49	15	20	26	55	10
Area-wide(B)	115	21	28	93	175	54	1
Mobile(C)	256	445	22	36	37	2,004	7
Total(D)	468	514	65	148	238	2,113	17
Emissions Source	**2012 Pollutant Emissions (Tons Per Year)**						
	ROG	NO_X	$PM_{2.5}$	PM_{10}	PM	CO	SO_X
Stationary (A)	35,478	17,925	5,497	7,253	9,574	20,130	3,555
Area-wide (B)	42,026	7,523	10,370	33,821	63,849	19,728	186
Mobile (C)	93,334	162,294	7,884	13,104	13,447	731,442	2,398
Total (D)	170,838	187,741	23,751	54,177	86,870	771,300	6,139

Source: CARB, 2016b, modified by MIG.
(A) Stationary sources include fuel combustion in stationary equipment or a specific type of facility such as printing and metals processing facilities.
(B) Mobile sources include automobiles, trucks, and other vehicles intended for "on-road" travel and other self-propelled machines such as construction equipment and all-terrain vehicles intended for "off-road" travel.
(C) Area-wide sources include solvent evaporation (e.g., consumer products, painting, and asphalt paving) and miscellaneous processes such as residential space heating, fugitive windblown dust, and cooking.
(D) Totals may not equal due to rounding.

3.1.3 SOUTH COAST AIR BASIN CLIMATE, TOPOGRAPHY, AND METEOROLOGY

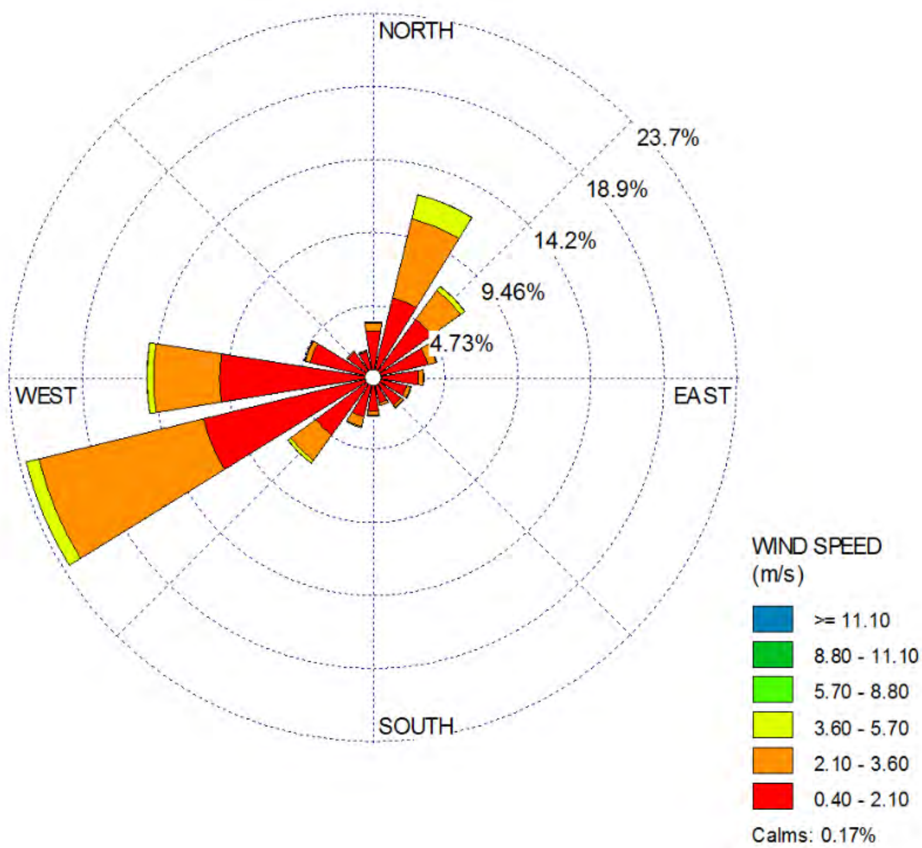
Los Angeles County and the broader Los Angeles Basin are defined by a semi-arid, Mediterranean climate with mild winters and warm summers. The San Gabriel, San Bernardino, and San Jacinto Mountains bound the Basin to the north and east trap ambient air and pollutants within the Los Angeles and Inland Empire valleys below. The climate of the Los Angeles region is classified as Mediterranean, but weather conditions within the basin are dependent on local topography and proximity to the Pacific Ocean. The climate is dominated by the Pacific high-pressure system that results in generally mild, dry summers and mild, wet winters. This temperate climate is occasionally interrupted by extremely hot temperatures during the summer, Santa Ana winds during the fall, and storms from the Pacific northwest during the winter. In addition to the basin's topography and geographic location, El Niño and La Niña patterns also have large effects on weather and rainfall received between November and March.

The Pacific high-pressure system drives the prevailing winds in the basin. The winds tend to blow onshore in the daytime and offshore at night. In the summer, an inversion layer is created over the coastal areas and increases ozone levels. A temperature inversion is created when a layer of cool air is overlain by a layer of warmer air; this can occur over coastal areas when cool, dense air that originates over the ocean is blown onto land and flows underneath the warmer, drier air that is present over land. In the winter, areas throughout the basin often experience a shallow inversion layer that prevents the dispersion of surface level air pollutants, resulting in higher concentrations of criteria air pollutants such as carbon monoxide (CO) and oxides of nitrogen (NO_X).

The City's average temperatures range from a high of 94 degrees Fahrenheit (F) in August to a low of 38 degrees Fahrenheit in December. Annual precipitation is approximately 9.89 inches, falling mostly from January through April (WRCC 2015). Elevations in the City of Covina range from approximately 440 feet above mean seal level (AMSL) in the southwestern portion of the City to approximately 750 feet AMSL in the northeastern portion of the City. The proposed Project site is generally located at an approximate elevation of 450 feet AMSL.

SCAQMD maintains publicly meteorological data for use in air quality analyses. The closest meteorological station is the Azusa meteorological station, approximately three miles to north of the project site at 803 North Loren Street in the City of Azusa. The wind rose for the Azusa meteorological station, shown in Figure 3-1, indicates the prevailing wind near the project site is from the west.

Figure 3-1 Wind Rose for the Azusa (AZUS) Meteorological Station (Blowing From)



Source: SCAQMD, 2018a

3.1.4 REGIONAL AIR QUALITY CONDITIONS AND ATTAINMENT STATUS

As described in Section 3.1.1, the Federal and State governments have established emission standards and limits for air pollutants which may reasonably be anticipated to endanger public health or welfare. These standards typically take one of two forms: standards or requirements that are applicable to specific types of facilities or equipment (e.g., petroleum refining, metal smelting), or concentration-based standards that are applicable to overall ambient air quality. Air quality conditions are best described and understood in the context of these standards; areas that meet, or attain, concentration-based ambient air quality standards are considered to have levels of pollutants in the ambient air that, based on the latest scientific knowledge, do not endanger public health or welfare.

The U.S. EPA, CARB, and the SCAQMD assess the air quality of an area by measuring and monitoring the amount of pollutants in the ambient air and comparing pollutant levels against NAAQS and CAAQS. Based on these comparisons, regions are classified into one of the following categories:

- Attainment. A region is "in attainment" if monitoring shows ambient concentrations of a specific pollutant are less than or equal to NAAQS or CAAQS. In addition, an area that has been re-designated from nonattainment to attainment is classified as a "maintenance area" for 10 years to ensure that the air quality improvements are sustained.

- Nonattainment. If the NAAQS or CAAQS are exceeded for a pollutant, the region is designated as nonattainment for that pollutant. It is important to note that some NAAQS and CAAQS require multiple exceedances of the standard in order for a region to be classified as nonattainment. Federal and state laws require nonattainment areas to develop strategies, plans, and control measures to reduce pollutant concentrations to levels that meet, or attain, standards.
- Unclassified. An area is unclassified if the ambient air monitoring data are incomplete and do not support a designation of attainment or nonattainment.

Table 3-2 summarizes the Basin's attainment status for criteria pollutants. The Basin is currently in nonattainment for state and federal ozone, state PM_{10}, and state and federal $PM_{2.5}$ standards.

Pollution problems in the Basin are caused by emissions within the area and the specific meteorology that promotes pollutant concentrations. Emissions sources vary widely from smaller sources such as individual residential water heaters and short-term grading activities to extensive operational sources including long-term operation of electrical power plants and other intense industrial use. Pollutants in the Basin are blown inward from coastal areas by sea breezes from the Pacific Ocean and are prevented from horizontally dispersing due to the surrounding mountains. This is further complicated by atmospheric temperature inversions that create inversion layers. The inversion layer in Southern California refers to the warm layer of air that lies over the cooler air from the Pacific Ocean. This is strongest in the summer and prevents ozone and other pollutants from dispersing upward. A ground-level surface inversion commonly occurs during winter nights and traps carbon monoxide emitted during the morning rush hour.

3.1.5 LOCAL AIR QUALITY CONDITIONS

Air pollution levels are measured at monitoring stations located throughout the Basin. The Project site is located in SCAQMD Source Receptor Area (SRA) 9 – East San Gabriel Valley. The station closest to Covina is identified as East San Gabriel Valley 1 Station (Station #060) by SCAQMD (CARB refers to this station as Azusa). The station is located approximately 3.25 miles south of the Project site and monitors CO, O_3, NO_2, PM_{10} and $PM_{2.5}$. This monitoring station represents the best approximation of the air quality conditions within the City.

Table 3-2: Summary of Ambient Air Quality Standards and Attainment Status					
Pollutant	Averaging Time(B)	California Standards(A)		National Standards(A)	
		Standard(C)	Attainment Status(D)	Standard(C)	Attainment Status(D)
Ozone	1-Hour (1979)	--	--	240 µg/m³	Nonattainment
	1-Hour (Current)	180 µg/m³	Nonattainment	--	--
	8-Hour (1997)	--	--	160 µg/m³	Nonattainment
	8-Hour (2008)	--	--	147 µg/m³	Nonattainment
	8-Hour (Current)	137 µg/m³	Nonattainment	137 µg/m³	Nonattainment
PM_{10}	24-Hour	50 µg/m³	Nonattainment	150 µg/m³	Attainment
	Annual Average	20 µg/m³	Nonattainment	--	--
$PM_{2.5}$	24-Hour	--	--	35 µg/m³	Nonattainment
	Annual Average (1997)	--	--	15 µg/m³	Attainment
	Annual Average (Current)	12 µg/m³	Nonattainment	12 µg/m³	Nonattainment
Carbon Monoxide	1-Hour	23,000 µg/m³	Attainment	40,000 µg/m³	Attainment
	8-Hour	10,000 µg/m³	Attainment	10,000 µg/m³	Attainment
Nitrogen Dioxide	1-Hour	339 µg/m³	Attainment	188 µg/m³	Unclassifiable/ Attainment
	Annual Average	57 µg/m³	Attainment	100 µg/m³	Attainment
Sulfur Dioxide	1-Hour	655 µg/m³	Attainment	196 µg/m³	Attainment
	24-Hour	105 µg/m³	--	367 µg/m³	Unclassifiable/ Attainment
	Annual Average	--	--	79 µg/m³	Unclassifiable/ Attainment
Lead	3-Months Rolling	--	--	0.15 µg/m³	Nonattainment (Partial)
Hydrogen Sulfide	1-Hour	42 µg/m³	Attainment	--	
Sulfates	24-Hour	25 µg/m³	Attainment	--	
Vinyl Chloride	24-Hour	26 µg/m³	Attainment	--	

Source: SCAQMD 2018b, modified by MIG.

(B) This table summarizes the CAAQS and NAAQS and the Basin's attainments status. This table does not prevent comprehensive information regarding the CAAQS and NAAQS. Each CAAQS and NAAQS has its own averaging time, standard unit of measurement, measurement method, and statistical test for determining if a specific standard has been exceeded. Standards are not presented for visibility reducing particles, which are not concentration-based. The Basin is unclassified for visibility reducing particles.

(C) Ambient air standards have changed over time. This table presents information on the standards previously used by the U.S. EPA for which the Basin does not meet attainment.

(D) All standards are shown in terms of micrograms per cubic meter (µg/m³) rounded to the nearest whole number for comparison purposes (with the exception of lead, which has a standard less than 1 µg/m³). The actual CAAQS and NAAQS standards specify units for each pollutant measurement.

(E) A= Attainment, N= Nonattainment, U=Unclassifiable.

Table 3-3 summarizes the published monitoring data from the East San Gabriel Valley 1 monitoring station from 2017 to 2019, the three most recent years for which verified, published data was available from the SCAQMD at the time this Report was prepared. Table 3-3 shows that air quality standards at this location have been exceeded for PM_{10} and O_3. As shown in Table 3-3:

- The maximum 1- and 8-hour CO concentration declined each year from 2017 to 2019. Days in which CO standards were exceeded have generally declined during this time period.
- The maximum 1-hour NO_2 concentration and average annual NO_2 concentration generally decreased from 2017 to 2019. There were no days in which NO_2 standards were exceeded during this time period.
- The maximum 1-hour and 8-hour O_3 concentration, as well as the number of days exceeding O_3 standards, generally decreased from 2017 to 2019.
- The maximum 24-hour and average annual PM_{10} concentration remained steady from 2017 to 2019 period. The State PM_{10} annual standard was exceeded in 2017, 2018, and 2019; however, the annual average PM_{10} concentration and the number of days exceeding the state 24-hour standard generally decreased over this time period.
- The maximum 24-hour and average annual $PM_{2.5}$ concentration fluctuated during the 2017 to 2019 period, and there were no days in which Federal $PM_{2.5}$ 24-standard was exceeded during this time period.

3.1.6 LOCAL AIR QUALITY SETTING

The proposed Project is located in the western portion of the City of Covina, and is bounded by Cutter Way to the East, San Bernardino Road to the south, and light industrial and commercial uses to the west and north. To the west and north of the Project site are industrial park and commercial uses that support the industrial park. To the east of the Project site, on the opposite side of Cutter Way, is a multi-family residential apartment complex and to the north of the apartment complex is Las Palmas Middle School. To the south of the Project site, on the opposite side of San Bernardino Road are industrial park and supportive commercial uses as well as the Jubilee Christian School (City of West Covina). Interstate 10 (I-10) is located approximately 1.15 miles south of the site. Las Palmas Middle School is located 145 feet (0.03 miles) northeast of the site and Jubilee Christian School is located 100 feet (0.02 miles) southeast of the site in the City of West Covina. The existing industrial uses, and vehicles on I-10 and local roadways all contribute to the local air quality conditions in proximity to the Project site.

The Project site currently contains an unoccupied single-family home that is used as a temporary gathering place for Faith Community Church of Covina. This existing activity at the site generates on- and off-site emissions from equipment and vehicle operations. According to the City's General Plan, motor vehicles represent a major source of emissions within the City and the Basin.

Table 3-3: 2017-2019 Local Air Quality Data for East San Gabriel Valley 1 (A)				
Pollutant	Ambient Air Standard	Year(A)		
		2017	2018	2019
Ozone (O_3)				
Maximum 1-hour Concentration (ppm)		0.152	0.139	0.123
Maximum 8-hr Concentration (ppm)		0.114	0.099	0.094
Number of Days Exceeding State 1-hr Standard	>180 µg/m3	38	24	34
Number of Days Exceeding State 8-hr Standard	>137 µg/m3	62	42	39
Days Exceeding Federal 1-hr Standard	>0.124 ppm	7	3	0
Days Exceeding Federal 8-hr Standard	>0.070 ppm	62	42	39
Carbon Monoxide (CO)				
Maximum 1-hr Concentration (ppm)		1.8	1.4	1.6
Maximum 8-hr Concentration (ppm)		0.9	1.0	1.1
Days Exceeding State 1-hr Standard	>23,000 µg/m^3	0	0	0
Days Exceeding Federal/State 8-hr Standard	>10,000 µg/m^3	0	0	0
Days Exceeding Federal 1-hr Standard	>40,000 µg/m^3	0	0	0
Nitrogen Dioxide (NO_2)				
Maximum 1-hr Concentration (ppb)		65.6	70.8	59.7
Annual Arithmetic Mean Concentration (ppb)		15.8	14.9	13.7
Days Exceeding State 1-hr Standard	>180 µg/m^3	0	0	0
Suspended Particulate Matter (PM_{10})				
Maximum 24-hr Concentration (µg/m^3)		83	78	82
Annual Arithmetic Mean (µg/m^3)		31.4	32.2	28.1
Samples Exceeding State 24-hr Standard	>50 µg/m^3	6	10	4
Samples Exceeding Federal 24-hr Standard	>150 µg/m^3	0	0	0
Fine Particulate Matter ($PM_{2.5}$)				
Maximum 24-hr Concentration (µg/m^3)		24.90	30.20	28.30
Annual Arithmetic Mean (µg/m^3)		10.42	10.35	9.18
Samples Exceeding Federal 24-hr Standard	>35 µg/m^3	0	0	0

Source: SCAQMD, 2020a, 2020b, 2020c
(A) "--" indicates data are not available.

3.1.7 SENSITIVE AIR QUALITY RECEPTORS AND EXISTING REGIONAL HEALTH RISKS

Some people are more affected by air pollution than others. Sensitive air quality receptors include specific subsets of the general population that are susceptible to poor air quality and the potential adverse health effects associated with poor air quality. Both CARB and the SCAQMD consider residences, schools, parks and playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes to be sensitive air quality land uses and receptors (SCAQMD, 2017a; CARB, 2005). The potential sensitive air quality receptors adjacent or in close proximity to the perimeter of the project site (i.e., within 1,000 feet) are shown in Figure 2-1 include:

- Multi-family residential apartment complex on the opposite side of Cutter Way, approximately 50 feet from the eastern edge of the Project site,

- Jubilee Christian School (City of West Covina) on the opposite side of San Bernardino Road, approximately 90 feet from the southeastern edge of the Project site,[1] and
- Las Palma Middle School on the opposite side of Cutter Way, approximately 120 feet from the northeastern edge of the Project site.

The existing sensitive air quality receptors located adjacent or in close proximity to the project site, are exposed to air pollution associated with motor vehicles travelling on the roadways in proximity of the site (e.g., San Bernardino Road). According to the SCAQMD's MATES IV Carcinogenic Risk Map, the existing carcinogenic risk in the vicinity of the Project is approximately 1,021 incremental cancer cases per million population (SCAQMD, 2018c)[2]. This estimate reflects regional modeling efforts that largely do not account for site specific emission rates and dispersion characteristics that typically result in refined and substantially lower health risk estimates.

CalEnviroScreen is a mapping tool that helps identify California communities that are most affected by many sources of pollution, and where people are often especially vulnerable to pollution's effects. The tool uses environmental, health, and socioeconomic information to produce scores for every census tract in the state. The scores are then mapped so that different communities can be compared. An area with a high score is one that experiences a much higher pollution burden than areas with low scores.

According to the Office of Environmental Health Hazard Assessment (OEHHA) CalEnviroScreen 3.0 Map, the proposed Project is in the census tract north of I-10 (Census Tract: 6037405701). This area shows an average pollution indicator percentile of 55% to 60% based on the CalEnviroScreen indicators (e.g., exposure, environmental effects, population characteristics, socioeconomic factors) (OEHHA, 2018). The average pollution indicator percentile drops to 45-50% south of San Bernardino Road, where the Jubilee Christian School is located. Census Tract 6037405701 has a population of 3,853 people. The CalEnviroScreen data indicates approximately 56 in 10,000 people in the Project site's census tract visited an emergency facility for asthma-related health issues. This rate places the Project site's census tract in the 76th percentile, meaning the asthma rate in this census tract is higher than 56% of the census tracts in the State (OEHHA 2018). Since the Project area's census tract is not in the top 25% in scoring according to the CalEnviroScreen methodology, it is not considered a disadvantaged community pursuant to Senate Bill (SB) 535, which allocates funding from the state's Cap and Trade Program to disadvantaged communities (OEHHA, 2017a, 2017b).

[1] The warehouse that has been used for the Jubilee Christian School recently underwent environmental review to transition its use to an Amazon last-mile delivery center (City of West Covina 2021). The analysis contained in this Report conservatively assesses the potential for the proposed Project to adversely affect potential school receptors should unforeseen delays occur with transitioning the Jubilee Christian School to the Amazon last-mile delivery center.

[2] The potential cancer risk for a given substance is expressed as the incremental number of potential cancer cases that could be developed per million people, assuming that the population is exposed to the substance at a constant annual average concentration over a presumed 70-year lifetime. These risks are usually presented in chances per million. For example, if the cancer risks were estimated to be 100 per million, the probability of an individual developing cancer due to a lifetime of exposure would be one hundred in a million, or one in ten thousand. In other words, this predicts an additional 100 cases of cancer in a population of a million people over a 70-year lifetime (SCAQMD, 2015a).

3.2 FEDERAL, STATE, AND LOCAL AIR QUALITY REGULATIONS

3.2.1 FEDERAL AIR QUALITY REGULATIONS

3.2.1.1 Clean Air Act

The Federal Clean Air Act (CAA) defines the U.S. EPA's responsibilities for protecting and improving the United States air quality and ozone layer. Key components of the CAA include reducing ambient concentrations of air pollutants that cause health and aesthetic problems, reducing emission of toxic air pollutants, and stopping production and use of chemicals that destroy the ozone.

Federal clean air laws require areas with unhealthy levels of ozone, inhalable particulate matter, Carbon monoxide, nitrogen dioxide, and sulfur dioxide to develop State Implementation Plans (SIPs); comprehensive documents that identify how an area will attain NAAQS. Deadlines for attainment were established in the 1990 amendments to the CAA based on the severity of an area's air pollution problem. Failure to meet air quality deadlines can result in sanctions against the State or the U.S. EPA taking over enforcement of the CAA in the affected area. SIPs are a compilation of new and previously submitted plans, programs, district rules, and State and Federal regulations. The SCAQMD implements the required provisions of an applicable SIP through its Air Quality Management Plan (AQMP). Currently, SCAQMD implements the 2012 Lead SIP for the Los Angeles County portion of Basin through the 2012 AQMP, and the 8-hr Ozone, 1-hr Ozone, 24-hr $PM_{2.5}$, and annual $PM_{2.5}$ SIPs through the 2016 AQMP.

3.2.1.2 Safe Affordable Fuel-Efficient Rule

On September 27, 2019, the U.S. EPA and the National Highway Traffic Safety Administration (NHTSA) published the SAFE Vehicles Rule Part One: One National Program." (84 Fed. Reg. 51,310 (Sept. 27, 2019)). The Part One Rule revoked California's authority to set its own greenhouse gas emissions standards and set zero emission vehicle mandates in California. As a result of the loss of the zero emission vehicles (ZEV) sales requirements in California, there may be fewer ZEVs sold and thus additional gasoline-fueled vehicles sold in future years (CARB 2019).

In April 2020, the U.S. EPA and NHTSA issued the SAFE Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (Final SAFE Rule) that relaxed federal greenhouse gas emissions and fuel economy standards. The Final SAFE Rule relaxed federal greenhouse gas emissions and Corporate Average Fuel Economy (CAFE) standards to approximately 1.5 percent (%) per year from model year (MY) 2020 levels over MYs 2021–2026. The previously established emission standards and related "augural" fuel economy standards would have achieved approximately 4% per year improvements through MY 2025. The Final SAFE Rule affects both upstream (production and delivery) and downstream (tailpipe exhaust) carbon dioxide (CO_2) emissions (CARB 2020).

3.2.2 STATE AIR QUALITY REGULATIONS

3.2.2.1 California Clean Air Act

In addition to being subject to Federal requirements, air quality in the State is also governed by more stringent regulations under the California Clean Air Act, which was enacted in 1988 to develop plans and strategies for attaining the California Ambient Air Quality Standards. CARB, which is part of the California Environmental Protection Agency (Cal-EPA), develops Statewide air quality regulations, including industry-specific limits on criteria, toxic, and nuisance pollutants. The California Clean Air Act is more stringent than

Federal Law in a number of ways, including revised standards for PM_{10} and ozone and for visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride.

In California, both the Federal and State Clean Air acts are administered by CARB. It sets all air quality standards including emission standards for vehicles, fuels, and consumer goods as well as monitors air quality and sets control measures for toxic air contaminants. CARB oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional level.

3.2.2.2 **Air Toxics "Hot Spots" Program**

State requirements specifically address air toxic issues through Assembly Bill (AB) 1807 (known as the Tanner Bill) that established the State air toxics program and the Air Toxics Hot Spots Information and Assessment Act (AB 2588). Under the: "Hot Spots" Program, stationary sources of emissions are required to report the types and quantities of certain substances that their facilities routinely release into the air.

3.2.2.3 In-Use Off-Road Diesel Equipment Program

CARB's In-Use Off-Road Diesel Equipment regulation is intended to reduce emissions of NO_X and PM from off-road diesel vehicles, including construction equipment, operating within California. The regulation imposes limits on idling; requires reporting equipment and engine information and labeling all vehicles reported; restricts adding older vehicles to fleets; and requires fleets to reduce their emissions by retiring, replacing, or repowering older engines or installing exhaust retrofits for PM. The requirements and compliance dates of the off-road regulation vary by fleet size, and large fleets (fleets with more than 5,000 horsepower) must meet average targets or comply with Best Available Control Technology (BACT) requirements beginning in 2014. CARB has off-road anti-idling regulations affecting self-propelled diesel-fueled vehicles of 25 horsepower and up. The off-road anti-idling regulations limit idling on applicable equipment to no more than five minutes, unless exempted due to safety, operation, or maintenance requirements.

3.2.2.4 On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation

CARB's On-Road Heavy-Duty Diesel Vehicles (In-Use) regulation (also known as the Truck and Bus Regulation) is intended to reduce emission of NO_X, PM, and other criteria pollutants generated from existing on-road diesel vehicles operating in California. The regulation applies to nearly all diesel-fueled trucks and buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds that are privately or federally owned, and for privately and publicly owned school buses. Heavier trucks and buses with a GVWR greater than 26,000 pounds must comply with a schedule by engine model year or owners can report to show compliance with more flexible options. Fleets complying with the heavier trucks and buses schedule must install the best available PM filter on 1996 model year and newer engines, and replace the vehicle eight years later. Trucks with 1995 model year and older engines had to be replaced starting in 2015. Replacements with a 2010 model year or newer engine meet the final requirements, but owners can also replace the equipment with used trucks that have a future compliance date (as specified in regulation). By 2023, all trucks and buses must have at least 2010 model year engines with few exceptions.

3.2.2.5 CARB Stationary Diesel Engines – Emission Regulations

In 1998, CARB identified DPM as a TAC. To reduce public exposure to DPM, in 2000, the Board approved the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles (Risk Reduction Plan) (CARB, 2000). Integral to this plan is the implementation of control measures to reduce DPM such as the control measures for stationary diesel-fueled engines. As such, diesel generators must comply with regulations under CARB's amendments *to Airborne Toxic Control Measure for Stationary Compression Ignition Engines* and be permitted by SCAQMD.

3.2.2.6 CARB Air Quality and Land Use Handbook

In 1998, CARB identified particulate matter from diesel-fueled engines as a TAC. CARB's Air Quality and Land Use Handbook is intended to serve as a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process (CARB, 2005). The CARB Handbook recommends that planning agencies consider proximity to air pollution sources when considering new locations for "sensitive" land uses, such as residences, medical facilities, daycare centers, schools, and playgrounds. Air pollution sources of concern include freeways, rail yards, ports, refineries, distribution centers, chrome plating facilities, dry cleaners, and large gasoline service stations. Key recommendations in the Handbook relative to the Project Area include taking steps to consider or avoid siting new, sensitive land uses:

- Within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day;
- Within 300 feet of gasoline fueling stations; or
- Within 300 feet of dry-cleaning operations (dry cleaning with TACs is being phased out and will be prohibited in 2023). The SCAQMD (Regulation 14, Rule 21) has established emission controls for the use of perchloroethylene, the most common dry-cleaning solvent.

3.2.2.7 California Building Industry Association vs. Bay Area Air Quality Management District

The California Supreme Court in *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369 (2015) ruled that CEQA review is focused on a project's impact on the environment "and not the environment's impact on the project." The opinion also holds that when a project has "potentially significant exacerbating effects on existing environmental hazards" those impacts are properly within the scope of CEQA because they can be viewed as impacts of the project on "existing conditions" rather than impacts of the environment on the project. The Supreme Court provided the example of a project that threatens to disperse existing buried environmental contaminants that would otherwise remain undisturbed. The Court concluded that it is proper under CEQA to undertake an analysis of the dispersal of existing contaminants because such an analysis would be focused on how the project "would worsen existing conditions." The court also found that the limited number of express CEQA provisions that require analysis of the impacts of the existing environment on a project – such as impacts associated with school siting and airports – should be viewed as specific statutory exceptions to the general rule that such impacts are not properly within CEQA's scope.

3.2.3 REGIONAL AIR QUALITY REGULATIONS

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is a Joint Powers Authority under California State Law, established as an association of local governments and agencies that voluntarily convene as a forum to address regional issues. SCAG encompasses the counties of Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial.

SCAG is designated as a Metropolitan Planning Organization (MPO) and as a Regional Transportation Planning Agency. Under SB 375, SCAG, as a designated MPO, is required to prepare a Sustainable Communities Strategy (SCS) as an integral part of its Regional Transportation Plan (RTP). On April 7, 2016, SCAG's Regional Council adopted the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS). The 2016 RTP/SCS is a long-range visioning plan that balances future mobility and housing needs with economic, environmental, and public health goals. Information contained in Chapter 5: The Road to Greater Mobility and Sustainable Growth of the 2016 RTP/SCS forms the basis for the land use and transportation components of the AQMP and are utilized in the preparation of air quality forecasts and consistency analysis included in the AQMP.

3.2.3.1 SCAQMD 2016 Air Quality Management Plan

The purpose of an AQMP is to bring an air basin into compliance with federal and state air quality standards and is a multi-tiered document that builds on previously adopted AQMPs. The 2016 AQMP for the Basin, which updated the 2012 AQMP, was approved by the SCAQMD Board of Directors on March 3, 2017. The 2016 AQMP provides new and revised demonstration's for how the SCAQMD, in coordination with Federal, State, Regional and Local Governments will bring the Basin back into attainment for the following NAAQS: 1997 8-hour Ozone; 1997 1-hour Ozone; 2008 8-hour Ozone; 2006 24-hour $PM_{2.5}$; and 2012 Annual $PM_{2.5}$.[3]

To achieve the reductions necessary to bring ambient air quality back into attainment the SCAQMD has identified seven primary objectives for the AQMP, which include:

1. Eliminating reliance on unknown future technology measures to demonstrate future attainment of air quality standards;
2. Calculating and accounting for co-benefits associated with measures identified in other, approved planning efforts (e.g., SCAG's RTP/SCS);
3. Developing a strategy with fair-share emission reductions at the Federal, State, and local levels;
4. Investing in strategies and technologies that meet multiple objectives regarding air quality, climate change, air toxic exposure, energy, and transportation – especially in disadvantaged communities;

[3] Although the 2006 24-hour $PM_{2.5}$ standard was focused on in the 2012 AQMP, it has since been determined, primarily due to unexpected drought conditions, that it is impractical to meet the standard by the original attainment year. Since adoption of the 2012 AQMP, the U.S. EPA approved a re-classification to "serious" non-attainment for the standard, which requires a new attainment demonstration and deadline.

5. Seeking, identifying, and securing significant sources of funding for incentives to implement early deployment and commercialization of zero and near-zero technologies, particularly in the mobile source sector;
6. Enhancing the socioeconomic analysis and selecting the most efficient and cost-effective path to achieve multi-pollutant and deadline targets; and
7. Prioritize non-regulatory, innovative approaches that can contribute to the economic vitality of the regional while maximizing emission reductions.

The emission forecasts and demonstrations presented in the 2016 AMQP rely heavily on information contained in other planning and strategy documents. For example, the 2016 AQMP's long-term emissions inventory is based on the growth and land use(s) projections contained in the SCAG's 2016 RTP/SCS. Additionally, the conclusions relating to ozone compliance are based on implementation of measures presented in CARB's Mobile Source Strategy and SIP strategy. The Mobile Source Strategy outlines a suite of measures targeted at on-road light- and heavy-duty vehicles, off-road equipment, and Federal and international sources. A subset of the Statewide strategy is a mobile source strategy for the South Coast SIP. Because the SCAQMD has limited authority in regulating mobile source emissions, coordination and cooperation between SCAQMD, CARB, and the U.S. EPA is imperative to meeting the NOx reductions required to meet ozone standards. Although not incorporated specifically from another planning document strategy, the 2016 AQMP also provides numerous control measures for stationary sources.

3.2.3.2 SCAQMD Rules

In order to control air pollution in the Basin, the SCAQMD adopts rules that establish permissible air pollutant emissions and governs a variety of businesses, processes, operations, and products to implement the AQMP and the various federal and state air quality requirements. SCAQMD does not adopt rules for mobile sources; those are established by CARB or the U.S. EPA. In general, the SCAQMD rules that are anticipated to be applicable to the development of the proposed Project, include:

- Rule 203 (Permit to Operate) sets forth the requirement that the use or operation any equipment or agricultural permit unit, the use of which may cause the issuance of air contaminants, or the use of which may reduce or control the issuance of air contaminants, must receive a written permit to operate from the Executive Officer.
- Rule 401 (Visible Emissions) prohibits discharge into the atmosphere from any single source of emission for any contaminant for a period or periods aggregating more than three minutes in any one hour that is as dark or darker in shade than that designated as No. 1 on the Ringelmann Chart, as published by the U.S. Bureau of Mines.
- Rule 402 (Nuisance) prohibits discharges of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.
- Rule 403 (Fugitive Dust) prohibits emissions of fugitive dust from any grading activity, storage pile, or other disturbed surface area if it crosses the project property line or if emissions caused by vehicle movement cause substantial impairment of visibility (defined as exceeding 20 percent capacity in the air). Rule 403 requires the implementation of Best Available Control Measures and includes additional provisions for projects disturbing more than five acres and those disturbing more than fifty acres.

- Rule 445 (Wood Burning Devices) prohibits installation of woodburning devices such as fireplaces and wood-burning stoves in new development unless the development is located at an elevation above 3,000 feet or if existing infrastructure for natural gas service is not available within 150-feet of the development. All fireplaces installed within the Proposed Project area will be natural gas fueled fireplaces.
- Rule 481 (Spray Coating Operations) imposes equipment and operational restrictions during construction for all spray painting and spray coating operations.
- Rule 1108 (Cutback Asphalt) prohibits the sale or use of any cutback asphalt containing more than 0.5 percent by volume organic compounds which evaporate at 260°C (500°F) or lower.
- Rule 1113 (Architectural Coatings) establishes maximum concentrations of VOCs in paints and other applications and establishes the thresholds for low-VOC coatings.
- Rule 1143 (Consumer Paint Thinners and Multi-Purpose Solvents) prohibits the supply, sale, manufacture, blend, package or repackage of any consumer paint thinner or multi-purpose solvent for use in the SCAQMD unless consumer paint thinners or other multi-purpose solvents comply with applicable VOC content limits.
- Rule 1403 (Asbestos Emissions from Demolition/Renovation Activities) specifies work practice requirements to limit asbestos emissions from building demolition and renovation activities, including the removal and associated disturbance of asbestos containing materials. The requirements for demolition and renovation activities include asbestos surveying, notification, asbestos containing materials removal procedures and time schedules, asbestos containing materials handling and clean-up procedures, and storage, disposal, and land filling requirements for asbestos containing waste materials.

3.2.4 CITY OF COVINA

3.2.4.1 General Plan

The City of Covina's General Plan contains the following policies regarding air quality that may be applicable to the proposed Project:

- Policy Area 1 (O): The City shall comply with applicable portions of Federal, State, regional, and County plans and programs pertaining to air pollution mitigation/air quality enhancement by following, in a manner that recognizes local needs, issues, views, and policy and financial constraints, various vehicular emissions-reducing and traffic congestion-reducing land use and transportation control and energy conservation measures, proposals, and policies outlined in the Land Use and Circulation Elements, to the greatest extent feasible and practical.
- Policy Area 1 (P): The City shall encourage and support the use of mass transit, whenever possible, and work with transit operators to provide the best, most efficient service for local residents and businesses to reduce vehicular travel and air pollution.
- Policy Area 1 (S): The City shall separate sensitive areas and uses (e.g., parks, schools, child care centers, and nursing homes) from significant sources of air pollution, to the greatest extent possible.
- Policy Area 1 (T): The City shall preclude the development of land uses and land use practices that would contribute significantly to air quality degradation.

- Policy Area 1 (U): The City shall encourage and, where necessary, require the incorporation of energy conservation features in the design of all new and significantly expanded/remodeled private and public developments and encourage the installation of conservation devices in existing developments to increase energy efficiency and decrease pollution emissions from off-site electrical power plants and on-site natural gas use.

3.2.4.2 Municipal Code

Section 9.42.020 subsection C, Smoke, states: "No operation or activity is permitted to have operations that emit excessive smoke, fumes, or dust that exceeds the requirements or levels specified by the South Coast Air Quality Management District (SCAQMD)" (City of Covina, 2020).

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4 AIR QUALITY IMPACT ANALYSIS

This chapter evaluates the direct and indirect air quality impacts that could result from implementation of the proposed Project.

4.1 THRESHOLDS OF SIGNIFICANCE

In accordance with Appendix G of the State CEQA Guidelines, the proposed Project could result in potentially significant impacts related to air quality if it would:

- Conflict with or obstruct implementation of the applicable SCAQMD 2016 AQMP;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the South Coast Air Basin is designated non-attainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

4.1.1 REGIONAL AND TOXIC AIR CONTAMINANT SIGNIFICANCE THRESHOLDS

Consistent with the guidance contained in Appendix G of the State CEQA Guidelines, this Report relies upon SCAQMD-recommended methods and pollutant thresholds to evaluate whether the proposed Project's emissions would violate any air quality standard, contribute substantially to an existing or projected air quality violation, result in a cumulatively considerable net increase in nonattainment criteria air pollutants, or expose sensitive receptors to substantial pollutant concentrations. The SCAQMD's recommended thresholds of significance for criteria pollutants and incremental increases in health risk are shown in Table 4-1.

Table 4-1: SCAQMD-Recommended CEQA Thresholds

Pollutant	Maximum Daily Emissions (lbs/day)	
	Construction	Operation
NO_X	100	55
VOC/ROG	75	55
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_X	150	150
CO	550	550
Lead	3	3
TACs	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	

Source: SCAQMD, 2019d

4.1.2 LOCALIZED SIGNIFICANCE THRESHOLDS

In addition to establishing thresholds of significance for emissions of criteria air pollutants on a regional level, the SCAQMD has also developed Localized Significance Thresholds (LSTs) that represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable Federal or State ambient air quality standards, which would result in significant adverse localized air quality effects. The LST methodology takes into account a number of factors, including (1) existing ambient air quality in each Source Receptor Area (SRA); (2) how many acres the project would disturb in a day; and (3) how far project construction and operational activities would take place from the nearest sensitive receptor. Unlike the regional emission significance thresholds, LSTs have only been developed for NO_X, CO, PM_{10} and $PM_{2.5}$. This Report evaluates the proposed Project's potential to expose sensitive receptors to substantial pollutant concentrations pursuant to the SCAQMD Final Localized Significance Thresholds Methodology. This methodology provides screening tables for one through five-acre project scenarios, depending on the amount of site disturbance during a day, using the SCAQMD's Fact Sheet for Applying CalEEMod to Localized Significance Thresholds (SCAQMD, 2016c). The construction and operational LSTs for one-acre, two-acre, and five-acre sites in SRA 9 (East San Gabriel Valley), the SRA in which the City of Covina is located, are shown in Table 4-2.

Table 4-2: SCAQMD Localized Significance Thresholds for Source Receptor Area 9

Pollutant Monitored	Maximum Allowable Emissions (Pounds per Day) as a Function of Receptor Distance (in Feet) from Site Boundary				
	82 Feet	164 Feet	328 Feet	656 Feet	1,640 Feet
ONE-ACRE SITE					
Construction Thresholds					
Nitrogen Oxides (NO_x)	89	112	159	251	489
Carbon Monoxide (CO)	623	945	1,914	4,803	20,721
Particulate Matter (PM_{10})	5	14	34	75	199
Particulate Matter ($PM_{2.5}$)	3	5	9	22	94
Pollutant Monitored	Maximum Allowable Emissions (Pounds per Day) as a Function of Receptor Distance (in Feet) from Site Boundary				
	82 Feet	164 Feet	328 Feet	656 Feet	1,640 Feet
ONE-ACRE SITE					
Operational Thresholds					
Nitrogen Oxides (NO_x)	89	112	159	251	489
Carbon Monoxide (CO)	623	945	1,914	4,803	20,721
Particulate Matter (PM_{10})	2	4	9	19	48
Particulate Matter ($PM_{2.5}$)	1	2	3	6	23
TWO-ACRE SITE					
Construction Thresholds					
Nitrogen Oxides (NO_x)	128	151	200	284	513
Carbon Monoxide (CO)	953	1,344	2,445	5,658	22,093
Particulate Matter (PM_{10})	7	22	42	84	207
Particulate Matter ($PM_{2.5}$)	5	7	12	26	100
Operational Thresholds					
Nitrogen Oxides (NO_x)	128	151	200	284	513

Table 4-2: SCAQMD Localized Significance Thresholds for Source Receptor Area 9					
Pollutant Monitored	Maximum Allowable Emissions (Pounds per Day) as a Function of Receptor Distance (in Feet) from Site Boundary				
	82 Feet	164 Feet	328 Feet	656 Feet	1,640 Feet
Carbon Monoxide (CO)	953	1,344	2,445	5,658	22,093
Particulate Matter (PM_{10})	2	6	11	20	50
Particulate Matter ($PM_{2.5}$)	2	2	3	7	25
FIVE-ACRE SITE					
Construction Thresholds					
Nitrogen Oxides (NO_x)	203	227	286	368	584
Carbon Monoxide (CO)	1,733	2,299	3,680	7,600	25,558
Particulate Matter (PM_{10})	14	43	63	105	229
Particulate Matter ($PM_{2.5}$)	8	11	17	35	116
Operational Thresholds					
Nitrogen Oxides (NO_x)	203	227	286	368	584
Carbon Monoxide (CO)	1,733	2,299	3,680	7,600	25,558
Particulate Matter (PM_{10})	4	11	16	26	55
Particulate Matter ($PM_{2.5}$)	2	3	5	9	28

Source: SCAQMD 2008, modified by MIG 2019
Note: The localized thresholds for NOx in this table account for the conversion of NO to NO_2. The emission thresholds are based on NO_2 levels, as this is the compound associated with adverse health effects.

4.1.3 CARBON MONOXIDE "HOT SPOT" THRESHOLDS

Historically, to determine whether a project poses the potential for a CO hotspot, the quantitative CO screening procedures provided in the *Transportation Project-Level Carbon Monoxide Protocol* (the Protocol) were used (UCD ITS 1997). The Protocol determines whether a project may worsen air quality by increasing the percentage of vehicles in cold start modes by two percent or more; significantly increasing traffic volumes by five percent or more; or worsening traffic flow at signalized intersections (by increasing average delay at intersections operating at level of service (LOS) E or F or causing an intersection that would operate at LOS D or better without the project, to operate at LOS E or F). With new vehicles and improvements in fuels resulting in fewer emissions, the retirement of older polluting vehicles, and new controls and programs, CO concentrations have declined dramatically in California. As a result of emissions controls on new vehicles, the number of vehicles that can idle, and the length of time that vehicles can idle before emissions would trigger a CO impact, has increased. Therefore, the use of LOS as an indicator is no longer applicable for determining CO impacts.

The Bay Area Air Quality Management District (BAAQMD) developed a screening-level analysis for CO hotspots in 2010 which finds that projects that are consistent with the applicable congestion management program, and that do not cause traffic volumes at affected intersections to increase to more than 44,000 vehicles per hour, would not result in a CO hotspot that could exceed State or Federal air quality standards (BAAQMD 2017 pg. 3-4). CO modeling was conducted for the SCAQMD's 2003 AQMP at four busy intersections during morning and evening peak hour periods as well. The busiest intersection studied in this analysis, Wilshire Boulevard and Veteran Avenue, had 8,062 vehicles per hour during morning peak hours, 7,719 vehicles per hour during evening peak hours, and approximately 100,000 vehicles per day. The 2003 AQMP estimated that the 1-hour CO concentration for this intersection was 4.6

ppm, which is less than a fourth of the 1-hour CAAQS CO standard (20 ppm) (SCAQMD 2003a). The BAAQMD screening threshold is generally consistent with the results of the CO modeling conducted for the SCAQMD's 2003 AQMP.

Therefore, for purposes of this Report, the Project would pose the potential for a CO hotspot if it would exceed the BAAQMD's screening traffic level for peak hour intersection traffic volumes (44,000 vehicles per hour) (thereby having the potential to result in CO concentrations that exceed 1-hour State [20 ppm], 1-hour Federal [35 ppm], and/or State and Federal 8-hour [9 ppm] ambient air quality standards for CO).

4.2 ANALYSIS METHODOLOGY

Construction and operational emissions associated with buildout of the Project were calculated and evaluated against regional and localized significance thresholds to determine potential impacts on air quality standards, as well as to evaluate potential impacts associated with DPM emissions on sensitive receptors. In addition, a discussion is provided below on the potential for the Project to generate CO hotspots or objectionable odors. An evaluation of whether the Project is consistent with existing plans and policies protecting air quality is also included below.

For potential environmental impacts, mitigation measures were designed to avoid or reduce each effect to a less than significant level, where possible.

4.2.1 MASS-BASED CRITERIA AIR POLLUTANT AND TAC EMISSIONS

4.2.1.1 Construction Emissions

Construction of the proposed Project would generate equipment exhaust and dust emissions from demolition activities, ground disturbing activities such as site preparation and grading, and the use of gasoline- and diesel-fuel combustion in on- and off-site heavy duty construction equipment, worker vehicle trips, vendor vehicle trips, and haul truck trips, ground disturbing activities. The proposed Project's potential construction emissions were modeled using CalEEMod, Version 2016.3.2. The Project's construction activities, duration, and typical equipment used during construction are shown in Table 2-2. The construction phases, duration, and the type and amount of equipment used during construction was generated using CalEEMod default assumptions, and modified to reflect the following Project-specific characteristics:

- Construction Phase durations were altered as follows:
  - Demolition Phase was reduced from 20 days (default) to 5 days to reflect the limited nature of demolition activities (i.e., one single-family house);
  - Grading Phase was extended from 6 days (default) to 15 days to account for additional time that may be required to excavate for the subterranean parking garage;
- Construction Equipment was adjusted to reflect the quantity and daily runtime associated with equipment operation during development activities;
- Demolition of approximately 2,647 square feet of existing building space and associated debris hauling activities was added; and
- Off-haul of approximately 7,532 cubic yards of soil during the grading phase to account for spoils that would be generated while excavating for the subterranean parking garage was added.

4.2.1.2 Operational Emissions

Once operational, the proposed Project would generate emissions from the following sources:

- **Small "area" sources** including landscaping equipment and the use of consumer products such as paints, cleaners, and fertilizers that result in the evaporation of chemicals to the atmosphere during product use.
- Energy use in the form of natural gas combustion for building water and space heating needs.
- Mobile sources including trips made to and from the site by new residents and visitors.

Similar to construction emissions, criteria air pollutant emissions were estimated in CalEEMod, Version 2016.3.2 based on default model assumptions, with the following modifications made to reflect Project-specific characteristics:

- Area Sources: Woodstoves and fireplaces were removed pursuant to SCAQMD Rule 445. The quantity of wood-burning fireplaces assumed by CalEEMod were added to natural-gas powered fireplaces.
- Energy Use and Consumption: Since CalEEMod default values are based on the energy efficiency standards contained in the 2016 CALGreen Code, the:
  - Default Title 24 electricity consumption intensity was adjusted downwards by a factor of 0.47 for residential land uses to reflect increased efficiency in the 2019 CALGreen Code (CEC, 2018).
  - Default energy efficiency value for light energy intensity was adjusted downwards by a factor of 0.7 for non-residential land uses to reflect increased lighting efficiency in the 2019 CALGreen Code (CEC, 2018).
- Mobile Sources: The default, weekday trip generation rate for the proposed land use was updated to reflect the trip generation rate provided in the TIS prepared for the proposed Project by Linscott, Law & Greenspan (Linscott, Law & Greenspan 2020; see Table 2-1).

4.2.2 CONSTRUCTION HEALTH RISK ASSESSMENT

The construction health risk assessment (HRA) was conducted consistent with Office of Environmental Health Hazard Assessment (OEHHA) (OEHHA, 2015). The EPA's AERMOD dispersion model (version 19191) was used to predict pollutant concentrations at existing sensitive receptors near the project site. The AERMOD dispersion model is an EPA-approved and SCAQMD-recommended model for simulating the dispersion of pollutant emissions and estimating ground level concentrations of pollutants at specified receptor locations. AERMOD requires the user to input information on the source(s) of pollutants being modeled, the receptors where pollutant concentrations are modeled, and the meteorology, terrain, and other factors that affect the potential dispersion of pollutants. These variables are described below.

4.2.2.1 Modeled Construction Sources / Emission Rates

On- and off-site construction emissions were modeled as a series of area and line area sources, respectively, as shown in Table 4-3. As a conservative approach, PM_{10} construction exhaust emissions were presumed to be 100 percent DPM and be emitting entirely in one year (as opposed to one year and a few weeks, as accounted for in the CalEEMod modeling). An emissions rate for each source listed in Table 4-3 was derived from the CalEEMod emissions estimates presented in Section 4.3.2.1. The annual emissions generated during construction of the proposed Project were converted to an average emission rate in terms of grams / second per hour of construction activity.

On-site DPM emissions from construction of the proposed project were modeled as two area sources split between the northern portion of the site and southern portion of the site. The area sources were assigned a release height of five meters; this elevated source height reflects the height of the equipment exhaust pipes, plus an additional distance for the height of the exhaust plume above the exhaust pipes to account for the plume rise of the exhaust gases.[4]

Off-site DPM emissions from vehicles were modeled as a line area source. All haul truck and vendor trips were assumed to travel to the site from westbound San Bernardino Road, turn right onto Cutter Way, receive fill / deliver materials, continue northbound on Cutter Way before heading westbound on Industrial Park Street, and turn right onto northbound Vincent Avenue.[5] Off-site truck travel emissions were treated as a line area source. The release height for the line area source was set to 4.12 meters, the approximate height of a truck exhaust.

Table 4-3. AERMOD Source Parameters

ID	Description	UTM Coordinates(A)		Size (m^2)
		X	Y	
PAREA1	Year 1 On-site PM_{10} Exhaust (North)	414960.36	3772546.88	4,746.3
PAREA2	Year 1 On-site PM_{10} Exhaust (South)	414958.83	3772482.55	4,226.0
ARLN1	Year 1 Off-site PM_{10} Exhaust	414692.31	3772671.76	1,224(B)

Source: MIG, see Appendix B
(A) UTM coordinates represent the southwest corner of the source.
(B) Reflects length of line area source in meters.

4.2.2.2 Meteorological Data Inputs

AERMOD requires meteorological data as an input into the model. The meteorological data is processed using AERMET, a pre-processor to AERMOD. AERMET requires surface meteorological data, upper air meteorological data, and surface parameter data such as albedo (reflectivity) and surface roughness. For the proposed project, pre-processed surface data from the SCAQMD was obtained for the Azusa meteorological station, the closest meteorological station to the project site. Five complete years of meteorological data from January 2012 to December 2016 were utilized. Emissions were presumed to be generated 24-hours per day.

4.2.2.3 Terrain Inputs

Terrain was incorporated by using AERMAP (an AERMOD pre-processor) to import the elevation of the project site using data from the National Elevation Dataset (NED) with a resolution of 1/3 arcsecond.

4.2.2.4 Modeled Receptors

For construction activities, a 1,000-meter by 1,000-meter grid was generated with a receptor spacing of 50 meters. The grid's center coordinates were 414999.28 meters Easting and 3772478.80

[4] The Sacramento Metro Air Quality Management District (SMAQMD) recommends a release height of 5 meters. Since the SCAQMD does not have a recommended release height for PM exhaust emissions generated by construction equipment, the SMAQMD's release heights have been used instead (SMAQMD 2013).

[5] Badillo Street and Azusa Avenue are designated truck routes in Section 10.44.010 in the City's Municipal Code. Thus, this analysis assumes these two roadways would primarily be used for hauling activities.

meters Northing. The grid was converted to discrete Cartesian receptors. An additional ten (10) receptors were placed on top of residences in proximity to the project site, as well as on top of Las Palmas Middle School and Jubilee Christian School.

4.2.2.5 Risk Assessment

Health Risks were assessed according to the recommendations in the Office of Environmental Health Hazard Assessment's *Air Toxics Hot Spots Program Guidance Manual*. The ground level concentrations of pollutants produced by the project during construction, as estimated using AERMOD, were used to derive:

1. Individual excess cancer risk. Cancer risk is the calculated, pollutant-specific estimated probability of developing cancer based upon the dose and exposure to the TAC. Cancer risk is calculated using predefined cancer potency factors, ground level exposure concentration, duration of exposure, and other parameters such as age sensitivity. For the proposed Project, cancer risk was estimated for the inhalation pathway (i.e., breathing). In general, the inhalation dose is a function of the concentration of a chemical and the intake of that chemical. The dose can be calculated as follows:

$$RISK_{(Inh)} = DOSE_{air} \times CPF \times ASF \times (ED/AT) \times FAH \times 1{,}000{,}000$$

Where:

Risk	= Cancer Risk per million population; the incremental probability of an individual developing cancer as a result of inhalation exposure to a particular potential carcinogen (unitless)
Dose	= Dose of chemical in the air (mg/kg-day)
CPF	= Inhalation cancer potency factor (mg/kg-day)
ASF	= Age sensitivity factor for specified age group
ED	= Exposure duration (in years) for specified age group (unitless)
AT	= Averaging time for lifetime cancer risk (years)
FAH	= Fraction of time spent at home (unitless)

The cancer potency factor for DPM is 1.1 mg/kg-day. The age sensitivity factor, exposure duration, and fraction of time spent at home for 3rd trimester, 0-2, 0-16, and 16-70 age bins were set to SCAQMD-recommended levels.

The risk parameters used to calculate excess individual cancer risk for residential and student receptors are summarized in Table 4-4 and Table 4-5, respectively.

Table 4-4. Residential Health Risk Assessment Parameters				
Risk Assessment Parameter	Infant Receptor		Child Receptor	Adult Receptor
	3rd Trimester	0-2 Years	2-16 Years	16-30 Years
Daily Breathing Rate (L/kg-day)	361	1090	572	261
Exposure Frequency	0.96	0.96	0.96	0.96
DPM Inhalation Cancer Potency (mg/kg-day)	1.1	1.1	1.1	1.1
Age Sensitivity Factor	10	10	3	1
Exposure Duration (Years)	0.25	2	14	14
Averaging Time (Years)	70	70	70	70
Fraction of Time at Home(A)	1	1	1	0.73

Source: OEHHA, 2015

(A) Consistent with OEHHA guidance, the FAHs for 3rd trimester and ages 0-2 and 2-16 were set to "1", since there is school within the 1 x 10^{-6} risk isopleth (OEHHA 2015; pg. 8-5).

Table 4-5. Student Health Risk Assessment Parameters		
Risk Assessment Parameter	Infant Receptor	Child Receptor
	2-9 Years	2-16 Years
Daily Breathing Rate (L/kg-day)	640	520
Exposure Frequency(A)	0.49	0.49
DPM Inhalation Cancer Potency (mg/kg-day)	1.1	1.1
Age Sensitivity Factor	3	3
Exposure Duration (Years)	7	14
Averaging Time (Years)	70	70
Fraction of Time at School(B)	0.42	0.42

Source: OEHHA, 2015

(A) Assumes children would be at school 180 days per year.

(B) Assumes children at the site from approximately 7:00 AM to 5:00 PM (accounts for before and after school care / activities; approximately 10 hours) (SCAQMD, 2017b).

2. Noncancer hazard quotient. The noncancer hazard quotient is the calculated pollutant-specific indicator for risk of developing an adverse health effect on specific organ system(s) targeted by the identified TAC. The potential for exposure to result in chronic non-cancer effects is evaluated by comparing the estimated annual average air concentration (which is equivalent to the average daily air concentration) to the chemical-specific, non-cancer chronic reference exposure levels (RELs). The REL is a concentration below which there is assumed to be no observable adverse health impact to a target organ system. When calculated for a single chemical, the comparison yields a ratio termed a hazard quotient. To evaluate the potential for adverse chronic non-cancer health effects from simultaneous exposure to multiple chemicals, the hazard quotients for all chemicals are summed, yielding a hazard index. For an acute hazard quotient, the one-hour maximum concentration is divided by the acute REL for the substance.

In general, the equations used to calculate chemical-specific hazard quotients and summed hazard index are:

$$Chronic\ HQ_i = C_i/REL_i$$

$$Chronic\ HI = \sum HQ_i$$

Where:

Chronic HQ_i	= Chronic Hazard quotient for $chemical_i$ (unitless)
Chronic HI	= Hazard Index (unitless)
C_i	= Annual average air concentration for $chemical_i$ (μg/m^3)
REL_i	= Chronic non-cancer Reference Exposure Level for $chemical_i$ (μg/m^3)

The chronical inhalation REL for DPM is 5 μg/m^3. No acute non-cancer impacts were estimated, since there is no acute REL for DPM.

4.3 ENVIRONMENTAL IMPACTS

4.3.1 CONSISTENCY WITH THE APPLICABLE AIR QUALITY PLAN

As described in Section 3.1.3, the proposed Project is within the South Coast Air Basin, which is under the jurisdiction of the SCAQMD. Pursuant to the methodology provided in Chapter 12 of the SCAQMD *CEQA Air Quality Handbook*, consistency with the AQMP is affirmed if the Project:

1) Is consistent with the growth assumptions in the AQMP; and
2) Does not increase the frequency or severity of an air quality standards violation, or cause a new one.

Consistency Criterion 1 refers to the growth forecasts and associated assumptions included in the 2016 AQMP. The 2016 AQMP was designed to achieve attainment for all criteria air pollutants within the Basin while still accommodating growth in the region. Projects that are consistent with the AQMP growth assumptions would not interfere with attainment of air quality standards, because this growth is included in the projections used to formulate the AQMP. The proposed Project would generate approximately 188 new residents, which would be well within the SCAG 2016 RTP/SCS growth projections for the City of Covina (i.e., 4,150 residents between 2012 and 2040; SCAG, 2016). Therefore, the proposed project would not exceed the growth assumptions contained in the AQMP.

Consistency Criterion 2 refers to the CAAQS. In developing its CEQA significance thresholds, the SCAQMD considered the emission levels at which a project's individual emissions would be cumulatively considerable (SCAQMD, 2003; page D-3). As described below in Section 4.3.2, the proposed Project would not generate construction or operational emissions in excess of SCAQMD criteria air pollutant thresholds.

For the reasons described above, the proposed Project would not conflict with the SCAQMD 2016 AQMP.

4.3.2 CUMULATIVELY CONSIDERABLE NET INCREASE OF CRITERIA AIR POLLUTANTS

The proposed Project would generate both short-term construction emissions and long-term operational emissions. As described in more detail below, the proposed Project would not generate emissions levels that exceed SCAQMD-recommended pollutant thresholds.

4.3.2.1 Construction Emissions

The proposed Project's maximum daily construction emissions are shown in Table 4-6. The construction emissions estimates incorporate measures to control and reduce fugitive dust as required by SCAQMD Rule 403 (see Section 3.2.3), as well as off-road construction equipment mitigation as recommended in Mitigation Measure AIR-1 to reduce diesel particulate matter (see Section 4.3.3.2). Please refer to Appendix A for CalEEMod output files and detailed construction emissions assumptions.

Table 4-6: Construction Emissions Estimates

Season	Maximum Daily Emissions (lbs/day)					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Summer 2021	45.3	18.0	15.3	0.1	3.9	1.8
Winter 2021	45.3	18.2	15.5	0.1	3.9	1.7
Summer 2022	45.3	1.5	2.4	<0.0[(A)]	0.3	0.1
Winter 2022	45.3	1.5	2.4	<0.0[(A)]	0.3	0.1
SCAQMD CEQA Threshold	75	100	550	150	150	55
Threshold Exceeded?	No	No	No	No	No	No

Source: MIG, 2021 (see Appendix A)
(A) <0.0 does not mean zero; rather, it means less than 0.05 but greater than zero.

As shown in Table 4-6, the proposed Project's maximum daily unmitigated construction emissions would be below the SCAQMD's regional pollutant thresholds for all pollutants. Therefore, the construction of the proposed Project would not generate construction-related emissions that exceed SCAQMD CEQA thresholds.

4.3.2.2 Operational Emissions

Once operational, the proposed Project would generate emissions of regulated air pollutants from the sources described in Section 4.2.1.2. The proposed Project's maximum daily unmitigated operational emissions are shown in Table 4-7. The emissions presented are for the proposed Project's first year of operation, which is presumed to be 2022.

Table 4-7: Operational Emissions Estimates

Source	Maximum Daily Pollutant Emissions (Pounds Per Day)[(A)]					
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Area	1.7	1.1	5.4	<0.0[(B)]	0.1	0.1
Energy	<0.0[(B)]	0.2	0.1	<0.0[(B)]	<0.0[(B)]	<0.0[(B)]
Mobile	0.7	3.4	9.4	<0.0[(B)]	2.8	0.8
Total Project Emissions[(C)]	*2.5*	*4.7*	*15.0*	<0.0[(B)]	*2.9*	*0.9*
SCAQMD CEQA Threshold	55	55	550	150	150	55
Threshold Exceeded?	No	No	No	No	No	No

Source: MIG, 2021 (See Appendix A)
(A) Emissions presented are worst-case emissions and may reflect summer or winter emissions levels. Maximum daily ROG, CO, SO_X emissions occur during the summer. Maximum daily NO_X emissions occur during the winter. In general, due to rounding, there is no difference between summer and winter PM_{10} and $PM_{2.5}$ emissions levels for the purposes of this table.
(B) <0.0 does not mean zero; rather, it means less than 0.05 but greater than zero.
(C) Totals may not equal due to rounding.

As shown in Table 4-7, the proposed Project's maximum daily unmitigated operational emissions would be below the SCAQMD's regional pollutant thresholds for all pollutants. Therefore, the construction of the proposed Project would not generate operations-related emissions that exceed SCAQMD CEQA thresholds.

4.3.2.3 Conclusion

The Basin is currently designated non-attainment for State and/or federal standards for ozone, PM_{10}, and $PM_{2.5}$ (see Table 3-2). As discussed in the preceding subsections, the proposed Project would not result in construction or operational emissions of criteria air pollutants that exceed SCAQMD thresholds of significance. In developing its CEQA significance thresholds, the SCAQMD considered the emission levels at which a project's individual emissions would be cumulatively considerable (SCAQMD, 2003; page D-3). The SCAQMD considers projects that result in emissions that exceed its CEQA significance thresholds to result in individual impacts that are cumulatively considerable and significant. Since the proposed Project would not individually exceed any SCAQMD CEQA significance thresholds, it would not result in a cumulatively considerable increase in regulated, nonattainment pollutants.

4.3.3 SENSITIVE RECEPTORS AND SUBSTANTIAL POLLUTANT CONCENTRATIONS

The proposed Project would generate both short-term construction emissions and long-term operational emissions that could impact sensitive residential receptors located near the Project; however, as described in more detail below, the proposed Project would not generate short-term or long-term emissions that exceed SCAQMD-recommended localized significance thresholds or result in other substantial pollutant concentrations with the incorporation of mitigation measures.

4.3.3.1 Localized Significance Thresholds

<u>Construction Emissions</u>

The proposed Project's maximum daily construction emissions are compared against the SCAQMD's-recommended LSTs in Table 4-2. Consistent with the SCAQMD's LST methodology, the emissions included in the construction LST analysis are onsite emissions only, and the LST thresholds against which these onsite emissions are compared are based on the Project size, in acre. The LST thresholds are for SRA 9 (East San Gabriel Valley), the SRA in which the proposed Project is located, and are based on a receptor distance of 25 meters (82 feet), the closest LST receptor distance threshold recommended for use by the SCAQMD, and a project site of 2 acres.

The emissions presented in Table 4-8 incorporate certain best available control measures the Project would be subject to pursuant to SCAQMD Rule 403, Fugitive Dust. Specifically, the CalEEMod project file applies an approximate 61 percent reduction in PM_{10} and $PM_{2.5}$ fugitive dust emissions through site watering (three times daily) and replacement of ground cover. These estimated reductions are consistent with the reductions realized by implementation of the numerous best available control measures contained in SCAQMD Rule 403.

Table 4-8: LST Construction Analysis				
Construction Phase	Maximum Daily Emissions (Pounds per Day)(A)			
	NO_X	CO	PM_{10}(B)	$PM_{2.5}$(B)
Demolition	3.8	12.2	0.4	0.2
Site Preparation	1.3	11.9	0.6	0.1
Grading	1.1	10.9	2.6	1.4
Building Construction	1.0	6.1	<0.0(C)	<0.0(C)
Paving	1.3	13.3	<0.0(C)	<0.0(C)
Architectural Coating 2021	1.5	1.8	0.1	0.1
Architectural Coating 2022	1.4	1.8	0.1	0.1
SCAQMD LST Threshold (2-Acre)	128	953	7	5
Threshold Exceeded?	No	No	No	No

Source: MIG 2021 (see Appendix A)

(A) Emissions presented are worst-case total emissions and may reflect summer or winter emissions levels.

(B) PM emissions assume compliance with SCAQMD Rule 403 best available control measures for site watering and replacing ground cover.

(C) <0.0 does not mean zero; rather, it means greater than zero but less than 0.05.

As shown in Table 4-8, the maximum daily onsite emissions generated during all construction phases associated with the Project would be below the SCAQMD's LST thresholds for a two-acre site (a conservative comparison since the Project area is slightly larger than two acres in size) at a distance of 82 feet (approximately 25 meters), the closest LST receptor distance threshold recommended for use by the SCAQMD.

Operational Emissions

The Project's maximum daily operational emissions are compared against the SCAQMD's-recommended LSTs in Table 4-9. Consistent with the SCAQMD's LST methodology, the emissions included in the operational LST analysis are onsite emissions only, and the LST thresholds against which these onsite emissions are compared are based on the Project size, in acres. The LST thresholds are for SRA 9 (East San Gabriel Valley), the SRA in which the Project is located and are based on a receptor distance of 82 feet (approximately 25 meters), the closest LST receptor distance threshold recommended for use by the SCAQMD.

Table 4-9: LST Operational Analysis				
Emissions	Maximum Onsite Pollutant Emissions (Pounds Per Day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Area Sources	1.1	5.4	0.1	0.1
Energy Sources	0.2	0.1	<0.0[(B)]	<0.0[(B)]
Mobile Sources[(A)]	0.1	0.2	0.1	<0.0[(B)]
Total Emissions[(C)]	1.4	5.7	0.2	0.1
SCAQMD LST Threshold[(D)]	128	953	2	2
Threshold Exceeded?	No	No	No	No

Source: MIG 2019 (see Appendix A).

(A) Mobile source emissions estimates reflect potential onsite vehicle emissions only and were derived by assuming 2% of operational mobile source emissions in Table 4-6 will occur onsite.

(B) <0.0 does not mean zero; rather, it means less than 0.05, but less than zero.

(C) Emissions presented are worst-case emissions and may reflect summer or winter emissions levels. In general, due to rounding, there is no difference between summer and winter emissions levels for the purposes of this table.

(D) LST threshold is conservatively based on a 5.0-acre project size and 25-meter (82-foot) receptor distance.

As shown in Table 4-9, the maximum daily onsite emissions generated during operation of the proposed Project would not exceed the SCAQMD's recommended LST thresholds.

4.3.3.2 Construction Health Risk Assessment

As described in Section 3.1.7, sensitive receptors are located north, east, and south of the Project site. Project-related construction activities would emit PM_{10} from equipment exhaust. This analysis conservatively assumed all the project's PM_{10} emissions from equipment exhaust would be DPM, a TAC.

The construction HRA evaluated DPM emissions associated with on- and off-road diesel fuel trucks and equipment. Gasoline-fuel vehicles emit various TACs in much smaller quantities and health toxicity compared to DPM. Thus, gasoline fueled emission sources were not included in the HRA.

The proposed Project would involve different construction activities occurring at different intensities over an approximately one-year timeframe, with initial groundbreaking taking place as early as the beginning of 2021. Receptors would be exposed to varying concentrations of pollutants throughout the construction period.

Individual Cancer Risk from Exposure to DPM

The predicted locations of the annual, unmitigated point of maximum impact (PMI) and the maximum exposed individual receptor (MEIR) for DPM exposure are shown in Figure 4-1. The predicted PMI is located in the Cutter Way right-of-way northeast of the Project site. Since the PMI for DPM exposure is located on land that is not occupied by a receptor on a permanent basis, lifetime excess cancer risks and chronic non-cancer health hazards, which are based on exposure to annual average pollutant concentrations, were not estimated for the modeled PMI location.

Accordingly, health risks were assessed at the modeled residential MEIR location, which is located east of the Project site at the adjacent multi-family apartment complex. The HRA for residential receptors evaluated worst-case carcinogenic and non-carcinogenic risks to child (3rd trimester, 0-2 years, and 2-16 years) and adult (16-30 years and 30-70 years) receptors. Potential health risks were also assessed for student receptors at Jubilee Christian School (southeast of the Project site) and Las Palmas Middle School (northeast of the Project site). As noted previously, it is unanticipated that student receptors would be present at the Jubilee Christian School, since the warehouse used for educational purposes has been proposed for use as an Amazon last-mile delivery center. Nonetheless, this analysis assumes receptors could be present at the site should unforeseen delays occur with that project. As shown in Table 4-10 the calculated risks are greatest for residential child receptors; in particular, child receptors that are less than two years old at the start of construction activities. The calculated excess individual cancer risk for this subset of the population is more than the SCAQMD-recommended significance threshold value of 10 excess cancers per million population.

As shown in Table 4-10, unmitigated construction exhaust emissions would have the potential to result in incremental cancerogenic health risk increases that are in excess of the SCAQMD's threshold of 10 excess cancers in a million. To reduce potential DPM (and PM_{10}) exhaust emissions generated by Project construction activities, MIG recommends the Lead Agency incorporate Mitigation Measure AIR-1 into the proposed Project.

Mitigation Measure AIR-1: Reduce DPM Emissions. To reduce potential short-term adverse health risks associated with PM_{10} exhaust emissions, including emissions of diesel particulate matter (DPM), generated during project construction activities, the City shall require the Applicant and/or it's designated contractors, contractor's representatives, or other appropriate personnel to apply the following construction equipment restrictions for the Project:

1. Electric-powered and liquefied or compressed natural gas equipment (including generators) shall be employed instead of diesel-powered equipment to the maximum extent feasible.
2. All construction equipment with a rated power-output of 50 horsepower or greater shall meet U.S. EPA and CARB Tier IV Final Emission Standards for PM_{10}. This may be achieved via the use of equipment with engines that have been certified to meet Tier IV emission standards, or through the use of equipment that has been retrofitted with a CARB-verified diesel emission control strategy (e.g., oxidation catalyst, particulate filter) capable of reducing exhaust PM_{10} emissions to levels that meet Tier IV standards.

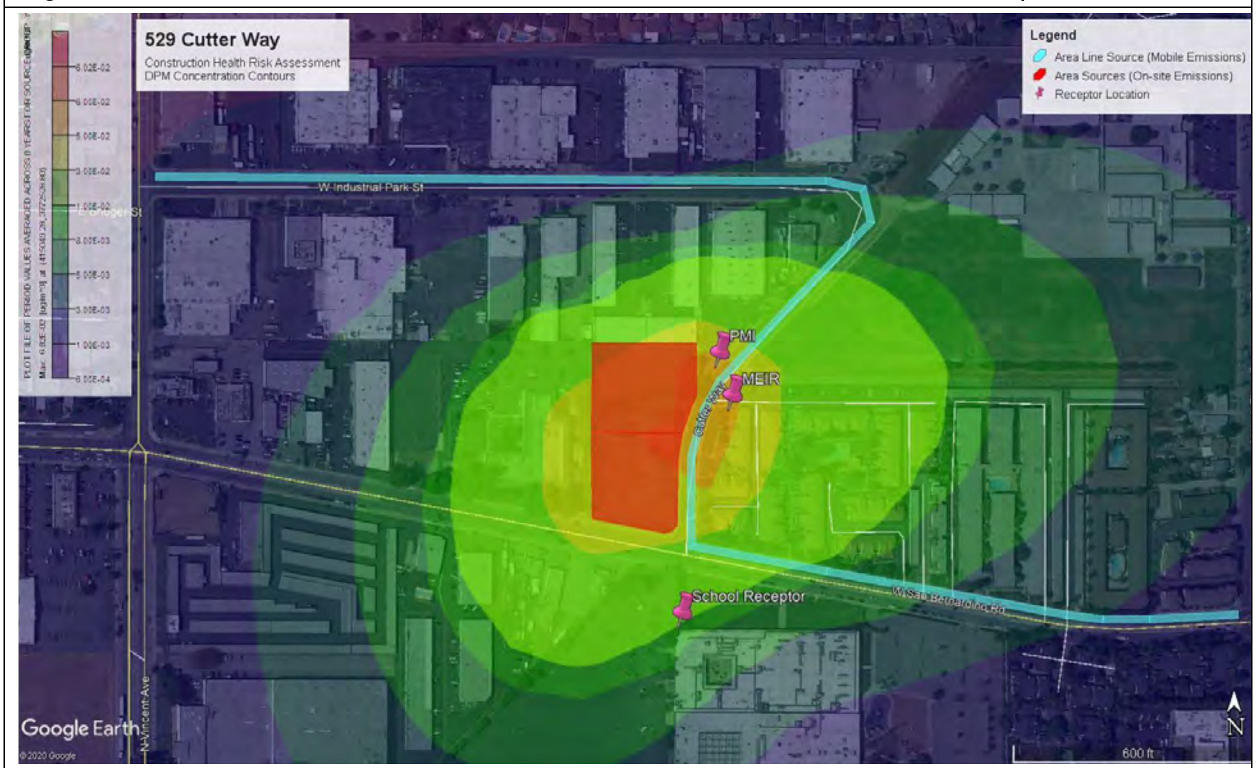
As an alternative to using equipment that meets Tier IV Final Emissions Standards for off-road equipment with a rated power-output of 50 horsepower or greater, the Applicant may prepare and submit a refined construction health risk assessment to the City once additional Project-specific construction information is known (e.g., specific construction equipment type, quantity, engine tier, and runtime by phase). The refined health risk assessment shall demonstrate and identify any measures necessary such that the proposed Project's incremental cancerogenic health risk at nearby sensitive receptor locations is below the applicable SCAQMD threshold of 10 cancers in a million.

Implementation of Mitigation Measure AIR-1 would substantially reduce the amount of DPM that MEIRs would be exposed to, and reduce the potential, incremental increase in cancerogenic health risk to a level that is below the SCAQMD's threshold.

Table 4-10 Maximum Increased Cancer Risk from Project Construction DPM Emissions		
Year	Health Risk Increase	
	Unmitigated	Mitigated
Residential Child Receptor (0-2 Years of Age); MEIR[(A)]	81.0	9.0
Residential Adult Receptor	1.4	0.2
School Child Receptor (2-9 Years of Age)[(B)]	0.5	0.1
SCAQMD Significance Threshold	10	10
Threshold Exceeded?	Yes[(C)]	No

Source: Appendix C
(A) Maximum exposed residential receptor located at 415058.46 m E and 33724.97 m N.
(B) Maximum exposed student receptor located at 415020.02 m E and 3772340.00 m N.
(C) As show in the "Residential Child Receptor (0-2 Years of Age)", the SCAQMD's threshold would be exceeded by approximately 71.0 cancers in one million.

Figure 4-1 Construction Health Risk Assessment – PMI, MEIR, and Student Receptor



<u>Non-Carcinogenic Health Hazard from Exposure to DPM</u>

The maximum annual average DPM concentration at any receptor location under mitigated conditions would be approximately 0.05 µg/m³, which would occur at the MEIR location. Based on the chronic inhalation REL for DPM (5 µg/m³), the calculated chronic hazard quotient during the maximum exposure to DPM concentration would be 0.01, which is below the SCAQMD's non-cancer hazard index threshold value of 1.0.

4.3.3.3 Carbon Monoxide Hot Spots

A CO hotspot is an area of localized CO pollution that is caused by severe vehicle congestion on major roadways, typically near high volume intersections. Several screening procedures have been developed by air districts throughout the state to assess whether a project may result in a CO impact. For example, the Bay Area Air Quality Management District (BAAQMD) developed a screening threshold in 2010 which states that any project involving an intersection experiencing 44,000 vehicles per hour would require detailed analysis (BAAQMD, 2017 pg. 3-4). Additionally, the SCAQMD's 2003 AQMP and *1992 Federal Attainment Plan for Carbon Monoxide* demonstrated that CO levels were below the CAAQS at an intersection with a daily traffic volume of up to approximately 100,000 vehicles per day. The proposed Project would add approximately 326 new vehicle trips to the roadway system per day (Lindscott, Law & Greenspan 2020). The worst-case hourly intersection volume in the project vicinity would be at the Badillo Street and Vincent Avenue intersection under future plus project conditions with a total of 3,861 vehicles per hour during the PM peak hour. This is well below the BAAQMD screening threshold, and surrounding roadway segments would not have traffic volumes exceeding 100,000 vehicles per day. The proposed Project would not cause intersection volumes to exceed any daily (100,000) or hourly (44,000) screening vehicle volumes maintained by the SCAQMD and other regional air districts and, therefore, would not result in significant CO concentrations.

4.3.3.4 Conclusion

The proposed Project's construction and operational criteria air pollutant emissions would be below the SCAQMD's LSTs, and additional traffic and associated emissions generated by the Project would not cause a CO hot spot. The proposed Project's PM_{10} exhaust emissions (i.e., DPM) could, however, result in incremental cancerogenic risk increases that exceed the SCAQMD's threshold. MIG recommends the Lead Agency implementation of Mitigation Measure AIR-1, which requires all off-road equipment with a rated power-output of 50 horsepower or greater meet Tier IV emission standards, which would substantially reduce exhaust emissions. Alternatively, the Applicant may conduct a new construction health risk assessment once additional details are known regarding construction activities that would occur at the site, and identify new construction equipment limitations/requirements such that Project health risks remain below the SCAQMD threshold. With the implementation of Mitigation Measure AIR-1, the proposed project would not expose sensitive receptors to substantial pollutant concentrations.

4.4 ODORS

According to the SCAQMD CEQA Air Quality Handbook, land uses associated with odor complaints include agricultural operations, wastewater treatment plants, landfills, and certain industrial operations (such as manufacturing uses that produce chemicals, paper, etc.). The proposed Project does not include such sources but would result in the construction of a new apartment complex and parking garage that could generate odors related to vehicle parking and refuse collection (e.g. oils, lubricants, fuel vapors, short-term waste odors). These activities would not generate sustained odors that would affect substantial numbers of people.

5 REPORT PREPARERS AND REFERENCES

This report was prepared by MIG under contract to Faith Community Church, LLC. This report reflects the independent, objective, professional opinion of MIG. The following individuals were involved in the preparation and review of this report:

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APPENDIX A: CalEEMod Output Files

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529 Cutter Way (Tier IV Construction Mitigation)
Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Library	2.50	1000sqft	0.06	2,500.00	0
Enclosed Parking with Elevator	35.41	1000sqft	0.00	35,411.00	0
Other Non-Asphalt Surfaces	32.39	1000sqft	0.74	32,389.00	0
Parking Lot	30.11	1000sqft	0.69	30,112.00	0
Apartments Mid Rise	60.00	Dwelling Unit	0.75	63,869.00	172

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	427.1	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - MIG Modeler: Phil Gleason. SCE GHG intensity values updated to reflect SCE estimated renewable mix in 2022.

Land Use - Land uses updated to reflect size of project based on information provided in the site plan cover sheet. Library reflects community center.

Construction Phase - Demo reduced to 5 days b/c only one house. Grading increased to 3 weeks to reflect additional time for excavation activities.

Off-road Equipment -

Off-road Equipment - Building Const Equip - Assumes crans and forklifts only operate 6hrs per day for 220 days; elect hookups available on-site; only 1 welder would be required for 3hrs per day for 220 days (equates to 8hrs per day for 82.5 days).

Off-road Equipment - Demo Equip - TLB reduced from 3 to 2, since only one house being demoed.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Demolition - Existing 2,647 sf house demoed as part of project.

Grading - Project would require the off-haul of 7,532 CY of soil during grading.

Vehicle Trips - Weekday trip gen updated to reflect 326 daily trips per TIS prepared by LL&G. Assumes community center trips are internal (i.e, project-serving only).

Woodstoves - Updated to reflect ban on wood-burning devices; wood and fireplaces added to gas.

Energy Use - Res T24 elect intensity adj downward to reflect compliance with 2019 CalGreen Code; comment center assumed to have same reduction as res since located in res building. Non-res lighting adj downward for 2019 T24.

Construction Off-road Equipment Mitigation - Assumes watering 3x per day to comply with SCAQMD Rule 403. Equipment 50hp< would meet Tier IV emission standards.

Table Name	Column Name	Default Value	New Value
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	6.00	15.00
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tblEnergyUse	T24E	252.63	118.74
tblEnergyUse	T24E	2.25	1.06
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tblLandUse	LandUseSquareFeet	60,000.00	63,869.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
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tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.033
tblProjectCharacteristics	CO2IntensityFactor	702.44	427.1
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
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tblVehicleTrips	SU_TR	25.49	0.00
tblVehicleTrips	WD_TR	6.65	5.43
tblVehicleTrips	WD_TR	56.24	0.00
tblWoodstoves	NumberCatalytic	3.00	0.00
tblWoodstoves	NumberNoncatalytic	3.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	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	0.3442	1.5101	1.2617	3.5000e-003	0.1827	0.0576	0.2404	0.0606	0.0534	0.1140	0.0000	318.2107	318.2107	0.0472	0.0000	319.3912
2022	0.0453	1.4600e-003	2.4100e-003	0.0000	1.9000e-004	8.0000e-005	2.7000e-004	5.0000e-005	8.0000e-005	1.3000e-004	0.0000	0.4175	0.4175	2.0000e-005	0.0000	0.4181
Maximum	**0.3442**	**1.5101**	**1.2617**	**3.5000e-003**	**0.1827**	**0.0576**	**0.2404**	**0.0606**	**0.0534**	**0.1140**	**0.0000**	**318.2107**	**318.2107**	**0.0472**	**0.0000**	**319.3912**

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	0.2647	0.5608	1.3360	3.5000e-003	0.1502	7.8400e-003	0.1581	0.0449	7.7300e-003	0.0526	0.0000	318.2105	318.2105	0.0472	0.0000	319.3911
2022	0.0453	1.4600e-003	2.4100e-003	0.0000	1.9000e-004	8.0000e-005	2.7000e-004	5.0000e-005	8.0000e-005	1.3000e-004	0.0000	0.4175	0.4175	2.0000e-005	0.0000	0.4181
Maximum	**0.2647**	**0.5608**	**1.3360**	**3.5000e-003**	**0.1502**	**7.8400e-003**	**0.1581**	**0.0449**	**7.7300e-003**	**0.0526**	**0.0000**	**318.2105**	**318.2105**	**0.0472**	**0.0000**	**319.3911**

	ROG	**NOx**	**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	**20.42**	**62.80**	**-5.88**	**0.00**	**17.76**	**86.28**	**34.20**	**25.92**	**85.39**	**53.78**	**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	**1-1-2021**	**3-31-2021**	0.6110	0.2450
2	**4-1-2021**	**6-30-2021**	0.3597	0.1360
3	**7-1-2021**	**9-30-2021**	0.3637	0.1375
4	**10-1-2021**	**12-31-2021**	0.4979	0.2799
5	**1-1-2022**	**3-31-2022**	0.0668	0.0668
		Highest	0.6110	0.2799

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	0.2889	0.0196	0.6260	1.1000e-004		4.4300e-003	4.4300e-003		4.4300e-003	4.4300e-003	0.0000	15.4215	15.4215	1.2600e-003	2.6000e-004	15.5316
Energy	4.5800e-003	0.0393	0.0176	2.5000e-004		3.1600e-003	3.1600e-003		3.1600e-003	3.1600e-003	0.0000	134.2802	134.2802	7.7400e-003	1.6600e-003	134.9696
Mobile	0.1052	0.5538	1.4512	5.3000e-003	0.4380	4.4300e-003	0.4424	0.1174	4.1300e-003	0.1215	0.0000	489.3950	489.3950	0.0252	0.0000	490.0240
Waste						0.0000	0.0000		0.0000	0.0000	6.0694	0.0000	6.0694	0.3587	0.0000	15.0368
Water						0.0000	0.0000		0.0000	0.0000	1.2650	15.6264	16.8914	0.1311	3.2100e-003	21.1278
Total	**0.3987**	**0.6126**	**2.0949**	**5.6600e-003**	**0.4380**	**0.0120**	**0.4500**	**0.1174**	**0.0117**	**0.1291**	**7.3345**	**654.7230**	**662.0575**	**0.5240**	**5.1300e-003**	**676.6898**

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	0.2889	0.0196	0.6260	1.1000e-004		4.4300e-003	4.4300e-003		4.4300e-003	4.4300e-003	0.0000	15.4215	15.4215	1.2600e-003	2.6000e-004	15.5316
Energy	4.5800e-003	0.0393	0.0176	2.5000e-004		3.1600e-003	3.1600e-003		3.1600e-003	3.1600e-003	0.0000	134.2802	134.2802	7.7400e-003	1.6600e-003	134.9696
Mobile	0.1052	0.5538	1.4512	5.3000e-003	0.4380	4.4300e-003	0.4424	0.1174	4.1300e-003	0.1215	0.0000	489.3950	489.3950	0.0252	0.0000	490.0240
Waste						0.0000	0.0000		0.0000	0.0000	6.0694	0.0000	6.0694	0.3587	0.0000	15.0368
Water						0.0000	0.0000		0.0000	0.0000	1.2650	15.6264	16.8914	0.1311	3.2100e-003	21.1278
Total	**0.3987**	**0.6126**	**2.0949**	**5.6600e-003**	**0.4380**	**0.0120**	**0.4500**	**0.1174**	**0.0117**	**0.1291**	**7.3345**	**654.7230**	**662.0575**	**0.5240**	**5.1300e-003**	**676.6898**

	ROG	**NOx**	**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	1/1/2021	1/7/2021	5	5	
2	Site Preparation	Site Preparation	1/8/2021	1/12/2021	5	3	
3	Grading	Grading	1/13/2021	2/2/2021	5	15	
4	Building Construction	Building Construction	2/3/2021	12/7/2021	5	220	
5	Paving	Paving	12/8/2021	12/21/2021	5	10	
6	Architectural Coating	Architectural Coating	12/22/2021	1/4/2022	5	10	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 7.5

Acres of Paving: 1.43

Residential Indoor: 129,335; Residential Outdoor: 43,112; Non-Residential Indoor: 3,750; Non-Residential Outdoor: 1,250; Striped Parking Area: 5,875 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	1	3.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

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
Demolition	4	13.00	0.00	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	942.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	85.00	23.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	17.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

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					1.3000e-003	0.0000	1.3000e-003	2.0000e-004	0.0000	2.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.5100e-003	0.0445	0.0306	5.0000e-005		2.3200e-003	2.3200e-003		2.1700e-003	2.1700e-003	0.0000	4.5854	4.5854	1.1300e-003	0.0000	4.6136
Total	**4.5100e-003**	**0.0445**	**0.0306**	**5.0000e-005**	**1.3000e-003**	**2.3200e-003**	**3.6200e-003**	**2.0000e-004**	**2.1700e-003**	**2.3700e-003**	**0.0000**	**4.5854**	**4.5854**	**1.1300e-003**	**0.0000**	**4.6136**

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	5.0000e-005	1.6600e-003	3.9000e-004	0.0000	1.0000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.4574	0.4574	3.0000e-005	0.0000	0.4582
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	1.4000e-004	1.1000e-004	1.2300e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.3214	0.3214	1.0000e-005	0.0000	0.3216
Total	**1.9000e-004**	**1.7700e-003**	**1.6200e-003**	**0.0000**	**4.6000e-004**	**0.0000**	**4.7000e-004**	**1.2000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.7788**	**0.7788**	**4.0000e-005**	**0.0000**	**0.7798**

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					5.1000e-004	0.0000	5.1000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.4100e-003	9.5500e-003	0.0305	5.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	4.5854	4.5854	1.1300e-003	0.0000	4.6136
Total	**1.4100e-003**	**9.5500e-003**	**0.0305**	**5.0000e-005**	**5.1000e-004**	**4.9000e-004**	**1.0000e-003**	**8.0000e-005**	**4.9000e-004**	**5.7000e-004**	**0.0000**	**4.5854**	**4.5854**	**1.1300e-003**	**0.0000**	**4.6136**

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	5.0000e-005	1.6600e-003	3.9000e-004	0.0000	1.0000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.4574	0.4574	3.0000e-005	0.0000	0.4582
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	1.4000e-004	1.1000e-004	1.2300e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.3214	0.3214	1.0000e-005	0.0000	0.3216
Total	**1.9000e-004**	**1.7700e-003**	**1.6200e-003**	**0.0000**	**4.6000e-004**	**0.0000**	**4.7000e-004**	**1.2000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.7788**	**0.7788**	**4.0000e-005**	**0.0000**	**0.7798**

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					2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3200e-003	0.0274	0.0161	4.0000e-005		1.0500e-003	1.0500e-003		9.7000e-004	9.7000e-004	0.0000	3.2290	3.2290	1.0400e-003	0.0000	3.2551
Total	**2.3200e-003**	**0.0274**	**0.0161**	**4.0000e-005**	**2.3900e-003**	**1.0500e-003**	**3.4400e-003**	**2.6000e-004**	**9.7000e-004**	**1.2300e-003**	**0.0000**	**3.2290**	**3.2290**	**1.0400e-003**	**0.0000**	**3.2551**

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	5.0000e-005	4.0000e-005	4.5000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.1187	0.1187	0.0000	0.0000	0.1188
Total	**5.0000e-005**	**4.0000e-005**	**4.5000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**3.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1187**	**0.1187**	**0.0000**	**0.0000**	**0.1188**

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					9.3000e-004	0.0000	9.3000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.5000e-004	1.9600e-003	0.0178	4.0000e-005		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	3.2290	3.2290	1.0400e-003	0.0000	3.2551
Total	**4.5000e-004**	**1.9600e-003**	**0.0178**	**4.0000e-005**	**9.3000e-004**	**6.0000e-005**	**9.9000e-004**	**1.0000e-004**	**6.0000e-005**	**1.6000e-004**	**0.0000**	**3.2290**	**3.2290**	**1.0400e-003**	**0.0000**	**3.2551**

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	5.0000e-005	4.0000e-005	4.5000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.1187	0.1187	0.0000	0.0000	0.1188
Total	**5.0000e-005**	**4.0000e-005**	**4.5000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**3.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1187**	**0.1187**	**0.0000**	**0.0000**	**0.1188**

3.4 Grading - 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					0.0496	0.0000	0.0496	0.0253	0.0000	0.0253	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0137	0.1516	0.0732	1.5000e-004		6.8700e-003	6.8700e-003		6.3200e-003	6.3200e-003	0.0000	13.5779	13.5779	4.3900e-003	0.0000	13.6877
Total	**0.0137**	**0.1516**	**0.0732**	**1.5000e-004**	**0.0496**	**6.8700e-003**	**0.0564**	**0.0253**	**6.3200e-003**	**0.0316**	**0.0000**	**13.5779**	**13.5779**	**4.3900e-003**	**0.0000**	**13.6877**

3.4 Grading - 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	3.9700e-003	0.1304	0.0304	3.6000e-004	8.0900e-003	3.9000e-004	8.4900e-003	2.2200e-003	3.7000e-004	2.6000e-003	0.0000	35.9042	35.9042	2.4900e-003	0.0000	35.9665
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	3.2000e-004	2.5000e-004	2.8400e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7417	0.7417	2.0000e-005	0.0000	0.7422
Total	**4.2900e-003**	**0.1306**	**0.0332**	**3.7000e-004**	**8.9100e-003**	**4.0000e-004**	**9.3200e-003**	**2.4400e-003**	**3.8000e-004**	**2.8200e-003**	**0.0000**	**36.6458**	**36.6458**	**2.5100e-003**	**0.0000**	**36.7087**

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					0.0193	0.0000	0.0193	9.8800e-003	0.0000	9.8800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8900e-003	8.1900e-003	0.0818	1.5000e-004		2.5000e-004	2.5000e-004		2.5000e-004	2.5000e-004	0.0000	13.5779	13.5779	4.3900e-003	0.0000	13.6877
Total	**1.8900e-003**	**8.1900e-003**	**0.0818**	**1.5000e-004**	**0.0193**	**2.5000e-004**	**0.0196**	**9.8800e-003**	**2.5000e-004**	**0.0101**	**0.0000**	**13.5779**	**13.5779**	**4.3900e-003**	**0.0000**	**13.6877**

3.4 Grading - 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	3.9700e-003	0.1304	0.0304	3.6000e-004	8.0900e-003	3.9000e-004	8.4900e-003	2.2200e-003	3.7000e-004	2.6000e-003	0.0000	35.9042	35.9042	2.4900e-003	0.0000	35.9665
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	3.2000e-004	2.5000e-004	2.8400e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7417	0.7417	2.0000e-005	0.0000	0.7422
Total	**4.2900e-003**	**0.1306**	**0.0332**	**3.7000e-004**	**8.9100e-003**	**4.0000e-004**	**9.3200e-003**	**2.4400e-003**	**3.8000e-004**	**2.8200e-003**	**0.0000**	**36.6458**	**36.6458**	**2.5100e-003**	**0.0000**	**36.7087**

3.5 Building Construction - 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					
Off-Road	0.0833	0.8133	0.6137	1.0900e-003		0.0423	0.0423		0.0392	0.0392	0.0000	94.2599	94.2599	0.0290	0.0000	94.9845
Total	**0.0833**	**0.8133**	**0.6137**	**1.0900e-003**		**0.0423**	**0.0423**		**0.0392**	**0.0392**	**0.0000**	**94.2599**	**94.2599**	**0.0290**	**0.0000**	**94.9845**

3.5 Building Construction - 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	7.8600e-003	0.2497	0.0677	6.4000e-004	0.0159	5.1000e-004	0.0165	4.6000e-003	4.9000e-004	5.0900e-003	0.0000	62.3636	62.3636	3.8300e-003	0.0000	62.4593
Worker	0.0402	0.0313	0.3536	1.0200e-003	0.1025	8.4000e-004	0.1033	0.0272	7.8000e-004	0.0280	0.0000	92.4637	92.4637	2.7200e-003	0.0000	92.5318
Total	**0.0481**	**0.2810**	**0.4213**	**1.6600e-003**	**0.1184**	**1.3500e-003**	**0.1198**	**0.0318**	**1.2700e-003**	**0.0331**	**0.0000**	**154.8274**	**154.8274**	**6.5500e-003**	**0.0000**	**154.9910**

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	0.0246	0.1146	0.6702	1.0900e-003		4.6700e-003	4.6700e-003		4.6700e-003	4.6700e-003	0.0000	94.2598	94.2598	0.0290	0.0000	94.9844
Total	**0.0246**	**0.1146**	**0.6702**	**1.0900e-003**		**4.6700e-003**	**4.6700e-003**		**4.6700e-003**	**4.6700e-003**	**0.0000**	**94.2598**	**94.2598**	**0.0290**	**0.0000**	**94.9844**

3.5 Building Construction - 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	7.8600e-003	0.2497	0.0677	6.4000e-004	0.0159	5.1000e-004	0.0165	4.6000e-003	4.9000e-004	5.0900e-003	0.0000	62.3636	62.3636	3.8300e-003	0.0000	62.4593
Worker	0.0402	0.0313	0.3536	1.0200e-003	0.1025	8.4000e-004	0.1033	0.0272	7.8000e-004	0.0280	0.0000	92.4637	92.4637	2.7200e-003	0.0000	92.5318
Total	**0.0481**	**0.2810**	**0.4213**	**1.6600e-003**	**0.1184**	**1.3500e-003**	**0.1198**	**0.0318**	**1.2700e-003**	**0.0331**	**0.0000**	**154.8274**	**154.8274**	**6.5500e-003**	**0.0000**	**154.9910**

3.6 Paving - 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					
Off-Road	5.3200e-003	0.0532	0.0589	9.0000e-005		2.9100e-003	2.9100e-003		2.6900e-003	2.6900e-003	0.0000	7.7524	7.7524	2.4600e-003	0.0000	7.8138
Paving	9.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.2200e-003**	**0.0532**	**0.0589**	**9.0000e-005**		**2.9100e-003**	**2.9100e-003**		**2.6900e-003**	**2.6900e-003**	**0.0000**	**7.7524**	**7.7524**	**2.4600e-003**	**0.0000**	**7.8138**

3.6 Paving - 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	3.2000e-004	2.5000e-004	2.8400e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7417	0.7417	2.0000e-005	0.0000	0.7422
Total	**3.2000e-004**	**2.5000e-004**	**2.8400e-003**	**1.0000e-005**	**8.2000e-004**	**1.0000e-005**	**8.3000e-004**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7417**	**0.7417**	**2.0000e-005**	**0.0000**	**0.7422**

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	1.3500e-003	6.4000e-003	0.0664	9.0000e-005		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004	0.0000	7.7524	7.7524	2.4600e-003	0.0000	7.8138
Paving	9.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.2500e-003**	**6.4000e-003**	**0.0664**	**9.0000e-005**		**2.1000e-004**	**2.1000e-004**		**2.1000e-004**	**2.1000e-004**	**0.0000**	**7.7524**	**7.7524**	**2.4600e-003**	**0.0000**	**7.8138**

3.6 Paving - 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	3.2000e-004	2.5000e-004	2.8400e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7417	0.7417	2.0000e-005	0.0000	0.7422
Total	**3.2000e-004**	**2.5000e-004**	**2.8400e-003**	**1.0000e-005**	**8.2000e-004**	**1.0000e-005**	**8.3000e-004**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7417**	**0.7417**	**2.0000e-005**	**0.0000**	**0.7422**

3.7 Architectural Coating - 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					
Archit. Coating	0.1800					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.8000e-004	6.1100e-003	7.2700e-003	1.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004	0.0000	1.0213	1.0213	7.0000e-005	0.0000	1.0231
Total	**0.1809**	**6.1100e-003**	**7.2700e-003**	**1.0000e-005**		**3.8000e-004**	**3.8000e-004**		**3.8000e-004**	**3.8000e-004**	**0.0000**	**1.0213**	**1.0213**	**7.0000e-005**	**0.0000**	**1.0231**

3.7 Architectural Coating - 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	2.9000e-004	2.3000e-004	2.5700e-003	1.0000e-005	7.5000e-004	1.0000e-005	7.5000e-004	2.0000e-004	1.0000e-005	2.0000e-004	0.0000	0.6725	0.6725	2.0000e-005	0.0000	0.6730
Total	**2.9000e-004**	**2.3000e-004**	**2.5700e-003**	**1.0000e-005**	**7.5000e-004**	**1.0000e-005**	**7.5000e-004**	**2.0000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6725**	**0.6725**	**2.0000e-005**	**0.0000**	**0.6730**

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	0.1800					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.8000e-004	6.1100e-003	7.2700e-003	1.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004	0.0000	1.0213	1.0213	7.0000e-005	0.0000	1.0231
Total	**0.1809**	**6.1100e-003**	**7.2700e-003**	**1.0000e-005**		**3.8000e-004**	**3.8000e-004**		**3.8000e-004**	**3.8000e-004**	**0.0000**	**1.0213**	**1.0213**	**7.0000e-005**	**0.0000**	**1.0231**

3.7 Architectural Coating - 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	2.9000e-004	2.3000e-004	2.5700e-003	1.0000e-005	7.5000e-004	1.0000e-005	7.5000e-004	2.0000e-004	1.0000e-005	2.0000e-004	0.0000	0.6725	0.6725	2.0000e-005	0.0000	0.6730
Total	**2.9000e-004**	**2.3000e-004**	**2.5700e-003**	**1.0000e-005**	**7.5000e-004**	**1.0000e-005**	**7.5000e-004**	**2.0000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6725**	**0.6725**	**2.0000e-005**	**0.0000**	**0.6730**

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	0.0450					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0000e-004	1.4100e-003	1.8100e-003	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.2553	0.2553	2.0000e-005	0.0000	0.2557
Total	**0.0452**	**1.4100e-003**	**1.8100e-003**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**0.2553**	**0.2553**	**2.0000e-005**	**0.0000**	**0.2557**

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	7.0000e-005	5.0000e-005	5.9000e-004	0.0000	1.9000e-004	0.0000	1.9000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1622	0.1622	0.0000	0.0000	0.1623
Total	**7.0000e-005**	**5.0000e-005**	**5.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1622**	**0.1622**	**0.0000**	**0.0000**	**0.1623**

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	0.0450					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0000e-004	1.4100e-003	1.8100e-003	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.2553	0.2553	2.0000e-005	0.0000	0.2557
Total	**0.0452**	**1.4100e-003**	**1.8100e-003**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**0.2553**	**0.2553**	**2.0000e-005**	**0.0000**	**0.2557**

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	7.0000e-005	5.0000e-005	5.9000e-004	0.0000	1.9000e-004	0.0000	1.9000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1622	0.1622	0.0000	0.0000	0.1623
Total	**7.0000e-005**	**5.0000e-005**	**5.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1622**	**0.1622**	**0.0000**	**0.0000**	**0.1623**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1052	0.5538	1.4512	5.3000e-003	0.4380	4.4300e-003	0.4424	0.1174	4.1300e-003	0.1215	0.0000	489.3950	489.3950	0.0252	0.0000	490.0240
Unmitigated	0.1052	0.5538	1.4512	5.3000e-003	0.4380	4.4300e-003	0.4424	0.1174	4.1300e-003	0.1215	0.0000	489.3950	489.3950	0.0252	0.0000	490.0240

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	325.80	383.40	351.60	1,154,021	1,154,021
Enclosed Parking with Elevator	0.00	0.00	0.00		
Library	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	325.80	383.40	351.60	1,154,021	1,154,021

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
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Library	16.60	8.40	6.90	52.00	43.00	5.00	44	44	12
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Enclosed Parking with Elevator	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Library	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Other Non-Asphalt Surfaces	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Parking Lot	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876

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	88.9732	88.9732	6.8700e-003	8.3000e-004	89.3934
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	88.9732	88.9732	6.8700e-003	8.3000e-004	89.3934
NaturalGas Mitigated	4.5800e-003	0.0393	0.0176	2.5000e-004		3.1600e-003	3.1600e-003		3.1600e-003	3.1600e-003	0.0000	45.3070	45.3070	8.7000e-004	8.3000e-004	45.5762
NaturalGas Unmitigated	4.5800e-003	0.0393	0.0176	2.5000e-004		3.1600e-003	3.1600e-003		3.1600e-003	3.1600e-003	0.0000	45.3070	45.3070	8.7000e-004	8.3000e-004	45.5762

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					
Apartments Mid Rise	803770	4.3300e-003	0.0370	0.0158	2.4000e-004		2.9900e-003	2.9900e-003		2.9900e-003	2.9900e-003	0.0000	42.8922	42.8922	8.2000e-004	7.9000e-004	43.1471
Enclosed Parking with Elevator	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
Library	45250	2.4000e-004	2.2200e-003	1.8600e-003	1.0000e-005		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004	0.0000	2.4147	2.4147	5.0000e-005	4.0000e-005	2.4291
Other Non-Asphalt Surfaces	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
Parking Lot	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
Total		**4.5700e-003**	**0.0393**	**0.0176**	**2.5000e-004**		**3.1600e-003**	**3.1600e-003**		**3.1600e-003**	**3.1600e-003**	**0.0000**	**45.3070**	**45.3070**	**8.7000e-004**	**8.3000e-004**	**45.5762**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	803770	4.3300e-003	0.0370	0.0158	2.4000e-004		2.9900e-003	2.9900e-003		2.9900e-003	2.9900e-003	0.0000	42.8922	42.8922	8.2000e-004	7.9000e-004	43.1471
Enclosed Parking with Elevator	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
Library	45250	2.4000e-004	2.2200e-003	1.8600e-003	1.0000e-005		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004	0.0000	2.4147	2.4147	5.0000e-005	4.0000e-005	2.4291
Other Non-Asphalt Surfaces	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
Parking Lot	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
Total		**4.5700e-003**	**0.0393**	**0.0176**	**2.5000e-004**		**3.1600e-003**	**3.1600e-003**		**3.1600e-003**	**3.1600e-003**	**0.0000**	**45.3070**	**45.3070**	**8.7000e-004**	**8.3000e-004**	**45.5762**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	234857	45.4986	3.5200e-003	4.3000e-004	45.7135
Enclosed Parking with Elevator	189095	36.6332	2.8300e-003	3.4000e-004	36.8062
Library	24775	4.7996	3.7000e-004	4.0000e-005	4.8223
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	10539.2	2.0418	1.6000e-004	2.0000e-005	2.0514
Total		**88.9732**	**6.8800e-003**	**8.3000e-004**	**89.3934**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	234857	45.4986	3.5200e-003	4.3000e-004	45.7135
Enclosed Parking with Elevator	189095	36.6332	2.8300e-003	3.4000e-004	36.8062
Library	24775	4.7996	3.7000e-004	4.0000e-005	4.8223
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	10539.2	2.0418	1.6000e-004	2.0000e-005	2.0514
Total		**88.9732**	**6.8800e-003**	**8.3000e-004**	**89.3934**

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	0.2889	0.0196	0.6260	1.1000e-004		4.4300e-003	4.4300e-003		4.4300e-003	4.4300e-003	0.0000	15.4215	15.4215	1.2600e-003	2.6000e-004	15.5316
Unmitigated	0.2889	0.0196	0.6260	1.1000e-004		4.4300e-003	4.4300e-003		4.4300e-003	4.4300e-003	0.0000	15.4215	15.4215	1.2600e-003	2.6000e-004	15.5316

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0225					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2462					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.4600e-003	0.0124	5.2900e-003	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.0000	14.4082	14.4082	2.8000e-004	2.6000e-004	14.4939
Landscaping	0.0188	7.1600e-003	0.6207	3.0000e-005		3.4300e-003	3.4300e-003		3.4300e-003	3.4300e-003	0.0000	1.0132	1.0132	9.8000e-004	0.0000	1.0378
Total	**0.2889**	**0.0196**	**0.6260**	**1.1000e-004**		**4.4400e-003**	**4.4400e-003**		**4.4400e-003**	**4.4400e-003**	**0.0000**	**15.4215**	**15.4215**	**1.2600e-003**	**2.6000e-004**	**15.5316**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0225					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2462					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.4600e-003	0.0124	5.2900e-003	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.0000	14.4082	14.4082	2.8000e-004	2.6000e-004	14.4939
Landscaping	0.0188	7.1600e-003	0.6207	3.0000e-005		3.4300e-003	3.4300e-003		3.4300e-003	3.4300e-003	0.0000	1.0132	1.0132	9.8000e-004	0.0000	1.0378
Total	**0.2889**	**0.0196**	**0.6260**	**1.1000e-004**		**4.4400e-003**	**4.4400e-003**		**4.4400e-003**	**4.4400e-003**	**0.0000**	**15.4215**	**15.4215**	**1.2600e-003**	**2.6000e-004**	**15.5316**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	16.8914	0.1311	3.2100e-003	21.1278
Unmitigated	16.8914	0.1311	3.2100e-003	21.1278

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	3.90924 / 2.46452	16.4060	0.1286	3.1500e-003	20.5585
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Library	0.0782223 / 0.122348	0.4855	2.5800e-003	6.0000e-005	0.5693
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**16.8914**	**0.1311**	**3.2100e-003**	**21.1278**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	3.90924 / 2.46452	16.4060	0.1286	3.1500e-003	20.5585
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Library	0.0782223 / 0.122348	0.4855	2.5800e-003	6.0000e-005	0.5693
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**16.8914**	**0.1311**	**3.2100e-003**	**21.1278**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	6.0694	0.3587	0.0000	15.0368
Unmitigated	6.0694	0.3587	0.0000	15.0368

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	27.6	5.6026	0.3311	0.0000	13.8801
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Library	2.3	0.4669	0.0276	0.0000	1.1567
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**6.0694**	**0.3587**	**0.0000**	**15.0368**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	27.6	5.6026	0.3311	0.0000	13.8801
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Library	2.3	0.4669	0.0276	0.0000	1.1567
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**6.0694**	**0.3587**	**0.0000**	**15.0368**

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

529 Cutter Way (Tier IV Construction Mitigation)

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Library	2.50	1000sqft	0.06	2,500.00	0
Enclosed Parking with Elevator	35.41	1000sqft	0.00	35,411.00	0
Other Non-Asphalt Surfaces	32.39	1000sqft	0.74	32,389.00	0
Parking Lot	30.11	1000sqft	0.69	30,112.00	0
Apartments Mid Rise	60.00	Dwelling Unit	0.75	63,869.00	172

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	427.1	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - MIG Modeler: Phil Gleason. SCE GHG intensity values updated to reflect SCE estimated renewable mix in 2022.

Land Use - Land uses updated to reflect size of project based on information provided in the site plan cover sheet. Library reflects community center.

Construction Phase - Demo reduced to 5 days b/c only one house. Grading increased to 3 weeks to reflect additional time for excavation activities.

Off-road Equipment -

Off-road Equipment - Building Const Equip - Assumes crans and forklifts only operate 6hrs per day for 220 days; elect hookups available on-site; only 1 welder would be required for 3hrs per day for 220 days (equates to 8hrs per day for 82.5 days).

Off-road Equipment - Demo Equip - TLB reduced from 3 to 2, since only one house being demoed.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Demolition - Existing 2,647 sf house demoed as part of project.

Grading - Project would require the off-haul of 7,532 CY of soil during grading.

Vehicle Trips - Weekday trip gen updated to reflect 326 daily trips per TIS prepared by LL&G. Assumes community center trips are internal (i.e, project-serving only).

Woodstoves - Updated to reflect ban on wood-burning devices; wood and fireplaces added to gas.

Energy Use - Res T24 elect intensity adj downward to reflect compliance with 2019 CalGreen Code; comment center assumed to have same reduction as res since located in res building. Non-res lighting adj downward for 2019 T24.

Construction Off-road Equipment Mitigation - Assumes watering 3x per day to comply with SCAQMD Rule 403. Equipment 50hp< would meet Tier IV emission standards.

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	6.00	15.00
tblEnergyUse	LightingElect	1.75	1.23
tblEnergyUse	T24E	252.63	118.74
tblEnergyUse	T24E	2.25	1.06
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	51.00	60.00
tblFireplaces	NumberNoFireplace	6.00	0.00
tblFireplaces	NumberWood	3.00	0.00
tblGrading	MaterialExported	0.00	7,532.00
tblLandUse	LandUseSquareFeet	35,410.00	35,411.00
tblLandUse	LandUseSquareFeet	32,390.00	32,389.00
tblLandUse	LandUseSquareFeet	30,110.00	30,112.00
tblLandUse	LandUseSquareFeet	60,000.00	63,869.00
tblLandUse	LotAcreage	0.81	0.00
tblLandUse	LotAcreage	1.58	0.75
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.033
tblProjectCharacteristics	CO2IntensityFactor	702.44	427.1
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblTripsAndVMT	WorkerTripNumber	10.00	13.00
tblVehicleTrips	ST_TR	46.55	0.00
tblVehicleTrips	SU_TR	25.49	0.00
tblVehicleTrips	WD_TR	6.65	5.43
tblVehicleTrips	WD_TR	56.24	0.00
tblWoodstoves	NumberCatalytic	3.00	0.00
tblWoodstoves	NumberNoncatalytic	3.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	45.2969	37.0887	14.1130	0.0707	7.8190	0.9684	8.7873	3.7067	0.8928	4.5995	0.0000	7,425.1710	7,425.1710	1.0095	0.0000	7,450.4089
2022	45.2780	1.4537	2.4453	4.8400e-003	0.1900	0.0832	0.2732	0.0504	0.0831	0.1335	0.0000	468.2291	468.2291	0.0235	0.0000	468.8161
Maximum	**45.2969**	**37.0887**	**14.1130**	**0.0707**	**7.8190**	**0.9684**	**8.7873**	**3.7067**	**0.8928**	**4.5995**	**0.0000**	**7,425.1710**	**7,425.1710**	**1.0095**	**0.0000**	**7,450.4089**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	45.2969	17.9678	15.2597	0.0707	3.7874	0.2003	3.8737	1.6473	0.2002	1.7312	0.0000	7,425.1710	7,425.1710	1.0095	0.0000	7,450.4089
2022	45.2780	1.4537	2.4453	4.8400e-003	0.1900	0.0832	0.2732	0.0504	0.0831	0.1335	0.0000	468.2291	468.2291	0.0235	0.0000	468.8161
Maximum	**45.2969**	**17.9678**	**15.2597**	**0.0707**	**3.7874**	**0.2003**	**3.8737**	**1.6473**	**0.2002**	**1.7312**	**0.0000**	**7,425.1710**	**7,425.1710**	**1.0095**	**0.0000**	**7,450.4089**

	ROG	**NOx**	**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**	**49.61**	**-6.93**	**0.00**	**50.34**	**73.04**	**54.23**	**54.81**	**70.97**	**60.60**	**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	1.7392	1.0525	5.3892	6.6200e-003		0.1079	0.1079		0.1079	0.1079	0.0000	1,279.5234	1,279.5234	0.0330	0.0233	1,287.2903
Energy	0.0251	0.2151	0.0966	1.3700e-003		0.0173	0.0173		0.0173	0.0173		273.6568	273.6568	5.2500e-003	5.0200e-003	275.2830
Mobile	0.6914	3.3100	9.4158	0.0343	2.7859	0.0276	2.8135	0.7456	0.0258	0.7713		3,486.3247	3,486.3247	0.1743		3,490.6820
Total	**2.4556**	**4.5776**	**14.9016**	**0.0423**	**2.7859**	**0.1528**	**2.9388**	**0.7456**	**0.1510**	**0.8965**	**0.0000**	**5,039.5048**	**5,039.5048**	**0.2126**	**0.0283**	**5,053.2553**

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	1.7392	1.0525	5.3892	6.6200e-003		0.1079	0.1079		0.1079	0.1079	0.0000	1,279.5234	1,279.5234	0.0330	0.0233	1,287.2903
Energy	0.0251	0.2151	0.0966	1.3700e-003		0.0173	0.0173		0.0173	0.0173		273.6568	273.6568	5.2500e-003	5.0200e-003	275.2830
Mobile	0.6914	3.3100	9.4158	0.0343	2.7859	0.0276	2.8135	0.7456	0.0258	0.7713		3,486.3247	3,486.3247	0.1743		3,490.6820
Total	**2.4556**	**4.5776**	**14.9016**	**0.0423**	**2.7859**	**0.1528**	**2.9388**	**0.7456**	**0.1510**	**0.8965**	**0.0000**	**5,039.5048**	**5,039.5048**	**0.2126**	**0.0283**	**5,053.2553**

	ROG	NOx	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	1/1/2021	1/7/2021	5	5	
2	Site Preparation	Site Preparation	1/8/2021	1/12/2021	5	3	
3	Grading	Grading	1/13/2021	2/2/2021	5	15	
4	Building Construction	Building Construction	2/3/2021	12/7/2021	5	220	
5	Paving	Paving	12/8/2021	12/21/2021	5	10	
6	Architectural Coating	Architectural Coating	12/22/2021	1/4/2022	5	10	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 7.5

Acres of Paving: 1.43

Residential Indoor: 129,335; Residential Outdoor: 43,112; Non-Residential Indoor: 3,750; Non-Residential Outdoor: 1,250; Striped Parking Area: 5,875 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	1	3.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

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
Demolition	4	13.00	0.00	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	942.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	85.00	23.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	17.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

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					0.5211	0.0000	0.5211	0.0789	0.0000	0.0789			0.0000			0.0000
Off-Road	1.8057	17.8008	12.2323	0.0210		0.9291	0.9291		0.8686	0.8686		2,021.8170	2,021.8170	0.4966		2,034.2328
Total	**1.8057**	**17.8008**	**12.2323**	**0.0210**	**0.5211**	**0.9291**	**1.4502**	**0.0789**	**0.8686**	**0.9475**		**2,021.8170**	**2,021.8170**	**0.4966**		**2,034.2328**

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	0.0200	0.6438	0.1510	1.8700e-003	0.0420	1.9800e-003	0.0439	0.0115	1.8900e-003	0.0134		203.1471	203.1471	0.0138		203.4918
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	0.0557	0.0383	0.5236	1.4900e-003	0.1453	1.1700e-003	0.1465	0.0385	1.0800e-003	0.0396		148.0401	148.0401	4.3600e-003		148.1491
Total	**0.0757**	**0.6821**	**0.6746**	**3.3600e-003**	**0.1873**	**3.1500e-003**	**0.1904**	**0.0500**	**2.9700e-003**	**0.0530**		**351.1872**	**351.1872**	**0.0182**		**351.6409**

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					0.2032	0.0000	0.2032	0.0308	0.0000	0.0308			0.0000			0.0000
Off-Road	0.5653	3.8201	12.1918	0.0210		0.1972	0.1972		0.1972	0.1972	0.0000	2,021.8170	2,021.8170	0.4966		2,034.2328
Total	**0.5653**	**3.8201**	**12.1918**	**0.0210**	**0.2032**	**0.1972**	**0.4004**	**0.0308**	**0.1972**	**0.2280**	**0.0000**	**2,021.8170**	**2,021.8170**	**0.4966**		**2,034.2328**

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	0.0200	0.6438	0.1510	1.8700e-003	0.0420	1.9800e-003	0.0439	0.0115	1.8900e-003	0.0134		203.1471	203.1471	0.0138		203.4918
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	0.0557	0.0383	0.5236	1.4900e-003	0.1453	1.1700e-003	0.1465	0.0385	1.0800e-003	0.0396		148.0401	148.0401	4.3600e-003		148.1491
Total	**0.0757**	**0.6821**	**0.6746**	**3.3600e-003**	**0.1873**	**3.1500e-003**	**0.1904**	**0.0500**	**2.9700e-003**	**0.0530**		**351.1872**	**351.1872**	**0.0182**		**351.6409**

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	lb/day										lb/day					
Fugitive Dust					1.5908	0.0000	1.5908	0.1718	0.0000	0.1718			0.0000			0.0000
Off-Road	1.5463	18.2862	10.7496	0.0245		0.7019	0.7019		0.6457	0.6457		2,372.8832	2,372.8832	0.7674		2,392.0692
Total	**1.5463**	**18.2862**	**10.7496**	**0.0245**	**1.5908**	**0.7019**	**2.2926**	**0.1718**	**0.6457**	**0.8175**		**2,372.8832**	**2,372.8832**	**0.7674**		**2,392.0692**

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	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	0.0343	0.0236	0.3222	9.1000e-004	0.0894	7.2000e-004	0.0901	0.0237	6.7000e-004	0.0244		91.1016	91.1016	2.6800e-003		91.1687
Total	**0.0343**	**0.0236**	**0.3222**	**9.1000e-004**	**0.0894**	**7.2000e-004**	**0.0901**	**0.0237**	**6.7000e-004**	**0.0244**		**91.1016**	**91.1016**	**2.6800e-003**		**91.1687**

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					0.6204	0.0000	0.6204	0.0670	0.0000	0.0670			0.0000			0.0000
Off-Road	0.3008	1.3034	11.8595	0.0245		0.0401	0.0401		0.0401	0.0401	0.0000	2,372.883 2	2,372.883 2	0.7674		2,392.069 2
Total	**0.3008**	**1.3034**	**11.8595**	**0.0245**	**0.6204**	**0.0401**	**0.6605**	**0.0670**	**0.0401**	**0.1071**	**0.0000**	**2,372.883 2**	**2,372.883 2**	**0.7674**		**2,392.069 2**

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	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	0.0343	0.0236	0.3222	9.1000e-004	0.0894	7.2000e-004	0.0901	0.0237	6.7000e-004	0.0244		91.1016	91.1016	2.6800e-003		91.1687
Total	**0.0343**	**0.0236**	**0.3222**	**9.1000e-004**	**0.0894**	**7.2000e-004**	**0.0901**	**0.0237**	**6.7000e-004**	**0.0244**		**91.1016**	**91.1016**	**2.6800e-003**		**91.1687**

3.4 Grading - 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					6.6091	0.0000	6.6091	3.3761	0.0000	3.3761			0.0000			0.0000
Off-Road	1.8271	20.2135	9.7604	0.0206		0.9158	0.9158		0.8425	0.8425		1,995.6114	1,995.6114	0.6454		2,011.7470
Total	**1.8271**	**20.2135**	**9.7604**	**0.0206**	**6.6091**	**0.9158**	**7.5249**	**3.3761**	**0.8425**	**4.2186**		**1,995.6114**	**1,995.6114**	**0.6454**		**2,011.7470**

3.4 Grading - 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	0.5236	16.8457	3.9498	0.0490	1.0981	0.0517	1.1498	0.3010	0.0495	0.3505		5,315.682 6	5,315.682 6	0.3607		5,324.701 1
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	0.0429	0.0295	0.4028	1.1400e-003	0.1118	9.0000e-004	0.1127	0.0296	8.3000e-004	0.0305		113.8770	113.8770	3.3600e-003		113.9609
Total	**0.5665**	**16.8752**	**4.3526**	**0.0501**	**1.2099**	**0.0526**	**1.2625**	**0.3306**	**0.0503**	**0.3810**		**5,429.559 6**	**5,429.559 6**	**0.3641**		**5,438.662 0**

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					2.5776	0.0000	2.5776	1.3167	0.0000	1.3167			0.0000			0.0000
Off-Road	0.2522	1.0927	10.9071	0.0206		0.0336	0.0336		0.0336	0.0336	0.0000	1,995.611 4	1,995.611 4	0.6454		2,011.747 0
Total	**0.2522**	**1.0927**	**10.9071**	**0.0206**	**2.5776**	**0.0336**	**2.6112**	**1.3167**	**0.0336**	**1.3503**	**0.0000**	**1,995.611 4**	**1,995.611 4**	**0.6454**		**2,011.747 0**

3.4 Grading - 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	0.5236	16.8457	3.9498	0.0490	1.0981	0.0517	1.1498	0.3010	0.0495	0.3505		5,315.6826	5,315.6826	0.3607		5,324.7011
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	0.0429	0.0295	0.4028	1.1400e-003	0.1118	9.0000e-004	0.1127	0.0296	8.3000e-004	0.0305		113.8770	113.8770	3.3600e-003		113.9609
Total	**0.5665**	**16.8752**	**4.3526**	**0.0501**	**1.2099**	**0.0526**	**1.2625**	**0.3306**	**0.0503**	**0.3810**		**5,429.5596**	**5,429.5596**	**0.3641**		**5,438.6620**

3.5 Building Construction - 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					
Off-Road	0.7576	7.3934	5.5786	9.9100e-003		0.3848	0.3848		0.3563	0.3563		944.5795	944.5795	0.2905		951.8411
Total	**0.7576**	**7.3934**	**5.5786**	**9.9100e-003**		**0.3848**	**0.3848**		**0.3563**	**0.3563**		**944.5795**	**944.5795**	**0.2905**		**951.8411**

3.5 Building Construction - 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	0.0000	0.0000	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	0.0699	2.2331	0.5838	5.9100e-003	0.1473	4.5700e-003	0.1518	0.0424	4.3700e-003	0.0468		632.2255	632.2255	0.0373		633.1566
Worker	0.3644	0.2504	3.4236	9.7200e-003	0.9501	7.6800e-003	0.9578	0.2520	7.0700e-003	0.2590		967.9544	967.9544	0.0285		968.6674
Total	**0.4343**	**2.4835**	**4.0074**	**0.0156**	**1.0974**	**0.0123**	**1.1096**	**0.2944**	**0.0114**	**0.3058**		**1,600.1798**	**1,600.1798**	**0.0658**		**1,601.8240**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2234	1.0421	6.0929	9.9100e-003		0.0425	0.0425		0.0425	0.0425	0.0000	944.5795	944.5795	0.2905		951.8411
Total	**0.2234**	**1.0421**	**6.0929**	**9.9100e-003**		**0.0425**	**0.0425**		**0.0425**	**0.0425**	**0.0000**	**944.5795**	**944.5795**	**0.2905**		**951.8411**

3.5 Building Construction - 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	0.0000	0.0000	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	0.0699	2.2331	0.5838	5.9100e-003	0.1473	4.5700e-003	0.1518	0.0424	4.3700e-003	0.0468		632.2255	632.2255	0.0373		633.1566
Worker	0.3644	0.2504	3.4236	9.7200e-003	0.9501	7.6800e-003	0.9578	0.2520	7.0700e-003	0.2590		967.9544	967.9544	0.0285		968.6674
Total	**0.4343**	**2.4835**	**4.0074**	**0.0156**	**1.0974**	**0.0123**	**1.1096**	**0.2944**	**0.0114**	**0.3058**		**1,600.1798**	**1,600.1798**	**0.0658**		**1,601.8240**

3.6 Paving - 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					
Off-Road	1.0633	10.6478	11.7756	0.0178		0.5826	0.5826		0.5371	0.5371		1,709.1107	1,709.1107	0.5417		1,722.6524
Paving	0.1808					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2441**	**10.6478**	**11.7756**	**0.0178**		**0.5826**	**0.5826**		**0.5371**	**0.5371**		**1,709.1107**	**1,709.1107**	**0.5417**		**1,722.6524**

3.6 Paving - 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	0.0000	0.0000	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	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.0643**	**0.0442**	**0.6042**	**1.7100e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2500e-003**	**0.0457**		**170.8155**	**170.8155**	**5.0300e-003**		**170.9413**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2691	1.2799	13.2821	0.0178		0.0424	0.0424		0.0424	0.0424	0.0000	1,709.1107	1,709.1107	0.5417		1,722.6524
Paving	0.1808					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4499**	**1.2799**	**13.2821**	**0.0178**		**0.0424**	**0.0424**		**0.0424**	**0.0424**	**0.0000**	**1,709.1107**	**1,709.1107**	**0.5417**		**1,722.6524**

3.6 Paving - 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	0.0000	0.0000	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	0.0643	0.0442	0.6042	1.7100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		170.8155	170.8155	5.0300e-003		170.9413
Total	**0.0643**	**0.0442**	**0.6042**	**1.7100e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2500e-003**	**0.0457**		**170.8155**	**170.8155**	**5.0300e-003**		**170.9413**

3.7 Architectural Coating - 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					
Archit. Coating	45.0052					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**45.2241**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.7 Architectural Coating - 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	0.0000	0.0000	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	0.0729	0.0501	0.6847	1.9400e-003	0.1900	1.5400e-003	0.1916	0.0504	1.4100e-003	0.0518		193.5909	193.5909	5.7000e-003		193.7335
Total	**0.0729**	**0.0501**	**0.6847**	**1.9400e-003**	**0.1900**	**1.5400e-003**	**0.1916**	**0.0504**	**1.4100e-003**	**0.0518**		**193.5909**	**193.5909**	**5.7000e-003**		**193.7335**

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	45.0052					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**45.2241**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.7 Architectural Coating - 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	0.0000	0.0000	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	0.0729	0.0501	0.6847	1.9400e-003	0.1900	1.5400e-003	0.1916	0.0504	1.4100e-003	0.0518		193.5909	193.5909	5.7000e-003		193.7335
Total	**0.0729**	**0.0501**	**0.6847**	**1.9400e-003**	**0.1900**	**1.5400e-003**	**0.1916**	**0.0504**	**1.4100e-003**	**0.0518**		**193.5909**	**193.5909**	**5.7000e-003**		**193.7335**

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	lb/day										lb/day					
Archit. Coating	45.0052					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**45.2097**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

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	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	0.0683	0.0452	0.6317	1.8700e-003	0.1900	1.4900e-003	0.1915	0.0504	1.3700e-003	0.0518		186.7811	186.7811	5.1600e-003		186.9100
Total	**0.0683**	**0.0452**	**0.6317**	**1.8700e-003**	**0.1900**	**1.4900e-003**	**0.1915**	**0.0504**	**1.3700e-003**	**0.0518**		**186.7811**	**186.7811**	**5.1600e-003**		**186.9100**

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	45.0052					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**45.2097**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

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	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	0.0683	0.0452	0.6317	1.8700e-003	0.1900	1.4900e-003	0.1915	0.0504	1.3700e-003	0.0518		186.7811	186.7811	5.1600e-003		186.9100
Total	**0.0683**	**0.0452**	**0.6317**	**1.8700e-003**	**0.1900**	**1.4900e-003**	**0.1915**	**0.0504**	**1.3700e-003**	**0.0518**		**186.7811**	**186.7811**	**5.1600e-003**		**186.9100**

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	0.6914	3.3100	9.4158	0.0343	2.7859	0.0276	2.8135	0.7456	0.0258	0.7713		3,486.3247	3,486.3247	0.1743		3,490.6820
Unmitigated	0.6914	3.3100	9.4158	0.0343	2.7859	0.0276	2.8135	0.7456	0.0258	0.7713		3,486.3247	3,486.3247	0.1743		3,490.6820

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	325.80	383.40	351.60	1,154,021	1,154,021
Enclosed Parking with Elevator	0.00	0.00	0.00		
Library	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	325.80	383.40	351.60	1,154,021	1,154,021

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
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Library	16.60	8.40	6.90	52.00	43.00	5.00	44	44	12
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Enclosed Parking with Elevator	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Library	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Other Non-Asphalt Surfaces	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Parking Lot	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876

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	0.0251	0.2151	0.0966	1.3700e-003		0.0173	0.0173		0.0173	0.0173		273.6568	273.6568	5.2500e-003	5.0200e-003	275.2830
NaturalGas Unmitigated	0.0251	0.2151	0.0966	1.3700e-003		0.0173	0.0173		0.0173	0.0173		273.6568	273.6568	5.2500e-003	5.0200e-003	275.2830

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					
Apartments Mid Rise	2202.11	0.0238	0.2029	0.0864	1.3000e-003		0.0164	0.0164		0.0164	0.0164		259.0718	259.0718	4.9700e-003	4.7500e-003	260.6113
Enclosed Parking with Elevator	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
Library	123.973	1.3400e-003	0.0122	0.0102	7.0000e-005		9.2000e-004	9.2000e-004		9.2000e-004	9.2000e-004		14.5850	14.5850	2.8000e-004	2.7000e-004	14.6717
Other Non-Asphalt Surfaces	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
Parking Lot	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
Total		**0.0251**	**0.2151**	**0.0966**	**1.3700e-003**		**0.0173**	**0.0173**		**0.0173**	**0.0173**		**273.6568**	**273.6568**	**5.2500e-003**	**5.0200e-003**	**275.2830**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	2.20211	0.0238	0.2029	0.0864	1.3000e-003		0.0164	0.0164		0.0164	0.0164		259.0718	259.0718	4.9700e-003	4.7500e-003	260.6113
Enclosed Parking with Elevator	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
Library	0.123973	1.3400e-003	0.0122	0.0102	7.0000e-005		9.2000e-004	9.2000e-004		9.2000e-004	9.2000e-004		14.5850	14.5850	2.8000e-004	2.7000e-004	14.6717
Other Non-Asphalt Surfaces	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
Parking Lot	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
Total		**0.0251**	**0.2151**	**0.0966**	**1.3700e-003**		**0.0173**	**0.0173**		**0.0173**	**0.0173**		**273.6568**	**273.6568**	**5.2500e-003**	**5.0200e-003**	**275.2830**

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	1.7392	1.0525	5.3892	6.6200e-003		0.1079	0.1079		0.1079	0.1079	0.0000	1,279.5234	1,279.5234	0.0330	0.0233	1,287.2903
Unmitigated	1.7392	1.0525	5.3892	6.6200e-003		0.1079	0.1079		0.1079	0.1079	0.0000	1,279.5234	1,279.5234	0.0330	0.0233	1,287.2903

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1233					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3488					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1165	0.9953	0.4235	6.3500e-003		0.0805	0.0805		0.0805	0.0805	0.0000	1,270.5882	1,270.5882	0.0244	0.0233	1,278.1387
Landscaping	0.1506	0.0572	4.9657	2.6000e-004		0.0274	0.0274		0.0274	0.0274		8.9351	8.9351	8.6600e-003		9.1515
Total	**1.7392**	**1.0525**	**5.3892**	**6.6100e-003**		**0.1079**	**0.1079**		**0.1079**	**0.1079**	**0.0000**	**1,279.5234**	**1,279.5234**	**0.0330**	**0.0233**	**1,287.2903**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1233					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3488					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1165	0.9953	0.4235	6.3500e-003		0.0805	0.0805		0.0805	0.0805	0.0000	1,270.588 2	1,270.588 2	0.0244	0.0233	1,278.138 7
Landscaping	0.1506	0.0572	4.9657	2.6000e-004		0.0274	0.0274		0.0274	0.0274		8.9351	8.9351	8.6600e-003		9.1515
Total	**1.7392**	**1.0525**	**5.3892**	**6.6100e-003**		**0.1079**	**0.1079**		**0.1079**	**0.1079**	**0.0000**	**1,279.523 4**	**1,279.523 4**	**0.0330**	**0.0233**	**1,287.290 3**

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

529 Cutter Way (Tier IV Construction Mitigation)

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Library	2.50	1000sqft	0.06	2,500.00	0
Enclosed Parking with Elevator	35.41	1000sqft	0.00	35,411.00	0
Other Non-Asphalt Surfaces	32.39	1000sqft	0.74	32,389.00	0
Parking Lot	30.11	1000sqft	0.69	30,112.00	0
Apartments Mid Rise	60.00	Dwelling Unit	0.75	63,869.00	172

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	427.1	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - MIG Modeler: Phil Gleason. SCE GHG intensity values updated to reflect SCE estimated renewable mix in 2022.

Land Use - Land uses updated to reflect size of project based on information provided in the site plan cover sheet. Library reflects community center.

Construction Phase - Demo reduced to 5 days b/c only one house. Grading increased to 3 weeks to reflect additional time for excavation activities.

Off-road Equipment -

Off-road Equipment - Building Const Equip - Assumes crans and forklifts only operate 6hrs per day for 220 days; elect hookups available on-site; only 1 welder would be required for 3hrs per day for 220 days (equates to 8hrs per day for 82.5 days).

Off-road Equipment - Demo Equip - TLB reduced from 3 to 2, since only one house being demoed.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Demolition - Existing 2,647 sf house demoed as part of project.

Grading - Project would require the off-haul of 7,532 CY of soil during grading.

Vehicle Trips - Weekday trip gen updated to reflect 326 daily trips per TIS prepared by LL&G. Assumes community center trips are internal (i.e, project-serving only).

Woodstoves - Updated to reflect ban on wood-burning devices; wood and fireplaces added to gas.

Energy Use - Res T24 elect intensity adj downward to reflect compliance with 2019 CalGreen Code; comment center assumed to have same reduction as res since located in res building. Non-res lighting adj downward for 2019 T24.

Construction Off-road Equipment Mitigation - Assumes watering 3x per day to comply with SCAQMD Rule 403. Equipment 50hp< would meet Tier IV emission standards.

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	6.00	15.00
tblEnergyUse	LightingElect	1.75	1.23
tblEnergyUse	T24E	252.63	118.74
tblEnergyUse	T24E	2.25	1.06
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	51.00	60.00
tblFireplaces	NumberNoFireplace	6.00	0.00
tblFireplaces	NumberWood	3.00	0.00
tblGrading	MaterialExported	0.00	7,532.00
tblLandUse	LandUseSquareFeet	35,410.00	35,411.00
tblLandUse	LandUseSquareFeet	32,390.00	32,389.00
tblLandUse	LandUseSquareFeet	30,110.00	30,112.00
tblLandUse	LandUseSquareFeet	60,000.00	63,869.00
tblLandUse	LotAcreage	0.81	0.00
tblLandUse	LotAcreage	1.58	0.75
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.033
tblProjectCharacteristics	CO2IntensityFactor	702.44	427.1
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblTripsAndVMT	WorkerTripNumber	10.00	13.00
tblVehicleTrips	ST_TR	46.55	0.00
tblVehicleTrips	SU_TR	25.49	0.00
tblVehicleTrips	WD_TR	6.65	5.43
tblVehicleTrips	WD_TR	56.24	0.00
tblWoodstoves	NumberCatalytic	3.00	0.00
tblWoodstoves	NumberNoncatalytic	3.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	45.3051	37.2982	14.3170	0.0698	7.8190	0.9692	8.7881	3.7067	0.8935	4.6003	0.0000	7,326.4344	7,326.4344	1.0220	0.0000	7,351.9853
2022	45.2858	1.4586	2.3902	4.7300e-003	0.1900	0.0832	0.2732	0.0504	0.0831	0.1335	0.0000	457.3249	457.3249	0.0232	0.0000	457.9040
Maximum	**45.3051**	**37.2982**	**14.3170**	**0.0698**	**7.8190**	**0.9692**	**8.7881**	**3.7067**	**0.8935**	**4.6003**	**0.0000**	**7,326.4344**	**7,326.4344**	**1.0220**	**0.0000**	**7,351.9853**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	45.3051	18.1773	15.4637	0.0698	3.7874	0.2004	3.8744	1.6473	0.2002	1.7320	0.0000	7,326.4344	7,326.4344	1.0220	0.0000	7,351.9853
2022	45.2858	1.4586	2.3902	4.7300e-003	0.1900	0.0832	0.2732	0.0504	0.0831	0.1335	0.0000	457.3249	457.3249	0.0232	0.0000	457.9040
Maximum	**45.3051**	**18.1773**	**15.4637**	**0.0698**	**3.7874**	**0.2004**	**3.8744**	**1.6473**	**0.2002**	**1.7320**	**0.0000**	**7,326.4344**	**7,326.4344**	**1.0220**	**0.0000**	**7,351.9853**

	ROG	**NOx**	**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**	**49.34**	**-6.86**	**0.00**	**50.34**	**73.05**	**54.23**	**54.81**	**70.99**	**60.59**	**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	1.7392	1.0525	5.3892	6.6200e-003		0.1079	0.1079		0.1079	0.1079	0.0000	1,279.5234	1,279.5234	0.0330	0.0233	1,287.2903
Energy	0.0251	0.2151	0.0966	1.3700e-003		0.0173	0.0173		0.0173	0.0173		273.6568	273.6568	5.2500e-003	5.0200e-003	275.2830
Mobile	0.6710	3.3913	8.9209	0.0326	2.7859	0.0277	2.8137	0.7456	0.0259	0.7714		3,318.6173	3,318.6173	0.1737		3,322.9595
Total	**2.4353**	**4.6589**	**14.4067**	**0.0406**	**2.7859**	**0.1530**	**2.9389**	**0.7456**	**0.1511**	**0.8967**	**0.0000**	**4,871.7974**	**4,871.7974**	**0.2120**	**0.0283**	**4,885.5328**

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	1.7392	1.0525	5.3892	6.6200e-003		0.1079	0.1079		0.1079	0.1079	0.0000	1,279.5234	1,279.5234	0.0330	0.0233	1,287.2903
Energy	0.0251	0.2151	0.0966	1.3700e-003		0.0173	0.0173		0.0173	0.0173		273.6568	273.6568	5.2500e-003	5.0200e-003	275.2830
Mobile	0.6710	3.3913	8.9209	0.0326	2.7859	0.0277	2.8137	0.7456	0.0259	0.7714		3,318.6173	3,318.6173	0.1737		3,322.9595
Total	**2.4353**	**4.6589**	**14.4067**	**0.0406**	**2.7859**	**0.1530**	**2.9389**	**0.7456**	**0.1511**	**0.8967**	**0.0000**	**4,871.7974**	**4,871.7974**	**0.2120**	**0.0283**	**4,885.5328**

	ROG	NOx	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	1/1/2021	1/7/2021	5	5	
2	Site Preparation	Site Preparation	1/8/2021	1/12/2021	5	3	
3	Grading	Grading	1/13/2021	2/2/2021	5	15	
4	Building Construction	Building Construction	2/3/2021	12/7/2021	5	220	
5	Paving	Paving	12/8/2021	12/21/2021	5	10	
6	Architectural Coating	Architectural Coating	12/22/2021	1/4/2022	5	10	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 7.5

Acres of Paving: 1.43

Residential Indoor: 129,335; Residential Outdoor: 43,112; Non-Residential Indoor: 3,750; Non-Residential Outdoor: 1,250; Striped Parking Area: 5,875 (Architectural Coating – sqft)

OffRoad Equipment

529 Cutter Way (Tier IV Construction Mitigation) - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	1	3.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

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
Demolition	4	13.00	0.00	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	942.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	85.00	23.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	17.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

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					0.5211	0.0000	0.5211	0.0789	0.0000	0.0789			0.0000			0.0000
Off-Road	1.8057	17.8008	12.2323	0.0210		0.9291	0.9291		0.8686	0.8686		2,021.8170	2,021.8170	0.4966		2,034.2328
Total	**1.8057**	**17.8008**	**12.2323**	**0.0210**	**0.5211**	**0.9291**	**1.4502**	**0.0789**	**0.8686**	**0.9475**		**2,021.8170**	**2,021.8170**	**0.4966**		**2,034.2328**

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	0.0205	0.6517	0.1601	1.8400e-003	0.0420	2.0100e-003	0.0440	0.0115	1.9200e-003	0.0134		199.6279	199.6279	0.0143		199.9848
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	0.0620	0.0424	0.4787	1.4000e-003	0.1453	1.1700e-003	0.1465	0.0385	1.0800e-003	0.0396		139.3926	139.3926	4.1000e-003		139.4952
Total	**0.0825**	**0.6941**	**0.6388**	**3.2400e-003**	**0.1873**	**3.1800e-003**	**0.1905**	**0.0500**	**3.0000e-003**	**0.0530**		**339.0206**	**339.0206**	**0.0184**		**339.4799**

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					0.2032	0.0000	0.2032	0.0308	0.0000	0.0308			0.0000			0.0000
Off-Road	0.5653	3.8201	12.1918	0.0210		0.1972	0.1972		0.1972	0.1972	0.0000	2,021.8170	2,021.8170	0.4966		2,034.2328
Total	**0.5653**	**3.8201**	**12.1918**	**0.0210**	**0.2032**	**0.1972**	**0.4004**	**0.0308**	**0.1972**	**0.2280**	**0.0000**	**2,021.8170**	**2,021.8170**	**0.4966**		**2,034.2328**

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	0.0205	0.6517	0.1601	1.8400e-003	0.0420	2.0100e-003	0.0440	0.0115	1.9200e-003	0.0134		199.6279	199.6279	0.0143		199.9848
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	0.0620	0.0424	0.4787	1.4000e-003	0.1453	1.1700e-003	0.1465	0.0385	1.0800e-003	0.0396		139.3926	139.3926	4.1000e-003		139.4952
Total	**0.0825**	**0.6941**	**0.6388**	**3.2400e-003**	**0.1873**	**3.1800e-003**	**0.1905**	**0.0500**	**3.0000e-003**	**0.0530**		**339.0206**	**339.0206**	**0.0184**		**339.4799**

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	lb/day										lb/day					
Fugitive Dust					1.5908	0.0000	1.5908	0.1718	0.0000	0.1718			0.0000			0.0000
Off-Road	1.5463	18.2862	10.7496	0.0245		0.7019	0.7019		0.6457	0.6457		2,372.8832	2,372.8832	0.7674		2,392.0692
Total	**1.5463**	**18.2862**	**10.7496**	**0.0245**	**1.5908**	**0.7019**	**2.2926**	**0.1718**	**0.6457**	**0.8175**		**2,372.8832**	**2,372.8832**	**0.7674**		**2,392.0692**

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	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	0.0382	0.0261	0.2946	8.6000e-004	0.0894	7.2000e-004	0.0901	0.0237	6.7000e-004	0.0244		85.7801	85.7801	2.5200e-003		85.8432
Total	**0.0382**	**0.0261**	**0.2946**	**8.6000e-004**	**0.0894**	**7.2000e-004**	**0.0901**	**0.0237**	**6.7000e-004**	**0.0244**		**85.7801**	**85.7801**	**2.5200e-003**		**85.8432**

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					0.6204	0.0000	0.6204	0.0670	0.0000	0.0670			0.0000			0.0000
Off-Road	0.3008	1.3034	11.8595	0.0245		0.0401	0.0401		0.0401	0.0401	0.0000	2,372.8832	2,372.8832	0.7674		2,392.0692
Total	**0.3008**	**1.3034**	**11.8595**	**0.0245**	**0.6204**	**0.0401**	**0.6605**	**0.0670**	**0.0401**	**0.1071**	**0.0000**	**2,372.8832**	**2,372.8832**	**0.7674**		**2,392.0692**

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	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	0.0382	0.0261	0.2946	8.6000e-004	0.0894	7.2000e-004	0.0901	0.0237	6.7000e-004	0.0244		85.7801	85.7801	2.5200e-003		85.8432
Total	**0.0382**	**0.0261**	**0.2946**	**8.6000e-004**	**0.0894**	**7.2000e-004**	**0.0901**	**0.0237**	**6.7000e-004**	**0.0244**		**85.7801**	**85.7801**	**2.5200e-003**		**85.8432**

3.4 Grading - 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					6.6091	0.0000	6.6091	3.3761	0.0000	3.3761			0.0000			0.0000
Off-Road	1.8271	20.2135	9.7604	0.0206		0.9158	0.9158		0.8425	0.8425		1,995.611 4	1,995.611 4	0.6454		2,011.747 0
Total	**1.8271**	**20.2135**	**9.7604**	**0.0206**	**6.6091**	**0.9158**	**7.5249**	**3.3761**	**0.8425**	**4.2186**		**1,995.611 4**	**1,995.611 4**	**0.6454**		**2,011.747 0**

3.4 Grading - 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	0.5362	17.0521	4.1883	0.0481	1.0981	0.0525	1.1506	0.3010	0.0502	0.3512		5,223.5979	5,223.5979	0.3735		5,232.9343
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	0.0477	0.0326	0.3683	1.0800e-003	0.1118	9.0000e-004	0.1127	0.0296	8.3000e-004	0.0305		107.2251	107.2251	3.1600e-003		107.3040
Total	**0.5839**	**17.0847**	**4.5566**	**0.0492**	**1.2099**	**0.0534**	**1.2633**	**0.3306**	**0.0511**	**0.3817**		**5,330.8230**	**5,330.8230**	**0.3766**		**5,340.2383**

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					2.5776	0.0000	2.5776	1.3167	0.0000	1.3167			0.0000			0.0000
Off-Road	0.2522	1.0927	10.9071	0.0206		0.0336	0.0336		0.0336	0.0336	0.0000	1,995.6114	1,995.6114	0.6454		2,011.7470
Total	**0.2522**	**1.0927**	**10.9071**	**0.0206**	**2.5776**	**0.0336**	**2.6112**	**1.3167**	**0.0336**	**1.3503**	**0.0000**	**1,995.6114**	**1,995.6114**	**0.6454**		**2,011.7470**

3.4 Grading - 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	0.5362	17.0521	4.1883	0.0481	1.0981	0.0525	1.1506	0.3010	0.0502	0.3512		5,223.5979	5,223.5979	0.3735		5,232.9343
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	0.0477	0.0326	0.3683	1.0800e-003	0.1118	9.0000e-004	0.1127	0.0296	8.3000e-004	0.0305		107.2251	107.2251	3.1600e-003		107.3040
Total	**0.5839**	**17.0847**	**4.5566**	**0.0492**	**1.2099**	**0.0534**	**1.2633**	**0.3306**	**0.0511**	**0.3817**		**5,330.8230**	**5,330.8230**	**0.3766**		**5,340.2383**

3.5 Building Construction - 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		
Off-Road	0.7576	7.3934	5.5786	9.9100e-003		0.3848	0.3848		0.3563	0.3563		944.5795	944.5795	0.2905		951.8411
Total	**0.7576**	**7.3934**	**5.5786**	**9.9100e-003**		**0.3848**	**0.3848**		**0.3563**	**0.3563**		**944.5795**	**944.5795**	**0.2905**		**951.8411**

3.5 Building Construction - 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	0.0000	0.0000	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	0.0734	2.2284	0.6458	5.7500e-003	0.1473	4.7100e-003	0.1520	0.0424	4.5100e-003	0.0469		614.8947	614.8947	0.0397		615.8871
Worker	0.4053	0.2772	3.1302	9.1500e-003	0.9501	7.6800e-003	0.9578	0.2520	7.0700e-003	0.2590		911.4134	911.4134	0.0268		912.0839
Total	**0.4787**	**2.5057**	**3.7759**	**0.0149**	**1.0974**	**0.0124**	**1.1097**	**0.2944**	**0.0116**	**0.3059**		**1,526.3081**	**1,526.3081**	**0.0665**		**1,527.9710**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2234	1.0421	6.0929	9.9100e-003		0.0425	0.0425		0.0425	0.0425	0.0000	944.5795	944.5795	0.2905		951.8411
Total	**0.2234**	**1.0421**	**6.0929**	**9.9100e-003**		**0.0425**	**0.0425**		**0.0425**	**0.0425**	**0.0000**	**944.5795**	**944.5795**	**0.2905**		**951.8411**

3.5 Building Construction - 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	0.0000	0.0000	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	0.0734	2.2284	0.6458	5.7500e-003	0.1473	4.7100e-003	0.1520	0.0424	4.5100e-003	0.0469		614.8947	614.8947	0.0397		615.8871
Worker	0.4053	0.2772	3.1302	9.1500e-003	0.9501	7.6800e-003	0.9578	0.2520	7.0700e-003	0.2590		911.4134	911.4134	0.0268		912.0839
Total	**0.4787**	**2.5057**	**3.7759**	**0.0149**	**1.0974**	**0.0124**	**1.1097**	**0.2944**	**0.0116**	**0.3059**		**1,526.3081**	**1,526.3081**	**0.0665**		**1,527.9710**

3.6 Paving - 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					
Off-Road	1.0633	10.6478	11.7756	0.0178		0.5826	0.5826		0.5371	0.5371		1,709.1107	1,709.1107	0.5417		1,722.6524
Paving	0.1808					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2441**	**10.6478**	**11.7756**	**0.0178**		**0.5826**	**0.5826**		**0.5371**	**0.5371**		**1,709.1107**	**1,709.1107**	**0.5417**		**1,722.6524**

3.6 Paving - 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	0.0000	0.0000	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	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.0715**	**0.0489**	**0.5524**	**1.6100e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2500e-003**	**0.0457**		**160.8377**	**160.8377**	**4.7300e-003**		**160.9560**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2691	1.2799	13.2821	0.0178		0.0424	0.0424		0.0424	0.0424	0.0000	1,709.1107	1,709.1107	0.5417		1,722.6524
Paving	0.1808					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4499**	**1.2799**	**13.2821**	**0.0178**		**0.0424**	**0.0424**		**0.0424**	**0.0424**	**0.0000**	**1,709.1107**	**1,709.1107**	**0.5417**		**1,722.6524**

3.6 Paving - 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	0.0000	0.0000	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	0.0715	0.0489	0.5524	1.6100e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2500e-003	0.0457		160.8377	160.8377	4.7300e-003		160.9560
Total	**0.0715**	**0.0489**	**0.5524**	**1.6100e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2500e-003**	**0.0457**		**160.8377**	**160.8377**	**4.7300e-003**		**160.9560**

3.7 Architectural Coating - 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					
Archit. Coating	45.0052					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**45.2241**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.7 Architectural Coating - 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	0.0000	0.0000	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	0.0811	0.0555	0.6260	1.8300e-003	0.1900	1.5400e-003	0.1916	0.0504	1.4100e-003	0.0518		182.2827	182.2827	5.3600e-003		182.4168
Total	**0.0811**	**0.0555**	**0.6260**	**1.8300e-003**	**0.1900**	**1.5400e-003**	**0.1916**	**0.0504**	**1.4100e-003**	**0.0518**		**182.2827**	**182.2827**	**5.3600e-003**		**182.4168**

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	45.0052					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**45.2241**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.7 Architectural Coating - 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	0.0000	0.0000	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	0.0811	0.0555	0.6260	1.8300e-003	0.1900	1.5400e-003	0.1916	0.0504	1.4100e-003	0.0518		182.2827	182.2827	5.3600e-003		182.4168
Total	**0.0811**	**0.0555**	**0.6260**	**1.8300e-003**	**0.1900**	**1.5400e-003**	**0.1916**	**0.0504**	**1.4100e-003**	**0.0518**		**182.2827**	**182.2827**	**5.3600e-003**		**182.4168**

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	lb/day										lb/day					
Archit. Coating	45.0052					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**45.2097**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

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	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	0.0761	0.0501	0.5766	1.7600e-003	0.1900	1.4900e-003	0.1915	0.0504	1.3700e-003	0.0518		175.8768	175.8768	4.8400e-003		175.9979
Total	**0.0761**	**0.0501**	**0.5766**	**1.7600e-003**	**0.1900**	**1.4900e-003**	**0.1915**	**0.0504**	**1.3700e-003**	**0.0518**		**175.8768**	**175.8768**	**4.8400e-003**		**175.9979**

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	45.0052					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**45.2097**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

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	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	0.0761	0.0501	0.5766	1.7600e-003	0.1900	1.4900e-003	0.1915	0.0504	1.3700e-003	0.0518		175.8768	175.8768	4.8400e-003		175.9979
Total	**0.0761**	**0.0501**	**0.5766**	**1.7600e-003**	**0.1900**	**1.4900e-003**	**0.1915**	**0.0504**	**1.3700e-003**	**0.0518**		**175.8768**	**175.8768**	**4.8400e-003**		**175.9979**

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	0.6710	3.3913	8.9209	0.0326	2.7859	0.0277	2.8137	0.7456	0.0259	0.7714		3,318.617 3	3,318.617 3	0.1737		3,322.959 5
Unmitigated	0.6710	3.3913	8.9209	0.0326	2.7859	0.0277	2.8137	0.7456	0.0259	0.7714		3,318.617 3	3,318.617 3	0.1737		3,322.959 5

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	325.80	383.40	351.60	1,154,021	1,154,021
Enclosed Parking with Elevator	0.00	0.00	0.00		
Library	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	325.80	383.40	351.60	1,154,021	1,154,021

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
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Library	16.60	8.40	6.90	52.00	43.00	5.00	44	44	12
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Enclosed Parking with Elevator	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Library	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Other Non-Asphalt Surfaces	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Parking Lot	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876

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	0.0251	0.2151	0.0966	1.3700e-003		0.0173	0.0173		0.0173	0.0173		273.6568	273.6568	5.2500e-003	5.0200e-003	275.2830
NaturalGas Unmitigated	0.0251	0.2151	0.0966	1.3700e-003		0.0173	0.0173		0.0173	0.0173		273.6568	273.6568	5.2500e-003	5.0200e-003	275.2830

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					
Apartments Mid Rise	2202.11	0.0238	0.2029	0.0864	1.3000e-003		0.0164	0.0164		0.0164	0.0164		259.0718	259.0718	4.9700e-003	4.7500e-003	260.6113
Enclosed Parking with Elevator	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
Library	123.973	1.3400e-003	0.0122	0.0102	7.0000e-005		9.2000e-004	9.2000e-004		9.2000e-004	9.2000e-004		14.5850	14.5850	2.8000e-004	2.7000e-004	14.6717
Other Non-Asphalt Surfaces	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
Parking Lot	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
Total		**0.0251**	**0.2151**	**0.0966**	**1.3700e-003**		**0.0173**	**0.0173**		**0.0173**	**0.0173**		**273.6568**	**273.6568**	**5.2500e-003**	**5.0200e-003**	**275.2830**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	2.20211	0.0238	0.2029	0.0864	1.3000e-003		0.0164	0.0164		0.0164	0.0164		259.0718	259.0718	4.9700e-003	4.7500e-003	260.6113
Enclosed Parking with Elevator	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
Library	0.123973	1.3400e-003	0.0122	0.0102	7.0000e-005		9.2000e-004	9.2000e-004		9.2000e-004	9.2000e-004		14.5850	14.5850	2.8000e-004	2.7000e-004	14.6717
Other Non-Asphalt Surfaces	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
Parking Lot	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
Total		**0.0251**	**0.2151**	**0.0966**	**1.3700e-003**		**0.0173**	**0.0173**		**0.0173**	**0.0173**		**273.6568**	**273.6568**	**5.2500e-003**	**5.0200e-003**	**275.2830**

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	1.7392	1.0525	5.3892	6.6200e-003		0.1079	0.1079		0.1079	0.1079	0.0000	1,279.5234	1,279.5234	0.0330	0.0233	1,287.2903
Unmitigated	1.7392	1.0525	5.3892	6.6200e-003		0.1079	0.1079		0.1079	0.1079	0.0000	1,279.5234	1,279.5234	0.0330	0.0233	1,287.2903

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1233					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3488					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1165	0.9953	0.4235	6.3500e-003		0.0805	0.0805		0.0805	0.0805	0.0000	1,270.5882	1,270.5882	0.0244	0.0233	1,278.1387
Landscaping	0.1506	0.0572	4.9657	2.6000e-004		0.0274	0.0274		0.0274	0.0274		8.9351	8.9351	8.6600e-003		9.1515
Total	**1.7392**	**1.0525**	**5.3892**	**6.6100e-003**		**0.1079**	**0.1079**		**0.1079**	**0.1079**	**0.0000**	**1,279.5234**	**1,279.5234**	**0.0330**	**0.0233**	**1,287.2903**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1233					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3488					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1165	0.9953	0.4235	6.3500e-003		0.0805	0.0805		0.0805	0.0805	0.0000	1,270.5882	1,270.5882	0.0244	0.0233	1,278.1387
Landscaping	0.1506	0.0572	4.9657	2.6000e-004		0.0274	0.0274		0.0274	0.0274		8.9351	8.9351	8.6600e-003		9.1515
Total	**1.7392**	**1.0525**	**5.3892**	**6.6100e-003**		**0.1079**	**0.1079**		**0.1079**	**0.1079**	**0.0000**	**1,279.5234**	**1,279.5234**	**0.0330**	**0.0233**	**1,287.2903**

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

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APPENDIX B: AERMOD Outputs

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Control Pathway

Dispersion Options

Titles

C:\Lakes\529-CutterWay_UNMIT_20201109\529-CutterWay_UNMIT_20201109.i

Dispersion Options

- [x] Regulatory Default
- [ ] Non-Default Options

Dispersion Coefficient

Rural

Output Type

- [x] Concentration
- [ ] Total Deposition (Dry & Wet)
- [ ] Dry Deposition
- [ ] Wet Deposition

Plume Depletion

- [ ] Dry Removal
- [ ] Wet Removal

Output Warnings

- [ ] No Output Warnings
- [ ] Non-fatal Warnings for Non-sequential Met Data

Pollutant / Averaging Time / Terrain Options

Pollutant Type

PM10

Averaging Time Options

Hours: [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 6 [ ] 8 [ ] 12 [ ] 24

[ ] Month [x] Period [ ] Annual

Exponential Decay

Option not available

Terrain Height Options

[ ] Flat [x] Elevated

SO: Meters
RE: Meters
TG: Meters

Flagpole Receptors

[ ] Yes [x] No

Default Height = 0.00 m

Optional Files

☐ Re-Start File	☐ Init File	☐ Multi-Year Analyses	☐ Event Input File	☒ Error Listing File

Detailed Error Listing File

Filename: 529-CutterWay_UNMIT_20201111.err

Meteorology Pathway

AERMOD

Met Input Data

Surface Met Data

Filename: C:\Users\sjremote\Desktop\AZUS_V9_ADJU\AZUS_v9.SFC

Format Type: Default AERMET format

Profile Met Data

Filename: C:\Users\sjremote\Desktop\AZUS_V9_ADJU\AZUS_v9.PFL

Format Type: Default AERMET format

Wind Speed

☐ Wind Speeds are Vector Mean (Not Scalar Means)

Wind Direction

Rotation Adjustment [deg]:

Potential Temperature Profile

Base Elevation above MSL (for Primary Met Tower): 10.00 [m]

Meteorological Station Data

Stations	Station No.	Year	X Coordinate [m]	Y Coordinate [m]	Station Name
Surface		2012			
Upper Air		2012			
On-Site		2012			

Data Period

Data Period to Process

Start Date: 1/1/2012 Start Hour: 1 End Date: 12/31/2016 End Hour: 24

Wind Speed Categories

Stability Category	Wind Speed [m/s]	Stability Category	Wind Speed [m/s]
A	1.54	D	8.23
B	3.09	E	10.8
C	5.14	F	No Upper Bound

Receptor Pathway

AERMOD

Receptor Networks

Note: Terrain Elavations and Flagpole Heights for Network Grids are in Page RE2 - 1 (If applicable)
Generated Discrete Receptors for Multi-Tier (Risk) Grid and Receptor Locations for Fenceline Grid are in Page RE3 - 1 (If applicable)

Discrete Receptors

Discrete Cartesian Receptors

Record Number	X-Coordinate [m]	Y-Coordinate [m]	Group Name (Optional)	Terrain Elevations	Flagpole Heights [m] (Optional)
1	414499.28	3771978.80	UCART1	130.35	
2	414549.28	3771978.80	UCART1	130.74	
3	414599.28	3771978.80	UCART1	131.54	
4	414649.28	3771978.80	UCART1	131.99	
5	414699.28	3771978.80	UCART1	132.11	
6	414749.28	3771978.80	UCART1	132.24	
7	414799.28	3771978.80	UCART1	132.32	
8	414849.28	3771978.80	UCART1	132.70	
9	414899.28	3771978.80	UCART1	133.75	
10	414949.28	3771978.80	UCART1	134.69	
11	414999.28	3771978.80	UCART1	135.09	
12	415049.28	3771978.80	UCART1	135.48	
13	415099.28	3771978.80	UCART1	135.86	
14	415149.28	3771978.80	UCART1	136.60	
15	415199.28	3771978.80	UCART1	137.07	
16	415249.28	3771978.80	UCART1	137.31	
17	415299.28	3771978.80	UCART1	137.72	
18	415349.28	3771978.80	UCART1	139.54	
19	415399.28	3771978.80	UCART1	139.39	
20	415449.28	3771978.80	UCART1	139.90	
21	415499.28	3771978.80	UCART1	140.47	
22	414499.28	3772028.80	UCART1	131.01	
23	414549.28	3772028.80	UCART1	131.39	
24	414599.28	3772028.80	UCART1	131.81	
25	414649.28	3772028.80	UCART1	132.80	
26	414699.28	3772028.80	UCART1	133.04	
27	414749.28	3772028.80	UCART1	132.98	
28	414799.28	3772028.80	UCART1	133.38	
29	414849.28	3772028.80	UCART1	134.26	
30	414899.28	3772028.80	UCART1	135.05	

31	414949.28	3772028.80	UCART1	135.49
32	414999.28	3772028.80	UCART1	136.28
33	415049.28	3772028.80	UCART1	136.59
34	415099.28	3772028.80	UCART1	136.36
35	415149.28	3772028.80	UCART1	137.52
36	415199.28	3772028.80	UCART1	138.04
37	415249.28	3772028.80	UCART1	137.80
38	415299.28	3772028.80	UCART1	138.10
39	415349.28	3772028.80	UCART1	139.71
40	415399.28	3772028.80	UCART1	139.68
41	415449.28	3772028.80	UCART1	140.24
42	415499.28	3772028.80	UCART1	140.88
43	414499.28	3772078.80	UCART1	131.27
44	414549.28	3772078.80	UCART1	131.53
45	414599.28	3772078.80	UCART1	132.08
46	414649.28	3772078.80	UCART1	132.96
47	414699.28	3772078.80	UCART1	133.17
48	414749.28	3772078.80	UCART1	133.22
49	414799.28	3772078.80	UCART1	133.64
50	414849.28	3772078.80	UCART1	134.22
51	414899.28	3772078.80	UCART1	134.78
52	414949.28	3772078.80	UCART1	135.25
53	414999.28	3772078.80	UCART1	135.82
54	415049.28	3772078.80	UCART1	136.35
55	415099.28	3772078.80	UCART1	136.62
56	415149.28	3772078.80	UCART1	137.50
57	415199.28	3772078.80	UCART1	137.98
58	415249.28	3772078.80	UCART1	138.14
59	415299.28	3772078.80	UCART1	138.55
60	415349.28	3772078.80	UCART1	139.75
61	415399.28	3772078.80	UCART1	140.34
62	415449.28	3772078.80	UCART1	140.60
63	415499.28	3772078.80	UCART1	141.28
64	414499.28	3772128.80	UCART1	131.39
65	414549.28	3772128.80	UCART1	131.92
66	414599.28	3772128.80	UCART1	132.58
67	414649.28	3772128.80	UCART1	132.85
68	414699.28	3772128.80	UCART1	133.17

69	414749.28	3772128.80	UCART1	133.58
70	414799.28	3772128.80	UCART1	133.88
71	414849.28	3772128.80	UCART1	134.48
72	414899.28	3772128.80	UCART1	134.95
73	414949.28	3772128.80	UCART1	135.44
74	414999.28	3772128.80	UCART1	135.96
75	415049.28	3772128.80	UCART1	136.45
76	415099.28	3772128.80	UCART1	136.96
77	415149.28	3772128.80	UCART1	137.46
78	415199.28	3772128.80	UCART1	137.98
79	415249.28	3772128.80	UCART1	138.48
80	415299.28	3772128.80	UCART1	138.98
81	415349.28	3772128.80	UCART1	139.49
82	415399.28	3772128.80	UCART1	140.05
83	415449.28	3772128.80	UCART1	140.73
84	415499.28	3772128.80	UCART1	141.13
85	414499.28	3772178.80	UCART1	131.91
86	414549.28	3772178.80	UCART1	132.36
87	414599.28	3772178.80	UCART1	132.91
88	414649.28	3772178.80	UCART1	133.17
89	414699.28	3772178.80	UCART1	133.48
90	414749.28	3772178.80	UCART1	134.21
91	414799.28	3772178.80	UCART1	134.34
92	414849.28	3772178.80	UCART1	134.49
93	414899.28	3772178.80	UCART1	134.91
94	414949.28	3772178.80	UCART1	135.42
95	414999.28	3772178.80	UCART1	136.12
96	415049.28	3772178.80	UCART1	136.79
97	415099.28	3772178.80	UCART1	137.32
98	415149.28	3772178.80	UCART1	137.90
99	415199.28	3772178.80	UCART1	138.17
100	415249.28	3772178.80	UCART1	138.71
101	415299.28	3772178.80	UCART1	139.96
102	415349.28	3772178.80	UCART1	140.43
103	415399.28	3772178.80	UCART1	140.76
104	415449.28	3772178.80	UCART1	141.14
105	415499.28	3772178.80	UCART1	141.75
106	414499.28	3772228.80	UCART1	132.22

107	414549.28	3772228.80	UCART1	132.60
108	414599.28	3772228.80	UCART1	133.36
109	414649.28	3772228.80	UCART1	134.35
110	414699.28	3772228.80	UCART1	134.13
111	414749.28	3772228.80	UCART1	134.59
112	414799.28	3772228.80	UCART1	134.90
113	414849.28	3772228.80	UCART1	134.48
114	414899.28	3772228.80	UCART1	134.99
115	414949.28	3772228.80	UCART1	135.46
116	414999.28	3772228.80	UCART1	136.04
117	415049.28	3772228.80	UCART1	137.88
118	415099.28	3772228.80	UCART1	138.05
119	415149.28	3772228.80	UCART1	138.05
120	415199.28	3772228.80	UCART1	138.22
121	415249.28	3772228.80	UCART1	138.77
122	415299.28	3772228.80	UCART1	140.34
123	415349.28	3772228.80	UCART1	140.60
124	415399.28	3772228.80	UCART1	140.95
125	415449.28	3772228.80	UCART1	141.39
126	415499.28	3772228.80	UCART1	142.02
127	414499.28	3772278.80	UCART1	132.74
128	414549.28	3772278.80	UCART1	133.20
129	414599.28	3772278.80	UCART1	133.40
130	414649.28	3772278.80	UCART1	134.24
131	414699.28	3772278.80	UCART1	134.58
132	414749.28	3772278.80	UCART1	134.84
133	414799.28	3772278.80	UCART1	134.95
134	414849.28	3772278.80	UCART1	135.04
135	414899.28	3772278.80	UCART1	135.01
136	414949.28	3772278.80	UCART1	135.50
137	414999.28	3772278.80	UCART1	136.04
138	415049.28	3772278.80	UCART1	137.79
139	415099.28	3772278.80	UCART1	138.03
140	415149.28	3772278.80	UCART1	138.07
141	415199.28	3772278.80	UCART1	138.51
142	415249.28	3772278.80	UCART1	138.95
143	415299.28	3772278.80	UCART1	140.62
144	415349.28	3772278.80	UCART1	140.98

Receptor Pathway

AERMOD

145	415399.28	3772278.80	UCART1	141.49
146	415449.28	3772278.80	UCART1	141.62
147	415499.28	3772278.80	UCART1	142.19
148	414499.28	3772328.80	UCART1	132.21
149	414549.28	3772328.80	UCART1	133.34
150	414599.28	3772328.80	UCART1	133.55
151	414649.28	3772328.80	UCART1	133.81
152	414699.28	3772328.80	UCART1	134.26
153	414749.28	3772328.80	UCART1	134.56
154	414799.28	3772328.80	UCART1	135.17
155	414849.28	3772328.80	UCART1	135.24
156	414899.28	3772328.80	UCART1	135.89
157	414949.28	3772328.80	UCART1	135.51
158	414999.28	3772328.80	UCART1	136.03
159	415049.28	3772328.80	UCART1	137.96
160	415099.28	3772328.80	UCART1	138.02
161	415149.28	3772328.80	UCART1	138.00
162	415199.28	3772328.80	UCART1	138.63
163	415249.28	3772328.80	UCART1	139.36
164	415299.28	3772328.80	UCART1	140.26
165	415349.28	3772328.80	UCART1	140.70
166	415399.28	3772328.80	UCART1	141.33
167	415449.28	3772328.80	UCART1	141.77
168	415499.28	3772328.80	UCART1	142.49
169	414499.28	3772378.80	UCART1	132.14
170	414549.28	3772378.80	UCART1	133.49
171	414599.28	3772378.80	UCART1	133.64
172	414649.28	3772378.80	UCART1	134.11
173	414699.28	3772378.80	UCART1	134.57
174	414749.28	3772378.80	UCART1	135.01
175	414799.28	3772378.80	UCART1	135.40
176	414849.28	3772378.80	UCART1	135.87
177	414899.28	3772378.80	UCART1	136.46
178	414949.28	3772378.80	UCART1	136.82
179	414999.28	3772378.80	UCART1	136.53
180	415049.28	3772378.80	UCART1	136.93
181	415099.28	3772378.80	UCART1	137.42
182	415149.28	3772378.80	UCART1	137.81

183	415199.28	3772378.80	UCART1	138.82
184	415249.28	3772378.80	UCART1	139.63
185	415299.28	3772378.80	UCART1	139.69
186	415349.28	3772378.80	UCART1	140.22
187	415399.28	3772378.80	UCART1	141.71
188	415449.28	3772378.80	UCART1	141.57
189	415499.28	3772378.80	UCART1	142.40
190	414499.28	3772428.80	UCART1	132.83
191	414549.28	3772428.80	UCART1	133.73
192	414599.28	3772428.80	UCART1	134.15
193	414649.28	3772428.80	UCART1	134.28
194	414699.28	3772428.80	UCART1	134.74
195	414749.28	3772428.80	UCART1	135.24
196	414799.28	3772428.80	UCART1	135.42
197	414849.28	3772428.80	UCART1	135.89
198	414899.28	3772428.80	UCART1	136.80
199	414949.28	3772428.80	UCART1	137.05
200	415049.28	3772428.80	UCART1	137.02
201	415099.28	3772428.80	UCART1	137.45
202	415149.28	3772428.80	UCART1	138.01
203	415199.28	3772428.80	UCART1	138.43
204	415249.28	3772428.80	UCART1	139.38
205	415299.28	3772428.80	UCART1	138.93
206	415349.28	3772428.80	UCART1	139.89
207	415399.28	3772428.80	UCART1	140.40
208	415449.28	3772428.80	UCART1	141.25
209	415499.28	3772428.80	UCART1	142.28
210	414499.28	3772478.80	UCART1	133.39
211	414549.28	3772478.80	UCART1	133.66
212	414599.28	3772478.80	UCART1	133.85
213	414649.28	3772478.80	UCART1	134.30
214	414699.28	3772478.80	UCART1	134.78
215	414749.28	3772478.80	UCART1	135.41
216	414799.28	3772478.80	UCART1	135.98
217	414849.28	3772478.80	UCART1	136.32
218	414899.28	3772478.80	UCART1	137.41
219	414949.28	3772478.80	UCART1	137.27
220	415049.28	3772478.80	UCART1	137.92

221	415099.28	3772478.80	UCART1	137.87
222	415149.28	3772478.80	UCART1	138.16
223	415199.28	3772478.80	UCART1	138.36
224	415249.28	3772478.80	UCART1	138.34
225	415299.28	3772478.80	UCART1	138.44
226	415349.28	3772478.80	UCART1	139.17
227	415399.28	3772478.80	UCART1	140.45
228	415449.28	3772478.80	UCART1	141.02
229	415499.28	3772478.80	UCART1	142.61
230	414499.28	3772528.80	UCART1	133.74
231	414549.28	3772528.80	UCART1	133.98
232	414599.28	3772528.80	UCART1	134.38
233	414649.28	3772528.80	UCART1	134.87
234	414699.28	3772528.80	UCART1	135.16
235	414749.28	3772528.80	UCART1	135.85
236	414799.28	3772528.80	UCART1	136.07
237	414849.28	3772528.80	UCART1	136.63
238	414899.28	3772528.80	UCART1	137.08
239	414949.28	3772528.80	UCART1	137.40
240	415049.28	3772528.80	UCART1	137.86
241	415099.28	3772528.80	UCART1	138.23
242	415149.28	3772528.80	UCART1	138.60
243	415199.28	3772528.80	UCART1	138.70
244	415249.28	3772528.80	UCART1	138.90
245	415299.28	3772528.80	UCART1	139.04
246	415349.28	3772528.80	UCART1	139.27
247	415399.28	3772528.80	UCART1	140.36
248	415449.28	3772528.80	UCART1	140.69
249	415499.28	3772528.80	UCART1	142.52
250	414499.28	3772578.80	UCART1	133.77
251	414549.28	3772578.80	UCART1	134.31
252	414599.28	3772578.80	UCART1	134.57
253	414649.28	3772578.80	UCART1	135.27
254	414699.28	3772578.80	UCART1	135.99
255	414749.28	3772578.80	UCART1	136.68
256	414799.28	3772578.80	UCART1	136.99
257	414849.28	3772578.80	UCART1	136.79
258	414899.28	3772578.80	UCART1	136.94

259	414949.28	3772578.80	UCART1	137.22
260	414999.28	3772578.80	UCART1	137.48
261	415049.28	3772578.80	UCART1	138.03
262	415099.28	3772578.80	UCART1	138.37
263	415149.28	3772578.80	UCART1	139.49
264	415199.28	3772578.80	UCART1	139.67
265	415249.28	3772578.80	UCART1	139.78
266	415299.28	3772578.80	UCART1	139.75
267	415349.28	3772578.80	UCART1	139.97
268	415399.28	3772578.80	UCART1	141.15
269	415449.28	3772578.80	UCART1	140.42
270	415499.28	3772578.80	UCART1	142.31
271	414499.28	3772628.80	UCART1	134.30
272	414549.28	3772628.80	UCART1	134.88
273	414599.28	3772628.80	UCART1	135.47
274	414649.28	3772628.80	UCART1	135.87
275	414699.28	3772628.80	UCART1	136.59
276	414749.28	3772628.80	UCART1	136.51
277	414799.28	3772628.80	UCART1	136.68
278	414849.28	3772628.80	UCART1	136.59
279	414899.28	3772628.80	UCART1	136.89
280	414949.28	3772628.80	UCART1	136.90
281	414999.28	3772628.80	UCART1	137.21
282	415049.28	3772628.80	UCART1	137.65
283	415099.28	3772628.80	UCART1	138.29
284	415149.28	3772628.80	UCART1	138.95
285	415199.28	3772628.80	UCART1	140.55
286	415249.28	3772628.80	UCART1	140.98
287	415299.28	3772628.80	UCART1	141.32
288	415349.28	3772628.80	UCART1	141.43
289	415399.28	3772628.80	UCART1	141.64
290	415449.28	3772628.80	UCART1	140.70
291	415499.28	3772628.80	UCART1	141.57
292	414499.28	3772678.80	UCART1	134.30
293	414549.28	3772678.80	UCART1	134.84
294	414599.28	3772678.80	UCART1	135.45
295	414649.28	3772678.80	UCART1	135.84
296	414699.28	3772678.80	UCART1	136.10

Receptor Pathway

AERMOD

297	414749.28	3772678.80	UCART1	136.29
298	414799.28	3772678.80	UCART1	136.43
299	414849.28	3772678.80	UCART1	136.64
300	414899.28	3772678.80	UCART1	136.82
301	414949.28	3772678.80	UCART1	136.92
302	414999.28	3772678.80	UCART1	137.84
303	415049.28	3772678.80	UCART1	138.23
304	415099.28	3772678.80	UCART1	138.44
305	415149.28	3772678.80	UCART1	138.83
306	415199.28	3772678.80	UCART1	139.90
307	415249.28	3772678.80	UCART1	141.14
308	415299.28	3772678.80	UCART1	141.50
309	415349.28	3772678.80	UCART1	141.73
310	415399.28	3772678.80	UCART1	141.68
311	415449.28	3772678.80	UCART1	141.68
312	415499.28	3772678.80	UCART1	143.27
313	414499.28	3772728.80	UCART1	133.68
314	414549.28	3772728.80	UCART1	134.31
315	414599.28	3772728.80	UCART1	135.31
316	414649.28	3772728.80	UCART1	136.15
317	414699.28	3772728.80	UCART1	136.17
318	414749.28	3772728.80	UCART1	136.67
319	414799.28	3772728.80	UCART1	136.90
320	414849.28	3772728.80	UCART1	137.29
321	414899.28	3772728.80	UCART1	137.37
322	414949.28	3772728.80	UCART1	137.16
323	414999.28	3772728.80	UCART1	138.46
324	415049.28	3772728.80	UCART1	138.83
325	415099.28	3772728.80	UCART1	139.09
326	415149.28	3772728.80	UCART1	139.04
327	415199.28	3772728.80	UCART1	139.31
328	415249.28	3772728.80	UCART1	141.16
329	415299.28	3772728.80	UCART1	141.91
330	415349.28	3772728.80	UCART1	141.77
331	415399.28	3772728.80	UCART1	141.92
332	415449.28	3772728.80	UCART1	142.85
333	415499.28	3772728.80	UCART1	143.27
334	414499.28	3772778.80	UCART1	134.39

335	414549.28	3772778.80	UCART1	134.78
336	414599.28	3772778.80	UCART1	135.18
337	414649.28	3772778.80	UCART1	136.19
338	414699.28	3772778.80	UCART1	136.28
339	414749.28	3772778.80	UCART1	136.79
340	414799.28	3772778.80	UCART1	137.32
341	414849.28	3772778.80	UCART1	137.73
342	414899.28	3772778.80	UCART1	138.44
343	414949.28	3772778.80	UCART1	138.70
344	414999.28	3772778.80	UCART1	139.07
345	415049.28	3772778.80	UCART1	139.48
346	415099.28	3772778.80	UCART1	139.83
347	415149.28	3772778.80	UCART1	140.27
348	415199.28	3772778.80	UCART1	141.00
349	415249.28	3772778.80	UCART1	140.86
350	415299.28	3772778.80	UCART1	141.44
351	415349.28	3772778.80	UCART1	141.95
352	415399.28	3772778.80	UCART1	142.35
353	415449.28	3772778.80	UCART1	143.14
354	415499.28	3772778.80	UCART1	143.78
355	414499.28	3772828.80	UCART1	134.07
356	414549.28	3772828.80	UCART1	134.36
357	414599.28	3772828.80	UCART1	134.78
358	414649.28	3772828.80	UCART1	135.90
359	414699.28	3772828.80	UCART1	136.26
360	414749.28	3772828.80	UCART1	136.66
361	414799.28	3772828.80	UCART1	137.04
362	414849.28	3772828.80	UCART1	137.63
363	414899.28	3772828.80	UCART1	137.91
364	414949.28	3772828.80	UCART1	138.87
365	414999.28	3772828.80	UCART1	139.06
366	415049.28	3772828.80	UCART1	139.84
367	415099.28	3772828.80	UCART1	140.23
368	415149.28	3772828.80	UCART1	140.16
369	415199.28	3772828.80	UCART1	140.93
370	415249.28	3772828.80	UCART1	141.36
371	415299.28	3772828.80	UCART1	141.48
372	415349.28	3772828.80	UCART1	141.84

373	415399.28	3772828.80	UCART1	142.35
374	415449.28	3772828.80	UCART1	142.99
375	415499.28	3772828.80	UCART1	143.79
376	414499.28	3772878.80	UCART1	134.52
377	414549.28	3772878.80	UCART1	135.01
378	414599.28	3772878.80	UCART1	135.53
379	414649.28	3772878.80	UCART1	136.32
380	414699.28	3772878.80	UCART1	136.61
381	414749.28	3772878.80	UCART1	136.82
382	414799.28	3772878.80	UCART1	137.50
383	414849.28	3772878.80	UCART1	138.03
384	414899.28	3772878.80	UCART1	138.59
385	414949.28	3772878.80	UCART1	138.97
386	414999.28	3772878.80	UCART1	139.60
387	415049.28	3772878.80	UCART1	140.24
388	415099.28	3772878.80	UCART1	140.45
389	415149.28	3772878.80	UCART1	140.42
390	415199.28	3772878.80	UCART1	141.31
391	415249.28	3772878.80	UCART1	141.77
392	415299.28	3772878.80	UCART1	141.73
393	415349.28	3772878.80	UCART1	142.20
394	415399.28	3772878.80	UCART1	142.62
395	415449.28	3772878.80	UCART1	142.92
396	415499.28	3772878.80	UCART1	143.45
397	414499.28	3772928.80	UCART1	134.86
398	414549.28	3772928.80	UCART1	135.21
399	414599.28	3772928.80	UCART1	135.56
400	414649.28	3772928.80	UCART1	135.98
401	414699.28	3772928.80	UCART1	136.29
402	414749.28	3772928.80	UCART1	136.62
403	414799.28	3772928.80	UCART1	137.13
404	414849.28	3772928.80	UCART1	137.69
405	414899.28	3772928.80	UCART1	138.22
406	414949.28	3772928.80	UCART1	138.68
407	414999.28	3772928.80	UCART1	139.18
408	415049.28	3772928.80	UCART1	139.75
409	415099.28	3772928.80	UCART1	140.21
410	415149.28	3772928.80	UCART1	140.55

411	415199.28	3772928.80	UCART1	141.14
412	415249.28	3772928.80	UCART1	142.07
413	415299.28	3772928.80	UCART1	141.98
414	415349.28	3772928.80	UCART1	142.31
415	415399.28	3772928.80	UCART1	142.28
416	415449.28	3772928.80	UCART1	142.85
417	415499.28	3772928.80	UCART1	144.02
418	414499.28	3772978.80	UCART1	135.36
419	414549.28	3772978.80	UCART1	135.46
420	414599.28	3772978.80	UCART1	136.13
421	414649.28	3772978.80	UCART1	136.24
422	414699.28	3772978.80	UCART1	137.15
423	414749.28	3772978.80	UCART1	137.51
424	414799.28	3772978.80	UCART1	137.97
425	414849.28	3772978.80	UCART1	138.39
426	414899.28	3772978.80	UCART1	139.05
427	414949.28	3772978.80	UCART1	139.56
428	414999.28	3772978.80	UCART1	139.99
429	415049.28	3772978.80	UCART1	140.46
430	415099.28	3772978.80	UCART1	140.85
431	415149.28	3772978.80	UCART1	140.93
432	415199.28	3772978.80	UCART1	141.57
433	415249.28	3772978.80	UCART1	142.41
434	415299.28	3772978.80	UCART1	142.30
435	415349.28	3772978.80	UCART1	142.97
436	415399.28	3772978.80	UCART1	143.08
437	415449.28	3772978.80	UCART1	142.94
438	415499.28	3772978.80	UCART1	144.19
439	415045.06	3772420.17		137.05
440	415045.06	3772442.38		137.29
441	415054.58	3772465.12		137.85
442	415058.46	3772497.03		137.71
443	415221.63	3772638.97		140.77
444	415211.26	3772659.91		140.70
445	415336.73	3772609.93		141.28
446	415081.61	3772338.01		138.12
447	415020.02	3772340.00		137.80
448	415118.96	3772338.01		138.15

Plant Boundary Receptors

Receptor Groups

Record Number	Group ID	Group Description
1	UCART1	Receptors generated from Uniform Cartesian Grid

Results Summary

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PM10 - Concentration - Source Group: Y1_ALL

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		0.06021	ug/m^3	415049.28	3772528.80	137.86	0.00	137.86	

PM10 - Concentration - Source Group: Y1_OFF

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		0.00030	ug/m^3	415058.46	3772497.03	137.71	0.00	137.71	

PM10 - Concentration - Source Group: Y1_ON

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		0.06001	ug/m^3	415049.28	3772528.80	137.86	0.00	137.86	

PM10 - Concentration - Source Group: Y1_ON-N

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		0.05149	ug/m^3	415049.28	3772528.80	137.86	0.00	137.86	

Results Summary

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PM10 - Concentration - Source Group: Y1_ON-S

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		0.04039	ug/m^3	415045.06	3772442.38	137.29	0.00	137.29	

Results Summary

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PM10 - Concentration - Source Group: Y1_ALL

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		0.54311	ug/m^3	415049.28	3772528.80	137.86	0.00	137.86	

PM10 - Concentration - Source Group: Y1_OFF

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		0.00030	ug/m^3	415058.46	3772497.03	137.71	0.00	137.71	

PM10 - Concentration - Source Group: Y1_ON

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		0.54290	ug/m^3	415049.28	3772528.80	137.86	0.00	137.86	

PM10 - Concentration - Source Group: Y1_ON-N

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		0.46585	ug/m^3	415049.28	3772528.80	137.86	0.00	137.86	

Results Summary

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PM10 - Concentration - Source Group: Y1_ON-S

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		0.36536	ug/m^3	415045.06	3772442.38	137.29	0.00	137.29	

Source Pathway - Source Inputs

AERMOD

Polygon Area Sources

Source Type: AREA POLY

Source: PAREA1 (Y1_ON-N)

Base Elevation (Optional)	Release Height [m]	Emission Rate [g/ (s-m^2)]	Initial Vertical Dim. [m]	Number of Vertices (or sides)	X Coordinate for Vertices [m]	Y Coordinate for Vertices [m]
137.71	5.00	1.98E-8		6	414960.36	3772546.88
		1.98E-8			415035.35	3772546.27
		1.98E-8			415035.35	3772508.04
		1.98E-8			415032.06	3772501.11
		1.98E-8			415024.97	3772481.60
		1.98E-8			414958.94	3772482.46

Source Type: AREA POLY

Source: PAREA2 (Y1_ON-S)

Base Elevation (Optional)	Release Height [m]	Emission Rate [g/ (s-m^2)]	Initial Vertical Dim. [m]	Number of Vertices (or sides)	X Coordinate for Vertices [m]	Y Coordinate for Vertices [m]
137.49	5.00	1.98E-8		7	414958.83	3772482.55
		1.98E-8			415024.80	3772481.41
		1.98E-8			415021.56	3772461.71
		1.98E-8			415020.59	3772415.33
		1.98E-8			415016.65	3772411.20
		1.98E-8			415011.88	3772409.61
		1.98E-8			414959.07	3772420.64

Source Pathway - Source Inputs

AERMOD

Line Area Sources

Source Type: LINE AREA

Source: ARLN1 (Y1_OFF)

Length of Side [m]	Emission Rate [g/ s]	Initial Vertical Dimension [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
5.18	3.77E-10		415428.12	3772346.62	141.51	4.12
			415363.63	3772343.86	140.82	4.12
			415329.82	3772344.08	140.46	4.12
			415303.41	3772347.37	140.11	4.12
			415129.11	3772380.65	137.69	4.12
			415031.36	3772399.63	136.75	4.12
			415030.48	3772419.31	136.89	4.12
			415031.49	3772464.67	137.25	4.12
			415040.74	3772497.85	137.56	4.12
			415052.90	3772519.23	137.62	4.12
			415108.23	3772576.79	138.28	4.12
			415163.49	3772632.71	139.12	4.12
			415157.88	3772656.40	139.01	4.12
			415130.96	3772662.38	138.32	4.12
			414643.53	3772669.93	135.50	4.12

Source Pathway - Source Inputs

AERMOD

Area Sources Generated from Line Sources

Line Source ID	Area Source ID	X Coordinate [m]	Y Coordinate [m]	Release Height [m]	Length of Side [m]	Angle [deg]	Base Elevation [m]	Initial Sigma Z [m]
ARLN1	A0000001	415428.01	3772349.20	4.12	32.27	177.55	141.56	
	A0000002	415395.77	3772347.83	4.12	32.27	177.55	141.30	
	A0000003	415363.65	3772346.45	4.12	33.81	180.38	140.80	
	A0000004	415330.14	3772346.65	4.12	26.61	187.10	140.50	
	A0000005	415303.90	3772349.92	4.12	44.36	190.81	140.15	
	A0000006	415260.32	3772358.24	4.12	44.36	190.81	139.67	
	A0000007	415216.75	3772366.56	4.12	44.36	190.81	138.98	
	A0000008	415173.17	3772374.88	4.12	44.36	190.81	138.38	
	A0000009	415129.61	3772383.19	4.12	49.79	190.99	137.72	
	A0000010	415080.73	3772392.69	4.12	49.79	190.99	137.24	
	A0000011	415033.95	3772399.75	4.12	19.69	267.44	136.75	
	A0000012	415033.07	3772419.25	4.12	45.37	271.29	136.85	
	A0000013	415033.99	3772463.97	4.12	34.45	285.58	137.19	
	A0000014	415043.00	3772496.57	4.12	24.60	299.62	137.50	
	A0000015	415054.77	3772517.44	4.12	39.92	313.87	137.63	
	A0000016	415082.43	3772546.22	4.12	39.92	313.87	137.93	
	A0000017	415110.07	3772574.97	4.12	39.31	314.66	138.31	
	A0000018	415137.70	3772602.93	4.12	39.31	314.66	138.61	
	A0000019	415166.01	3772633.31	4.12	24.34	256.68	139.07	
	A0000020	415158.44	3772658.93	4.12	27.57	192.52	138.95	
	A0000021	415131.00	3772664.97	4.12	48.75	180.89	138.28	
	A0000022	415082.26	3772665.72	4.12	48.75	180.89	137.78	
	A0000023	415033.52	3772666.48	4.12	48.75	180.89	137.15	
	A0000024	414984.77	3772667.23	4.12	48.75	180.89	136.84	

Source Pathway - Source Inputs

AERMOD

Line Source ID	Area Source ID	X Coordinate [m]	Y Coordinate [m]	Release Height [m]	Length of Side [m]	Angle [deg]	Base Elevation [m]	Initial Sigma Z [m]
ARLN1	A0000025	414936.03	3772667.99	4.12	48.75	180.89	136.63	
	A0000026	414887.29	3772668.74	4.12	48.75	180.89	136.53	
	A0000027	414838.54	3772669.50	4.12	48.75	180.89	136.39	
	A0000028	414789.80	3772670.25	4.12	48.75	180.89	136.26	
	A0000029	414741.06	3772671.01	4.12	48.75	180.89	136.12	
	A0000030	414692.31	3772671.76	4.12	48.75	180.89	135.86	

Source Pathway - Source Inputs

AERMOD

Polygon Area Sources

Source Type: AREA POLY

Source: PAREA1 (Y1_ON-N)

Base Elevation (Optional)	Release Height [m]	Emission Rate [g/ (s-m^2)]	Initial Vertical Dim. [m]	Number of Vertices (or sides)	X Coordinate for Vertices [m]	Y Coordinate for Vertices [m]
137.71	5.00	1.79E-7		6	414960.36	3772546.88
		1.79E-7			415035.35	3772546.27
		1.79E-7			415035.35	3772508.04
		1.79E-7			415032.06	3772501.11
		1.79E-7			415024.97	3772481.60
		1.79E-7			414958.94	3772482.46

Source Type: AREA POLY

Source: PAREA2 (Y1_ON-S)

Base Elevation (Optional)	Release Height [m]	Emission Rate [g/ (s-m^2)]	Initial Vertical Dim. [m]	Number of Vertices (or sides)	X Coordinate for Vertices [m]	Y Coordinate for Vertices [m]
137.49	5.00	1.79E-7		7	414958.83	3772482.55
		1.79E-7			415024.80	3772481.41
		1.79E-7			415021.56	3772461.71
		1.79E-7			415020.59	3772415.33
		1.79E-7			415016.65	3772411.20
		1.79E-7			415011.88	3772409.61
		1.79E-7			414959.07	3772420.64

Source Pathway - Source Inputs

AERMOD

Line Area Sources

Source Type: LINE AREA

Source: ARLN1 (Y1_OFF)

Length of Side [m]	Emission Rate [g/ s]	Initial Vertical Dimension [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
5.18	3.77E-10		415428.12	3772346.62	141.51	4.12
			415363.63	3772343.86	140.82	4.12
			415329.82	3772344.08	140.46	4.12
			415303.41	3772347.37	140.11	4.12
			415129.11	3772380.65	137.69	4.12
			415031.36	3772399.63	136.75	4.12
			415030.48	3772419.31	136.89	4.12
			415031.49	3772464.67	137.25	4.12
			415040.74	3772497.85	137.56	4.12
			415052.90	3772519.23	137.62	4.12
			415108.23	3772576.79	138.28	4.12
			415163.49	3772632.71	139.12	4.12
			415157.88	3772656.40	139.01	4.12
			415130.96	3772662.38	138.32	4.12
			414643.53	3772669.93	135.50	4.12

Source Pathway - Source Inputs

AERMOD

Area Sources Generated from Line Sources

Line Source ID	Area Source ID	X Coordinate [m]	Y Coordinate [m]	Release Height [m]	Length of Side [m]	Angle [deg]	Base Elevation [m]	Initial Sigma Z [m]
ARLN1	A0000001	415428.01	3772349.20	4.12	32.27	177.55	141.56	
	A0000002	415395.77	3772347.83	4.12	32.27	177.55	141.30	
	A0000003	415363.65	3772346.45	4.12	33.81	180.38	140.80	
	A0000004	415330.14	3772346.65	4.12	26.61	187.10	140.50	
	A0000005	415303.90	3772349.92	4.12	44.36	190.81	140.15	
	A0000006	415260.32	3772358.24	4.12	44.36	190.81	139.67	
	A0000007	415216.75	3772366.56	4.12	44.36	190.81	138.98	
	A0000008	415173.17	3772374.88	4.12	44.36	190.81	138.38	
	A0000009	415129.61	3772383.19	4.12	49.79	190.99	137.72	
	A0000010	415080.73	3772392.69	4.12	49.79	190.99	137.24	
	A0000011	415033.95	3772399.75	4.12	19.69	267.44	136.75	
	A0000012	415033.07	3772419.25	4.12	45.37	271.29	136.85	
	A0000013	415033.99	3772463.97	4.12	34.45	285.58	137.19	
	A0000014	415043.00	3772496.57	4.12	24.60	299.62	137.50	
	A0000015	415054.77	3772517.44	4.12	39.92	313.87	137.63	
	A0000016	415082.43	3772546.22	4.12	39.92	313.87	137.93	
	A0000017	415110.07	3772574.97	4.12	39.31	314.66	138.31	
	A0000018	415137.70	3772602.93	4.12	39.31	314.66	138.61	
	A0000019	415166.01	3772633.31	4.12	24.34	256.68	139.07	
	A0000020	415158.44	3772658.93	4.12	27.57	192.52	138.95	
	A0000021	415131.00	3772664.97	4.12	48.75	180.89	138.28	
	A0000022	415082.26	3772665.72	4.12	48.75	180.89	137.78	
	A0000023	415033.52	3772666.48	4.12	48.75	180.89	137.15	
	A0000024	414984.77	3772667.23	4.12	48.75	180.89	136.84	

Source Pathway - Source Inputs

AERMOD

Line Source ID	Area Source ID	X Coordinate [m]	Y Coordinate [m]	Release Height [m]	Length of Side [m]	Angle [deg]	Base Elevation [m]	Initial Sigma Z [m]
ARLN1	A0000025	414936.03	3772667.99	4.12	48.75	180.89	136.63	
	A0000026	414887.29	3772668.74	4.12	48.75	180.89	136.53	
	A0000027	414838.54	3772669.50	4.12	48.75	180.89	136.39	
	A0000028	414789.80	3772670.25	4.12	48.75	180.89	136.26	
	A0000029	414741.06	3772671.01	4.12	48.75	180.89	136.12	
	A0000030	414692.31	3772671.76	4.12	48.75	180.89	135.86	

Source Pathway

AERMOD

Building Downwash Information

Option not in use

Emission Rate Units for Output

For Concentration

Unit Factor:	1E6
Emission Unit Label:	GRAMS/SEC
Concentration Unit Label:	MICROGRAMS/M**3

Source Groups

Source Group ID	List of Sources in Group (Source Range or Single Sources)
Y1_ON-S	PAREA2
Y1_ON-N	PAREA1
Y1_ON	PAREA1 PAREA2
Y1_OFF	ARLN1
Y1_ALL	PAREA1 PAREA2 ARLN1

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APPENDIX C: Health Risk Calculations

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Appendix C: Construction Health Risk Assessment Calculations (DPM)
529 Cutter Way HRA
Unmitigated Health Risk Calculations - Residential

METHODOLOGY

Dose (Air) = Cair x DBR x A x EF x CF

Where:		
	Cair	Chemical concentration in air (µg/m^3)
	DBR:	Daily breathing rate (L/kg-day)
	A:	Inhalation adsorption factor (unitless)
	EF:	Exposure Frequency, days at home / days in year (unitless)
	CF:	10^$^{-6}$ Conversion Factor (m^3/L and mg/µg)

Cancer Risk (per million) = Dose (Air) x CPF x ASF x (ED/AT) x FAH x 1,000,000

Where:		
	Dose:	Dose of chemical in the air (µg/m3)
	CPF:	Cancer Potency Factor (mg/kg-day)$^{-1}$
	ASF:	Age Sensitivity Factor
	ED:	Exposure Duration (years)
	AT:	Averaging Time for lifetime cancer risks
	FAH:	Fraction of daily time spent at home / school

Risk Parameter Values by Age Bin

Variable			**Residential Age Bin**		
	3rd Trimester	**0-2 Years**	**2-16 Years**	**16-30 Years**	**16-70 Years**
DBR	361	1090	572	261	233
A	1	1	1	1	1
EF	0.96	0.96	0.96	0.96	0.96
CF	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06
CPF	1.1	1.1	1.1	1.1	1.1
ASF	10	10	3	1	1
ED	0.25	2	14	14	54
AT	70	70	70	70	70
FAH	1	1	1	0.73	0.73

AERMOD Modeled DPM Concentrations (PMI/MEIR)

		PMI			**MEIR**	
	Conc.	X	Y	Conc.	X	Y
Year 1	0.54311	415049.28	3772528.8	0.49299	415058.46	3772497.03

Risk Assessment Year 1 MEIR

Scenario	AERMOD DPM Conc.	Chronic Hazard Quotient
Year 1	0.49299	0.098598

Year 1 Dose @ Year 1 and 2 MEIR

Age Group	Cair x	BR	A	EF	CF		Dose
3rd Trimester	0.49299	361	1	0.96	1.00E-06	=	1.71E-04
0-2 Years	0.49299	1090	1	0.96	1.00E-06	=	5.15E-04
2-16 Years	0.49299	572	1	0.96	1.00E-06	=	2.70E-04
16-30 Years	0.49299	261	1	0.96	1.00E-06	=	1.23E-04
30-70 Years	0.49299	233	1	0.96	1.00E-06	=	1.10E-04

Year 1 Excess Risk at Year 1 and 2 MEIR

Age Group	Dose	CPF	ASF	ED	AT	FAH	Conversion	Risk
3rd Trimester	1.71E-04	1.1	10	0.25	70	1	1,000,000	6.7
0-2 Years	5.15E-04	1.1	10	0.75	70	1	1,000,000	60.7
0-2 Years	5.15E-04	1.1	10	1.00	70	1	1,000,000	81.0
2-16 Years	2.70E-04	1.1	3	1.00	70	1	1,000,000	12.7
16-30 Years	1.23E-04	1.1	1	1.00	70	0.73	1,000,000	1.4
30-70 Years	1.10E-04	1.1	1	1.00	70	0.73	1,000,000	1.3

Total Excess Risk at Year 1 and 2 MEIR

	Infant	Child < 2	Child 2<x<16	Adult 16<x<30	Adult 30<x<70
Year 1	67.4	81.0	12.7	1.4	1.3
Total	67.4	81.0	12.7	1.4	1.3

Note: Infant exposure includes infant and child (0.75 years exposure) in Year 1

Appendix C: Construction Health Risk Assessment Calculations (DPM)
529 Cutter Way HRA
Mitigated Health Risk Calculations - Residential

METHODOLOGY

Dose (Air) = Cair x DBR x A x EF x CF

Where:
- Cair Chemical concentration in air (µg/m^3)
- DBR: Daily breathing rate (L/kg-day)
- A: Inhalation adsorption factor (unitless)
- EF: Exposure Frequency, days at home / days in year (unitless)
- CF: 10^$^{-6}$ Conversion Factor (m^3/L and mg/µg)

Cancer Risk (per million) = Dose (Air) x CPF x ASF x (ED/AT) x FAH x 1,000,000

Where:
- Dose: Dose of chemical in the air (µg/m3)
- CPF: Cancer Potency Factor (mg/kg-day)$^{-1}$
- ASF: Age Sensitivity Factor
- ED: Exposure Duration (years)
- AT: Averaging Time for lifetime cancer risks
- FAH: Fraction of daily time spent at home / school

Risk Parameter Values by Age Bin

Variable	Residential Age Bin				
	3rd Trimester	**0-2 Years**	**2-16 Years**	**16-30 Years**	**16-70 Years**
DBR	361	1090	572	261	233
A	1	1	1	1	1
EF	0.96	0.96	0.96	0.96	0.96
CF	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06
CPF	1.1	1.1	1.1	1.1	1.1
ASF	10	10	3	1	1
ED	0.25	2	14	14	54
AT	70	70	70	70	70
FAH	1	1	1	0.73	0.73

AERMOD Modeled DPM Concentrations (PMI/MEIR)

	PMI			MEIR		
	Conc.	X	Y	Conc.	X	Y
Year 1	0.06021	415049.28	3772528.8	0.05476	415058.46	3772497.03

<u>Risk Assessment Year 1 MEIR</u>

Scenario	AERMOD DPM Conc.	Chronic Hazard Quotient
Year 1	0.05476	0.010952

Year 1 Dose @ Year 1 and 2 MEIR

Age Group	Cair x	BR	A	EF	CF		Dose
3rd Trimester	0.05476	361	1	0.96	1.00E-06	=	1.90E-05
0-2 Years	0.05476	1090	1	0.96	1.00E-06	=	5.72E-05
2-16 Years	0.05476	572	1	0.96	1.00E-06	=	3.00E-05
16-30 Years	0.05476	261	1	0.96	1.00E-06	=	1.37E-05
30-70 Years	0.05476	233	1	0.96	1.00E-06	=	1.22E-05

Year 1 Excess Risk at Year 1 and 2 MEIR

Age Group	Dose	CPF	ASF	ED	AT	FAH	Conversion	Risk
3rd Trimester	1.90E-05	1.1	10	0.25	70	1	1,000,000	0.7
0-2 Years	5.72E-05	1.1	10	0.75	70	1	1,000,000	6.7
0-2 Years	5.72E-05	1.1	10	1.00	70	1	1,000,000	9.0
2-16 Years	3.00E-05	1.1	3	1.00	70	1	1,000,000	1.4
16-30 Years	1.37E-05	1.1	1	1.00	70	0.73	1,000,000	0.2
30-70 Years	1.22E-05	1.1	1	1.00	70	0.73	1,000,000	0.1

Total Excess Risk at Year 1 and 2 MEIR

	Infant	Child < 2	Child 2<x<16	Adult 16<x<30	Adult 30<x<70
Year 1	7.5	9.0	1.4	0.2	0.1
Total	7.5	9.0	1.4	0.2	0.1

Note: Infant exposure includes infant and child (0.75 years exposure) in Year 1

Appendix C: Construction Health Risk Assessment Calculations (DPM)
529 Cutter Way
Unmitigated Health Risk Calculations - Student

Dose (Air) = Cair x (BR/BW) x A x EF x CF

Where:	Cair	Chemical concentration in air (µg/m^3)
	DBR:	Daily breathing rate (L/kg-day)
	A:	Inhalation adsorption factor (unitless)
	EF:	Exposure Frequency, days at school / days in year (unitless)
	CF:	$10^{\wedge -6}$ Conversion Factor (m^3/L and mg/µg)

Cancer Risk (per million) = Dose (Air) x CPF x ASF x (ED/AT) x FAH x 1,000,000

Where:	Dose:	Dose of chemical in the air (µg/m3)
	CPF:	Cancer Potency Factor $(\text{mg/kg-day})^{-1}$
	ASF:	Age Sensitivity Factor
	ED:	Exposure Duration (years)
	AT:	Averaging Time for lifetime cancer risks
	FAH:	Fraction of daily time spent at school

General Calculation Values

A	1	
EF (0-2)	0.49	(Assumes receptor would be at school 180 days out of 365 days/year)
EF (2-16)	0.49	(Assumes receptor would be at school 180 days out of 365 days/year)
CPF	1.1	Factor is for diesel particulate matter
AT	70	Years

Risk Calculation Values by Age Bin (School - 10 Hour Period)

Variable	Age Bin	
	2-9 Years	2-16 Years
DBR	640	520
ASF	3	3
ED	7	14
FAH	0.42	0.42

Receptor Location

Conc.	X	Y
0.08573	415020.02	3772340.00

Construction Risk Calculations: Child (School inhalataion based on 1 year of exposure)

Age Group	Cair x	BR	A	EF	CF		Dose
2-9 Years	0.08573	640	1	0.49	1.00E-06	=	2.69E-05
2-16 Years	0.08573	520	1	0.49	1.00E-06	=	2.18E-05

Age Group	Dose	CPF	ASF	ED	AT	FAH	Conversion	Risk
2-9 Years	2.69E-05	1.1	3	1	70	0.42	1,000,000	0.5
2-16 Years	2.18E-05	1.1	3	1	70	0.42	1,000,000	0.4

Chronic Hazard Quotient ---> 0.017

Appendix C: Construction Health Risk Assessment Calculations (DPM)
529 Cutter Way
Mitigated Health Risk Calculations - Student

Dose (Air) = Cair x (BR/BW) x A x EF x CF

Where:

Cair	Chemical concentration in air (µg/m^3)
DBR:	Daily breathing rate (L/kg-day)
A:	Inhalation adsorption factor (unitless)
EF:	Exposure Frequency, days at school / days in year (unitless)
CF:	$10^{\wedge -6}$ Conversion Factor (m^3/L and mg/µg)

Cancer Risk (per million) = Dose (Air) x CPF x ASF x (ED/AT) x FAH x 1,000,000

Where:

Dose:	Dose of chemical in the air (µg/m3)
CPF:	Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$
ASF:	Age Sensitivity Factor
ED:	Exposure Duration (years)
AT:	Averaging Time for lifetime cancer risks
FAH:	Fraction of daily time spent at school

General Calculation Values

A	1	
EF (0-2)	0.49	(Assumes receptor would be at school 180 days out of 365 days/year)
EF (2-16)	0.49	(Assumes receptor would be at school 180 days out of 365 days/year)
CPF	1.1	Factor is for diesel particulate matter
AT	70	Years

Risk Calculation Values by Age Bin (School - 10 Hour Period)

Variable	Age Bin	
	2-9 Years	**2-16 Years**
DBR	640	520
ASF	3	3
ED	7	14
FAH	0.42	0.42

Receptor Location

Conc.	X	Y
0.00957	415020.02	3772340.00

Construction Risk Calculations: Child (School inhalataion based on 1 year of exposure)

Age Group	Cair x	BR	A	EF	CF		Dose
2-9 Years	0.00957	640	1	0.49	1.00E-06	=	3.00E-06
2-16 Years	0.00957	520	1	0.49	1.00E-06	=	2.44E-06

Age Group	Dose	CPF	ASF	ED	AT	FAH	Conversion	Risk
2-9 Years	3.00E-06	1.1	3	1	70	0.42	1,000,000	0.1
2-16 Years	2.44E-06	1.1	3	1	70	0.42	1,000,000	0.0

Chronic Hazard Quotient ---> **0.002**

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529 Cutter Way Apartments Project

Energy and Greenhouse Gas Analysis Report

September 24, 2021

CEQA Lead Agency:

City of Covina
Planning Department
125 East College Street
Covina, California 91723

Project Applicant:

Faith Community Church, LLC
529 Cutter Way
Covina, California 91723

Prepared by:

MIG

1650 Spruce Street, Suite 106
Riverside, California 92507

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Appendices

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	Full Phrase or Description
§	Section
°C	Degrees Celsius
°F	Degrees Fahrenheit
AB	Assembly Bill
ACC	Advanced Clean Cars
ADA	American With Disabilities Act
APN	Assessor Parcel Number
ASTM	American Society for Testing and Materials
BAU	Business As Usual
BOE	Board of Equalization
Btu	British Thermal Unit
CalEEMod	California Emissions Estimator Model
Cal-EPA	California Environmental Protection Agency
CalGreen Code	California Green Building Standards Code
CARB	California Air Resources Board
CAFE	Corporate Average Fuel Economy
CAT	Climate Action Team
CBSC	California Building Standards Commission
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH_4	Methane
CI	Carbon Intensity
City	City of Covina
CNRA	California Natural Resources Agency
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
EISA	Energy Independency and Security Act
GHG	Greenhouse Gas
GWh	Gigawatt-hours
GWP	Global Warming Potential
HFC	Hydrofluorocarbon
HHDT	Heavy Heavy-Duty Trucks

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	Full Phrase or Description
HQTA	High Quality Transit Area
IPCC	Intergovernmental Panel on Climate Change
kW	Kilowatt
LCFS	Low Carbon Fuel Standard
LDA	Light Duty Auto
LDT1 / LDT2	Light Duty Trucks
LEV	Low-Emissions Vehicle
MPO	Metropolitan Planning Organization
MT	Metric Ton
$MTCO_2e$	Metric Ton of Carbon Dioxide Equivalent
NHTSA	National Highway Safety Administration
N_2O	Nitrous Oxide
NMA	Neighborhood Mobility Area
PFC	Perfluorocarbon
PGA	Priority Growth Area
ppm	Parts Per Million
PRC	Public Resources Code
PSI	Pounds Per Square Inch
PV	Photovoltaic
Report	Energy and Greenhouse Gas Impact Analysis Report
RFS	Renewable Fuel Standards
RPS	Renewable Portfolio Standard
RTP	Regional Transportation Plan
SAFE	Safer Affordable Fuel-Efficient Vehicles Rule
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCS	Sustainable Communities Strategy
SF_6	Sulfur Hexafluoride
SoCalGas	Southern California Gas Company
SOI	Sphere of Influence
TPA	Transit Priority Area

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	Full Phrase or Description
U.S.	United States
U.S. EIA	United State Energy Information Administration
U.S. EPA	United States Environmental Protection Agency
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds

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EXECUTIVE SUMMARY

This Energy and Greenhouse Gas Impact Analysis Report (Report) evaluates and documents the potential greenhouse gas (GHG) and energy impacts associated with the construction and operation of the proposed 529 Mixed-Use Multi-Family Project (proposed Project) located at 529 Cutter Way in the City of Covina, California 91723.

This Report is consistent with the guidance and recommendations contained in the South Coast Air Quality Management District's (SCAQMD) California Environmental Quality Act (CEQA) Air Quality Handbook, as amended and supplemented (SCAQMD, 2018). This Report is intended to assist the CEQA Lead Agency (City of Covina) with its review of potential Project-related GHG and energy impacts in compliance with the State CEQA Statutes and Guidelines, particularly in respect to the energy and GHG issues identified in Appendix G of the State CEQA Guidelines.

S.1 PROPOSED PROJECT DESCRIPTION

The proposed Project includes a mixed-use development consisting of 60 residential units, 49 of which will be traditional multi-family units and 11 of which will be "Live/Work" units, located in twelve buildings on a 2.24-acre site in the City of Covina, California. The Project site is comprised of a single parcel (APN# 8434-013-010) zoned (M-1) "Light Manufacturing" and designated "General Industrial" in the City's General Plan. The Project will include a Zone Change and Planned Community Development (PCD) Overlay. The development is proposed for two distinct uses – a traditional multi-family residential area and a mixed-use Live/Work area. The proposed units will be arranged into building blocks that will vary in height and number of stories (1 to 4 stories), with taller units located towards the rear of the property and decreasing in height as they reach the street property lines. Each proposed building will have varying heights depending on the types of units in each building block. The Project will also include associated landscaping improvements as well as surface parking and a subterranean parking garage. The Project site contains an approximately 2,647-square foot single-family home that was built in 1990. The single-family home is currently used as a temporary meeting place for the Faith Community Church of Covina and is not currently utilized by any persons as a residence.

S.2 POTENTIAL ENERGY IMPACTS

The proposed Project would result in electricity, gasoline, and diesel fuel consumption during construction activities, and electricity, natural gas, gasoline, diesel, and natural gas consumption during operation. Energy consumption during construction would not be wasteful, unnecessary, or inefficient, since these energy demands are necessary components of development activities. Once operational, the proposed Project would use energy in an efficient way because of building arrangement and other features associated with Project operation (e.g., photovoltaic system, tankless-water heaters, etc.). The proposed Project would not conflict with or obstruct a state or local plan adopted for the purposes of reducing energy consumption, and would be consistent with the City's Energy Action Plan. The proposed Project would not result in a significant energy impact.

S.3 POTENTIAL GHG EMISSION IMPACTS

The proposed Project's GHG emissions were estimated using the California Emissions Estimator Model (CalEEMod). The Project's GHG emissions were found to be below the SCAQMD's 2020 GHG significance threshold for all land uses (3,000 metric tons of carbon dioxide equivalents, or $MTCO_2e$) and 2030 Project-specific GHG emission goal of 1,800 $MTCO_2e$/yr, which demonstrates progress toward the State's 2030 GHG emissions reduction goal.

S.4 CONSISTENCY WITH APPLICABLE PLANS

The proposed Project would not result in population or employment growth or associated emissions that conflict with the SCAQMD's 2016 Air Quality Management Plan; California Air Resources Board (CARB) 2017 Climate Change Scoping Plan; Connect SoCal, the Southern California Association of Government's (SCAG) Regional Transportation Plan/Sustainable Communities Strategy for 2020-2045; or the City's Energy Action Plan. These plans generally call on state, regional, and local government entities to establish state, regional, community wide, and municipal programs to promote energy efficiency, reduce vehicle trips and/or reduce air pollutant emissions, including GHG emissions. The proposed Project would not interfere with any state, regional, or local planning processes or the implementation of any state, regional, or local policies intended to promote energy efficiency and reduce vehicle trips and/or emissions.

1 INTRODUCTION

Faith Community Church, LLC has submitted an application to the City of Covina for a Zone Change and Planned Community Development (PCD) Overlay, Environmental Review, and Site and Architectural Review for its proposed 529 Cutter Way mixed-use, multi-family residential project (proposed Project). The proposed Project would be located on a single parcel containing an unoccupied single-family home, in the western portion of the City of Covina, in Los Angeles County. It would involve the construction and operation of a new mixed-use development consisting of 49 traditional multi-family residential dwelling units and 11 non-traditional "Live/Work" units consisting of a combination of residential floor space and non-residential floor space intended for light industrial operations such as arts and crafts, 3D printing, textiles, research and development, telecommunications, etc.

MIG, Inc. (MIG) has prepared this Energy and Greenhouse Gas Analysis Report (Report) to evaluate the potential construction- and operations-related energy and greenhouse gas (GHG) impacts of the proposed Project. MIG has prepared this report using Project-specific information contained in Faith Community Church's entitlement applications, as well as supplemental information provided by California Recyclers and the South Coast Air Quality Management District (SCAQMD). Where necessary, MIG has supplemented available information with standardized sources of information, such as model assumptions pertaining to construction equipment activity levels. In general, this Report evaluates the potential "worst-case" conditions associated with the proposed Project's construction and operational emissions levels to ensure a conservative (i.e., likely to overestimate) assessment of potential energy and GHG impacts are presented.

This Report is intended for use by the City of Covina to assess the potential energy and GHG impacts of the proposed Project in compliance with the California Environmental Quality Act (CEQA; PRC §21000 et seq.) and the State CEQA Guidelines (14 CCR §15000 et seq.), particularly in respect to energy and GHG issues identified in Appendix G of the State CEQA Guidelines.

1.1 REPORT ORGANIZATION

This Report is organized as follows:

- Chapter 1, Introduction, explains the contents of this Report and its intended use.
- Chapter 2, Proposed Project Description, provides an overview of the construction and operational activities associated with the proposed Project.
- Chapter 3, Energy Setting and Regulatory Framework, provides pertinent background information on energy, describes the existing energy setting of the proposed Project, and provides information on the federal, state, and local regulations that govern the proposed Project's energy setting and potential energy impacts.
- Chapter 4, GHG Setting and Regulatory Framework, provides pertinent background information on GHG and climate change, describes the existing GHG setting of the proposed Project, and provides information on the federal, state, and local regulations that govern the proposed Project's GHG setting and potential GHG impacts.
- Chapter 5, Energy Impact Assessment, identifies the potential construction and operational energy impacts of the proposed Project and evaluates these effects in accordance with Appendix G of the State CEQA Guidelines.

- Chapter 6, GHG Impact Assessment, identifies the potential construction and operational GHG impacts of the proposed Project and evaluates these effects in accordance with Appendix G of the State CEQA Guidelines.
- Chapter 7, Report Preparers and References, list the individuals involved, and the references used, in the preparation of this Report.

2 PROPOSED PROJECT DESCRIPTION

Faith Community Church is proposing to develop the 529 Cutter Way mixed-use, multi-family residential project (proposed Project). The proposed Project would consist of the construction and operation of 12 new buildings containing 60 multi-family residential units, 11 units of which will be Live/Work units, on existing industrial land in the western part of the City of Covina. The Project would support mostly multi-family residential operations with some light industrial and commercial operations.

2.1 PROJECT LOCATION

The proposed Project would be located at 529 Cutter Way in the City of Covina (Assessor Parcel Number (APN) 8434-013-010; see Figure 2-1: Aerial View of Project Site). The Project site consists of approximately 2.24-acres of land currently developed with an unoccupied single-family home and classified as (M-1) Light Manufacturing by the City's Zoning Code and designated as General Industrial by the City's General Plan (City of Covina, 2000).

2.1.1 SURROUNDING LAND USES

In general, the proposed Project site is surrounded by industrial, commercial, and institutional land uses in the cities of Covina and West Covina. The site is bound on the north by industrial and commercial uses, on the east by Cutter Way, on the south by San Bernardino Road, and on the west by industrial and commercial uses. To the west and north of the site are light industrial/industrial office park and commercial uses. A multi-family residential apartment complex is located east of the site on the opposite side of Cutter Way. Las Palmas Middle School is located to the north of this apartment complex (northeast of the Project site). On the south side of San Bernardino Road are light industrial/industrial park and commercial uses in the City of Covina and the Jubilee Christian School[1] in the City of West Covina. The underlying land use zoning and General Plan designations for the Project area are similar to the Project site, generally consisting of Light Manufacturing/General Industrial (M-1), with areas to the east consisting of Multi-Family/High-Density Residential (RD-3000). Interstate 10 (I-10) is located approximately 1.15 miles south of the site. Las Palmas Middle School is located 145 feet (0.03 miles) northeast of the site and Jubilee Christian School is located 100 feet (0.02 miles) southeast of the site.

2.2 EXISTING SITE DESCRIPTION AND OPERATIONS

The proposed Project site has historically been used for residential uses. Currently, the site contains an approximately 2,647-square foot single-family home built in 1990 along with associated landscaping and parking. The single-family home is not currently occupied by any residents, and the home is used as a temporary gathering place for Faith Community Church of Covina. Under the proposed Project, Faith Community Church would demolish the single-family home and remove the landscaping and parking.

[1] As of July 2021, the warehouse used for Jubilee Christian School has been proposed for reuse as an Amazon last-mile delivery center (City of West Covina 2021).

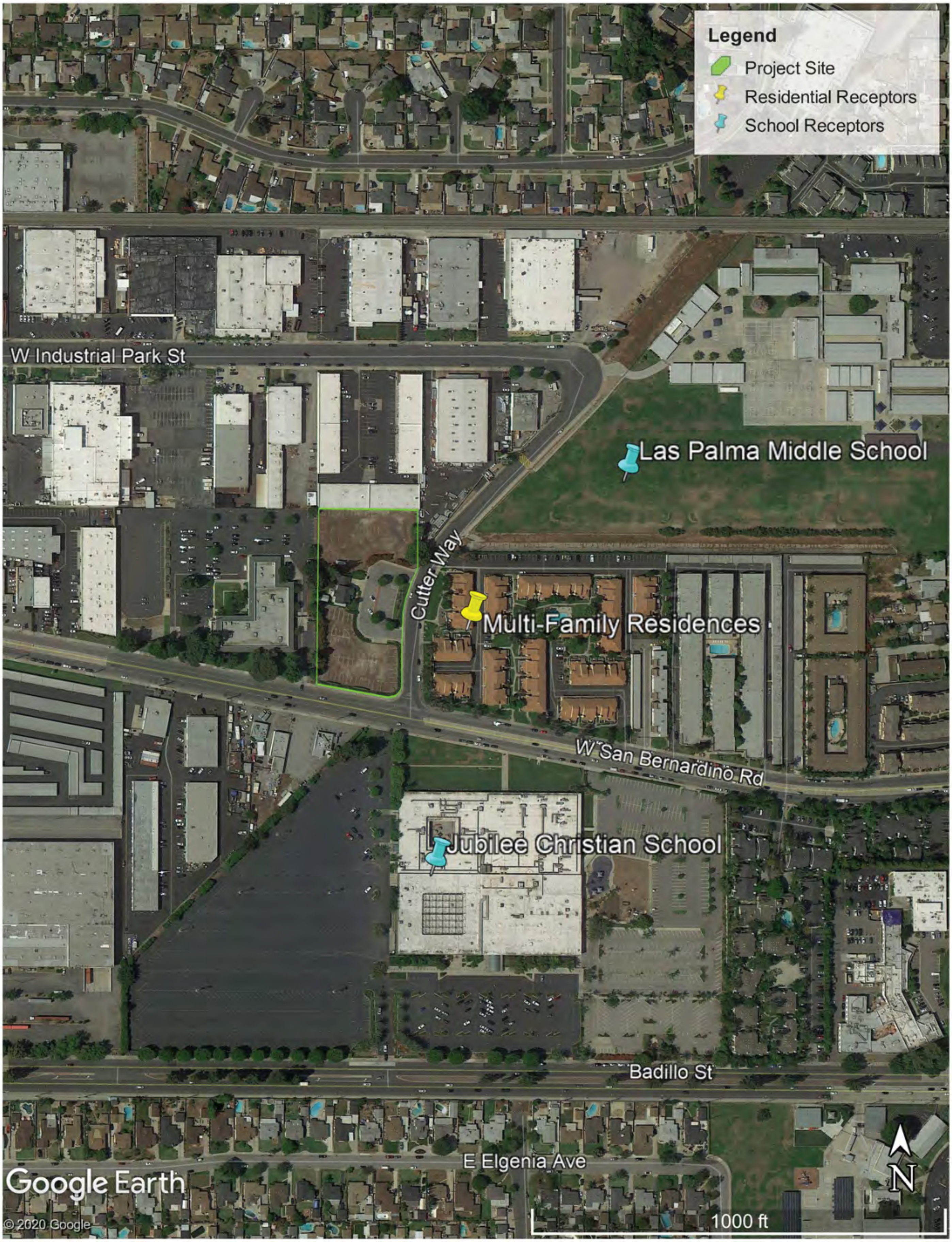

Figure 2-1 Aerial View of the Project Site

529 Cutter Way Apartments Project: Energy and Greenhouse Gas Impact Analysis

2.3 PROPOSED SITE DEVELOPMENT AND OPERATIONS

The proposed Project would involve the development of 12 buildings containing 60 multi-family residential units, 11 of which will be Live/Work units. The Project will also include both surface and subterranean parking and landscaping areas (see Figure 2-2: Site Plan). Each proposed building will be comprised of building blocks. While each proposed building will have varying levels of building blocks, each building will have a maximum number of stories/height of either three (3) stories/35-feet or four (4) stories/45-feet. An outdoor courtyard with amenities will be centrally located within the property, and a community center will be incorporated into Building 6, which is located on the north side of Building 6 and abuts the courtyard area. Construction of the proposed Project is anticipated to begin at the beginning of 2021, at the earliest, and take approximately 12 months to complete. In total, the proposed Project would result in the development of approximately 63,869 square feet of residential building space, an additional approximately 2,500 square feet of building space for shared work, approximately 32,389 square feet of landscaping, and approximately 30,112 square feet of hardscape. The proposed project would also accommodate an approximately 35,411 square foot subterranean parking garage.

2.3.1 SITE LAYOUT

The site plan calls for the proposed buildings to be arranged in a north-south direction to best capture solar energy and natural lighting for energy conservation with the outdoor courtyard centrally located. Monumental stairs (with ADA provisions) from the public way to the courtyard are introduced. The buildings would front Cutter Way and San Bernardino Road but would be setback at least approximately 10 and 12 feet from these roadways, respectively. The subterranean parking would be centrally located below the middle of the site and the surface parking would be located along the northern edge of the property. A combination freight and passenger elevator from the garage floor level to the courtyard level is included for the ease of movement of people and goods.

2.3.2 NEW RESIDENTIAL BUILDINGS DESCRIPTIONS

As discussed above, the Project will include 12 buildings ranging in height with each building having a maximum height of three (3) or four (4) stories (Logos Architecture, 2020). Some buildings will include both the traditional multi-family residential units and the non-traditional Live/Work units, while others will only include the traditional multi-family residential units. The floor area sizes for the dwelling units are planned to range from 650 square feet for the one-bedroom units to over 1,200 square feet for the three-bedroom units. The Live/Work units will be combination units composed of dwelling space on the upper floors and work space on the lower floors connected by an interior staircase.

The apartment dwelling units are to be supplied with gas, water, and heating via a private service system with separate utility meters in order to recoup initial start-up costs from tenants. The Project will include rooftop solar photovoltaic (PV) and solar thermal electricity and hot water heating systems. No central plant is required for this development. Smaller individual transformers serving two or three buildings will be used for cost efficiency. Transformers will be installed on 8ft by 8ft concrete pads throughout the site and within 100 feet of property lines. Site lighting fixtures will be pole and wall mounted and installed throughout the site for security, illumination and aesthetics. Each individual apartment unit will be equipped with energy-saving and space-saving devices such as tankless water closets, tankless water heaters, and air condenser units for heating and cooling interior spaces. These items are proposed for the convenience, efficiency, and maintenance that these products will offer to both landlord and tenant. In addition, each dwelling unit will be equipped with washer and dryer and natural gas kitchen appliances.

Figure 2-2 Site Plan

2.3.3 PARKING AND SITE ACCESS

On-site parking will be provided primarily through a partial subterranean parking structure and surface parking near the northern portion of the site. Direct vehicular access to the subterranean parking structure will be provided via a 48-foot wide driveway entrance at the eastern edge of the site on Cutter Way. This driveway will also allow for access to the surface parking in the northern portion of the site. A secondary access point will be provided via a 28-foot wide driveway at the southwestern corner of the site on San Bernardino Road. The proposed Project will provide a total of 127 parking stalls for tenants, guests, property maintenance staff, and employees/visitors of the Live/Work units. The parking stalls will be divided between a partial (about 5 feet in depth) subterranean parking structure beneath the site and a surface parking area located at the north end of the Project site. The proposed subterranean parking garage will include 102 parking stalls, two of which will be ADA accessible. The proposed surface parking area will include 25 parking stalls, two of which will be ADA accessible stalls.

2.3.3.1 Emergency Fire / Secondary Site Access

In consultation with the Los Angeles County Fire Department, Faith Community Church is providing a fire access road located around the perimeter of the site which will be accessible from both Cutter Way and San Bernardino Road. This access road will make for easy access to any dwelling unit.

2.3.4 OTHER SITE IMPROVEMENTS

The proposed Project would include other site improvements, including new perimeter fencing and new landscaping. Landscaped areas will have approximately 32,389 square feet land coverage. Project plans call for the development of a 6-foot concrete masonry unit (CMU) wall to be constructed along the Project site's western property line.

2.3.5 OPERATIONAL TRIP GENERATION ESTIMATES

Once, operational, the proposed Project would generate trips to and from the site from the newly proposed residential land uses. The proposed Project's trip generation potential, as provided for in the Project's Traffic Impact Study prepared by Linscott, Law & Greenspan, is summarized in Table 2-1 (Linscott, Law & Greenspan 2020).

Table 2-1: Project Trip Generation Rates

Vehicle Type	Throughput		AM Peak Hour Volumes	PM Peak Hour Volumes	Average Daily Traffic (ADT)
	Quantity	Unit			
Apartment	49	Unit	18	22	266
Live/Work	11	Unit	4	5	60
Total	-	-	22	27	326
Source: Linscott, Law & Greenspan 2020, modified by MIG.					

2.3.6 PROJECT CONSTRUCTION

The proposed Project would involve the demolition of the existing, approximately 2,647 square-foot single-family home, and the construction of the 12 mixed-use, multi-family residential buildings. Construction phasing associated the proposed Project is anticipated to include demolition, site preparation, grading, building construction, paving, and architectural coating. The Project will require the export (i.e., off-haul) of approximately 7,532 cubic yards of soil. Construction activities are anticipated to begin in early 2021. Based on default assumptions generated by the California Emissions Estimator Model (CalEEMod), which was used to estimate emissions associated with the proposed Project, construction activities are anticipated to last approximately 12 months. The proposed Project anticipated to require varying types of equipment throughout the various construction phases including, but not limited to: bulldozers, backhoes, loaders, graders, cranes and forklifts. Table 2-2 summarizes the proposed Project's construction phasing and the typical pieces of heavy-duty, off-road construction equipment that would be required during each phase.

Table 2-2: Construction Activity, Duration, and Typical Equipment

Construction Activity	Duration (Days)[A]	Typical Equipment Used[B]
Demolition	5	Concrete/Industrial Saw, Dozer, Backhoe
Site Preparation	3	Grader, Scraper, Backhoe
Grading	15	Grader, Dozer, Backhoe
Building Construction	220	Crane, Forklift, Generator, Backhoe, Welder
Paving	10	Paver, Roller, Paving Equipment
Architectural Coating	10	Air Compressor

Source: MIG, 2020 (See Appendix A).

(A) Days refers to total active workdays in the construction phase, not calendar days.

(B) The typical equipment list does not reflect all equipment that would be used during the construction phase. Not all equipment would operate eight hours per day each workday.

3 ENERGY SETTING AND REGULATORY FRAMEWORK

This chapter provides information on the environmental and regulatory energy setting of the proposed Project. Information on existing energy conditions, and federal, state, and local energy standards and goals was obtained from the United States Environmental Protection Agency (U.S. EPA), United States Energy Information Administration (U.S. EIA) the California Energy Commission (CEC), Southern California Edison (SCE), and Sothern California Gas Company (SoCalGas).

3.1 ENVIRONMENTAL SETTING

Energy is primarily categorized into three areas: electricity, natural gas, and fuels used for transportation. According to the U.S. EIA, California is the most populous state in the United States (U.S.), representing 12 percent of the total national population, has the largest economy, and is second only to Texas in total energy consumption. However, California has one of the lowest per capita energy consumption levels in the U.S. This is a result of California's mild climate, extensive efforts to increase energy efficiency, and implementation of alternative technologies. California leads the nation in electricity generation from solar, geothermal, and biomass resources (U.S. EIA, 2018).

3.1.1 ELECTRICITY

In 2018, almost half of California's net electricity generation was from renewable resources, including hydropower (U.S. EIA, 2019). In 2018 the California electric system used 285,488 gigawatt-hours (GWh) of electricity, nearly 68% of which (194,842 GWh) was produced in-state (CEC, 2020a). Los Angeles County consumed approximately 68,486 GWh of electricity, about 22% of the state's electricity consumption (CEC, 2020c). The non-residential sector made up approximately 69% of County-wide consumption while the residential sector made up approximately 31% of County-wide consumption (CEC, 2020c).

SCE is the electricity utility provider in Covina. In the 2018 fiscal year, SCE sold approximately 84,654 million kWh of electricity (SCE, 2020a); approximately 48% of the electricity that SCE delivered to customers came from carbon-free resources, including solar energy (approximately 16%), wind energy (approximately 11%), and geothermal energy (approximately 6%) (SCE, 2020b).

3.1.2 NATURAL GAS

California accounts for less than 1% of total U.S. natural gas reserves and production; however, almost two-thirds of California households use natural gas for home heating (U.S. EIA, 2020a). In 2018, California consumed about 12,666 million therms of natural gas. Approximately 35% of natural gas was consumed by the residential sector. Los Angeles County consumed approximately 2,921 million therms of natural gas in the same year, accounting for approximately 23% of statewide consumption. The residential sector made up approximately 38% of County-wide consumption (CEC, 2020d).

SoCalGas provides natural gas service to the City of Covina. SoCalGas is the principal distributor of natural gas in Southern California and provides natural gas for residential, commercial, and industrial markets. The annual natural gas sale to all markets in 2018 was approximately 1.264 million kiloBritish Thermal Units (kBtu)[2] (CEC, 2020e).

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[2] One therm is equal to 100,000 British Thermal Unit (Btu), or 100 kBtu.

3.1.3 TRANSPORTATION

California's transportation sector consumed 201.9 million Btu of energy per capita in 2018, which ranked 48th in the nation (U.S. EIA, 2020b). Most gasoline and diesel fuel sold in California for motor vehicles is refined in California to meet state-specific formulations required by CARB.

According to the Board of Equalization (BOE), statewide taxable sales figures indicate a total of 15,471 million gallons of gasoline and 3,074 million gallons of diesel fuel were sold in 2018 (CEC, 2020b; CDFTA, 2018). Although exact estimates are not available by county, retail fuel outlet survey data indicates San Bernardino County accounted for approximately 23.5% and 14.2% of total statewide gasoline and diesel sales, respectively, in 2018 (CEC, 2019d).

3.2 ENERGY REGULATORY SETTING

3.2.1 FEDERAL ENERGY REGULATIONS

3.2.1.1 Federal Energy Policy and Conservation Act

In 1975, Congress enacted the Federal Energy and Policy Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the act, the National Highway Traffic Safety Administration (NHTSA) is responsible for establishing additional vehicle standards.

3.2.1.2 Energy Independence and Security Act of 2007

On December 19, 2007, the Energy Independence and Security Act of 2007 was signed into law. In addition to setting increased Corporate Average Fuel Economy (CAFE) standards for motor vehicles, the act also includes the following provisions related to energy efficiency:

- Renewable fuel standards (RFS)
- Appliance and lighting efficiency standards
- Building energy efficiency

The federal legislation requires ever-increasing levels of renewable fuels to replace petroleum. The U.S. EPA is responsible for developing and implementing regulations to ensure transportation fuel sold in the United State contains a minimum volume of renewable fuel. The RFS program regulations were developed in collaboration with refiners, renewable fuel produces, and other stakeholders.

The RFS program was created under the Energy Policy Act of 2005 and established the first renewable fuel volume mandate in the United States. As required under the act, the original RFS program (RFS1) required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. Under the Energy Independence and Security Act of 2007 (EISA), the RFS program was expanded in several key ways that laid the foundation for achieving significant reductions of GHG emissions through the use of renewable fuels, for reducing imported petroleum, and for encouraging the development and expansion of the nation's renewable fuels sector. The updated program is referred to as RFS2 and includes the following:

- EISA expanding the RFS program to include diesel, in addition to gasoline;
- EISA increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022;
- EISA established new categories of renewable fuel and set separate volume requirements for each one; and

- EISA required the U.S. EPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHG than the petroleum fuel it replaces (U.S. EPA, 2015).

Additional provisions of the EISA address energy savings in government and public institutions, promoting research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

3.2.1.3 Federal Vehicle Standards

In 2009, the NHTSA issued a final rule regarding fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011; and, in 2010, the U.S. EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016.

In 2010, President Obama issued a memorandum directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards projected to achieve 163 grams per mile of carbon dioxide (CO_2) in model year 2025, on an average industry fleetwide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021.

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the U.S. EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018. The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the U.S. EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6% to 23% over the 2010 baselines.

In August 2016, the U.S. EPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018–2027 for certain trailers, and model years 2021–2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. The final standards are expected to lower CO_2 emissions by approximately 1.1 billion metric tons (MT) and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program (U.S. EPA and NHTSA, 2016).

In August 2018, The U.S. EPA and NHTSA released a notice of proposed rulemaking called Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (SAFE Vehicles Rule).

On September 27, 2019, the U.S. EPA and the NHTSA published the SAFE Vehicles Rule Part One: One National Program." (84 Fed. Reg. 51,310 (Sept. 27, 2019)). The Part One Rule revoked California's authority to set its own greenhouse gas emissions standards and set zero emission vehicle mandates in California. As a result of the loss of the zero emission vehicles (ZEV) sales requirements in California, there may be fewer ZEVs sold and thus additional gasoline-fueled vehicles sold in future years (CARB, 2019).

In April 2020, the U.S. EPA and NHTSA issued the SAFE Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (Final SAFE Rule) that relaxed federal greenhouse gas emissions and fuel economy standards. The Final SAFE Rule relaxed federal greenhouse gas emissions and CAFE standards to approximately 1.5 percent (%) per year from model year (MY) 2020 levels over MYs 2021–2026. The previously established emission standards and related "augural" fuel economy standards would have achieved approximately 4% per year improvements through MY 2025. The Final SAFE Rule affects both upstream (production and delivery) and downstream (tailpipe exhaust) CO_2 emissions (CARB, 2020).

3.2.2 STATE ENERGY REGULATIONS

3.2.2.1 Title 24 Energy Standards

The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings in 1978 in response to a legislative mandate to reduce energy consumption in California. Although not originally intended to reduce GHG emissions, increased energy efficiency, and reduced consumption of electricity, natural gas, and other fuels result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods.

Part 11 of the Title 24 Building Standards Code is referred to as the California Green Building Standards Code (CalGreen Code). The purpose of the CalGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) planning and design; (2) energy efficiency; (3) water efficiency and conservation; (4) material conservation and resource efficiency; and (5) environmental air quality." The CalGreen Code is not intended to substitute or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission (CBSC).

CalGreen contains both mandatory and voluntary measures. For non-residential land uses there are 39 mandatory measures including, but not limited to, exterior light pollution reduction, wastewater reduction by 20 percent, and commissioning of projects over 10,000 square feet. Two tiers of voluntary measures apply to nonresidential land uses, for a total of 36 additional elective measures.

California's Building Energy Efficiency Standards are updated on an approximately three-year cycle. The 2019 standards, adopted May 9, 2018, went into effect on January 1, 2020 and improve upon existing standards, focusing on three key areas: new requirements for installation of solar photovoltaics for newly constructed low-rise residential buildings; updating current ventilation and IAQ requirements; and extending Title 24 Part 6 to apply to healthcare facilities. The 2019 Building Energy Efficiency Standards are approximately 53 percent more efficient than the 2016 Title 24 Energy Standards for residential development and approximately 30 percent more efficient for non-residential development.

3.2.2.2 Executive Order B-30-15

Executive Order B-30-15, 2030 Carbon Target and Adaptation, issued by Governor Brown in April 2015, set a target of reducing GHG emissions by 40 percent below 1990 levels in 2030. To achieve this ambitious target, Governor Brown identified five key goals for reducing GHG emissions in California through 2030:

- Increase the amount of renewable electricity provided state-wide to 50 percent.
- Double energy efficiency savings achieved in existing buildings and make heating fuels cleaner.
- Reduce petroleum use in cars and trucks by up to 50 percent.
- Reduce emissions of short-lived climate pollutants.

- Manage farms, rangelands, forests, and wetlands to increasingly store carbon.

3.2.2.3 Senate Bill 375 (Sustainable Communities and Climate Protection Act)

In January 2009, California Senate Bill (SB) 375, known as the Sustainable Communities and Climate Protection Act, went into effect. The objective of SB 375 is to better integrate regional planning of transportation, land use, and housing to reduce sprawl and ultimately reduce GHG emissions and other air pollutants. SB 375 tasks CARB to set GHG reduction targets for each of California's 18 regional Metropolitan Planning Organizations (MPOs). Each MPO is required to prepare a Sustainable Communities Strategy (SCS) as part of their Regional Transportation Plan (RTP). The SCS is a growth strategy in combination with transportation policies that will show how the MPO will meet its GHG reduction target. If the SCS cannot meet the reduction goal, an Alternative Planning Strategy may be adopted that meets the goal through alternative development, infrastructure, and transportation measures or policies.

In August 2010, CARB released the proposed GHG reduction targets for the MPOs. The proposed reduction targets for the Southern California Association of Governments (SCAG) region were 8% by year 2020 and 13% by year 2035. In September 2010 and February 2011, the 8% and the 13% targets were adopted, respectively. SCAG's Regional Council adopted 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS) on April 7, 2016, which updated the 2012 RTP/SCS

In March 2018, CARB established new regional GHG reduction targets for SCAG and other MPOs in the state (CARB, 2018). The new SCAG targets are an 8% reduction in per capita passenger vehicle GHG reductions by 2020 and a 19% reduction by 2035. On May 7, 2020, SCAG adopted "Connect SoCal", the 2020-2045 RTP/SCS, for federal transportation conformity purposes only. On September 3, 2020, SCAG's Regional Council unanimously voted to approve and fully adopt Connect SoCal, and the addendum to the Connect SoCal Program Environmental Impact Report. Connect SoCal is designed to meet the regional GHG reduction targets for SCAG that were identified by CARB in 2018.

Connect SoCal is a long-range visioning plan that builds upon and expands land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern. It charts a path toward a more mobile, sustainable and prosperous region by making connections between transportation networks, between planning strategies and between the people whose collaboration can improve the quality of life for Southern Californians. Connect SoCal contains 10 primary goals, as detailed below:

1. Encourage regional economic prosperity and global competitiveness.
2. Improve mobility, accessibility, reliability, and travel safety for people and goods.
3. Enhance the preservation, security, and resilience of the regional transportation system.
4. Increase person and goods movement and travel choices within the transportation system.
5. Reduce greenhouse gas emissions and improve air quality.
6. Support healthy and equitable communities.
7. Adapt to a changing climate and support an integrated regional development pattern and transportation network.
8. Leverage new transportation technologies and data-driven solutions that result in more efficient travel.
9. Encourage development of diverse housing types in areas that are supported by multiple transportation options.
10. Promote conservation of natural and agricultural lands and restoration of habitats.

Connect SoCal's "Core Vision" centers on maintaining and better managing the transportation network for moving people and goods, while expanding mobility choices by locating housing, jobs, and transit closer together and increasing investment in transit and complete streets. The Core Vision includes: Sustainable Development, System Preservation and Resilience, Demand and System Management, Transit Backbone, Complete Streets, and Goods Movement.

From 2016 to 2045, Connect So Cal anticipates approximately 64 percent of household and 74 percent of new gobs will occur in Priority Growth Areas (PGAs). Connect SoCal's PGA's – Job Centers, Transit Priority Areas (TPAs), High Quality Transit Areas (HQTAs),[3] Neighborhood Mobility Areas (NMAs), Livable Corridors, and Spheres of Influences (SOIs) – account for only 4 percent of the region's total land areas, but will accommodate the afore mentioned growth statistics. The plan identifies one HQTA in the City of Covina, which also corresponds to a TPA. It is generally centered around the Covina Metrolink Station at 600 N Citrus Avenue.

3.2.2.4 Renewables Portfolio Standard Program

In 2002, California established its Renewables Portfolio Standard (RPS) Program, with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent of retail sales by 2017. The *2003 Integrated Energy Policy Report* recommended accelerating that goal to 20 percent by 2010, and the *2004 Energy Report Update* further recommended increasing the target to 33 percent by 2020. The state's *Energy Action Plan* also supported this goal. In 2006 under Senate Bill 107, California's 20 percent by 2010 RPS goal was codified. The legislation required retail sellers of electricity to increase renewable energy purchases by at least one percent each year with a target of 20 percent renewables by 2010. Publicly owned utilities set their own RPS goals, recognizing the intent of the legislature to attain the 20 percent by 2010 target.

On November 17, 2008, Governor Schwarzenegger signed Executive Order S-14-08 requiring "[a]ll retail sellers of electricity shall serve 33 percent of their load with renewable energy by 2020." The following year, Executive Order S-21-09 directed CARB, under its AB 32 authority, to enact regulations to achieve the goal of 33 percent renewables by 2020.

In October 2015, Governor Brown signed SB 350 to codify ambitious climate and clean energy goals. One key provision of SB 350 is for retail sellers and publicly owned utilities to procure "half of the state's electricity from renewable sources by 2030."

The State's RPS program was further strengthened by the passage of SB 100 in 2018. SB 100 revised the State's RPS Program to require retail sellers of electricity to serve 50% and 60% of the total kilowatt-hours sold to retail end-use customers be served by renewable energy sources by 2026 and 2030, respectively, and requires 100% of all electricity supplied come from renewable sources by 2045.

3.2.2.5 Executive Order B-55-18

On September 10, 2018, Governor Brown signed Executive Order B-55-18, to achieve carbon neutrality by moving California to 100% clean energy by 2045. This Executive Order also includes specific measures to reduce GHG emissions via clean transportation, energy efficient buildings, directing cap-and-trade funds to disadvantaged communities, and better management of the state's forest land.

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[3] HQTAs are corridor-focused PGAs within half-a-mile of an existing or planned fixed guideway transit stop or a bus transit corridor where buses pick passengers up at a frequency of every 15 minutes (or less) during peak commuting hours.

3.2.2.6 Advanced Clean Cars Program

In January 2012, CARB approved the Advanced Clean Cars (ACC) Program (formerly known as Pavley II) for model years 2017-2025. The components of the ACC program are the Low-Emission Vehicle (LEV) regulations and the ZEV regulation. The Program combines the control of smog, soot, and global warming gases with requirements for greater numbers of zero-emission vehicles into a single package of standards. By 2025, new automobiles under California's ACC Program will emit 34 percent less global warming gases and 75 percent less smog-forming emissions.

Executive Order B-48-18, issued by Governor Brown in January 2018, establishes a target to have five million ZEVs on the road in California by 2030. This Executive Order is supported by the State's 2018 ZEV Action Plan Priorities Update, which expands upon the State's 2016 ZEV Action Plan. While the 2016 plan remains in effect, the 2018 update function as an addendum, highlighting the most important actions State agencies are taking in 2018 to implement the directives of Executive Order B-48-18.

3.2.3 CITY OF COVINA ENERGY ACTION PLAN

The City of Covina 2012 Energy Action Plan (EAP) and 2019 EAP Update establishes the following goals, policies and standards related to energy that may be applicable to the proposed Project:

- Goal 1: Residential: Maximize energy efficiency and improve the quality of Covina's residential communities.
  - Policy 1.1: Promote household energy conservation by residents in existing structures through education and outreach.
  - Policy 1.2: Encourage residential upgrades to more energy-efficient, cost-saving appliances and equipment.
  - Policy 1.3: Enhance the single-family housing stock through support of voluntary retrofits to single-family structures.
  - Policy 1.4: Encourage multi-family energy efficiency retrofits through outreach and education.
  - Policy 1.5: Incentivize home energy benchmarking as a tool to help homeowners assess opportunities to improve energy performance and improve resale value.
- Goal 3: Maximize the efficiency of all new buildings.
  - Policy 3.1: Maximize the energy-efficient design and orientation of new, remodeled, and renovated buildings through voluntary sustainable building standards.
  - Policy 3.2: Encourage the use of energy-efficient appliances and equipment in new buildings.
- Goal 5: Maximize use of shading and cooling to sustain a comfortable and energy-efficient urban environment.
  - Policy 5.1: Maximize the cooling of buildings through strategic tree planting and shading to reduce building electricity demands.
  - Policy 5.2: Reduce electricity demand by promoting cool roofs and surfaces for residential and non-residential buildings.
- Goal 6: Encourage water conservation to support community energy efficiency and conservation goals.
  - Policy 6.2: Support water-efficient landscaping practices to reduce electricity demand for water transport and treatment.

The 2019 EAP Update only includes updates and revisions to municipal operations that were referenced in the 2012 EAP. Thus, the goals and policies identified above are from the 2012 EAP (i.e., goals and policies related to municipal operations are not included, because they are not directly applicable to the proposed Project).

4 GREENHOUSE GAS SETTING AND REGULATORY FRAMEWORK

This chapter provides information on the environmental and regulatory GHG setting of the proposed Project. Information on existing GHG conditions, relevant standards, and issues of concern was obtained from the U.S. EPA, CARB, and SCAQMD.

4.1 DEFINING CLIMATE CHANGE

Climate change is the distinct change in measures of climate for a long period of time. Climate change can result from natural processes and from human activities. Natural changes in the climate can be caused by indirect processes such as changes in the Earth's orbit around the Sun or direct changes within the climate system itself (i.e. changes in ocean circulation). Human activities can affect the atmosphere through emissions of gases and changes to the planet's surface. Emissions affect the atmosphere directly by changing its chemical composition, while changes to the land surface indirectly affects the atmosphere by changing the way the Earth absorbs gases from the atmosphere. The term "climate change" is preferred over the term "global warming" because "climate change" conveys the fact that other changes can occur beyond just average increase in temperatures near the Earth's surface.

Elements that indicate that climate change is occurring on Earth include, but are not limited to:

- Rising of global surface temperatures by 1.3°F over the last 100 years;
- Changes in precipitation patterns;
- Melting ice in the Arctic;
- Melting glaciers throughout the world;
- Rising ocean temperatures;
- Acidification of oceans; and
- Range shifts in plant and animal species

Climate change is intimately tied to the Earth's greenhouse effect. The greenhouse effect is a natural occurrence that helps regulate the temperature of the planet. The majority of radiation from the Sun hits the Earth's surface and warms it. The Earth's surface in turn radiates heat back towards the atmosphere, known as infrared radiation. Gases and clouds in the atmosphere trap and prevent some of this heat from escaping back into space and re-radiate it in all directions. This process is essential to supporting life on Earth because it keeps the planet warmer during the nights than without it. Emissions from human activities since the beginning of the industrial revolution (approximately 150 years ago) are adding to the natural greenhouse effect by increasing the gases in the atmosphere that trap heat, thereby contributing to an average increase in the Earth's temperature. Human activities that enhance the greenhouse effect are detailed below.

4.1.1 GREENHOUSE GASES

Gases that trap heat in the atmosphere and affect regulation of the earth's temperature are known as GHG. Many chemical compounds found in the earth's atmosphere exhibit the GHG property. GHG allow sunlight to enter the atmosphere freely. When sunlight strikes the earth's surface, it is either absorbed or reflected back toward space. Earth that has absorbed sunlight warms up and emits infrared radiation toward space. GHG absorb this infrared radiation and "trap" the energy in the earth's atmosphere.

GHG that contribute to climate regulation are a different type of pollutant than criteria or hazardous air pollutants because climate regulation is global in scale, both in terms of causes and effects. Some GHG are emitted to the atmosphere naturally by biological and geological processes such as evaporation (water vapor), aerobic respiration (carbon dioxide), and off-gassing from low oxygen environments such as swamps or exposed permafrost (methane); however, GHG emissions from human activities such as fuel combustion (e.g., carbon dioxide) and refrigerants use (e.g., hydrofluorocarbons) significantly contribute to overall GHG concentrations in the atmosphere, climate regulation, and global climate change. Human production of GHG has increased steadily since pre-industrial times (approximately pre-1880) and atmospheric carbon dioxide concentrations have increased from a pre-industrial value of 280 ppm in the early 1800's to 417 ppm in May 2020 (NOAA, 2020).

The 1997 United Nations' Kyoto Protocol international treaty set targets for reductions in emissions of four specific GHG – carbon dioxide, methane, nitrous oxide, and sulfur hexafluoride – and two groups of gases – hydrofluorocarbons and perfluorocarbons. These GHG are the primary GHG emitted into the atmosphere by human activities. Water vapor is also a common GHG that regulates the earth's temperature; however, the amount of water vapor in the atmosphere can change substantially from day to day, whereas other GHG emissions remain in the atmosphere for longer periods of time. Black carbon consists of particles emitted during combustion; although a particle and not a gas, black carbon also acts to trap heat in the Earth's atmosphere. The six common GHG are described below.

- Carbon Dioxide (CO_2). CO_2 is released to the atmosphere when fossil fuels (oil, gasoline, diesel, natural gas, and coal), solid waste, and wood or wood products are burned.
- Methane (CH_4). CH_4 is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from the decomposition of organic waste in municipal solid waste landfills and the raising of livestock.
- Nitrous Oxide (N_2O). N_2O is emitted during agricultural and industrial activities, as well as during combustion of solid waste and fossil fuels.
- Sulfur Hexafluoride (SF_6). SF_6 is commonly used as an electrical insulator in high voltage electrical transmission and distribution equipment such as circuit breakers, substations, and transmission switchgear. Releases of SF_6 occur during maintenance and servicing as well as from leaks of electrical equipment.
- Hydrofluorocarbons (HFCs) and Perfluorocarbons (PFCs). HFCs and PFCs are generated in a variety of industrial processes. Although the amount of these gases emitted into the atmosphere is small in terms of their absolute mass, they are potent agents of climate change due to their high global warming potential.

GHG can remain in the atmosphere long after they are emitted. The potential for a particular greenhouse gas to absorb and trap heat in the atmosphere is considered its global warming potential (GWP). The reference gas for measuring GWP is CO_2, which has a GWP of one. By comparison, CH_4 has a GWP of 25, which means that one molecule of CH_4 has 25 times the effect on global warming as one molecule of CO_2. Multiplying the estimated emissions for non-CO_2 GHG by their GWP determines their carbon dioxide equivalent (CO_2e), which enables a project's combined global warming potential to be expressed in terms of mass CO_2 emissions. The GWPs and estimated atmospheric lifetimes of the common GHG are shown in Table 4-1.

Table 4-1: Global Warming Potential (GWP) of Common Greenhouse Gases (GHG)		
GHG	Lifetime (years)	GWP[(A)]
Carbon Dioxide (CO_2)	50-200	1
Methane (CH_4)	12	25
Nitrous Oxide (N_2O)	114	298
HFC-23	270	14,800
HFC-134a	14	1,430
HFC-152a	1.4	124
PFC-14	50,000	7,390
PFC-116	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Source: CARB, 2014.
(A) GWPs are based on the United Nations Intergovernmental Panel on Climate Change (IPCC) 4th Assessment Report.

4.1.2 CLIMATE CHANGE AND CALIFORNIA

The 2009 California Climate Adaptation Strategy prepared by the California Natural Resources Agency (CNRA) identified anticipated impacts to California due to climate change through extensive modeling efforts. General climate changes in California indicate that:

- California is likely to get hotter and drier as climate change occurs with a reduction in winter snow, particularly in the Sierra Nevada Mountain Range.
- Some reduction in precipitation is likely by the middle of the century.
- Sea levels will rise up to an estimated 55 inches.
- Extreme events such as heat waves, wildfires, droughts, and floods will increase.
- Ecological shifts of habitat and animals are already occurring and will continue to occur (CNRA, 2009).

In July 2012, the CNRA and Emergency Management Agency published an update, titled *Emergency Management Agency published California Adaptation Planning Guide*, which walks local decision-makers through the steps to create climate vulnerability assessments and adaptation strategies. This guide presents the basis for climate change adaptation planning and introduces a step-by-step process for local and regional climate vulnerability assessment and adaptation strategy development. The guide outlines nine steps in adaptation planning development, the first five steps are a vulnerability assessment which covers: 1) exposure, 2) sensitivity, 3) potential impacts, 4) adaptive capacity, and 5) risk and onset. The last four steps are guiding principles for adaptation strategy development, which are: 6) prioritize adaptive needs, 7) identify strategies, 8) evaluate and prioritize, and 9) phase and implement.

The potential impacts of global climate change in California are detailed below.

4.1.2.1 Public Health and Welfare

Concerns related to public health and climate change includes higher rates of mortality and morbidity, change in prevalence and spread of disease vectors, decreases in food quality and security, reduced water availability, and increased exposure to pesticides. These concerns are all generally related to increase in ambient outdoor air temperature, particularly in summer.

Higher rates of mortality and morbidity could arise from more frequent heat waves at greater intensities. Health impacts associated with extreme heat events include heat stroke, heat exhaustion, and exacerbation of medical conditions such as cardiovascular and respiratory diseases, diabetes, nervous system disorders, emphysema, and epilepsy. Climate change would result in degradation of air quality promoting the formation of ground-level pollutants, particularly ozone. Degradation of air quality would increase the severity of health impacts from criteria and other, non-GHG air pollutants (e.g., toxic air contaminants). Temperature increases and increases in CO_2 are also expected to increase plant production of pollens, spores, and fungus. Pollens and spores could induce or aggravate allergic rhinitis, asthma, and obstructive pulmonary diseases.

Precipitation projections suggest that California will become drier over the next century due to reduced precipitation and increased evaporation from higher temperatures. These conditions could result in increased occurrences of drought. Surface water reductions will increase the need to pump groundwater, reducing supplies and increasing the potential for land subsidence.

Precipitation changes are also suspected to impact the Sierra snowpack (see “Water Management” herein). Earlier snowmelts could coincide with the rainy season and could result in failure of the flood control devices in that region. Flooding can cause property damage and loss of life for those affected. Increased wildfires are also of concern as the State “dries” over time. Wildfires can also cause property damage, loss of life, and injuries to citizens and emergency response services.

Sea-level rises would also threaten human health and welfare. Flood risks will be increased in coastal areas due to strengthened storm surges and greater tidal damage that could result in injury and loss of property and life. Gradual rising of the sea will permanently inundate many coastal areas in the state.

Other concerns related to public health are changes in the range, incidence, and spread of infectious, water-borne, and food-borne diseases. Changes in humidity levels, distribution of surface water, and precipitation changes are all likely to shift or increase the preferred range of disease vectors (i.e. mosquitoes). This could expose more people and animals to potential for vector-borne disease.

4.1.2.2 Biodiversity and Habitat

Changes in temperature will change the livable ranges of plants and animals throughout the state and cause considerable stress on these species. Species will shift their range if appropriate habitat is available and accessible if they cannot adapt to their new climate. If they do not adapt or shift, they face local extirpation or extinction. As the climate changes, community compositions and interactions will be interrupted and changed. These have substantial implications on the ecosystems in the state. Extreme events will lead to tremendous stress and displacement on affected species. This could make it easier for invasive species to enter new areas, due to their ability to more easily adapt. Precipitation changes would alter stream flow patterns and affect fish populations during their life cycle. Sea level rises could impact fragile wetland and other coastal habitat.

4.1.2.3 Water Management

Although disagreement among scientists on long-term precipitation patterns in the State has occurred, it is generally accepted by scientists that rising temperatures will impact California's water supply due to changes in the Sierra Nevada snowpack. Currently, the State's water infrastructure is designed to both gather and convey water from melting snow and to serve as a flood control device. Snowpack melts gradually through spring warming into early summer, releasing an average of approximately 15 million acre-feet of water. The State's concern related to climate change is that due to rising temperatures, snowpack melt will begin earlier in the spring and will coincide with the rainy season. The combination of precipitation and snowmelt would overwhelm the current system, requiring tradeoffs between water storage and flood protection to be made. Reduction in reserves from the Sierra Nevada snowpack is troublesome for California and particularly for Southern California. Approximately 75-percent of California's available water supply originates in the northern third of the state while 80 percent of demand occurs in the southern two-thirds. There is also concern is that rising temperatures will result in decreasing volumes from the Colorado River basin. Colorado River water is important to Southern California because it supplies water directly to Metropolitan Water District of Southern California. Water from the Colorado River is also used to recharge groundwater basins in the Coachella Valley.

4.1.2.4 Agriculture

California is the most agriculturally productive state in the US resulting in more than 37 billion dollars in revenue in 2008. California is the nation's leading producer of nearly 80 crops and livestock commodities, supplying more than half of the nation's fruit and vegetables and over 90 percent of the nation's production of almonds, apricots, raisin grapes, olives, pistachios, and walnuts. Production of crops is not limited to the Central Valley but also occurs in Southern California. Strawberries and grapes are grown in San Bernardino and Riverside Counties. Orange County and San Diego County also contribute to strawberry production. Cherries are also grown in Los Angeles and Riverside County. Anticipated impacts to agricultural resources are mixed when compared to the potentially increased temperatures, reduced chill hours, and changes in precipitation associated with climate change. For example, wheat, cotton, maize, sunflower, and rice are anticipated to show declining yields as temperatures rise. Conversely, grapes and almonds would benefit from warming temperatures. Anticipated increases in the number and severity in heat waves would have a negative impact on livestock where heat stress would make livestock more vulnerable to disease, infection and mortality. The projected drying trend and changes in precipitation are a threat to agricultural production in California. Reduced water reliability and changes in weather patterns would impact irrigated farmlands and reduce food security. Furthermore, a drying trend would increase wildfire risk. Overall, agriculture in California is anticipated to suffer due to climate change impacts.

4.1.2.5 Forestry

Increases in wildfires will substantially impact California's forest resources that are prime targets for wildfires. This can increase public safety risks, property damage, emergency response costs, watershed quality, and habitat fragmentation. Climate change is also predicted to affect the behavior or plant species including seed production, seedling establishment, growth, and vigor due to rising temperatures. Precipitation changes will affect forests due to longer dry periods and moisture deficits and drought conditions that limit seedling and sapling growth. Prolonged drought also weakens trees, making them more susceptible to disease and pest invasion. Furthermore, as trees die due to disease and pest invasion (e.g., the Bark Beetle invasion of the Angeles National Forest), wildfires can spread more rapidly.

4.1.2.6 Transportation and Energy Infrastructure

Higher temperatures will require increased cooling, raising energy production demand. Higher temperatures also decrease the efficiency of distributing electricity and could lead to more power outages during peak demand. Climate changes would impact the effectiveness of California's transportation infrastructure as extreme weather events damage, destroy, and impair roadways and railways throughout the state causing governmental costs to increase as well as impacts to human life as accidents increase. Other infrastructure costs and potential impacts to life would increase due to the need to upgrade levees and other flood control devices throughout the state. Infrastructure improvement costs related to climate change adaptation are estimated in the tens of billions of dollars.

4.1.3 CARBON SEQUESTRATION

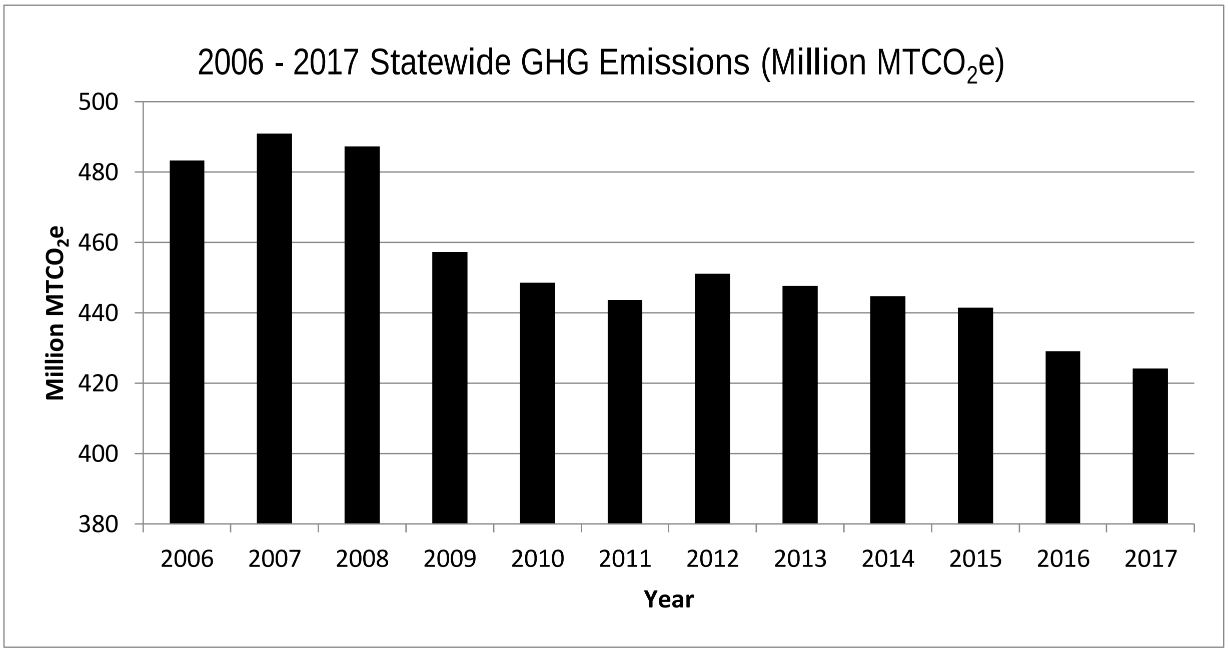
Carbon sequestration is the process by which plants absorb CO_2 from the atmosphere and store it in biomass like leaves and grasses. Agricultural lands, forests, and grasslands can all sequester carbon dioxide, or emit it. The key is to determine if the land use is emitting CO_2 faster than it is absorbing it. Young, fast-growing trees are particularly good at absorbing more than they release and are known as a sink. Agricultural resources often end up being sources of carbon release because of soil management practices. Deforestation contributes to carbon dioxide emissions by removing trees, or carbon sinks, that would otherwise absorb CO_2. Forests are a crucial part of sequestration in some parts of the world, but not much in the United States. Another form of sequestration is geologic sequestration. This is a manmade process that results in the collection and transport of CO_2 from industrial emitters (i.e. power plants) and injecting it into underground reservoirs.

4.2 EXISTING STATE GHG EMISSIONS LEVELS

CARB prepares an annual statewide GHG emissions inventory using regional, state, and federal data sources, including facility-specific emissions reports prepared pursuant to the state's Mandatory GHG Reporting Program (see Section 4.3.2). The statewide GHG emissions inventory helps CARB track progress towards meeting the state's AB 32 GHG emissions target of 431 million metric tons of CO_2 equivalents ($MTCO_2e$), as well as establish and understand trends in GHG emissions. CARB approved use of 431 million MCO_2e as the state's 2020 GHG emission target in May 2014. Previously, the target had been set at 427 million MCO_2e. Statewide GHG emissions for the 2006 to 2017 time period are shown in Table 4-2. Statewide GHG emissions have generally decreased over the last decade, with 2017 levels (424 million $MTCO_2e$) approximately 12 percent less than 2006 levels (483 million $MTCO_2e$). The transportation sector (170 million $MTCO_2e$) accounted for more than one-third (approximately 40.1%) of the state's total GHG emissions inventory (424 million $MTCO_2e$) in 2017.

Table 4-2: 2006 – 2017 Statewide GHG Emissions (Million $MTCO_2e$)

Scoping Plan Sector	Year											
	'06	**'07**	**'08**	**'09**	**'10**	**'11**	**'12**	**'13**	**'14**	**'15**	**'16**	**'17**
Agriculture	35	36	36	33	34	35	36	35	36	34	34	32
Commercial/Residential	43	43	44	44	45	46	43	44	37	38	39	41
Electric Power	105	114	120	101	90	88	95	90	88	84	69	62
High GWP	10	11	12	12	14	15	16	17	18	19	20	20
Industrial	93	90	91	88	91	91	91	94	94	92	90	89
Recycling and Waste	8	8	8	8	8	8	8	9	9	9	9	9
Transportation	189	189	178	170	165	162	161	161	162	166	169	170
Total Million $MTCO_2e^{(A)}$	*483*	*490*	*487*	*457*	*448*	*444*	*450*	*448*	*444*	*441*	*429*	***424***



Source: CARB, 2019

(A) Totals may not equal due to rounding. CARB inventory uses GWPs based on the United Nations' ICC's 4th Assessment Report.

4.3 FEDERAL, STATE, AND LOCAL CLIMATE CHANGE REGULATIONS

4.3.1 FEDERAL GHG REGULATIONS

4.3.1.1 U.S. EPA GHG Tailoring Rule and GHG Reporting System

On December 7, 2009, the U.S. EPA issued an endangerment finding that current and projected concentrations of the six Kyoto GHG (CO_2, CH_4, N_2O, SF_6, HFCs, and PFCs) in the atmosphere threaten the public health and welfare of current and future generations. This finding came in response to the Supreme Court ruling in *Massachusetts v. EPA*, which found that GHG are pollutants under the federal Clean Air Act. As a result, the U.S. EPA issued its GHG Tailoring Rule in 2010, which applies to facilities that have the potential to emit more than 100,000 $MTCO_2e$. In 2014, the U.S. Supreme Court issued its decision in *Utility Air Regulatory Group v. EPA* (No. 12-1146), finding that the U.S. EPA may not treat GHGs as an air pollutant for purposes of determining whether a source is a major source required to obtain a permit pursuant to the Clean Air Act's Prevention of Significant Deterioration or Title V operating permit programs. The U.S. EPA's Greenhouse Gas Reporting Program requires facilities that emit 25,000 $MTCO_2e$ or more of GHG to report their GHG emissions to the U.S. EPA to inform future policy decisions.

4.3.1.2 SAFE Vehicles Rule

On September 27, 2019, the U.S. EPA and the NHTSA published the SAFE Vehicles Rule Part One: One National Program." (84 Fed. Reg. 51,310 (Sept. 27, 2019)). The Part One Rule revoked California's authority to set its own GHG emissions standards and set zero emission vehicle mandates in California. As a result of the loss of the ZEV sales requirements in California, there may be fewer ZEVs sold and thus additional gasoline-fueled vehicles sold in future years (CARB, 2019).

In April 2020, the U.S. EPA and NHTSA issued the SAFE Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks (Final SAFE Rule) that relaxed federal greenhouse gas emissions and fuel economy standards. The Final SAFE Rule relaxed federal greenhouse gas emissions and CAFE standards to approximately 1.5 % per year from MY 2020 levels over MYs 2021–2026. The previously established emission standards and related "augural" fuel economy standards would have achieved approximately 4% per year improvements through MY 2025. The Final SAFE Rule affects both upstream (production and delivery) and downstream (tailpipe exhaust) CO_2 emissions (CARB, 2020).

4.3.2 STATE CLIMATE CHANGE REGULATIONS

4.3.2.1 Executive Order S-3-05

Executive Order S-3-05 was issued by California Governor Arnold Schwarzenegger and established targets for the reduction of greenhouse gas emission at the milestone years of 2010, 2020, and 2050. Statewide GHG emissions must be reduced to 1990 levels by year 2020 and by 80 percent beyond that by year 2050. The Order requires the Secretary of the California Environmental Protection Agency (Cal-EPA) to coordinate with other State departments to identify strategies and reduction programs to meet the identified targets. A Climate Action Team (CAT) was created and is headed by the Secretary of Cal-EPA who reports on the progress of the reduction strategies. The latest CAT Biennial Report to the Governor and Legislature was completed in April 2016.

4.3.2.2 Assembly Bill 32 – California Global Warming Solutions Act and Related GHG Reduction Goals

In September 2006, Governor Arnold Schwarzenegger signed Assembly Bill (AB) 32, the California Climate Solutions Act of 2006. AB 32 establishes the caps on Statewide greenhouse gas emissions proclaimed in Executive Order S-3-05 and established the timeline for meeting State GHG reduction targets. The deadline for meeting the 2020 reduction target is December 31, 2020.

As part of AB 32, CARB determines 1990 GHG emissions levels and projected a "business-as-usual" (BAU)[4] estimate for 2020, to determine the amount of GHG emission reductions that would need to be achieved. In 2007, CARB approved a Statewide 1990 emissions level and corresponding 2020 GHG

[4] BAU is a term used to define emissions levels without considering reductions from future or existing programs or technologies.

emissions limit of 427 million $MTCO_2e$ (CARB, 2007). In 2008, CARB adopted its Climate Change Scoping Plan, which projects 2020 Statewide GHG emissions levels of 596 million $MTCO_2e$ and identifies numerous measures (i.e., mandatory rules and regulations and voluntary measures) that will achieve at least 174 million $MTCO_2e$ of GHG reductions and bring Statewide GHG emissions to 1990 levels by 2020 (CARB, 2009).

Executive Order B-30-15, 2030 Carbon Target and Adaptation, issued by Governor Brown in April 2015, set a target of reducing GHG emissions by 40 percent below 1990 levels in 2030. To achieve this ambitious target, Governor Brown identified five key goals for reducing GHG emissions in California through 2030:

- Increase renewable electricity to 50 percent.
- Double energy efficiency savings achieved in existing buildings and make heating fuels cleaner.
- Reduce petroleum use in cars and trucks by up to 50 percent.
- Reduce emissions of short-lived climate pollutants.
- Manage farms, rangelands, forests and wetlands to increasingly store carbon.

By directing State agencies to take measures consistent with their existing authority to reduce GHG emissions, Executive Order B-30-15 establishes coherence between the 2020 and 2050 GHG reduction goals set by AB 32 and seeks to align California with the scientifically established GHG emissions levels needed to limit global warming below two degrees Celsius.

To reinforce the goals established through Executive Order B-30-15, Governor Brown went on to sign SB 32 and AB 197 on September 8, 2016. SB 32 made the GHG reduction target (to reduce GHG emissions by 40 percent below 1990 levels by 2030) a requirement, as opposed to a goal. AB 197 gives the Legislature additional authority over CARB to ensure the most successful strategies for lowering emissions are implemented, and requires CARB to, "protect the State's most impacted and disadvantaged communities …[and] consider the social costs of the emissions of greenhouse gases."

Scoping Plan

The CARB Scoping Plan is the comprehensive plan primarily directed at identifying the measures necessary to reach the GHG reduction targets stipulated in AB 32. The key elements of the 2008 Plan were to expand and strengthen energy efficiency programs, achieve a Statewide renewable energy mix of 33 percent, develop a cap-and-trade program with other partners (including seven States in the United States and four territories in Canada) in the Western Climate Initiative, establish transportation-related targets, and establish fees (CARB, 2009). CARB estimated that implementation of these measures will achieve at least 174 million $MTCO_2e$ of reductions and reduce Statewide GHG emissions to 1990 levels by 2020 (CARB, 2009).

On February 10, 2014, CARB released the public draft of the "First Update to the Scoping Plan." "The First Update" built upon the 2008 Scoping Plan with new strategies and recommendations, and identified opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. "The First Update" defined CARB's climate change priorities over the next five years, and set the groundwork to reach post-2020 goals set forth in Executive Orders S-3-05 and B-16-12. It also highlighted California's progress toward meeting the 2020 GHG emission reduction goals defined in the 2008 Scoping Plan. "The First Update" evaluated how to align the State's long-term GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use. "The First Update" to the Scoping Plan was approved by the Board on May 22, 2014.

The second update to the scoping plan, the *2017 Climate Change Scoping Plan Update* (CARB, 2017a), was adopted by CARB in December 2017. The primary objective for the *2017 Scoping Plan Update* is to identify the measures required to achieve the mid-term GHG reduction target for 2030 (i.e., reduce emissions by 40 percent below 1990 levels by 2030) established under Executive Order B-30-15 and SB 32. The *2017 Scoping Plan Update* identifies an increased need for coordination among State, Regional, and local governments to realize the potential for GHG emissions reductions that can be gained from local land use decisions. It notes that emissions reductions targets set by more than one hundred local jurisdictions in the State could result in emissions reductions of up to 45 million $MTCO_2e$ and 83 million $MTCO_2e$ by 2020 and 2050, respectively. To achieve these goals, the *2017 Scoping Plan Update* includes a recommended plan-level efficiency threshold of six metric tons or less per capita by 2030 and no more than two metric tons by 2050. The major elements of the *2017 Scoping Plan Update* framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing ZEV buses and trucks.
- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030).
- Implementation of SB 350, which expands the RPS to 50 percent and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks.
- Implementing the proposed Short-Lived Climate Pollutant Strategy, which focuses on reducing CH_4 and hydrocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030.
- Continued implementation of SB 375.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- 20 percent reduction in GHG emissions from refineries by 2030.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

4.3.2.3 Executive Order B-30-15 / Senate Bill 32 and Assembly Bill 197

Executive Order B-30-15, 2030 Carbon Target and Adaptation, issued by Governor Brown in April 2015, sets a target of reducing GHG emissions by 40 percent below 1990 levels in 2030. By directing state agencies to take measures consistent with their existing authority to reduce GHG emissions, this order establishes coherence between the 2020 and 2050 GHG reduction goals set by AB 32 and seeks to align California with the scientifically established GHG emissions levels needed to limit global warming below two degrees Celsius.

To reinforce the goals established through Executive Order B-30-15, Governor Brown went on to sign SB 32 and AB 197 on September 8, 2016. SB 32 made the GHG reduction target to reduce GHG emissions by 40 percent below 1990 levels by 2030 a requirement as opposed to a goal. AB-197 gives the Legislature additional authority over CARB to ensure the most successful strategies for lowering emissions are implemented, and requires CARB to, "protect the state's most impacted and disadvantaged communities …[and] consider the social costs of the emissions of greenhouse gases."

4.3.2.4 Low Carbon Fuel Standard Regulation

CARB initially approved the LCFS regulation in 2009, identifying it as one of the nine discrete early action measures in the *2008 Scoping Plan* to reduce California's GHG emissions. The LCFS regulation is designed to encourage the use of cleaner low-carbon transportation fuels in California, encourage the production of those fuels, and therefore, reduce GHG emissions and decrease petroleum dependence in the transportation sector. The LCFS regulation defines a Carbon Intensity, or "CI," reduction target (or standard) for each year, which the rule refers to as the "compliance schedule."

The LCFS regulation initially required a reduction of at least 10 percent in the CI of California's transportation fuels by 2020. CARB approved some amendments to the LCFS in December 2011, which were implemented on January 1, 2013. In September 2015, the Board approved the re-adoption of the LCFS, which became effective on January 1, 2016, to address procedural deficiencies in the way the original regulation was adopted. The 2015 rulemaking included many amendments, updates, and improvements to the program, including a compliance schedule that maintained the 2009 LCFS regulation's target of a 10 percent reduction in average carbon intensity by 2020 from a 2010 baseline. In 2018, the Board approved amendments to the regulation, which included strengthening and smoothing the carbon intensity benchmarks through 2030 in-line with California's 2030 GHG emission reduction target enacted through SB 32, adding new crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector.

There are three ways to generate credits under the LCFS regulation: fuel pathways, projects, and capacity-based crediting.

- Fuel Pathways: Under fuel pathway-based crediting, all transportation fuels need a carbon intensity score to participate in the LCFS, and the fuel type dictates which process is used to determine that CI. Providers of low carbon fuels used in California transportation generate credits by obtaining a certified CI and reporting transaction quantities on a quarterly basis. Credits are calculated relative to the annual CI benchmark and will undergo verification post credit generation.
- Project-Based Crediting: Under project-based crediting, projects include actions to reduce GHG emissions in the petroleum supply chain, and also carbon capture storage using Direct Air Capture. Crediting for projects is based on life cycle emission reductions, and credits are issued after the reported reductions are verified.
- Capacity-Based Crediting: The 2018 amendments added a new crediting mechanism to the LCFS that is designed to support the deployment of ZEV infrastructure. Crediting for ZEV infrastructure is based on the capacity of the hydrogen station or EV fast charging site minus the actual fuel dispensed (CARB, 2020).

4.3.2.5 Title 24 Energy Standards

See Section 3.2.2.1.

4.3.2.6 Senate Bill 375 – Sustainable Communities and Climate Protection Act

See Section 3.2.2.

4.3.2.7 Renewables Portfolio Standard (RPS) Program

See Section 3.2.2.4.

4.3.2.8 Advanced Clean Cars Program

See Section 3.2.2.6.

4.3.2.9 Water Conservation in Landscaping Act

Section 65591 of the Government Code requires all local jurisdictions to adopt a water efficient landscape ordinance. The ordinance is to address water conservation through appropriate use and grouping of plants based on environmental conditions, water budgeting to maximize irrigation efficiency, storm water retention, and automatic irrigation systems. Failure to adopt a water efficiency ordinance requires a local jurisdiction to enforce the provisions of the State's model water efficiency ordinance. In 2009, the Department of Water Resources updated the Model Water Efficient Landscape Ordinance pursuant to amendments to the 1991 Act. These amendments and the new model ordinance went into effect on January 1, 2010. The amended Act is applicable to any new commercial, multi-family, industrial or tract home project containing 2,500 square feet or more of landscaping. Individual landscape projects of 5,000 square feet or more on single-family properties will also be subject to the Act. All landscape plans are required to include calculations verifying conformance with the maximum applied water allowance and must be prepared and stamped by a licensed landscape architect.

4.3.2.10 Biological Diversity v. California Department of Fish and Wildlife

In its decision in *Center for Biological Diversity v. California Dep't of Fish and Wildlife* (*Newhall*) 62 Cal.4th 204 (2015), the California Supreme Court set forth several options that lead agencies may consider for evaluating the cumulative significance of a proposed project's GHG emissions:

1. A calculation of emissions reductions compared to a BAU scenario based upon the emissions reductions in CARB's Scoping Plan, including examination of the data to determine what level of reduction from BAU a new land use development at the proposed location must contribute in order to comply with statewide goals.
2. A lead agency might assess consistency with AB 32's goals by looking to compliance with regulatory programs designed to reduce GHG emissions from particular activities.
3. Use of geographically specific GHG emission reduction plans to provide a basis for tiering and streamlining of project-level CEQA analysis.
4. A lead agency may rely on existing numerical thresholds of significance for GHG emissions, though use of such thresholds is not required.

4.3.3 CITY OF COVINA ENERGY ACTION PLAN

The goals and policies identified in Section 3.2.3 would also be applicable to the proposed Project in terms of reducing GHG emissions.

5 ENERGY IMPACT ANALYSIS

This chapter evaluates the direct and indirect energy impacts that could result from implementation of the proposed Project.

5.1 THRESHOLDS OF SIGNIFICANCE

In accordance with Appendix G of the State CEQA Guidelines, the proposed Project could result in potentially significant impacts related to energy resources if it would:

- Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

5.2 ENERGY QUANTIFICATION METHODOLOGY

Implementation of the proposed Project would result in the consumption of electricity, natural gas, and petroleum fuels during construction and operation of the multifamily residential development. This section describes the methodologies used to estimate potential energy construction associated with the proposed Project. A summary of the methodologies used to estimate the proposed Project's energy consumption is shown in Table 5-1.

Table 5-1: Summary of Energy Quantification Methodologies

Consumption Source	Methodology	Key Data Inputs
Heavy-Duty Off-Road Construction Equipment	CalEEMod and Carl Moyer Program Emission Factors	Size of Project Site, Size and Type of Proposed Structure
Off-site Vehicle Trips During Construction	CalEEMod and EMFAC2017	Vehicle Classification, Fuel Type, Number of Trips, and Trip Distance
Operational Electricity and Natural Gas	CalEEMod	Size and Type of Proposed Structure, Climate Zone, and Energy Efficiency
Operational Mobile Sources	CalEEMod and EMFAC2017	Vehicle Classification, Fuel Type, Number of Trips, and Trip Distance

5.2.1 CONSTRUCTION

Implementation of the proposed Project would increase the demand for petroleum-based fuel during construction. Both on- and off-site equipment would be powered by gasoline and/or diesel fuels.

5.2.1.1 Heavy-Duty Off-Road Construction Equipment

Heavy-duty, off-road construction equipment (e.g., bulldozers, loaders, etc.) would consume diesel fuel during construction of the proposed Project. The Project's on-site diesel fuel consumption was estimated using the type, quantity, and runtime of equipment generated by CalEEMod and multiplying through by a fuel consumption factor contained in the CARB *Carl Moyer Program Guidelines (2017*

Revisions) (CARB, 2017b; Table D-21). Please refer to Appendix B, Sheet 2 for a breakdown of fuel consumption by phase and equipment type.

5.2.1.2 Off-Site Vehicle Trips

Gasoline and diesel fuel would be consumed by construction workers commuting to and from the Project site, as well as vendor deliveries and haul trucks used to remove demolition debris from the site. Petroleum consumption from these trip types were estimated by deriving an average fuel consumption rate for various vehicle types in CARB EMission FACtor (EMFAC) Model 2017 (v1.0.3) vehicle classifications operating in the South Coast sub-area of Los Angeles County (for year 2021) and multiplying them number of trips accounted for in CalEEMod. Worker trips were assumed to be a mix of light duty autos (LDA) and light-duty trucks (LDT1 and LDT2). Vendor trips were assumed to be a mix of medium heavy-duty trucks (MHDT) and HHDT, and haul trips were assumed to be HHDT. Please see Appendix B, Sheet 3 for a breakdown of fuel consumption information by trip type.

5.2.2 OPERATIONAL

5.2.2.1 Electricity and Natural Gas

Electricity and natural gas emissions from Project operation were estimated using CalEEMod, V. 2016.3.2. The consumption estimates are based on default model assumptions based on the residential building square footage (66,369 square feet),[5] non-residential building square footage (35,411 square feet), climate (Zone 9), and building systems energy efficiency requirements, as modified to account for the following project-specific characteristics:

- Since CalEEMod default values are based on the energy efficiency standards contained in the 2016 CALGreen Code, the:
    - Default Title 24 electricity consumption intensity was adjusted downwards by a factor of 0.47 for residential land uses to reflect increased efficiency in the 2019 CALGreen Code (CEC, 2018).
    - Default energy efficiency value for light energy intensity was adjusted downwards by a factor of 0.7 for non-residential land uses to reflect increased lighting efficiency in the 2019 CALGreen Code (CEC, 2018).

The modeling did not include the PV system that would installed on the building's roof nor did it include the energy efficient appliances and building systems (e.g., tankless water heaters) the building would feature and therefore, is considered a conservative estimate of energy source emissions (i.e., likely to overestimate).

5.2.2.2 Mobile Sources

Mobile source consumption estimates were generated using consumption factors derived from CARB's EMFAC Model 2017 (v1.0.3) and annual vehicle miles traveled (VMT) as estimated in CalEEMod, which reflect the weekday trip generation for the site (i.e., 326 trips per weekday) as detailed in the Traffic

[5] This value includes the approximately 2,500 square foot community center that would be part of Building 6.

Impact Study prepared for the Project by Linscott, Law & Greenspan (Linscott, Law & Greenspan 2020).[6] Estimates of petroleum consumption were then generated by multiplying the annual VMT estimate by a weighted fuel consumption factor for LDA, LDT1, and LDT2 from EFMAC2017 for the South Coast sub-area of Los Angeles County.

The proposed Project's trip generation rates are shown in Table 2-1. Refer to Appendix B, Sheet 4 for detailed mobile source fuel consumption estimate calculations.

5.3 WASTEFUL, INEFFICIENT, OR UNNECESSARY CONSUMPTION OF ENERGY RESOURCES

Implementation of the Project would increase the demand for energy at the project site during construction and operation. However, the proposed multifamily residential buildings would be designated to increase energy efficiency, and the energy consumption associated with development activities would be necessary. The proposed Project would not use energy in a wasteful, inefficiency, or unnecessary manner.

5.3.1 CONSTRUCTION

5.3.1.1 Electricity

Temporary electric power would be required for lighting and electronic equipment (e.g., computers) located in trailers used by the construction crew. However, the electricity used for such activities would be temporary and would have a negligible contribution to the Project's overall energy consumption.

5.3.1.2 Natural Gas

Natural gas consumption is not anticipated during construction of the Project. Fuels used for construction would generally consist of diesel and gasoline, which are discussed in the next subsection. Any amount of natural gas that may be consumed during Project construction would be nominal and would have a negligible contribution to the Project's overall energy consumption.

5.3.1.3 Diesel and Gasoline Fuel

Diesel and gasoline fuels, also referred to as petroleum in this subsection, would be consumed throughout construction of the Project. Fuel consumed by construction equipment would be the primary energy resource consumed over the course of construction, and VMT associated with the transportation of construction materials (e.g., deliveries to the site and off haul of soil) and worker trips to and from the site would also result in petroleum consumption. Whereas on-site, heavy-duty construction equipment and delivery trucks would predominantly use diesel fuel, construction workers would generally rely on gasoline-powered vehicles to commute to and from the Project site.

The operation of heavy-duty, off-road equipment associated with Project construction would consume approximately 15,469 gallons of diesel fuel. Worker, vendor, and hauling trips associated with Project construction are estimated to consume approximately 11,174 and 7,160 gallons of gasoline and

[6] As the latest version of the model, EMFAC2017 represents CARB's current understanding of motor vehicle travel activities and their associated emission levels. Though not approved yet by the U.S. EPA, it has been used in this analysis since, since it reflects the most updated information available from CARB.

diesel fuel, respectively. In total, Project construction is estimated to require approximately 11,174 gallons of gasoline and 22,629 gallons of diesel (totals may not equal due to rounding).

On- and off-road petroleum-powered vehicles/equipment would be subject to various rules and regulations at the federal and state levels. On the federal level, on-road vehicles would be subject to the SAFE Vehicles Rule. On the state level, off-road equipment at the site would also be required to comply with CARB's Airborne Toxic Control Measures, which restricts heavy-duty diesel vehicle idling to five minutes. In addition, the efficiency of petroleum use is related to numerous other state-wide regulations and programs, such as the LCFS (on- and off-road vehicles/equipment) and ACC Program (on-road vehicles). In addition, on the local level (i.e., immediate Project-level) Mitigation Measure AIR-1, contained in the Air Quality and Construction Health Risk Assessment Report prepared for the proposed Project, would require the use of late engine model years (i.e., equipment meeting U.S. EPA and CARB Tier IV Final Emission Standards) and use of electric-powered and liquefied or compressed natural gas equipment in lieu of diesel-powered equipment (e.g., generators) to the maximum extent feasible. Since petroleum use during construction would be temporary and is a necessary component when conducting development activities, it would not be wasteful or inefficient.

5.3.2 OPERATION

5.3.2.1 Electricity

During operation of the new multifamily residential land use, the Project would consume electricity from appliance operation, general building systems (e.g., lighting, HVAC equipment), and outdoor lighting. Based on estimates generated by CalEEMod, the proposed project would consume approximately 459,266 kWh per year of electricity. The proposed Project would be required to comply with the standards contained in the CalGreen Code (i.e., Part 11 of the Title 24 Building Code) that requires the installation of a PV system and other efficient electricity building features. The proposed Project site plan calls for the proposed buildings to be oriented in a north-south direction to best capture solar energy and natural lighting for energy conservation, and would include rooftop solar PV and solar thermal electricity and hot water heating systems. In addition, each individual apartment unit would be equipped with energy-saving and space-saving devices such as the tankless water closets, tankless water heaters and air condenser units for heating and cooling interior spaces. These project design features would help reduce electricity consumption associated with operation of the proposed Project.

The proposed Project would also indirectly benefit from other, regulatory actions taken at the state level. For example, SB 100 requires 60% of the power purchased by California come from renewable sources by 2030. SB 100 further requires all retail electricity be carbon-free by 2045. Based on these state-wide mandates, electricity consumed at the site will become more and more green (e.g., not requiring the burning of fossil fuels), which will lead to the more efficient use of energy resources.

Although electricity would increase at the site under implementation of the Project, the proposed facility would be designed to the 2019 Title 24 Building Code standards, and include other green building features (e.g., a more efficient water heating system) that go beyond the requirements of the CalGreen Code. For these reasons, the electricity consumed by the Project is not considered to be inefficient or wasteful.

5.3.2.2 Natural Gas

Natural gas consumption would be required during operation of the Project for various purposes, such as hot water and building HVAC. Based on estimates generated by CalEEMod, the proposed project would consume approximately 849,020 kBtu per year of natural gas. Although natural gas consumption would increase at the site under implementation of the Project, the building envelope, HVAC, lighting, and other systems, would be more efficient than the structure at the site currently. In addition, the Project would be subject to statewide mandatory energy requirements outlined in the 2019 Title 24 Building Code, as discussed above under “Electricity”. For these reasons, the natural gas that would be consumed by the Project is not considered to be inefficient or wasteful.

5.3.2.3 Gasoline, Diesel, and Natural Gas Fuels

Gasoline and diesel would be consumed during operation of the proposed Project. Both forms of petroleum fuel would be consumed from future residents traveling to and from the site. As estimated in CalEEMod, the proposed Project is anticipated to generate approximately 1,154,021 VMT on an annual basis. Based on the average fuel economy for LDA, LDT1, and LDT2 vehicle classifications, vehicle trips associated with the proposed Project would consume approximately 41,649 and 193 gallons of gasoline and diesel, respectively, on an annual basis.

There are numerous regulations in place that require and encourage fuel efficiency. For example, CARB has adopted an approach to passenger vehicles by combining the control of smog-causing pollutants and GHG emissions into a single, coordinated package of standards. The approach also includes efforts to support and accelerate the number of plug-in hybrids and ZEVs in California. In addition, per the requirements identified in SB 375, CARB adopted a regional goal for the SCAG region of reducing per-capita GHG emissions from 2005 levels by 8% by 2020 and 19% by 2035 for light-duty passenger vehicles. Accordingly, operation of the Project is expected to decrease the amount of petroleum it consumes in the future due to advances in fuel economy.

Although the Project would increase petroleum use in the region during construction and operation, the use would be a small fraction of the statewide use, and would have its overall fuel consumption decrease over time. As such, petroleum consumption associated with the Project would not be considered inefficient or wasteful.

5.4 CONFLICT WITH OR OBSTRUCT A STATE OR LOCAL PLAN FOR RENEWABLE ENERGY OR ENERGY EFFICIENCY

The proposed Project would not conflict with nor obstruct a state or local plan adopted for the purposes of increasing the amount of renewable energy or energy efficiency. As discussed above, the project would be subject to the California Title 24 Building Code energy efficiency standards for residential and non-residential buildings and feature many green building features (e.g., north-south orientation of buildings, tankless water heaters, PV system, etc.) to help reduce energy consumption. Equipment and vehicles associated with construction and operation of the project would also be subject to fuel standards at the state and federal level. The Project would support the goals and policies contained in the City of Covina EAP, such as Goal 3, Maximize the efficiency of all new buildings, because it would maximize the energy efficient design (e.g., north-south arrangement of the Project; Policy 3.1) and include energy-efficient appliances and equipment (Policy 3.2). The Project would not conflict with nor obstruct a state or local plan for renewable energy or energy efficiency.

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6 GREENHOUSE GAS IMPACT ANALYSIS

This chapter evaluates the GHG impacts that could result from implementation of the proposed Project. Unlike air quality, which is influenced by local and regional factors and is therefore considered on the local or regional scale, the effects of global climate change are the result of GHG emissions worldwide; individual projects do not generate enough GHG emissions to influence global climate change. Thus, the analysis of GHG emissions is by nature a cumulative analysis focused on whether an individual project's contribution to global climate change is cumulatively considerable.

6.1 THRESHOLDS OF SIGNIFICANCE

In accordance with Appendix G of the State CEQA Guidelines, the proposed Project could result in potentially significant GHG impacts if it would:

- Generate GHG emission, either directly or indirectly, that may have a significant impact on the environment or;
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG; or

In order to provide guidance to local lead agencies on determining the significance of GHG emissions in their CEQA documents, the SCAQMD convened the first GHG Significance Threshold Working Group (Working Group) meeting on April 30, 2008. To date, the Working Group has convened a total of 15 times, with the last meeting taking place on September 28, 2010. Based on the last Working Group meeting, the SCAQMD identified an interim, tiered approach for evaluating GHG emissions intent on capturing 90 percent of development projects where the SCAQMD is not the lead agency. The following describes the basic structure of the SCAQMD's tiered, interim GHG significance thresholds (SCAQMD, 2010):

- Tier 1 consists of evaluating whether or not the project qualifies for applicable CEQA exemptions.
- Tier 2 consists of determining whether or not a project is consistent with a greenhouse gas reduction plan. If a project is consistent with a greenhouse gas reduction plan, it would not have a significant impact.
- Tier 3 consists of using screening values at the discretion of the Lead Agency; however, the Lead Agency should be consistent for all projects within its jurisdiction. The following thresholds were proposed for consideration:
  - 3,000 $MTCO_2e$ per year for all land use types; or
  - 3,500 $MTCO_2e$ per year for residential; 1,400 $MTCO_2e$ per year for commercial; 3,000 $MTCO_2e$ per year for mixed use projects.
- Tier 4 has three options for projects that exceed the screening values identified in Tier 3:
  - Option 1: Reduce emissions from business-as-usual by a certain percentage (currently undefined); or
  - Option 2: Early implementation of applicable AB 32 Scoping Measures; or
  - Option 3: For plan-level analyses, analyze a project's emissions against an efficiency value of 6.6 $MTCO_2e$/year/service population by 2020 and 4.1 $MTCO_2e$/year/service population by 2035. For project-level analyses, analyze a project's emissions against an efficiency value of 4.8 and 3.0 $MTCO_2e$/year/service population for the 2020 and 2035 calendar years, respectively.

The SCAQMD's interim Tier 3 3,000 $MTCO_2e$ per year for all land use types was intended to address GHG emissions through the Year 2020, consistent with AB 32 GHG emissions reduction goals at the state level. Since the proposed Project would become operational as early as 2022 (i.e., two years after 2020), the 3,000 $MTCO_2e$ per year interim threshold is not directly applicable to the proposed Project. As such, in addition to the 3,000 $MTCO_2e$ per year interim threshold, this analysis also uses a Project-specific GHG emissions goal of 1,800 $MTCO_2e$ per year, which demonstrates progress towards the state's next GHG emission reduction goal in 2030 (i.e., 40 percent below 1990 levels by 2030).[7]

6.2 GHG EMISSIONS QUANTIFICATION METHODOLOGY

The construction and operation of the proposed Project would generate GHG emissions. This section describes the Project's emissions sources and the methodologies used to estimate potential Project emissions levels. A summary of the methodologies used to estimate the proposed Project's potential GHG emissions levels is shown in Table 6-1.

Table 6-1: Summary of Emissions Quantification Methodologies

Emissions Source	Methodology	Key Data Inputs
Construction Activities	CalEEMod	Size of Project Lot, Size of Building to be Demolished, Quantity of Cut to be Exported
Area, Energy, Water and Wastewater, and Solid Waste Sources	CalEEMod	Size and Type of Proposed Structure, Climate Zone, and Energy Efficiency
Mobile Sources	CalEEMod	Number of Trips and Trip Distance

6.2.1 CONSTRUCTION EMISSIONS

Construction of the proposed Project would generate equipment exhaust and dust emissions from demolition activities, ground disturbing activities such as site preparation and grading, and the use of gasoline- and diesel-fuel combustion in on- and off-site heavy duty construction equipment, worker vehicle trips, vendor vehicle trips, and haul truck trips, ground disturbing activities. The proposed Project's potential construction emissions were modeled using CalEEMod, Version 2016.3.2. The Project's construction activities, duration, and typical equipment used during construction are shown in Table 2-2. The construction phases, duration, and the type and amount of equipment used during construction was generated using CalEEMod default assumptions, and modified to reflect the following Project-specific characteristics:

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[7] The 1,800 $MTCO_2e$ per year goal was developed by taking the SCAQMD's Tier 3 threshold of 3,000 $MTCO_2e$ per year, which was the threshold to reduce emissions back to 1990 levels, and reducing it by 40 percent (3,000 $MTCO_2e$/yr * (1 - 0.4) = 1,800 $MTCO_2e$/yr). This reduction is consistent with the GHG reductions required under SB 32. This linear reduction approach oversimplifies the threshold development process. The City is not adopting nor proposing to use 1,800 MTCO2e as a CEQA GHG threshold for general use; rather, it is only intended for to provide additional context and information on the magnitude of the proposed Project's GHG emissions.

- Construction Phase durations were altered as follows:
  - Demolition Phase was reduced from 20 days (default) to 5 days to reflect the limited nature of demolition activities (i.e., one single-family house);
  - Grading Phase was extended from 6 days (default) to 15 days to account for additional time that may be required to excavate for the subterranean parking garage;
- Construction Equipment was adjusted to reflect the quantity and daily runtime associated with equipment operation during development activities;
- Demolition of approximately 2,647 square feet of existing building space and associated debris hauling activities was added; and
- Off-haul of approximately 7,532 cubic yards of soil during the grading phase to account for spoils that would be generated while excavating for the subterranean parking garage was added.

6.2.2 OPERATIONAL EMISSIONS

Once operational, the proposed Project would generate GHG emissions from the following sources:

- Small **"area" sources** including landscaping equipment and the use of consumer products such as paints, cleaners, and fertilizers that result in the evaporation of chemicals to the atmosphere during product use.
- Energy use in the form of natural gas combustion for building water and space heating needs.
- Mobile sources including resident trips to and from the site (see Table 2-1).
- Water and wastewater sources include the imbedded electricity consumption required to supply water to the Project site and treat wastewater produced by individuals working or visiting the site.
- Solid Waste including the transport of and disposal of waste generated at the Project site.

These sources and the methodology used to estimate emissions from these sources are described in more detail below.

Area, energy, mobile, water and wastewater, and waste source emissions were modeled using CalEEMod, V. 2016.3.2. The emissions estimates are based on default model assumptions with, the following modifications made to reflect Project-specific characteristics:

- Area Sources: Woodstoves and fireplaces were removed pursuant to SCAQMD Rule 445. The quantity of wood-burning fireplaces assumed by CalEEMod were added to natural-gas powered fireplaces.
- Energy Use and Consumption: Since CalEEMod default values are based on the energy efficiency standards contained in the 2016 CALGreen Code, the:
  - Default Title 24 electricity consumption intensity was adjusted downwards by a factor of 0.47 for residential land uses to reflect increased efficiency in the 2019 CALGreen Code (CEC, 2018).

    - Default energy efficiency value for light energy intensity was adjusted downwards by a factor of 0.7 for non-residential land uses to reflect increased lighting efficiency in the 2019 CALGreen Code (CEC, 2018).
  - GHG Electricity Intensity Values. The SCE GHG intensity value for CO_2 emissions was reduced based on an increase in renewable energy mix from 20% under Year 2012 conditions (the CalEEMod default data year) to approximately 39% under anticipated conditions in 2022 (based on SCE's RPS in 2017 and future RPS standards that will need to be met, such as SB 100). This adjustment reduced the estimated amount of CO_2 produced by the SCE energy mix from approximately 702 pounds/megawatt-hour (lbs/MWh) to 427 lbs/MWh (SCE, 2018).
    - Electricity generation emission factors for CH_4 (0.033 lbs/MWh) and N_20 (0.004 lbs/MWh) were obtained from the U.S. EPA's EGRID database for year 2016, the last year for which data was available at the time this EIR was prepared (U.S. EPA, 2016).
- Mobile Sources: The default, weekday trip generation rate for the proposed land use was updated to reflect the trip generation rate provided in the TIS prepared for the proposed Project by Linscott, Law & Greenspan (Linscott, Law & Greenspan 2020; see Table 2-1).

The modeling did not include: 1) the proposed solar PV system that would be installed, 2) the green building systems and appliances (e.g., tankless water heaters), 3) site design (e.g., building orientation), or 4) credit for GHG emissions that are generated by existing operations at the site, which would help reduce net energy consumption and associated GHG emissions. Therefore, this analysis is considered to have a conservative estimate of energy source emissions (i.e., likely to overestimate).

6.3 GHG EMISSIONS

The proposed Project would generate GHG emissions from both short-term construction and long-term operational activities. As described in more detail below, the proposed Project would not generate short-term or long-term emissions that exceed the SCAQMD GHG interim threshold of 3,000 $MTCO_2e$ per year or the Project-specific goal of 1,8000 $MTCO_2e$ per year.

Construction activities would generate GHG emissions primarily from equipment fuel combustion as well as worker, vendor, and haul trips to and from the Project site during demolition, site preparation, grading, building construction, paving, and architectural coating activities. Construction activities would cease to emit GHG upon completion, unlike operational emissions that would be continuous year after year until the Project is decommissioned. Accordingly, the SCAQMD recommends amortizing construction GHG emissions over a 30-year period and including with operational emissions estimates. This normalizes construction emissions so that they can be grouped with operational emissions and compared to appropriate thresholds, plans, etc. GHG emissions from construction of the proposed Project were estimated using CalEEMod, Version 2016.3.2, based on the anticipated construction schedule and construction activities described in Section 2.3.6. The proposed Project's total construction emissions, as estimated using CalEEMod V.2016.3.2, are shown in Table 6-2.

Table 6-2: Project Construction GHG Emissions				
Source	Annual GHG Emissions (MT / Year)			
	CO_2	CH_4	N_2O	TOTAL $MTCO_2e$
2021	318.2	<0.0(A)	0.0	319.4
2022	0.4	<0.0(A)	0.0	0.4
Construction Total	318.6	<0.0(A)	0.0	319.8
Amortized GHG Estimate(B)	10.6	<0.0(A)	0.0	10.7

Source: MIG, 2020 (see Appendix A)
(A) <0.0 does not mean zero; rather is means less than 0.05, but greater than zero.
(B) Emissions are amortized over the life of the Project, which is presumed to be 30 years.

Once operational, the proposed Project would generate emissions of GHG from area, energy, mobile, water/wastewater, and solid waste sources. For a description of the methodology used to estimate emissions from these sources, see Section 6.2. The proposed Project's operational GHG emissions are shown in Table 6-3.

Table 6-3: Project Operational GHG Emissions				
Emission Source	GHG Emissions (MT / Year)			
	CO_2	CH_4	N_2O	CO_2e
Area	15.4	<0.0(A)	<0.0(A)	15.5
Energy	134.3	<0.0(A)	<0.0(A)	135.0
Mobile	489.4	<0.0(A)	0.0	490.0
Waste	6.1	0.4	0.0	15.0
Water	16.9	0.1	<0.0(A)	21.1
Amortized Construction	10.6	<0.0(A)	0.0	10.7
Total(B)	672.7	0.5	<0.0(A)	687.4
SCAQMD 2020 Interim Threshold				*3,000*
Project-specific 2030 GHG Emissions Goal				*1,800*
SCAQMD Interim Threshold or Project-specific Goal Exceeded?				*No*

Source: MIG 2020 (see Appendix A).
(A) <0.0 does not mean zero; rather is means less than 0.05, but greater than zero.
(B) Totals may not equal due to rounding.

As shown in Table 6-3, the proposed Project's potential increase in GHG emissions would be below the SCAQMD's 2020 interim threshold for all land uses of 3,000 $MTCO_2e$ per year, as well as the Project-specific goal of 1,800 $MTCO_2e$ that demonstrates progress toward the State's 2030 GHG emission reduction goals. Therefore, the proposed Project would not generate GHG emissions that have the potential to exceed SCAQMD thresholds.

6.4 CONSISTENCY WITH GHG REDUCTION PLANS

The proposed Project would not conflict with CARB's Scoping Plan or the regional RTP/SCS. The Project's consistency with these plans is described in more detail below.

6.4.1 CARB SCOPING PLAN

As discussed under Section 4.3.2, the *2017 Climate Change Scoping Plan* is CARB's primary document used to ensure State GHG reduction goals are met. The 2017 Climate Change Scoping Plan's primary objective is to identify the measures needed to achieve the 2030 reduction target established under Executive Order B-30-15 and SB 32. The major elements of the plan are generally geared toward actions either CARB or other state entities will pursue, such as, but not limited to:

- Implementation of the Post-2020 Cap and Trade Program
- Implementation of the LCFS, with an increased stringency (18 percent by 2030);
- Implementation of SB 350, which expands the RPS to 50 percent and doubles energy efficiency savings; and
- Implementing the proposed Short-Lived Climate Pollutant Strategy, which focuses on reducing CH_4 and hydrocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by the year 2030.

Many of the measures identified in the *2017 Scoping Plan Update* are not applicable at the proposed Project level, such as the Cap-and-Trade Program that applies to all large industrial GHG emitters (industrial sources emitting more than 25,000 MTCO2e/year), or the reduction in GHG emissions associated with electricity utility generators. Although most of these measures would be implemented at the State level, the GHG reductions achieved by these state measures would be realized at the local level. For example, regardless of actions taken by the City, emissions generated through gasoline combustion in motor vehicles within the City of Covina would produce less GHG in 2030 than they do now.

In addition to State measures, Appendix B to CARB's *2017 Scoping Plan Update* identifies potential actions that could be undertaken at a local level to support the State's climate goals. This appendix is organized into two categories Category A applies to code and broad planning documents and is not applicable to the proposed Project. Category B includes measures that could be considered for individual projects. The proposed Project is consistent with many of the suggested measures in Appendix B through required compliance with SCAQMD rules and the California Green Building Standards Code. The project, therefore, would not conflict with the goals of the *2017 Scoping Plan Update*.

6.4.2 SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS RTP/SCS

As described in Section 4.3.2, the Connect SoCal is growth strategy and transportation plan whose primary intent is to demonstrate how the SCAG region will meet its GHG reduction target through the year 2045. Many of the measures included in the RTP/SCS are focused on: the expansion of, and access to, mass transit (e.g., light rail, commuter rail, bus rapid transit, etc.); planning growth around livable corridors; and locating new housing and job growth in high quality transit areas. Collectively, these land use plans, in conjunction with measures at the state-level to improve fuel efficiency standards, are designed to meet CARB's goal for the SCAB region for reducing per capita GHG emissions in the region by eight percent by 2020—compared with 2005 levels—and by 19 percent by 2035 (CARB, 2018).

The proposed Project would not be located in a TPA nor would it be located in a HQTA; however, the Project would be located adjacent to Foothill Transit Route 190 which, per the information provided in the Project TIS, is served by approximately one bus every 15 minutes in either direction during the AM and PM peak hours (Linscott, Law & Greenspan 2020). The proposed Project would also feature many green elements, which would help reduce VMT and GHG emissions in general. For example, the proposed project would include a community room and would be located adjacent to two schools. This would help reduce potential trips associated with community gatherings, and trips to and from school. Furthermore, the proposed Project would feature sustainable elements, such as tankless water heaters and reduced energy consumption associated with building orientation. Therefore, although the proposed Project is not in TPA or HQTA, as identified in Connect SoCal, it is still in proximity to bus transit and features green elements. This supports the overarching goals of Connect SoCal. Therefore, the proposed Project would not conflict with or otherwise obstruct implementation of Connect SoCal.

6.4.3 CITY OF COVINA ENERGY ACTION PLAN

As described in Section 5.4, the proposed Project would not conflict with the City of Covina EAP.

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7 REPORT PREPARERS AND REFERENCES

This report was prepared by MIG under contract to Faith Community Church, LLC. This report reflects the independent, objective, professional opinion of MIG. The following individuals were involved in the preparation and review of this report:

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APPENDIX A: CalEEMod Output Files

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529 Cutter Way (Tier IV Construction Mitigation)

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Library	2.50	1000sqft	0.06	2,500.00	0
Enclosed Parking with Elevator	35.41	1000sqft	0.00	35,411.00	0
Other Non-Asphalt Surfaces	32.39	1000sqft	0.74	32,389.00	0
Parking Lot	30.11	1000sqft	0.69	30,112.00	0
Apartments Mid Rise	60.00	Dwelling Unit	0.75	63,869.00	172

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 33

Climate Zone 9 **Operational Year** 2022

Utility Company Southern California Edison

CO2 Intensity (lb/MWhr) 427.1 **CH4 Intensity (lb/MWhr)** 0.033 **N2O Intensity (lb/MWhr)** 0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - MIG Modeler: Phil Gleason. SCE GHG intensity values updated to reflect SCE estimated renewable mix in 2022.

Land Use - Land uses updated to reflect size of project based on information provided in the site plan cover sheet. Library reflects community center.

Construction Phase - Demo reduced to 5 days b/c only one house. Grading increased to 3 weeks to reflect additional time for excavation activities.

Off-road Equipment -

Off-road Equipment - Building Const Equip - Assumes crans and forklifts only operate 6hrs per day for 220 days; elect hookups available on-site; only 1 welder would be required for 3hrs per day for 220 days (equates to 8hrs per day for 82.5 days).

Off-road Equipment - Demo Equip - TLB reduced from 3 to 2, since only one house being demoed.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Demolition - Existing 2,647 sf house demoed as part of project.

Grading - Project would require the off-haul of 7,532 CY of soil during grading.

Vehicle Trips - Weekday trip gen updated to reflect 326 daily trips per TIS prepared by LL&G. Assumes community center trips are internal (i.e, project-serving only).

Woodstoves - Updated to reflect ban on wood-burning devices; wood and fireplaces added to gas.

Energy Use - Res T24 elect intensity adj downward to reflect compliance with 2019 CalGreen Code; comment center assumed to have same reduction as res since located in res building. Non-res lighting adj downward for 2019 T24.

Construction Off-road Equipment Mitigation - Assumes watering 3x per day to comply with SCAQMD Rule 403. Equipment 50hp< would meet Tier IV emission standards.

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00

529 Cutter Way (Tier IV Construction Mitigation) - Los Angeles-South Coast County, Annual

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	6.00	15.00
tblEnergyUse	LightingElect	1.75	1.23
tblEnergyUse	T24E	252.63	118.74
tblEnergyUse	T24E	2.25	1.06
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	51.00	60.00
tblFireplaces	NumberNoFireplace	6.00	0.00
tblFireplaces	NumberWood	3.00	0.00
tblGrading	MaterialExported	0.00	7,532.00
tblLandUse	LandUseSquareFeet	35,410.00	35,411.00
tblLandUse	LandUseSquareFeet	32,390.00	32,389.00
tblLandUse	LandUseSquareFeet	30,110.00	30,112.00
tblLandUse	LandUseSquareFeet	60,000.00	63,869.00
tblLandUse	LotAcreage	0.81	0.00
tblLandUse	LotAcreage	1.58	0.75
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.033
tblProjectCharacteristics	CO2IntensityFactor	702.44	427.1
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblTripsAndVMT	WorkerTripNumber	10.00	13.00
tblVehicleTrips	ST_TR	46.55	0.00
tblVehicleTrips	SU_TR	25.49	0.00
tblVehicleTrips	WD_TR	6.65	5.43
tblVehicleTrips	WD_TR	56.24	0.00
tblWoodstoves	NumberCatalytic	3.00	0.00
tblWoodstoves	NumberNoncatalytic	3.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	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	0.3442	1.5101	1.2617	3.5000e-003	0.1827	0.0576	0.2404	0.0606	0.0534	0.1140	0.0000	318.2107	318.2107	0.0472	0.0000	319.3912
2022	0.0453	1.4600e-003	2.4100e-003	0.0000	1.9000e-004	8.0000e-005	2.7000e-004	5.0000e-005	8.0000e-005	1.3000e-004	0.0000	0.4175	0.4175	2.0000e-005	0.0000	0.4181
Maximum	**0.3442**	**1.5101**	**1.2617**	**3.5000e-003**	**0.1827**	**0.0576**	**0.2404**	**0.0606**	**0.0534**	**0.1140**	**0.0000**	**318.2107**	**318.2107**	**0.0472**	**0.0000**	**319.3912**

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	0.2647	0.5608	1.3360	3.5000e-003	0.1502	7.8400e-003	0.1581	0.0449	7.7300e-003	0.0526	0.0000	318.2105	318.2105	0.0472	0.0000	319.3911
2022	0.0453	1.4600e-003	2.4100e-003	0.0000	1.9000e-004	8.0000e-005	2.7000e-004	5.0000e-005	8.0000e-005	1.3000e-004	0.0000	0.4175	0.4175	2.0000e-005	0.0000	0.4181
Maximum	**0.2647**	**0.5608**	**1.3360**	**3.5000e-003**	**0.1502**	**7.8400e-003**	**0.1581**	**0.0449**	**7.7300e-003**	**0.0526**	**0.0000**	**318.2105**	**318.2105**	**0.0472**	**0.0000**	**319.3911**

	ROG	**NOx**	**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	**20.42**	**62.80**	**-5.88**	**0.00**	**17.76**	**86.28**	**34.20**	**25.92**	**85.39**	**53.78**	**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	1-1-2021	3-31-2021	0.6110	0.2450
2	4-1-2021	6-30-2021	0.3597	0.1360
3	7-1-2021	9-30-2021	0.3637	0.1375
4	10-1-2021	12-31-2021	0.4979	0.2799
5	1-1-2022	3-31-2022	0.0668	0.0668
		Highest	0.6110	0.2799

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	0.2889	0.0196	0.6260	1.1000e-004		4.4300e-003	4.4300e-003		4.4300e-003	4.4300e-003	0.0000	15.4215	15.4215	1.2600e-003	2.6000e-004	15.5316
Energy	4.5800e-003	0.0393	0.0176	2.5000e-004		3.1600e-003	3.1600e-003		3.1600e-003	3.1600e-003	0.0000	134.2802	134.2802	7.7400e-003	1.6600e-003	134.9696
Mobile	0.1052	0.5538	1.4512	5.3000e-003	0.4380	4.4300e-003	0.4424	0.1174	4.1300e-003	0.1215	0.0000	489.3950	489.3950	0.0252	0.0000	490.0240
Waste						0.0000	0.0000		0.0000	0.0000	6.0694	0.0000	6.0694	0.3587	0.0000	15.0368
Water						0.0000	0.0000		0.0000	0.0000	1.2650	15.6264	16.8914	0.1311	3.2100e-003	21.1278
Total	**0.3987**	**0.6126**	**2.0949**	**5.6600e-003**	**0.4380**	**0.0120**	**0.4500**	**0.1174**	**0.0117**	**0.1291**	**7.3345**	**654.7230**	**662.0575**	**0.5240**	**5.1300e-003**	**676.6898**

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	0.2889	0.0196	0.6260	1.1000e-004		4.4300e-003	4.4300e-003		4.4300e-003	4.4300e-003	0.0000	15.4215	15.4215	1.2600e-003	2.6000e-004	15.5316
Energy	4.5800e-003	0.0393	0.0176	2.5000e-004		3.1600e-003	3.1600e-003		3.1600e-003	3.1600e-003	0.0000	134.2802	134.2802	7.7400e-003	1.6600e-003	134.9696
Mobile	0.1052	0.5538	1.4512	5.3000e-003	0.4380	4.4300e-003	0.4424	0.1174	4.1300e-003	0.1215	0.0000	489.3950	489.3950	0.0252	0.0000	490.0240
Waste						0.0000	0.0000		0.0000	0.0000	6.0694	0.0000	6.0694	0.3587	0.0000	15.0368
Water						0.0000	0.0000		0.0000	0.0000	1.2650	15.6264	16.8914	0.1311	3.2100e-003	21.1278
Total	**0.3987**	**0.6126**	**2.0949**	**5.6600e-003**	**0.4380**	**0.0120**	**0.4500**	**0.1174**	**0.0117**	**0.1291**	**7.3345**	**654.7230**	**662.0575**	**0.5240**	**5.1300e-003**	**676.6898**

	ROG	**NOx**	**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	1/1/2021	1/7/2021	5	5	
2	Site Preparation	Site Preparation	1/8/2021	1/12/2021	5	3	
3	Grading	Grading	1/13/2021	2/2/2021	5	15	
4	Building Construction	Building Construction	2/3/2021	12/7/2021	5	220	
5	Paving	Paving	12/8/2021	12/21/2021	5	10	
6	Architectural Coating	Architectural Coating	12/22/2021	1/4/2022	5	10	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 7.5

Acres of Paving: 1.43

Residential Indoor: 129,335; Residential Outdoor: 43,112; Non-Residential Indoor: 3,750; Non-Residential Outdoor: 1,250; Striped Parking Area: 5,875 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	1	3.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

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
Demolition	4	13.00	0.00	12.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	942.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	85.00	23.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	17.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

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					1.3000e-003	0.0000	1.3000e-003	2.0000e-004	0.0000	2.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.5100e-003	0.0445	0.0306	5.0000e-005		2.3200e-003	2.3200e-003		2.1700e-003	2.1700e-003	0.0000	4.5854	4.5854	1.1300e-003	0.0000	4.6136
Total	**4.5100e-003**	**0.0445**	**0.0306**	**5.0000e-005**	**1.3000e-003**	**2.3200e-003**	**3.6200e-003**	**2.0000e-004**	**2.1700e-003**	**2.3700e-003**	**0.0000**	**4.5854**	**4.5854**	**1.1300e-003**	**0.0000**	**4.6136**

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	5.0000e-005	1.6600e-003	3.9000e-004	0.0000	1.0000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.4574	0.4574	3.0000e-005	0.0000	0.4582
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	1.4000e-004	1.1000e-004	1.2300e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.3214	0.3214	1.0000e-005	0.0000	0.3216
Total	**1.9000e-004**	**1.7700e-003**	**1.6200e-003**	**0.0000**	**4.6000e-004**	**0.0000**	**4.7000e-004**	**1.2000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.7788**	**0.7788**	**4.0000e-005**	**0.0000**	**0.7798**

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					5.1000e-004	0.0000	5.1000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.4100e-003	9.5500e-003	0.0305	5.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	4.5854	4.5854	1.1300e-003	0.0000	4.6136
Total	**1.4100e-003**	**9.5500e-003**	**0.0305**	**5.0000e-005**	**5.1000e-004**	**4.9000e-004**	**1.0000e-003**	**8.0000e-005**	**4.9000e-004**	**5.7000e-004**	**0.0000**	**4.5854**	**4.5854**	**1.1300e-003**	**0.0000**	**4.6136**

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	5.0000e-005	1.6600e-003	3.9000e-004	0.0000	1.0000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.4574	0.4574	3.0000e-005	0.0000	0.4582
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	1.4000e-004	1.1000e-004	1.2300e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.3214	0.3214	1.0000e-005	0.0000	0.3216
Total	**1.9000e-004**	**1.7700e-003**	**1.6200e-003**	**0.0000**	**4.6000e-004**	**0.0000**	**4.7000e-004**	**1.2000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.7788**	**0.7788**	**4.0000e-005**	**0.0000**	**0.7798**

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					2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3200e-003	0.0274	0.0161	4.0000e-005		1.0500e-003	1.0500e-003		9.7000e-004	9.7000e-004	0.0000	3.2290	3.2290	1.0400e-003	0.0000	3.2551
Total	**2.3200e-003**	**0.0274**	**0.0161**	**4.0000e-005**	**2.3900e-003**	**1.0500e-003**	**3.4400e-003**	**2.6000e-004**	**9.7000e-004**	**1.2300e-003**	**0.0000**	**3.2290**	**3.2290**	**1.0400e-003**	**0.0000**	**3.2551**

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	5.0000e-005	4.0000e-005	4.5000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.1187	0.1187	0.0000	0.0000	0.1188
Total	**5.0000e-005**	**4.0000e-005**	**4.5000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**3.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1187**	**0.1187**	**0.0000**	**0.0000**	**0.1188**

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					9.3000e-004	0.0000	9.3000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.5000e-004	1.9600e-003	0.0178	4.0000e-005		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	3.2290	3.2290	1.0400e-003	0.0000	3.2551
Total	**4.5000e-004**	**1.9600e-003**	**0.0178**	**4.0000e-005**	**9.3000e-004**	**6.0000e-005**	**9.9000e-004**	**1.0000e-004**	**6.0000e-005**	**1.6000e-004**	**0.0000**	**3.2290**	**3.2290**	**1.0400e-003**	**0.0000**	**3.2551**

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	5.0000e-005	4.0000e-005	4.5000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.1187	0.1187	0.0000	0.0000	0.1188
Total	**5.0000e-005**	**4.0000e-005**	**4.5000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**3.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1187**	**0.1187**	**0.0000**	**0.0000**	**0.1188**

3.4 Grading - 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					0.0496	0.0000	0.0496	0.0253	0.0000	0.0253	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0137	0.1516	0.0732	1.5000e-004		6.8700e-003	6.8700e-003		6.3200e-003	6.3200e-003	0.0000	13.5779	13.5779	4.3900e-003	0.0000	13.6877
Total	**0.0137**	**0.1516**	**0.0732**	**1.5000e-004**	**0.0496**	**6.8700e-003**	**0.0564**	**0.0253**	**6.3200e-003**	**0.0316**	**0.0000**	**13.5779**	**13.5779**	**4.3900e-003**	**0.0000**	**13.6877**

3.4 Grading - 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	3.9700e-003	0.1304	0.0304	3.6000e-004	8.0900e-003	3.9000e-004	8.4900e-003	2.2200e-003	3.7000e-004	2.6000e-003	0.0000	35.9042	35.9042	2.4900e-003	0.0000	35.9665
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	3.2000e-004	2.5000e-004	2.8400e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7417	0.7417	2.0000e-005	0.0000	0.7422
Total	**4.2900e-003**	**0.1306**	**0.0332**	**3.7000e-004**	**8.9100e-003**	**4.0000e-004**	**9.3200e-003**	**2.4400e-003**	**3.8000e-004**	**2.8200e-003**	**0.0000**	**36.6458**	**36.6458**	**2.5100e-003**	**0.0000**	**36.7087**

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					0.0193	0.0000	0.0193	9.8800e-003	0.0000	9.8800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8900e-003	8.1900e-003	0.0818	1.5000e-004		2.5000e-004	2.5000e-004		2.5000e-004	2.5000e-004	0.0000	13.5779	13.5779	4.3900e-003	0.0000	13.6877
Total	**1.8900e-003**	**8.1900e-003**	**0.0818**	**1.5000e-004**	**0.0193**	**2.5000e-004**	**0.0196**	**9.8800e-003**	**2.5000e-004**	**0.0101**	**0.0000**	**13.5779**	**13.5779**	**4.3900e-003**	**0.0000**	**13.6877**

3.4 Grading - 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	3.9700e-003	0.1304	0.0304	3.6000e-004	8.0900e-003	3.9000e-004	8.4900e-003	2.2200e-003	3.7000e-004	2.6000e-003	0.0000	35.9042	35.9042	2.4900e-003	0.0000	35.9665
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	3.2000e-004	2.5000e-004	2.8400e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7417	0.7417	2.0000e-005	0.0000	0.7422
Total	**4.2900e-003**	**0.1306**	**0.0332**	**3.7000e-004**	**8.9100e-003**	**4.0000e-004**	**9.3200e-003**	**2.4400e-003**	**3.8000e-004**	**2.8200e-003**	**0.0000**	**36.6458**	**36.6458**	**2.5100e-003**	**0.0000**	**36.7087**

3.5 Building Construction - 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					
Off-Road	0.0833	0.8133	0.6137	1.0900e-003		0.0423	0.0423		0.0392	0.0392	0.0000	94.2599	94.2599	0.0290	0.0000	94.9845
Total	**0.0833**	**0.8133**	**0.6137**	**1.0900e-003**		**0.0423**	**0.0423**		**0.0392**	**0.0392**	**0.0000**	**94.2599**	**94.2599**	**0.0290**	**0.0000**	**94.9845**

3.5 Building Construction - 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	7.8600e-003	0.2497	0.0677	6.4000e-004	0.0159	5.1000e-004	0.0165	4.6000e-003	4.9000e-004	5.0900e-003	0.0000	62.3636	62.3636	3.8300e-003	0.0000	62.4593
Worker	0.0402	0.0313	0.3536	1.0200e-003	0.1025	8.4000e-004	0.1033	0.0272	7.8000e-004	0.0280	0.0000	92.4637	92.4637	2.7200e-003	0.0000	92.5318
Total	**0.0481**	**0.2810**	**0.4213**	**1.6600e-003**	**0.1184**	**1.3500e-003**	**0.1198**	**0.0318**	**1.2700e-003**	**0.0331**	**0.0000**	**154.8274**	**154.8274**	**6.5500e-003**	**0.0000**	**154.9910**

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	0.0246	0.1146	0.6702	1.0900e-003		4.6700e-003	4.6700e-003		4.6700e-003	4.6700e-003	0.0000	94.2598	94.2598	0.0290	0.0000	94.9844
Total	**0.0246**	**0.1146**	**0.6702**	**1.0900e-003**		**4.6700e-003**	**4.6700e-003**		**4.6700e-003**	**4.6700e-003**	**0.0000**	**94.2598**	**94.2598**	**0.0290**	**0.0000**	**94.9844**

3.5 Building Construction - 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	7.8600e-003	0.2497	0.0677	6.4000e-004	0.0159	5.1000e-004	0.0165	4.6000e-003	4.9000e-004	5.0900e-003	0.0000	62.3636	62.3636	3.8300e-003	0.0000	62.4593
Worker	0.0402	0.0313	0.3536	1.0200e-003	0.1025	8.4000e-004	0.1033	0.0272	7.8000e-004	0.0280	0.0000	92.4637	92.4637	2.7200e-003	0.0000	92.5318
Total	**0.0481**	**0.2810**	**0.4213**	**1.6600e-003**	**0.1184**	**1.3500e-003**	**0.1198**	**0.0318**	**1.2700e-003**	**0.0331**	**0.0000**	**154.8274**	**154.8274**	**6.5500e-003**	**0.0000**	**154.9910**

3.6 Paving - 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					
Off-Road	5.3200e-003	0.0532	0.0589	9.0000e-005		2.9100e-003	2.9100e-003		2.6900e-003	2.6900e-003	0.0000	7.7524	7.7524	2.4600e-003	0.0000	7.8138
Paving	9.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.2200e-003**	**0.0532**	**0.0589**	**9.0000e-005**		**2.9100e-003**	**2.9100e-003**		**2.6900e-003**	**2.6900e-003**	**0.0000**	**7.7524**	**7.7524**	**2.4600e-003**	**0.0000**	**7.8138**

3.6 Paving - 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	3.2000e-004	2.5000e-004	2.8400e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7417	0.7417	2.0000e-005	0.0000	0.7422
Total	**3.2000e-004**	**2.5000e-004**	**2.8400e-003**	**1.0000e-005**	**8.2000e-004**	**1.0000e-005**	**8.3000e-004**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7417**	**0.7417**	**2.0000e-005**	**0.0000**	**0.7422**

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	1.3500e-003	6.4000e-003	0.0664	9.0000e-005		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004	0.0000	7.7524	7.7524	2.4600e-003	0.0000	7.8138
Paving	9.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.2500e-003**	**6.4000e-003**	**0.0664**	**9.0000e-005**		**2.1000e-004**	**2.1000e-004**		**2.1000e-004**	**2.1000e-004**	**0.0000**	**7.7524**	**7.7524**	**2.4600e-003**	**0.0000**	**7.8138**

3.6 Paving - 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	3.2000e-004	2.5000e-004	2.8400e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7417	0.7417	2.0000e-005	0.0000	0.7422
Total	**3.2000e-004**	**2.5000e-004**	**2.8400e-003**	**1.0000e-005**	**8.2000e-004**	**1.0000e-005**	**8.3000e-004**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7417**	**0.7417**	**2.0000e-005**	**0.0000**	**0.7422**

3.7 Architectural Coating - 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					
Archit. Coating	0.1800					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.8000e-004	6.1100e-003	7.2700e-003	1.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004	0.0000	1.0213	1.0213	7.0000e-005	0.0000	1.0231
Total	**0.1809**	**6.1100e-003**	**7.2700e-003**	**1.0000e-005**		**3.8000e-004**	**3.8000e-004**		**3.8000e-004**	**3.8000e-004**	**0.0000**	**1.0213**	**1.0213**	**7.0000e-005**	**0.0000**	**1.0231**

3.7 Architectural Coating - 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	2.9000e-004	2.3000e-004	2.5700e-003	1.0000e-005	7.5000e-004	1.0000e-005	7.5000e-004	2.0000e-004	1.0000e-005	2.0000e-004	0.0000	0.6725	0.6725	2.0000e-005	0.0000	0.6730
Total	**2.9000e-004**	**2.3000e-004**	**2.5700e-003**	**1.0000e-005**	**7.5000e-004**	**1.0000e-005**	**7.5000e-004**	**2.0000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6725**	**0.6725**	**2.0000e-005**	**0.0000**	**0.6730**

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	0.1800					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.8000e-004	6.1100e-003	7.2700e-003	1.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004	0.0000	1.0213	1.0213	7.0000e-005	0.0000	1.0231
Total	**0.1809**	**6.1100e-003**	**7.2700e-003**	**1.0000e-005**		**3.8000e-004**	**3.8000e-004**		**3.8000e-004**	**3.8000e-004**	**0.0000**	**1.0213**	**1.0213**	**7.0000e-005**	**0.0000**	**1.0231**

3.7 Architectural Coating - 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	2.9000e-004	2.3000e-004	2.5700e-003	1.0000e-005	7.5000e-004	1.0000e-005	7.5000e-004	2.0000e-004	1.0000e-005	2.0000e-004	0.0000	0.6725	0.6725	2.0000e-005	0.0000	0.6730
Total	**2.9000e-004**	**2.3000e-004**	**2.5700e-003**	**1.0000e-005**	**7.5000e-004**	**1.0000e-005**	**7.5000e-004**	**2.0000e-004**	**1.0000e-005**	**2.0000e-004**	**0.0000**	**0.6725**	**0.6725**	**2.0000e-005**	**0.0000**	**0.6730**

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	0.0450					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0000e-004	1.4100e-003	1.8100e-003	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.2553	0.2553	2.0000e-005	0.0000	0.2557
Total	**0.0452**	**1.4100e-003**	**1.8100e-003**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**0.2553**	**0.2553**	**2.0000e-005**	**0.0000**	**0.2557**

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	7.0000e-005	5.0000e-005	5.9000e-004	0.0000	1.9000e-004	0.0000	1.9000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1622	0.1622	0.0000	0.0000	0.1623
Total	**7.0000e-005**	**5.0000e-005**	**5.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1622**	**0.1622**	**0.0000**	**0.0000**	**0.1623**

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	0.0450					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0000e-004	1.4100e-003	1.8100e-003	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.2553	0.2553	2.0000e-005	0.0000	0.2557
Total	**0.0452**	**1.4100e-003**	**1.8100e-003**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**0.2553**	**0.2553**	**2.0000e-005**	**0.0000**	**0.2557**

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	7.0000e-005	5.0000e-005	5.9000e-004	0.0000	1.9000e-004	0.0000	1.9000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1622	0.1622	0.0000	0.0000	0.1623
Total	**7.0000e-005**	**5.0000e-005**	**5.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1622**	**0.1622**	**0.0000**	**0.0000**	**0.1623**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1052	0.5538	1.4512	5.3000e-003	0.4380	4.4300e-003	0.4424	0.1174	4.1300e-003	0.1215	0.0000	489.3950	489.3950	0.0252	0.0000	490.0240
Unmitigated	0.1052	0.5538	1.4512	5.3000e-003	0.4380	4.4300e-003	0.4424	0.1174	4.1300e-003	0.1215	0.0000	489.3950	489.3950	0.0252	0.0000	490.0240

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	325.80	383.40	351.60	1,154,021	1,154,021
Enclosed Parking with Elevator	0.00	0.00	0.00		
Library	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	325.80	383.40	351.60	1,154,021	1,154,021

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
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Library	16.60	8.40	6.90	52.00	43.00	5.00	44	44	12
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Enclosed Parking with Elevator	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Library	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Other Non-Asphalt Surfaces	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876
Parking Lot	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876

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	88.9732	88.9732	6.8700e-003	8.3000e-004	89.3934
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	88.9732	88.9732	6.8700e-003	8.3000e-004	89.3934
NaturalGas Mitigated	4.5800e-003	0.0393	0.0176	2.5000e-004		3.1600e-003	3.1600e-003		3.1600e-003	3.1600e-003	0.0000	45.3070	45.3070	8.7000e-004	8.3000e-004	45.5762
NaturalGas Unmitigated	4.5800e-003	0.0393	0.0176	2.5000e-004		3.1600e-003	3.1600e-003		3.1600e-003	3.1600e-003	0.0000	45.3070	45.3070	8.7000e-004	8.3000e-004	45.5762

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					
Apartments Mid Rise	803770	4.3300e-003	0.0370	0.0158	2.4000e-004		2.9900e-003	2.9900e-003		2.9900e-003	2.9900e-003	0.0000	42.8922	42.8922	8.2000e-004	7.9000e-004	43.1471
Enclosed Parking with Elevator	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
Library	45250	2.4000e-004	2.2200e-003	1.8600e-003	1.0000e-005		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004	0.0000	2.4147	2.4147	5.0000e-005	4.0000e-005	2.4291
Other Non-Asphalt Surfaces	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
Parking Lot	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
Total		**4.5700e-003**	**0.0393**	**0.0176**	**2.5000e-004**		**3.1600e-003**	**3.1600e-003**		**3.1600e-003**	**3.1600e-003**	**0.0000**	**45.3070**	**45.3070**	**8.7000e-004**	**8.3000e-004**	**45.5762**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	803770	4.3300e-003	0.0370	0.0158	2.4000e-004		2.9900e-003	2.9900e-003		2.9900e-003	2.9900e-003	0.0000	42.8922	42.8922	8.2000e-004	7.9000e-004	43.1471
Enclosed Parking with Elevator	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
Library	45250	2.4000e-004	2.2200e-003	1.8600e-003	1.0000e-005		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004	0.0000	2.4147	2.4147	5.0000e-005	4.0000e-005	2.4291
Other Non-Asphalt Surfaces	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
Parking Lot	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
Total		**4.5700e-003**	**0.0393**	**0.0176**	**2.5000e-004**		**3.1600e-003**	**3.1600e-003**		**3.1600e-003**	**3.1600e-003**	**0.0000**	**45.3070**	**45.3070**	**8.7000e-004**	**8.3000e-004**	**45.5762**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	234857	45.4986	3.5200e-003	4.3000e-004	45.7135
Enclosed Parking with Elevator	189095	36.6332	2.8300e-003	3.4000e-004	36.8062
Library	24775	4.7996	3.7000e-004	4.0000e-005	4.8223
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	10539.2	2.0418	1.6000e-004	2.0000e-005	2.0514
Total		**88.9732**	**6.8800e-003**	**8.3000e-004**	**89.3934**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	234857	45.4986	3.5200e-003	4.3000e-004	45.7135
Enclosed Parking with Elevator	189095	36.6332	2.8300e-003	3.4000e-004	36.8062
Library	24775	4.7996	3.7000e-004	4.0000e-005	4.8223
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	10539.2	2.0418	1.6000e-004	2.0000e-005	2.0514
Total		**88.9732**	**6.8800e-003**	**8.3000e-004**	**89.3934**

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	0.2889	0.0196	0.6260	1.1000e-004		4.4300e-003	4.4300e-003		4.4300e-003	4.4300e-003	0.0000	15.4215	15.4215	1.2600e-003	2.6000e-004	15.5316
Unmitigated	0.2889	0.0196	0.6260	1.1000e-004		4.4300e-003	4.4300e-003		4.4300e-003	4.4300e-003	0.0000	15.4215	15.4215	1.2600e-003	2.6000e-004	15.5316

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0225					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2462					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.4600e-003	0.0124	5.2900e-003	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.0000	14.4082	14.4082	2.8000e-004	2.6000e-004	14.4939
Landscaping	0.0188	7.1600e-003	0.6207	3.0000e-005		3.4300e-003	3.4300e-003		3.4300e-003	3.4300e-003	0.0000	1.0132	1.0132	9.8000e-004	0.0000	1.0378
Total	**0.2889**	**0.0196**	**0.6260**	**1.1000e-004**		**4.4400e-003**	**4.4400e-003**		**4.4400e-003**	**4.4400e-003**	**0.0000**	**15.4215**	**15.4215**	**1.2600e-003**	**2.6000e-004**	**15.5316**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0225					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2462					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.4600e-003	0.0124	5.2900e-003	8.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.0000	14.4082	14.4082	2.8000e-004	2.6000e-004	14.4939
Landscaping	0.0188	7.1600e-003	0.6207	3.0000e-005		3.4300e-003	3.4300e-003		3.4300e-003	3.4300e-003	0.0000	1.0132	1.0132	9.8000e-004	0.0000	1.0378
Total	**0.2889**	**0.0196**	**0.6260**	**1.1000e-004**		**4.4400e-003**	**4.4400e-003**		**4.4400e-003**	**4.4400e-003**	**0.0000**	**15.4215**	**15.4215**	**1.2600e-003**	**2.6000e-004**	**15.5316**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	16.8914	0.1311	3.2100e-003	21.1278
Unmitigated	16.8914	0.1311	3.2100e-003	21.1278

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	3.90924 / 2.46452	16.4060	0.1286	3.1500e-003	20.5585
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Library	0.0782223 / 0.122348	0.4855	2.5800e-003	6.0000e-005	0.5693
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**16.8914**	**0.1311**	**3.2100e-003**	**21.1278**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	3.90924 / 2.46452	16.4060	0.1286	3.1500e-003	20.5585
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Library	0.0782223 / 0.122348	0.4855	2.5800e-003	6.0000e-005	0.5693
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**16.8914**	**0.1311**	**3.2100e-003**	**21.1278**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	6.0694	0.3587	0.0000	15.0368
Unmitigated	6.0694	0.3587	0.0000	15.0368

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	27.6	5.6026	0.3311	0.0000	13.8801
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Library	2.3	0.4669	0.0276	0.0000	1.1567
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**6.0694**	**0.3587**	**0.0000**	**15.0368**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	27.6	5.6026	0.3311	0.0000	13.8801
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Library	2.3	0.4669	0.0276	0.0000	1.1567
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**6.0694**	**0.3587**	**0.0000**	**15.0368**

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

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APPENDIX B: Fuel Consumption Spreadsheets

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529 Cutter Way
Covina, CA

Fuel Consumption Spreadsheets
Prepared by: MIG, Inc.
November 2020

Contents:

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Energy Appendix: Fuel Consumption Estimations
529 Cutter Way
Covina, CA
Prepared by MIG, Inc. November 2020

Sheet 1: Construction and Operational Fuel Consumption Summary

Construction Fuel Consumption

Activity	Gasoline	Diesel
On-site	-	15,469
Off-site	11,174	7,160
Total	11,174	22,629

Operational Fuel Consumption

Trip Type	Gasoline	Diesel
Residents	41,649	193
Total	41,649	193

Sheet 2: Construction On-site Fuel Consumption Estimations

Phase	Days	Equipment	# of Pieces	Hr/Day	Horsepower	Load Factor	Runtime (bhp-hr)	Consumption (bhp-hr/gal)[1]	Gallons of Diesel
Demolition	5	Concrete/Industrial Saws	1	8	81	0.73	2,365	18.5	128
		Rubber Tired Dozers	1	8	247	0.40	3,952		214
		Tractors/Loaders/Backhoes	2	8	97	0.37	2,871		155
Site Preparation	3	Graders	1	8	187	0.41	1,840		99
		Scrapers	1	8	367	0.48	4,228		229
		Tractors/Loaders/Backhoes	1	7	97	0.37	754		41
Grading	15	Graders	1	8	187	0.41	9,200		497
		Rubber Tired Dozers	1	8	247	0.40	11,856		641
		Tractors/Loaders/Backhoes	2	7	97	0.37	7,537		407
Building Construction	220	Cranes	1	6	231	0.29	88,427		4,780
		Forklifts	2	6	89	0.20	46,992		2,540
		Tractors/Loaders/Backhoes	1	6	97	0.37	47,375		2,561
		Welders	1	8	46	0.45	36,432		1,969
Paving	10	Cement and Mortar Mixers	1	8	9	0.56	403		22
		Pavers	1	8	130	0.42	4,368		236
		Paving Equipment	2	8	132	0.36	7,603		411
		Rollers	2	8	80	0.38	4,864		263
		Tractors/Loaders/Backhoes	1	8	97	0.37	2,871		155
Architectural Coating	10	Air Compressors	1	6	78	0.48	2,246		121
								Total	15,469

[1] The Carl Moyer Program Guidelines 2017 Revisions. Table D-21. Approved by the Board April 27, 2017.

Sheet 3: Construction Off-site Fuel Consumption Estimates

Phase	Days	Number of Trips	Dist (mi)	Total VMT	Vehicle Class	Percent of Workers by Vehcile Class	Gasoline Average Fuel Economy (MPG)	Gasoline Fuel Split	Gasoline Fuel Consumption by Class (gal)	Gasoline Fuel Consumption by Phase (gal)	Diesel Average Fuel Economy (MPG)	Diesel Fuel Split	Diesel Fuel Consumption by Class (gal)	Diesel Fuel Consumption by Phase (gal)
Worker Trips														
Demolition	5	13	14.7	955.5	LDA	0.5	29.5	99.2%	16	36	46.1	0.8%	0	0
					LDT1	0.25	25.5	99.9%	9		21.5	0.1%	0	
					LDT2	0.25	23.5	99.4%	10		33.8	0.6%	0	
Site Preparation	3	8	14.7	352.8	LDA	0.5	29.5	99.2%	6	13	46.1	0.8%	0	0
					LDT1	0.25	25.5	99.9%	3		21.5	0.1%	0	
					LDT2	0.25	23.5	99.4%	4		33.8	0.6%	0	
Grading	15	10	14.7	2205	LDA	0.5	29.5	99.2%	37	82	46.1	0.8%	0	0
					LDT1	0.25	25.5	99.9%	22		21.5	0.1%	0	
					LDT2	0.25	23.5	99.4%	23		33.8	0.6%	0	
Building Construction	220	85	14.7	274890	LDA	0.5	29.5	99.2%	4,620	10,226	46.1	0.8%	25	39
					LDT1	0.25	25.5	99.9%	2,697		21.5	0.1%	2	
					LDT2	0.25	23.5	99.4%	2,909		33.8	0.6%	12	
Paving	10	15	14.7	2205	LDA	0.5	29.5	99.2%	37	82	46.1	0.8%	0	0
					LDT1	0.25	25.5	99.9%	22		21.5	0.1%	0	
					LDT2	0.25	23.5	99.4%	23		33.8	0.6%	0	
Architectural Coating	10	17	14.7	2499	LDA	0.5	29.5	99.2%	42	93	46.1	0.8%	0	0
					LDT1	0.25	25.5	99.9%	25		21.5	0.1%	0	
					LDT2	0.25	23.5	99.4%	26		33.8	0.6%	0	
Sub-Total Worker Trips Energy Consumption									Gasoline (gal)	10,532			Diesel (gal)	40
Vendor Trips														
Building Construction	220	23	6.9	34914	MHDT	0.5	5.0	18.3%	642	642	10.2	81.7%	1,403	4,134
					HHDT	0.5	N/A	0.0%	N/A		6.4	100.0%	2,731	
Hauling Trips														
Demolition	N/A	12	20	240	HHDT	1.0	N/A	0.0%	N/A	0	6.4	100.0%	38	38
Grading	N/A	942	20	18840	HHDT	1.0	N/A	0.0%	N/A	0	6.4	100.0%	2,948	2,948
Total On-Road Construction Trips Genergy Usage									**Gasoline (gal)**	**11,174**			**Diesel (gal)**	**7,160**

Sheet 4: Operational Fuel Consumption

Trip Type	Vehicle Class	Annual VMT	Gasoline Average Fuel Economy (MPG)	Gasoline Fuel Split	Gasoline Fuel Consumption by Class (gal)	Diesel Average Fuel Economy (MPG)	Diesel Fuel Split	Diesel Fuel Consumption by Class (gal)
Residents	LDA / LDT1 / LDT2	1,154,021	27.51	99.3%	41,649	42.6	0.7%	193
Sub-total Resident Consumption				Gasoline	41,649		Diesel	193
		Total		***Gasoline (Gal)***	***41,649***		***Diesel (Gal)***	***193***

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Earth Strata Geotechnical Services, Inc.
Geotechnical, Environmental and Materials Testing Consultants

August 26, 2019

Project No. 192813-10A

Mr. Mel Gaines, CFO
Faith Church
1211 E. Badillo Street
West Covina, CA 91790

Subject: **Preliminary Geotechnical Interpretive Report, Proposed Mixed Use Development with 73 Residential Units and Light Industrial, Assessor's Parcel Number 8434-013-010, Located at 529 Cutter Way, City of Covina, Los Angeles County, California**

Earth Strata Geotechnical Services is pleased to present our preliminary geotechnical interpretive report for the proposed mixed-use development with 73 residential units and light industrial, Assessor's Parcel Number 8434-013-010, located at 529 Cutter Way in the City of Covina, Los Angeles County, California. This work was performed in accordance with the scope of work described in our proposal, dated July 26, 2019. The purpose of this study is to evaluate the nature, distribution, engineering properties, and geologic strata underlying the site with respect to the proposed development.

Earth Strata Geotechnical Services appreciates the opportunity to offer our consultation and advice on this project. In the event that you have any questions, please do not hesitate to contact the undersigned at your earliest convenience.

Respectfully submitted,

EARTH STRATA GEOTECHNICAL SERVICES

Stephen M. Poole, PE, GE
Principal Engineer

Aaron G. Wood, PG, CEG
Principal Geologist

SMP/jf

Distribution: (2) Addressee

TABLE OF CONTENTS

Section **Page**

Attachments:

INTRODUCTION

Earth Strata Geotechnical Services is pleased to present our preliminary geotechnical interpretive report for the proposed development. The purpose of this study was to evaluate the nature, distribution, engineering properties, and geologic strata underlying the site with respect to the proposed development, and then provide preliminary grading and foundation design recommendations based on the plans you provided. The general location of the subject property is indicated on the Vicinity Map, Figure 1. The plans you provided were used as the base map to show geologic conditions within the subject site, see Geotechnical Map, Plate 1.

SITE DESCRIPTION

The subject property is located at 529 Cutter Way in the City of Covina, Los Angeles County, California. The approximate location of the site is shown on the Vicinity Map, Figure 1.

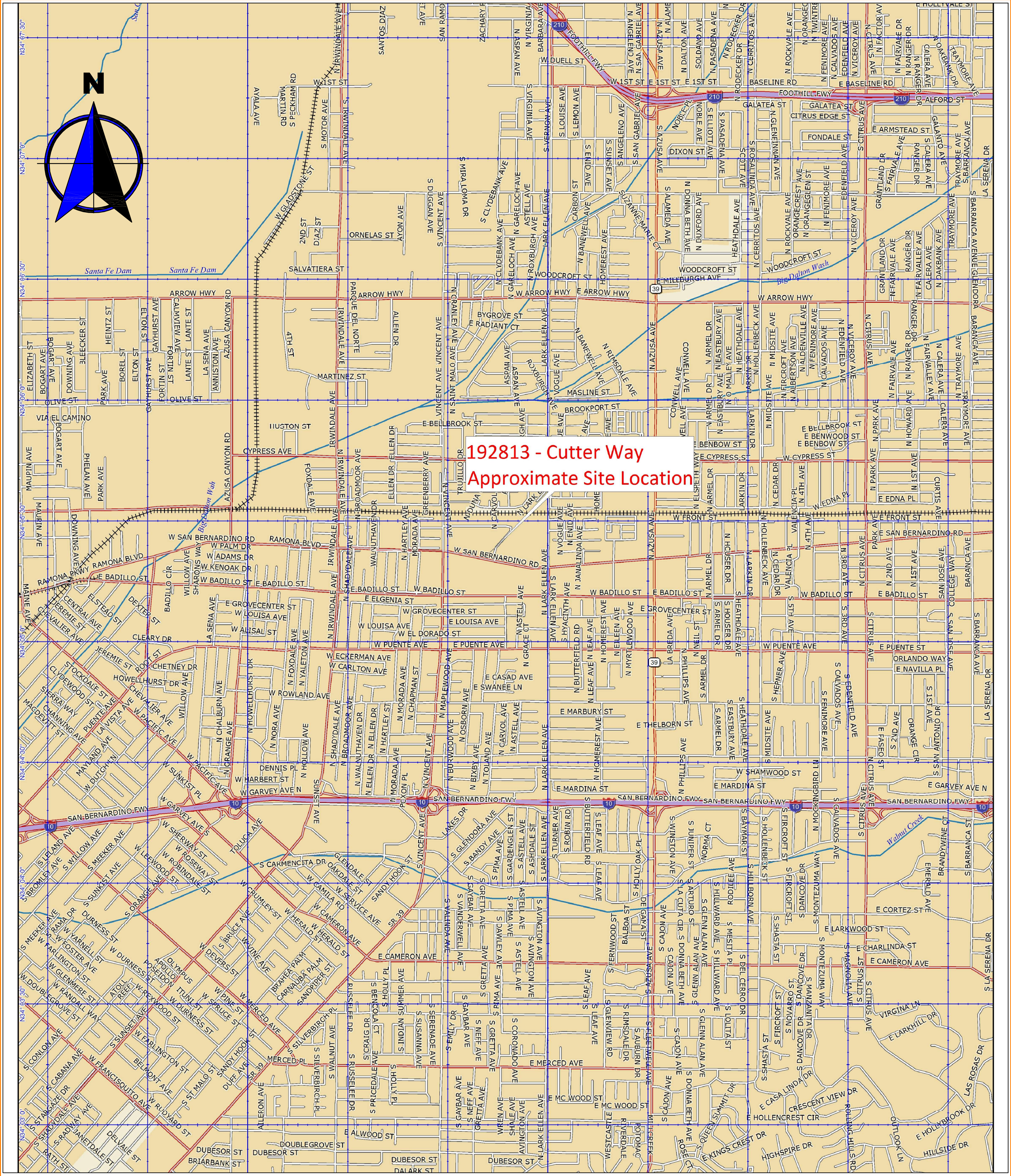
The subject property is comprised of approximately 2.25 acres of partially developed land. The site has not been graded. Topographic relief at the subject property is relatively low with the terrain being generally flat. Elevations at the site range from approximately 450 to 452 feet above mean sea level (msl), for a difference of about 2± feet across the entire site. Drainage within the subject property generally flows to the northwest.

The site is currently bordered by commercial development to the north, south and west, as well as residential development to the east. Most of the vegetation on the site consists of moderate amounts of annual weeds/grasses, along with small to large trees bordering the northeastern and southwestern portion of the subject site.

PROPOSED DEVELOPMENT AND GRADING

The proposed residential development is expected to consist of concrete, wood or steel framed one to four -story structures utilizing slab on grade construction with associated streets, landscape areas, and utilities. The current development plans include multiple buildings with a partial subterranean garage on the order of 5 feet below grade, and interior drive isles positioned throughout the site.

The plans provided by you were utilized in our exploration and form the base for our Geotechnical Map, Plate 1.



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529 CUTTER WAY		192813-10A
VICINITY MAP	SCALE 1:40,625	
	AUG 2019	FIGURE 1

FIELD EXPLORATION AND LABORATORY TESTING

Field Exploration

Subsurface exploration within the subject site was performed on August 22, 2019 and September 21, 2019 for the exploratory excavations. A truck mounted hollow-stem-auger drill rig was utilized to drill eight (8) borings throughout the site to a maximum depth of 51.5 feet. An underground utilities clearance was obtained from Underground Service Alert of Southern California, prior to the subsurface exploration.

Earth materials encountered during exploration were classified and logged in general accordance with the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) of ASTM D 2488. Upon completion of laboratory testing, exploratory logs and sample descriptions may have been reconciled to reflect laboratory test results with regard to ASTM D 2487.

Associated with the subsurface exploration was the collection of bulk (disturbed) samples and relatively undisturbed samples of earth materials for laboratory testing and analysis. The relatively undisturbed samples were obtained with a 3 inch outside diameter modified California split-spoon sampler lined with 1-inch-high brass rings. Samples obtained using a hollow stem auger drill rig, were mechanically driven with successive 30 inch drops of a 140-pound automatic trip safety hammer. The blow count per one-foot increment was recorded in the boring logs. The central portions of the driven samples were placed in sealed containers and transported to our laboratory for testing and analysis. The approximate exploratory locations are shown on Plate 1 and descriptive logs are presented in Appendix B.

Laboratory Testing

Maximum dry density/optimum moisture content, sieve analysis (-200), expansion potential, R-value, pH, resistivity, sulfate content, chloride content, and in-situ density/moisture content were determined for selected undisturbed and bulk samples of earth materials, considered representative of those encountered. An evaluation of the test data is reflected throughout the Conclusions and Recommendations section of this report. A brief description of laboratory test criteria and summaries of test data are presented in Appendix C.

FINDINGS

Regional Geology

Regionally, the site is located in the Peninsular Ranges Geomorphic Province of California. The Peninsular Ranges are characterized by northwest trending steep mountain ranges separated by sediment filled elongated valleys. The dominant structural geologic features reflect the northwest trend of the province. Associated with and subparallel to the San Andreas Fault are the San Jacinto Fault, Newport-Inglewood, and the Whittier-Elsinore Fault. The Santa Ana Mountains abut the west side of the Elsinore Fault while the Perris Block forms the other side of the fault zone to the east. The Perris Block is bounded to the east by the San Jacinto Fault. The northern perimeter of the Los Angeles basin forms part of a northerly dipping blind thrust fault at the boundary between the Peninsular Ranges Province and the Transverse Range Province.

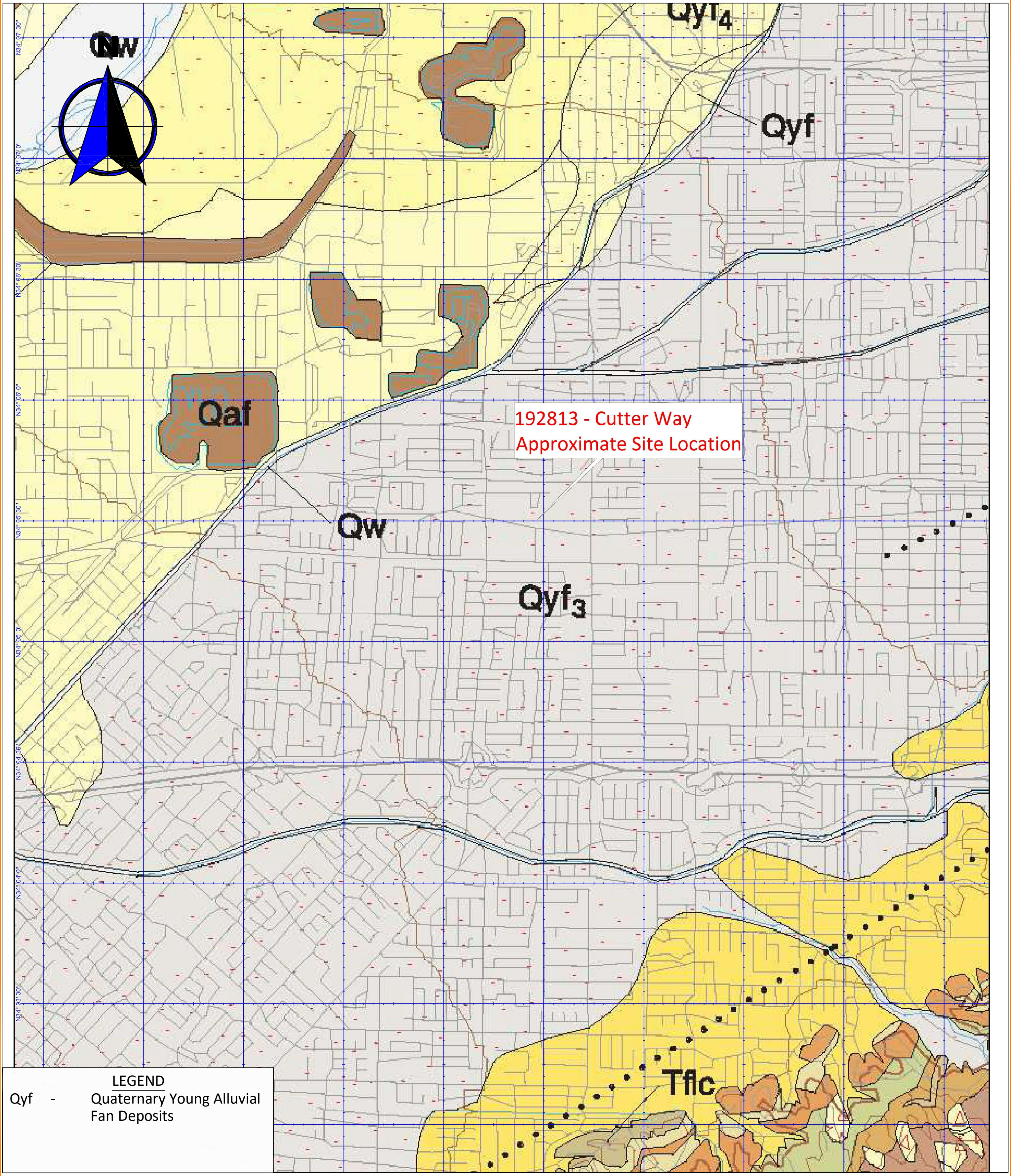
The mountainous regions within the Peninsular Ranges Province are comprised of Pre-Cretaceous, metasedimentary, and metavolcanic rocks along with Cretaceous plutonic rocks of the Southern California Batholith. The low lying areas are primarily comprised of Tertiary and Quaternary non-marine alluvial sediments consisting of alluvial deposits, sandstones, claystones, siltstones, conglomerates, and occasional volcanic units. A map illustrating the regional geology is presented on the Regional Geologic Map, Figure 2.

Local Geology

The earth materials on the site are primarily comprised of artificial fill and Quaternary alluvial materials. A general description of the dominant earth materials observed on the site is provided below:

- Artificial Fill, Undocumented (map symbol Afu): Undocumented artificial fill materials were encountered throughout the site within the upper 3 feet during exploration. These materials are typically locally derived from the native materials and consist generally of brown to dark yellowish-brown silty sand. These materials are generally inconsistent, poorly consolidated fills.

- Quaternary Young Alluvial Fan Deposits (map symbol Qyf): Quaternary alluvial fan deposits were encountered to the full depth of our exploration. These alluvial deposits consist predominately of interlayered yellowish brown to dark yellowish brown, fine to coarse grained silty sand and occasional sandy silt. These deposits were generally noted to be in a dry to slightly moist, loose to dense state.



REFERNCES: Morton, D.M., Hauser, Rachel M., and Ruppert, Kelly R., 2004, Preliminary Digital Geologic Map of the San Bernardino and Santa Ana 30' x 60' Quadrangle, Southern California, Version 2.0: U.S. Geological Survey Open-File Report 99-0172.
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529 CUTTER WAY		192813-10A
REGIONAL GEOLOGIC MAP	SCALE 1:40,625	
	AUG 2019	FIGURE 2

Faulting

The project is located in a seismically active region and as a result, significant ground shaking will likely impact the site within the design life of the proposed project. The geologic structure of the entire southern California area is dominated by northwest-trending faults associated with the San Andreas Fault system, which accommodates for most of the right lateral movement associated with the relative motion between the Pacific and North American tectonic plates. Known active faults within this system include the Newport-Inglewood, Whittier-Elsinore, San Jacinto and San Andreas Faults.

No active faults are known to project through the site and the site is not located within an Alquist-Priolo Earthquake Fault Zone, established by the State of California to restrict the construction of new habitable structures across identifiable traces of known active faults. An active fault is defined by the State of California as having surface displacement within the past 11,000 years or during the Holocene geologic time period. Based on our mapping of the subject site, review of current and historical aerial imagery, lack of lineaments indicative of active faulting, and the data compiled during the preparation of this report, it is our interpretation that the potential for surface rupture to adversely impact the proposed structures is very low to remote.

Based on our review of regional geologic maps and applicable computer programs (USGS 2008 Interactive Deaggregation, Caltrans ARS online, and USGS Earthquake Hazard Programs), the Sierra Madre Fault with an approximate source to site distance of 6.43 kilometers is the closest known active fault anticipated to produce the highest ground accelerations, with an anticipated maximum modal magnitude of 7.2. A list of faults as well as a list of significant historical seismic events within a 100km radius of the subject site are included in Appendix D.

Landslides

Landslide debris was not observed during our subsurface exploration and no ancient landslides are known to exist on the site. No landslides are known to exist, or have been mapped, in the vicinity of the site. Geologic mapping of the site conducted during our investigation, and review of aerial imagery of the site, reveal no geomorphic expressions indicative of landsliding. No oversteepened slopes exist on the site or are proposed.

CONCLUSIONS AND RECOMMENDATIONS

General

From geotechnical and engineering geologic points of view, the subject property is considered suitable for the proposed development, provided the following conclusions and recommendations are incorporated into the plans and are implemented during construction.

Earthwork

Earthwork and Grading

The provisions of the 2016 California Building Code (CBC), including the General Earthwork and Grading Specifications in the last Appendix of this report, should be applied to all earthwork and grading operations, as well as in accordance with all applicable grading codes and requirements of the appropriate reviewing agency. Unless specifically revised or amended herein, grading operations should also be performed in accordance with applicable provisions of our General Earthwork and Grading Specifications within the last appendix of this report.

Clearing and Grubbing

Vegetation including trees, grasses, weeds, brush, shrubs, or any other debris should be stripped from the areas to be graded and properly disposed of offsite. In addition, laborers should be utilized to remove any roots, branches, or other deleterious materials during grading operations.

Earth Strata Geotechnical Services should be notified at the appropriate times to provide observation and testing services during Clearing and Grubbing operations. Any buried structures or unanticipated conditions should be brought to our immediate attention.

Excavation Characteristics

Based on the results of our exploration and experience with similar projects in similar settings, the near surface earth materials, will be readily excavated with conventional earth moving equipment. Excavation difficulty is a function of the degree of weathering and amount of fracturing within the bedrock. Bedrock generally becomes harder and more difficult to excavate with increasing depth.

Groundwater

Groundwater was not observed during our subsurface exploration. Based on local groundwater data by the California Department of Water Resources, local groundwater depth is at approximately 290 feet. It should be noted that localized groundwater could be encountered during grading due to the limited number of exploratory locations or other factors.

Ground Preparation for Fill Areas

For each area to receive compacted fill, the removal of low density, compressible earth materials, such as upper alluvial materials, and undocumented artificial fill, should continue until firm competent alluvium is encountered. Removal excavations are subject to verification by the project engineer, geologist or their representative. Prior to placing compacted fills, the exposed bottom in each removal area should be scarified to a depth of 6 inches or more, watered or air dried as necessary to achieve near optimum moisture conditions and then compacted to a minimum of 90 percent of the maximum dry density determined by ASTM D 1557.

The intent of remedial grading is to diminish the potential for hydro-consolidation, slope instability, and/or settlement. Remedial grading should extend beyond the perimeter of the proposed structures a horizontal distance equal to the depth of excavation or a minimum of 5 feet, whichever is greater. For cursory purposes the anticipated removal depths are shown on the enclosed Geotechnical Map, Plate 1. In general, the anticipated removal depths should vary from 14 to 16 feet below existing grade.

For the buildings that have a basement, an additional recommendation is applicable. We recommend two (2) layers of Geogrid consisting of Tension 5XT, 2 feet apart should be placed at depths of 11, 13, and 15 feet.

Wet Removals

Wet alluvial materials will probably not be encountered within the low lying areas of the site. If removals of wet alluvial materials are required, special grading equipment and procedures can greatly reduce overall costs. Careful planning by an experienced grading contractor can reduce the need for special equipment, such as swamp cats, draglines, excavators, pumps, and top loading earthmovers. Possible solutions may include the placement of imported angular rock and/or geotextile ground reinforcement. More specific recommendations can be provided based on the actual conditions encountered. Drying or mixing of wet materials with dry materials will be needed to bring the wet materials to near optimum moisture prior to placing wet materials into compacted fills.

Oversize Rock

Oversize rock is not expected to be encountered during grading. Oversize rock that is encountered (i.e., rock exceeding a maximum dimension of 12 inches) should be disposed of offsite or stockpiled onsite and crushed for future use. The disposal of oversize rock is discussed in greater detail in General Earthwork and Grading Specifications within the last appendix of this report.

Compacted Fill Placement

Compacted fill materials should be placed in 6 to 8 inch maximum (uncompacted) lifts, watered or air dried as necessary to achieve uniform near optimum moisture content and then compacted to a minimum of 90 percent of the maximum dry density determined by ASTM D 1557.

Import Earth Materials

Should import earth materials be needed to achieve final design grades, all potential import materials should be free of deleterious/oversize materials, non-expansive, and approved by the project geotechnical consultant prior to delivery onsite.

Fill Slopes

When properly constructed, fill slopes up to 10 feet high with inclinations of 2:1 (h:v) or flatter are considered to be grossly stable. Keyways are required at the toe of all fill slopes higher than 5 feet and steeper than 5:1 (h:v). Keyways should be a minimum of 10 feet wide and 2 feet into competent earth materials, as measured on the downhill side. In order to establish keyway removals, backcuts should be cut no steeper than 1:1 or as recommended by the geotechnical engineer or engineering geologist. Compacted fill should be benched into competent earth materials.

Cut Slopes

When properly constructed, cut slopes into older alluvium up to 10 feet high with inclinations of 2:1 (h:v) or flatter are considered grossly stable. Cut slopes should be observed by the engineering geologist or his representative during grading but are anticipated to be stable.

Stabilization Fills

Currently, stabilization fills will not be required for cut slopes in the alluvium. Our engineering geologist or his representative should be called to evaluate all slopes during grading. In the event that unfavorable geologic conditions are encountered, recommendations for stabilization fills or flatter slopes will be provided.

Fill Over Cut Slopes

The fill portion of fill over cut slopes should not be constructed until the cut portion of the slope has been cut to finish grade. The earth materials and geologic structure exposed along the cut slope should be evaluated with regard to suitability for compacted fills or foundations and for stability. If the cut materials are determined to be competent, then the construction of the keyway and subdrain system may commence or additional remedial recommendations will be provided.

Temporary Backcuts

It is the responsibility of the grading contractor to follow all Cal-OSHA requirements with regard to excavation safety. Where existing developments are upslope, adequate slope stability to protect those developments must be maintained. Temporary backcuts will be required to accomplish removals of unsuitable materials and possibly, to perform canyon removals, stabilization fills, and/or keyways. Backcuts should be excavated at a gradient of 1:1 (h:v) or flatter. Flatter backcuts may be required where geologic structure or earth materials are unfavorable. It is imperative that grading schedules minimize the exposure time of the unsupported excavations. All excavations should be stabilized within 30 days of initial excavation.

Cut/Fill Transitions

Cut/fill transitions should be eliminated from all building areas where the depth of fill placed within the "fill" portion exceeds proposed footing depths. This is to diminish distress to structures resulting from excessive differential settlement. The entire foundation of each structure should be founded on a uniform bearing material. This should be accomplished by overexcavating the "cut" portion and replacing the excavated materials as properly compacted fill. Refer to the following table for recommended depths of overexcavation.

DEPTH OF FILL (“fill” portion)	DEPTH OF OVEREXCAVATION (“cut” portion)
Up to 5 feet	Equal Depth
5 to 10 feet	5 feet
Greater than 10 feet	One-half the thickness of fill placed on the “fill” portion (10 feet maximum)

Overexcavation of the “cut” portion should extend beyond the building perimeter a horizontal distance equal to the depth of overexcavation or a minimum of 5 feet, whichever is greater.

Cut Areas

In cut areas, an area a minimum of 5 feet beyond the footprint of the proposed structures should overexcavated until; competent bottoms are achieved; to a minimum 3 feet below the proposed foundations; or per the Overexcavation Table above; (whichever is greater) and replaced with compacted fill. Final determination of areas that require overexcavation should be determined in the field by a representative of Earth Strata Geotechnical Services.

Shrinkage, Bulking and Subsidence

Volumetric changes in earth material quantities will occur when poorly consolidated earth materials are replaced with properly compacted fill. Estimates of the percent shrinkage/bulking factors for the various geologic units observed on the subject property are based on in-place densities and on the estimated average percent of relative compaction achieved during grading.

GEOLOGIC UNIT	SHRINKAGE (%)
Artificial Fill	10 to 15
Alluvium	10 to 15

Subsidence from scarification and recompaction of exposed bottom surfaces is expected to be negligible to approximately 0.01 foot.

The estimates of shrinkage/bulking and subsidence are intended as an aid for project engineers in determining earthwork quantities. Since many variables can affect the accuracy of these estimates, they should be used with caution and contingency plans should be in place for balancing the project.

Geotechnical Observations

Clearing operations, removal of unsuitable materials, and general grading procedures should be observed by the project geotechnical consultant or his representative. No compacted fill should be placed without observations by the geotechnical consultant or his representative to verify the adequacy of the removals.

The project geotechnical consultant or his representative should be present to observe grading operations and to check that minimum compaction requirements and proper lift thicknesses are being met,
as well as to verify compliance with the other recommendations presented herein.

Post Grading Considerations

Slope Landscaping and Maintenance

Adequate slope and building pad drainage is essential for the long term performance of the subject site. The gross stability of graded slopes should not be adversely affected, provided all drainage provisions are properly constructed and maintained. Engineered slopes should be landscaped with deep rooted, drought tolerant maintenance free plant species, as recommended by the project landscape architect.

Site Drainage

Control of site drainage is important for the performance of the proposed project. Roof gutters are recommended for the proposed structures. Pad and roof drainage should be collected and transferred to driveways, adjacent streets, storm-drain facilities, or other locations approved by the building official in non-erosive drainage devices. Drainage should not be allowed to pond on the pad or against any foundation or retaining wall. Drainage should not be allowed to flow uncontrolled over any descending slope. Planters located within retaining wall backfill should be sealed to prevent moisture intrusion into the backfill. Planters located next to structures should be sealed to the depth of the footings. Drainage control devices require periodic cleaning, testing and maintenance to remain effective.

At a minimum, pad drainage should be designed at the minimum gradients required by the CBC. To divert water away from foundations, the ground surface adjacent to foundations should also be graded at the minimum gradients required per the CBC.

Utility Trenches

All utility trench backfill should be compacted at near optimum moisture to a minimum of 90 percent of the maximum dry density determined by ASTM D 1557. For utility trench backfill within pavement areas the upper 6 inches of subgrade materials should be compacted to 95 percent of the maximum dry density determined by ASTM D 1557. This includes within the street right-of-ways, utility easements, under footings, sidewalks, driveways and building floor slabs, as well as within or adjacent to any slopes. Backfill should be placed in approximately 6 to 8 inch maximum loose lifts and then mechanically compacted with a hydro-hammer, rolling with a sheepsfoot, pneumatic tampers, or similar equipment. The utility trenches should be tested by the project geotechnical engineer or their representative to verify minimum compaction requirements are obtained.

In order to minimize the penetration of moisture below building slabs, all utility trenches should be backfilled with compacted fill, lean concrete or concrete slurry where they undercut the perimeter foundation. Utility trenches that are proposed parallel to any building footings (interior and/or exterior trenches), should not be located within a 1:1 (h:v) plane projected downward from the outside bottom edge of the footing.

SEISMIC DESIGN CONSIDERATIONS

Ground Motions

Structures are required to be designed and constructed to resist the effects of seismic ground motions as provided in the 2016 California Building Code Section 1613. The design is dependent on the site class, occupancy category I, II, III, or IV, mapped spectral accelerations for short periods (S_S), and mapped spectral acceleration for a 1-second period (S_1).

In order for structural design to comply with the 2016 CBC, the USGS "US Seismic Design Maps" online tool was used to compile spectral accelerations for the subject property based on data and maps jointly compiled by the United States Geological Survey (USGS) and the California Geological Survey (CGS). The data found in the following table is based on the Maximum Considered Earthquake (MCE) with 5% damped ground motions having a 2% probability of being exceeded in 50 years (2,475 year return period).

The seismic design coefficients were determined by a combination of the site class, mapped spectral accelerations, and occupancy category. The following seismic design coefficients should be implemented during design of the proposed structures. Summaries of the Seismic Hazard Deaggregation graphs and test data are presented in Appendix D.

2016 CBC	FACTOR
Site Location	Latitude: 34.0897192° (North) Longitude: -117.921628°(West)
Site Class	D
Mapped Spectral Accelerations for short periods, S_S	2.158 g
Mapped Spectral Accelerations for 1-Second Period, S_1	0.75 g
Maximum Considered Earthquake Spectral Response Acceleration for Short Periods, S_{MS}	2.158 g
Maximum Considered Earthquake Spectral Response Acceleration for 1-Second Period, S_{M1}	1.126 g
Design Spectral Response Acceleration for Short Periods, S_{DS}	1.439 g
Design Spectral Response Acceleration for 1-Second Period, S_{D1}	0.75 g
Seismic Design Category	E
Importance Factor Based on Occupancy Category	II

We performed the probabilistic seismic hazard assessment for the site in accordance with the 2016 CBC, Section 1803.5.11 and 1803.5.12. The probabilistic seismic hazard maps and data files were jointly prepared by the United States Geological Survey (USGS) and the California Geological Survey (CGS) and can be found at the CGS Probabilistic Seismic Hazards Mapping Ground Motion Page. Actual ground shaking intensities at the site may be substantially higher or lower based on complex variables such as the near source directivity effects, depth and consistency of earth materials, topography, geologic structure, direction of fault rupture, and seismic wave reflection, refraction, and attenuation rates. The mean peak ground acceleration was calculated to be 0.754 g.

Secondary Seismic Hazards

Secondary effects of seismic shaking considered as potential hazards include several types of ground failure as well as induced flooding. Different types of ground failure, which could occur as a consequence of severe ground shaking at the site, include landslides, ground lurching, shallow ground rupture, and liquefaction/lateral spreading. The probability of occurrence of each type of ground failure depends on the severity of the earthquake, distance from faults, topography, the state of subsurface earth materials, groundwater conditions, and other factors. Based on our experience, subsurface exploration, and laboratory testing, all of the above secondary effects of seismic activity are considered unlikely.

Seismically induced flooding is normally a consequence of a tsunami (seismic sea wave), a seiche (i.e., a wave-like oscillation of surface water in an enclosed basin that may be initiated by a strong earthquake) or failure of a major reservoir or retention system up gradient of the site. Since the site is at an elevation of more than 400 feet above mean sea level and is located more than 20 miles inland from the nearest coastline of the Pacific Ocean, the potential for seismically induced flooding due to a tsunami is considered nonexistent. Since no enclosed bodies of water lie adjacent to or up gradient of the site, the likelihood for induced flooding due to a dam failure or a seiche overcoming the dam's freeboard is considered nonexistent.

Liquefaction

Liquefaction occurs as a result of a substantial loss of shear strength or shearing resistance in loose, saturated, cohesionless earth materials subjected to earthquake induced ground shaking. Potential impacts from liquefaction include loss of bearing capacity, liquefaction related settlement, lateral movements, and surface manifestation such as sand boils. Seismically induced settlement occurs when loose sandy soils become denser when subjected to shaking during an earthquake. The three factors determining whether a site is likely to be subject to liquefaction include seismic shaking, type and consistency of earth materials, and groundwater level. The proposed structures will be supported by compacted fill and competent alluvium, with groundwater at a depth of approximately 290 feet. As such, the potential for earthquake induced liquefaction and lateral spreading beneath the proposed structures is considered very low to remote due to the recommended compacted fill, relatively low groundwater level, and the dense nature of the deeper onsite earth materials.

Liquefaction/ settlement of dry sands analyses were performed for the existing un-graded and graded conditions, using a conservative groundwater level of 5 feet to represent the historic high groundwater level. The analyses of post graded conditions determined that potentially liquefiable earth materials were encountered in boring B-4 at 5, 10, and 20 feet. We estimate that dynamic settlement of sands for removals of 10 to 12 feet will be on the order of 1.2 inches. The dynamic settlement of sands analyses are included within the appendices of this report.

TENTATIVE FOUNDATION DESIGN RECOMMENDATIONS

General

Provided grading is performed in accordance with the recommendations of this report, shallow foundations are considered feasible for support of the proposed structures. Tentative foundation recommendations are provided herein and graphic presentations of relevant recommendations may also be included on the enclosed map.

Allowable Bearing Values

An allowable bearing value of 2,500 pounds per square foot (psf) is recommended for design of 24-inch square pad footings and 12-inch-wide continuous footings founded at a minimum depth of 12 inches below the lowest adjacent final grade. This value may be increased by 20 percent for each additional 1-foot of width and/or depth to a maximum value of 3,000 psf. Recommended allowable bearing values include both dead and frequently applied live loads and may be increased by one third when designing for short duration wind or seismic forces.

Settlement

Based on the settlement characteristics of the earth materials that underlie the building sites and the anticipated loading, we estimate that the maximum total settlement of the footings will be less than approximately ¾ inch. Differential settlement is expected to be about ½ inch over a horizontal distance of approximately 20 feet, for an angular distortion ratio of 1:480. It is anticipated that the majority of the settlement will occur during construction or shortly after the initial application of loading.

The above settlement estimates are based on the assumption that the grading and construction are performed in accordance with the recommendations presented in this report and that the project geotechnical consultant will observe or test the earth material conditions in the footing excavations.

Lateral Resistance

Passive earth pressure of 250 psf per foot of depth to a maximum value of 2,500 psf may be used to establish lateral bearing resistance for footings. For areas coved with hardscape, passive earth pressure may be taken from the surface. For areas without hardscape, the upper 12 inches of the soil profile must be neglected when calculating passive earth pressure. A coefficient of friction of 0.36 times the dead load forces may be used between concrete and the supporting earth materials to determine lateral sliding resistance. The above values may be increased by one-third when designing for short duration wind or seismic forces. When combining passive and friction for lateral resistance, the passive component should be reduced by one third. In no case shall the lateral sliding resistance exceed one-half the dead load for clay, sandy clay, sandy silty clay, silty clay, and clayey silt.

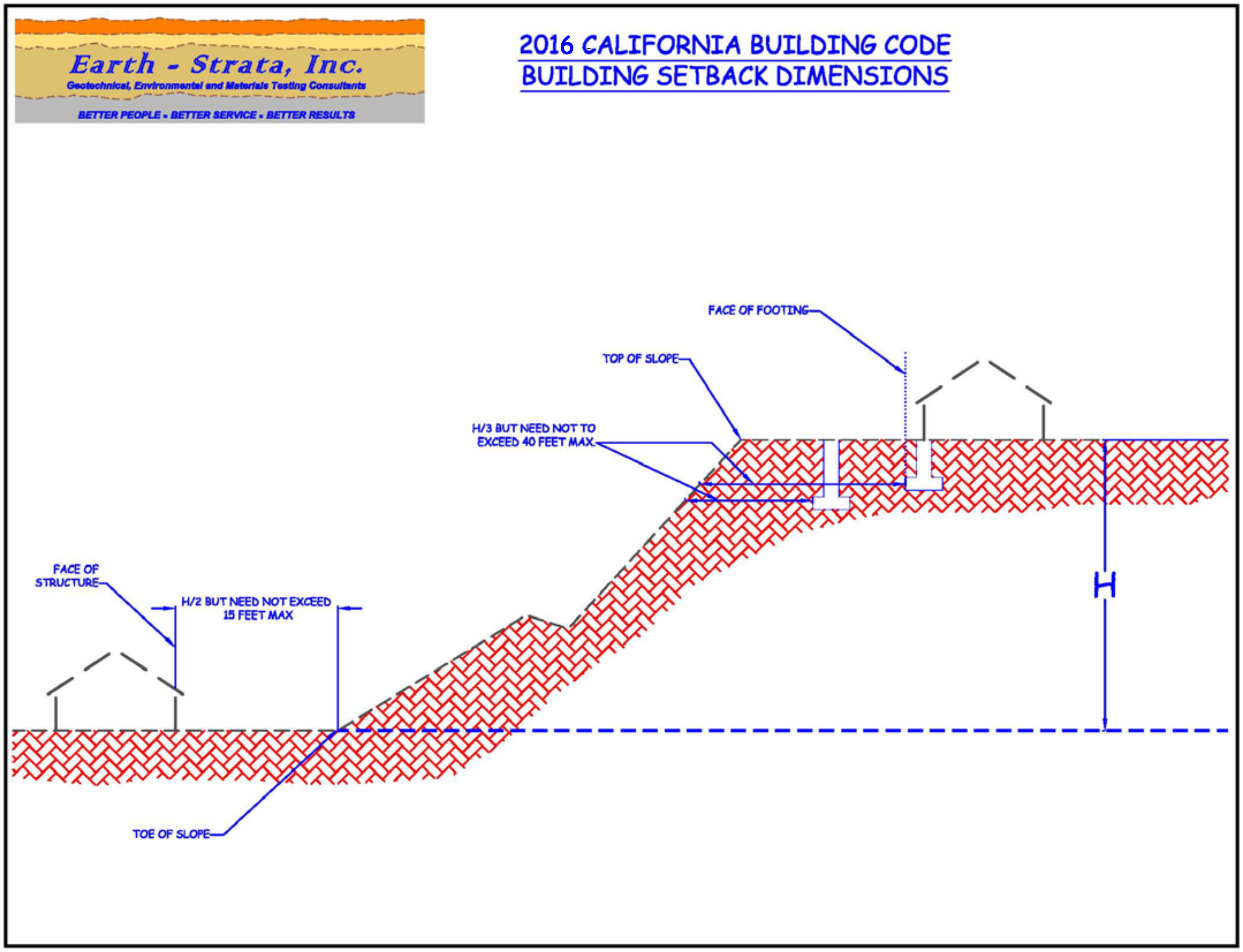
The above lateral resistance values are based on footings for an entire structure being placed directly against either compacted fill or competent alluvium.

Structural Setbacks and Building Clearance

Structural setbacks are required per the 2016 California Building Code (CBC). Additional structural setbacks are not required due to geologic or geotechnical conditions within the site. Improvements constructed in close proximity to natural or properly engineered and compacted slopes can, over time, be affected by natural processes including gravity forces, weathering, and long term secondary settlement. As a result, the CBC requires that buildings and structures be setback or footings deepened to resist the influence of these processes.

For structures that are planned near ascending and descending slopes, the footings should be embedded to satisfy the requirements presented in the CBC, Section 1808.7 as illustrated in the following Foundation Clearances from Slopes diagram.

FOUNDATION CLEARANCES FROM SLOPES



When determining the required clearance from ascending slopes with a retaining wall at the toe, the height of the slope shall be measured from the top of the wall to the top of the slope.

Foundation Observations

In accordance with the 2016 CBC and prior to the placement of forms, concrete, or steel, all foundation excavations should be observed by the geologist, engineer, or his representative to verify that they have been excavated into competent bearing materials. The excavations should be per the approved plans, moistened, cleaned of all loose materials, trimmed neat, level, and square. Any moisture softened earth materials should be removed prior to steel or concrete placement.

Earth materials from foundation excavations should not be placed in slab on grade areas unless the materials are tested for expansion potential and compacted to a minimum of 90 percent of the maximum dry density.

Expansive Soil Considerations

Preliminary laboratory test results indicate onsite earth materials exhibit an expansion potential of **VERY LOW** as classified in accordance with 2016 CBC Section 1803.5.3 and ASTM D4829. Additional, testing for expansive soil conditions should be conducted upon completion of rough grading. The following recommendations should be considered the very minimum requirements, for the earth materials tested. It is common practice for the project architect or structural engineer to require additional slab thickness, footing sizes, and/or reinforcement.

Very Low Expansion Potential (Expansion Index of 20 or Less)

Our laboratory test results indicate that the earth materials onsite exhibit a **VERY LOW** expansion potential as classified in accordance with 2016 CBC Section 1803.5.3 and ASTM D4829. Since the onsite earth materials exhibit expansion indices of 20 or less, the design of slab on ground foundations is exempt from the procedures outlined in Section 1808.6.1 or 1808.6.2.

Footings

- Exterior continuous footings may be founded at the minimum depths below the lowest adjacent final grade (i.e. 12-inch minimum depth for one-story, 18-inch minimum depth for two-story, and 24-inch minimum depth for three-story construction). Interior continuous footings for one-, two-, and three-story construction may be founded at a minimum depth of 12 inches below the lowest adjacent final grade. All continuous footings should have a minimum width of 12, 15, and 18 inches, for one and two-, and three-story structures, respectively per Table 1809.7 of the 2016 CBC, and should be reinforced with a minimum of four (4) No. 4 bars, two (2) top and two (2) bottom.

- Exterior pad footings intended to support roof overhangs, such as second story decks, patio covers and similar construction should be a minimum of 24 inches square and founded at a minimum depth of 18 inches below the lowest adjacent final grade with No. 4 bars at 18" on centers, each way.

Building Floor Slabs

- Building floor slabs should be a minimum of 4 inches thick and reinforced with a minimum of No. 4 bars spaced a maximum of 24 inches on center, each way. All floor slab reinforcement should be supported on concrete chairs or bricks to ensure the desired placement at mid-depth.

- Interior floor slabs, within moisture sensitive areas, should be underlain by a minimum 10-mil thick moisture/vapor barrier to help reduce the upward migration of moisture from the underlying earth materials. The moisture/vapor barrier used should meet the performance standards of an ASTM E 1745 Class A material, and be properly installed in accordance with ACI publication 318-05. It is the responsibility of the contractor to ensure that the moisture/vapor barriers are free of openings, rips, or punctures prior to placing concrete. As an option for additional moisture reduction, higher strength concrete, such as a minimum 28-day compressive strength of 5,000 pounds per square inch (psi) may be used. Ultimately, the design of the moisture/vapor barrier system and recommendations for concrete placement and curing are the purview of the foundation engineer, taking into consideration the project requirements provided by the architect and owner.

- Garage floor slabs should be a minimum of 5 inches thick and should be reinforced in a similar manner as living area floor slabs. Garage floor slabs should be placed separately from adjacent wall footings with a positive separation maintained with ⅜ inch minimum felt expansion joint materials and quartered with weakened plane joints. A 12-inch-wide turn down founded at the same depth as adjacent footings should be provided across garage entrances. The turn down should be reinforced with a minimum of four (4) No. 4 bars, two (2) top and two (2) bottom.

- The subgrade earth materials below all floor slabs should be pre-watered to promote uniform curing of the concrete and minimize the development of shrinkage cracks, prior to placing concrete. The pre-watering should be verified by Earth Strata Geotechnical Services during construction.

Corrosivity

Corrosion is defined by the National Association of Corrosion Engineers (NACE) as "a deterioration of a substance or its properties because of a reaction with its environment." From a geotechnical viewpoint, the "substances" are the reinforced concrete foundations or buried metallic elements (not surrounded by concrete) and the "environment" is the prevailing earth materials in contact with them. Many factors can contribute to corrosivity, including the presence of chlorides, sulfates, salts, organic materials, different oxygen levels, poor drainage, different soil types, and moisture content. It is not considered practical or realistic to test for all of the factors which may contribute to corrosivity.

The potential for concrete exposure to chlorides is based upon the recognized Caltrans reference standard "Bridge Design Specifications", under Subsection 8.22.1 of that document, Caltrans has determined that "Corrosive water or soil contains more than 500 parts per million (ppm) of chlorides". Based on limited preliminary laboratory testing, the onsite earth materials have chloride contents *less* than 500 ppm. As such, specific requirements resulting from elevated chloride contents are not required. Therefore, structural concrete in contact with onsite earth materials should utilize a minimum water to cement ratio of 0.4 and a minimum 28-day compressive strength of 5,000 psi.
Specific guidelines for concrete mix design are provided in 2016 CBC Section 1904.1 and ACI 318, Section 4.3 Table 4.3.1 when the soluble sulfate content of earth materials exceeds 0.1 percent by weight. Based on limited preliminary laboratory testing, the onsite earth materials are classified in accordance with Table 4.3.1 as having a *negligible* sulfate exposure condition. Therefore, structural concrete in contact with onsite earth materials should utilize Type I or II.

Based on our laboratory testing of resistivity, the onsite earth materials in contact with buried steel should be considered *mildly corrosive*. Additionally, pH values below 9.7 are recognized as being corrosive to most common metallic components including, copper, steel, iron, and aluminum. The pH values for the earth materials tested were *lower* than 9.7. Therefore, any steel or metallic materials that are exposed to the earth materials should be encased in concrete or other measures should be taken to provide corrosion protection.

The preliminary test results for corrosivity are based on limited samples, and the initiation of grading may blend various earth materials together. This blending or imported material could alter and increase the detrimental properties of the onsite earth materials. Accordingly, additional testing for chlorides and sulfates along with testing for pH and resistivity should be performed upon completion of grading. Laboratory test results are presented in Appendix C.

RETAINING WALLS

Active and At-Rest Earth Pressures

Foundations may be designed in accordance with the recommendations provided in the Tentative Foundation Design Recommendation section of this report. The following table provides the minimum recommended equivalent fluid pressures for design of retaining walls a maximum of 8 feet high. The active earth pressure should be used for design of unrestrained retaining walls, which are free to tilt slightly. The at-rest earth pressure should be used for design of retaining walls that are restrained at the top, such as basement walls, curved walls with no joints, or walls restrained at corners. For curved walls, active pressure may be used if tilting is acceptable and construction joints are provided at each angle point and at a minimum of 15 foot intervals along the curved segments.

MINIMUM STATIC EQUIVALENT FLUID PRESSURES (pcf)		
PRESSURE TYPE	BACKSLOPE CONDITION	
	LEVEL	2:1 (h:v)
Active Earth Pressure	40	63
At-Rest Earth Pressure	60	95

The retaining wall parameters provided do not account for hydrostatic pressure behind the retaining walls. Therefore, the subdrain system is a very important part of the design. All retaining walls should be designed to resist surcharge loads imposed by other nearby walls, structures, or vehicles should be added to the above earth pressures, if the additional loads are being applied within a 1.5:1 (h:v) plane projected up from the heel of the retaining wall footing. As a way of minimizing surcharge loads and the settlement potential of nearby buildings, the footings for the building can be deepened below the 1.5:1 (h:v)plane projected up from the heel of the retaining wall footing.

Upon request and under a separate scope of work, more detailed analyses can be performed to address equivalent fluid pressures with regard to stepped retaining walls, actual retaining wall heights, actual backfill inclinations, specific backfill materials, higher retaining walls requiring earthquake design motions, etc.

Subdrain System

We recommend a perforated pipe and gravel subdrain system be provided behind all proposed retaining walls to prevent the buildup of hydrostatic pressure behind the proposed retaining walls. The perforated pipe should consist of 4-inch minimum diameter Schedule 40 PVC or ABS SDR-35, placed with the perforations facing down. The pipe should be surrounded by 1 cubic foot per foot of ¾- or 1½ inch open graded gravel wrapped in filter fabric. The filter fabric should consist of Mirafi 140N or equivalent to prevent infiltration of fines and subsequent clogging of the subdrain system.

In lieu of a perforated pipe and gravel subdrain system, weep holes or open vertical masonry joints may be provided in the lowest row of block exposed to the air to prevent the buildup of hydrostatic pressure behind the proposed retaining walls. Weep holes should be a minimum of 3 inches in diameter and provided at intervals of at least every 6 feet along the wall. Open vertical masonry joints should be provided at a minimum of 32 inch intervals. A continuous gravel fill, a minimum of 1 cubic foot per foot, should be placed behind the weep holes or open masonry joints. The gravel should be wrapped in filter fabric consisting of Mirafi 140N or equivalent.

The retaining walls should be adequately coated on the backfilled side of the walls with a proven waterproofing compound by an experienced professional to inhibit infiltration of moisture through the walls.

Temporary Excavations

All excavations should be made in accordance with Cal-OSHA requirements. Earth Strata Geotechnical Services is not responsible for job site safety.

Retaining Wall Backfill

Retaining wall backfill materials should be approved by the geotechnical engineer or his representative prior to placement as compacted fill. Retaining wall backfill should be placed in lifts no greater than 6 to 8 inches, watered or air dried as necessary to achieve near optimum moisture contents. All retaining wall backfill should be compacted to a minimum of 90 percent of the maximum dry density as determined by ASTM D 1557. Retaining wall backfill should be capped with a paved surface drain.

CONCRETE FLATWORK

Thickness and Joint Spacing

Concrete sidewalks and patio type slabs should be at least 4 inches thick and provided with construction or expansion joints every 6 feet or less, to reduce the potential for excessive cracking. Concrete driveway slabs should be at least 5 inches thick and provided with construction or expansion joints every 10 feet or less.

Subgrade Preparation

In order to reduce the potential for unsightly cracking, subgrade earth materials underlying concrete flatwork should be compacted at near optimum moisture to 90 percent of the maximum dry density determined by ASTM D 1557 and then moistened to optimum or slightly above optimum moisture content. This moisture should extend to a depth of 12 inches below subgrade and be maintained prior to placement of concrete. Pre-watering of the earth materials prior to placing concrete will promote uniform curing of the concrete and minimize the development of shrinkage cracks. The project geotechnical engineer or his representative should verify the density and moisture content of the earth materials and the depth of moisture penetration prior to placing concrete.

Cracking within concrete flatwork is often a result of factors such as the use of too high a water to cement ratio and/or inadequate steps taken to prevent moisture loss during the curing of the concrete. Concrete distress can be reduced by proper concrete mix design and proper placement and curing of the concrete. Minor cracking within concrete flatwork is normal and should be expected.

PRELIMINARY ASPHALTIC CONCRETE PAVEMENT DESIGN

Laboratory testing of representative earth materials indicate an R-value of 54. However, an R-value of 50 will be used for preliminary pavement design. The following table includes our minimum recommended asphaltic concrete pavement sections calculated in accordance with the State of California design procedures using assumed Traffic Indices. Final pavement design should be based on sampling and testing of post grading conditions. Alternative pavement sections and calculation sheets have been provided within the appendices of this report.

PRELIMINARY ASPHALTIC CONCRETE PAVEMENT DESIGN			
PARAMETERS	CUL-DE-SAC/AUTO PARKING	RESIDENTIAL STREETS/AUTO DRIVES	ENTRANCES
Assumed Traffic Index	5.0	6.0	7.0
Design R-Value	50	50	50
AC Thickness (inches)	3	3 ½	4
AB Thickness (inches)	4*	4 ¼	4 ½

Notes: AC – Asphaltic Concrete *Minimum Section
AB – Aggregate Base

The subgrade earth materials immediately below the aggregate base (base) should be compacted to a minimum of 95 percent of the maximum dry density determined by ASTM D 1557 to a minimum depth of 12 inches. Base materials should be compacted to a minimum of 95 percent of the maximum dry density determined by ASTM D 1557.

Base materials should consist of Class 2 aggregate base conforming to Section 26-1.02B of the State of California Standard Specifications or crushed aggregate base conforming to Section 200-2 of the Standard Specifications for Public Works Construction (Greenbook). Base materials should be compacted at or slightly below optimum moisture content. Asphaltic concrete materials and construction operations should conform to Section 203 of the Greenbook.

GRADING PLAN REVIEW AND CONSTRUCTION SERVICES

This report has been prepared for the exclusive use of **Mr. Mel Gaines** and their authorized representative. It likely does not contain sufficient information for other parties or other uses. Earth Strata Geotechnical Services should be engaged to review the final design plans and specifications prior to construction. This is to verify that the recommendations contained in this report have been properly incorporated into the project plans and specifications. Should Earth Strata Geotechnical Services not be accorded the opportunity to review the project plans and specifications, we are not responsibility for misinterpretation of our recommendations.

We recommend that Earth Strata Geotechnical Services be retained to provide geologic and geotechnical engineering services during grading and foundation excavation phases of the work. In order to allow for design changes in the event that the subsurface conditions differ from those anticipated prior to construction.

Earth Strata Geotechnical Services should review any changes in the project and modify and approve in writing the conclusions and recommendations of this report. This report and the drawings contained within are intended for design input purposes only and are not intended to act as construction drawings or specifications. In the event that conditions encountered during grading or construction operations appear to be different than those indicated in this report, this office should be notified immediately, as revisions may be required.

REPORT LIMITATIONS

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable soils engineers and geologists, practicing at the time and location this report was prepared. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

Earth materials vary in type, strength, and other geotechnical properties between points of observation and exploration. Groundwater and moisture conditions can also vary due to natural processes or the works of man on this or adjacent properties. As a result, we do not and cannot have complete knowledge of the subsurface conditions beneath the subject property. No practical study can completely eliminate uncertainty with regard to the anticipated geotechnical conditions in connection with a subject property. The conclusions and recommendations within this report are based upon the findings at the points of observation and are subject to confirmation by Earth Strata Geotechnical Services based on the conditions revealed during grading and construction.

This report was prepared with the understanding that it is the responsibility of the owner or their representative, to ensure that the conclusions and recommendations contained herein are brought to the attention of the other project consultants and are incorporated into the plans and specifications. The owners' contractor should properly implement the conclusions and recommendations during grading and construction, and notify the owner if they consider any of the recommendations presented herein to be unsafe or unsuitable.

APPENDIX A

REFERENCES

APPENDIX A

References

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APPENDIX B

EXPLORATORY LOGS

Geotechnical Boring Log B-1

Date: August 22, 2019	**Project Name: 592 Cutter Way, Covina** **Page: 1 of 1**
Project Number: 192813-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0		0-5'				**Artificial Fill, Undocumented (Afu):**
					SM	Silty SAND; yellowish brown, dry, dense, fine to medium sand with trace
	32	2.5'	109.6	2.1		gravel
						Quaternary Young Alluvial Fan Deposits (Qyf):
					SM	Silty SAND; yellowish brown, moist, medium dense, fine to medium sand
5	13	5'	83.9	22.0		with trace clay
	7	7.5'	98.9	13.6		
10	6	10'	86.2	16.8		
15	16	15'	92.3	16.8		
20	13	20'	105.8	5.9		Trace Gravel below 21 feet
25	38	25'	112.6	2.1	GM	Silty GRAVEL; olive brown, slightly moist, dense, fine to medium sand
						Total Depth: 26.5 feet
						No Groundwater
30						

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Geotechnical Boring Log B-2

Date: August 22, 2019	**Project Name: 592 Cutter Way, Covina** **Page: 1 of 1**
Project Number: 192813-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Artificial Fill, Undcoumented (Afu):**
					SM	Silty SAND; dark yellowish brown, dry, medium dense, fine to medium sand
	15	2.5'	99.5	3.4		with trace gravel
						Quaternary Young Alluvial Fan Deposits (Qyf):
					SM	Silty SAND; yellowish brown, dry, medium dense, fine to coarse sand with
5	13	5'	101.0	3.4		trace gravel
	14	7.5'	104.0	1.8		
10	14	10'	89.7	11.5		Dark yellowish brown, fine to medium sand below 10 feet
15	13	15'	95.9	3.4		
20	15	20'	97.1	3.6		Fine sand
25	33	25'	104.7	1.7		Abundant gravel below 25 feet
30						

Geotechnical Boring Log B-3

Date: August 22, 2019	Project Name: 592 Cutter Way, Covina — Page: 1 of 1
Project Number: 192813-10A	Logged By: JF
Drilling Company: Drilling It	Type of Rig: B-61
Drive Weight (lbs): 140	Drop (in): 30 — Hole Diameter (in): 8
Top of Hole Elevation (ft): See Map	Hole Location: See Geotechnical Map

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Artificial Fill, Undcoumented (Afu):**
					SM	Silty SAND; dark yellowish brown, dry, medium dense, fine to medium sand
	33	2.5'	106.6	11.4		with trace gravel
						Quaternary Young Alluvial Fan Deposits (Qyf):
					SM	Silty SAND; dark yellowish brown, dry, medium dense, fine to medium sand
5	11	5'	93.9	6.7		
	9	7.5'	96.9	10.6		
10	10	10'	95.2	10.5		Fine sand below 10 feet
15	18	15'	97.2	5.1		
20	14	20'	96.4	6.2		
25	31	25'	104.0	2.5		Abundant gravel below 25 feet
						Total Depth: 26.5 feet
						No Groundwater
30						

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Geotechnical Boring Log B-4

Date: August 22, 2019	**Project Name: 592 Cutter Way, Covina** **Page: 1 of 1**
Project Number: 192813-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Artificial Fill, Undcoumented (Afu):**
					SM	Silty SAND; dark yellowish brown, dry, medium dense, fine to medium sand
	13	2.5'	100.9	2.5		with trace gravel
						Quaternary Young Alluvial Fan Deposits (Qyf):
					SM	Silty SAND; dark yellowish brown, dry, medium dense, fine to medium sand
5	7	5'	96.6	6.0		Loose below 5 feet
	13	7.5'	99.0	5.3		
10	9	10'	85.0	25.1		Moist at 10 feet
15	10	15'	94.5	5.5	ML	Sandy SILT; medium brown, dry, firm, fine sand
20	16	20'	100.4	2.1	SP-SM	Poorly-graded SAND with Silt; brown, dry, medium dense, fine to medium sand
25	31	25'	93.4	2.8		Abundant gravel below 25 feet
						Total Depth: 26.5 feet
						No Groundwater
30						

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Geotechnical Boring Log B-5

Date: August 22, 2019	**Project Name: 592 Cutter Way, Covina** — **Page: 1 of 1**
Project Number: 192813-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Artificial Fill, Undcoumented (Afu):**
					SM	Silty SAND; dark yellowish brown, dry, medium dense, fine to medium sand
	14	2.5'	95.5	4.9		with trace gravel
						Quaternary Young Alluvial Fan Deposits (Qyf):
					SM	Silty SAND; dark yellowish brown, dry, medium dense, fine to medium sand
5	11	5'	95.5	11.0		
	15	7.5'	94.9	11.5		
					ML	Sandy SILT; yellowish brown, moist, firm, fine sand
10	10	10'	96.9	4.3		
15	14	15'	96.6	3.7	SM	Silty SAND; yellowish brown, slightly moist, fine sand
20	20	20'	99.5	3.4		
25	24	25'	90.7	8.0		Abundant gravel below 25 feet
						Total Depth: 26.5 feet
						No Groundwater
30						

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Geotechnical Boring Log B-6

Date: August 22, 2019	**Project Name: 592 Cutter Way, Covina** **Page: 1 of 1**
Project Number: 192813-10A	**Logged By: JF**
Drilling Company: Drilling It	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Artificial Fill, Undcoumented (Afu):**
					SM	Silty SAND; dark yellowish brown, dry, medium dense, fine to medium sand
	21	2.5'	104.3	6.8		with trace gravel
						Quaternary Young Alluvial Fan Deposits (Qyf):
					SM	Silty SAND; yellowish brown, slightly moist, medium dense, fine to coarse
5	20	5'	88.2	8.4		sand with gravel
	7	7.5'	94.4	5.9		Fine to medium sand
10	9	10'	96.2	4.2		
15	13	15'	95.9	2.0		Fine sand
20	25	20'	106.0	1.7		Abundant gravel below 20 feet
25	42	25'	111.9	1.9		Dense below 25 feet
						Total Depth: 26.5 feet
						No Groundwater
30						

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Geotechnical Boring Log B-7

Date: August 22, 2019	Project Name: 592 Cutter Way, Covina — Page: 1 of 1
Project Number: 192813-10A	Logged By: JF
Drilling Company: Drilling It	Type of Rig: B-61
Drive Weight (lbs): 140	Drop (in): 30 — Hole Diameter (in): 8
Top of Hole Elevation (ft): See Map	Hole Location: See Geotechnical Map

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Artificial Fill, Undcoumented (Afu):**
					SM	Silty SAND; dark yellowish brown, dry, medium dense, fine to medium sand
	32	2.5	107.4	1.2		with trace gravel
						Quaternary Young Alluvial Fan Deposits (Qyf):
					SM	Silty SAND; yellowish brown, dry, medium dense, fine to medium sand
5	15	5'	99.6	13.6		
	6	7.5'	103.3	10.4		
10	6	10'	76.8	4.3		
15	13	15'	97.9	9.8		
20	16	20'	104.5	4.7		
25	33	25'	108.9	4.3		Dense, with gravel below 25 feet
						Total Depth: 26.5 feet
						No Groundwater
30						

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Geotechnical Boring Log B-8

Date: September 21, 2019	**Project Name: 529 Cutter Way** **Page: 1 of 2**
Project Number: 192813-10A	**Logged By: MM**
Drilling Company: Drilling It	**Type of Rig: B61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Quaternary Young Alluvial Fan Deposits (Qyf):**
					SM	Silty SAND; medium brown, dry, medium dense, fine to medium sand
5	20	5'	98.8	13.3		
10	18	10'	100.0	9.6		
						Slightly moist, very low fine content at 14 feet
15	12	15'	95.5	5.0		
					GM	Silty GRAVEL with SAND; medium to dark brown, moist, dense to very dense
20	19	20'	100.4	4.4		
25						
30						Large cobble

Geotechnical Boring Log B-8

Date: September 21, 2019	**Project Name: 529 Cutter Way** **Page: 2 of 2**
Project Number: 192813-10A	**Logged By: MM**
Drilling Company: Drilling It	**Type of Rig: B61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
30	50/5"	30'	121.0	1.9		
35						
40	20	40'	103.8	19.5	SM	Silty SAND; dark brown, moist, medium dense, fine to medium grained sand
45						
					GM	Silty GRAVEL; medium brown, moist, very dense, fine to coarse sand
					SM	Silty SAND; dark brown, moist, very dense, fine to coarse sand
50	53	50'	120.9	2.8		
						Total Depth: 51.5 feet
						No Groundwater
55						
60						

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APPENDIX C

LABORATORY PROCEDURES AND TEST RESULTS

APPENDIX C

Laboratory Procedures and Test Results

Laboratory testing provided quantitative and qualitative data involving the relevant engineering properties of the representative earth materials selected for testing. The representative samples were tested in general accordance with American Society for Testing and Materials (ASTM) procedures and/or California Test Methods (CTM).

Soil Classification: Earth materials encountered during exploration were classified and logged in general accordance with the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) of ASTM D 2488. Upon completion of laboratory testing, exploratory logs and sample descriptions were reconciled to reflect laboratory test results with regard to ASTM D 2487.

Grain Size Distribution: Select samples were tested using the guidelines of ASTM D 1140. The test results are presented in the table below.

SAMPLE LOCATION	MATERIAL DESCRIPTION	% PASSING # 200 SIEVE
B-1 @ 15 feet	Poorly-graded SAND	5
B-4 @ 5 feet	Silty SAND	15
B-4 @ 10 feet	Silty SAND	41
B-4 @ 15 feet	Sandy SILT	56
B-4 @ 20 feet	Poorly-graded SAND with Silt	7
B-8 @ 10 feet	Silty SAND	38
B-8 @ 15 feet	Poorly-graded SAND	3
B-8 @ 20 feet	Poorly-graded SAND with Silt	7
B-8 @ 30 feet	Poorly-graded SAND	3
B-8 @ 40 feet	Sandy SILT	65
B-8 @ 50 feet	Silty SAND	12

Moisture and Density Tests: For select samples moisture content was determined using the guidelines of ASTM D 2216 and dry density determinations were made using the guidelines of ASTM D 2937. These tests were performed on relatively undisturbed samples and the test results are presented on the exploratory logs.

Maximum Density Tests: The maximum dry density and optimum moisture content of representative samples were determined using the guidelines of ASTM D 1557. The test results are presented in the table below.

SAMPLE LOCATION	MATERIAL DESCRIPTION	MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE CONTENT (%)
Bulk 1 @ 0 - 5 feet	Poorly-graded SAND with Silt	121.5	7.5

Expansion Index: The expansion potential of representative samples was evaluated using the guidelines of ASTM D 4829. The test results are presented in the table below.

SAMPLE LOCATION	MATERIAL DESCRIPTION	EXPANSION INDEX	EXPANSION POTENTIAL
Bulk 1 @ 0 - 5 feet	Poorly-graded SAND with Silt	4	Very Low

R-Value: The R-value of representative samples was determined using the guidelines of CTM 301. The test results are presented in the table below.

SAMPLE LOCATION	MATERIAL DESCRIPTION	R-VALUE
Bulk 1 @ 0 - 5 feet	Poorly-graded SAND with Silt	54

Minimum Resistivity and pH Tests: Minimum resistivity and pH Tests of select samples were performed using the guidelines of CTM 643. The test results are presented in the table below.

SAMPLE LOCATION	MATERIAL DESCRIPTION	pH	MINIMUM RESISTIVITY (ohm-cm)
Bulk 1 @ 0 - 5 feet	Poorly-graded SAND with Silt	7.3	7,600

Soluble Sulfate: The soluble sulfate content of select samples was determined using the guidelines of CTM 417. The test results are presented in the table below.

SAMPLE LOCATION	MATERIAL DESCRIPTION	SULFATE CONTENT (% by weight)	SULFATE EXPOSURE
Bulk 1 @ 0 - 5 feet	Poorly-graded SAND with Silt	0.001	Negligible

Chloride Content: Chloride content of select samples was determined using the guidelines of CTM 422. The test results are presented in the table below.

SAMPLE LOCATION	MATERIAL DESCRIPTION	CHLORIDE CONTENT (ppm)
Bulk 1 @ 0 - 5 feet	Poorly-graded SAND with Silt	40

APPENDIX D

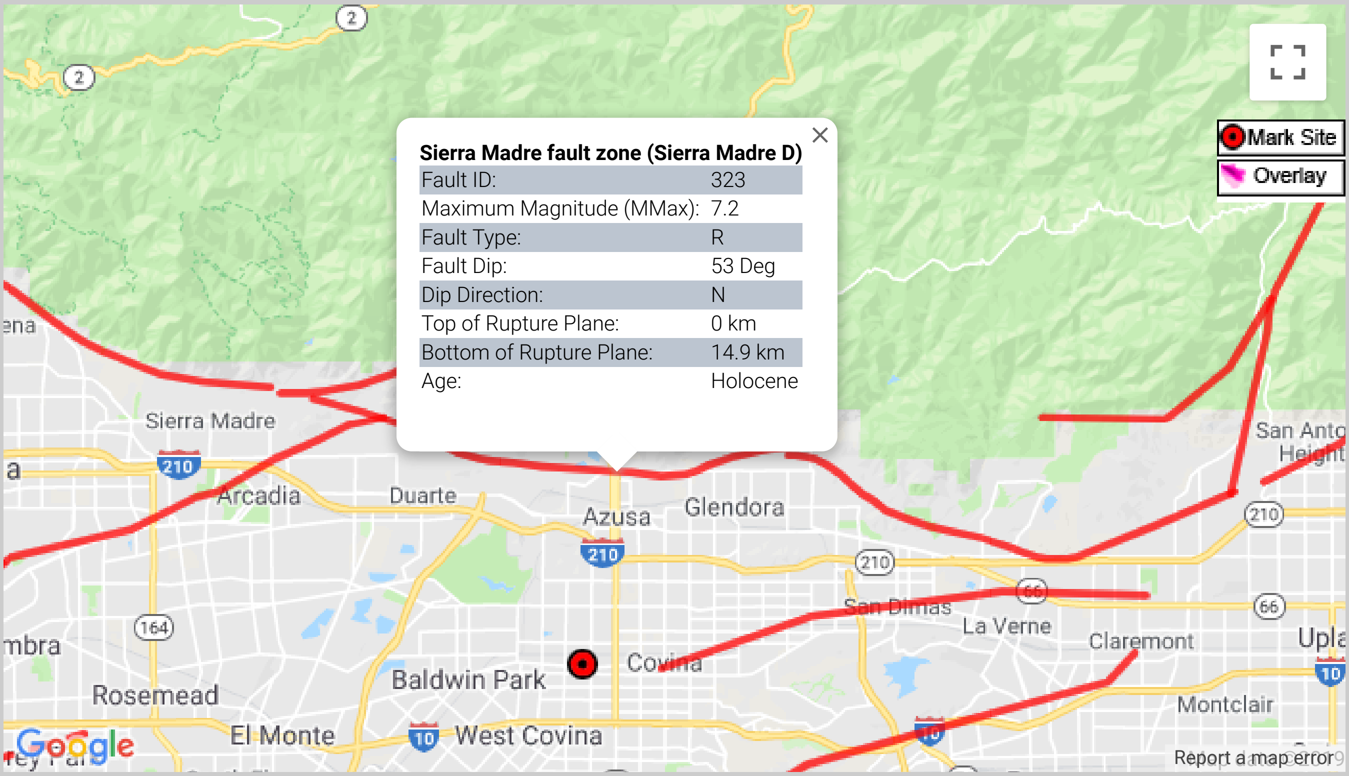
SEISMICITY

CA.GOV CALIFORNIA DEPARTMENT OF TRANSPORTATION

Caltrans ARS Online (v2.3.09)

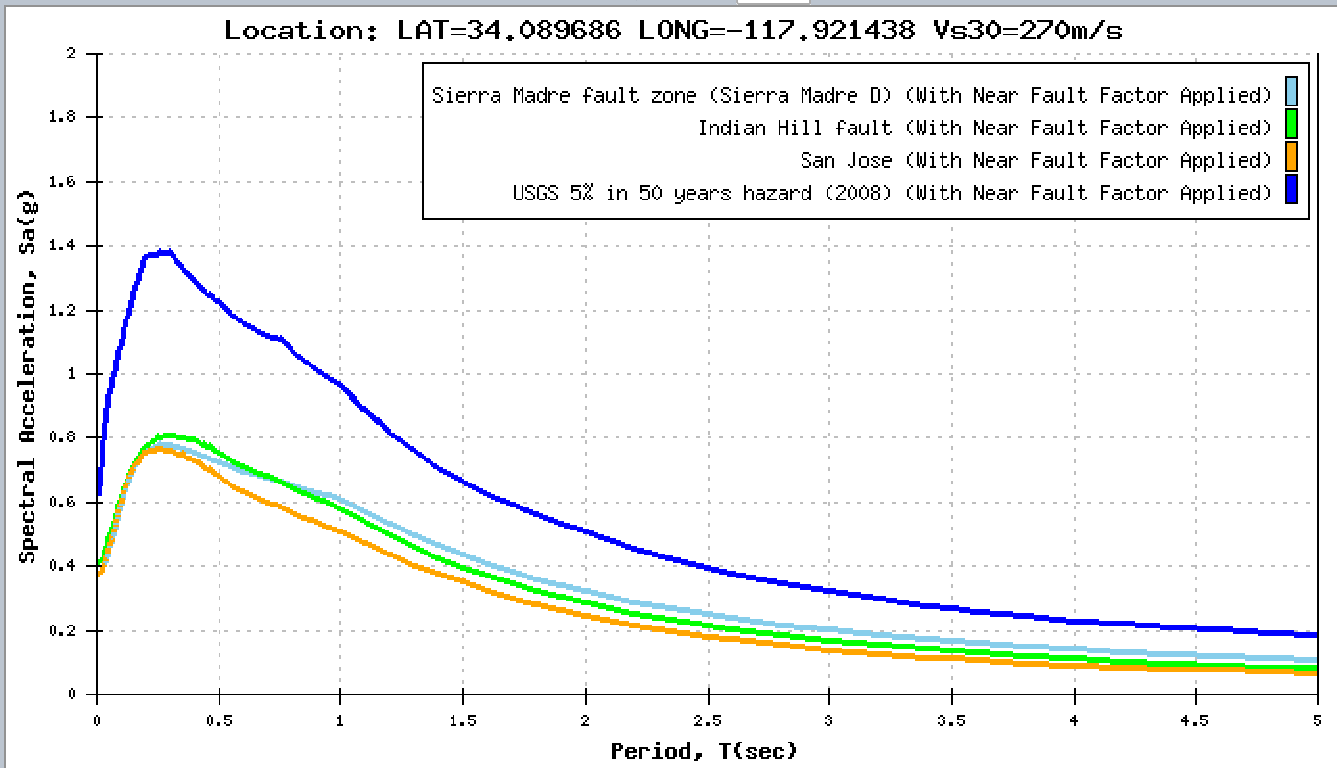
This web-based tool calculates both deterministic and probabilistic acceleration response spectra for any location in California based on criteria provided in *Appendix B of Caltrans Seismic Design Criteria*. More...

SELECT SITE LOCATION



Latitude: 34.089686 **Longitude:** -117.921438 ***Vs*30:** 270 m/s Calculate

CALCULATED SPECTRA Display Curves: 3 ▼



Tabular Data | Envelope Only | Hide Near Fault | Axis Scale | Show Basin

Apply Near Fault Adjustment To:
NOTE: Caltrans SDC requires application of a Near Fault Adjustment factor for sites less than 25 km (Rrup) from the causative fault.

☑ Deterministic Spectrum Using

6.43 Km Sierra Madre fault zone (Sierra Madre D)

2.77 Km Indian Hill fault

6.53 Km San Jose

☑ Probabilistic Spectrum Using

2.77 Km (Recommend Performing Deaggregation To Verify)

◉ Show Spectrum with Adjustment Only

○ Show Spectrum with and without near fault Adjustment

OK

U.S. Geological Survey - Earthquake Hazards Program

2008 National Seismic Hazard Maps - Source Parameters

New Search

Distance in Kilometers	Name	State	Pref Slip Rate (mm/yr)	Dip (degrees)	Dip Dir	Slip Sense	Rupture Top (km)	Rupture Bottom (km)	Length (km)
6.58	Sierra Madre	CA	2	53	N	reverse	0	14	57
6.58	Sierra Madre Connected	CA	2	51		reverse	0	14	76
6.78	San Jose	CA	0.5	74	NW	strike slip	0	15	20
10.36	Raymond	CA	1.5	79	N	strike slip	0	16	22
12.14	Clamshell-Sawpit	CA	0.5	50	NW	reverse	0	14	16
14.58	Elsinore;W+GI+T+J	CA	n/a	84	NE	strike slip	0	16	199
14.58	Elsinore;W+GI	CA	n/a	81	NE	strike slip	0	14	83
14.58	Elsinore;W+GI+T+J+CM	CA	n/a	84	NE	strike slip	0	16	241
14.58	Elsinore;W+GI+T	CA	n/a	84	NE	strike slip	0	14	124
14.58	Elsinore;W	CA	2.5	75	NE	strike slip	0	14	46
16.71	Elysian Park (Upper)	CA	1.3	50	NE	reverse	3	15	20
17.33	Chino, alt 2	CA	1	65	SW	strike slip	0	14	29
17.44	Chino, alt 1	CA	1	50	SW	strike slip	0	9	24
18.13	Cucamonga	CA	5	45	N	thrust	0	8	28
19.75	Puente Hills (Santa Fe Springs)	CA	0.7	29	N	thrust	2.8	15	11
21.85	Puente Hills (Coyote Hills)	CA	0.7	26	N	thrust	2.8	15	17
21.98	Verdugo	CA	0.5	55	NE	reverse	0	15	29
23.23	Puente Hills (LA)	CA	0.7	27	N	thrust	2.1	15	22
28.75	Hollywood	CA	1	70	N	strike slip	0	17	17
33.61	Santa Monica Connected alt 2	CA	2.4	44		strike slip	0.8	11	93
37.96	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike	0.1	13	421

						slip			
37.96	S. San Andreas;SM+NSB+SSB+BG	CA	n/a	81		strike slip	0	13	234
37.96	S. San Andreas;SM+NSB+SSB+BG+CO	CA	n/a	83		strike slip	0.1	13	303
37.96	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0.1	13	377
37.96	S. San Andreas;PK+CH+CC+BB+NM+SM	CA	n/a	90	V	strike slip	0.1	13	342
37.96	S. San Andreas;BB+NM+SM	CA	n/a	90	V	strike slip	0	14	184
37.96	S. San Andreas;NM+SM+NSB+SSB+BG+CO	CA	n/a	84		strike slip	0.1	13	340
37.96	S. San Andreas;NM+SM+NSB+SSB+BG	CA	n/a	83		strike slip	0	14	271
37.96	S. San Andreas;NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	13	213
37.96	S. San Andreas;NM+SM+NSB	CA	n/a	90	V	strike slip	0	13	170
37.96	S. San Andreas;NM+SM	CA	n/a	90	V	strike slip	0	14	134
37.96	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	86		strike slip	0	14	442
37.96	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14	384
37.96	S. San Andreas;CH+CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14	341
37.96	S. San Andreas;CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13	449
37.96	S. San Andreas;CH+CC+BB+NM+SM	CA	n/a	90	V	strike slip	0	14	306
37.96	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13	512
37.96	S. San Andreas;SM	CA	29	90	V	strike slip	0	13	98
37.96	S. San Andreas;CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	85		strike slip	0	14	380
37.96	S. San Andreas;CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14	322
37.96	S. San Andreas;CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14	279
37.96	S. San Andreas;CC+BB+NM+SM	CA	n/a	90	V	strike slip	0	14	243

37.96	S. San Andreas;BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14	263
37.96	S. San Andreas;BB+NM+SM+NSB+SSB+BG	CA	n/a	84		strike slip	0	14	321
37.96	S. San Andreas;SM+NSB+SSB	CA	n/a	90	V	strike slip	0	13	176
37.96	S. San Andreas;BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	85		strike slip	0.1	13	390
37.96	S. San Andreas;SM+NSB	CA	n/a	90	V	strike slip	0	13	133
37.96	S. San Andreas;BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14	220
37.96	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13	548
37.96	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	86		strike slip	0.1	13	479
38.07	Newport Inglewood Connected alt 2	CA	1.3	90	V	strike slip	0	11	208
39.05	Newport Inglewood Connected alt 1	CA	1.3	89		strike slip	0	11	208
39.05	Newport-Inglewood, alt 1	CA	1	88		strike slip	0	15	65
39.83	San Jacinto;SBV+SJV+A+C	CA	n/a	90	V	strike slip	0	17	181
39.83	San Jacinto;SBV+SJV+A+CC	CA	n/a	90	V	strike slip	0	16	181
39.83	San Jacinto;SBV+SJV+A+CC+B	CA	n/a	90	V	strike slip	0.1	15	215
39.83	San Jacinto;SBV+SJV+A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15	241
39.83	San Jacinto;SBV+SJV	CA	n/a	90	V	strike slip	0	16	88
39.83	San Jacinto;SBV+SJV+A	CA	n/a	90	V	strike slip	0	16	134
39.83	San Jacinto;SBV	CA	6	90	V	strike slip	0	16	45
40.38	Sierra Madre (San Fernando)	CA	2	45	N	thrust	0	13	18
41.69	San Gabriel	CA	1	61	N	strike slip	0	15	71
42.07	Elsinore;GI+T+J	CA	n/a	86	NE	strike slip	0	17	153
42.07	Elsinore;GI+T	CA	5	90	V	strike slip	0	14	78

42.07	Elsinore;GI	CA	5	90	V	strike slip	0	13	37
42.07	Elsinore;GI+T+J+CM	CA	n/a	86	NE	strike slip	0	16	195
42.48	S. San Andreas;NSB+SSB+BG+CO	CA	n/a	79		strike slip	0.2	12	206
42.48	S. San Andreas;NSB+SSB+BG	CA	n/a	75		strike slip	0	14	136
42.48	S. San Andreas;NSB+SSB	CA	n/a	90	V	strike slip	0	13	79
42.48	S. San Andreas;NSB	CA	22	90	V	strike slip	0	13	35
43.78	San Joaquin Hills	CA	0.5	23	SW	thrust	2	13	27
45.39	Santa Monica, alt 1	CA	1	75	N	strike slip	0	18	14
45.39	Santa Monica Connected alt 1	CA	2.6	51		strike slip	0	16	79
48.70	Cleghorn	CA	3	90	V	strike slip	0	16	25
48.72	Northridge	CA	1.5	35	S	thrust	7.4	17	33
48.92	Palos Verdes Connected	CA	3	90	V	strike slip	0	10	285
48.92	Palos Verdes	CA	3	90	V	strike slip	0	14	99
55.30	Newport-Inglewood (Offshore)	CA	1.5	90	V	strike slip	0	10	66
56.22	Malibu Coast, alt 2	CA	0.3	74	N	strike slip	0	16	38
56.22	Malibu Coast, alt 1	CA	0.3	75	N	strike slip	0	8	38
58.81	Anacapa-Dume, alt 2	CA	3	41	N	thrust	1.2	12	65
59.03	Santa Susana, alt 1	CA	5	55	N	reverse	0	16	27
63.62	San Jacinto;SJV+A	CA	n/a	90	V	strike slip	0	17	89
63.62	San Jacinto;SJV+A+C	CA	n/a	90	V	strike slip	0	17	136
63.62	San Jacinto;SJV	CA	18	90	V	strike slip	0	16	43
63.62	San Jacinto;SJV+A+CC+B	CA	n/a	90	V	strike slip	0.1	15	170
63.62	San Jacinto;SJV+A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15	196

63.62	San Jacinto;SJV+A+CC	CA	n/a	90	V	strike slip	0	16	136
64.79	S. San Andreas;SSB+BG	CA	n/a	71		strike slip	0	13	101
64.79	S. San Andreas;SSB	CA	16	90	V	strike slip	0	13	43
64.79	S. San Andreas;SSB+BG+CO	CA	n/a	77		strike slip	0.2	12	170
65.13	North Frontal (West)	CA	1	49	S	reverse	0	16	50
67.89	Elsinore;T	CA	5	90	V	strike slip	0	14	52
67.89	Elsinore;T+J+CM	CA	n/a	85	NE	strike slip	0	16	169
67.89	Elsinore;T+J	CA	n/a	86	NE	strike slip	0	17	127
68.29	Holser, alt 1	CA	0.4	58	S	reverse	0	19	20
72.49	Anacapa-Dume, alt 1	CA	3	45	N	thrust	0	16	51
75.32	Simi-Santa Rosa	CA	1	60		strike slip	1	12	39
78.23	San Jacinto;A	CA	9	90	V	strike slip	0	17	71
78.23	San Jacinto;A+C	CA	n/a	90	V	strike slip	0	17	118
78.23	San Jacinto;A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15	178
78.23	San Jacinto;A+CC	CA	n/a	90	V	strike slip	0	16	118
78.23	San Jacinto;A+CC+B	CA	n/a	90	V	strike slip	0.1	15	152
81.42	Oak Ridge (Onshore)	CA	4	65	S	reverse	1	19	49
81.42	Oak Ridge Connected	CA	3.6	53		reverse	0.6	15	94
86.50	San Cayetano	CA	6	42	N	thrust	0	16	42
86.53	S. San Andreas;BB+NM	CA	n/a	90	V	strike slip	0	15	87
86.53	S. San Andreas;CC+BB+NM	CA	n/a	90	V	strike slip	0	15	146
86.53	S. San Andreas;PK+CH+CC+BB+NM	CA	n/a	90	V	strike slip	0.1	12	245
86.53	S. San Andreas;NM	CA	27	90	V	strike slip	0	15	37
86.53	S. San Andreas;CH+CC+BB+NM	CA	n/a	90	V	strike slip	0	14	208

89.82	Coronado Bank	CA	3	90	V	strike slip	0	9	186
93.30	Helendale-So Lockhart	CA	0.6	90	V	strike slip	0	13	114

Search Results

0 of 0 earthquakes in map area.

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There are no events in the current feed.

Didn't find what you were looking for?

- Check your Settings.
- Which earthquakes are included on the map and list?
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Earthquakes updated

Hazards by Location

Search Information

Address: 529 Cutter Way, Covina, CA 91722, USA

Coordinates: 34.0897192, -117.92162769999999

Elevation: ft

Timestamp: 2019-09-03T16:41:12.331Z

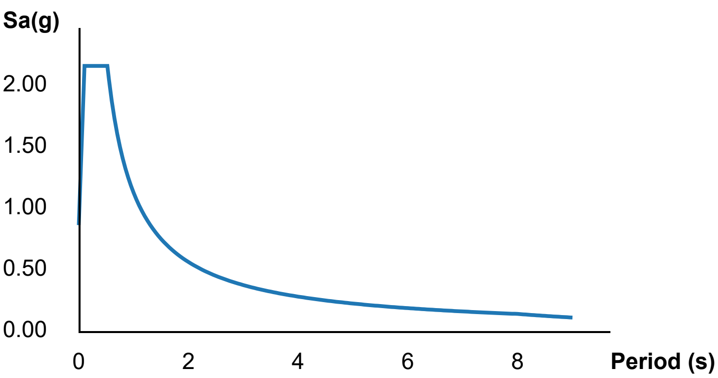
Hazard Type: Seismic

Reference Document: ASCE7-10

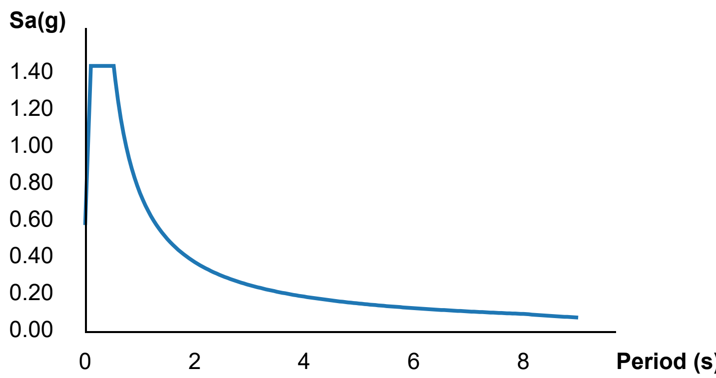
Risk Category: II

Site Class: D

MCER Horizontal Response Spectrum



Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
S_S	2.158	MCE_R ground motion (period=0.2s)
S_1	0.75	MCE_R ground motion (period=1.0s)
S_{MS}	2.158	Site-modified spectral acceleration value
S_{M1}	1.126	Site-modified spectral acceleration value
S_{DS}	1.439	Numeric seismic design value at 0.2s SA
S_{D1}	0.75	Numeric seismic design value at 1.0s SA

Additional Information

Name	Value	Description
SDC	E	Seismic design category
F_a	1	Site amplification factor at 0.2s
F_v	1.5	Site amplification factor at 1.0s

CR_S	1.017	Coefficient of risk (0.2s)
CR_1	1.031	Coefficient of risk (1.0s)
PGA	0.754	MCE_G peak ground acceleration
F_{PGA}	1	Site amplification factor at PGA
PGA_M	0.754	Site modified peak ground acceleration
T_L	8	Long-period transition period (s)
SsRT	2.158	Probabilistic risk-targeted ground motion (0.2s)
SsUH	2.122	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	2.264	Factored deterministic acceleration value (0.2s)
S1RT	0.77	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.747	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.75	Factored deterministic acceleration value (1.0s)
PGAd	0.826	Factored deterministic acceleration value (PGA)

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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APPENDIX E

LIQUEFACTION ANALYSIS

LIQUEFACTION & SETTLEMENT OF SANDS ANALYSIS

Project Name: 529 Cutter Way
Project Number: 192813-10A
Boring Number: B-4 (INSITU)

Horizontal Ground Acceleration (% g)	0.754	Energy Ratio C_E (Auto-hammer)	1.70
Analyzed Groundwater Depth (feet)	5.0	Borehole Diameter C_B (6 - 8 inches)	1.00
Average Wet Unit Weight (pcf)	102.1	Groundwater Depth in Boring (feet)	362.0
Design Magnitude Earthquake	6.9		
Magnitude Scaling Factor (MSF)	1.2		

Depth (feet)	Blow Count SPT	Blow Count Cal. Mod.	SPT N_m	Total Stress (tons/ft2)	Effective Stress (tons/ft2)	Fines Content FC(%)	C_R	Overburden C_N	rd	Sampler Type C_S	$(N_1)_{60}$	$(N_1)_{60cs}$	NCEER 1998 CSR	NCEER 1998 CRR*MSF	Liquefaction Safety Factor	Layer Thickness t (ft)	Layer Thickness t (inches)	Percent Volumetric Strain	Settlement Per Sand Layer (inches)
2		13	9.828	0.102	0.102	14.7	0.75	1.69	1.00	1.00	21	25	0.49	0.3509	Above GW, Not Liquifiable	2.00	24.00	1.50	0.36
4		7	5.292	0.204	0.204	14.7	0.75	1.57	0.99	1.00	11	13	0.49	0.1795	Above GW, Not Liquifiable	2.00	24.00	2.60	0.62
6		7	5.292	0.306	0.275	14.7	0.75	1.46	0.99	1.00	10	13	0.54	0.1707	0.32	2.00	24.00	2.70	0.65
8		13	9.828	0.408	0.315	41.1	0.75	1.37	0.98	1.00	17	26	0.62	0.3756	0.61	2.00	24.00	1.80	0.43
10		9	6.804	0.511	0.355	41.1	0.75	1.29	0.98	1.00	11	18	0.69	0.2428	0.35	2.00	24.00	2.40	0.58
12		10	7.560	0.613	0.394	41.1	0.85	1.21	0.97	1.00	13	21	0.74	0.2810	0.38	2.00	24.00	2.10	0.50
14		10	7.560	0.715	0.434	56.5	0.85	1.15	0.97	1.00	13	20	0.78	0.2675	Fine Grained, Not Liquifiable	2.00	24.00	2.30	Fine Grained
16		10	7.560	0.817	0.474	56.5	0.85	1.09	0.96	1.00	12	19	0.81	0.2560	Fine Grained, Not Liquifiable	2.00	24.00	2.40	Fine Grained
18		12	9.072	0.919	0.513	6.8	0.95	1.04	0.96	1.00	15	15	0.84	0.2034	0.24	2.00	24.00	1.90	0.46
20		16	12.096	1.021	0.553	6.8	0.95	0.99	0.95	1.00	19	20	0.86	0.2604	0.30	2.00	24.00	1.60	0.38
22		16	12.096	1.123	0.593	15	0.95	0.95	0.95	1.00	18	22	0.88	0.2975	0.34	2.00	24.00	1.70	0.41
26		31	23.436	1.327	0.672	15	0.95	0.87	0.94	1.00	33	37	0.91	---	Corrected SPT >30*	4.00	48.00	0.00	0.00

Total Settlement (inches): 4.4

Procedure established by T.L. Youd and I.M. Idriss, et. al., 1996 NCEER-96-0022 Workshop & S.C.E.C. SP117
Evaluation of settlements in sand due to earthquake shaking, Tokimatsu and Seed, 1987

3 Extension of rod above boring (feet)

* CRR 7.5 is not defined for (N_1)60cs greater than 30. Soils with (N1)60cs > 30 are considered too dense to liquefy (NCEER Workshop)

$(N_1)_{60} = N_M C_N C_E C_B C_R C_S$ $(N_1)_{60CS} = K_S (N_1)_{60}$

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LIQUEFACTION & SETTLEMENT OF SANDS ANALYSIS

Project Name: 529 Cutter Way
Project Number: 192813-10A
Boring Number: B-4 (5-FOOT-REMOVALS)

Horizontal Ground Acceleration (% g)	0.754	Energy Ratio C_E (Auto-hammer)	1.70
Analyzed Groundwater Depth (feet)	5.0	Borehole Diameter C_B (6 - 8 inches)	1.00
Average Wet Unit Weight (pcf)	102.1	Groundwater Depth in Boring (feet)	362.0
Design Magnitude Earthquake	7.2		
Magnitude Scaling Factor (MSF)	1.1		

Depth (feet)	Blow Count SPT	Blow Count Cal. Mod.	SPT N_m	Total Stress (tons/ft2)	Effective Stress (tons/ft2)	Fines Content FC(%)	C_R	Overburden C_N	rd	Sampler Type C_S	$(N_1)_{60}$	$(N_1)_{60cs}$	NCEER 1998 CSR	NCEER 1998 CRR*MSF	Liquefaction Safety Factor	Layer Thickness t (ft)	Layer Thickness t (inches)	Percent Volumetric Strain	Settlement Per Sand Layer (inches)
2		30	22.680	0.102	0.102	14.7	0.75	1.69	1.00	1.00	49	54	0.49	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
4		30	22.680	0.204	0.204	14.7	0.75	1.57	0.99	1.00	45	50	0.49	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
6		30	22.680	0.306	0.275	14.7	0.75	1.46	0.99	1.00	42	47	0.54	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
8		30	22.680	0.408	0.315	41.1	0.75	1.37	0.98	1.00	40	52	0.62	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
10		25	18.900	0.511	0.355	41.1	0.75	1.29	0.98	1.00	31	42	0.69	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
12		10	7.560	0.613	0.394	41.1	0.85	1.21	0.97	1.00	13	21	0.74	0.2520	0.34	2.00	24.00	2.10	0.50
14		10	7.560	0.715	0.434	56.5	0.85	1.15	0.97	1.00	13	20	0.78	0.2399	Fine Grained, Not Liquifiable	2.00	24.00	2.30	Fine Grained
16		10	7.560	0.817	0.474	56.5	0.85	1.09	0.96	1.00	12	19	0.81	0.2296	Fine Grained, Not Liquifiable	2.00	24.00	2.40	Fine Grained
18		12	9.072	0.919	0.513	6.8	0.95	1.04	0.96	1.00	15	15	0.84	0.1824	0.22	2.00	24.00	1.90	0.46
20		16	12.096	1.021	0.553	6.8	0.95	0.99	0.95	1.00	19	20	0.86	0.2335	0.27	2.00	24.00	1.60	0.38
22		16	12.096	1.123	0.593	15	0.95	0.95	0.95	1.00	18	22	0.88	0.2668	0.30	2.00	24.00	1.70	0.41
26		31	23.436	1.327	0.672	15	0.95	0.87	0.94	1.00	33	37	0.91	---	Corrected SPT >30*	4.00	48.00	0.00	0.00
																		Total Settlement (inches):	1.8

Procedure established by T.L. Youd and I.M. Idriss, et. al., 1996 NCEER-96-0022 Workshop & S.C.E.C. SP117
Evaluation of settlements in sand due to earthquake shaking, Tokimatsu and Seed, 1987

3 Extension of rod above boring (feet)

* CRR 7.5 is not defined for $(N_1)60cs$ greater than 30. Soils with (N1)60cs > 30 are considered too dense to liquefy (NCEER Workshop)

$(N_1)_{60} = N_M C_N C_E C_B C_R C_S$ $(N_1)_{60CS} = K_S (N_1)_{60}$

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LIQUEFACTION & SETTLEMENT OF SANDS ANALYSIS

Project Name: 529 Cutter Way
Project Number: 192813-10A
Boring Number: B-4 (10-FOOT-REMOVALS)

Horizontal Ground Acceleration (% g)	0.754	Energy Ratio C_E (Auto-hammer)	1.70
Analyzed Groundwater Depth (feet)	5.0	Borehole Diameter C_B (6 - 8 inches)	1.00
Average Wet Unit Weight (pcf)	102.1	Groundwater Depth in Boring (feet)	362.0
Design Magnitude Earthquake	7.2		
Magnitude Scaling Factor (MSF)	1.1		

Depth (feet)	Blow Count SPT	Blow Count Cal. Mod.	SPT N_m	Total Stress (tons/ft2)	Effective Stress (tons/ft2)	Fines Content FC(%)	C_R	Overburden C_N	rd	Sampler Type C_S	$(N_1)_{60}$	$(N_1)_{60cs}$	NCEER 1998 CSR	NCEER 1998 CRR*MSF	Liquefaction Safety Factor	Layer Thickness t (ft)	Layer Thickness t (inches)	Percent Volumetric Strain	Settlement Per Sand Layer (inches)
2		30	22.680	0.102	0.102	14.7	0.75	1.69	1.00	1.00	49	54	0.49	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
4		30	22.680	0.204	0.204	14.7	0.75	1.57	0.99	1.00	45	50	0.49	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
6		30	22.680	0.306	0.275	14.7	0.75	1.46	0.99	1.00	42	47	0.54	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
8		30	22.680	0.408	0.315	41.1	0.75	1.37	0.98	1.00	40	52	0.62	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
10		30	22.680	0.511	0.355	41.1	0.75	1.29	0.98	1.00	37	50	0.69	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
12		30	22.680	0.613	0.394	41.1	0.85	1.21	0.97	1.00	40	53	0.74	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
14		25	18.900	0.715	0.434	56.5	0.85	1.15	0.97	1.00	31	43	0.78	---	Corrected SPT >30*	2.00	24.00	0.00	Fine Grained
16		10	7.560	0.817	0.474	56.5	0.85	1.09	0.96	1.00	12	19	0.81	0.2296	Fine Grained, Not Liquifiable	2.00	24.00	2.40	Fine Grained
18		12	9.072	0.919	0.513	6.8	0.95	1.04	0.96	1.00	15	15	0.84	0.1824	0.22	2.00	24.00	1.90	0.46
20		16	12.096	1.021	0.553	6.8	0.95	0.99	0.95	1.00	19	20	0.86	0.2335	0.27	2.00	24.00	1.60	0.38
22		16	12.096	1.123	0.593	15	0.95	0.95	0.95	1.00	18	22	0.88	0.2668	0.30	2.00	24.00	1.70	0.41
26		31	23.436	1.327	0.672	15	0.95	0.87	0.94	1.00	33	37	0.91	---	Corrected SPT >30*	4.00	48.00	0.00	0.00
																		Total Settlement (inches):	1.2

Procedure established by T.L. Youd and I.M. Idriss, et. al., 1996 NCEER-96-0022 Workshop & S.C.E.C. SP117
Evaluation of settlements in sand due to earthquake shaking, Tokimatsu and Seed, 1987

3 Extension of rod above boring (feet)

* CRR 7.5 is not defined for (N_1)60cs greater than 30. Soils with (N1)60cs > 30 are considered too dense to liquefy (NCEER Workshop)

$(N_1)_{60} = N_M C_N C_E C_B C_R C_S$ $(N_1)_{60CS} = K_S (N_1)_{60}$

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LIQUEFACTION & SETTLEMENT OF SANDS ANALYSIS

Project Name: 529 Cutter Way
Project Number: 192813-10A
Boring Number: B-4 (12-FOOT-REMOVALS)

Horizontal Ground Acceleration (% g)	0.754	Energy Ratio C_E (Auto-hammer)	1.70
Analyzed Groundwater Depth (feet)	5.0	Borehole Diameter C_B (6 - 8 inches)	1.00
Average Wet Unit Weight (pcf)	102.1	Groundwater Depth in Boring (feet)	290.0
Design Magnitude Earthquake	7.2		
Magnitude Scaling Factor (MSF)	1.1		

Depth (feet)	Blow Count SPT	Blow Count Cal. Mod.	SPT N_m	Total Stress (tons/ft2)	Effective Stress (tons/ft2)	Fines Content FC(%)	C_R	Overburden C_N	rd	Sampler Type C_S	$(N_1)_{60}$	$(N_1)_{60cs}$	NCEER 1998 CSR	NCEER 1998 CRR*MSF	Liquefaction Safety Factor	Layer Thickness t (ft)	Layer Thickness t (inches)	Percent Volumetric Strain	Settlement Per Sand Layer (inches)
2		30	22.680	0.102	0.102	14.7	0.75	1.69	1.00	1.00	49	54	0.49	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
4		30	22.680	0.204	0.204	14.7	0.75	1.57	0.99	1.00	45	50	0.49	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
6		30	22.680	0.306	0.275	14.7	0.75	1.46	0.99	1.00	42	47	0.54	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
8		30	22.680	0.408	0.315	41.1	0.75	1.37	0.98	1.00	40	52	0.62	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
10		30	22.680	0.511	0.355	41.1	0.75	1.29	0.98	1.00	37	50	0.69	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
12		30	22.680	0.613	0.394	41.1	0.85	1.21	0.97	1.00	40	53	0.74	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
14		30	22.680	0.715	0.434	56.5	0.85	1.15	0.97	1.00	38	50	0.78	---	Corrected SPT >30*	2.00	24.00	0.00	Fine Grained
16		25	18.900	0.817	0.474	56.5	0.85	1.09	0.96	1.00	30	41	0.81	---	Corrected SPT >30*	2.00	24.00	0.00	Fine Grained
18		12	9.072	0.919	0.513	6.8	0.95	1.04	0.96	1.00	15	15	0.84	0.1824	0.22	2.00	24.00	1.90	0.46
20		16	12.096	1.021	0.553	6.8	0.95	0.99	0.95	1.00	19	20	0.86	0.2335	0.27	2.00	24.00	1.60	0.38
22		16	12.096	1.123	0.593	15	0.95	0.95	0.95	1.00	18	22	0.88	0.2668	0.30	2.00	24.00	1.70	0.41
26		31	23.436	1.327	0.672	15	0.95	0.87	0.94	1.00	33	37	0.91	---	Corrected SPT >30*	4.00	48.00	0.00	0.00
																		Total Settlement (inches):	1.2

Procedure established by T.L. Youd and I.M. Idriss, et. al., 1996 NCEER-96-0022 Workshop & S.C.E.C. SP117
Evaluation of settlements in sand due to earthquake shaking, Tokimatsu and Seed, 1987

3 Extension of rod above boring (feet)

* CRR 7.5 is not defined for (N_1)60cs greater than 30. Soils with (N1)60cs > 30 are considered too dense to liquefy (NCEER Workshop)

$(N_1)_{60} = N_M C_N C_E C_B C_R C_S$ $(N_1)_{60CS} = K_S (N_1)_{60}$

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LIQUEFACTION & SETTLEMENT OF SANDS ANALYSIS

Project Name: 529 Cutter Way
Project Number: 192813-10A
Boring Number: B-4 (15-FOOT-REMOVALS)

Horizontal Ground Acceleration (% g)	0.754	Energy Ratio C_E (Auto-hammer)	1.70
Analyzed Groundwater Depth (feet)	5.0	Borehole Diameter C_B (6 - 8 inches)	1.00
Average Wet Unit Weight (pcf)	102.1	Groundwater Depth in Boring (feet)	289.0
Design Magnitude Earthquake	7.2		
Magnitude Scaling Factor (MSF)	1.1		

Depth (feet)	Blow Count SPT	Blow Count Cal. Mod.	SPT N_m	Total Stress (tons/ft2)	Effective Stress (tons/ft2)	Fines Content FC(%)	C_R	Overburden C_N	rd	Sampler Type C_S	$(N_1)_{60}$	$(N_1)_{60cs}$	NCEER 1998 CSR	NCEER 1998 CRR*MSF	Liquefaction Safety Factor	Layer Thickness t (ft)	Layer Thickness t (inches)	Percent Volumetric Strain	Settlement Per Sand Layer (inches)
2		30	22.680	0.102	0.102	14.7	0.75	1.69	1.00	1.00	49	54	0.49	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
4		30	22.680	0.204	0.204	14.7	0.75	1.57	0.99	1.00	45	50	0.49	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
6		30	22.680	0.306	0.275	14.7	0.75	1.46	0.99	1.00	42	47	0.54	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
8		30	22.680	0.408	0.315	41.1	0.75	1.37	0.98	1.00	40	52	0.62	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
10		30	22.680	0.511	0.355	41.1	0.75	1.29	0.98	1.00	37	50	0.69	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
12		30	22.680	0.613	0.394	41.1	0.85	1.21	0.97	1.00	40	53	0.74	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
14		30	22.680	0.715	0.434	56.5	0.85	1.15	0.97	1.00	38	50	0.78	---	Corrected SPT >30*	2.00	24.00	0.00	Fine Grained
16		30	22.680	0.817	0.474	56.5	0.85	1.09	0.96	1.00	36	48	0.81	---	Corrected SPT >30*	2.00	24.00	0.00	Fine Grained
18		25	18.900	0.919	0.513	6.8	0.95	1.04	0.96	1.00	32	32	0.84	---	Corrected SPT >30*	2.00	24.00	0.00	0.00
20		16	12.096	1.021	0.553	6.8	0.95	0.99	0.95	1.00	19	20	0.86	0.2335	0.27	2.00	24.00	1.60	0.38
22		16	12.096	1.123	0.593	15	0.95	0.95	0.95	1.00	18	22	0.88	0.2668	0.30	2.00	24.00	1.70	0.41
26		31	23.436	1.327	0.672	15	0.95	0.87	0.94	1.00	33	37	0.91	---	Corrected SPT >30*	4.00	48.00	0.00	0.00
																		Total Settlement (inches):	0.8

Procedure established by T.L. Youd and I.M. Idriss, et. al., 1996 NCEER-96-0022 Workshop & S.C.E.C. SP117
Evaluation of settlements in sand due to earthquake shaking, Tokimatsu and Seed, 1987

3 Extension of rod above boring (feet)

* CRR 7.5 is not defined for (N_1)60cs greater than 30. Soils with (N1)60cs > 30 are considered too dense to liquefy (NCEER Workshop)

$(N_1)_{60} = N_M C_N C_E C_B C_R C_S$ $(N_1)_{60CS} = K_S (N_1)_{60}$

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APPENDIX F

ASPHALTIC CONCRETE PAVEMENT
CALCULATIONS

PAVING DESIGN

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JN: **192813-10A** CONSULT: **SMP**
PROJECT: **529 Cutter Way**

CALCULATION SHEET # **AutoParking**

CALTRANS METHOD FOR DESIGN OF FLEXIBLE PAVEMENT

Input "R" value or "CBR" of native soil	50	
Type of Index Property - "R" value or "CBR" (C or R)	R	R Value
R Value used for Caltrans Method	50	
Input Traffic Index (TI)	5	
Calculated Total Gravel Equivalent (GE)	0.8	feet
Calculated Total Gravel Equivalent (GE)	9.6	inches
Calculated Gravel Factor (Gf) for A/C paving	2.53	
Gravel Factor for Base Course (Gf)	1.1	

Pavement sections provided below are considered equal; but, do not reflect reviewing agency minimums.

Gravel Equivalent			INCHES		FEET	
GE (feet)	GE (inches)	Delta (inches)	A/C Section Thickness (inches)	Minimum Base (inches)	A/C Section Thickness (feet)	Minimum Base (feet)
0.63	7.60	2.00	3.0	1.8	0.25	0.15
0.74	8.87	0.73	3.5	0.6	0.29	0.05
0.76	9.13	0.47	3.6	0.6	0.30	0.05
0.84	10.14	-0.54	4.0	0.0	0.33	0.00
0.89	10.65	-1.05	4.2		0.35	
0.95	11.41	-1.81	4.5		0.38	
1.01	12.17	-2.57	4.8		0.40	
1.06	12.67	-3.07	5.0		0.42	
1.27	15.21	-5.61	6.0		0.50	
2.11	25.35	-15.75	10.0		0.83	
2.53	30.42	-20.82	12.0		1.00	

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JN: **192813-10A** CONSULT: **SMP**
PROJECT: **529 Cutter Way**

CALCULATION SHEET # **AutoDrives**

CALTRANS METHOD FOR DESIGN OF FLEXIBLE PAVEMENT

Input "R" value or "CBR" of native soil	50	
Type of Index Property - "R" value or "CBR" (C or R)	R	R Value
R Value used for Caltrans Method	50	
Input Traffic Index (TI)	6	
Calculated Total Gravel Equivalent (GE)	0.96	feet
Calculated Total Gravel Equivalent (GE)	11.52	inches
Calculated Gravel Factor (Gf) for A/C paving	2.31	
Gravel Factor for Base Course (Gf)	1.1	

Pavement sections provided below are considered equal; but, do not reflect reviewing agency minimums.

Gravel Equivalent			INCHES		FEET	
GE (feet)	GE (inches)	Delta (inches)	A/C Section Thickness (inches)	Minimum Base (inches)	A/C Section Thickness (feet)	Minimum Base (feet)
0.58	6.94	4.58	3.0	4.2	0.25	0.35
0.62	7.40	4.12	3.2	3.6	0.27	0.30
0.67	8.10	3.42	3.5	3.0	0.29	0.25
0.77	9.26	2.26	4.0	1.8	0.33	0.15
0.81	9.72	1.80	4.2	1.8	0.35	0.15
0.87	10.41	1.11	4.5	1.2	0.38	0.10
0.93	11.11	0.41	4.8	0.6	0.40	0.05
0.96	11.57	-0.05	5.0	0.0	0.42	0.00
1.16	13.88	-2.36	6.0		0.50	
1.93	23.14	-11.62	10.0		0.83	
2.31	27.77	-16.25	12.0		1.00	

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JN: **192813-10A** CONSULT: **SMP**
PROJECT: **529 Cutter Way**

CALCULATION SHEET # **Entrances**

CALTRANS METHOD FOR DESIGN OF FLEXIBLE PAVEMENT

Input "R" value or "CBR" of native soil	50	
Type of Index Property - "R" value or "CBR" (C or R)	R	R Value
R Value used for Caltrans Method	50	
Input Traffic Index (TI)	7	
Calculated Total Gravel Equivalent (GE)	1.12	feet
Calculated Total Gravel Equivalent (GE)	13.44	inches
Calculated Gravel Factor (Gf) for A/C paving	2.14	
Gravel Factor for Base Course (Gf)	1.1	

Pavement sections provided below are considered equal; but, do not reflect reviewing agency minimums.

Gravel Equivalent GE (feet)	GE (inches)	Delta (inches)	INCHES A/C Section Thickness (inches)	INCHES Minimum Base (inches)	FEET A/C Section Thickness (feet)	FEET Minimum Base (feet)
0.54	6.43	7.01	3.0	6.6	0.25	0.55
0.57	6.86	6.58	3.2	6.0	0.27	0.50
0.62	7.50	5.94	3.5	5.4	0.29	0.45
0.71	8.57	4.87	4.0	4.2	0.33	0.35
0.75	9.00	4.44	4.2	4.2	0.35	0.35
0.80	9.64	3.80	4.5	3.6	0.38	0.30
0.86	10.28	3.16	4.8	3.0	0.40	0.25
0.89	10.71	2.73	5.0	2.4	0.42	0.20
1.07	12.85	0.59	6.0	0.6	0.50	0.05
1.79	21.42	-7.98	10.0	0.0	0.83	0.00
2.14	25.71	-12.27	12.0		1.00	

APPENDIX G

GENERAL EARTHWORK AND GRADING SPECIFICATIONS

EARTH-STRATA

General Earthwork and Grading Specifications

General

Intent: These General Earthwork and Grading Specifications are intended to be the minimum requirements for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These General Earthwork and Grading Specifications should be considered a part of the recommendations contained in the geotechnical report(s) and if they are in conflict with the geotechnical report(s), the specific recommendations in the geotechnical report shall supersede these more general specifications. Observations made during earthwork operations by the project Geotechnical Consultant may result in new or revised recommendations that may supersede these specifications and/or the recommendations in the geotechnical report(s).

The Geotechnical Consultant of Record: The Owner shall employ a qualified Geotechnical Consultant of Record (Geotechnical Consultant), prior to commencement of grading or construction. The Geotechnical Consultant shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading or construction.

Prior to commencement of grading or construction, the Owner shall coordinate with the Geotechnical Consultant, and Earthwork Contractor (Contractor) to schedule sufficient personnel for the appropriate level of observation, mapping, and compaction testing.

During earthwork and grading operations, the Geotechnical Consultant shall observe, map, and document the subsurface conditions to confirm assumptions made during the geotechnical design phase of the project. Should the observed conditions differ significantly from the interpretive assumptions made during the design phase, the Geotechnical Consultant shall recommend appropriate changes to accommodate the observed conditions, and notify the reviewing agency where required.

The Geotechnical Consultant shall observe the moisture conditioning and processing of the excavations and fill materials. The Geotechnical Consultant should perform periodic relative density testing of fill materials to verify that the attained level of compaction is being accomplished as specified.

The Earthwork Contractor: The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of earth materials to receive compacted fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall be provided with the approved grading plans and geotechnical report(s) for his review and acceptance of responsibilities, prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the approved grading plans and geotechnical report(s). Prior to commencement of grading, the Contractor shall prepare and submit to the Owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "equipment" of work and the estimated quantities of daily earthwork contemplated for the site. The Contractor shall inform the Owner and the Geotechnical Consultant of work schedule changes and revisions to the work plan at least 24 hours in advance of such changes so that appropriate personnel will be available for observation and testing. No assumptions shall be made by the Contractor with regard to whether the Geotechnical Consultant is aware of all grading operations.

It is the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the earthwork operations in accordance with the applicable grading codes and agency ordinances, these specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). At the sole discretion of the Geotechnical Consultant, any unsatisfactory conditions, such as unsuitable earth materials, improper moisture conditioning, inadequate compaction, insufficient buttress keyway size, adverse weather conditions, etc., resulting in a quality of work less than required in the approved grading plans and geotechnical report(s), the Geotechnical Consultant shall reject the work and may recommend to the Owner that grading be stopped until conditions are corrected.

Preparation of Areas for Compacted Fill

Clearing and Grubbing: Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed in a method acceptable to the Owner, Geotechnical Consultant, and governing agencies.

The Geotechnical Consultant shall evaluate the extent of these removals on a site by site basis. Earth materials to be placed as compacted fill shall not contain more than 1 percent organic materials (by volume). No compacted fill lift shall contain more than 10 percent organic matter.

Should potentially hazardous materials be encountered, the Contractor shall stop work in the affected area, and a hazardous materials specialist shall immediately be consulted to evaluate the potentially hazardous materials, prior to continuing to work in that area.

It is our understanding that the State of California defines most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) as hazardous waste. As such, indiscriminate dumping or spillage of these fluids may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall be prohibited. The contractor is responsible for all hazardous waste related to his operations. The Geotechnical Consultant does not have expertise in this area. If hazardous waste is a concern, then the Owner should contract the services of a qualified environmental assessor.

Processing: Exposed earth materials that have been observed to be satisfactory for support of compacted fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Exposed earth materials that are not observed to be satisfactory shall be removed or alternative recommendations may be provided by the Geotechnical Consultant. Scarification shall continue until the exposed earth materials are broken down and free of oversize material and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction. The earth materials should be moistened or air dried to near optimum moisture content, prior to compaction.

Overexcavation: The Cut Lot Typical Detail and Cut/Fill Transition Lot Typical Detail, included herein provides a graphic illustration that depicts typical overexcavation recommendations made in the approved geotechnical report(s) and/or grading plan(s).

Keyways and Benching: Where fills are to be placed on slopes steeper than 5:1 (horizontal to vertical units), the ground shall be thoroughly benched as compacted fill is placed. Please see the three Keyway and Benching Typical Details with subtitles Cut Over Fill Slope, Fill Over Cut Slope, and Fill Slope for a graphic illustration. The lowest bench or smallest keyway shall be a minimum of 15 feet wide (or ½ the proposed slope height) and at least 2 feet into competent earth materials as advised by the Geotechnical Consultant. Typical benches shall be excavated a minimum height of 4 feet into competent earth materials or as recommended by the Geotechnical Consultant. Fill placed on slopes steeper than 5:1 should be thoroughly benched or otherwise excavated to provide a flat subgrade for the compacted fill.

Evaluation/Acceptance of Bottom Excavations: All areas to receive compacted fill (bottom excavations), including removal excavations, processed areas, keyways, and benching, shall be observed, mapped, general elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive compacted fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to placing compacted fill. A licensed surveyor shall provide the survey control for determining elevations of bottom excavations, processed areas, keyways, and benching. The Geotechnical Consultant is not responsible for erroneously located, fills, subdrain systems, or excavations.

Fill Materials

General: Earth material to be used as compacted fill should to a large extent be free of organic matter and other deleterious substances as evaluated and accepted by the Geotechnical Consultant.

Oversize: Oversize material is rock that does not break down into smaller pieces and has a maximum diameter greater than 8 inches. Oversize rock shall not be included within compacted fill unless specific methods and guidelines acceptable to the Geotechnical Consultant are followed. For examples of methods and guidelines of oversize rock placement see the enclosed Oversize Rock Disposal Detail. The inclusion of oversize materials in the compacted fill shall only be acceptable if the oversize material is completely surrounded by compacted fill or thoroughly jetted granular materials. No oversize material shall be placed within 10 vertical feet of finish grade or within 2 feet of proposed utilities or underground improvements.

Import: Should imported earth materials be required, the proposed import materials shall meet the requirements of the Geotechnical Consultant. Well graded, very low expansion potential earth materials free of organic matter and other deleterious substances are usually sought after as import materials. However, it is generally in the Owners best interest that potential import earth materials are provided to the Geotechnical Consultant to determine their suitability for the intended purpose. At least 48 hours should be allotted for the appropriate laboratory testing to be performed, prior to starting the import operations.

Fill Placement and Compaction Procedures

Fill Layers: Fill materials shall be placed in areas prepared to receive fill in nearly horizontal layers not exceeding 8 inches in loose thickness. Thicker layers may be accepted by the Geotechnical Consultant, provided field density testing indicates that the grading procedures can adequately compact the thicker layers. Each layer of fill shall be spread evenly and thoroughly mixed to obtain uniformity within the earth materials and consistent moisture throughout the fill.

Moisture Conditioning of Fill: Earth materials to be placed as compacted fill shall be watered, dried, blended, and/or mixed, as needed to obtain relatively uniform moisture contents that are at or slightly above optimum. The maximum density and optimum moisture content tests should be performed in accordance with the American Society of Testing and Materials (ASTM test method D1557-00).

Compaction of Fill: After each layer has been moisture-conditioned, mixed, and evenly spread, it should be uniformly compacted to a minimum of 90 percent of maximum dry density as determined by ASTM test method D1557-00. Compaction equipment shall be adequately sized and be either specifically designed for compaction of earth materials or be proven to consistently achieve the required level of compaction.

Compaction of Fill Slopes: In addition to normal compaction procedures specified above, additional effort to obtain compaction on slopes is needed. This may be accomplished by backrolling of slopes with sheepsfoot rollers as the fill is being placed, by overbuilding the fill slopes, or by other methods producing results that are satisfactory to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill and the slope face shall be a minimum of 90 percent of maximum density per ASTM test method D1557-00.

Compaction Testing of Fill: Field tests for moisture content and relative density of the compacted fill earth materials shall be periodically performed by the Geotechnical Consultant. The location and frequency of tests shall be at the Geotechnical Consultant's discretion based on field observations. Compaction test locations will not necessarily be random. The test locations may or may not be selected to verify minimum compaction requirements in areas that are typically prone to inadequate compaction, such as close to slope faces and near benching.

Frequency of Compaction Testing: Compaction tests shall be taken at minimum intervals of every 2 vertical feet and/or per 1,000 cubic yards of compacted materials placed. Additionally, as a guideline, at least one (1) test shall be taken on slope faces for each 5,000 square feet of slope face and/or for each 10 vertical feet of slope. The Contractor shall assure that fill placement is such that the testing schedule described herein can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork operations to a safe level so that these minimum standards can be obtained.

Compaction Test Locations: The approximate elevation and horizontal coordinates of each test location shall be documented by the Geotechnical Consultant. The Contractor shall coordinate with the Surveyor to assure that sufficient grade stakes are established. This will provide the Geotechnical Consultant with sufficient accuracy to determine the approximate test locations and elevations. The Geotechnical Consultant can not be responsible for staking erroneously located by the Surveyor or Contractor. A minimum of two grade stakes should be provided at a maximum horizontal distance of 100 feet and vertical difference of less than 5 feet.

Subdrain System Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the approved grading plan, and the typical details provided herein. The Geotechnical Consultant may recommend additional subdrain systems and/or changes to the subdrain systems described herein, with regard to the extent, location, grade, or material depending on conditions encountered during grading or other factors. All subdrain systems shall be surveyed by a licensed land surveyor (except for retaining wall subdrain systems) to verify line and grade after installation and prior to burial. Adequate time should be allowed by the Contractor to complete these surveys.

Excavation

All excavations and over-excavations for remedial purposes shall be evaluated by the Geotechnical Consultant during grading operations. Remedial removal depths indicated on the geotechnical plans are estimates only. The actual removal depths and extent shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading operations. Where fill over cut slopes are planned, the cut portion of the slope shall be excavated, evaluated, and accepted by the Geotechnical Consultant prior to placement of the fill portion of the proposed slope, unless specifically addressed by the Geotechnical Consultant. Typical details for cut over fill slopes and fill over cut slopes are provided herein.

Trench Backfill

1) The Contractor shall follow all OHSA and Cal/OSHA requirements for trench excavation safety.

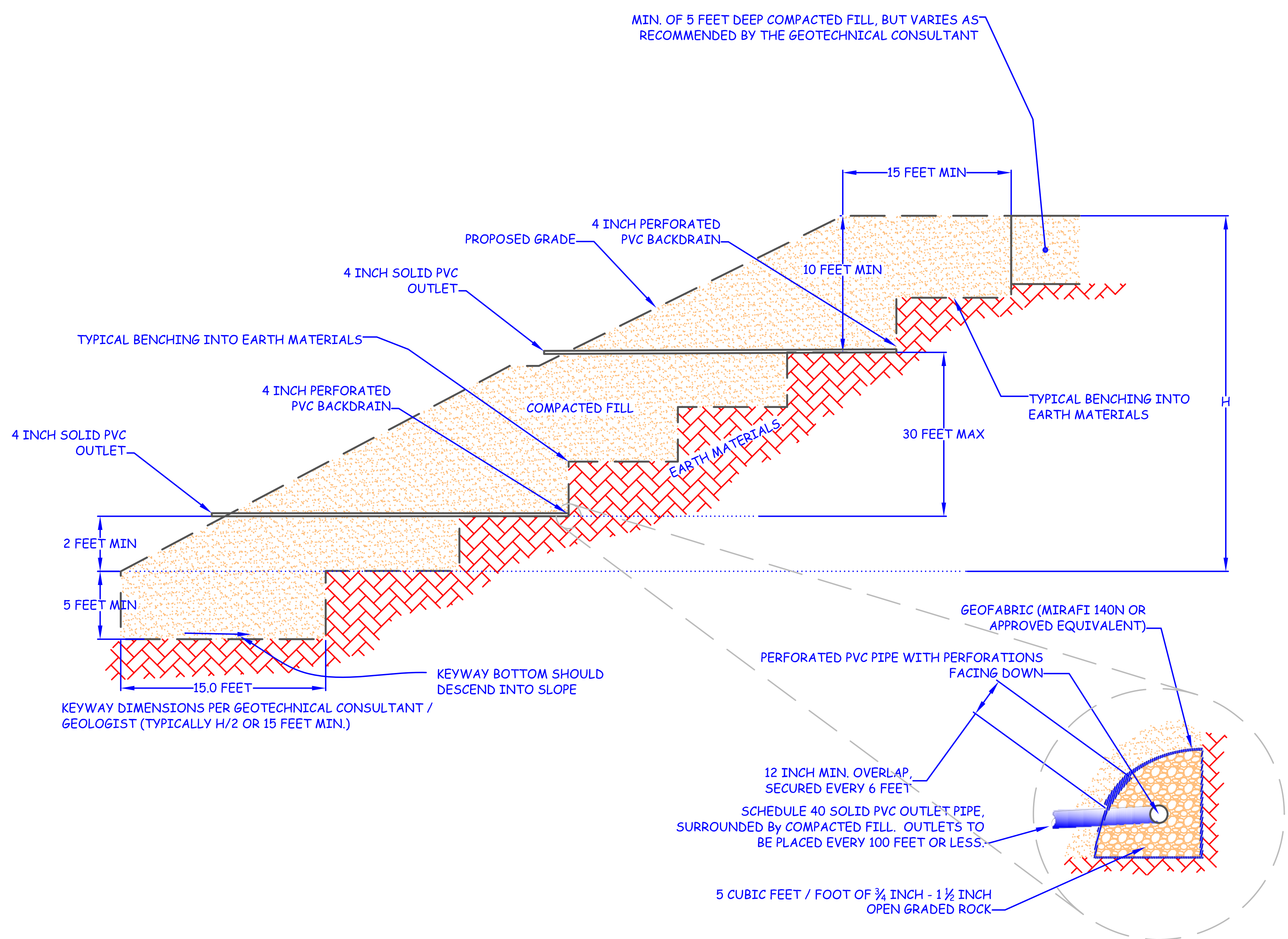
2) Bedding and backfill of utility trenches shall be done in accordance with the applicable provisions in the Standard Specifications of Public Works Construction. Bedding materials shall have a Sand Equivalency more than 30 (SE>30). The bedding shall be placed to 1 foot over the conduit and thoroughly jetting to provide densification. Backfill should be compacted to a minimum of 90 percent of maximum dry density, from 1 foot above the top of the conduit to the surface.

3) Jetting of the bedding materials around the conduits shall be observed by the Geotechnical Consultant.

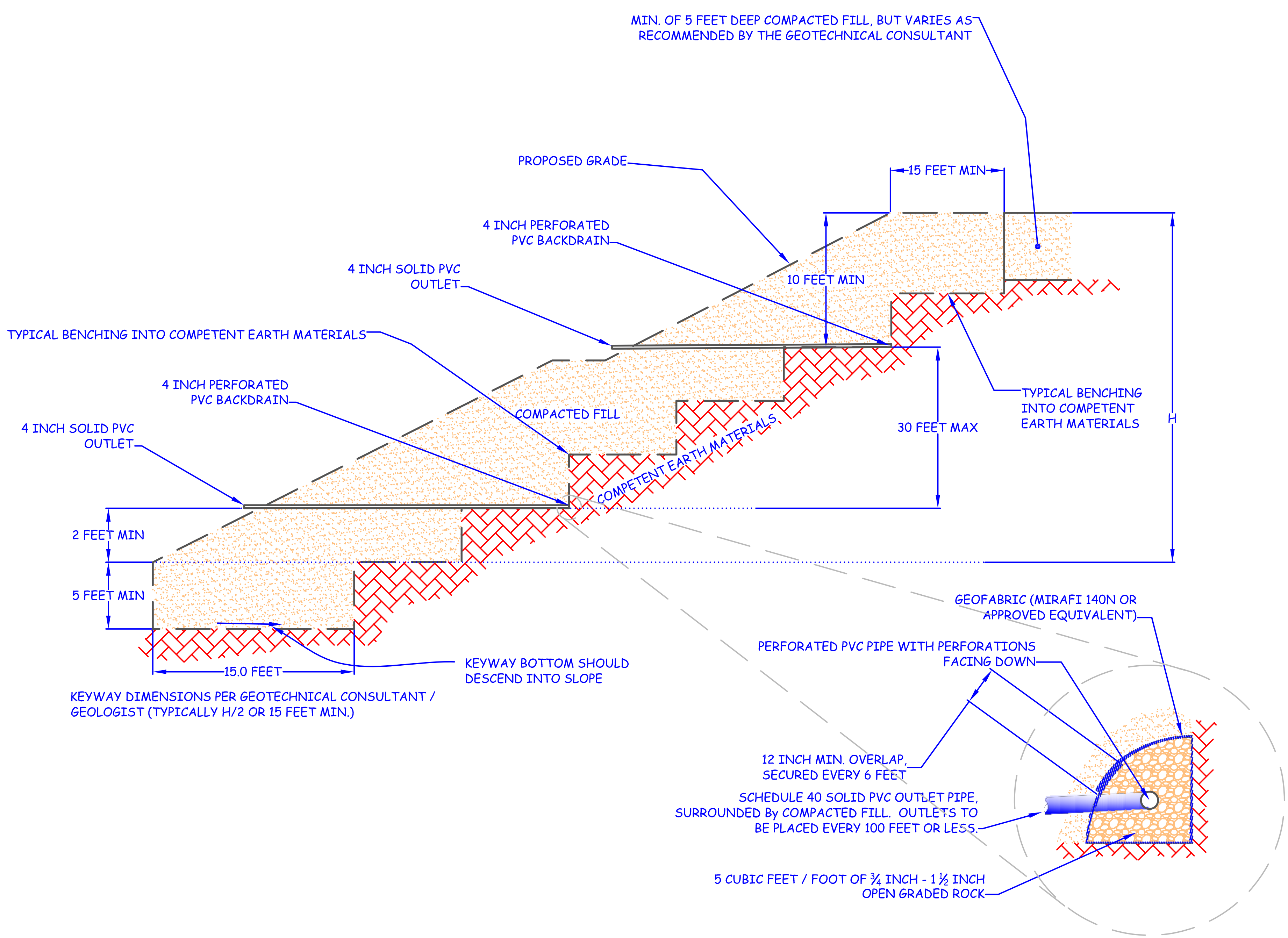
4) The Geotechnical Consultant shall test trench backfill for the minimum compaction requirements recommended herein. At least one test should be conducted for every 300 linear feet of trench and for each 2 vertical feet of backfill.

5) For trench backfill the lift thicknesses shall not exceed those allowed in the Standard Specifications of Public Works Construction, unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment or method.

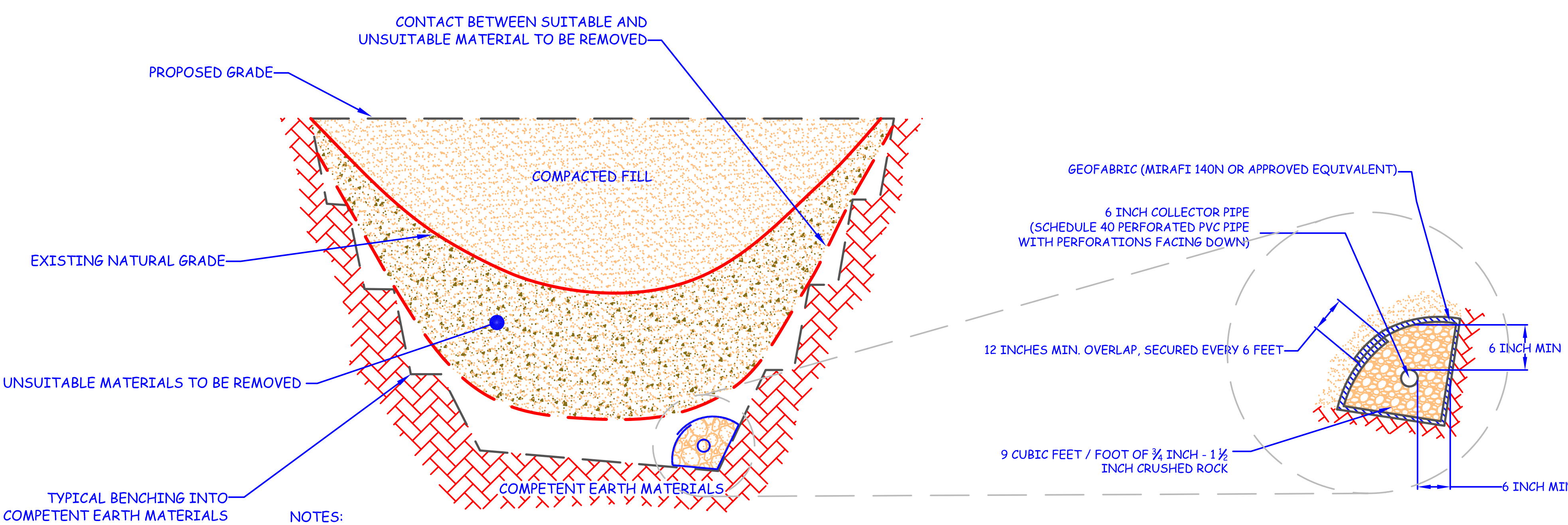
STABILIZATION FILL TYPICAL DETAIL



BUTTRESS TYPICAL DETAIL



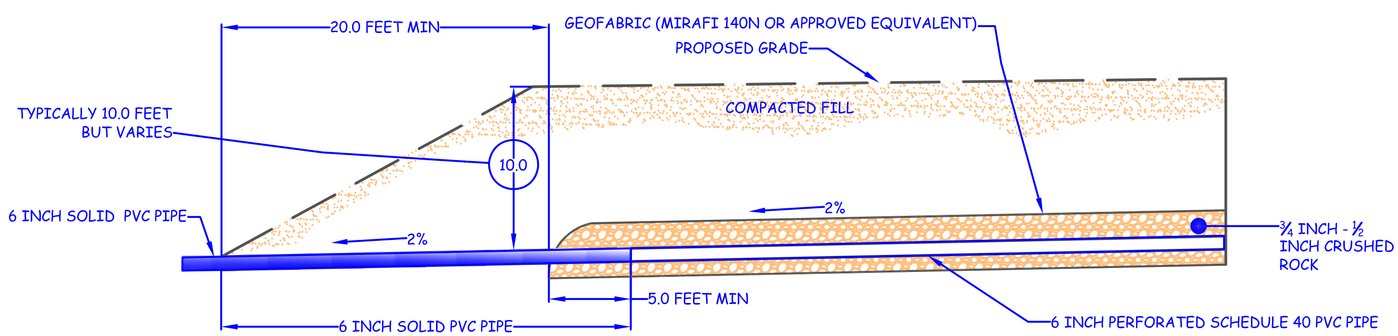
CANYON SUBDRAIN SYSTEM TYPICAL DETAIL



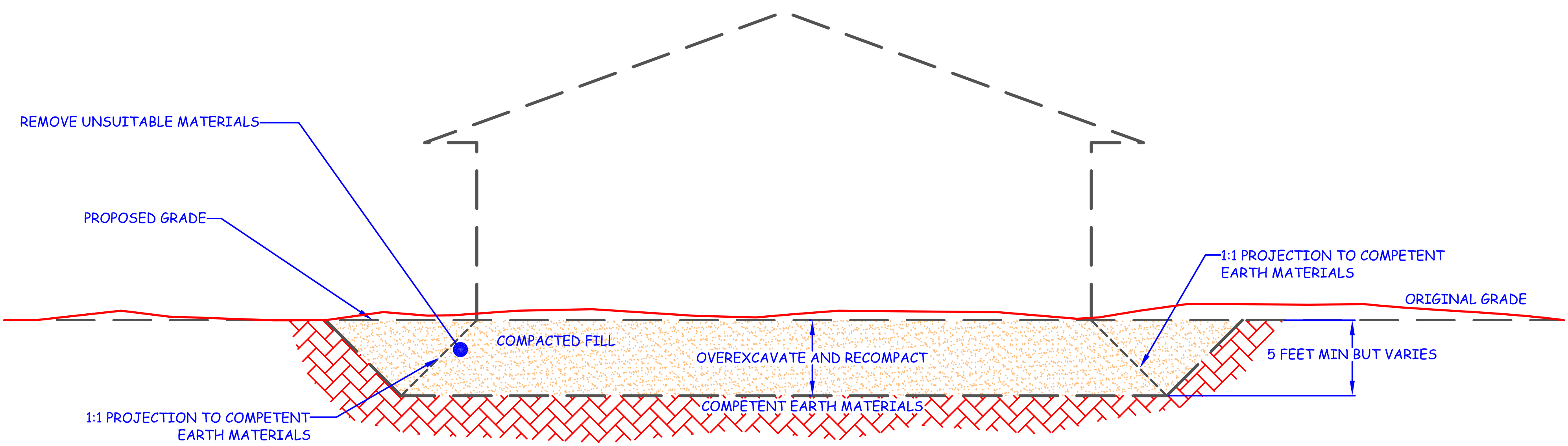
NOTES:
1 - CONTINUOUS RUNS IN EXCESS OF 500 FEET LONG WILL REQUIRE AN 8 INCH DIAMETER PIPE.

2 - FINAL 20 FEET OF PIPE AT OUTLET WILL BE SOLID AND BACKFILLED WITH COMPACTED FINE-GRAINED EARTH MATERIALS.

CANYON SUBDRAIN TYPICAL OUTLET



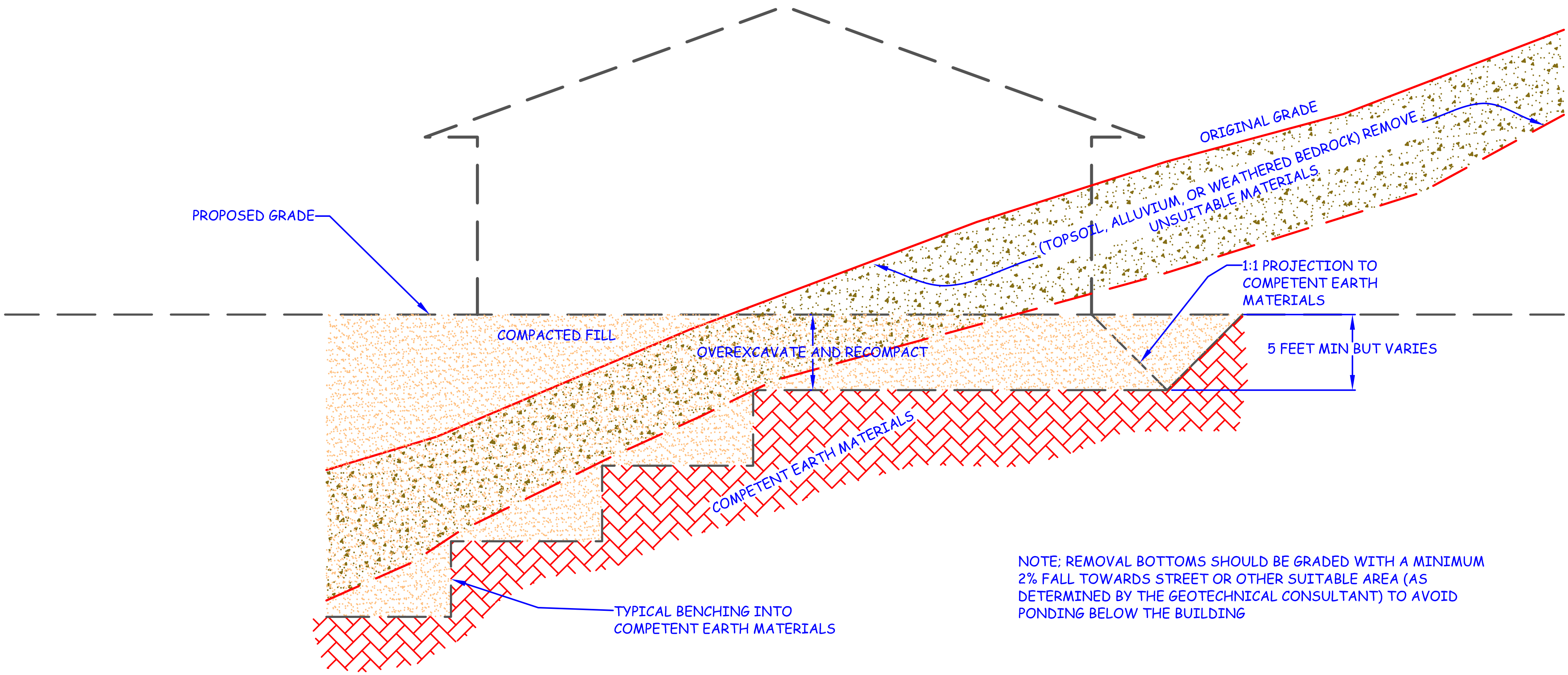
CUT LOT TYPICAL DETAIL



NOTE; REMOVAL BOTTOMS SHOULD BE GRADED WITH A MINIMUM 2% FALL TOWARDS STREET OR OTHER SUITABLE AREA (AS DETERMINED BY THE GEOTECHNICAL CONSULTANT) TO AVOID PONDING BELOW THE BUILDING

NOTE: WHERE DESIGN CUT LOTS ARE EXCAVATED ENTIRELY INTO COMPETENT EARTH MATERIALS, OVEREXCAVATION MAY STILL BY NEEDED FOR HARD-ROCK CONDITIONS OR MATERIALS WITH VARIABLE EXPANSION POTENTIALS

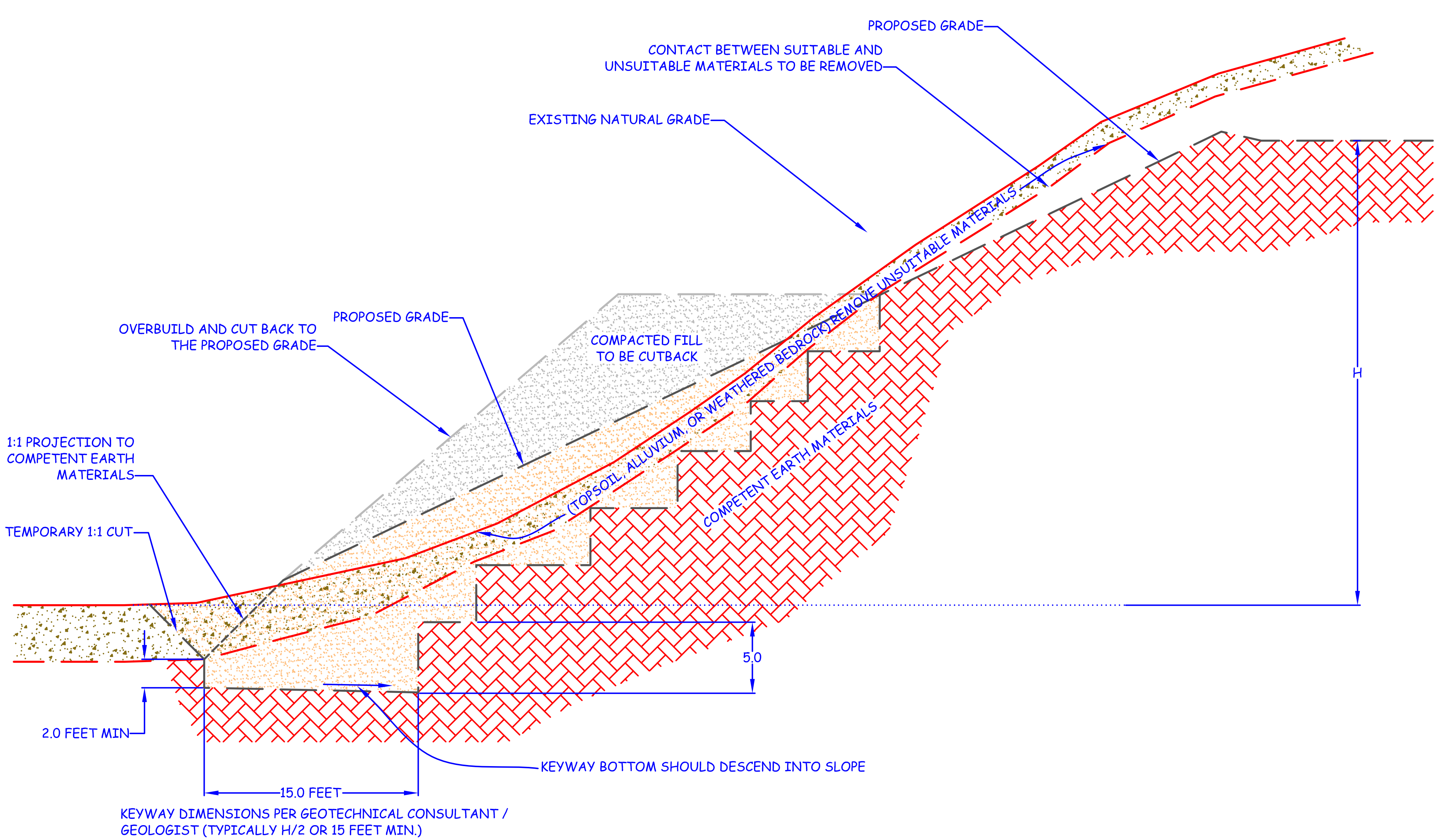
CUT / FILL TRANSITION LOT TYPICAL DETAIL



NOTE: REMOVAL BOTTOMS SHOULD BE GRADED WITH A MINIMUM 2% FALL TOWARDS STREET OR OTHER SUITABLE AREA (AS DETERMINED BY THE GEOTECHNICAL CONSULTANT) TO AVOID PONDING BELOW THE BUILDING

NOTE: WHERE DESIGN CUT LOTS ARE EXCAVATED ENTIRELY INTO COMPETENT EARTH MATERIALS, OVEREXCAVATION MAY STILL BY NEEDED FOR HARD-ROCK CONDITIONS OR MATERIALS WITH VARIABLE EXPANSION POTENTIALS

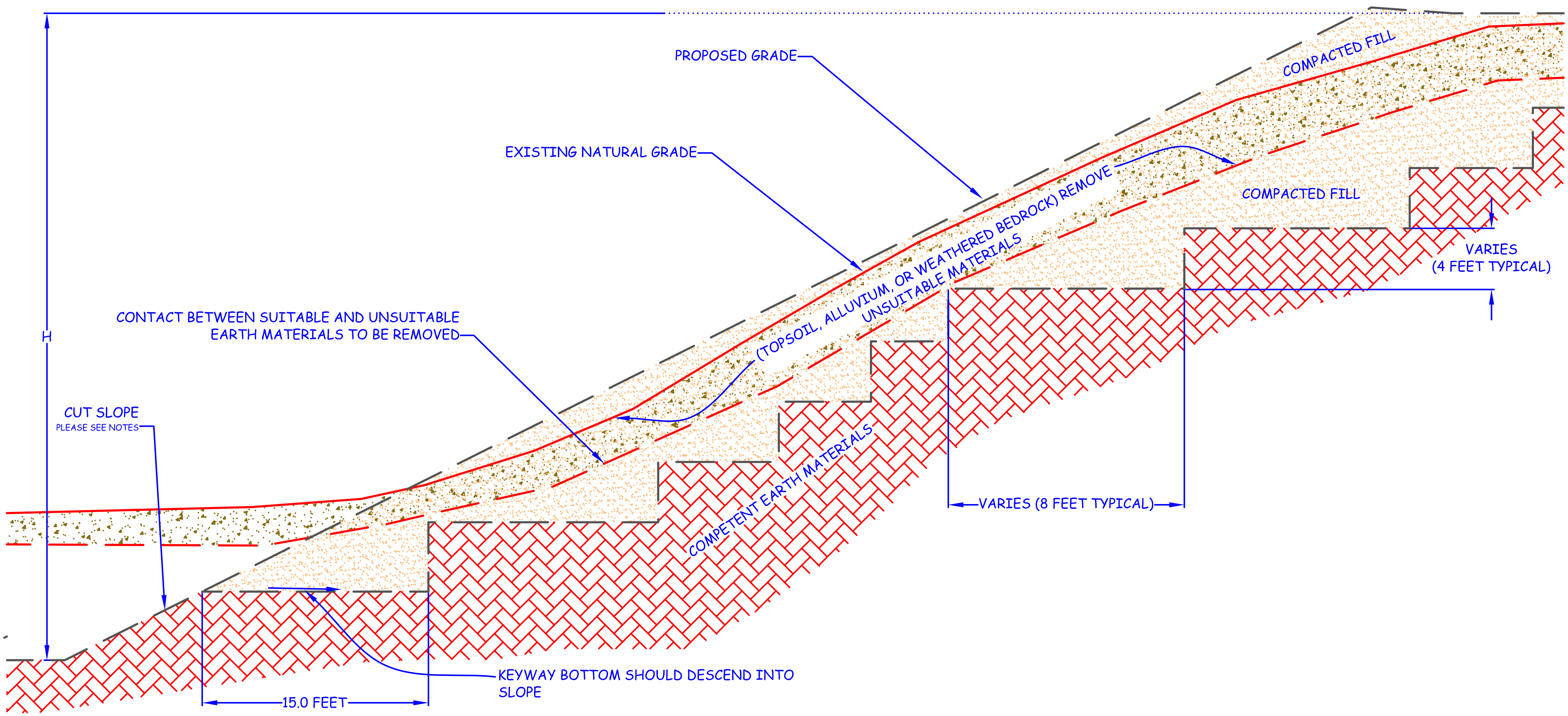
KEYWAY & BENCHING TYPICAL DETAILS
CUT OVER FILL SLOPE



NOTE:

NATURAL SLOPES STEEPER THAN 5:1 (H:V) MUST BE BENCHED INTO COMPETENT EARTH MATERIALS

KEYWAY & BENCHING TYPICAL DETAILS
FILL OVER CUT SLOPE



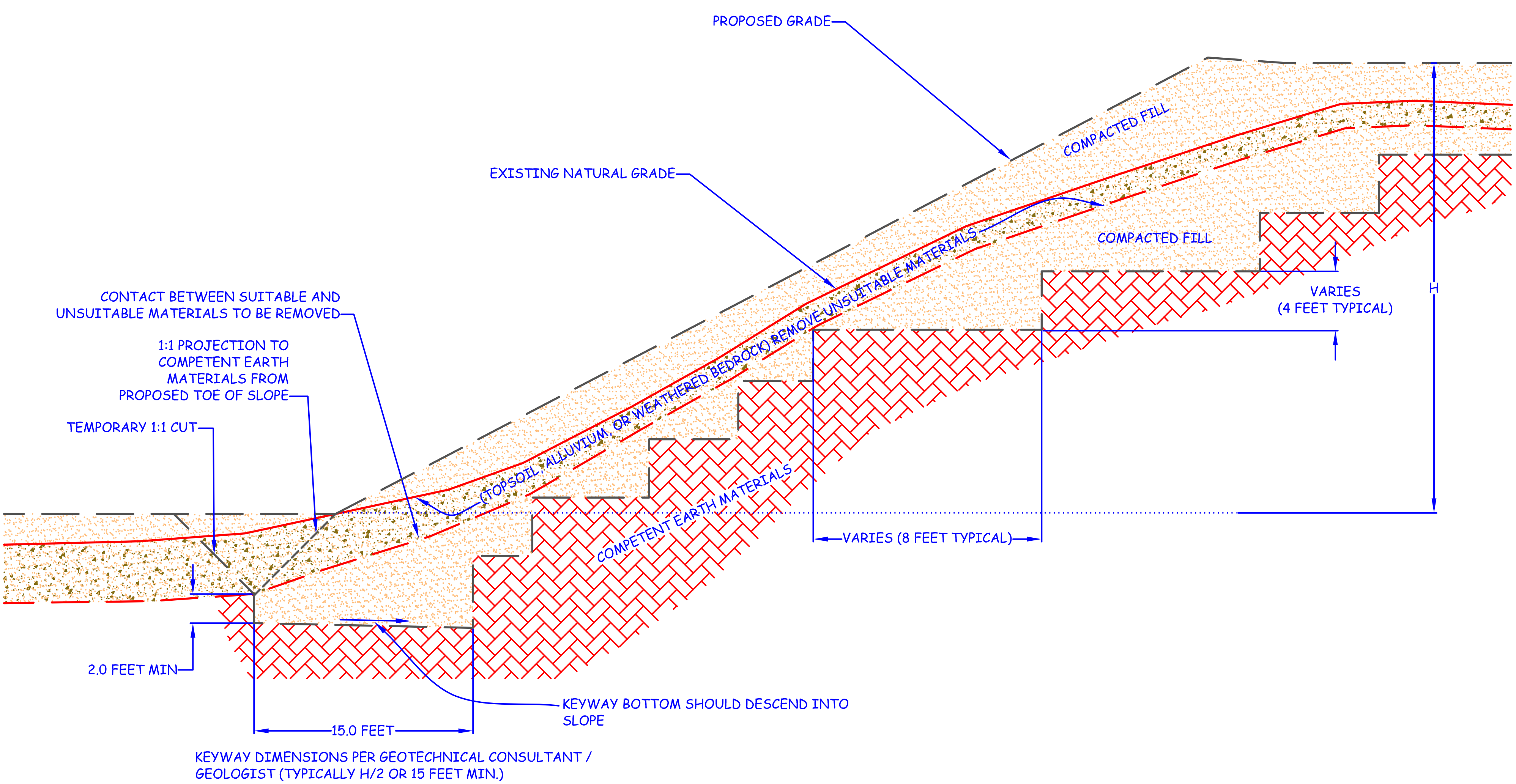
KEYWAY DIMENSIONS PER GEOTECHNICAL CONSULTANT / GEOLOGIST (TYPICALLY H/2 OR 15 FEET MIN.)

NOTES:

NATURAL SLOPES STEEPER THAN 5:1 (H:V) MUST BE BENCHED INTO COMPETENT EARTH MATERIALS

THE CUT SLOPE MUST BE CONSTRUCTED FIRST

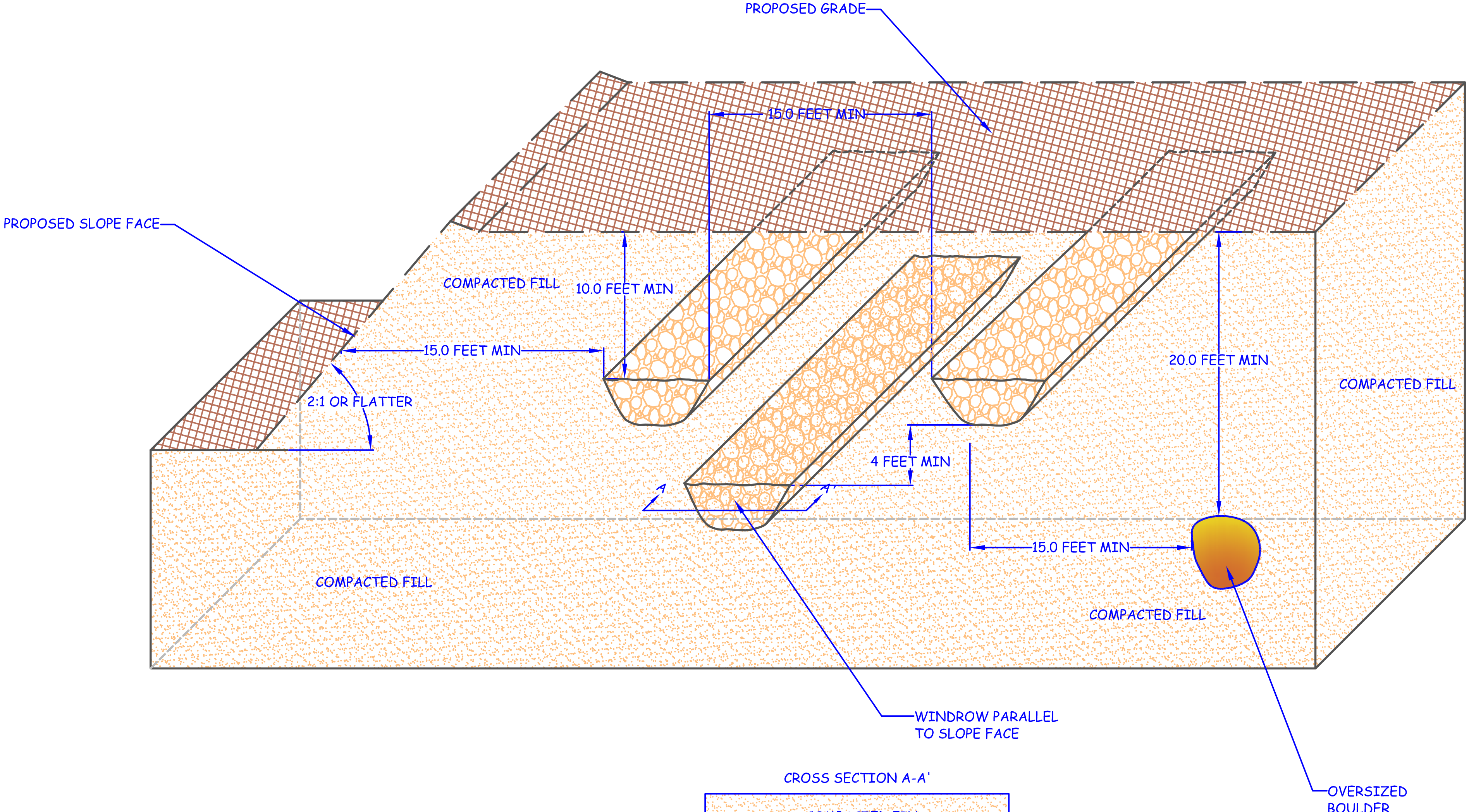
KEYWAY & BENCHING TYPICAL DETAILS
FILL SLOPE

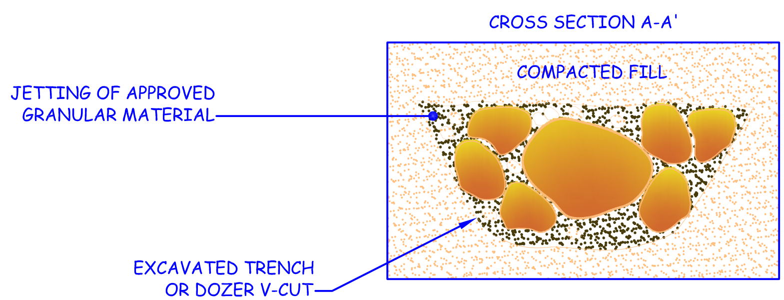


NOTES:

NATURAL SLOPES STEEPER THAN 5:1 (H:V) MUST BE BENCHED INTO COMPETENT EARTH MATERIALS

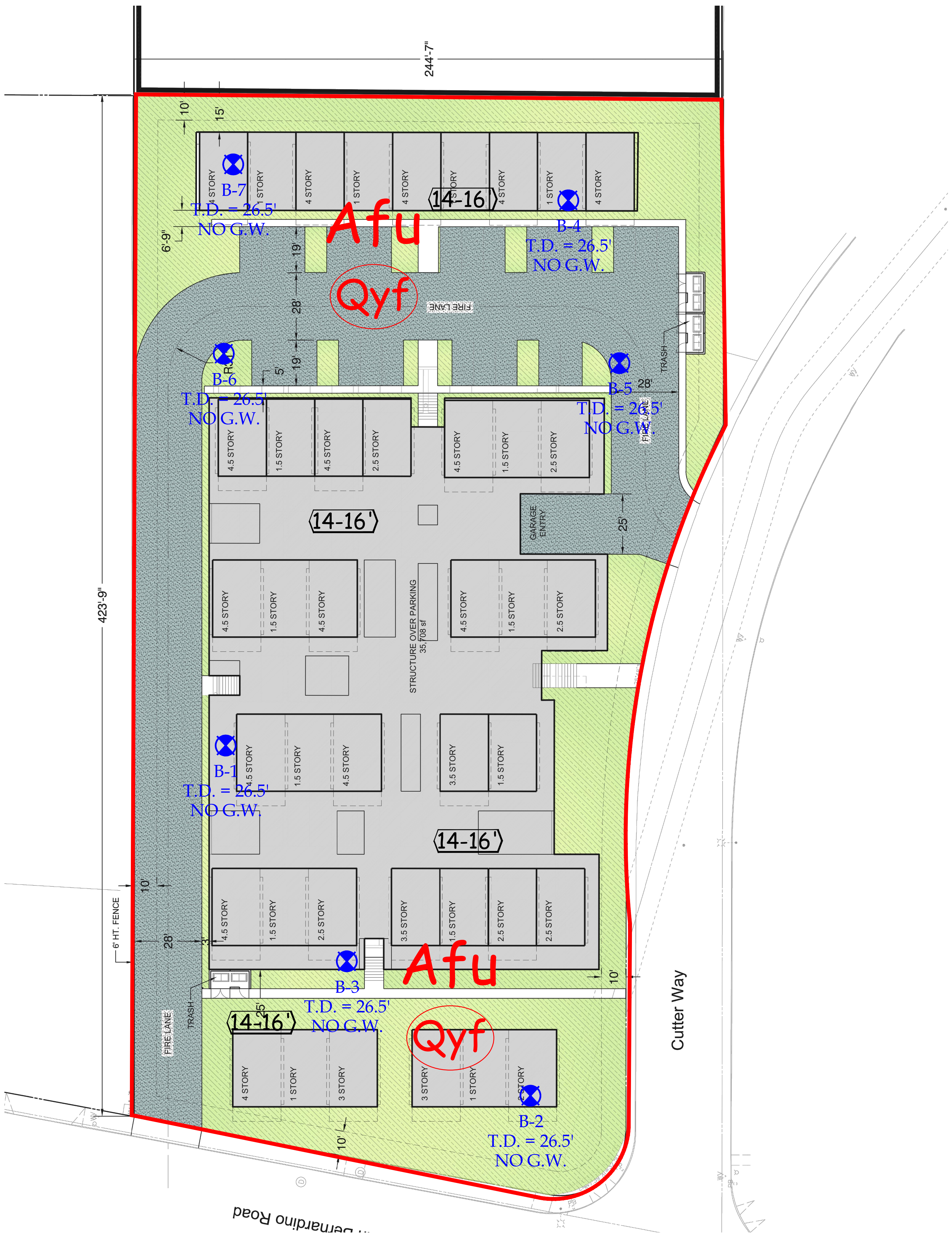
OVERSIZE ROCK TYPICAL DETAIL





NOTES:

OVERSIZE ROCK IS LARGER THAN
8 INCHES IN MAX DIAMETER



LEGEND

Locations are Approximate

Geologic Units

Afu - Artificial Fill, Undocumented

Qyf - Quaternary Young Alluvial Fan Deposits (Circled Where Buried)

Symbols

- Limits of Report

B-7 T.D. = 26.5' NO G.W. - Boring Location Including Total Depth and Depth to Groundwater

14-16' - Recommended Removal Depths

GEOTECHNICAL MAP

529 CUTTER WAY

CITY OF COVINA, LOS ANGELES COUNTY, CALIFORNIA

APN 8434-013-010

PROJECT	CUTTER WAY		
CLIENT	MR. MEL GAINES, CFO		
PROJECT NO.	192813-10A		
DATE	AUGUST 2019		
SCALE	1:50		
DWG XREFS			
REVISION			
DRAWN BY	JDG	PLATE	1 OF 1

Earth Strata Geotechnical Services, Inc.

Geotechnical, Environmental and Materials Testing Consultants

www.ESGSINC.com (951) 397-8315

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BLUE PEAK ENGINEERING

PRELIMINARY DRAINAGE STUDY

For:
Mixed Use Development Project
529 Cutter Way, Covina, CA 91722

Prepared by:
Blue Peak Engineering, Inc.
18543 Yorba Linda Blvd., #235
Yorba Linda, CA 92886
(714) 844-2720

Date: January 17, 2020

This study was prepared under my responsible charge:

1/17/2020

Thomas Hawksworth, RCE 68771 **Date**

Section I Project Description

INTRODUCTION

This report has been prepared to analyze the hydrological effects of the proposed mixed use development at 529 Cutter Way in Covina, CA.

IMPROVEMENTS

Project plans to construct an approximately 65,250 square foot, 1 to 4 – story residential/industrial (live/work) mixed use development, with subterranean parking on approximately 2.27 acres of land, in a light manufacturing (M-1) zone. Said project is located northwesterly of the intersection of Cutter Way and West San Bernardino Road, in the City of Covina. The site currently consists of a single family residential structure with adjacent parking lot improvements, which are planned for demolition and removal. The remainder of the site is undeveloped.

EXISTING DRAINAGE PATTERNS

Generally, the existing site drainage sheet flows from northwest side of the property to the south/southeast side. There are three drainage subareas (see Existing Hydrology Map in the Appendix):

DMA A1 – The land in subarea A1, generally the southern undeveloped portion of the site, slopes from the northwest to the south where it sheet flows to the right-of-way for W San Bernardino Road. From there, runoff is conveyed via curb and gutter to a publically owned catch basin near the middle of the southern property line. An 18" pipe conveys storm water from this catch basin to the east to an existing 5'-10" x 7'-0" reinforced concrete box (RCB) owned and maintained by Los Angeles County Flood Control District. Storm water from the RCB continues downstream to the Big Dalton Wash, Walnut Creek Channel, San Gabriel River and San Gabriel River Estuary before ultimately discharging to the Pacific Ocean (San Pedro Bay).

DMA A2 – The land in subarea A2 includes the two-story house, drive aisles and parking lot. Storm water from this area sheet flows to the right-of-way for Cutter Way. From there, runoff is conveyed via curb and gutter to the south and then west along W San Bernardino Road to the same existing catch basin described in DMA A1. Drainage continues as described above.

DMA A3 – The land in subarea A3, generally the northern undeveloped portion of the site, slopes from the northwest to the southeast where it sheet flows to the right-of-way for Cutter Way. From there, runoff is conveyed via curb and gutter to the south and then west along W San Bernardino Road to the same existing catch basin described in DMA A1. Drainage continues as described above.

PROPOSED DRAINAGE PATTERNS

The post-developed drainage pattern will generally maintain the existing drainage patterns, with runoff ultimately discharging to the RCB. There are four drainage subareas (see Proposed Hydrology Map in the Appendix):

DMA B1 – The land in subarea B1 includes the southeast corner of the property. Runoff from this area sheet flows to a graded swale which terminates at an area drain in the landscaping between Building 2 and the sidewalk along W San Bernardino Road. Storm water is piped to a water treatment planter (Modular Wetland System or MWS) and then piped to an underground storage system. From the storage system, storm water is piped to a proposed connection to the existing 18" pipe (as described in DMA A1) in W San Bernardino Road. Discharge from the storage system is controlled based on allowable rates of discharge provided by Los Angeles County Public Works.

DMA B2 – The land in subarea B2 includes the majority of the site. Roof runoff from the proposed buildings is discharged at curb face. Surface level runoff from this area sheet flows to curb and gutter and valley gutters that convey storm water to the southwest corner of the property. At the SWC of the site, runoff is collected by a water treatment planter (MWS) and then piped to an underground storage system. From the storage system, storm water is piped south to the existing public catch basin in W San Bernardino Road (as described in DMA A1). Discharge from the storage system is controlled based on allowable rates of discharge provided by Los Angeles County Public Works.

DMA B3 – The land in subarea B3 includes the northeast corner of the property. Roof runoff from the Building 12 is discharged at curb face. Surface level runoff from this area sheet flows to curb and gutter and valley gutters that convey storm water to a water treatment planter (MWS) near the proposed driveway along Cutter Way. From the MWS, storm water is then piped to an underground storage system. From the storage system, storm water is piped east to the existing RCB in Cutter Way (as described in DMA A1). Discharge from the storage system is controlled based on allowable rates of discharge provided by Los Angeles County Public Works.

DMA B4 – The land in subarea B4 only includes the landscaping along Cutter Way and the new sidewalk connection from the public right-of-way to the site. Runoff from this area discharges to the curb and gutter in Cutter Way and is conveyed south and then west along San Bernardino Road to the same existing catch basin described in DMA A1.

For discharge flow rates and calculations, see Section III and the Appendix.

HYDROMODIFICATION

Based on the exemptions listed in section 8.2 of the Los Angeles County LID Manual, projects are exempt if the project "discharges directly or through a storm drain into concrete or otherwise engineered channel (i.e. channelized or armored with rip-rap, shotcrete), which, in turn, discharge into receiving water that is not susceptible to hydromodifications impacts." As listed below in the receiving waters portion below, this project directly discharges into a concrete storm drain, tributary to a concrete channel. The project's receiving waters are entirely concrete lined until it reaches the ultimate outfall, San Pedro Bay. In conclusion, this project is exempt from hydromodification.

Project Area (97,900 sf)	Pervious		Impervious	
	Area (sf)	Percentage (%)	Area (sf)	Percentage (%)
Existing Conditions	76,338	78	21,562	22
Proposed Conditions	25,179	26	72,720	74

RUN-ON

There is no run-on from adjacent properties to this site.

FLOOD ZONE

This project is not in a flood zone.

Section II Methodology

RUNOFF DETERMINATION METHODS

The two primary methods used in the Los Angeles County area to determine design discharges are the Rational Method and the Unit Hydrograph method. The Rational method is generally intended for use on small watersheds of less than 300 to 500-acres while the Synthetic Unit Hydrograph method is intended for use on watersheds in excess of these limits. For the purposes of this report, we will be using the Rational Method for the 100-year storm event.

RATIONAL METHOD

The Rational method is commonly used for determining peak discharge from relatively small drainage areas. The Rational method is based on the following equation:

$Q = C\ I\ A$

Where:
Q = peak discharge, in cubic feet per second (cfs)

C = runoff coefficient, proportion of the rainfall that runs off the surface (no units); 0.085 for Commercial Developments from City

I = average rainfall intensity for a duration equal to the Tc for the area, in inches per hour (Note: If the computed Tc is less than 5 minutes, use 5 minutes for computing the peak discharge, Q)

A = drainage area contributing to the design location, in acres

The County's TC Calculator was used for this project.

Section III Hydrology Calculations

Runoff Calculations

Using the Los Angeles County Hydrology Manual, the existing and proposed runoff for the project was calculated for the 100-Year Storm Event. The runoff calculations are shown in the following tables.

Existing Conditions:

Based on LACFCD's project 275-519-D1.7, the allowable flow rates for discharge into the County's facilities is 0.98 cfs per acre. See Appendix for data from LA County Public Works. This allowable rate was used to determine allowable discharge from each subarea.

Proposed Conditions:

Based on the Tc Calculator program, the peak flow rates, allowable discharge flow rate, storage volume and mitigated flow rate discharge for the post-developed subareas are listed below from the calculations in the Appendix.

DMA B1
A = 0.198 acres

Impervious % = 48%

Q_{100} = 0.85 cfs to Biofiltration System

$Q_{Allowable}$ = 0.98 cfs/acre x 0.198 acres = 0.19 cfs

Peak Storage = 0.034 ac-ft (1,460 cf)

Q_{PM} = 0.16 cfs to existing 18" RCP

DMA B2
A = 1.624 acres

Impervious % = 77%

Q_{100} = 6.36 cfs to Biofiltration System

$Q_{Allowable}$ = 0.98 cfs/acre x 1.624 acres = 1.59 cfs

Peak Storage = 0.0182 ac-ft (7,930 cf)

Q_{PM} = 1.58 cfs to existing catch basin

DMA B3
A = 0.38 acres

Impervious % = 75%

Q_{100} = 1.63 cfs to Biofiltration System

$Q_{Allowable}$ = 0.98 cfs/acre x 0.38 acres = 0.37 cfs

Peak Storage = 0.0554 ac-ft (2,410 cf)

Q_{PM} = 0.33 cfs to RCB

DMA-B4
A = 2.32 acres

Impervious % = 38%

Q_{100} = 0.20 cfs

Runoff carried in the street right-of-way, no mitigation required.

With the detention storage proposed for each subarea, post-developed runoff flow rates are less than the allowable rates provided by the County. Therefore, no further mitigation is required.

Section IV **Conclusion**

As shown in the calculations, runoff from the project will be decreased with the proposed storm drain infrastructure as part of the development of the project. Since the project is able to maintain a runoff less than that of the Los Angeles County allowable flow rates, no adverse effects will occur to the downstream conveyance system.

	Outlet B1 (cfs)	Outlet B2 (cfs)	Outlet B3 (cfs)	Outlet B4 (cfs)
Allowable Q	0.19	1.59	0.37	-
Proposed Condition	0.16	1.58	0.33	0.20
Difference	-0.03	-0.01	-0.04	-

In addition, BMP's will be installed that satisfy the City's water quality requirements, which will reduce the post-developed flow rates further as well as significantly reduce the pollutants generated from the project.

Appendix

Peak Flow Hydrologic Analysis

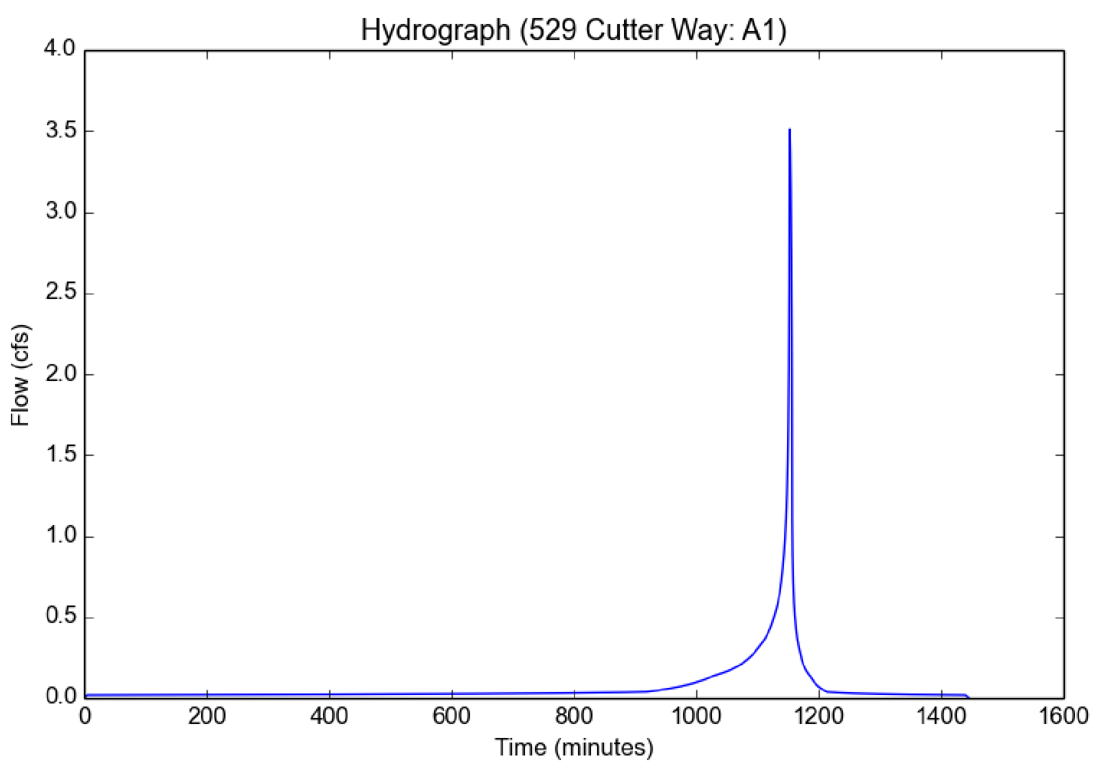
File location: C:/Users/ThomasH/Dropbox/0754-Logos-Cutter/0754-Logos-Cutter/Reports/Drainage Study/529 Cutter Way - A1-100yr.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	529 Cutter Way
Subarea ID	A1
Area (ac)	0.816
Flow Path Length (ft)	290.0
Flow Path Slope (vft/hft)	0.011
50-yr Rainfall Depth (in)	7.1
Percent Impervious	0.027
Soil Type	6
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	7.9662
Peak Intensity (in/hr)	4.7529
Undeveloped Runoff Coefficient (Cu)	0.9053
Developed Runoff Coefficient (Cd)	0.9051
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.5103
Burned Peak Flow Rate (cfs)	3.5103
24-Hr Clear Runoff Volume (ac-ft)	0.1496
24-Hr Clear Runoff Volume (cu-ft)	6516.9709



Peak Flow Hydrologic Analysis

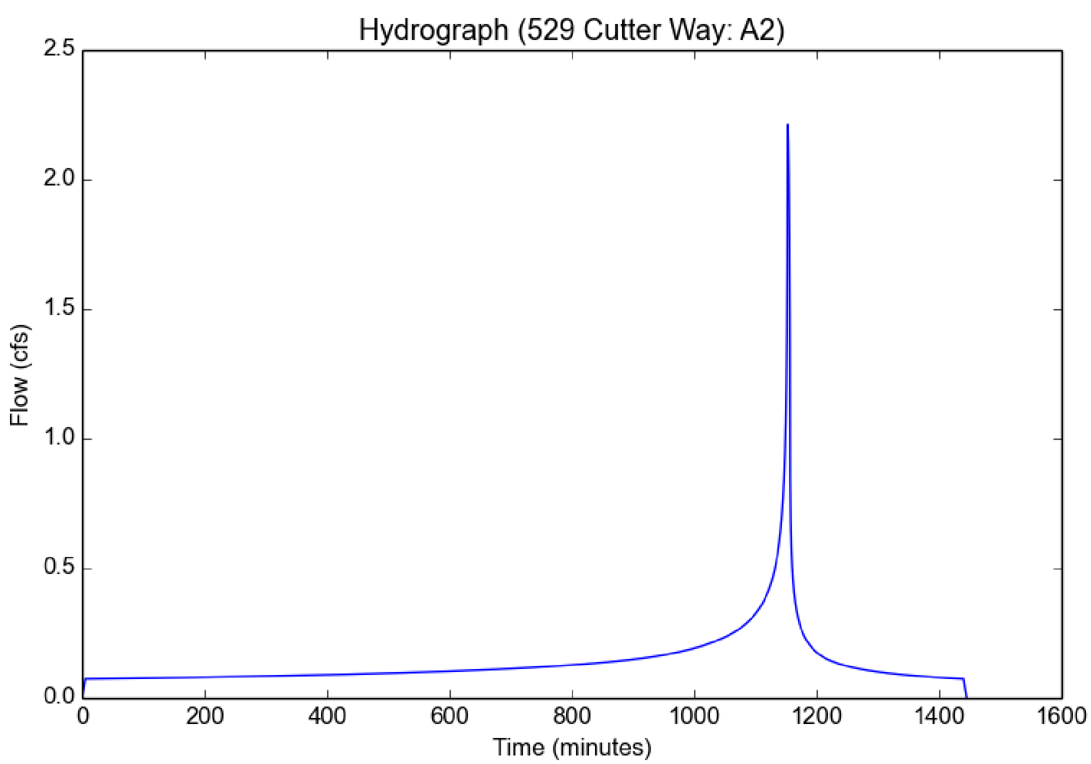
File location: C:/Users/ThomasH/Dropbox/0754-Logos-Cutter/0754-Logos-Cutter/Reports/Drainage Study/Existing Calcs/529 Cutter Way - A2-100yr.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	529 Cutter Way
Subarea ID	A2
Area (ac)	0.517
Flow Path Length (ft)	272.0
Flow Path Slope (vft/hft)	0.011
50-yr Rainfall Depth (in)	7.1
Percent Impervious	0.877
Soil Type	6
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	7.9662
Peak Intensity (in/hr)	4.7529
Undeveloped Runoff Coefficient (Cu)	0.9053
Developed Runoff Coefficient (Cd)	0.9006
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.2131
Burned Peak Flow Rate (cfs)	2.2131
24-Hr Clear Runoff Volume (ac-ft)	0.2796
24-Hr Clear Runoff Volume (cu-ft)	12179.1274



Peak Flow Hydrologic Analysis

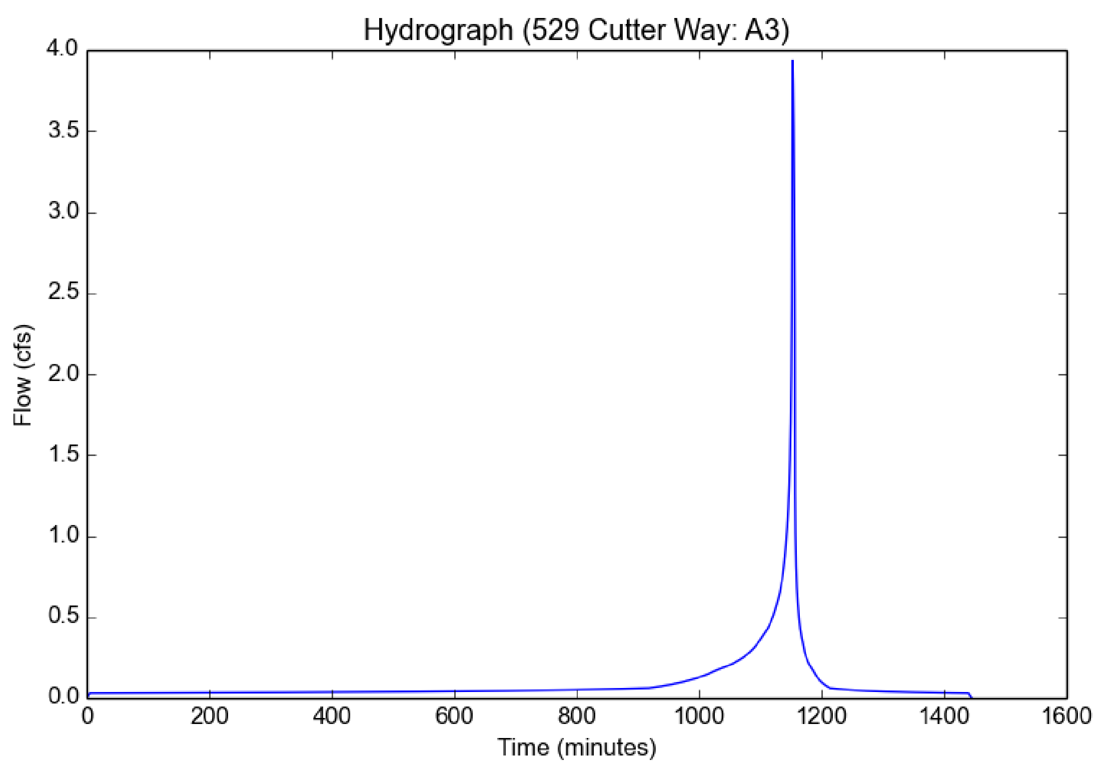
File location: C:/Users/ThomasH/Dropbox/0754-Logos-Cutter/0754-Logos-Cutter/Reports/Drainage Study/Existing Calcs/529 Cutter Way - A3-100yr.pdf
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	529 Cutter Way
Subarea ID	A3
Area (ac)	0.915
Flow Path Length (ft)	270.0
Flow Path Slope (vft/hft)	0.0037
50-yr Rainfall Depth (in)	7.1
Percent Impervious	0.099
Soil Type	6
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	7.9662
Peak Intensity (in/hr)	4.7529
Undeveloped Runoff Coefficient (Cu)	0.9053
Developed Runoff Coefficient (Cd)	0.9047
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.9346
Burned Peak Flow Rate (cfs)	3.9346
24-Hr Clear Runoff Volume (ac-ft)	0.1955
24-Hr Clear Runoff Volume (cu-ft)	8514.4631



Office Use Only	
☐ Sent	Initials: JK
☐ Fax ☐ Email ☑ Other:	
Date: 12/9/19	Time:

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS
DESIGN DIVISION – HYDRAULIC ANALYSIS UNIT

INFORMATION REQUEST SUMMARY

INFORMATION REQUESTED BY

*Requester's Name: Tom C. Burnside, P.E.
Company: Blue Peak Engineering, Inc
*Phone Number: 951.491.9532 Fax Number:
*Email: tburnside@bluepeakeng.com

Method of Contact: ☐ Walk-in ☐ Phone ☐ Fax ☒ Email ☐ Prelim. Mtg. Date: 11/20/19

Intended Use: Multi-Use Development

Proposed Project Type: Multi-Building Work/Live Center Acreage Involved: 2.247 Gross

*Will information be used in any litigation? ☐ YES ☒ NO
Case Info. Name: No: Location:

INFORMATION REQUESTED (Attach Assessor Map)

LACFCD Facility: Name: 275-519-D1.7
Unit: Line: Station: 95+52 (5'10" x
City: Covina
*Street/Cross-street: NWC of W. San Bernardino Road and Cutter Way
*Thomas Guide: Page: 598 Grid: G5 ☒ Site Map/Plans Submitted
Info. Requested: We are proposing a new 8" to 12" connection to the 5'-10"x7'-0" R.C. Box roughly 264-ft northerly of the intersection of Cutter Way and W. San Bernardino Rd. in

***Required Information. See Page 2 of 2 for Instructions.**

BELOW SECTION TO BE COMPLETED BY THE HYDRAULIC ANALYSIS UNIT

INFORMATION PROVIDED:
Hydrology / hydraulic calculations, hydrology map, and allowable Q of 0.98 cfs per acre

REFERENCES SEARCHED:
View LA, P:\ microfiche, and Project Wise

COMMENTS, ETC:

INFORMATION PROVIDED BY: Design Division Date: 12/9/2019

INFORMATION REVIEWED BY: Date:

Print Save a Copy

Peak Flow Hydrologic Analysis

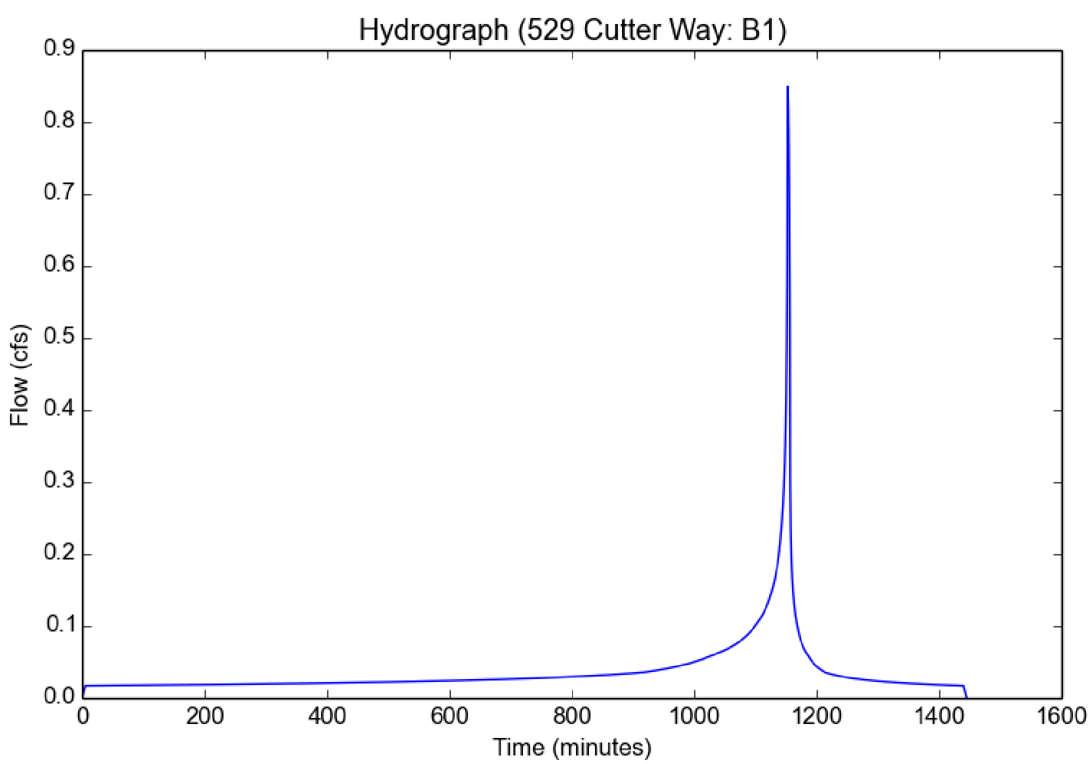
File location: C:/Users/ThomasH/Dropbox/0754-Logos-Cutter/0754-Logos-Cutter/Reports/Drainage Study/Proposed Calcs/529 Cutter Way - B1-100yr.pd
Version: HydroCalc 0.3.1-beta

Input Parameters

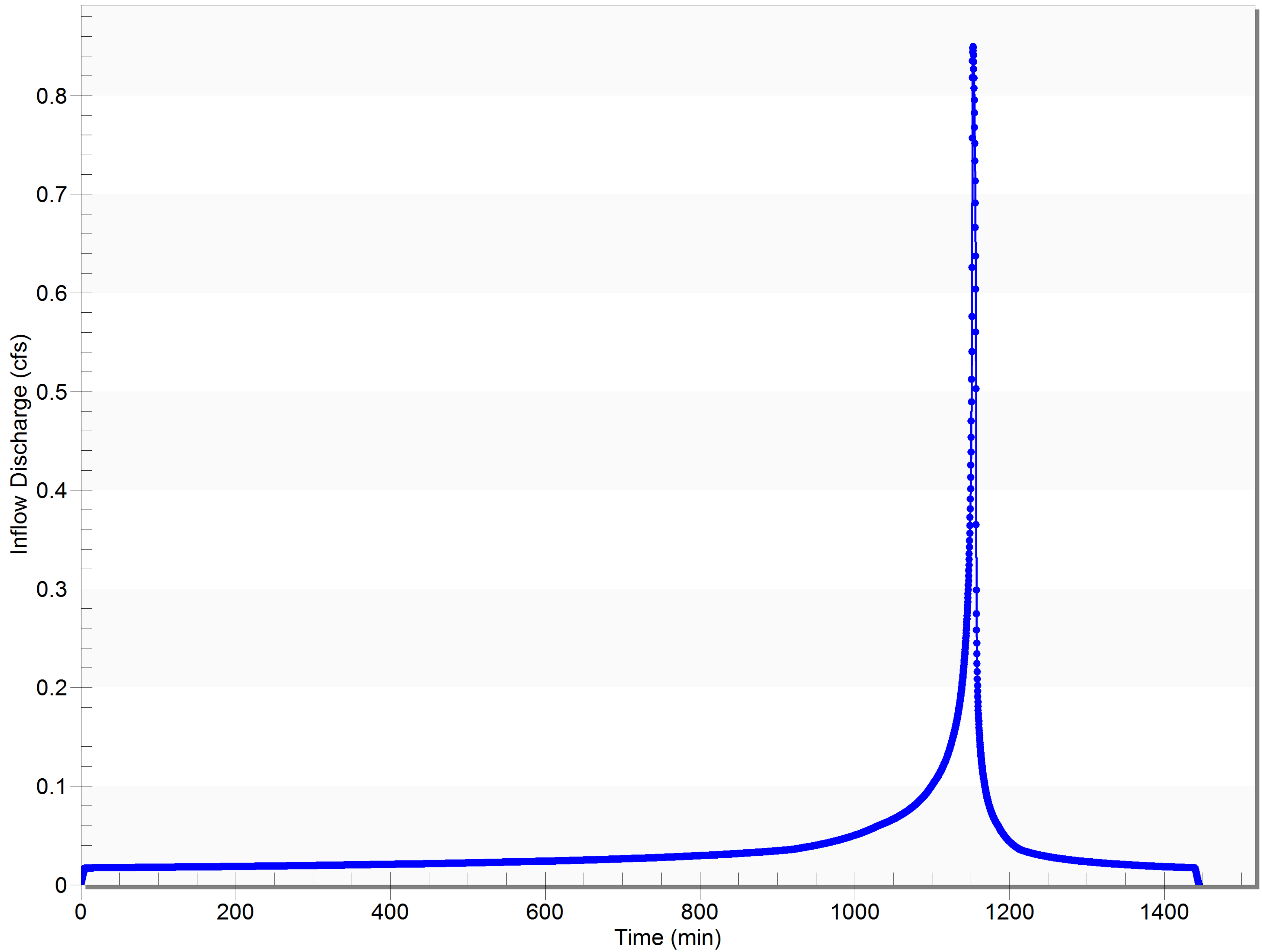
Project Name	529 Cutter Way
Subarea ID	B1
Area (ac)	0.198
Flow Path Length (ft)	184.0
Flow Path Slope (vft/hft)	0.008
50-yr Rainfall Depth (in)	7.1
Percent Impervious	0.48
Soil Type	6
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	7.9662
Peak Intensity (in/hr)	4.7529
Undeveloped Runoff Coefficient (Cu)	0.9053
Developed Runoff Coefficient (Cd)	0.9027
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.8495
Burned Peak Flow Rate (cfs)	0.8495
24-Hr Clear Runoff Volume (ac-ft)	0.074
24-Hr Clear Runoff Volume (cu-ft)	3224.3936

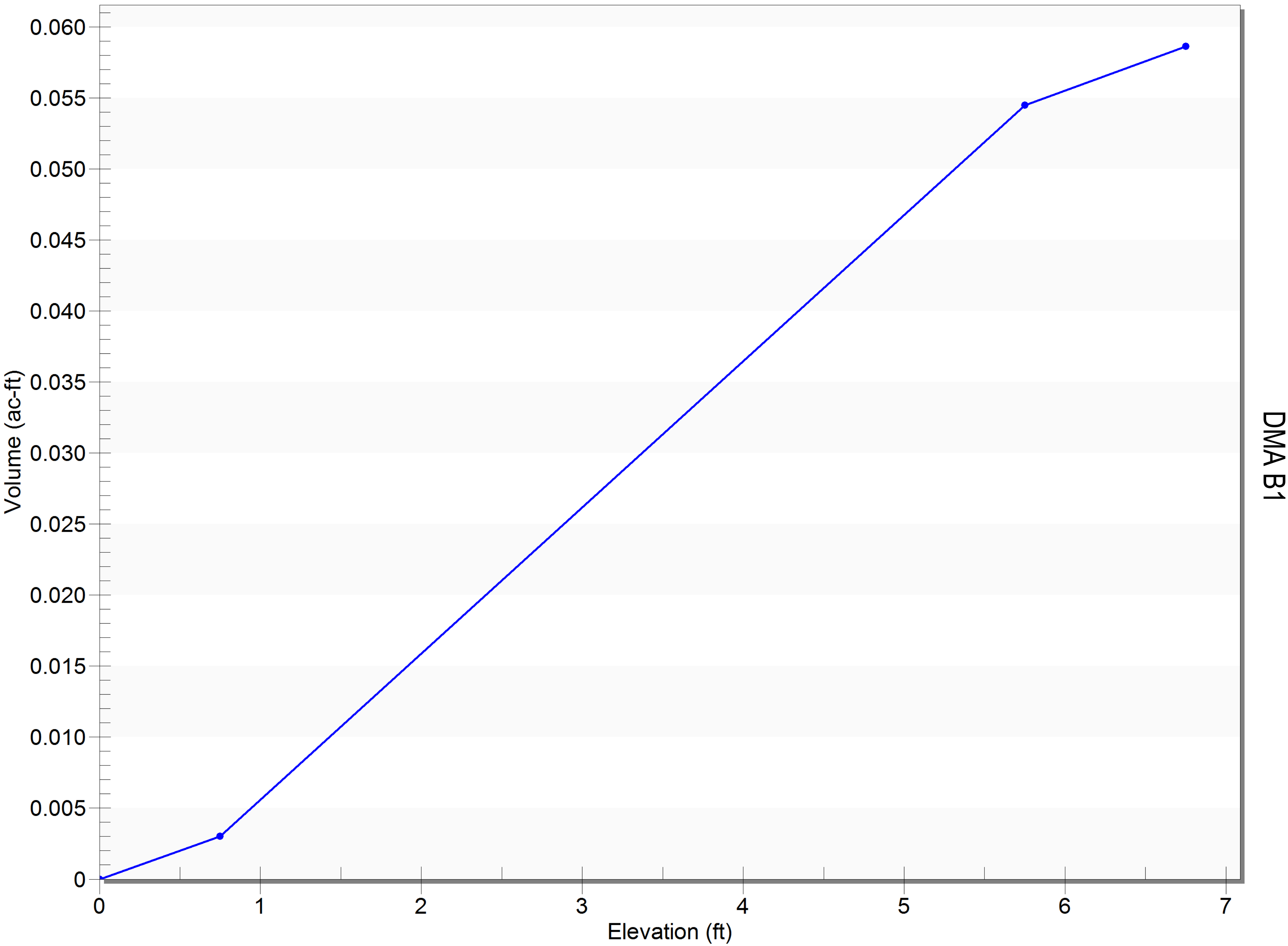


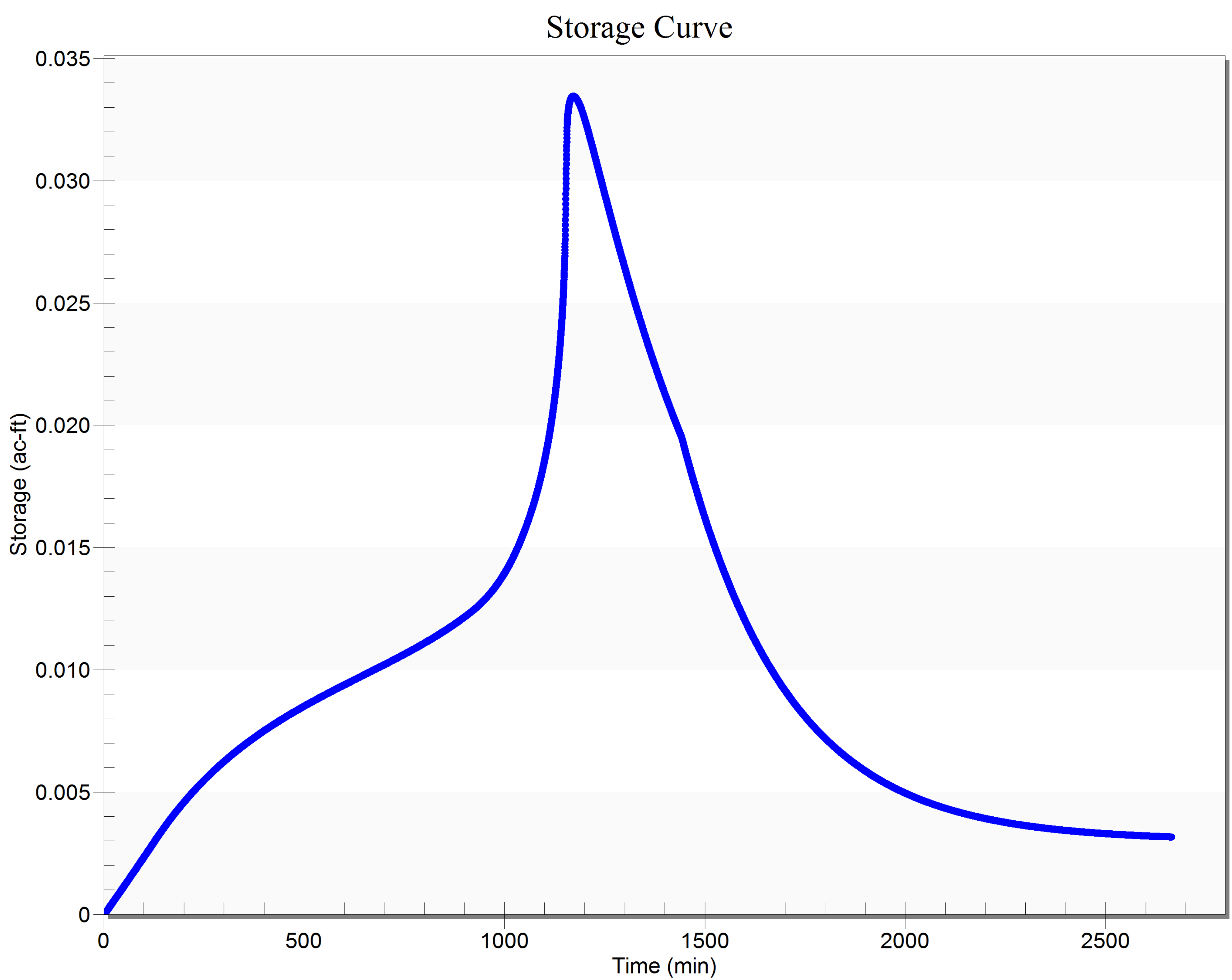
Inflow Hydrograph



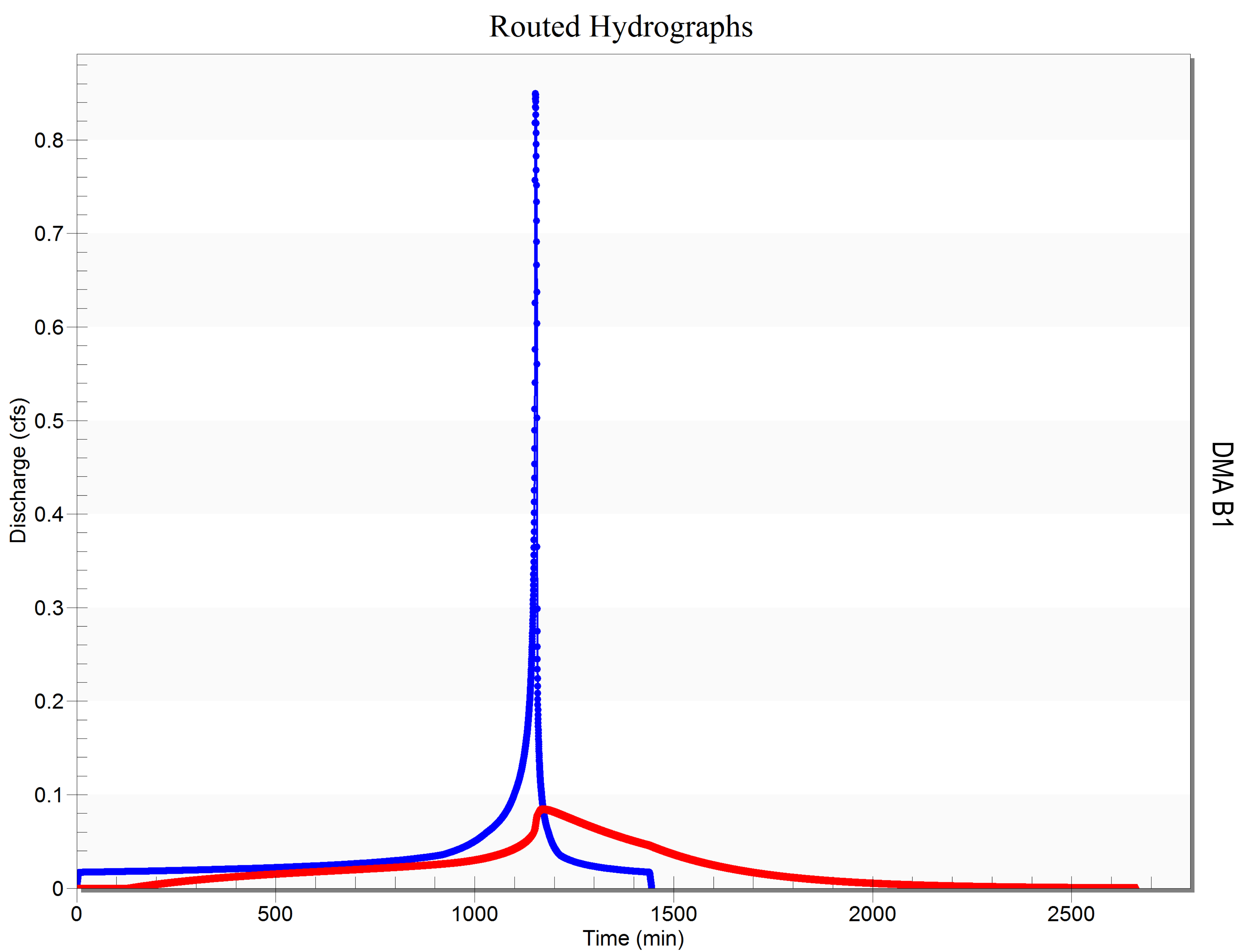
DMA B1

Define Elevation-Volume




Storage Curve
Storage (ac-ft)
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0
0
500
1000
1500
2000
2500
Time (min)

DMA B1


Routed Hydrographs
Discharge (cfs)
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0
500
1000
1500
2000
2500
Time (min)
DMA B1

Peak Flow Hydrologic Analysis

File location: C:/Users/ThomasH/Dropbox/0754-Logos-Cutter/0754-Logos-Cutter/Reports/Drainage Study/Proposed Calcs/529 Cutter Way - B2-100yr.pd
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	529 Cutter Way
Subarea ID	B2
Area (ac)	1.624
Flow Path Length (ft)	520.0
Flow Path Slope (vft/hft)	0.011
50-yr Rainfall Depth (in)	7.1
Percent Impervious	0.77
Soil Type	6
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	7.9662
Peak Intensity (in/hr)	4.3625
Undeveloped Runoff Coefficient (Cu)	0.8903
Developed Runoff Coefficient (Cd)	0.8978
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	6.3606
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24-Hr Clear Runoff Volume (ac-ft)	0.8051
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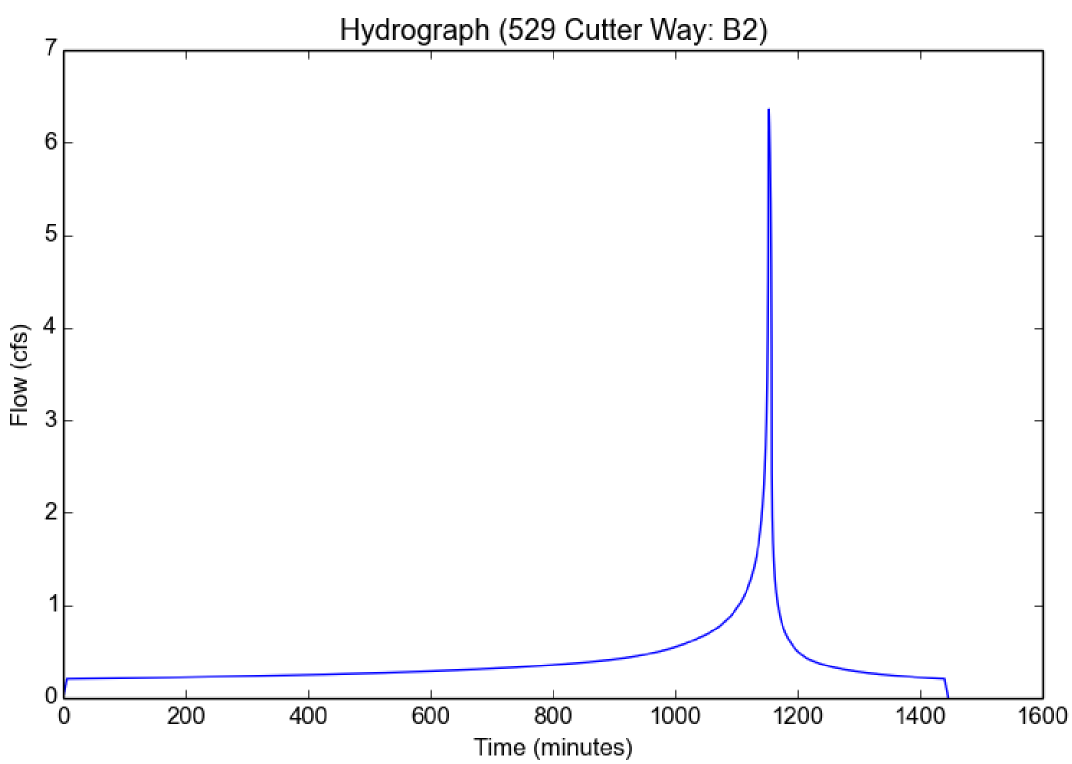
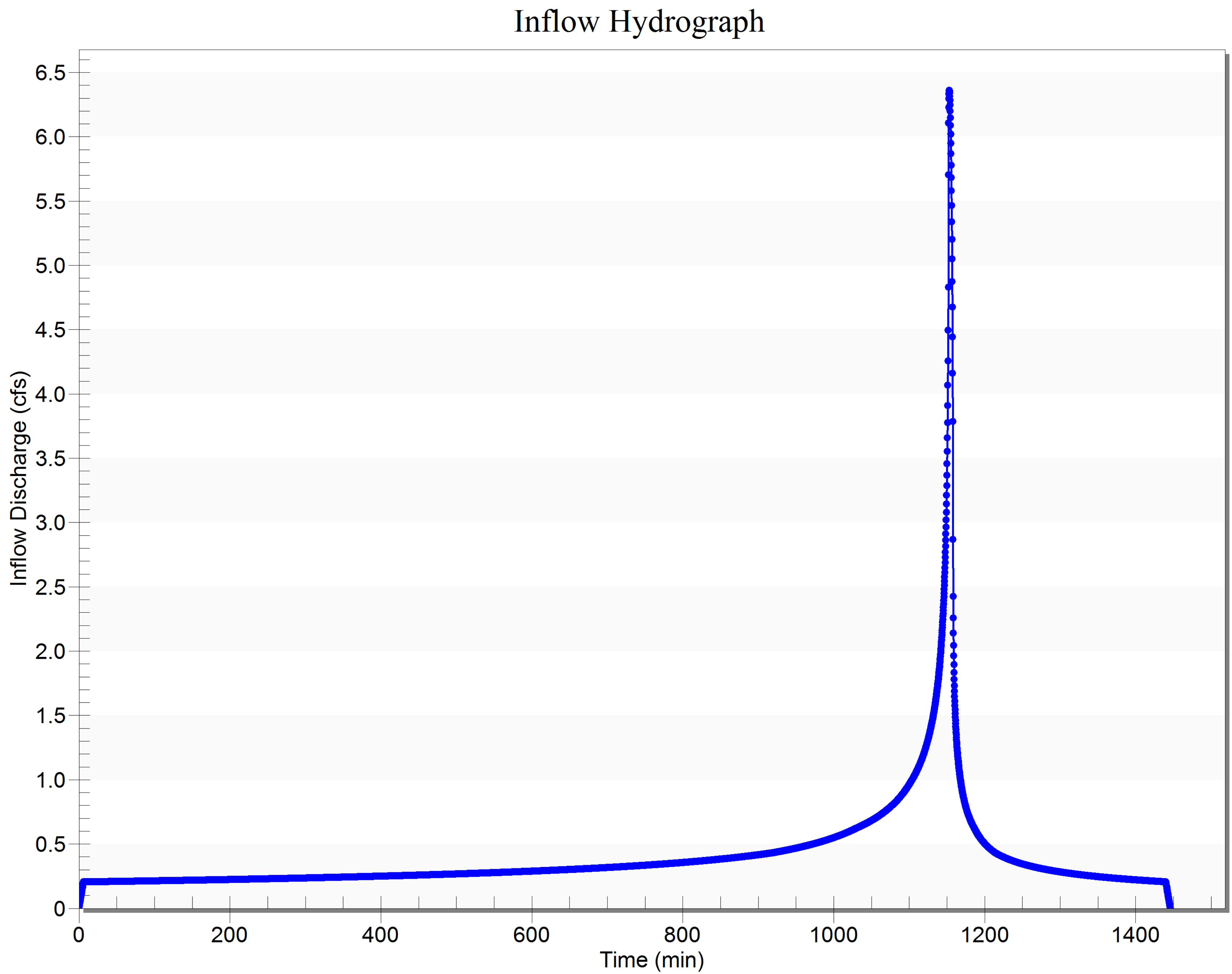
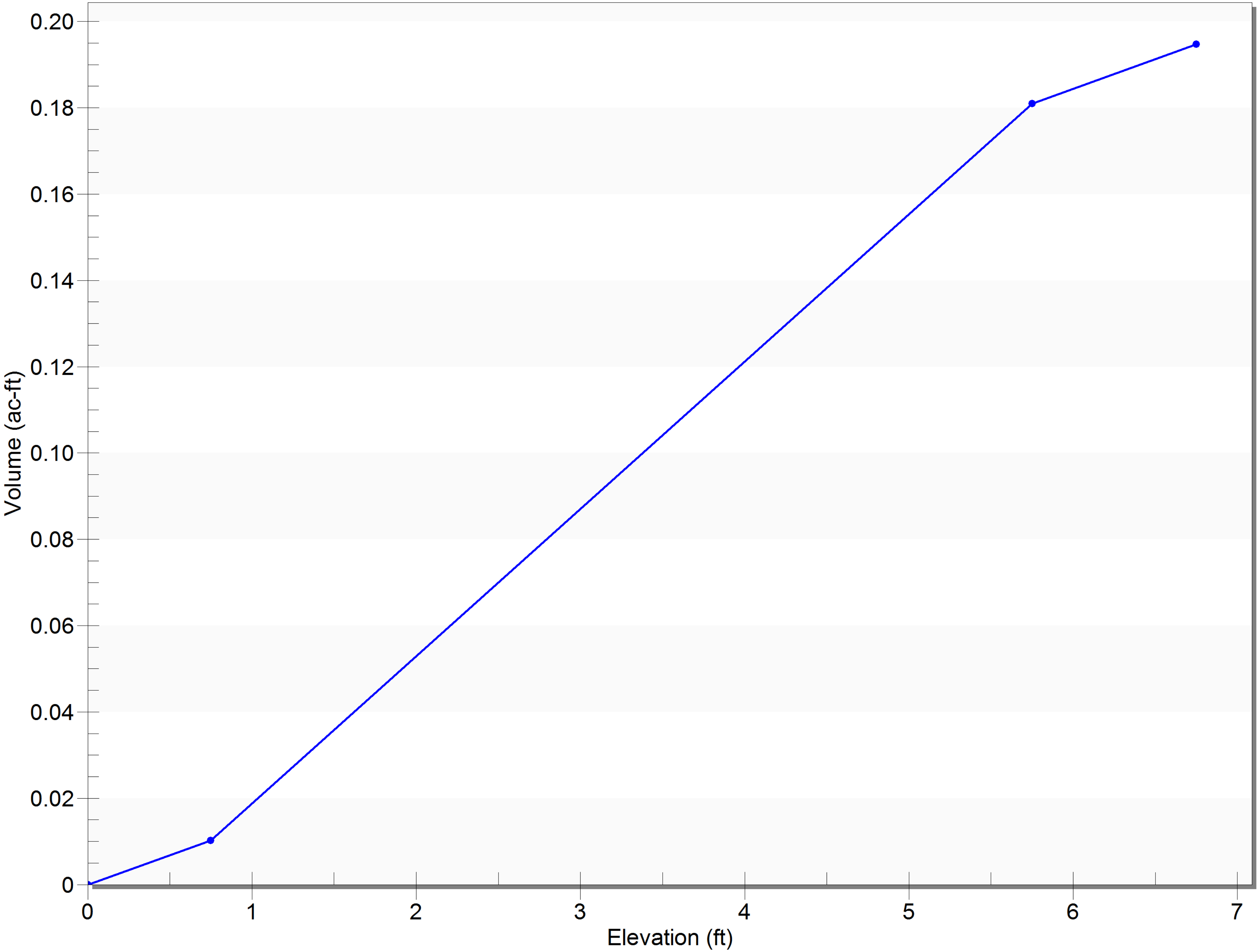


DMA B2

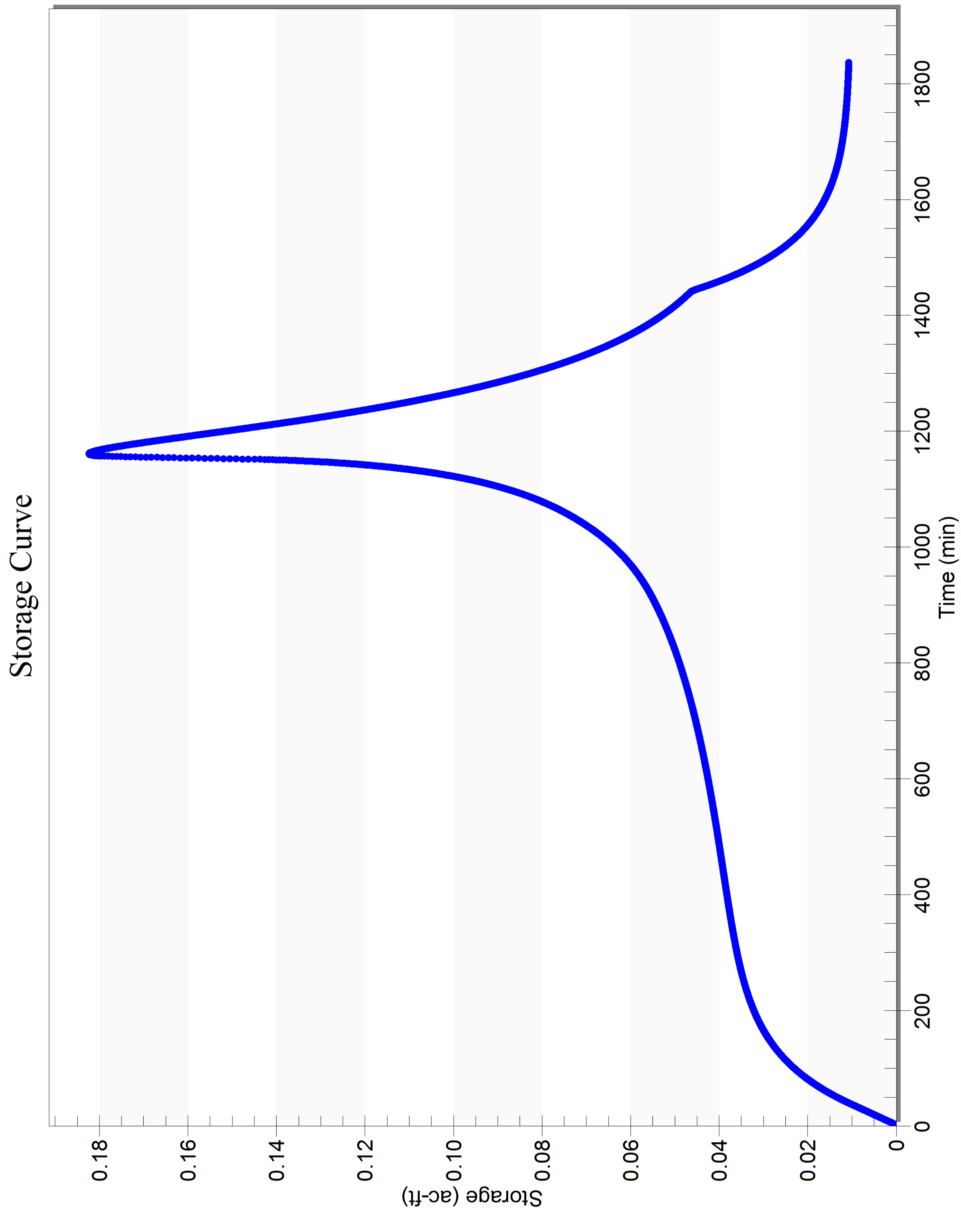

Inflow Hydrograph
Inflow Discharge (cfs)
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0
200
400
600
800
1000
1200
1400
Time (min)

Define Elevation-Volume



DMA B2

DMA B2



Storage Curve
Storage (ac-ft)
Time (min)
0
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0.18
0
200
400
600
800
1000
1200
1400
1600
1800

Peak Flow Hydrologic Analysis

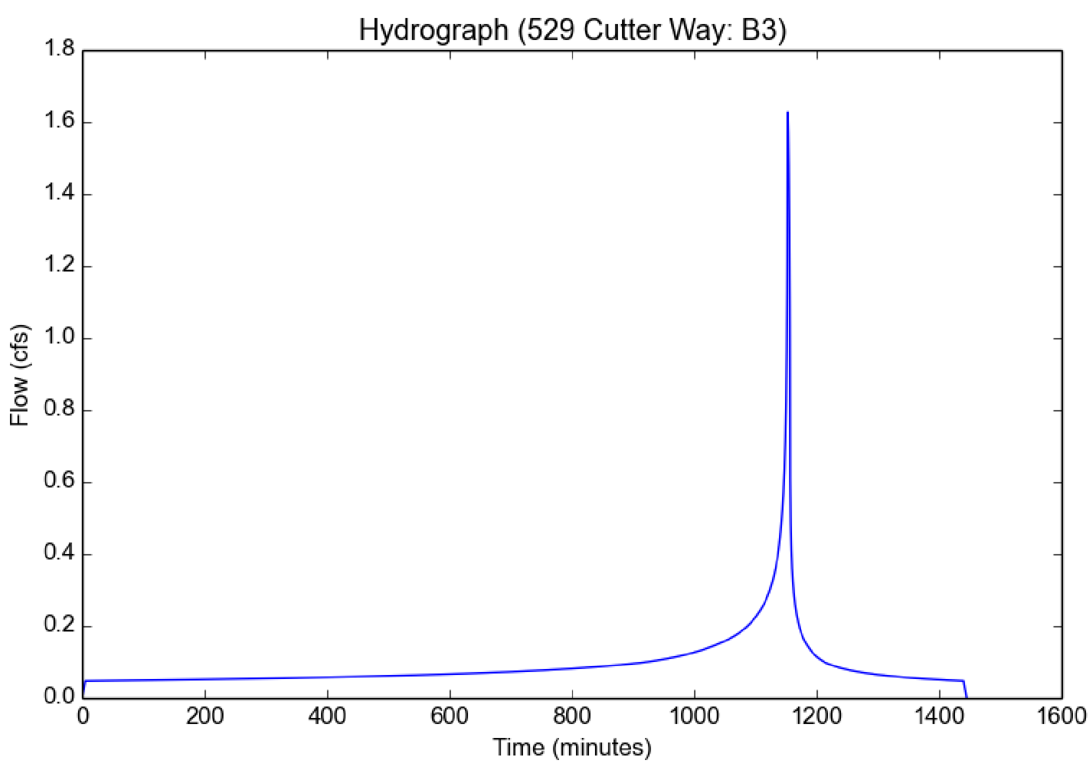
File location: C:/Users/ThomasH/Dropbox/0754-Logos-Cutter/0754-Logos-Cutter/Reports/Drainage Study/Proposed Calcs/529 Cutter Way - B3-100yr.pd
Version: HydroCalc 0.3.1-beta

Input Parameters

Project Name	529 Cutter Way
Subarea ID	B3
Area (ac)	0.38
Flow Path Length (ft)	200.0
Flow Path Slope (vft/hft)	0.016
50-yr Rainfall Depth (in)	7.1
Percent Impervious	0.75
Soil Type	6
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

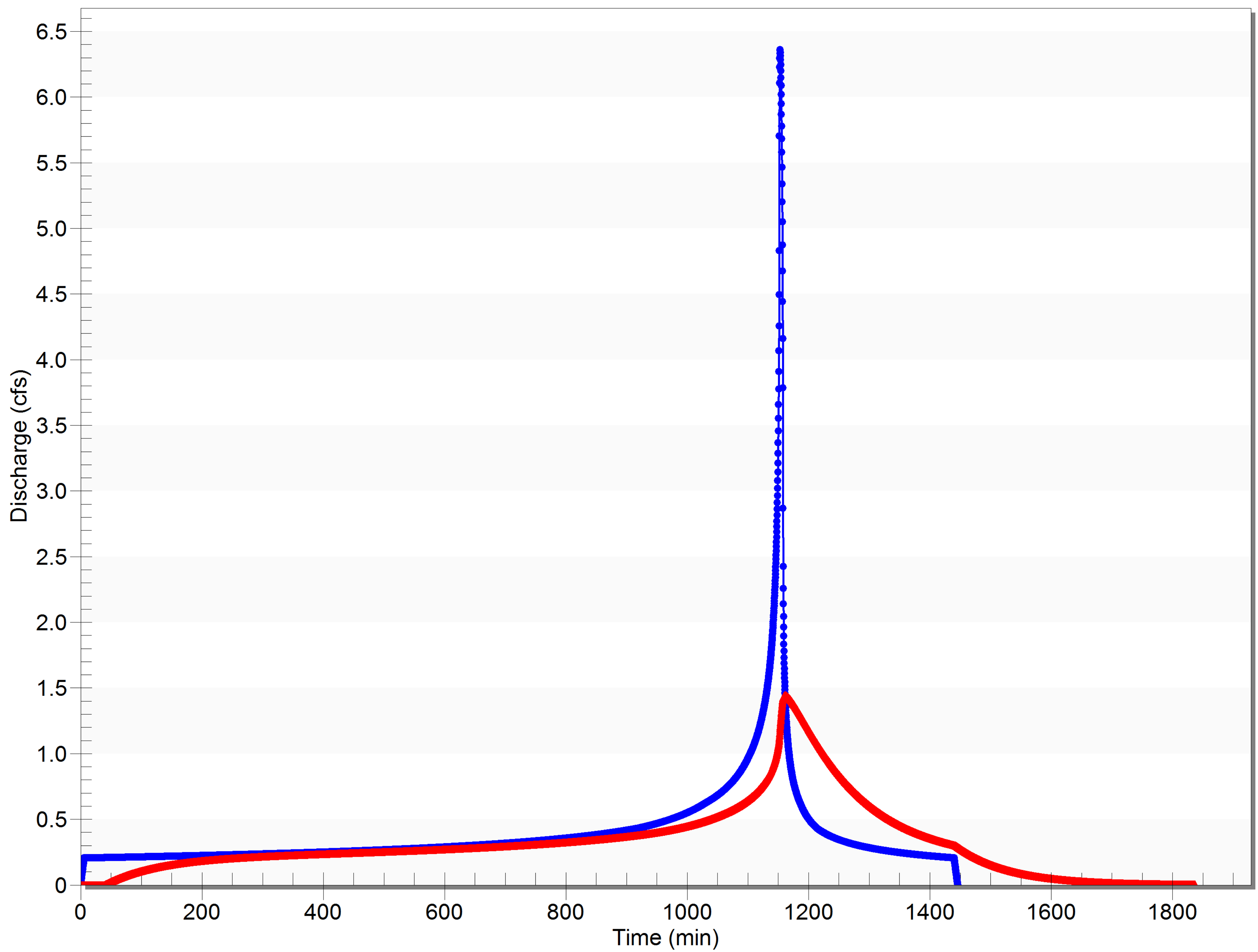
Output Results

Modeled (100-yr) Rainfall Depth (in)	7.9662
Peak Intensity (in/hr)	4.7529
Undeveloped Runoff Coefficient (Cu)	0.9053
Developed Runoff Coefficient (Cd)	0.9013
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.6279
Burned Peak Flow Rate (cfs)	1.6279
24-Hr Clear Runoff Volume (ac-ft)	0.1852
24-Hr Clear Runoff Volume (cu-ft)	8067.7201

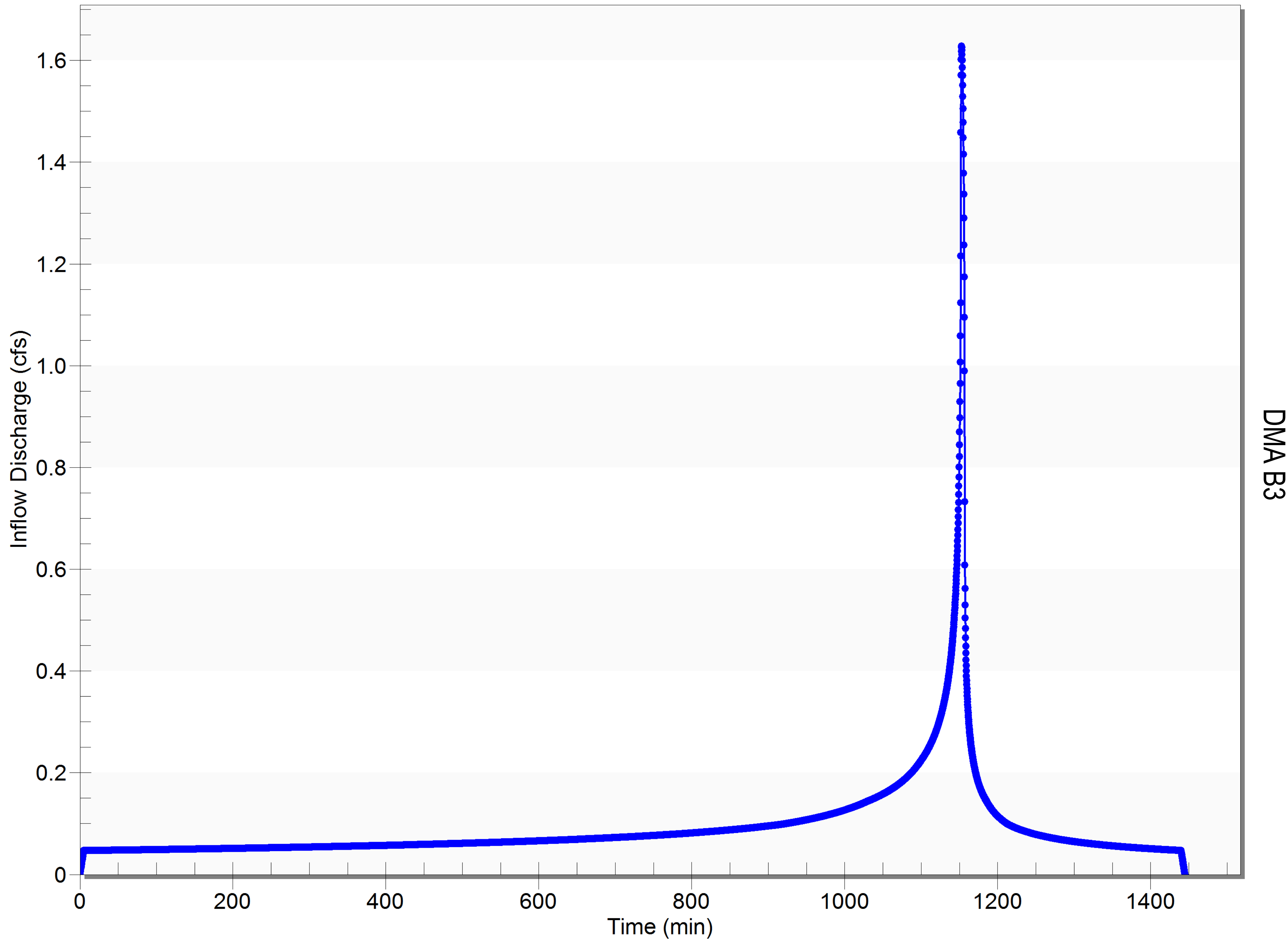


DMA B2

Routed Hydrographs



Inflow Hydrograph



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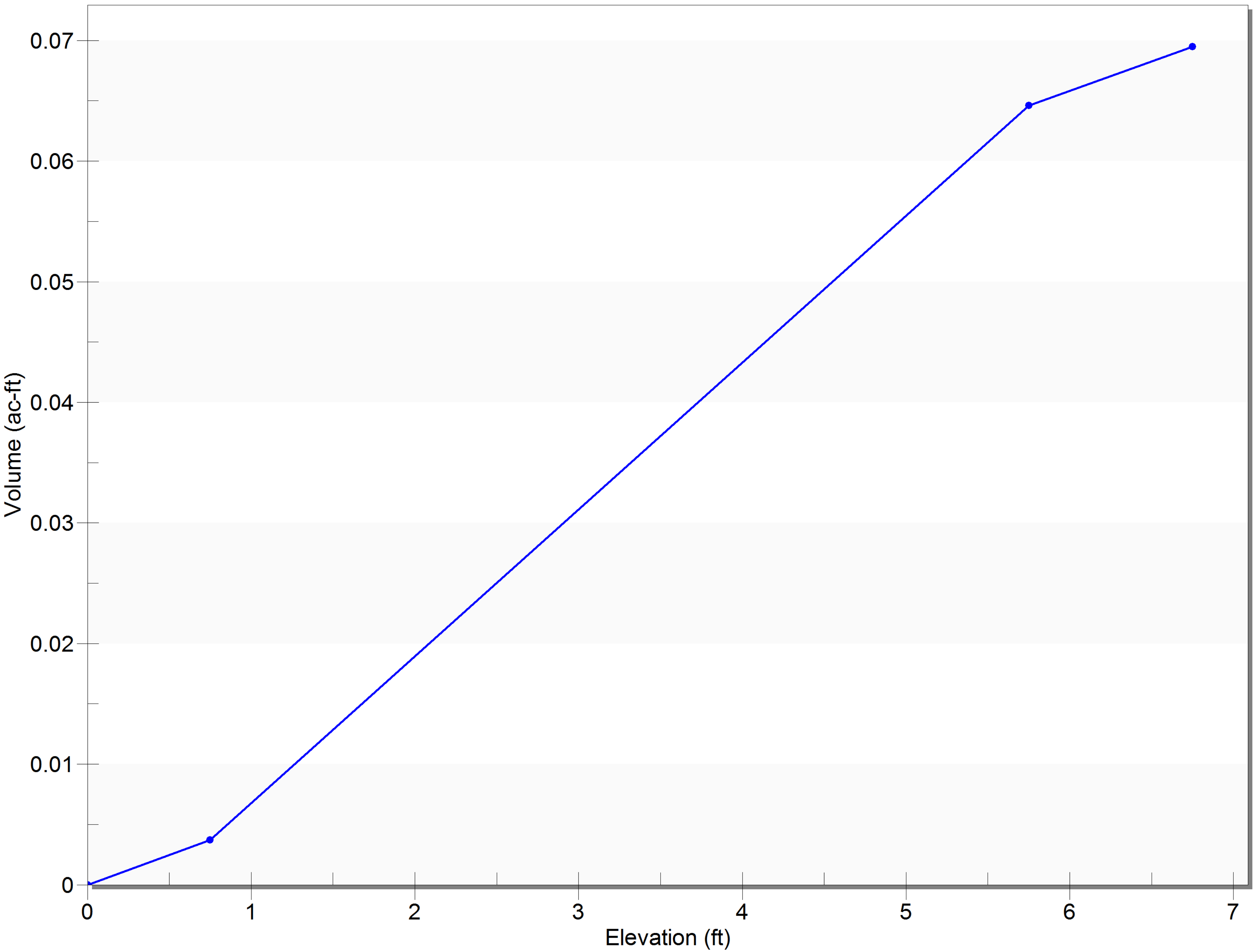
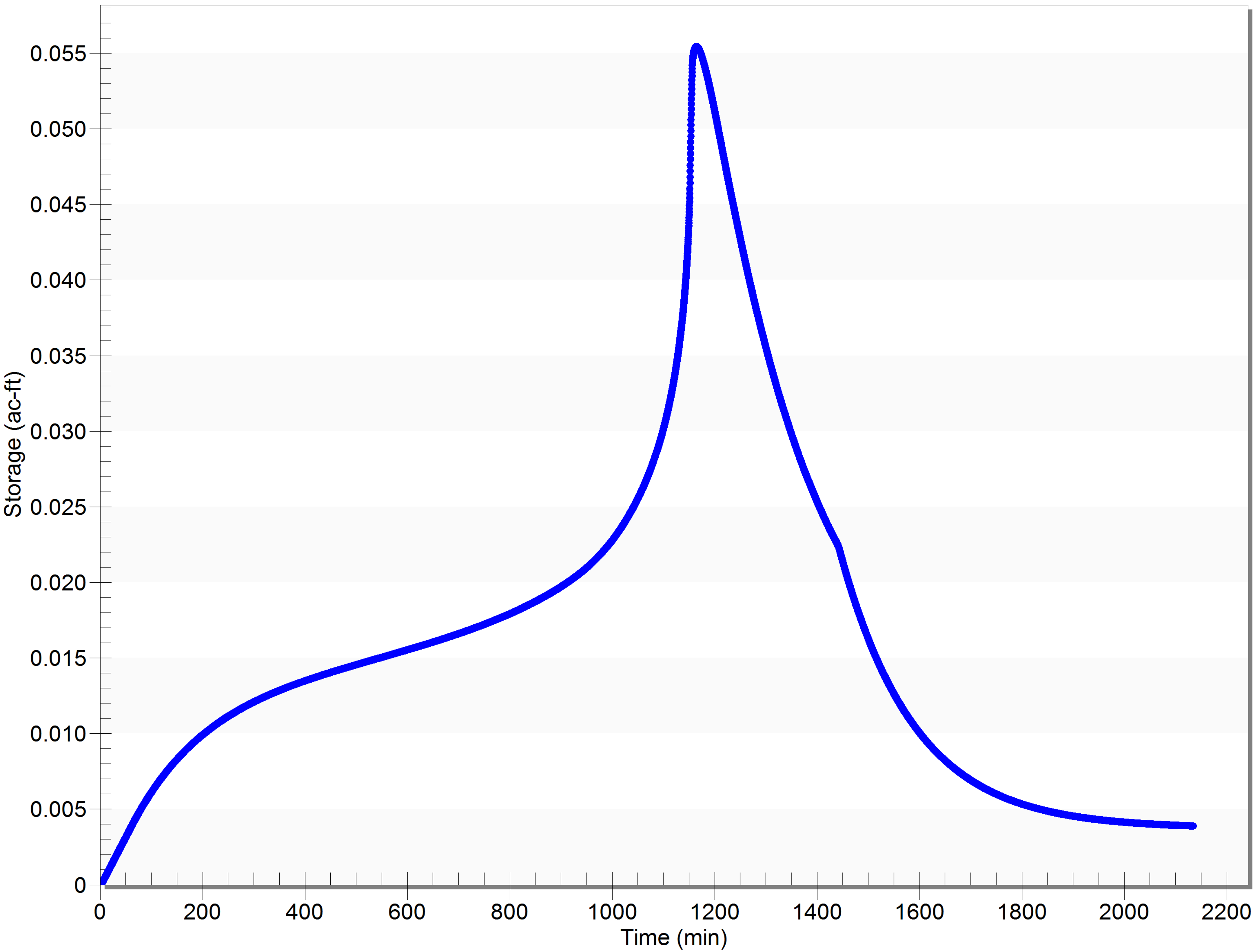


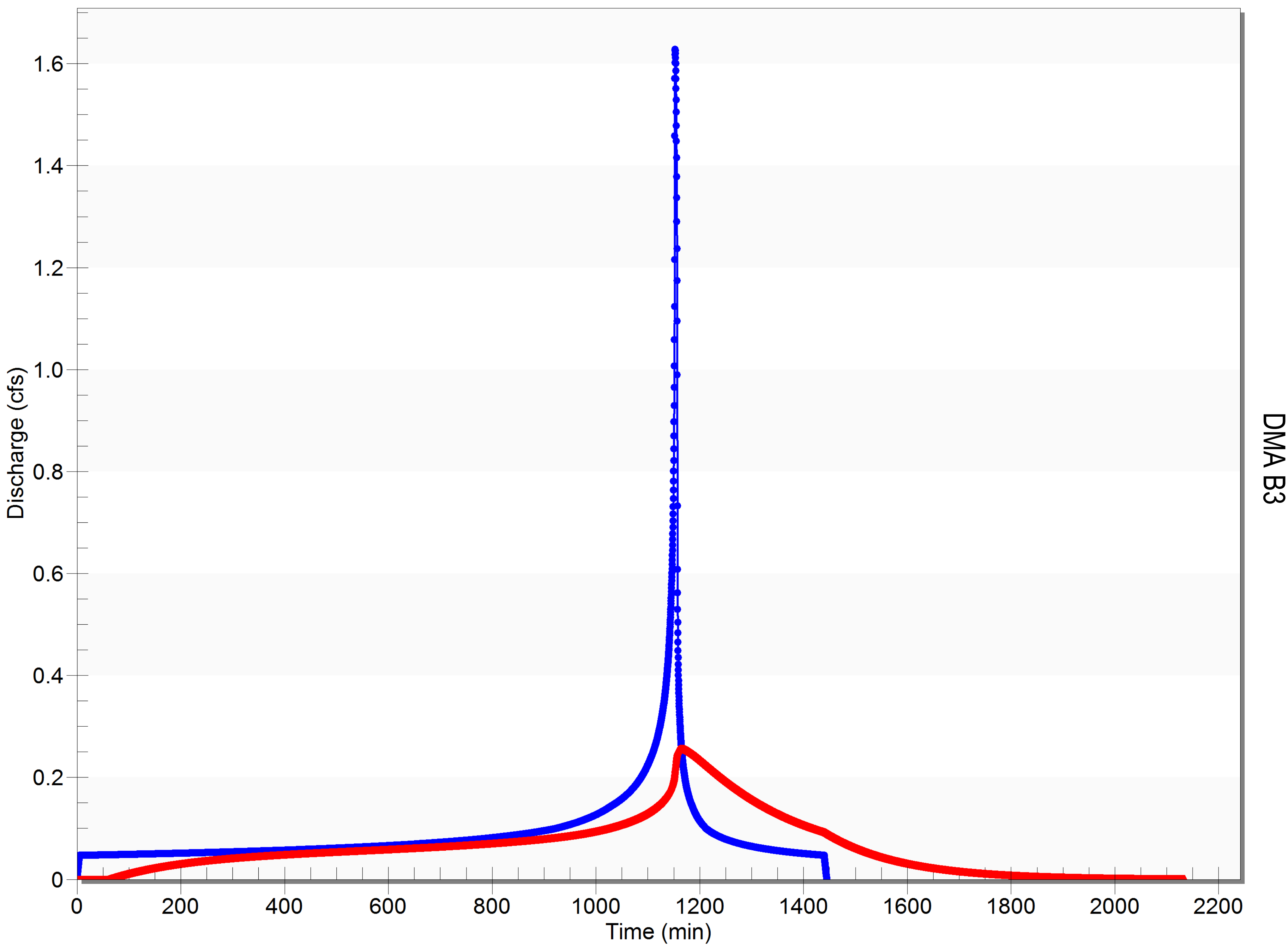
DMA B3

Storage Curve



DMA B3

Routed Hydrographs



Peak Flow Hydrologic Analysis

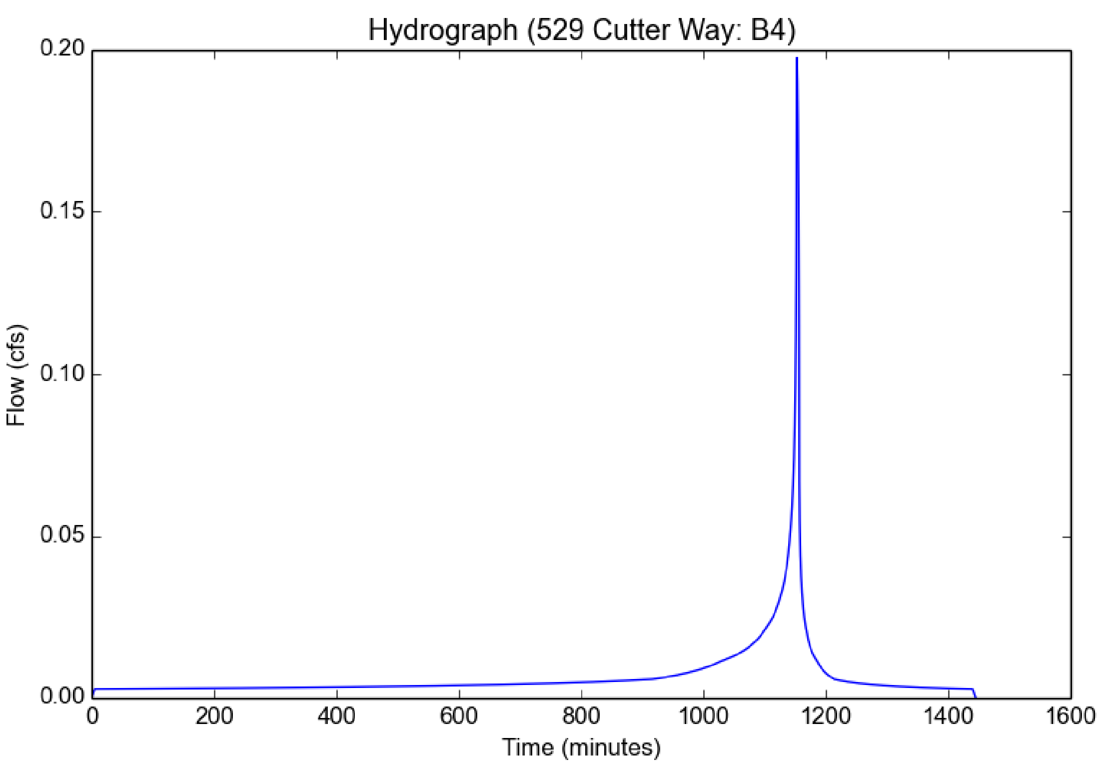
File location: C:/Users/ThomasH/Dropbox/0754-Logos-Cutter/0754-Logos-Cutter/Reports/Drainage Study/Proposed Calcs/529 Cutter Way - B4-100yr.pd
Version: HydroCalc 0.3.1-beta

Input Parameters

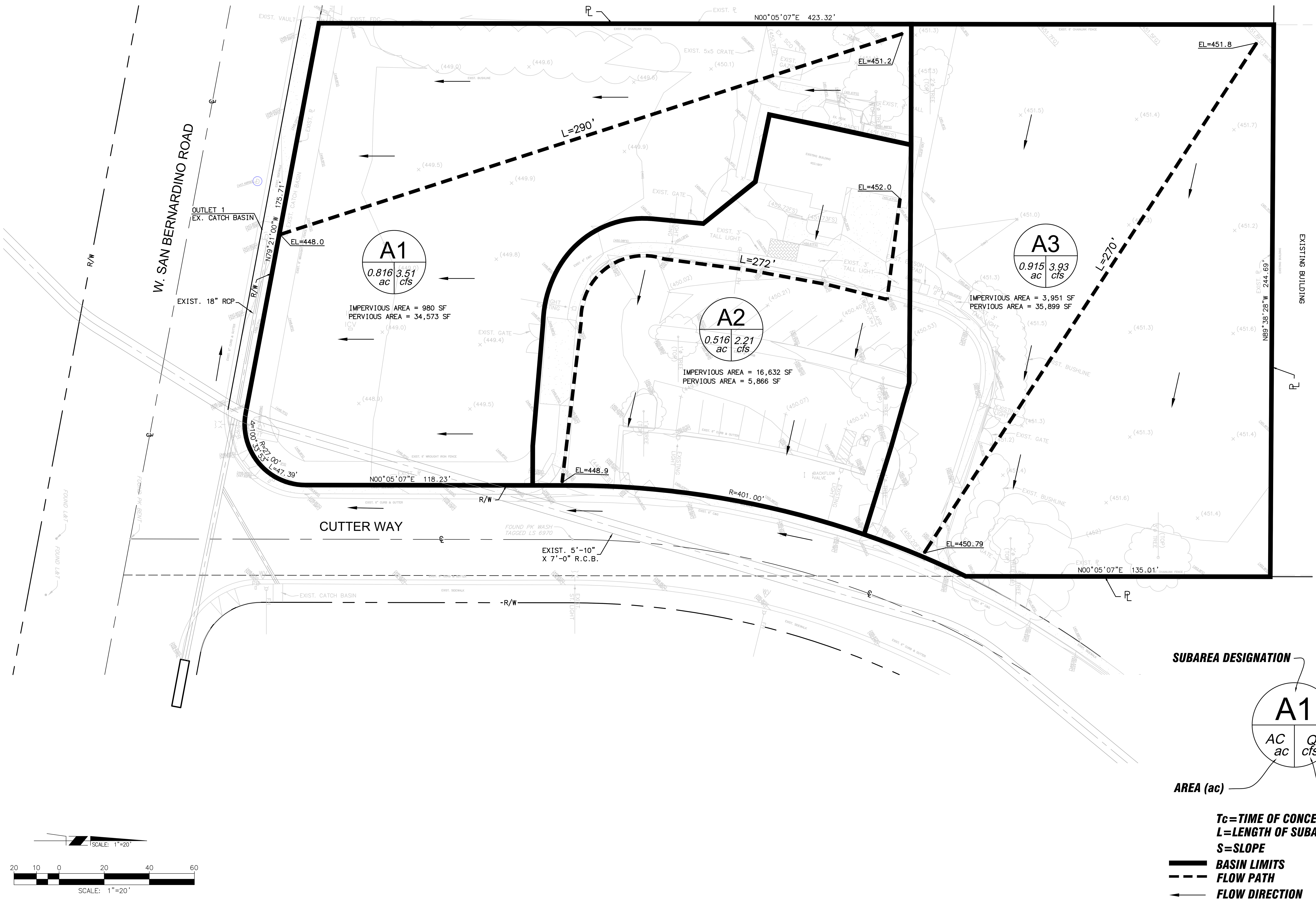
Project Name	529 Cutter Way
Subarea ID	B4
Area (ac)	0.046
Flow Path Length (ft)	20.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	7.1
Percent Impervious	0.3
Soil Type	6
Design Storm Frequency	100-yr
Fire Factor	0
LID	False

Output Results

Modeled (100-yr) Rainfall Depth (in)	7.9662
Peak Intensity (in/hr)	4.7529
Undeveloped Runoff Coefficient (Cu)	0.9053
Developed Runoff Coefficient (Cd)	0.9037
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.1976
Burned Peak Flow Rate (cfs)	0.1976
24-Hr Clear Runoff Volume (ac-ft)	0.0137
24-Hr Clear Runoff Volume (cu-ft)	597.4234



EXISTING HYDROLOGY MAP



SUBAREA DESIGNATION

A1 — AC ac — Q cfs

AREA (ac)

Q_{100} FLOW RATE

Tc=TIME OF CONCENTRATION
L=LENGTH OF SUBAREA FLOW PATH
S=SLOPE

BASIN LIMITS
FLOW PATH
FLOW DIRECTION

BLUE PEAK ENGINEERING, INC.
18543 YORBA LINDA BL. #235
YORBA LINDA, CA 92886
714.749.3077
714.281.1640 FAX

DRAWING ISSUE RECORD

DATE	DESCRIPTION

REVISION RECORD

NO.	DATE	DESCRIPTION

PROJECT NAME

CUTTER WAY MIXED USE DEVELOPMENT

529 CUTTER WAY, CITY OF COVINA, CA 91722

PROFESSIONAL SEAL

REGISTERED PROFESSIONAL ENGINEER THOMAS C. BURKHOLDER CIVIL STATE OF CALIFORNIA

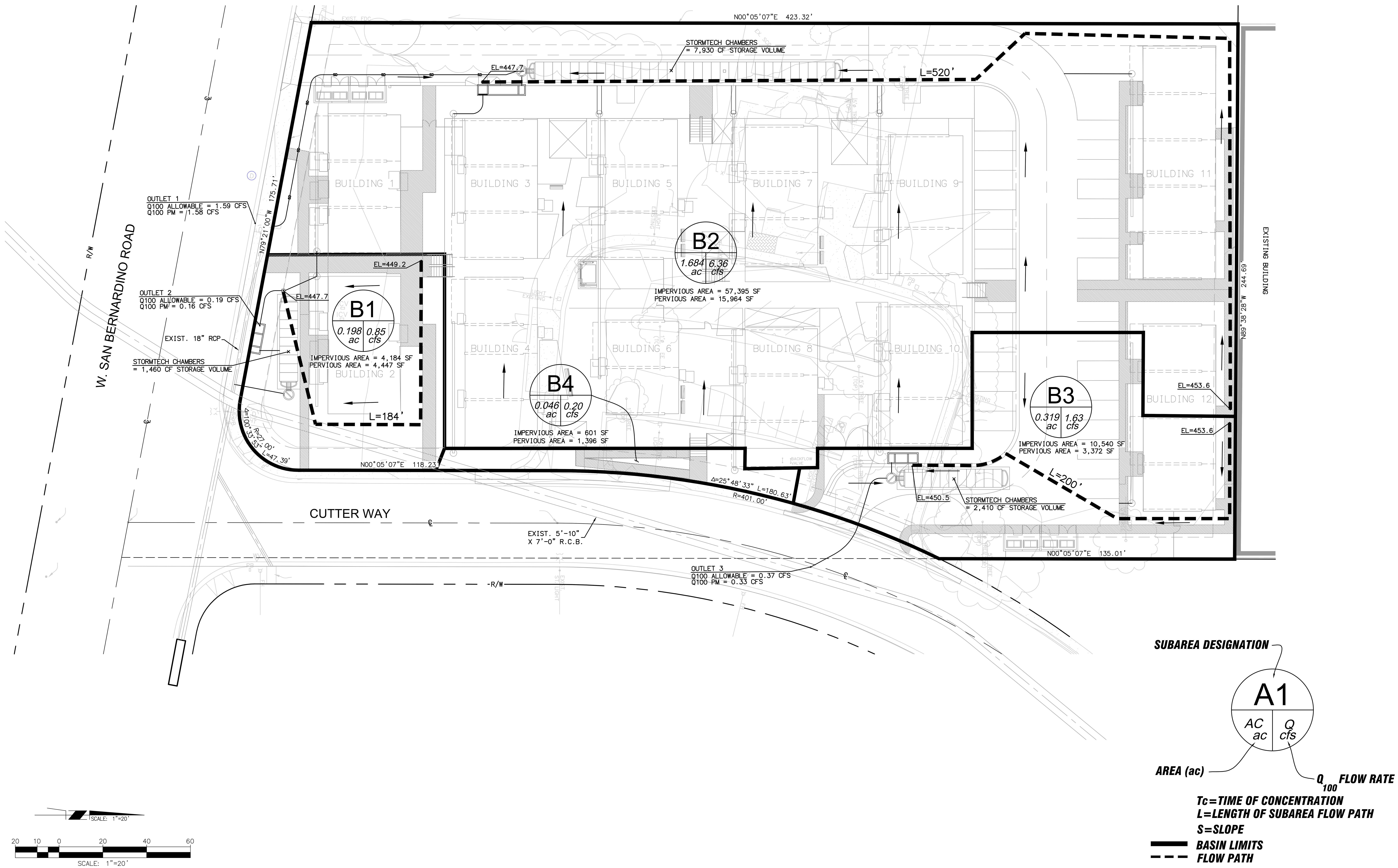
SHEET TITLE

EXISTING HYDROLOGY MAP

SHEET NUMBER

DATE: 01/17/2020

PROPOSED HYDROLOGY MAP



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PROFESSIONAL SEAL

REGISTERED PROFESSIONAL ENGINEER · CIVIL · STATE OF CALIFORNIA

SHEET TITLE

PROPOSED HYDROLOGY MAP

SHEET NUMBER

2 of 2

DATE: 01/17/2020

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529 Cutter Way Apartments Project
Covina, CA

Noise Impact Analysis Report

September 24, 2021

Reviewing Agency:

City of Covina
Planning Department
125 East College Street
Covina, California 91723

Project Applicant:

Faith Community Church, LLC
529 Cutter Way
Covina, California 91723

Prepared by:

MIG

1650 Spruce Street, Suite 106
Riverside, California 92507

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Appendices

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	Full Phrase or Description
ADA	Americans with Disabilities Act
APN	Assessor's Parcel Number
CalEEMod	California Emission Estimator Model
CALGreen	California Green Building Standards Code
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CMU	Concrete Masonry Unit
CNEL	Community Noise Equivalent Level
D	Distance
dB	Decibel (unweighted)
dBA	Decibels, A-Weighted
DNL / Ldn	Day-Night Noise Level
FHWA	Federal Highway Works Administration
FTA	Federal Transit Administration
HUD	U.S. Department of Housing and Urban Development
HVAC	Heating, Ventilation, and Air Conditioning
Hz	Hertz
I	Interstate
In/sec	Inches per Second
kH	Kilohertz
L_{eq}	Average / Equivalent Noise Level
L_{max}	Maximum Noise Level
L_{min}	Minimum Noise Level
LT	Long-term
MPH	Miles per Hour
M-1	Light Manufacturing (zoning designation)
OITC	Outside-Indoor Transmission Class
OPR	Office of Planning and Research
Pa	Pascals
PRC	Public Resources Code
PPV	Peak Particle Velocity (inches/second)
ROW	Right-of-Way

List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	Full Phrase or Description
Report	Noise and Vibration Impact Analysis Report (this document)
ST	Short-term
STC	Sound Transmission Class
TIS	Traffic Impact Study
UF	Usage Factor
VdB	Velocity Decibels
3D	Three Dimensional
§	Section
%	Percent

EXECUTIVE SUMMARY

This Noise Impact Analysis Report (Report) evaluates and documents noise levels associated with the construction and operation of a proposed mixed-use, multi-family residential project (proposed Project) located at 529 Cutter Way in the City of Covina, California 91723.

This Report is intended to assist the California Environmental Quality Act (CEQA) Lead Agency (City of Covina) with its review of the proposed Project's potential noise and vibration impacts in compliance with the State CEQA Statutes and Guidelines, particularly in respect to the noise and vibration issues identified in Appendix G of the State CEQA Guidelines.

S.1 PROPOSED PROJECT DESCRIPTION

Faith Community Church, LLC has applied to the City of Covina (City) for a Zone Change and Planned Community Development Overlay, Environmental Review, and Site and Architectural Review for its proposed 529 Cutter Way Apartments Project. The proposed Project involves the construction and operation of a mixed-use, multi-family residential development consisting of twelve buildings and 60 total residential units, 49 of which would be traditional multi-family units and 11 of which would be "Live/Work" units. The Project would be located at 529 Cutter Way, an approximately 2.24-acre site comprised of a single vacant parcel (Assessor's Parcel Number # 8434-013-010) zoned Light Manufacturing (M-1) and designated General Industrial in the City's General Plan. The site is bordered on the east and south by Cutter Way and San Bernardino Road, respectively, and generally surrounded by a mix of residential and non-residential land uses in the cities of Covina and West Covina, including the Las Palmas Middle School and a warehouse previously/currently used as the Jubilee Christian School/Faith Community Church but is being proposed for use as an Amazon Delivery Station. The proposed buildings would range from one (1) to four (4) stories in height, with taller units located towards the rear of the property; the Project also includes a subterranean parking garage, surface parking, and landscaping improvements. Construction of the Project is anticipated to begin in the first quarter of 2021, at the earliest, and take approximately 12 months to complete.

S.2 POTENTIAL CONSTRUCTION NOISE AND VIBRATION IMPACTS

The proposed Project's construction noise and vibration levels were estimated based on the typical construction activities associated with a multi-family residential development project. Potential construction noise and vibration levels were estimated for worst-case equipment operations (generally 25 and 70 feet from building locations and exterior use areas, respectively) and average equipment operations based on the distance from the center of the site to adjacent buildings and exterior use areas (generally between 160 and 350 feet away).

The City's Municipal Code does not establish a numeric limit for temporary construction noise levels; however, Section 9.40.110 sets forth that construction activities may not occur within 500 feet of a residential land use between 8:00 PM any one day and 7:00 AM the next day, or on Sundays or public holidays. In addition, although the Municipal Code does not establish numeric noise limits for construction noise sources, Municipal Code Section 9.40.100, Noise Sensitive Areas, limit noise levels near in-use schools to 55 dBA Leq and 75 dBA Lmax with certain allowable increases over 15-minute (L_{25}), 5-minute (L_{08}), and 1-minute (L_{02}) periods. The proposed Project's predicted worst-case construction noise levels could exceed L_{eq}, L_{25}, and L_{08} receiving land use standards established by the Municipal Code for Las Palmas Middle School. The Project could also temporarily increase noise levels above ambient levels at the multi-family residential development to the east of the Project site (across Cutter Way) between 8 to 25 dBA L_{eq} on an hourly basis, which would represent an approximately doubling to quadrupling of loudness in this residential area. The Project's potential construction noise levels, therefore, are considered a potentially significant impact. To reduce the proposed Project's construction noise levels at adjacent residential and school use areas, the City shall require the Project Applicant to implement Mitigation Measure NOI-1 into the Project. Mitigation Measure NOI-1 requires the use of construction management and equipment controls to reduce potential noise from construction activities and is consistent with the requirement of General Plan Policies 4.1, 4.2 and 4.3.This measure restricts work hours in accordance with the Municipal Code, require staging and stationary noise sources to be located as far from neighboring land uses as possible, and requires a temporary noise barrier be erected along the eastern property line capable of reducing noise levels by 15 dBA. This measure would ensure the proposed Project's construction noise levels comply with the requirements of Municipal Code Section 9.40.100 and do not otherwise result in a substantial temporary increase in noise levels at the residential development across Cutter Way. Thus, with Mitigation Measure NOI-1, the proposed Project's potential construction noise levels would be rendered a less than significant impact

City Municipal Code Section 9.40.120J and Section 9.40.020.30 set forth that the operation of any device that creates a vibration level above 0.01 in/sec is disturbing to the average individual. The proposed Project's construction activities would have the potential to generate ground borne-vibration levels that could exceed this threshold at nearby light manufacturing buildings. In addition, if vibration-generating equipment is used, such as a vibratory roller, the City's vibration perception threshold could be exceeded in residential areas across Cutter Way; however, in no case would potential construction vibration levels result in structural damage to adjacent buildings. The use of construction equipment that would generate ground-borne vibration levels above the City's perception threshold of 0.01 in/sec is considered a potentially significant impact. To reduce the proposed Project's potential construction vibration levels at adjacent buildings, the City shall require the Project Applicant to implement Mitigation Measure NOI-2 into the Project. Mitigation Measure NOI-2 requires advance notice to adjacent property owners/occupants, prohibits vibration-generating equipment during construction, and develops procedures designed to limit potential vibration annoyance and interference with daily activities at adjacent buildings. This measure would ensure the proposed Project's construction noise levels comply with the requirements of Municipal Code Section 9.40.120J. It would also ensure that construction-related ground-borne vibration levels would not be disturbing, excessive, or offensive at any nearby building locations, or cause damage to any adjacent building. Thus, with Mitigation Measure NOI-2, the proposed Project's potential construction ground-borne vibration levels would be rendered a less than significant impact.

S.3 POTENTIAL OPERATIONAL NOISE IMPACTS

Once constructed, the proposed Project would generate noise from on-site and off-site activities. On-site activities would include vehicle travel, use of outdoor recreation and amenity spaces, landscaping activities, mechanical equipment such as air conditioning units, and other miscellaneous site operations. Off-site noise activities would include vehicle travel on Cutter Way and San Bernardino Road.

Residential land uses are not considered to be a substantial noise generating land use type. The proposed Project site is generally directly bordered by light manufacturing lands that are not noise sensitive and would not be impacted by the Project. Multi-family residential dwelling units and the Las Palmas Middle School are located across Cutter Way. These land uses are noise sensitive; however, the proposed Project would not result in a substantial permanent increase in noise levels that exceed City standards for adjacent land uses because: 1) On-site vehicle travel would occur along perimeter access drive at low speed and would not generate substantial noise levels; 2) The schematic design site plan for the Project includes a six-foot-tall concrete masonry unit wall on the site's western boundary, which would reduce on-site vehicle travel noise levels along the receiver side of the perimeter access drive by at least 5 dBA; 3) The Project's at-grade parking area would have a limited capacity (25 vehicles) and be located between on-site buildings that would serve to block parking area noises from reaching most property line locations; 4) The proposed Project does not involve substantial mechanical equipment associated residential dwelling units (heating and air conditioning units would be individually sized to serve dwelling units between 650 square feet and 1,200 square feet in size); and 5) The proposed Project does not involve substantial nighttime activities. For these reasons, the proposed Project would not result in noise levels that exceed City standards or otherwise result in a substantial permanent increase in ambient noise levels in the vicinity of the Project.

The proposed Project would generate vehicle trips that would be distributed onto the local roadway system and potentially increase noise levels along travel routes, specifically Cutter Way and San Bernardino Road. Caltrans considers a doubling of total traffic volume to result in a three (3) dBA increase in traffic-related noise levels.The proposed Project would not double traffic volumes on either Cutter Way or San Bernardino Road and, therefore, would not result in a substantial off-site increase in noise levels. The proposed Project would also not result in significant operational vibration levels because it does not involve the use of large or vibration-inducing equipment during operations.

S.4 AIRPORT NOISE-RELATED IMPACTS

The proposed Project is not located within any airport land use compatibility planning or noise contour zone. The closest airport, San Gabriel Valley Airport, is located more than six (6) miles west of the Project. The Project, therefore, would not expose people living or working at the Project site to excessive airport-related noise levels.

S.5 OTHER NOISE AND VIBRATION EFFECTS

The California Supreme Court in *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369 (2015) ruled that CEQA review is focused on a project's impact on the environment "and not the environment's impact on the project." Per this ruling, a Lead Agency is not required to analyze how existing conditions might impact a project's future users or residents; however, a Lead Agency may elect to disclose information relevant to a project even if it not is considered an impact under CEQA. Furthermore, the City's Municipal Code and General Plan Noise Element set noise standards for receiving land uses which require evaluation for consistency and compliance even if such evaluation is not required by CEQA.

The existing exterior noise environment at the center and northern portions of the Project site are generally compatible and consistent with City goals, policies, and standards for the proposed Project; however, the southern portion of the site near San Bernardino Road is subject to community noise exposure levels of approximately 67 to 68 DNL. These ambient noise levels exceed the City's 60 DNL Noise Study Zone thresholds, which generally recognizes where noise insulation may be required for multi-family residential units, as well the City's 65 DNL Noise Mitigation Zone, which generally establishes the areas where new or expanded noise-sensitive development should be permitted only if appropriate mitigation measures, such as barriers or additional sound insulation, are included in the Project. Specifically, the proposed Project's schematic design site plan indicates Buildings 1 and 2 would front San Bernardino Road and include exterior balconies that front San Bernardino Road; Building 4 would also front San Bernardino Road and include balconies (on the eastern side of the building) that front San Bernardino Road. There are no other common or private exterior use areas that front San Bernardino Road. Due to the site layout, Buildings 1 and 2 effectively shield all other buildings from traffic noise levels associated with San Bernardino Road (with the exception of the eastern part of Building 4). Cutter Way does not generate substantial traffic noise levels and ambient noise monitoring data indicates noise levels in the center to northern parts of the site (adjacent to existing light manufacturing lands) do not exceed 60 DNL.

The California Building Standards Code establishes that interior noise levels attributable to exterior noise sources shall not exceed 45 DNL or CNEL (as established by the local General Plan) for residential developments. In addition, the City's Municipal Code (Section 9.40.060) establishes 45 dBA L_{eq} and 35 dBA L_{eq} interior daytime and nighttime noise standard for residential developments, respectively. Daily noise exposure levels at the exterior façade of Project Buildings 1, 2, and 4 that fronts San Bernardino Road could be up to 68 DNL. While standard construction techniques for new residential development typically provide a minimum exterior to interior noise attenuation (i.e., reduction) of 25 to 32 dBA with windows closed, the schematic design for the proposed Project indicates a storefront window wall system is proposed for most exterior building facades, including Buildings 1, 2, and 4. The exterior to interior noise transmission rating for this assembly, therefore, would need to be confirmed to ensure interior noise levels meet the 45 CNEL interior noise standard established by local and State requirements. In addition, the nighttime noise levels measured in the southern part of the Project site ranged from 53.7 - 63.3 dBA L_{eq}, with an overall nighttime average of 58.8 dBA L_{eq}. This indicates exterior to interior noise reduction of approximately 19 to 29 dBA is required to achieve the City's nighttime interior noise standard for residential developments. The STC and OITC exterior wall and roof assembly requirements set forth by the CALGreen code generally require the assembly to have an STC of 40 or an OITC of 30, which should be sufficient to meet the City's nighttime interior; however, the final exterior assemblies would need to be reviewed and confirmed to ensure the City's 35 dBA l_{eq} nighttime standard is met. To reduce the potential for exterior and interior noise and land use compatibility issues with City goals, policies, and standards that may occur as a result of the existing ambient noise environment at and in the vicinity of the proposed Project, MIG recommends the preparation of final acoustical analysis based on the final project design and exterior wall, ceiling, and roof assemblies that documents compliance with applicable exterior and interior noise standards.

S.6 MITIGATION MEASURES AND LAND USE COMPATIBILITY RECOMMENDATIONS

MIG recommends the following mitigation and noise/land use compatibility measures be incorporated into the Project to reduce potential construction noise and vibration levels to less than significant levels and address potential land use compatibility issues associated with the existing ambient noise environment at and in the vicinity of the Project site.

Mitigation Measure NOI-1: Reduce Construction Noise Levels. To reduce potential noise levels associated with construction of the proposed Project, the Applicant and/or its designated contractor, contractor's representatives, or other appropriate personnel shall:

- *Notify Adjacent Land Use of Construction Activities.* This notice shall be provided at least one week prior to the start of any construction activities, describe the noise control measures to be implemented by the Project, and include the name and phone number of a designated contact for the Applicant and the City of Covina responsible for handling construction-related noise complaints. This notice shall be provided to:
  - The owner/occupants of properties that directly border the Project site to the north and west; and

  - The owners/occupants of multi-family dwelling units directly to the east of the Project sit (across Cutter Way) that have an exterior wall or patio area that fronts Cutter Way; and
  - Las Palmas Middle School.
- *Restrict work hours/equipment noise.* All work shall be subject to the requirements in City Municipal Code Section 9.40.110.A. Construction activities, including deliveries, shall only during the hours of 7:00 AM to 8:00 PM, Monday through Saturday, unless otherwise authorized by City permit. The Applicant and/or its contractor shall post a sign at all entrances to the construction site informing contractors, subcontractors, construction workers, etc. of this requirement. The sign shall also provide a name (or title) and phone number for an appropriate on-site and City representative to contact to submit a noise complaint.
- *Construction Traffic and Site Access.* Construction traffic, including soil hauling, shall follow City-designated truck routes Construction site access shall occur via San Bernardino Road instead of Cutter Way. Access to the site using Cutter way may only occur after the noise barrier installed along the Project site's eastern boundary has been removed.
- *Construction equipment selection, use, and noise control measures*. The following measures shall apply during construction activities:
  - To the extent feasible, contractors shall use the smallest size equipment capable of safely completing work activities.
  - Construction staging shall occur as far away from the adjacent residential and school properties on Cutter Way as possible.
  - All stationary noise-generating equipment such as pumps, compressors, and welding machines shall be located as far from adjacent residential and school properties on Cutter Way as possible.
  - Heavy equipment engines shall be covered, and exhaust pipes shall include a muffler in good working condition.
  - Pneumatic tools shall include a noise suppression device on the compressed air exhaust.
  - The Applicant and/or his contractor shall connect to existing electrical service at the site to avoid the use of stationary power generators.
  - No radios or other amplified sound devices shall be audible beyond the property line of the construction site.
- *Construct/Install Temporary Noise Barrier.* During all demolition, site preparation, building foundation excavation, parking garage excavation, mass grading work, and building foundation work, the Applicant shall install and maintain a physical noise barrier capable of achieving a 15 dB reduction in construction noise levels. Potential barrier options capable of achieving a 15 dB reduction in construction noise levels include:
  - An 8-foot-high concrete, wood, or other barrier installed at-grade (or mounted to structures located at-grade, such as a K-Rail) along the Project's eastern property line. Such a wall/barrier shall consist of solid material (i.e., free of openings or gaps other than weep holes) that have a minimum rated transmission loss value of 25 dB.

  - Commercially available acoustic panels (8-foot-high) or other products such as acoustic barrier blankets installed along the Project's eastern property line that have a minimum sound transmission class (STC) or transmission loss value of 25 dB. The rated STC or transmission loss value of the barrier would be confirmed by the manufacturer's specifications prior to installation.
  - Any combination of noise barriers and commercial products capable of achieving a 15 dBA reduction in construction noise levels at the adjacent residential and school properties on Cutter Way.

The noise barrier may be removed following the completion of building foundation work (i.e., it is not necessary once framing and typical building construction begins provided no other grading, foundation, etc. work is still occurring on-site). In-lieu of the barrier recommendations above, the Applicant may prepare and submit to the City for review and approval an updated construction noise impact analysis, based on the final site plan and final selected construction equipment, demonstrating that selected equipment and/or alternative noise control measures will result in noise levels at least 15 dB below the estimates in Table 5-4 of the Project's Noise Impact Analysis Report (MIG, 2021).

Mitigation Measure NOI-2: Reduce Construction Vibration Levels. To reduce potential noise levels associated with construction of the proposed Project, the Applicant and/or its designated contractor, contractor's representatives, or other appropriate personnel shall:

- *Notify Adjacent Land Use of Construction Activities.* This notice shall be provided at least one week prior to the start of any construction activities, describe the vibration control measures to be implemented by the Project, and include the name (or title) and phone number of a designated contact for the Applicant and the City of Covina responsible for handling construction-related vibration complaints. This notice shall be provided to all building owners/occupants within 120 feet of the Property site boundary.

- *Prohibit Vibratory Equipment.* The use of large vibratory rollers (small plate compactors are acceptable) and vibratory pile driving equipment are prohibited during construction. Any deep foundation piers or caissons shall be auger drilled.

- *Prepare Vibration Mitigation Plan.* Prior to the start of construction activity, the City or its contractor shall prepare a Construction Vibration Response Plan for the project which:

  - Identifies the name (or title) and contact information (including phone number and email) of the Contractor and City-representatives responsible for addressing construction vibration-related issues.
  - Contains a detailed schedule of substantial earth moving activities expected to occur at the site.
  - Includes procedures describing how the construction contractor will receive, respond, and resolve to construction vibration complaints. At a minimum, upon receipt of a vibration complaint, the Contractor and/or City representative described in the first sub-bullet above shall identify the vibration source generating the complaint, determine the cause of the complaint, and take steps to resolve the complaint by reducing ground-borne vibration levels to a peak particle velocity to levels less than 0.01 inches/second. Such measures may include the use of non-impact drivers, use of rubber-tired

equipment instead of track equipment, or other measures that limit annoyance from ground-borne vibration levels.

Noise and Land Use Compatibility Measure 1: Document Compliance with Applicable Noise Standards. Prior to the issuance of a building permit for the Project, the City shall review and approve an acoustical analysis, prepared by or on behalf of the Project Applicant by a qualified acoustical consultant, and based on the final Project design, that:

- Identifies the exterior noise levels at all building façades and exterior use areas, including private balconies, with a direct line of sight to San Bernardino Road; and
- Identifies the final site and building design measures that would:
  - Attenuate exterior use areas such that noise levels do not exceed 65 DNL. For balconies, this may be achieved through the use of plexiglass or other similar shields that extend from the balcony floor or wall assembly to a sufficient height capable of achieving a minimum 3.1 dBA reduction in exterior noise levels (or other reduction determined to be necessary based on updated exterior noise levels identified in the acoustical analysis).
  - Comply with applicable CALGreen building code requirements for buildings located within a 65 DNL roadway noise contour and subject to hourly noise levels of 65 dBA L_{eq}.
  - Provide the necessary exterior to interior noise reduction need to achieve a 45 dBA L_{eq} interior daytime noise level (per City Municipal Code Section 9.40.060), a 35 dBA L_{eq} interior nighttime noise level (per City Municipal Code Section 9.40.060), and a 45 DNL (per State building code requirements). All standards are to be met with closed windows. Potential noise insulation design features capable of achieving these requirements may include, but are not limited to, sound barriers, enhanced exterior wall, ceiling, and roof noise insultation, use of enhanced window, door, roof assemblies with above average sound transmission class or outdoor/indoor transmission class values, and/or use of mechanical, forced air ventilation systems to permit a windows closed condition.

The measures listed above require the use of construction management and equipment controls to reduce potential noise and vibration from construction activities to less than significant levels and would ensure the final Project design complies with applicable noise and land use compatibility standards set by the City and State. No additional mitigation or noise and land use compatibility measures are required for the Project.

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1 INTRODUCTION

Faith Community Church, LLC has submitted an application to the City of Covina (City) for a Zone Change and Planned Community Development Overlay, Environmental Review, and Site and Architectural Review for its proposed 529 Cutter Way Apartments Project (the proposed Project). The proposed Project would consist of a mixed-use, multi-family residential development on a single parcel of land containing an unoccupied single-family home, in the western portion of the City of Covina, in Los Angeles County. It would involve the construction and operation of a new mixed-use development consisting of 49 traditional multi-family residential dwelling units and 11 non-traditional "Live/Work" units.

MIG, Inc. (MIG) has prepared this Noise Impact Analysis Report (Report) to evaluate the potential construction and operations-related noise impacts of the proposed Project. MIG has prepared this Report using project-specific information provided by Faith Community Church. Where necessary, MIG has supplemented available information with standardized sources of information, such as model assumptions pertaining to construction equipment activity levels. In general, this Report evaluates the potential "worst-case" conditions associated with the proposed Project's construction and operational noise levels to ensure a conservative (i.e., likely to overestimate) assessment of potential noise impacts is presented.

This Report is intended for use by the City to assess the potential noise and vibration impacts of the proposed Project in compliance with the California Environmental Quality Act (CEQA; PRC §21000 et seq.) and the State CEQA Guidelines (14 CCR §15000 et seq.), particularly with respect to noise issues identified in Appendix G of the State CEQA Guidelines.

1.1 REPORT ORGANIZATION

This Report is organized as follows:

- Chapter 1, Introduction, explains the contents of this Report and its intended use.
- Chapter 2, Project Description, provides an overview of construction and operational activities associated with the proposed Project.
- Chapter 3, Noise Fundamentals, provides pertinent background information on the measurement, propagation, and characterization of noise levels.
- Chapter 4, Environmental Setting and Regulatory Framework, describes the existing noise and setting of the proposed Project and provides information on the federal, state, and local regulations that govern the Project setting and potential noise impacts.
- Chapter 5, CEQA Noise and Vibration Impact Analysis, identifies the potential operational noise impacts of the proposed Project and evaluates these effects in accordance with Appendix G of the State CEQA Guidelines.
- Chapter 6, Other Noise and Vibration Effects, discloses other potential noise and vibration issues, such as incompatible or otherwise adverse existing environmental conditions that may affect the proposed Project and/or the proposed Project's ability to comply with applicable noise or vibration standards
- Chapter 7, Report Preparers and References, list the individuals involved, and the references used, in the preparation of this Report.

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2 PROJECT DESCRIPTION

Faith Community Church is proposing to develop a mixed-use, multifamily residential project at 529 Cutter Way, in the western part of the City of Covina. The proposed Project would consist of the construction and operation of 12 new buildings containing 60 total multi-family residential units, 11 of which would be Live/Work units.

2.1 PROJECT LOCATION

The proposed Project would be located at 529 Cutter Way (Assessor's Parcel Number (APN) 692-520-007), in the western part of the City (see Figure 2-1: Proposed Project Location). The Project site consists of an irregularly shaped, approximately 2.24-acre parcel of land currently developed with an unoccupied single-family home and a parking lot (see Figure 2-2: Proposed Project Site Aerial). The Project site is classified as Light Manufacturing (M-1) land by the City's Zoning Code and designated as General Industrial by the City's General Plan (City of Covina, 2000).

2.1.1 SURROUNDING LAND USES

In general, the proposed Project site is surrounded by a mix of residential, industrial, and commercial land uses in the cities of Covina and West Covina. The site is bordered on the north by M-1 land uses (in Covina), on the east by Cutter Way, on the south by San Bernardino Road, and on the west by M-1 land uses (in Covina). Across Cutter Way to the east are multi-family residential (zoned RD-3000) and school (zoned R-1-7500) land uses (in Covina), and across San Bernardino Road to the south are M-1 land uses (in Covina) and a warehouse once used by Jubilee Christian School/Faith Community Church but is now planned on being used as a last-mile delivery station for Amazon Inc. (in West Covina).

The Las Palmas Middle School is located approximately 120 feet northeast (across Cutter Way) of the Project site.[1]

Interstate 10 (I-10) is located approximately 1.1 miles south of the Project site, and the closest airport, San Gabriel Valley Airport, is located more than six (6) miles west of the site.

[1] Unless otherwise specifically noted, all measurements are based on the closest point between the Project's property line and the referenced land use property line, road right-of-way (ROW), or airport runway centerline.

Figure 2-1: Proposed Project Location

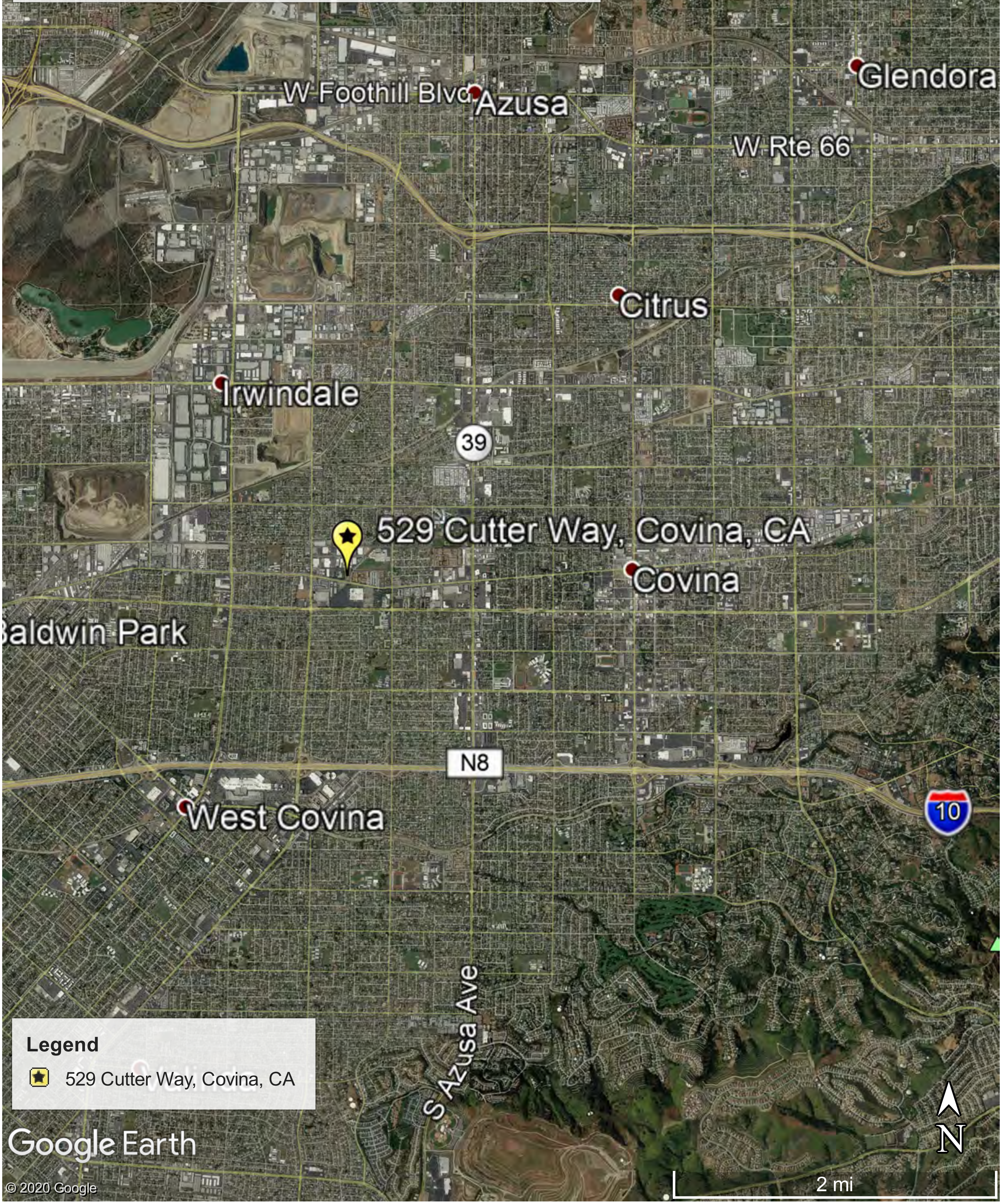


Figure 2-2: Proposed Project Site Aerial

2.2 EXISTING SITE DESCRIPTION

The proposed Project site is a flat, developed parcel of land that has historically been used for residential uses. Currently, the site contains an approximately 2,647-square foot single-family home built in 1990 along with associated landscaping and parking (see Figure 2-2: Proposed Project Site Aerial). The home is used as a temporary gathering place by Faith Community Church and is not permanently occupied. There are two existing curb cuts with driveways at the site (both on Cutter Way). An existing transit bus stop is present on San Bernardino Road (Foothill Transit Route 190/194). An approximate four to six-foot-high wrought iron and chain link fence generally surrounds the site.

2.3 PROPOSED SITE DEVELOPMENT AND OPERATIONS

The proposed Project would involve the development of 12 buildings containing 60 multi-family residential units, 11 of which would be Live/Work units, with subterranean and surface parking facilities and landscaping areas (Logos Architecture, 2020a; see Figure 2-3: Proposed Project Site Plan).

2.3.1 SITE LAYOUT

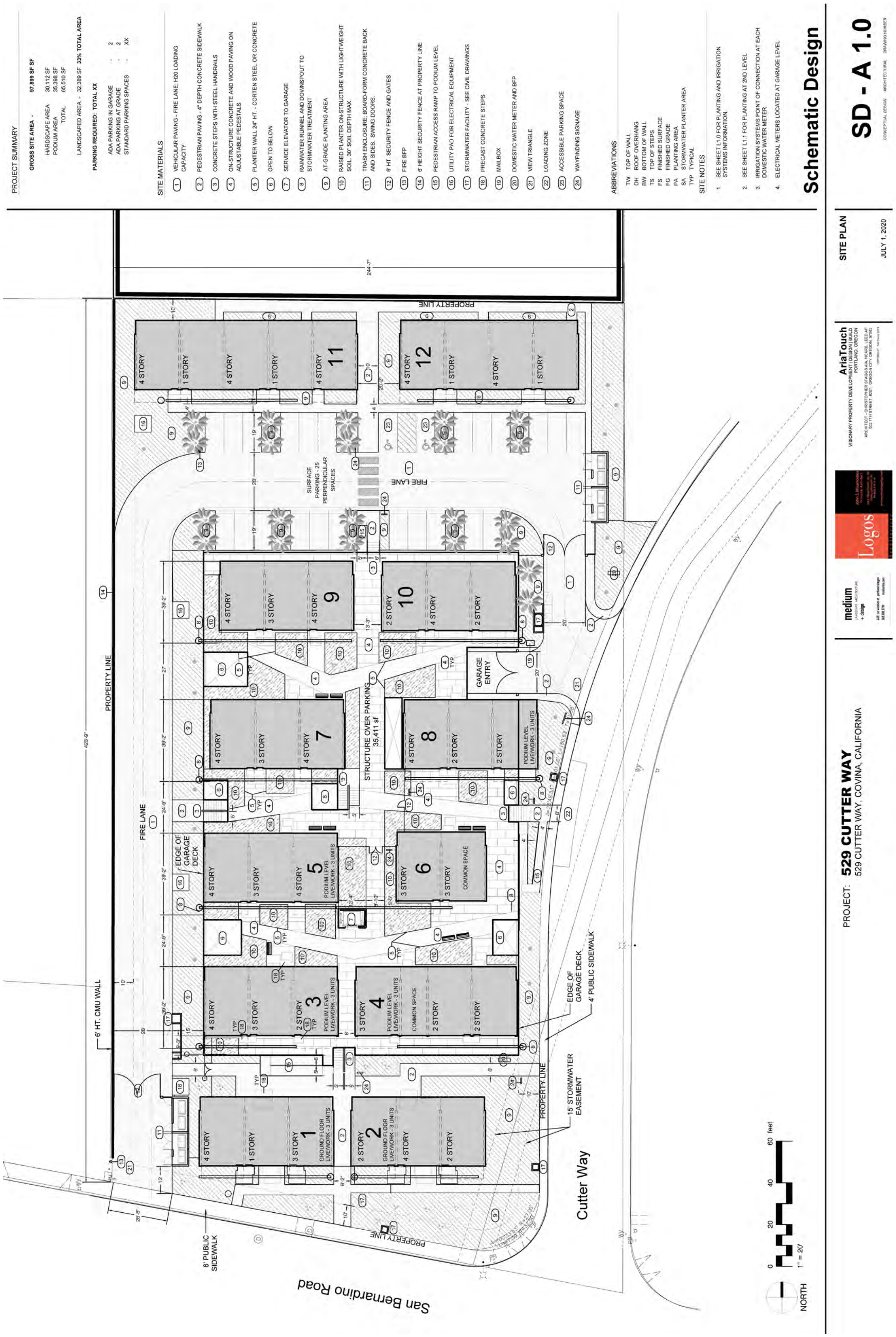
The schematic design site plan calls for the 12 proposed buildings to be arranged in a north-south pattern to best capture solar energy and natural lighting in each building (for energy conservation purposes). The site plan numbers Buildings 1 to 12 in a south to north order. Buildings 1 and 2 would front San Bernardino Road, while buildings 11 and 12 would be located adjacent to the light manufacturing building that borders the site to the north. All buildings would be setback from Cutter Way and San Bernardino Road by at least 10 feet and 12 feet, respectively. The subterranean parking would be centrally located below the middle of the site and the surface parking would be located along the northern edge of the property.

2.3.2 NEW RESIDENTIAL BUILDING DESCRIPTIONS

Each proposed building will be comprised of building blocks that reach three (3) stories and 35 feet tall or four (4) stories and 45 feet tall (Logos Architecture, 2020b). In general, Buildings 1, 2, 3, 4, and 6 would include tradition dwelling units (one-, two-, or-three bedroom) and 11 Live/Work units. The Live/Work units would generally be located on the first or second story while traditional dwelling units would be located on the second, third, or fourth story; Building 6 would also include a ground level community room. Buildings 5 and 7 to 12 would contain traditional one-, two, and three-bedroom dwelling units only. The floor area sizes for the dwelling units are planned to range from 650 square feet for the one-bedroom units to over 1,200 square feet for the three-bedroom units. The Live/Work units will be combination units composed of dwelling space on the upper floors and workspace on the lower floors connected by an interior staircase.

The Project would include rooftop solar photovoltaic and solar thermal electricity and hot water heating systems. No central plant is required for this type of solar thermal development. Smaller individual transformers would serve two or three buildings each for cost efficiency. Each individual apartment unit would be equipped with energy-saving and space-saving devices such as the tankless water closets, tankless water heaters, and air condenser units for heating and cooling interior spaces.

Figure 2-3: Proposed Project Site Plan



Source: Logos Architecture, 2020a.

2.3.3 SITE ACCESS, CIRCULATION, AND PARKING

The proposed Project would remove existing curb cuts and provide new primary and secondary vehicular access points. The primary driveway would be along the eastern boundary of the site on Cutter Way. This driveway would provide access to both the subterranean and surface parking areas (see below). The secondary driveway would be located near the southwest corner of the site on San Bernardino Drive and would also provide emergency ingress/egress. In addition to vehicular access, the proposed Project would include Americans with Disabilities Act (ADA) accessible monumental stairs that provide pedestrian access to the site.

The proposed Project will provide a total of 127 parking stalls for tenants, guests, property maintenance staff, and employees/visitors of the Live/Work units. The parking stalls will be divided between a partial subterranean parking structure (102 stalls, including 2 ADA accessible stalls) located beneath Buildings 3 to 10 and a surface parking area (25 stalls, including 2 ADA accessible stalls) located in the northern part of the site, between Buildings 9/10 and 11/12). The partial subterranean structure would be set about five (5) feet below grade.

2.3.3.1 Emergency/Fire Access

As described in Section 2.3.3, Faith Community Church, in consultation with the Los Angeles County Fire Department, is providing a fire access road located around the perimeter of the site which will be accessible from both Cutter Way and San Bernardino Road. This access road will make for easy access to any dwelling unit (see Figure 2-3).

2.3.4 OTHER SITE IMPROVEMENTS

The proposed Project would include other site improvements, including new perimeter fencing and new landscaping. Landscaped areas will have approximately 32,389 square feet of land coverage. The site plan depicts a six-foot-tall concrete masonry unit (CMU) wall along the Project site's western property line.

2.3.5 SITE OPERATIONS

Once, operational, the proposed Project would generate trips to and from the site from the newly proposed residential land uses. The proposed Project's trip generation potential, as estimated in the Project's Traffic Impact Study (TIS) prepared by Linscott, Law & Greenspan, is summarized in Table 2-1 (Linscott, Law & Greenspan, 2020a).

Table 2-1: Project Trip Generation Rates

Vehicle Type	Throughput		AM Peak Hour Volumes	PM Peak Hour Volumes	Average Daily Traffic (ADT)
	Quantity	Unit			
Apartment	49	Unit	18	22	266
Live/Work	11	Unit	4	5	60
Total	-	-	22	27	326

Source: Linscott, Law & Greenspan 2020a, modified by MIG.

The Live/Work units would consist of a combination of residential floor space and non-residential floor space intended for light industrial operations such as arts and crafts, three-dimensional (3D) printing, textiles, research and development, telecommunications, etc. These working operations are anticipated to occur during daytime hours only.

2.3.6 PROJECT CONSTRUCTION

The proposed Project would involve the demolition of the existing, approximately 2,647 square-foot single-family home, and the construction of the 12 mixed-use, multi-family residential buildings. Construction activities are anticipated to include demolition, site preparation, grading, building construction, paving, and architectural coating phases. The Project will require the export (i.e., off-haul) of approximately 7,532 cubic yards of soil. Construction activities are anticipated to begin as early as the beginning of 2021 and take approximately twelve months to complete. The proposed Project anticipated to require varying types of equipment throughout the various construction phases including, but not limited to bulldozers, backhoes, loaders, graders, cranes, and forklifts. Table 2-2 summarizes the proposed Project's construction phasing and the typical pieces of heavy-duty, off-road construction equipment that would be required during each phase.

Table 2-2: Construction Activity, Duration, and Typical Equipment

Construction Activity	Duration (Days)(A)	Typical Equipment Used(B)
Demolition	20	Concrete/Industrial Saw, Dozer, Backhoe
Site Preparation	3	Grader, Scraper, Backhoe
Grading	20	Grader, Dozer, Backhoe
Building Construction	120	Crane, Forklift, Generator, Backhoe, Welder
Paving	10	Paver, Roller, Paving Equipment
Architectural Coating	10	Air Compressor

Source: MIG, Inc. 2020

(A) Days refers to total active workdays in the construction phase, not calendar days.

(B) The typical equipment list does not reflect all equipment that would be used during the construction phase. Not all equipment would operate eight hours per day each workday.

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3 NOISE AND VIBRATION FUNDAMENTALS

3.1 DEFINING NOISE

"Sound" is a vibratory disturbance created by a moving or vibrating source and is capable of being detected. For example, airborne sound is the rapid fluctuation of air pressure above and below atmospheric pressure. "Noise" may be defined as unwanted sound that is typically construed as loud, unpleasant, unexpected, or undesired by a specific person or for a specific area.

3.1.1 SOUND PRODUCTION

Sound has three properties: frequency (or pitch), amplitude (or intensity or loudness), and duration. Pitch is the height or depth of a tone or sound and depends on the frequency of the vibrations by which it is produced. Sound frequency is expressed in terms of cycles per second, or Hertz (Hz). Humans generally hear sounds with frequencies between 20 and 20,000 Hz and perceive higher frequency sounds, or high pitch noise, as louder than low-frequency sound or sounds low in pitch. Sound intensity or loudness is a function of the amplitude of the pressure wave generated by a noise source combined with the reception characteristics of the human ear. Atmospheric factors and obstructions between the noise source and receptor also affect the loudness perceived by the receptor.

The frequency, amplitude, and duration of a sound all contribute to the effect on a listener, or receptor, and whether or not the receptor perceives the sound as "noisy" or annoying. Despite the ability to measure sound, human perceptibility is subjective, and the physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

3.1.2 MEASURING SOUND

Sound pressure levels are typically expressed on a logarithmic scale in terms of decibels (dB). A dB is a unit of measurement that indicates the relative amplitude (i.e., intensity or loudness) of a sound, with 0 dB corresponding roughly to the threshold of hearing for the healthy, unimpaired human ear. Since decibels are logarithmic units, an increase of 10 dBs represents a ten-fold increase in acoustic energy, while 20 dBs is 100 times more intense, 30 dBs is 1,000 times more intense, etc. In general, there is a relationship between the subjective noisiness or loudness of a sound and its intensity, with each 10 dB increase in sound level perceived as approximately a doubling of loudness. Due to the logarithmic basis, decibels cannot be directly added or subtracted together using common arithmetic operations:

$$50\ decibels + 50\ decibels\ \neq 100\ decibels$$

Instead, the combined sound level from two or more sources must be combined logarithmically. For example, if one noise source produces a sound power level of 50 dBA, two of the same sources would combine to produce 53 dB as shown below.

$$10 *\ 10\,log\left(10^{\left(\frac{50}{10}\right)} +\ 10^{\left(\frac{50}{10}\right)}\right) = 53\ decibels$$

In general, when one source is 10 dB higher than another source, the quieter source does not add to the sound levels produced by the louder source because the louder source contains ten times more sound energy than the quieter source.

3.1.3 CHARACTERIZING SOUND

Although humans generally can hear sounds with frequencies between 20 and 20,000 Hz most of the sound humans are normally exposed to do not consist of a single frequency, but rather a broad range of frequencies perceived differently by the human ear. In general, humans are most sensitive to the frequency range of 1,000–8,000 Hz and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. Instruments used to measure sound, therefore, include an electrical filter that enables the instrument's detectors to replicate human hearing. This filter known as the "A-weighting" or "A-weighted sound level" filters low and very high frequencies, giving greater weight to the frequencies of sound to which the human ear is typically most sensitive. Most environmental measurements are reported in dBA, meaning decibels on the A-scale. Most environmental measurements are reported in dBA, meaning decibels on the A-scale. A list of common noise sources and their associated A-weighted noise level is provided in Table 3-1. Other weightings include the B-, C-, and D-weighting, but these scales are not commonly used for environmental noise because human annoyance correlates well with the A-weighting and these weighting scales are not incorporated in typical environmental noise descriptors

Sound levels are usually not steady and vary over time. Therefore, a method for describing either the average character of the sound or the statistical behavior of the variations over a period of time is necessary. The continuous equivalent noise level (L_{eq}) descriptor is used to represent the average character of the sound over a period of time. The L_{eq} represents the level of steady-state noise that would have the same acoustical energy as the sum of the time-varying noise measured over a given time period. L_{eq} is useful for evaluating shorter time periods over the course of a day. The most common L_{eq} averaging period is hourly, but L_{eq} can describe any series of noise events over a given time period.

Variable noise levels are the values that are exceeded for a portion of the measured time period. Thus, the L_{01}, L_{05}, L_{25}, L_{50}, and L_{90} descriptors represent the sound levels exceeded 1%, 5%, 25%, 50%, and 90% of the time the measurement was performed. The L_{90} value usually corresponds to the background sound level at the measurement location.

When considering environmental noise, it is important to account for the different responses people have to daytime and nighttime noise. In general, during the nighttime, background noise levels are generally quieter than during the daytime but also more noticeable because household noise decreases as people begin to retire and sleep. Accordingly, a variety of methods for measuring noise have been developed. The California General Plan Guidelines for Noise Elements identifies the following common metrics for measuring noise (OPR 2017):

- L_{dn} or DNL (Day-Night Average Level): The average equivalent A-weighted sound level during a 24-hour day, divided into a 15-hour daytime period (7 AM to 10 PM) and a 9-hour nighttime period (10:00 PM to 7:00 AM). A 10 dB "penalty" is added to measure nighttime noise levels when calculating the 24-hour average noise level. For example, a 45-dBA nighttime sound level (e.g., at 2:00 AM) would contribute as much to the overall day-night average as a 55-dBA daytime sound level (e.g., at 7:00 AM).
- CNEL (Community Noise Equivalent Level): The CNEL descriptor is similar to DNL, except that it includes an additional 5 dBA penalty for noise events that occur during the evening time period (7:00 PM to 10:00 PM). For example, a 45-dBA evening sound level (e.g., at 8:00 PM) would contribute as much to the overall day-night average as a 50-dBA daytime sound level (e.g. at 8:00 AM).

Table 3-1: Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet flyover at 1,000 feet	105	
	100	
Gas lawn mower at 3 feet	95	
	90	
Diesel truck at 50 feet at 50 mph	85	Food blender at 3 feet
	80	Garbage disposal at 3 feet
Noise urban area, daytime	75	
Gas lawnmower, 100 feet	70	Vacuum cleaner at 10 feet
Commercial area	65	Normal speech at 3 feet
Heavy traffic at 300 feet	60	
	55	Large business office
Quiet urban daytime	50	Dishwasher next room
	45	
Quiet urban nighttime	40	Theater, large conference room
Quiet suburban nighttime	35	
	30	Library
Quite rural nighttime	25	Bedroom at night
	20	
	15	Broadcast/recording studio
	10	
	5	
Typical threshold of human hearing	0	Typical threshold of human hearing

Source: Caltrans 2013

The artificial penalties imposed during DNL and CNEL calculations are intended to account for a receptor's increased sensitivity to noise levels during quieter nighttime periods. As such, the DNL and CNEL metrics are usually applied when describing longer-term ambient noise levels because they account for all noise sources over an extended period of time and account for the heightened sensitivity of people to noise during the night. In contrast, the L_{eq} metric is usually applied to shorter reference periods where sensitivity is presumed to remain generally the same.

Federal and State agencies have established noise and land use compatibility guidelines that use averaging approaches to noise measurement. The State Department of Aeronautics and the California Commission on Housing and Community Development have adopted the CNEL for evaluating community noise exposure levels.

3.1.4 SOUND PROPAGATION

The energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out and travels away from the noise generating source. The strength of the source is often characterized by its "sound power level." Sound power level is independent of the distance a receiver is from the source and is a property of the source alone. Knowing the sound power level of an idealized source and its distance from a receiver, sound pressure level at the receiver point can be calculated based on geometrical spreading and attenuation (noise reduction) as a result of distance and environmental factors, such as ground cover (asphalt vs. grass or trees), atmospheric absorption, and shielding by terrain or barriers.

For an ideal "point" source of sound, such as mechanical equipment, the energy contained in a sound pressure wave dissipates and is absorbed by the surrounding environment as the sound wave spreads out in a spherical pattern and travels away from the point source. Theoretically, the sound level attenuates, or decreases, by 6 dB with each doubling of distance from the point source. In contrast, a "line" source of sound, such as roadway traffic or a rail line, spreads out in a cylindrical pattern and theoretically attenuates by 3 dB with each doubling of distance from the line source; however, the sound level at a receptor location can be modified further by additional factors. The first is the presence of a reflecting plane such as the ground. For hard ground, a reflecting plane typically increases A-weighted sound pressure levels by 3 dB. If some of the reflected sound is absorbed by the surface, this increase will be less than 3 dB. Other factors affecting the predicted sound pressure level are often lumped together into a term called "excess attenuation." Excess attenuation is the amount of additional attenuation that occurs beyond simple spherical or cylindrical spreading. For sound propagation outdoors, there is almost always excess attenuation, producing lower levels than what would be predicted by spherical or cylindrical spreading. Some examples include attenuation by sound absorption in air; attenuation by barriers; attenuation by rain, sleet, snow, or fog; attenuation by grass, shrubbery, and trees; and attenuation from shadow zones created by wind and temperature gradients. Under certain meteorological conditions, like fog and low-level clouds, some of these excess attenuation mechanisms are reduced or eliminated due to noise reflection.

3.1.5 NOISE EFFECTS ON HUMANS

Noise effects on human beings are generally categorized as:

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

Most environmental noise levels produce subjective or interference effects; physiological effects are usually limited to high noise environments such as industrial manufacturing facilities or airports.

Predicting the subjective and interference effects of noise is difficult due to the wide variation in individual thresholds of annoyance and past experiences with noise; however, an accepted method to determine a person's subjective reaction to a new noise source is to compare it the existing environment without the noise source, or the "ambient" noise environment. In general, the more a new noise source exceeds the ambient noise level, the more likely it is to be considered annoying and to disturb normal activities.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dB changes in sound levels when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000–8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dB are generally not perceptible. However, it is widely accepted that people can begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness that would almost certainly cause an adverse response from community noise receptors.

When exposed to high noise levels, humans may suffer hearing damage. Sustained exposure to high noise levels (e.g., 90 dBs for hours at a time) can cause gradual hearing loss, which is usually temporary, whereas sudden exposure to a very high noise level (e.g., 130 to 140 dBs) can cause sudden and permanent hearing loss. In addition to hearing loss, noise can cause stress in humans and may contribute to stress-related diseases, such as hypertension, anxiety, and heart disease (Caltrans, 2013).

3.1.6 GROUND-BORNE VIBRATION AND NOISE

Vibration is the movement of particles within a medium or object such as the ground or a building. Vibration may be caused by natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or humans (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources are usually characterized as continuous, such as factory machinery, or transient, such as explosions.

As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency; however, unlike airborne sound, there is no standard way of measuring and reporting amplitude. Vibration amplitudes can be expressed in terms of velocity (inches per second) or discussed in dB units to compress the range of numbers required to describe vibration. Vibration impacts to buildings are usually discussed in terms of peak particle velocity (PPV) in inches per second (in/sec). PPV represents the maximum instantaneous positive or negative peak of a vibration signal and is most appropriate for evaluating the potential for building damage. Vibration can impact people, structures, and sensitive equipment. The primary concern related to vibration and people is the potential to annoy those working and residing in the area. Vibration with high enough amplitudes can damage structures (such as crack plaster or destroy windows). Ground-borne vibration can also disrupt the use of sensitive medical and scientific instruments, such as electron microscopes. Potential human annoyance associated with ground-borne velocity is typically assessed using velocity decibel (VdB) notation.

Ground-borne noise is noise generated by vibrating building surfaces such as floors, walls, and ceilings that radiate noise inside buildings subjected to an external source of vibration. The vibration level, the acoustic radiation of the vibrating element, and the acoustical absorption of the room are all factors that affect potential ground-borne noise generation.

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4 ENVIRONMENTAL SETTING AND REGULATORY FRAMEWORK

This chapter provides information on the environmental and regulatory noise setting of the proposed Project.

4.1 PROJECT LOCATION AND SITE DESCRIPTION

The proposed Project would be located on a developed but generally vacant residential parcel at 529 Cutter Way in the western part of the City of Covina. Refer to Section 2.1 for a description of the Project site and its surroundings.

4.2 EXISTING NOISE ENVIRONMENT

The City's General Plan Noise Element describes that Covina has a relatively high percentage of commercial and industrial areas that contribute to the City's strong, diverse economic base (City of Covina, 2000). These lands uses can be located near residential areas, which makes certain neighborhoods susceptible to noise problems. Chapter 2 of the Noise Element identifies the following major noise sources in the City: San Bernardino Freeway, primary and secondary arterial streets (as classified under previous General Plan), the Metrolink Commuter Rail Line, aircraft overflights, commercial and industrial activities, and various stationary sources. The General Plan specifically identifies that San Bernardino Road is associated with higher traffic volumes and traffic-related noise levels, and that noise complaints from residential land uses along the Metrolink line have been reported. The segment of San Bernardino Road near Cutter Way is also a City-designated truck route (City of Covina, 2020, Section 10.44).

The proposed Project is located at the intersection of Cutter Way and San Bernardino Road, in an area of mixed industrial, commercial, residential, and institutional land uses. San Bernardino Road is generally considered a secondary highway or collector roadway consisting of four traffic lanes (Linscott, Law, and Greenspan, 2020a). Traffic noise modeling conducted for the General Plan Noise Element indicated that 2010 traffic noise levels would be above 65 DNL within 165 feet of San Bernardino Road (City of Covina, 2000, Table 2). These future traffic volumes would generate noise levels of 65 CNEL at distance of 220 and 108 feet from the road centerline, respectively.

4.2.1 AMBIENT NOISE LEVELS AT PROJECT SITE

MIG conducted ambient noise level monitoring at and near the proposed Project site from approximately 9:15 AM on Wednesday, July 29, 2020 to approximately 9:15 AM on Thursday, July 30, 2020 (see Appendix A).[2] The ambient noise levels were digitally measured and stored using two (2) Larson Davis SoundTrack LxT sound level meters that meet American National Standards Institute requirements for a Type 1 integrating sound level meter. Each sound meter was calibrated immediately before and after the monitoring period using a reference one kilohertz (1kH) check frequency and 114 dB sound pressure level and found to be operating within normal parameters for sensitivity. Measurements were continuously collected over the sample period in 1-minute intervals. This interval was selected to capture short-term noise events and increases in noise levels above typical background conditions. Weather conditions during the monitoring were generally clear and sunny during the daytime. Temperatures ranged from the low 60's (overnight) to

[2] State-wide shelter in place orders due to the COVID-19 pandemic have generally reduced commercial activities and vehicle traffic on major roadways; however, as documented in this Report, the ambient noise environment measured at the Project site is not considered to be affected by these orders by more than 1 dBA..

the high 90's (in the later afternoon). Winds were generally light and variable and ranged from calm conditions during the nighttime and morning to approximately 5- to 10-miles per hour during later afternoon periods.

The ambient noise monitoring conducted for this Report included one (1) long-term (LT) measurements and one (1) short-term (ST) measurement at locations selected to:

- Provide direct observations and measurements of existing noise sources at and in the vicinity of the proposed Project;
- Determine typical ambient noise levels at and in the vicinity of the proposed Project; and
- Evaluate potential Project noise levels at nearby sensitive receptors (see Section 4.2.2).

The ambient noise monitoring locations are described below and shown on Figure 4-1: Ambient Noise Monitoring Locations.

- Location LT-1 was near the southern boundary Project site, approximately 50 feet from the centerline of San Bernardino Road. Ambient noise levels at this location were measured from approximately 9:15 AM on Wednesday, July 29th to 9:15 AM on Thursday, July 30th. The ambient noise levels measured at location LT-1 are considered representative of the noise levels at the southern part of the site and its surroundings.
- Location ST-1 was near the northeastern corner of the Project site, approximately 385 feet from the centerline of San Bernardino Road. Ambient noise levels at this location were measured from 9:30 AM to 11:30 AM on Wednesday, July 29th. The ambient noise levels measured at location ST-1 are considered representative of existing noise levels associated with the adjacent M-1 lands to the north and west of the Project site.

Based on observations made during the ambient noise monitoring, the existing noise environment in the project vicinity consists primarily of vehicle traffic on San Bernardino Road, as well as adjacent commercial/industrial activities. Table 4-1 and Table 4-2 summarize the results of the ambient noise monitoring conducted for this Report. Refer to Appendix A for detailed ambient noise monitoring results.

Figure 4-1: Ambient Noise Monitoring Locations

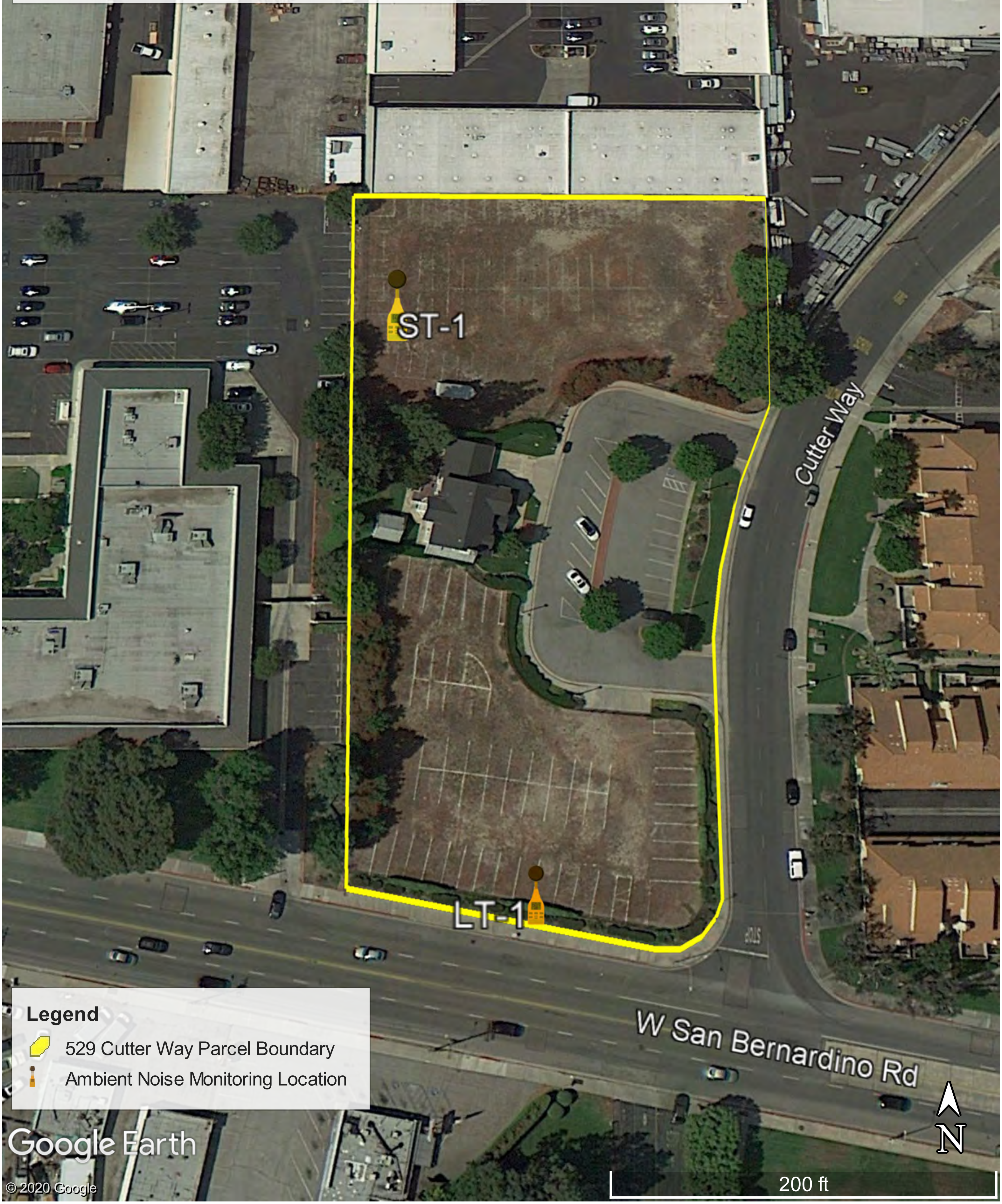

Table 4-1: Summary of Measured Long-Term Ambient Noise Levels at Project Site (dBA)							
Day / Site	Duration	L_{min}	L_{max}	Measured L_{eq} Range (dBA)(A)			DNL
				Daytime (7 AM to 7 PM)	Evening (7 PM to 10 PM)	Nighttime (10 PM to 7 AM	
Wednesday, July 29 to Thursday, July 30, 2020							
LT-1	24 hours	39.0	92.3	64.5 - 67.5	61.5 - 64.4	53.7 - 63.3	67.1
Source: MIG (See Appendix A) (A) Values are the lowest and highest measured values during the listed time period.							

Table 4-2: Summary of Measured Short-Term Ambient Noise Levels at and near Project Site (dBA)									
Day / Site	Duration	L_{min}	L_{max}	Measured Noise Level (dBA)					
				L_{eq}	$L_{1.6}$	$L_{8.3}$	L_{25}	L_{50}	L_{90}
Wednesday, July 29, 2020(A)									
LT-1	2-hours	42.1	86.4	64.8	73.5	69.4	65.6	60.6	51.5
ST-1	2-hours	47.1	64.0	55.5	58.0	57.2	56.3	55.3	53.5
Source: MIG (See Appendix A) (A) Measurements occurred from 9:30 to 11:30 AM.									

As shown in Table 4-1, the measured ambient noise levels at the Project site are moderate to high in magnitude near the southern part of the site (67.1 DNL). Based on observations during the monitoring, vehicle traffic on San Bernardino Road and Cutter Way are the predominant noise source at and near the Project site, and the ambient noise level measured at the site is consistent with traffic noise modeling conducted for the City's General Plan (see Section 4.2).

As shown in Table 4-2, measured ambient noise levels on the interior of the site were approximately nine (9) dBs lower than measurements near San Bernardino Road. This is because noise monitoring location ST-1 was farther away from San Bernardino Road than location LT-1. In addition, location ST-1 was behind the existing site residence. The monitoring also indicates that minimum and maximum noise levels at locations LT-1 and ST-1 occurred at different times, indicating that noise generating activities in one area of the site (i.e., vehicle traffic on San Bernardino Road) may not influence other areas (due to distance, shielding, etc.).

Based on the above, the ambient noise levels at the Project site are assumed to be approximately 67.1 DNL at the southern property line, 60 DNL in the center of the site (approximately 350 feet from the center line of San Bernardino Road), and 55 DNL in the northern part of the site.

<u>Metrolink Noise and Vibration Levels</u>

The proposed Project site is located approximately 690 feet south of the Metrolink rail corridor. Rail-related noise comes from several potential sources. A locomotive engine's propulsion system generates noise from mechanical and electrical systems. The interaction of wheels with the track produces various noises, particularly where the wheel encounters a flaw or defect along smooth wheel / track surfaces. Finally, train horn or bells and railroad crossing warning devices generate short but loud alerts pursuant to federal safety regulations.

The Metrolink San Bernardino Line is a commuter rail line with eastbound and westbound service at the Covina Station (approximately 1.8 miles east of the Project site) every 19 to 37 minutes Monday to Friday, with peak hourly weekday activity occurring during the AM and PM commuter periods. During these periods, approximately four Metrolink trains can pull into the station per hour. There are approximately 38 Metrolink trains that pull into the station on a weekday basis, 20 trains during Saturday service, and 14 trains during Sunday service. Weekday service runs for approximately 18 hours per day and weekend service for approximately 12-17 hours per day. The Metrolink rail line crosses Lark Ellen Avenue and Vincent Avenue at grade, with guards and warning bells provided for safety; these crossings are located more than 1,200 feet away from the Project site. In addition to the Metrolink trains, freight trains also use the rail corridor.

The City's General Plan identifies that noise levels associated with the Metrolink Rail corridor are less than 60 DNL at a distance 350 feet from the rail corridor. Although rail corridor noise is audible at the Project site, the rail corridor is more than 650 feet north of the Project site, with numerous buildings located between the rail corridor and the site. The rail corridor, therefore, does not substantially contribute to the measurable ambient noise environmental at the Project site (less than 50 DNL). The Metrolink does not generate noticeable vibration levels at the Project site due to the distance between the rail corridor and the site.

4.2.1.1 Discussion on the Influence of Shelter in Place Orders on Ambient Noise Monitoring

As shown in Table 4-1 and Table 4-2, the ambient noise level measured at and near the proposed Project site (67.1 DNL at a distance of 50 feet from the centerline of San Bernardino Road) are generally consistent with traffic noise modeling estimates contained in the City's General Plan (see Section 4.2.1); however, the General Plan Noise Element and associated traffic noise modeling were conducted in 2000 for future year conditions.

The ambient noise monitoring conducted for this Project measured noise levels based on actual traffic volumes on San Bernardino Road and Cutter Way. The supplemental traffic analysis prepared for the Project indicates October 2020 traffic volumes on Cutter Way and San Bernardino Road were lower than 2019 counts because of school and business closures due to the COVID-19 pandemic (Linscott, Law & Greenspan, 2020b). Accordingly, State public health orders limiting gatherings, school openings, non-essential travel, and other activities intended to control the spread of COVID-19 are assumed to have artificially reduced measured ambient noise levels collected for this Report (LT-1 and ST-1). The difference in 2019/2020 traffic volumes was approximately 31% less for San Bernardino Road and 34% less for Cutter Way.

The California Department of Transportation (Caltrans) considers a doubling of total traffic volume to result in a three (3) dBA increase in traffic-related noise levels (Caltrans 2013). An approximately 33% increase in traffic volumes would, therefore, result in an approximately change in measured noise levels of 1.0 dBA, assuming the vehicle fleet mix does not change substantially. Therefore, for the purposes of this Report, a 1.0 dBA adjustment is applied to measured ambient noise levels within approximately 350 feet of the centerline of San Bernardino Road. This would increase ambient noise levels at the Project site from 67.1 DNL to 68.1 DNL at the southern property line and from 60 DNL to 61 DNL in the center of the site.[3]

[3] As identified in the supplemental traffic analysis, daily traffic volumes on Cutter Way were less than 600 vehicles in 2019 and 2020. This traffic volume level is not considered to be a substantial contributor to the ambient noise environment (i.e., adjacent industrial operations and traffic on San Bernardino Road are considered to be primary drivers to the overall ambient noise environment at and in the vicinity of the Project site.

4.2.2 NOISE SENSITIVE RECEPTORS

Noise sensitive land uses and receptors are buildings or areas where unwanted sound or increases in sound may have an adverse effect on people or land uses. The City's General Plan identifies that residences, schools, libraries, parks/recreation areas, hospitals/medical facilities, nursing homes, and churches are examples of noise sensitive land uses (City of Covina 2019a). The noise sensitive receptors near the proposed Project site include:

- The multi-family residential land use east of the Project site, across Cutter Way (approximately 50 feet from the Project site boundary); and
- Las Palmas Middle School, located east of the Project site, across Cutter Way (approximately 120 feet from the Project site boundary).

4.3 FEDERAL, STATE, AND LOCAL NOISE REGULATIONS

4.3.1 FEDERAL NOISE AND VIBRATION REGULATIONS

There are no federal noise and vibration regulations that directly apply to the proposed Project.

4.3.2 STATE NOISE AND VIBRATION REGULATIONS

4.3.2.1 California Building Standards Code

The California Building Standards Code is contained in Title 24 of the California Code of Regulations and consists of 11 different parts that set various construction and building requirements. Part 2, California Building Code, Section 1207, Sound Transmission, establishes sound transmission standards for interior walls, partitions, and floor/ceiling assemblies. Specifically, Section 1207.4 establishes that interior noise levels attributable to exterior noise sources shall not exceed 45 dBA DNL or CNEL (as set by the local General Plan) in any habitable room.

The California Green Building Standards (CALGreen) Code is Part 11 to the California Building Standards Code. Chapter 5, Nonresidential Mandatory Standards, Section, establishes additional standards for interior noise levels:

- Section 5.507.4.1.1 sets forth that buildings exposed to a noise level of 65 dB L_{eq} (1-hour) during any hour of operation shall have exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composting sound transmission class (STC) rating of at least 45 (or an outdoor indoor transmission class (OITC) of 35, with exterior windows of a minimum STC of 40.
- Section 5.507.4.2 sets forth that wall and roof assemblies for buildings exposed to a 65 dBA L_{eq} pursuant to Section 5.507.4.1.1, shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed 50 dBA L_{eq} in occupied areas during any hour of operation. This requirement shall be documented by preparing an acoustical analysis documenting interior sound levels prepared by personnel approved by the architect or engineer of record.

4.3.3 CALIFORNIA DEPARTMENT OF TRANSPORTATION

Caltrans' Transportation and Construction Vibration Guidance Manual provides a summary of vibration human responses and structural damage criteria that have been reported by researchers, organizations, and governmental agencies (Caltrans, 2020). These thresholds are summarized in Table 4-3 and Table 4-4.

Table 4-3: Vibration Threshold Criteria for Building Damage		
Structural Integrity	Maximum PPV (in/sec)	
	Transient	Continuous
Historic and some older buildings	0.50	0.12 to 0.2
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial and commercial structures	2.00	0.50
Source: Caltrans,2020		

Table 4-4: Vibration Threshold Criteria for Human Response		
Human Response	Maximum PPV (in/sec)	
	Transient	Continuous
Slightly perceptible	0.035	0.012
Distinctly perceptible	0.24	0.035
Strongly perceptible	0.90	0.10
Severe/Disturbing	2.0	0.7 (at 2 Hz) to 0.17 (at 20 Hz)
Very disturbing	--	3.6 (at 2 Hz) to 0.4 (at 20 Hz)
Source: Caltrans, 2020		

4.3.4 LOCAL NOISE REGULATIONS

4.3.4.1 City of Covina Municipal Code

The City's existing Municipal Code regulates unnecessary, excessive, and annoying noise and vibration generated by certain sources of noise (City of Covina, 2020b). The City's code is intended to maintain quiet residential areas that exhibit low noise levels, and to implement programs that reduce noise in residential areas where noise levels are above acceptable values.

Municipal Code Title 9, Public Peace, Morals, and Safety, Chapter 9.40, Noise, includes the following standards related to noise:

- Section 9.40.030, Loud Party, provides an example of prohibited noise. It states: It is unlawful for any person to make, continue or cause to be made or continued any unnecessary, loud or unusual noise which is a threat to the public peace, health, safety or general welfare of others due to a party, gathering or unruly assemblage at a premises.
- Section 9.40.040, Exterior Noise Level Limits, stipulates the allowable noise level or sound level referred to in Section 9.40.030 shall be the higher of the actual measured ambient level or the following sound level limits:
  - Residential Estate or Agricultural: 50 dBA between 7:00 AM and 10:00 PM and 40 dBA between 10:00 PM and 7:00 AM

- Residential Low Density: 55 dBA between 7:00 AM and 10:00 PM and 45 dBA between 10:00 PM and 7:00 AM
- Residential Medium- and High-Density: 60 dBA between 7:00 AM and 10:00 PM and 50 dBA between 10:00 PM and 7:00 AM
- Commercial: 65 dBA between 7:00 AM and 10:00 PM and 55 dBA between 10:00 PM and 7:00 AM
- Industrial: 70 dBA between 7:00 AM and 10:00 PM and 60 dBA between 10:00 PM and 7:00 AM

- Section 9.40.050, Time Duration Correction Factors, sets forth that the following time duration allowances apply to the noise level limits listed in Section 9.40.040:
  - The noise standard plus five (5) dBA for a cumulative period of more than fifteen (15) minutes in any hour (L_{25})
  - The noise standard plus ten (10) dBA for a cumulative period of more than five (5) minutes in any hour (L_{08})
  - The noise standard plus fifteen (15) dBA for a cumulative period of more than one (1) minute in any hour (L_{02})
  - The noise standard plus twenty (20) dBA for any period (L_{max})
- Section 9.40.060, Interior Noise Level Limits, provides that the interior noise standards for residential dwellings, as presented, shall apply to all dwellings with windows in their closed configuration unless the unit does not have adequate heating, air conditioning and mechanical ventilation
  - Residential (All Densities): 35 dBA L_{eq} (1-hr) between 10:00 PM and 7:00 AM and 45 dBA L_{eq} (1-hr)$_r$ between 7:00 AM and 10:00 PM

  Section 9.40.060 further specifies that the above standards shall not be exceeded by 5 dBA Leq for a cumulative period of more than one minute or more in any hour, or 10 dBA or the maximum measured ambient for any period of time. Subsection F states all newly constructed residential dwellings located in areas that are exposed to ambient noise levels in excess of 60 dBA DNL be designed and built so all habitable rooms comply with these standards.
- Section 9.40.090, Controlled Hours of Operation, states that it is unlawful for any period to operate, permit, use, or cause to operate any of the following other than between the hours of 7: 00 AM and 8:00 PM of any one day: powered model vehicles; loading and unloading vehicles such as garbage trucks, forklifts, or cranes in a residential area or within 500 feet of a residence; domestic power tools; law equipment, including, but not limited to: lawn mowers, edgers, cultivators, chainsaws, and leaf blowers in any residential area or within 500 feet of any residence; and equipment associated with the repair and maintenance of any real property.
- Section 9.40.100, Noise Sensitive Areas, sets forth it is unlawful for any person to create, maintain, or cause to be created any noise or sound near any school, outdoor recreation area, library, hospital, nursing home, or church, while any of these facilities are in use, which exceeds the residential low density land use category standards listed in Municipal Code Section 9.40.040, or which unreasonably interferes with the working of such installations, provided conspicuous signs are displayed indicating the presence of such installations.

- Section 9.40.110, Construction, states that it is unlawful to operate equipment or perform outside construction or repair work within 500 feet of a residential land use between the hours of 8:00 PM of any one day and 7:00 AM of the next day, or on Sundays or public holidays such that a reasonable person of normal sensitivity residing in the area is caused discomfort or annoyance, unless a permit has been obtained in advance.
- Section 9.40.120, Loud and Unusual Noises, declares the following acts to be loud, disturbing, and unnecessary noises:
    - Standing Motor Vehicles (Section 9.40.120.D). The operation of any motor vehicle with a gross vehicle weight rating in excess of 10,000 pounds, or of any auxiliary equipment attached to such a vehicle, for a period longer than 15 minutes in any hour between the hours of 7:00 PM of one day and 7:00 AM the next day while the vehicle is stationary and within 150 feet of a residential area or designated noise sensitive area.
    - Mechanical and Electrical Equipment (Section 9.40.120.I). Air conditioners, pumps, transformers, antennas, heating and ventilation systems, and other mechanical and electrical equipment shall be located and operated in a manner that does not disturb adjacent uses and activities. The noise level from such equipment shall not exceed the standards listed in Municipal Code Section 9.40.030 through 9.40.060.
    - Vibration (Section 9.40.120.J). The operation of any device that creates a vibration that is above the vibration perception threshold of an average individual at or beyond the property boundary of the source if on a private property or at 150 feet from the source if on a public space or public right-of-way. Per Section 9.40.020.30 the threshold of perception is considered by the City to be 0.01 in/sec.
- Section 9.40.130, Truck Routes, sets forth that established truck routes shall be followed to prevent unnecessary noise and vibration on residential local and collector streets.
- Section 9.40.140, Exceptions, specifies that the following noise sources are specifically excluded from City's Municipal Code standards: lawn equipment, including lawn mowers, edgers, and leaf blowers in any residential area; noise sources associated with maintenance of real property; city or school-approved activities conducted on public parks, public playgrounds, and public or private school grounds; noise associated with the operation of garbage trucks and street sweepers;

4.3.4.2 City of Covina General Plan

The City of Covina Noise Element includes several noise control programs designed to protect the City's citizens from the adverse effects of uncontrolled noise by controlling noise at its source, as well as attenuating noise between the source and the receiver. The General Plan includes the following noise control programs relevant to the proposed Project (City of Covina, 2000):

<u>Policy Area 1: Transportation Noise Sources</u>

- Policy 1.1: Examine the noise environment of proposed residential or other noise-sensitive uses located within all 60 DNL noise contours to ensure compatibility and, pertaining to residential activities, adherence to applicable State noise insulation standards.
- Policy 1.2: Attempt to mitigate or eliminate the possible noise problems of proposed residential or other noise-sensitive uses located within all 65 DNL noise contours to ensure compatibility and, pertaining to residential activities, adherence to applicable State noise insulation standards.

- Policy 1.3: Consider "noise-sensitive uses" to include, but not be limited to, all residential housing types, public and private primary and secondary schools, libraries, parks/recreation areas, hospitals/medical facilities, nursing homes, and churches.
- Policy 1.4: Consider establishing acceptable limits of noise levels for various land uses throughout the community, in accordance with State guidelines, as a means of determining noise-compatible land uses.
- Policy 1.6: Require noise-reduction techniques and features in site planning, architectural design, project landscaping, building materials, and/or construction, where necessary or required by law.
- Policy 1.14: Require that new or expanded developments minimize the noise impacts of trips that they generate on residential neighborhoods by controlling the location of driveways and parking.

Policy Area 2: Commercial and Industrial Noise Sources

- Policy 2.1: Consider establishing acceptable limits of noise levels for various land uses throughout the community, in accordance with State guidelines, as a means of determining noise-compatible land uses.
- Policy 2.2: Discourage the location of noise-sensitive land uses in noise environments.
- Policy 2.3: Consider "noise-sensitive uses" to include, but not be limited to, all residential housing types, public and private primary and secondary schools, libraries, parks/recreation areas, hospitals/medical facilities, nursing homes, and churches.
- Policy 2.4: Require noise-reduction techniques and features in site planning, architectural design, project landscaping, building materials, and/or construction, where necessary or required by law.
- Policy 2.13: Ensure that condominium/townhouse and apartment structures are constructed soundly to prevent adverse noise transmission onto adjacent dwelling units.
- Policy 2.19: Continue enforcing the Covina Noise Ordinance and maintaining coordination among City departments/ divisions involved in noise abatement.
- Policy 2.22: Evaluate and make recommendations on potential noise impacts of permanent developments and uses through environmental or noise-related studies or analyses and, for minor work, by observing project plans as well as the potential noise impacts of temporary activities and special events.
- Policy 2.24: Require that commercial uses developed as part of a mixed use project (e.g., residential dwelling units situated above commercial businesses) not be noise-intensive, except where determined to be appropriate through appropriate features and mitigation.
- Policy 2.25: Require that mixed use structures be designed to prevent the transfer of noise and vibration from the commercial activity to the residential use.
- Policy 2.26: Require that common walls and doors between commercial and residential uses be constructed so as to minimize the transmission of noise and vibration.

- Policy 2.27: Orient mixed use residential units away from major noise sources, to the greatest degree possible.
- Policy 2.28: Locate balconies and operable windows of residential units in mixed use projects away from major noise sources, to the greatest degree possible.

Policy Area 3: Miscellaneous Stationary Noise Sources

- Policy 3.2: Encourage the installation of quiet residential air conditioners and outside appliances and devices, with proper installation procedures.

Policy Area 4: Construction Noise Sources and General Matters

- Policy 4.1: Continue implementing the Covina Noise Ordinance to regulate the hours of operation and excessive noise associated with on-site construction activities, particularly activities occurring in or near residential uses, permitting exceptions only under special circumstances.
- Policy 4.2: Where necessary, require the construction of barriers to shield noise-sensitive uses from intrusive, construction-related noise.
- Policy 4.3: Require that construction activities incorporate feasible and practical techniques, measures, and procedures that minimize the noise impacts on all adjacent uses.

Policies 1.4 and 2.1 indicate the City will consider adopting acceptable limits of noise levels for various land uses throughout the community, in accordance with State guidelines. To date, the City has not adopted the guidelines into its General Plan or Zoning Code; however, the General Plan Noise Element does describe 60 and 65 DNL noise contour zones as follows (City of Covina, 2000, pg. F-8):

- 60 DNL: The 60 DNL contour defines the Noise Study Zone, where, in recognition of the need to provide acceptable habitation environments, State law requires noise insulation of new multiple-family dwelling units. Moreover, the City may also wish to evaluate other proposed sensitive uses within this area (such as hospitals, primary and secondary schools, and churches) on a project-by-project basis to ensure noise level acceptability. It is noted that some sites may already be sufficiently buffered by existing walls, landscaping, and/or berms to the extent that no further sound analyses are necessary.
- 65 DNL: The 65 DNL counter delineates the Noise Mitigation Zone. Within this contour, new or expanded noise-sensitive developments should be permitted only if appropriate mitigation measures, such as barriers or additional sound insulation, are included and City and/or State noise standards are achieved. In some instances, it may be possible to show that current walls, landscaping, berms, and/or screening exist such that desired mitigation is already in place.

For information purposes, the most recent version of the State's recommended land use compatibility guidelines is presented in Table 4-5 (OPR 2017).

<table>
<tr><th colspan="6">Table 4-5: General Plan Land Use Compatibility Guidelines</th></tr>
<tr><th rowspan="2">Land Use Category</th><th colspan="4">Community Noise Equivalent Level (in dBA, DNL or CNEL)</th></tr>
<tr><th>Normally Acceptable</th><th>Conditionally Acceptable</th><th>Normally Unacceptable</th><th>Clearly Unacceptable</th></tr>
<tr><td>Residential – Low Density Single Family, Duplex, Mobile homes</td><td>50-60</td><td>55-70</td><td>70-75</td><td>75-85</td></tr>
<tr><td>Residential – Multi Family</td><td>50-65</td><td>60-70</td><td>70-75</td><td>70-85</td></tr>
<tr><td>Transient Lodging – Motels, Hotels</td><td>50-65</td><td>60-70</td><td>70-80</td><td>80-85</td></tr>
<tr><td>Schools, Libraries, Churches, Hospitals, Nursing Homes</td><td>50-70</td><td>60-70</td><td>70-80</td><td>80-85</td></tr>
<tr><td>Auditoriums, Concert Halls, Amphitheaters</td><td>--</td><td>50-70</td><td>--</td><td>65-85</td></tr>
<tr><td>Sports Arenas, Outdoor Spectator Sports</td><td>--</td><td>50-75</td><td>--</td><td>70-85</td></tr>
<tr><td>Playground, Neighborhood Parks</td><td>50-70</td><td>--</td><td>67.5-77.5</td><td>72.5-85</td></tr>
<tr><td>Golf Course, Riding Stables, Water Recreation, Cemeteries</td><td>50-70</td><td>--</td><td>70-80</td><td>80-85</td></tr>
<tr><td>Office Buildings, Business Commercial and Professional</td><td>50-70</td><td>67.5-77.5</td><td>75-85</td><td>--</td></tr>
<tr><td>Industrial, Manufacturing, Utilities, Agriculture</td><td>50-70</td><td>70-80</td><td>75-85</td><td>--</td></tr>
<tr><td colspan="6">Land Use Compatibility Interpretation:</td></tr>
<tr><td>Normally Acceptable:</td><td colspan="4">Specific land use is satisfactory based upon the assumption buildings involved are of normal conventional construction, without any special noise insulation requirements.</td></tr>
<tr><td>Conditionally Acceptable:</td><td colspan="4">New construction or development should be undertaken only after a detailed analyses of noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.</td></tr>
<tr><td>Normally Unacceptable:</td><td colspan="4">New construction or development should be generally discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.</td></tr>
<tr><td>Clearly Unacceptable:</td><td colspan="4">New development should generally not be undertaken.</td></tr>
<tr><td colspan="6">Source: OPR, 2017</td></tr>
</table>

4.3.4.1 City of West Covina Municipal Code and General Plan

As described in Section 2.1.1, the warehouse located south of the Project site, across San Bernardino Road, was previously used as a church and school; however, the site has recently undergone environmental review to change the site's use to a last-mile delivery station for Amazon Inc. (City of West Covina 2021). The proposed Project is located within the City of Covina and is not subject to West Covina standards pertaining to noise; however, for information purposes only, the West Covina Municipal Code does not generally limit construction activities to specific periods only (City of West Covina, 2020). In addition, the West Covina General Plan establishes 75 DNL and 80 DNL as the normally and conditionally acceptable noise level limit for industrial land uses (City of West Covina, 2016, Table 6-4).

5 NOISE IMPACT ANALYSIS

This chapter evaluates the potential for the proposed Project to result in direct and indirect changes to the existing noise and vibration environment in the vicinity of the Project area. Refer to Chapter 6 for information and disclosures about the existing noise and vibration environment's effect and overall compatibility on the proposed Project.

5.1 THRESHOLDS OF SIGNIFICANCE

In accordance with Appendix G of the State CEQA Guidelines, the proposed Project could result in potentially significant impacts related to noise and vibration if it would:

- Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of the standards established in:
    - The City of Covina Municipal Code Section 9.40.040 (Exterior Noise Level Limits), Section 9.40.050 (Time Duration Allowances), Section 9.40.060 (Interior Noise Level Limits), Section 9.40.100 (Noise Sensitive Areas), Section 9.40.110 (Construction), or Section 9.40.120 (Loud and Unusual Noises); or
    - The City of Covina Noise Element Policy Area 1, Transportation Noise Sources (Policy 1.2, 1.2, and Policy 1.6), Policy Area 2, Commercial and Industrial Noise Sources (Policy 2.1), or Policy Area 4, Construction Noise Sources and General Matters (Policy 3.1); or
- Generate excessive ground-borne vibration or ground-borne noise levels in excess of the standard established in City of Covina Municipal Code Section 9.40.140.J and Section 9.40.020.30; or
- Expose people residing or working in the Project area to excessive airport-related noise levels.

5.2 NOISE IMPACT ANALYSIS METHODOLOGY

The construction and operation of the proposed Project would generate noise and vibration. This section describes the Project's noise sources and the methodologies used to estimate potential Project noise and vibration levels.

5.2.1 CONSTRUCTION NOISE

As described in Section 2.3.6 and shown in Table 2-2, the proposed Project would generate construction noise from the following sources:

- Heavy equipment operations throughout the Project area. Some heavy equipment would consist of mobile equipment such as a loader, excavator, etc. that would move around work areas; other equipment would consist of stationary equipment (e.g., generators, air compressors) that would generally operate in a fixed location until work activities are complete. Heavy equipment generates noise from engine operation, mechanical systems and components (e.g., fans, gears, propulsion of wheels or tracks), and other sources such as back-up alarms. Mobile equipment generally operates at different loads, or power outputs, and produce higher or lower noise levels depending on the operating load. Stationary equipment generally operates at a steady power output that produces a constant noise level.

- Vehicle trips, including worker, vendor, and haul truck trips. These trips would occur on the roads that provide access to the Project site, primarily Cutter Way and San Bernardino Road.

Since Project-specific construction equipment information is not available at this time, potential construction-related noise impacts can only be evaluated based on the typical construction activities associated with a multi-family residential development project. Table 5-1 presents the estimated, worst-case noise levels that could occur from the operation of typical construction equipment used to develop a multi-family residential land use project. The equipment assumptions used in this Report are based on, and consistent with, the California Emissions Estimator Model (CalEEMod) construction phasing, equipment usage, and operating schedules used to evaluate the proposed Project's potential construction air quality impacts (MIG, 2021).

Table 5-1: Typical Construction Equipment Noise Levels (dBA)

Equipment	Reference Noise Level at 50 Feet (L_{max})(A)	Percent Usage Factor(B)	Predicted Noise Levels (L_{eq}) at Distance(C)						
			25 Feet	50 Feet	70 Feet	100 Feet	200 Feet	300 Feet	350 Feet
Backhoe	80	40	82	76	73	70	64	60	59
Bulldozer	85	40	87	81	78	75	69	65	64
Compact Roller	80	20	79	73	70	67	61	57	56
Concrete Mixer	85	40	87	81	78	75	69	65	64
Crane	85	16	83	77	74	71	65	61	60
Delivery Truck	85	40	87	81	78	75	69	65	64
Excavator	85	40	87	81	78	75	69	65	64
Generator	82	50	85	79	76	73	67	63	62
Paver	85	50	88	82	79	76	70	66	65
Pneumatic tools	85	50	88	82	79	76	70	66	65
Scraper	85	40	87	81	78	75	69	65	64
Tractor	84	40	86	80	77	74	68	64	63

Sources: Caltrans 2013, FHWA, 2010, and MIG (see Appendix B, Sheet 1).

(A) L_{max} noise levels based on manufacturer's specifications.

(B) Usage factor refers to the amount of time the equipment produces noise over the time period.

(C) Estimate does not account for any atmospheric or ground attenuation factors. Calculated noise levels based on Caltrans 2013: L_{eq} (hourly) = L_{max} at 50 feet – 20log (D/50) + 10log (UF), where: L_{max} = reference L_{max} from manufacturer or other source; D = distance of interest; UF = usage fraction or fraction of time period of interest equipment is in use.

5.2.2 OPERATIONAL NOISE

Once constructed, the proposed Project would generate noise from the following activities:

- On- and off-site automobile travel, including road travel, travel to parking areas, and other miscellaneous automobile noise sources such as doors closing and engine start-up and revving. On-site automobile travel is assumed to occur at low speeds (10 mph). The amount of gross peak hour (27 trips) and daily automobile trips (326) accessing the site is based on the

TIS prepared for the Project (Linscott, Law, and Greenspan 2020). The proposed CMU wall along the Project site's western property line is assumed to reduce on-site automobile related travel noise by 5 dBA.

- Heating, ventilation, and air conditioning (HVAC) units. Each dwelling unit would be equipped with heating and cooling systems; no centralized, rooftop mounted HVAC system is proposed. The noise level associated with individual heating and air conditioning units is generally based on the size of the unit (and area being conditioned) and whether the unit is equipped with variable or single-stage compressor system. Given the size of the proposed dwelling units (650 square feet to 1,200 square feet), individual HVAC systems are not anticipated to generate a noise level that exceeds exceed 45 dBA at a distance of 50 feet. Furthermore, as described in Section 4.3.4.1, any mechanical and electrical equipment installed in Project dwelling units must not disturb adjacent land uses and activities per Municipal Code Section 9.40.120.I.
- Other miscellaneous noise sources, such as resident use of courtyard areas and the community room, landscaping equipment, garbage collection services, and other miscellaneous site operations. As described in Section 4.3.4.1:
  - The loading and unloading of vehicles such as garbage trucks and the use of lawn equipment such as mowers, edgers, and leaf blowers is unlawful between the hours of 8:00 PM and 7:00 AM per Municipal Code Section 9.40.090.
  - Noise associated with lawn equipment, garbage trucks, and street sweeper is exempt from the City's Municipal Code noise standards per Municipal Code Section 9.40.140.

5.2.2.1 Operational Noise Level Estimates

Residential land uses are not considered to be a substantial noise generating land use type. As such, no specific operational noise levels were estimated for the Project.

5.2.3 GROUND-BORNE VIBRATION

Project construction activities would involve the use of large equipment capable of generating ground-borne vibrations. Since Project-specific construction equipment information is not available at this time, potential construction-related vibration impacts can only be evaluated based on the typical construction activities associated with a multi-family residential development project. Table 5-2 presents the estimated, worst-case vibration levels that could occur from the operation of the typical large and/or vibration-inducing construction equipment used to develop a multi-family residential land use project. The equipment assumptions used in this Report are based on, and consistent with, the CalEEMod construction phasing, equipment usage, and operating schedules used to evaluate the proposed Project's potential construction air quality impacts (MIG 2021).

Table 5-2: Potential Ground-borne Vibration Levels				
Equipment	PPV(A) (Inches/Second) at Distance			
	25 Feet	60 Feet	80 Feet	270 Feet
Vibratory Roller	0.210	0.080	0.058	0.015
Large Bulldozer	0.089	0.034	0.025	0.006
Small Bulldozer	0.030	0.011	0.008	0.002
Loaded Truck	0.076	0.029	0.021	0.006
Jackhammer	0.035	0.013	0.010	0.003

Source: MIG (See Appendix B, Sheet 2)

(A) Estimated PPV calculated as: PPV(D)=PPV(ref*(25/D^1.3 where PPV(D)= Estimated PPV at distance; PPVref= Reference PPV at 25 ft; D= Distance from equipment to receiver; and n= ground attenuation rate (1.1 for hard, compacted soils).

5.3 TEMPORARY CONSTRUCTION NOISE AND VIBRATION IMPACTS

During site preparation, grading, and paving activities construction equipment would operate throughout the site, moving closer to one property line and farther away from another; building construction and architectural coating activities would be concentrated in the center of the site where the proposed building and fueling canopy would be located. For these reasons, potential construction noise and vibration levels were estimated for worst-case equipment operations (70 feet to the adjacent multi-family residential exterior use patios to the east of the Project site) and average equipment operations based on the distance from the center of the site to sensitive exterior use areas.

5.3.1 TEMPORARY CONSTRUCTION NOISE LEVELS

A summary of predicted construction noise levels is presented in Table 5-3. As shown in Table 5-3, the worst-case L_{eq} and L_{max} noise levels associated with the operation of a dozer, excavator, or scraper, etc. are predicted to be approximately 82 and 85 dBA, respectively, at a distance of 50 feet from the equipment operating area. At an active construction site, it is not uncommon for two or more pieces of construction equipment to operate in the same area at the same time. The concurrent operation of two or more pieces of construction equipment would result in noise levels of 85 dBA L_{eq} and 88 dBA L_{max} at a distance of 50 feet from equipment operating areas.[4] These maximum noise levels could occur for a short period of time (approximately 1 month). As demolition (5 days) site preparation (3 days) and grading (15 days) is completed and building construction begins, work activities would occur further from property lines, require less heavy-duty equipment (e.g., grader), and generate lower construction noise levels. Typical construction activities would generate noise levels (65 – 72 dBA L_{eq}) at adjacent property lines that are similar to the existing ambient noise environment on San Bernardino Road (64.5 - 67.5 L_{eq} during the daytime).

The City's Municipal Code does not establish a numeric limit for temporary construction noise levels; however, Section 9.40.110 sets forth that construction activities may not occur within 500 feet of a residential land use between 8:00 PM any one day and 7:00 AM the next day, or on Sundays or public holidays. In addition, although the Municipal Code does not establish numeric noise limits for construction

[4] As shown in Table 5-1, a single bulldozer provides a sound level of 81 dBA L_{eq} at a distance of 50 feet; when two identical sound levels are combined, the noise level increases to 84 dBA L_{eq} and when three identical sound levels are combined, the noise level increases to 86 dBA L_{eq} (Caltrans, 2013). These estimates assume no shielding or other noise control measures are in place at or near the work areas.

noise sources, Section 9.40.100, Noise Sensitive Areas, does limit noise levels near in-use schools to the City's low-density residential noise standards established in Municipal Code Sections 9.040.040 and 9.04.050 and shown in Table 5-4.

Table 5-3: Summary of Predicted Construction Noise Levels

Scenario	Estimated Duration(A)	Single Equipment Use(B)		Multiple Equipment Use(C)	
		$L_{eq(h)}$	L_{max}	$L_{eq(h)}$	L_{max}(D)
Worst-Case Construction (70 feet from multi-family residential patio to the east)	1 month	79	82	82	85
Typical Construction (200 feet from multi-family residential patio to the east)	11 months	70	73	73	76
Typical Construction (300 feet from Las Palmas Middle School property to the northeast)	11 months	66	69	69	72
Typical Construction (350 feet from Amazon warehouse property to the south)	11 months	65	68	68	71

Source: MIG (see Appendix B, Sheet 1).
(A) Estimated duration represents the period of time site preparation, grading, and paving activities would occur (see Table 2-2).
(B) Values represent highest estimated noise level for one piece of construction equipment (see Table 5-1).
(C) Values represent highest estimated noise level for two pieces of construction equipment (see footnote 4).
(D) Combined Lmax noise levels are unlikely to actually occur since equipment would not operate in the same area under the same engine load conditions. In actuality, one piece of equipment would be slightly farther away and operating under less than maximum load conditions.

Table 5-4: Comparison of Predicted Construction Noise Levels to Municipal Code Standards

Receiving Land Use(A)	Predicted Construction Noise Levels(B)		Receiving Land Use Standard(C)				
	L_{eq}	L_{max}	L_{eq}	L_{25}	L_{08}	L_{02}	L_{max}
Multi-Family Residential (worst-case)	82	85	60	65	70	75	80
Multi-Family Residential (typical)	73	76	60	65	70	75	80
Las Palmas Middle School (typical)	69	72	55	60	65	70	75
Amazon Warehouse (typical)	68	71	-	-	-	-	-

(A) The City's Municipal Code does not set construction noise source limits for multi-family residential land uses; however, this land use is included for informational purposes.
(B) See Table 5-3.
(C) Standards per City Municipal Code Section 9.40.040, 9.40.050, and 9.40.100 (see Section 4.3.4.1). The standard for Las Palmas Middle School is based on the low-density residential land use. The Amazon Warehouse is located in the City of West Covina. The West Covina municipal code does not set receiving land use noise limits.

As shown in Table 5-4, the proposed Project's predicted worst-case construction noise levels could exceed L_{eq}, L_{25}, and L_{08} receiving land use standards established by the Municipal Code for Las Palmas Middle School. The Project could also temporarily increase noise levels above ambient levels at the multi-family residential patios to the east of the Project site between 8 dBA to 25 dBA, depending on the patio's proximity to San Bernardino Road. This increase would represent an approximately doubling to quadrupling of loudness in these residential exterior use areas. This is considered a potentially significant impact. To reduce the proposed Project's construction noise levels at adjacent residential and school property lines, the City shall require the Project Applicant to implement Mitigation Measure NOI-1 into the Project.

In addition to noise sensitive land uses, the proposed Project would involve construction activities within 60 feet of the light manufacturing building to the east of the Project site and directly adjacent to the commercial-industrial buildings to the north of the Project site. These buildings are not noise sensitive, nor do they involve sensitive exterior use areas. Thus, these buildings would not be impacted by exterior construction noise levels. Typical light manufacturing building façades provide a minimum of 30 dB of exterior to interior noise reduction, which would ensure the Project's construction noise levels do not result in interior noise levels in these buildings that exceed 55 dB or otherwise interfere with normal speech and operations in these buildings.[5]

Mitigation Measure NOI-1: Reduce Construction Noise Levels. To reduce potential noise levels associated with construction of the proposed Project, the Applicant and/or its designated contractor, contractor's representatives, or other appropriate personnel shall:

- *Notify Adjacent Land Use of Construction Activities.* This notice shall be provided at least one week prior to the start of any construction activities, describe the noise control measures to be implemented by the Project, and include the name and phone number of a designated contact for the Applicant and the City of Covina responsible for handling construction-related noise complaints. This notice shall be provided to:
  - The owner/occupants of properties that directly border the Project site to the north and west;
  - The owners/occupants of multi-family dwelling units directly to the east of the Project sit (across Cutter Way) that have an exterior wall or patio area that fronts Cutter Way; and
  - Las Palmas Middle School.
- *Restrict work hours/equipment noise.* All work shall be subject to the requirements in City Municipal Code Section 9.40.110.A. Construction activities, including deliveries, shall only during the hours of 7:00 AM to 8:00 PM, Monday through Saturday, unless otherwise authorized by City permit. The Applicant and/or its contractor shall post a sign at all entrances to the construction site informing contractors, subcontractors, construction workers, etc. of this requirement. The sign shall also provide a name (or title) and phone number for an appropriate on-site and City representative to contact to submit a noise complaint.

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[5] The U.S. Department of Housing and Urban Development (HUD) Noise Guidebook and supplement (2009a, 2009b) includes information on noise attenuation provided by building materials and different construction techniques. As a reference, a standard exterior wall consisting of 4x8x16 three-cell lightweight CMU weighing 17 pounds per block provides approximately 30 dBs of noise attenuation between exterior and interior noise levels.

- *Construction Traffic and Site Access.* Construction traffic, including soil hauling, shall follow City-designated truck routes Construction site access shall occur via San Bernardino Road instead of Cutter Way. Access to the site using Cutter Way may only occur after the noise barrier installed along the Project site's eastern boundary has been removed.
- *Construction equipment selection, use, and noise control measures*. The following measures shall apply during construction activities:
  - To the extent feasible, contractors shall use the smallest size equipment capable of safely completing work activities.
  - Construction staging shall occur as far away from the adjacent residential and school properties on Cutter Way as possible.
  - All stationary noise-generating equipment such as pumps, compressors, and welding machines shall be located as far from adjacent residential and school properties on Cutter Way as possible.
  - Heavy equipment engines shall be covered, and exhaust pipes shall include a muffler in good working condition.
  - Pneumatic tools shall include a noise suppression device on the compressed air exhaust.
  - The Applicant and/or his contractor shall connect to existing electrical service at the site to avoid the use of stationary power generators.
  - No radios or other amplified sound devices shall be audible beyond the property line of the construction site.
- *Construct/Install Temporary Noise Barrier.* During all demolition, site preparation, building foundation excavation, parking garage excavation, mass grading work, and building foundation work, the Applicant shall install and maintain a physical noise barrier capable of achieving a 15 dB reduction in construction noise levels. Potential barrier options capable of achieving a 15 dB reduction in construction noise levels include:
  - An 8-foot-high concrete, wood, or other barrier installed at-grade (or mounted to structures located at-grade, such as a K-Rail) along the Project's eastern property line. Such a wall/barrier shall consist of solid material (i.e., free of openings or gaps other than weep holes) that have a minimum rated transmission loss value of 25 dB.
  - Commercially available acoustic panels (8-foot-high) or other products such as acoustic barrier blankets installed along the Project's eastern property line that have a minimum sound transmission class (STC) or transmission loss value of 25 dB. The rated STC or transmission loss value of the barrier would be confirmed by the manufacturer's specifications prior to installation.
  - Any combination of noise barriers and commercial products capable of achieving a 15 dB reduction in construction noise levels at the adjacent residential and school properties on Cutter Way.

  The noise barrier may be removed following the completion of building foundation work (i.e., it is not necessary once framing and typical building construction begins provided no other grading, foundation, etc. work is still occurring on-site). In-lieu of the barrier recommendations above, the Applicant may prepare and submit to the City for review and approval an updated construction noise impact analysis, based on the final site plan and final selected construction equipment, demonstrating that selected equipment and/or alternative noise control measures will result in noise levels at least 15 dB below the estimates in Table 5-4 of the Project's Noise Impact Analysis Report (MIG, 2021).

Mitigation Measure NOI-1 will require the use of construction management and equipment controls to reduce potential noise from construction activities and is consistent with the requirement of General Plan Policies 4.1, 4.2 and 4.3 (see Section 4.3.4.2). This measure restricts work hours in accordance with the Municipal Code, requires staging and stationary noise sources to be located as far from neighboring land uses as possible, and requires a temporary noise barrier be erected along the eastern property line capable of reducing noise levels by 15 dB. This measure would ensure the proposed Project's construction noise levels comply with the requirements of Municipal Code Section 9.40.100 and lower noise levels at exterior noise areas associated with the multi-family residential development located east of the Project site such that a substantial temporary increase in noise would not occur. Thus, with Mitigation Measure NOI-1, the proposed Project's potential construction noise levels would be rendered a less than significant impact.

5.3.2 TEMPORARY CONSTRUCTION VIBRATION LEVELS

The potential for ground-borne vibration and noise is typically greatest when vibratory or large equipment such as rollers, impact drivers, or bulldozers are in operation. For the proposed Project, these types of equipment would primarily operate during site preparation, grading, and paving work. This equipment would, at worst-case and for very limited period of times, operate adjacent to the site's property lines and within approximately 25 and 60 feet of the commercial-industrial buildings immediately north and west of the Project site, respectively. Equipment could also operate within 80 feet of the multifamily residential building façades located east of the Project site; however, most site work would occur at least 150 feet from all adjacent buildings. Accordingly, similar to the construction noise analysis presented in Section 5.3.1, potential construction vibration levels were estimated for worst-case equipment operations (25 feet from adjacent buildings) and average equipment operations based on the distance from the center of the site to adjacent buildings (approximately 230 feet to the north, 220 feet to the east, and 160 feet to the west). A summary of predicted construction vibration levels is presented in Table 5-5.

Table 5-5: Summary of Predicted Construction Vibration Levels			
Scenario	Estimated Duration(A)	Maximum PPV, Vibratory Roller (inches/second)(B)	Maximum PPV, Typical Equipment (inches/second)(B
Worst-Case Construction (25 feet from north commercial-industrial building)(C)	1 week	0.210	0.089
Typical Construction (160 feet from east commercial-industrial building)	1 to 2 months	0.019	0.008
Typical Construction (220 feet from west residential building)	1 to 2 months	0.012	0.005
Typical Construction (230 feet from north commercial-industrial building)	1 to 2 months	0.012	0.005

Source: FTA, 2018 and MIG (see Appendix B, Sheet 2).

(A) Estimated duration represents the period of time site preparation, grading, and paving activities would occur (see Table 2-2). For the worst-case construction scenario, the duration assumes equipment would not operate within 25 feet of the same building location for more than 1 week.

(B) Values represent highest estimated ground-borne vibration level for vibratory roller and typical construction equipment (see Appendix B).

(C) Construction activities may occur closer than 25 feet from a property line for short periods of time (hours) that are not representative of overall construction activities. The worst-case construction scenario reflects the duration that heavy equipment may operate in the same general area near a building.

City Municipal Code Section 9.40.120J and Section 9.40.020.30 set forth that the operation of any device that creates a vibration level above 0.01 in/sec is disturbing to the average individual. As shown in Table 5-5, the proposed Project's construction activities would have the potential to generate ground borne-vibration levels that could exceed this threshold. Nearly all construction equipment is capable of generating ground-borne vibration levels that exceed 0.01 in/sec at distance of 25 feet (worst-case construction scenario based on the northern industrial-commercial building); however, at typical operating distances, most construction equipment would not produce ground-borne vibration levels that exceed the City's perception threshold of 0.01 in/sec.[6] The exception to this is the potential use of specific vibration-generating equipment such as a vibratory roller; this equipment could generate vibration levels above 0.01 in/sec at distances up to 260 feet from the operating area. The proposed Project does not propose the use of other vibration-generating equipment, such as a pile driving equipment. In addition, it is noted that potential construction vibration levels would not result in structural damage because the estimated vibration levels are substantially below commonly accepted thresholds for potential damage to residential buildings (0.3 to 0.5 in/sec; see Table 4-3).

[6] A large bulldozer, small bulldozer, loaded truck, and jack hammer are estimated to produce ground-borne vibration levels equal to 0.01 in/sec at a distance of 130 feet, 60 feet, 115 feet, and 65 feet from the operating area. These estimates are based on the calculation methodology shown in Table 5-2.

The use of construction equipment that would generate ground-borne vibration levels above the City's perception threshold of 0.01 in/sec is considered a potentially significant impact. To reduce the proposed Project's potential construction vibration levels at adjacent buildings, the City shall require the Project Applicant to implement Mitigation Measure NOI-2 into the Project.

Mitigation Measure NOI-2: Reduce Construction Vibration Levels. To reduce potential noise levels associated with construction of the proposed Project, the Applicant and/or its designated contractor, contractor's representatives, or other appropriate personnel shall:

- *Notify Adjacent Land Use of Construction Activities.* This notice shall be provided at least one week prior to the start of any construction activities, describe the vibration control measures to be implemented by the Project, and include the name (or title) and phone number of a designated contact for the Applicant and the City of Covina responsible for handling construction-related vibration complaints. This notice shall be provided to all building owners/occupants within 120 feet of the Property site boundary.

- *Prohibit Vibratory Equipment.* The use of large vibratory rollers (small plate compactors are acceptable) and vibratory pile driving equipment are prohibited during construction. Any deep foundation piers or caissons shall be auger drilled.
- *Prepare Vibration Mitigation Plan.* Prior to the start of construction activity, the City or its contractor shall prepare a Construction Vibration Response Plan for the project which:
  - Identifies the name (or title) and contact information (including phone number and email) of the Contractor and City-representatives responsible for addressing construction vibration-related issues.
  - Contains a detailed schedule of substantial earth moving activities expected to occur at the site.
  - Includes procedures describing how the construction contractor will receive, respond, and resolve to construction vibration complaints. At a minimum, upon receipt of a vibration complaint, the Contractor and/or City representative described in the first sub-bullet above shall identify the vibration source generating the complaint, determine the cause of the complaint, and take steps to resolve the complaint by reducing ground-borne vibration levels to a peak particle velocity to levels less than 0.01 in/sec . Such measures may include the use of non-impact drivers, use of rubber-tired equipment instead of track equipment, or other measures that limit annoyance from ground-borne vibration levels.

The implementation of Mitigation Measure NOI-2 would limit the potential for ground-borne vibration during construction activities, require advanced notice to adjacent property owners and building occupants, and develop procedures designed to limit potential annoyance and interference with daily activities at adjacent buildings. This measure would ensure the proposed Project's construction noise levels comply with the requirements of Municipal Code Section 9.40.120J and ensure that construction-related ground-borne vibration levels would not be disturbing, excessive, or offensive at any nearby building locations or cause damage to any adjacent building. Thus, with Mitigation Measure NOI-2, the proposed Project's potential construction noise levels would be rendered a less than significant impact.

5.4 OPERATIONAL NOISE IMPACTS

Once constructed, the proposed Project would generate noise from on-site and off-site activities. On-site activities would include vehicle travel, use of outdoor recreation and amenity spaces, landscaping activities, mechanical equipment such as air conditioning units, and other miscellaneous site operations. Off-site noise activities would include vehicle travel on Cutter Way and San Bernardino Road. These noise sources are described in Section 5.2.2.

5.4.1 ON-SITE NOISE GENERATION ANALYSIS

Residential land uses are not considered to be a substantial noise generating land use type. The proposed Project site is generally directly bordered by light manufacturing (M-1) lands that have an allowable base ambient noise level of 70 dBA L_{eq} during the daytime and 60 dBA L_{eq} during the nighttime per Municipal Code Sections 9.40.040. Multi-family residential dwelling units and the Las Palmas Middle School are located across Cutter Way. These land uses have lower allowable ambient noise levels (55 dBA L_{eq} during the daytime for Las Palmas Middle School and 60 dBA L_{eq} during the daytime for multi-family residential dwellings).

The proposed Project's on-site noise sources would not have the potential to generate noise levels that exceed these standards for the following reasons:

- On-site vehicle travel would occur along perimeter access drive at low speed and would not generate substantial noise levels;
- The schematic design site plan for the Project includes a six-foot-tall CMU wall on the site's western boundary, which would reduce on-site vehicle travel noise levels along the perimeter access drive by at least 5 dBA;
- The at-grade parking area would have capacity for 25 vehicles and be located between on-site buildings that would serve to block noise levels from the parking area from reaching most property line locations; and
- The proposed Project does not involve substantial mechanical equipment associated residential dwelling units;
- Live/Work units would not involve substantial operations or noise generating activities (units would be small in size, not more than 1,200 square feet in size); and
- The proposed Project does not involve substantial nighttime activities.

For the reasons described above, the proposed Project would not result in noise levels that exceed City standards or otherwise result in a substantial permanent increase in ambient noise levels in the vicinity of the Project.

5.4.2 OFF-SITE OPERATIONAL NOISE LEVELS

The proposed Project would generate vehicle trips that would be distributed onto the local roadway system and potentially increase noise levels along travel routes. Caltrans considers a doubling of total traffic volume to result in a three (3) dBA increase in traffic-related noise levels (Caltrans, 2013). If the proposed Project would not result in a doubling of traffic volumes on the local roadway system, it would not result in a substantial permanent increase in traffic-related noise levels.

The proposed Project would result in a net increase in trip generation equal to 326 total daily trips, including 27 trips during the PM peak hour (Linscott, Law, and Greenspan. 2020a). These trips would end up on Cutter Way or San Bernardino Road which have estimated ADT levels equal to at least 402 and

11,729 respectively (Linscott, Law, and Greenspan 2020b). The addition of 326 daily trips to either of these roadways (which is unlikely to occur) would result in at most an 81% increase in traffic volumes on Cutter Way and a 3% increase on San Bernardino Road. Even under PM peak hour conditions, the proposed Project would not double traffic volumes on either roadway (Cutter Way and San Bernardino had PM peak hour traffic volumes equal to 35 vehicles and 1,119 vehicles, respectively; Linscott, Law, and Greenspan 2020b). Since the proposed Project would result in substantially less than a doubling of peak hour and daily traffic volumes on roadways used to access the site it would not result in a substantial, permanent increase in off-site noise levels on Cutter Way or San Bernardino Road.

5.5 AIRPORT-RELATED NOISE

As described in Section 2.1, the proposed Project is not located within any airport land use compatibility planning or noise contour zone. The closest airport, San Gabriel Valley Airport, is located more than six (6) miles west of the Project. The Project, therefore, would not expose people living or working at the Project site to excessive airport-related noise levels.

6 OTHER NOISE AND VIBRATION EFFECTS

The California Supreme Court in *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369 (2015) ruled that CEQA review is focused on a project's impact on the environment "and not the environment's impact on the project." Per this ruling, a Lead Agency is not required to analyze how existing conditions might impact a project's future users or residents; however, a Lead Agency may elect to disclose information relevant to a project even if it not is considered an impact under CEQA. Furthermore, the City's Municipal Code and General Plan Noise Element set noise standards for receiving land uses which require evaluation for consistency and compliance even if such evaluation is not required by CEQA.

This chapter discusses the existing noise environment and the degree to which the existing environment is compatible and consistent with City goals, policies, and standards for the proposed Project's noise environment.

6.1 REVIEW STANDARDS

The existing noise environment described in Section 4.2 is reviewed against the following goals, policies and standards set by the City in its Municipal Code and General Plan. Would the project:

- Expose people living or working in the project area to existing noise levels that exceed the standards established in:
  - The City of Covina Municipal Code Section 9.04.060; and
  - The City of Covina General Plan Noise Element Policy 1.2.

6.2 LAND USE COMPATIBILITY – EXTERIOR NOISE EXPOSURE

As described in Section 4.2.1, the ambient noise levels at the Project site are assumed to range between 67 to 68 DNL (at the southern property line) to approximately 55 to 60 CNEL (near the center and northern part of the site).[7] On the southern portion of the site, these values exceed the City's 60 DNL Noise Study Zone thresholds, which generally recognizes where noise insulation may be required for multi-family residential units, as well the City's 65 DNL Noise Mitigation Zone, which generally establishes the areas where new or expanded noise-sensitive development should be permitted only if appropriate mitigation measures, such as barriers or additional sound insulation, are included in the Project (see Section 4.3.4.2). Specifically, based on the Project site plan, Buildings 1 and 2 would front San Bernardino Road and include exterior balconies that front San Bernardino Road; Building 4 would also front San Bernardino Road and

[7] These ambient noise levels are considered representative of the conditions that could be present at the Project site at the time the proposed Project is occupied by residential receptors. The City of West Covina prepared an Initial Study / Mitigated Negative Declaration (IS/MND) in July 2021 for the Amazon Delivery Station proposed to the south of the Project site (at the same location where the Faith Church used to operate) (City of West Covina 2021). The traffic noise levels associated with operation of that project were estimated to result in traffic noise levels of 66.0 dBA CNEL at a distance of 80 feet from San Bernardino Road (City of West Covina 2021, pg. 4-75, Table 4-22). The southernmost facades of Buildings 1 and 2 proposed by the Project would be located slightly closer to San Bernardino than 80 feet from the center line (these buildings would be approximately 60 feet from the San Bernardino Road center line). The use of 67 to 68 DNL as the noise environment at the proposed Project's building facades accounts for this reduced distance and provides an accurate assessment of potential noise levels. In addition, based on the preceding discussion, the analysis contained in this Report is also consistent with the findings of other environmental analyses conducted for recent projects in the vicinity of the Project site.

include balconies (on the eastern side of the building) that front San Bernardino Road (see Figure 2-3). There are no other common or private exterior use areas that front San Bernardino Road. Due to the site layout, Buildings 1 and 2 effectively shield all other buildings from traffic noise levels associated with San Bernardino Road (with the exception of the eastern part of Building 4). Cutter Way does not generate substantial traffic noise levels and ambient noise monitoring data indicates noise levels in the center to northern parts of the site (adjacent to existing light manufacturing lands) do not exceed 60 DNL.

City General Plan Policy 1.2 requires the City to attempt to mitigate or eliminate the possible noise problems of proposed residential or other noise-sensitive uses located within all 65 DNL noise contours to ensure compatibility and, pertaining to residential activities, adherence to applicable State noise insulation standards, which require interior noise levels attributable to exterior noise sources not exceed 45 dBA DNL (see Section 4.3.2.1). Based on the ambient noise levels that would be experienced at exterior patio areas in Buildings 1, 2, and 4 (67 to 68 DNL), special design features would be required to ensure these areas are not exposed noise levels above 65 DNL. The necessary attenuation (up to 3 dB) could be achieved using a wood / plexiglass balcony assembly reaching a total height of 5 feet above the balcony floor. Refer to Section 6.4 for exterior noise reduction recommendations.

6.3 INTERIOR NOISE LEVEL COMPATIBILITY

The California Building Standards Code establishes that interior noise levels attributable to exterior noise sources shall not exceed 45 DNL or CNEL (as established by the local General Plan) for residential developments. In addition, the City's Municipal Code (Section 9.40.060) establishes 45 dBA L_{eq} and 35 dBA L_{eq} interior daytime and nighttime noise standard for residential developments, respectively. As described in Section 6.2, daily noise exposure levels at the exterior façade of Project Buildings 1, 2, and 4, which front San Bernardino Road, could be up to 68 DNL. Standard construction techniques for new residential development typically provide a minimum exterior to interior noise attenuation (i.e., reduction) of 25 to 32 dBA with windows closed, which is sufficient to meet the 45 CNEL interior noise standard established by local and state requirements.[8] These estimates generally assume window assemblies do not account for more than 20% to 30% of the exterior façade surface area; however, the schematic design for the proposed Project indicates a storefront window wall system is proposed for most exterior building facades, including Buildings 1, 2, and 4. The exterior to interior noise transmission rating for this assembly, therefore, would need to be confirmed to ensure interior noise levels meet the 45 CNEL interior noise standard established by local and state requirements.

The CALGreen Code establishes additional standards for interior noise levels that may apply to residential developments if a building is located within a 65 DNL noise contour of an airport, freeway, railroad, industrial source, etc. or otherwise exposed to a noise level of 65 dBA on an hourly L_{eq} basis. As summarized above, the proposed Project would place Buildings 1, 2, and 4 within the 65 DNL contour associated with San Bernardino Road (see Table 4-1); these buildings would also be subject to hourly L_{eq} noise levels above

[8] The U.S. Department of Housing and Urban Development (HUD) Noise Guidebook and supplement (2009a, 2009b) includes information on noise attenuation provided by building materials and different construction techniques. As a reference, a standard exterior wall consisting of 5/8-inch siding, wall sheathing, fiberglass insulation, two by four wall studs on 16-inch centers, and 1/2-inch gypsum wall board with single strength windows provides approximately 35 dBs of attenuation between exterior and interior noise levels. This reduction may be slightly lower (2-3 dBs) for traffic noise due to the specific frequencies associated with traffic noise but will still be sufficient to meet the 45 DNL standard for dwelling units near San Bernardino Road. Increasing window space may also decrease attenuation, with a reduction of 10 dBs possible if windows occupy 30% of the exterior wall façade.

65 dBA (see Appendix A).The proposed Project, therefore, would be subject to the prescriptive or performance standard requirements of the CALGreen code, which requires that exterior wall and roof-ceiling assemblies exposed to the noise source meet specific STC and OITC ratings.

The City's Municipal Code (Section 9.40.060) also establishes a 35 dBA L_{eq} interior nighttime noise standard for residential developments. As shown in Table 4-1, nighttime noise levels at ambient monitoring location LT-1 ranged from 53.7 - 63.3 dBA L_{eq}, with an overall nighttime average of 58.8 dBA L_{eq}. This indicates exterior to interior noise reduction of approximately 19 to 29 dBA is required to achieve the City's nighttime interior noise standard for residential developments. The STC and OITC exterior wall and roof assembly requirements set forth by the CALGreen code generally require the assembly to have an STC of 40 or an OITC of 30, which should be sufficient to meet the City's nighttime interior; however, the final exterior assemblies would need to be reviewed and confirmed.

6.4 LAND USE AND NOISE COMPATIBILITY RECOMMENDATIONS

To reduce the potential for exterior and interior noise and land use compatibility issues with City goals, policies, and standards that may occur as a result of the existing ambient noise environment at and in the vicinity of the proposed Project, MIG recommends the following existing noise environment reduction measures for the proposed Project:

Noise and Land Use Compatibility Measure 1: Document Compliance with Applicable Noise Standards. Prior to the issuance of a building permit for the Project, the City shall review and approve an acoustical analysis, prepared by or on behalf of the Project Applicant by a qualified acoustical consultant, and based on the final Project design, that:

- Identifies the exterior noise levels at all building façades and exterior use areas, including private balconies, with a direct line of sight to San Bernardino Road; and
- Identifies the final site and building design measures that would:
  - Attenuate exterior use areas such that noise levels do not exceed 65 DNL. For balconies, this may be achieved through the use of plexiglass or other similar shields that extend from the balcony floor or wall assembly to a sufficient height capable of achieving a minimum 4 dBA reduction in exterior noise levels (or other reduction determined to be necessary based on updated exterior noise levels identified in the acoustical analysis).
  - Comply with applicable CALGreen building code requirements for buildings located within a 65 DNL roadway noise contour and subject to hourly noise levels of 65 dBA L_{eq}.
  - Provide the necessary exterior to interior noise reduction need to achieve a 45 dBA L_{eq} interior daytime noise level (per City Municipal Code Section 9.40.060), a 35 dBA L_{eq} interior nighttime noise level (per City Municipal Code Section 9.40.060), and a 45 DNL (per State building code requirements). All standards are to be met with closed windows. Potential noise insulation design features capable of achieving these requirements may include, but are not limited to, sound barriers, enhanced exterior wall, ceiling, and roof noise insultation, use of enhanced window, door, roof assemblies with above average sound transmission class or outdoor/indoor transmission class values, and/or use of mechanical, forced air ventilation systems to permit a windows closed condition.

The above recommendations would ensure the proposed Project's is designed and constructed in a manner that is compatible with the existing ambient noise environment and consistent with State noise requirements and City goals, policies, and standards for residential noise exposure. The Principal Architect for the Project has confirmed the above standards can be met through a combination of design, glazing, and material selection means (Logos Architecture 2020c).

7 REPORT PREPARERS AND REFERENCES

This Report was prepared by MIG under contract to the City of Covina. This Report reflects the independent, objective, professional opinion of MIG. The following individuals were involved in the preparation and review of this Report:

MIG
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APPENDIX A: Ambient Noise Monitoring Data

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529 Cutter Way, Covina, CA 91722
Los Angeles County
Appendix: Ambient Noise Monitoring Data
Prepared by MIG, August 2020

TABLE A1: SUMMARY OF SITE LT1 NOISE MONITORING DATA												
Date	Time	Duration	Leq	DNL	Lmin	Lmax	L(1.6)	L(8.3)	L(25)	L(50)	L(66.6)	L(90)
7/29/2020	9:00 AM	1-hour	64.9	64.9	45.1	86.4	73.5	69.3	65.7	60.9	57.6	53.2
7/29/2020	10:00 AM	1-hour	64.7	64.7	42.8	86.2	73.4	69.6	65.4	60.3	56.5	50.7
7/29/2020	11:00 AM	1-hour	65.1	65.1	42.1	83.5	73.1	70.0	66.1	61.3	57.9	51.9
7/29/2020	12:00 PM	1-hour	65.7	65.7	42.9	85.5	73.9	70.2	66.7	62.3	58.9	52.8
7/29/2020	1:00 PM	1-hour	67.5	67.5	42.9	92.3	77.1	71.8	67.6	63.3	59.9	53.0
7/29/2020	2:00 PM	1-hour	66.2	66.2	45.0	82.6	73.5	70.7	67.6	63.3	60.0	53.6
7/29/2020	3:00 PM	1-hour	66.4	66.4	45.7	80.9	74.0	70.7	67.7	63.7	60.6	54.9
7/29/2020	4:00 PM	1-hour	67.5	67.5	43.6	89.1	76.2	72.4	67.8	63.9	60.6	54.8
7/29/2020	5:00 PM	1-hour	66.6	66.6	44.6	86.2	75.0	71.2	67.4	63.2	60.0	54.1
7/29/2020	6:00 PM	1-hour	65.3	65.3	44.6	79.6	73.0	70.1	66.6	61.8	58.4	52.5
7/29/2020	7:00 PM	1-hour	64.4	64.4	44.5	81.9	72.6	69.0	65.4	60.8	57.1	51.9
7/29/2020	8:00 PM	1-hour	63.6	63.6	43.4	84.9	72.9	68.4	63.7	58.7	54.8	49.5
7/29/2020	9:00 PM	1-hour	61.5	61.5	43.2	77.0	70.5	66.6	62.0	56.5	53.2	48.2
7/29/2020	10:00 PM	1-hour	60.0	70.0	41.2	79.8	69.3	65.2	59.9	54.2	50.6	46.8
7/29/2020	11:00 PM	1-hour	57.9	67.9	40.3	75.1	68.0	63.3	56.9	49.8	47.0	43.8
7/30/2020	12:00 AM	1-hour	55.0	65.0	39.8	74.5	65.6	60.4	52.4	45.4	43.3	41.7
7/30/2020	1:00 AM	1-hour	53.7	63.7	39.0	76.8	64.7	58.9	50.3	44.1	42.1	40.9
7/30/2020	2:00 AM	1-hour	53.5	63.5	39.6	75.0	64.8	58.0	49.8	45.6	43.7	41.5
7/30/2020	3:00 AM	1-hour	57.5	67.5	40.1	85.0	69.6	62.0	51.7	44.7	43.5	42.5
7/30/2020	4:00 AM	1-hour	58.2	68.2	42.5	75.8	68.6	63.7	56.2	49.6	47.3	45.6
7/30/2020	5:00 AM	1-hour	60.5	70.5	44.3	77.0	70.4	65.7	59.9	53.6	50.9	48.2
7/30/2020	6:00 AM	1-hour	63.3	73.3	47.3	77.0	71.5	68.5	64.0	58.7	54.9	51.0
7/30/2020	7:00 AM	1-hour	64.5	64.5	47.1	85.8	73.3	69.3	65.1	59.5	56.0	51.7
7/30/2020	8:00 AM	1-hour	65.0	65.0	45.4	86.3	73.8	69.9	65.5	60.1	56.6	52.4
Daytime (7 AM to 7 PM)			*65.9*	*--*	*42.1*	*92.3*	*74.4*	*70.5*	*66.7*	*62.2*	*58.9*	*53.1*
Evening (7 PM to 10 PM)			*63.3*	*--*	*43.2*	*84.9*	*72.1*	*68.1*	*63.9*	*59.0*	*55.3*	*50.1*
Nightime (10 PM to 7 AM)			*58.8*	*--*	*39.0*	*85.0*	*68.7*	*64.0*	*58.2*	*52.4*	*49.1*	*46.0*
	24-hour DNL		*--*	*67.1*	*-*	*--*	*-*	*-*	*-*	*-*	*-*	*-*

TABLE A2: SUMMARY OF SITE LT1 NOISE MONITORING DATA (10-minute period)											
Date	Time	Duration	Leq	Lmin	Lmax	L(1.6)	L(8.3)	L(25)	L(50)	L(66.6)	L(90)
7/29/2020	9:30 AM	10-minutes	64.3	45.2	74.6	72.0	68.9	65.8	60.6	56.7	51.7
7/29/2020	9:40 AM	10-minutes	64.1	45.2	75.7	72.5	68.9	65.0	60.1	56.4	50.6
7/29/2020	9:50 AM	10-minutes	66.6	45.1	86.4	77.3	69.9	65.9	59.6	55.0	50.9
7/29/2020	10:00 AM	10-minutes	63.9	45.4	76.8	71.9	68.5	65.3	60.5	56.8	49.9
7/29/2020	10:10 AM	10-minutes	64.3	42.8	81.8	73.6	69.0	64.9	58.9	54.5	47.4
7/29/2020	10:20 AM	10-minutes	66.1	43.0	86.2	76.6	71.1	64.0	58.4	54.3	48.8
7/29/2020	10:30 AM	10-minutes	64.7	44.9	75.8	72.6	69.5	65.8	61.1	57.7	52.9
7/29/2020	10:40 AM	10-minutes	64.7	44.5	75.5	71.9	69.7	66.1	61.1	57.2	51.6
7/29/2020	10:50 AM	10-minutes	64.2	43.5	74.3	71.2	69.0	65.8	60.8	57.1	51.6
7/29/2020	11:00 AM	10-minutes	62.8	43.5	74.6	70.8	67.7	63.6	59.7	56.3	48.7
7/29/2020	11:10 AM	10-minutes	65.5	42.1	76.5	73.0	69.8	67.0	63.0	60.1	55.3
7/29/2020	11:20 AM	10-minutes	65.2	44.8	75.4	72.5	70.0	66.4	61.6	58.6	52.2

TABLE A3: SUMMARY OF SITE ST1 NOISE MONITORING DATA (10-minute period)											
Date	Time	Duration	Leq	Lmin	Lmax	L(1.6)	L(8.3)	L(25)	L(50)	L(66.6)	L(90)
7/29/2020	9:30 AM	10-minute	55.0	48.0	64.0	57.7	56.3	55.8	55.2	54.2	52.1
7/29/2020	9:40 AM	10-minute	55.3	47.4	60.9	57.4	57.0	55.9	55.3	54.3	53.7
7/29/2020	9:50 AM	10-minute	55.2	47.9	62.7	58.5	57.2	55.6	54.5	54.2	53.6
7/29/2020	10:00 AM	10-minute	55.5	48.3	61.8	57.2	56.6	56.0	55.4	55.1	53.8
7/29/2020	10:10 AM	10-minute	55.6	48.4	62.0	58.0	57.6	56.3	55.2	54.7	53.8
7/29/2020	10:20 AM	10-minute	55.9	47.9	63.3	58.9	58.2	56.7	55.2	54.7	54.0
7/29/2020	10:30 AM	10-minute	56.3	48.0	62.1	58.6	57.8	57.1	56.5	55.0	54.3
7/29/2020	10:40 AM	10-minute	56.8	48.6	61.6	58.7	58.4	57.7	56.5	56.0	54.7
7/29/2020	10:50 AM	10-minute	55.1	47.8	61.0	57.0	56.5	55.9	55.2	54.9	52.0
7/29/2020	11:00 AM	10-minute	54.3	47.4	60.2	57.2	56.4	55.5	53.5	53.2	52.3
7/29/2020	11:10 AM	10-minute	54.9	47.1	60.4	56.7	56.2	55.5	54.8	54.4	53.2
7/29/2020	11:20 AM	10-minute	56.0	47.1	61.5	59.0	57.8	56.8	55.7	55.3	53.6

TABLE A4: SUMMARY OF SITE LT1 NOISE MONITORING DATA (2-hour period for comparison to ST site)											
Date	Time	Duration	Leq	Lmin	Lmax	L(1.6)	L(8.3)	L(25)	L(50)	L(66.6)	L(90)
7/29/2020	9:30 AM	2hours	64.8	42.1	86.4	73.5	69.4	65.6	60.6	57.0	51.5

TABLE A5: SUMMARY OF SITE ST1 NOISE MONITORING DATA (2-hour period)											
Date	Time	Duration	Leq	Lmin	Lmax	L(1.6)	L(8.3)	L(25)	L(50)	L(66.6)	L(90)
7/29/2020	9:30 AM	2 hours	55.5	47.1	64.0	58.0	57.2	56.3	55.3	54.7	53.5

Summary

File Name on Meter	LxT_Data.032
File Name on PC	SLM_0005064_LxT_Data_032.00.ldbin
Serial Number	0005064
Model	SoundTrack LxT®
Firmware Version	2.402
User	
Location	
Job Description	
Note	

Measurement

Description	SLM1 529 Cutter Way
Start	2020-07-29 09:15:00
Stop	2020-07-30 09:11:02
Duration	23:56:02.7
Run Time	23:56:02.7
Pause	00:00:00.0
Pre Calibration	2020-07-29 09:02:28
Post Calibration	2020-07-30 09:12:22
Calibration Deviation	0.13 dB

Overall Settings

RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamp	PRMLxT1L		
Microphone Correction	Off		
Integration Method	Exponential		
OBA Range	Normal		
OBA Bandwidth	1/1 and 1/3		
OBA Freq. Weighting	A Weighting		
OBA Max Spectrum	At LMax		
Overload	122.1 dB		
	A	**C**	**Z**
Under Range Peak	**78.7**	75.7	80.7 dB
Under Range Limit	**24.1**	25.1	31.1 dB
Noise Floor	15.0	16.0	22.0 dB

Results

LASeq		64.0 dB		
LASE		113.3 dB		
EAS		23.859 mPa²h		
EAS8		7.975 mPa²h		
EAS40		39.874 mPa²h		
LASpeak (max)	2020-07-29	13:58:09	107.9	dB
LASmax	2020-07-29	13:58:10	92.3	dB
LASmin	2020-07-30	01:48:25	39.0	dB
SEA		-99.9 dB		

	Ldn	LDay 07:00-22:00	LNight 22:00-07:00	Lden	LDay 07:00-19:00	LEvening 19:00-22:00
Community Noise	67.1	65.5	58.8	67.5	65.9	63.3

LCSeq	71.1	dB
LASeq	64.0	dB
LCSeq - LASeq	7.1	dB
LAIeq	66.3	dB
LAeq	64.0	dB
LAIeq - LAeq	2.3	dB

	A					
	dB	**Time Stamp**				
Leq	64.0					
LS(max)	92.3	2020/07/29 13:58:10				
LS(min)	39.0	2020/07/30 1:48:25				
LPeak(max)	107.9	2020/07/29 13:58:09				

# Overloads	0	
Overload Duration	0.0	s
# OBA Overloads	0	
OBA Overload Duration	0.0	s

Dose Settings

Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5	dB
Threshold	90	80	dB
Criterion Level	90	90	dB
Criterion Duration	8	8	h

Results

Dose	0.01	0.09	%
Projected Dose	0.00	0.03	%
TWA (Projected)	13.0	31.8	dB
TWA (t)	20.9	39.7	dB
Lep (t)	68.7	68.7	dB

Statistics

LAS1.66	72.5 dB
LAS8.33	68.9 dB
LAS25.00	64.0 dB
LAS50.00	56.1 dB
LAS66.66	50.4 dB
LAS90.00	42.6 dB

Calibration History

Preamp	Date	dB re. 1V/Pa
Direct	2020-01-28 05:43:54	-28.6
PRMLxT1L	2020-07-30 09:12:21	-28.4
PRMLxT1L	2020-07-29 09:02:27	-28.5
PRMLxT1L	2020-07-28 16:11:28	-28.6
PRMLxT1L	2020-07-26 15:28:11	-28.5
PRMLxT1L	2020-07-26 15:26:11	-28.6
PRMLxT1L	2020-07-25 19:19:15	-28.6
PRMLxT1L	2020-07-24 16:58:48	-28.5
PRMLxT1L	2020-07-08 08:38:41	-28.6
PRMLxT1L	2020-04-09 08:11:17	-28.6
PRMLxT1L	2020-02-04 13:37:16	-28.5
PRMLxT1L	2020-01-28 06:01:08	-28.4

Summary

File Name on Meter	LxT_Data.036
File Name on PC	SLM_0005065_LxT_Data_036.00.ldbin
Serial Number	0005065
Model	SoundTrack LxT®
Firmware Version	2.402
User	
Location	
Job Description	
Note	

Measurement

Description	SLM2 529 Cutter Way
Start	2020-07-29 09:30:00
Stop	2020-07-29 11:30:30
Duration	02:00:30.4
Run Time	02:00:30.4
Pause	00:00:00.0
Pre Calibration	2020-07-29 09:14:06
Post Calibration	2020-07-29 11:31:09
Calibration Deviation	0.04 dB

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamp	PRMLxT1L			
Microphone Correction	Off			
Integration Method	Exponential			
OBA Range	Normal			
OBA Bandwidth	1/1 and 1/3			
OBA Freq. Weighting	A Weighting			
OBA Max Spectrum	At LMax			
Overload	122.0 dB			
	A	**C**	**Z**	
Under Range Peak	**78.5**	75.5	80.5	dB
Under Range Limit	**25.2**	25.7	31.3	dB
Noise Floor	16.0	16.6	22.1	dB

Results

LASeq	55.6	dB	
LASE	94.2	dB	
EAS	289.281	µPa²h	
EAS8	1.152	mPa²h	
EAS40	5.761	mPa²h	
LASpeak (max)	2020-07-29 11:19:31	90.1	dB
LASmax	2020-07-29 09:35:41	64.0	dB
LASmin	2020-07-29 11:23:28	47.1	dB
SEA	-99.9	dB	

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**
	55.6	55.6	-99.9	55.6	55.6	-99.9

LCSeq	64.9	dB
LASeq	55.6	dB
LCSeq - LASeq	9.3	dB
LAIeq	56.4	dB
LAeq	55.6	dB
LAIeq - LAeq	0.9	dB

	A					
	dB	**Time Stamp**				
Leq	55.6					
LS(max)	64.0	2020/07/29 9:35:41				
LS(min)	47.1	2020/07/29 11:23:28				
LPeak(max)	90.1	2020/07/29 11:19:31				

# Overloads	0	
Overload Duration	0.0	s
# OBA Overloads	0	
OBA Overload Duration	0.0	s

Dose Settings

Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5	dB
Threshold	90	80	dB
Criterion Level	90	90	dB
Criterion Duration	8	8	h

Results

Dose	-99.9	-99.9	%
Projected Dose	-99.9	-99.9	%
TWA (Projected)	-99.9	-99.9	dB
TWA (t)	-99.9	-99.9	dB
Lep (t)	49.6	49.6	dB

Statistics

LAS1.66	60.8 dB
LAS8.33	59.8 dB
LAS25.00	58.4 dB
LAS50.00	51.8 dB
LAS66.66	50.8 dB
LAS90.00	49.5 dB

Calibration History

Preamp	Date	dB re. 1V/Pa
Direct	2020-01-28 06:05:01	-28.5
PRMLxT1L	2020-07-29 11:31:07	-28.2
PRMLxT1L	2020-07-29 09:14:01	-28.3

APPENDIX B: Construction Noise and Vibration Estimates

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529 Cutter Way Apartments Project IS/MND
529 Cutter Way, Covina, CA

Appendix B: Construction Noise and Vibration Estimates
Prepared by: MIG, Inc.
November 2020

Contents:

529 Cutter Way Apartments Project IS/MND
529 Cutter Way, Covina, CA
Appendix B: Construction Noise and Vibration Estimates
Prepared by MIG, Inc. November 2020

Sheet 1: Construction Noise Estimates

Table 1: Construction Noise Estimates

Equipment	Reference Noise Level (Lmax)	Usage Factor (%)	Distance From Equipment (Feet) and Estimated Noise Level (Leq dBA)								
			25	50	70	100	200	250	300	350	500
Backhoe	80	0.4	82	76	73	70	64	62	60	59	56
Bulldozer	85	0.4	87	81	78	75	69	67	65	64	61
Compact roller	80	0.2	79	73	70	67	61	59	57	56	53
Concrete Mixer	85	0.4	87	81	78	75	69	67	65	64	61
Crane	85	0.16	83	77	74	71	65	63	61	60	57
Delivery Truck	85	0.4	87	81	78	75	69	67	65	64	61
Excavator	85	0.4	87	81	78	75	69	67	65	64	61
Generator	82	0.5	85	79	76	73	67	65	63	62	59
Paver	85	0.5	88	82	79	76	70	68	66	65	62
Pneumatic tools	85	0.5	88	82	79	76	70	68	66	65	62
Scraper	85	0.4	87	81	78	75	69	67	65	64	61
Tractor	84	0.4	86	80	77	74	68	66	64	63	60

Reference noise levels from FHWA 2010 .

529 Cutter Way Apartments Project IS/MND
529 Cutter Way, Covina, CA
Appendix B: Construction Noise and Vibration Estimates
Prepared by MIG, Inc. November 2020

Sheet 2: Vibration Estimates

Table 1: Receptor Distances

Receptor	Distance	From
Industrial (Worst-Case)	25	Construction Equip
Industrial (West)	160	Construction Equip
Residential (East)	220	Construction Equip
Industrial (North)	230	Construction Equip

Table 2: Vibration Levels at 25 Feet

Equipment	Reference PPV at 25ft	Reference Lv at 25ft	Estimated PPV at 25ft	Estimated Lv at 25 ft
Roller	0.21	94	0.210	94.0
Large Bulldozer	0.089	87	0.089	87.0
Small Bulldozer	0.03	58	0.030	58.0
Loaded Truck	0.076	86	0.076	86.0
Jackhammer	0.035	79	0.035	79.0

Table 3: Vibration Levels at 160 Feet

Equipment	Reference PPV at 25ft	Reference Lv at 25ft	Estimated PPV at 160ft	Estimated Lv at 160 ft
Vibratory Roller	0.21	94	0.019	69.8
Large Bulldozer	0.089	87	0.008	62.8
Small Bulldozer	0.03	58	0.003	33.8
Loaded Truck	0.076	86	0.007	61.8
Jackhammer	0.035	79	0.003	54.8

Table 4: Vibration Levels at 220 Feet

Equipment	Reference PPV at 25ft	Reference Lv at 25ft	Estimated PPV at 220ft	Estimated Lv at 220 ft
Vibratory Roller	0.21	94	0.012	65.7
Large Bulldozer	0.089	87	0.005	58.7
Small Bulldozer	0.03	58	0.002	29.7
Loaded Truck	0.076	86	0.004	57.7
Jackhammer	0.035	79	0.002	50.7

Table 5: Vibration Levels at 230 Feet

Equipment	Reference PPV at 25ft	Reference Lv at 25ft	Estimated PPV at 230ft	Estimated Lv at 230 ft
Vibratory Roller	0.21	94	0.012	65.1
Large Bulldozer	0.089	87	0.005	58.1
Small Bulldozer	0.03	58	0.002	29.1
Loaded Truck	0.076	86	0.004	57.1
Jackhammer	0.035	79	0.002	50.1

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LINSCOTT
LAW &
GREENSPAN
engineers

TRANSPORTATION IMPACT STUDY

529 CUTTER WAY LIVE/WORK PROJECT

City of Covina, California
September 10, 2020

Prepared for:

Faith Church
1211 East Badillo Street
West Covina, California 91790

LLG Ref. 1-19-4360-1

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TRANSPORTATION IMPACT STUDY

529 CUTTER WAY LIVE/WORK PROJECT

City of Covina, California
September 10, 2020

1.0 INTRODUCTION

This transportation analysis has been conducted to identify and evaluate the potential transportation impacts of the proposed multi-family residential and live/work project in the City of Covina, California. The project site is located at 529 Cutter Way, at the northwest corner of the Cutter Way and San Bernardino Road intersection in the City of Covina. The project site location and general vicinity are shown in ***Figure 1-1***.

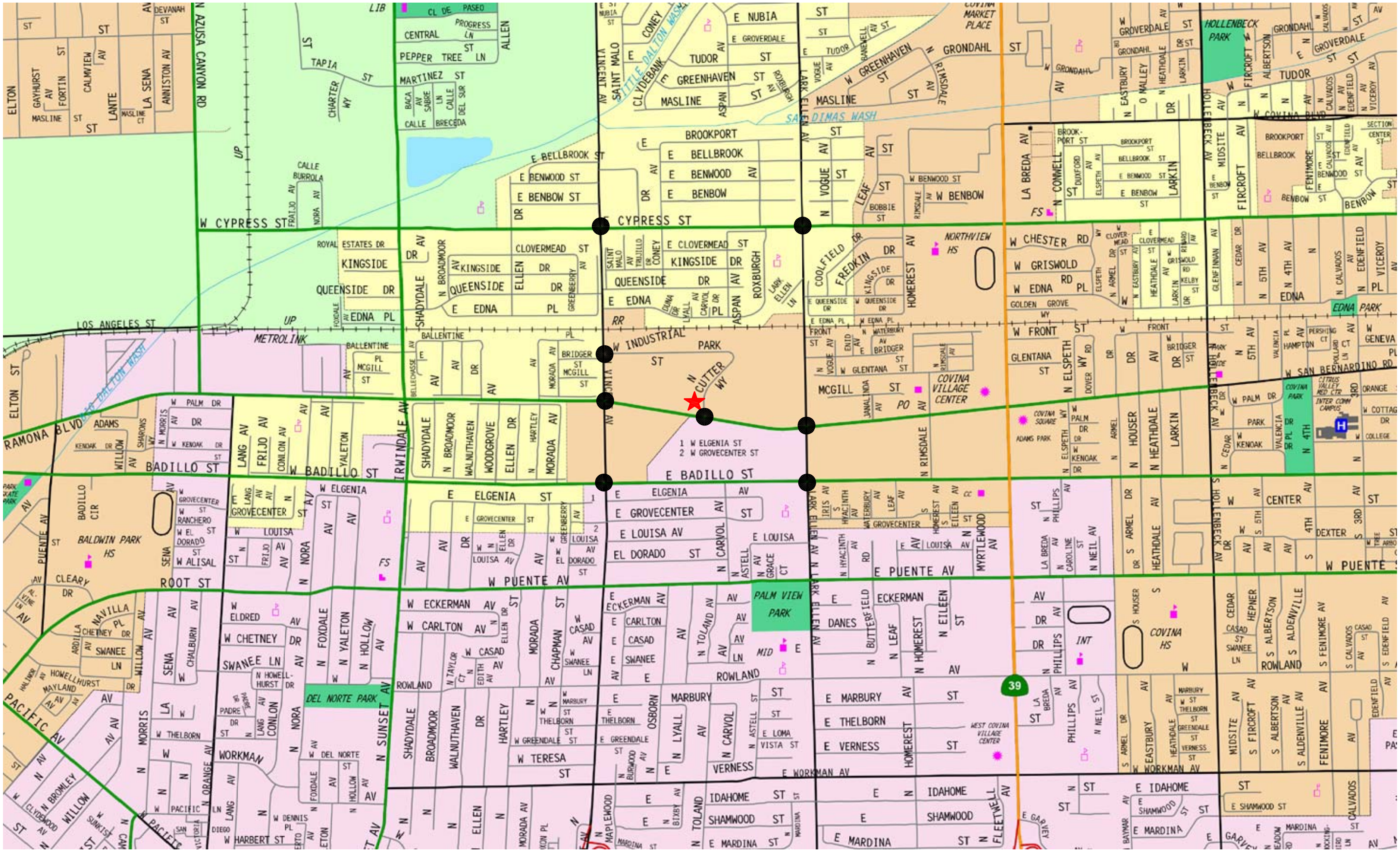
The transportation analysis follows the City of Covina transportation study guidelines[1]. This transportation analysis evaluates potential project-related impacts at eight (8) study intersections in the vicinity of the project site. The study intersections were determined in consultation with City of Covina staff. The Intersection Capacity Utilization method was used to determine volume-to-capacity ratios and corresponding Levels of Service for the signalized study intersections while the analysis method from the *Highway Capacity Manual*[2] (HCM) was utilized to determine intersection delay values and corresponding Levels of Service for the unsignalized study intersections.

This study (i) presents existing traffic volumes, (ii) evaluates existing-plus-project traffic volumes, (iii) forecasts future traffic volumes without the project, (iv) forecasts future traffic volumes with the proposed project, (v) determines proposed project-related impacts, and (vi) recommends mitigation measures, where necessary.

1.1 Study Area

A total of eight (8) study intersections have been identified for evaluation during the weekday morning and afternoon peak hours. The study intersections provide local access to the study area and define the extent of the boundaries for this transportation impact analysis. Further discussion of the existing street system and study area is provided in Section 4.0 herein.

[1] *Traffic Impact Analysis Guidelines*, City of Covina, May 2014.
[2] *Highway Capacity Manual*, 6th Edition, Transportation Research Board of the National Academies of Sciences-Engineering Medicine, 2016.



MAP SOURCE: RAND MCNALLY & COMPANY

PROJECT SITE

STUDY INTERSECTION

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FIGURE 1-1
VICINITY MAP

LINSCOTT, LAW & GREENSPAN, engineers

529 CUTTER WAY LIVE/WORK PROJECT

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The general location of the project in relation to the study intersections and surrounding street system is presented in *Figure 1-1*. The transportation analysis study area is generally comprised of those locations which have the greatest potential to experience significant traffic impacts due to the proposed project as defined by the Lead Agency. In traffic engineering practice, the study area generally includes those intersections that are:

a. Immediately adjacent or in close proximity to the project site;

b. In the vicinity of the project site that are documented to have current or projected future adverse operational issues; and

c. In the vicinity of the project site that are forecast to experience a relatively greater percentage of project-related vehicular turning movements.

The locations selected for analysis were based on the above criteria, the forecast project peak hour vehicle trip generation, anticipated distribution of project vehicular trips, and the existing nearby intersection and corridor operations. The eight study intersections included for analysis are as follows:

1. Vincent Avenue/Cypress Street
2. Vincent Avenue/Industrial Park Street (unsignalized)
3. Vincent Avenue/San Bernardino Road
4. Vincent Avenue/Badillo Street
5. Cutter Way/San Bernardino Road (unsignalized)
6. Lark Ellen Avenue/Cypress Street
7. Lark Ellen Avenue/San Bernardino Road
8. Lark Ellen Avenue/Badillo Street

Six of the study intersections selected for analysis are currently controlled by traffic signals, with the remaining two study intersections, Vincent Avenue/Industrial Park Street and Cutter Way/San Bernardino Road, controlled with two-way stop signs.

The intersection volume-to-capacity, delay and Level of Service calculations for the study intersections were used to evaluate the potential traffic-related impacts associated with area growth, cumulative projects and the proposed project. It should be noted that additional intersections in the project vicinity were not selected for analysis because they do not satisfy the aforementioned criteria, and as such, they are not anticipated to experience significant impacts due to project-generated traffic volumes.

1.2 Overview of Senate Bill 743

On September 27, 2013, Governor Brown signed Senate Bill (SB) 743 (Steinberg, 2013). Among other things, SB 743 creates a process to change the methodology to analyze transportation impacts under CEQA (Public Resources Code section 21000 and following), which could include analysis based on project vehicle miles traveled (VMT) rather than impacts to intersection Level of Service. On December 30, 2013, the State of California Governor's Office of Planning and Research (OPR) released a preliminary evaluation of alternative methods of transportation analysis. The intent of the original guidance documentation was geared first towards projects located within areas that are designated as transit priority areas, to be followed by other areas of the State. OPR issued other draft discussion documents in March 2015 and January 2016, suggesting some new revisions to the State CEQA Guidelines. In November 2017, OPR submitted the proposed amendments to the CEQA Guidelines to the State's Natural Resources Agency (that include a proposed new Guidelines section 15064.3 which governs how VMT-based analyses of potential traffic impacts should be conducted). On January 26, 2018, the Natural Resources Agency published a Notice of Rulemaking, commencing the formal rulemaking process for the amendments to the CEQA Guidelines. OPR has issued final revisions to the state CEQA Guidelines in order to implement the CEQA traffic analysis component of SB 743, and cities, like Covina, have adopted resolutions to update their transportation analysis guidelines to be in compliance.

1.3 Congestion Management Program Status

The Congestion Management Program (CMP) was previously a state-mandated program that was enacted by the California State Legislature with the passage of Proposition 111 in 1990 that primarily utilized a level of service (LOS) performance metric. Senate Bill 743 contains amendments to current congestion management law that allows counties to opt out of the LOS standards that would otherwise apply in areas where CMPs are utilized. Pursuant to California Government Code §65088.3, local jurisdictions may opt out of the CMP requirement without penalty if a majority of the local jurisdictions representing a majority of the County's population formally adopt resolutions requesting to opt out of the program. As of October 2019, the majority of local agencies representing the majority of the County's population have adopted resolutions to opt out of the program. Therefore, the CMP is no longer applicable in Los Angeles County.

2.0 PROJECT DESCRIPTION

2.1 Site Location

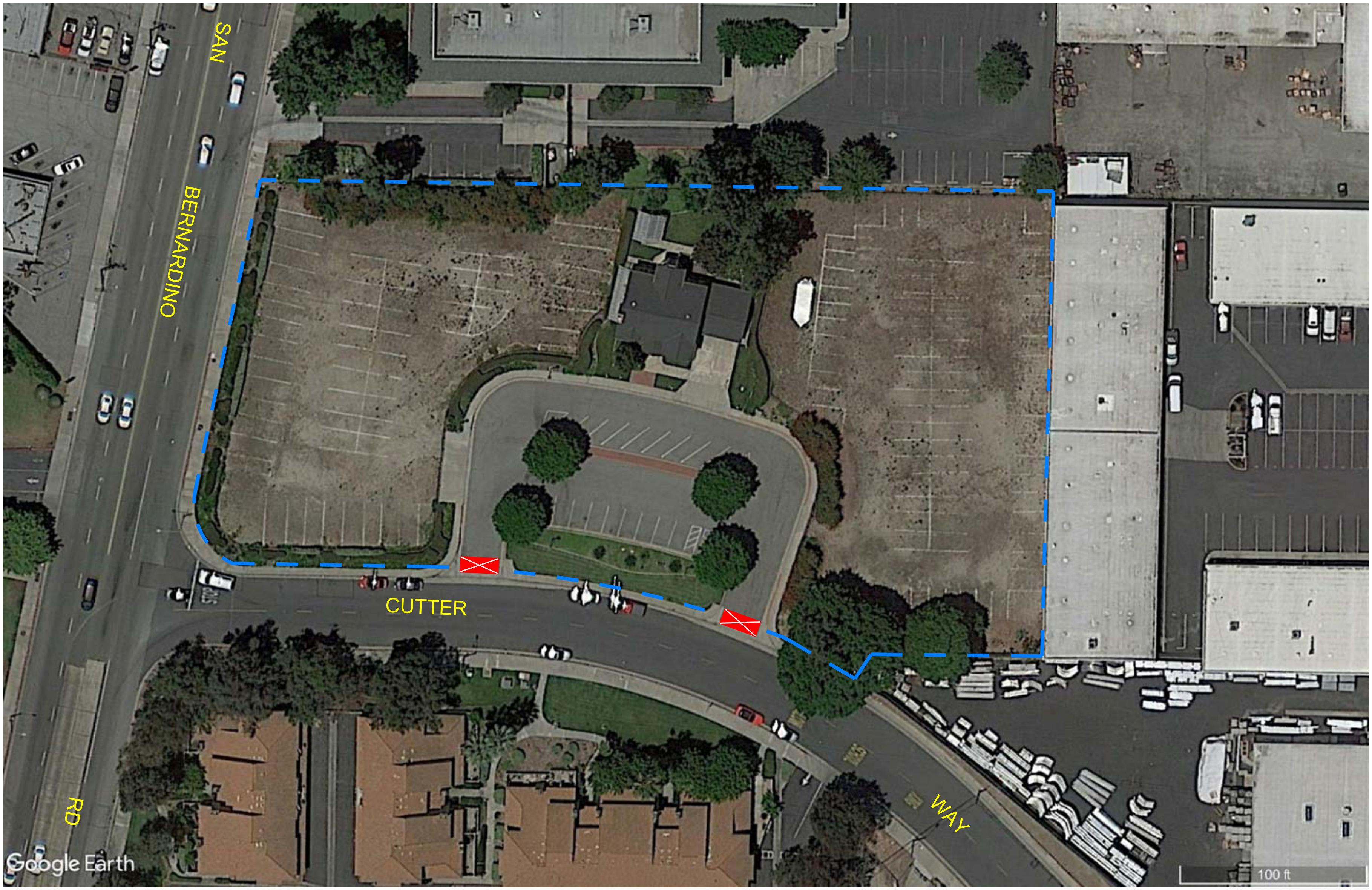
The proposed project site is comprised of 2.24 acres and is located at 529 Cutter Way, at the northwest corner of the Cutter Way and San Bernardino Road intersection in the City of Covina. The project site is generally bounded by an existing light industrial warehouse to the north, San Bernardino Road and Faith Church to the south, Cutter Way and existing apartment units to the east, and an existing light industrial facility operated by Southern California Edison to the west. An aerial photograph of the existing site is contained in ***Figure 2-1***.

2.2 Existing Project Site

The existing project site is developed with a building currently utilized by the Faith Church for warehousing/storage and other administrative functions. The existing structure and surface parking lot will be removed in order to accommodate the proposed development.

2.3 Proposed Project Description

The proposed project consists of the development of 49 multi-family residential apartment units and 11 live/work units. The proposed units will be arranged in building blocks that will vary in height and number of stories (one to four stories). The taller units will be located towards the rear of the property and are planned to decrease or step back in height as the buildings are located closer to the street property lines. The apartment units are planned to be comprised of one- to three-bedroom unit types and the live/work units are planned as one- to two-bedroom unit types. The floor area sizes for the dwelling units are planned to range from 650 square feet for the one-bedroom units to over 1,200 square feet for the three-bedroom units. On-site amenities include an outdoor courtyard and a community center which will be centrally-located within the site. On-site parking will be provided primarily through a partial subterranean parking structure and surface parking near the northern portion of the site. Vehicular access to the site is planned to be provided via a total of two driveways with one each on Cutter Way and San Bernardino Road. The site plan for the proposed project development site is illustrated in ***Figure 2-2***. Project buildout and occupancy is anticipated by the year 2023.



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MAP SOURCE: GOOGLE EARTH

PROJECT SITE

EXISTING DRIVEWAY

LINSCOTT, LAW & GREENSPAN, engineers

FIGURE 2-1

AERIAL PHOTOGRAPH OF EXISTING PROJECT SITE

529 CUTTER WAY LIVE/WORK PROJECT

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SOURCE: LOGOS ARCHITECTURE

FIGURE 2-2
SITE PLAN

LINSCOTT, LAW & GREENSPAN, engineers

529 CUTTER WAY LIVE/WORK PROJECT

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3.0 SITE ACCESS AND CIRCULATION

The site access scheme for the proposed 529 Cutter Way Live/Work project is displayed in *Figure 2-2*. The existing and proposed site access and circulation schemes are discussed in the following subsections.

3.1 Existing Site Access

Vehicular access to the existing site is currently provided via two (2) existing curb cuts on Cutter Way along the existing development site. The existing driveways currently accommodate full access (i.e., right-turn and left-turn ingress and egress traffic movements). An aerial photograph of the existing development site driveways and the adjacent roadways is presented in *Figure 2-1*.

3.2 Proposed Vehicular Site Access

The proposed site access scheme for the 529 Cutter Way Live/Work project is displayed in *Figure 2-2*. Vehicular access to the proposed project site would be provided via two (2) access driveways: one driveway on Cutter Way along the easterly property frontage and one driveway on San Bernardino Road along the southerly property frontage. A description of the project site driveways is provided in the following paragraphs. The number of vehicles forecast with development of the project site is discussed later in Section 7.0.

- *Cutter Way Driveway:*

  One project driveway is planned to be provided on the west side of Cutter Way along the easterly property frontage (i.e., by consolidating the existing driveways into one driveway on Cutter Way). The Cutter Way driveway is planned to provide main access to the garage entry as well as surface parking located at the north end of the site. Full vehicular access (i.e., right-turn and left-turn ingress and egress turning movements) is planned to be provided at the Cutter Way driveway. The proposed Cutter Way driveway will be constructed to City of Covina design standards.

- *San Bernardino Road Driveway:*

  The San Bernardino Road driveway will be located on the north side of San Bernardino Road along the southerly project frontage. This driveway is planned to provide secondary access to the site as well as to facilitate emergency access and circulation through the site via the fire access lane located around the perimeter of the property. Full access is planned to be provided (i.e., right-turn and left-turn ingress and egress movements) at the San Bernardino Road driveway. The proposed San Bernardino Road driveway will be constructed to City of Covina design standards.

3.3 Pedestrian Access

The project has been designed to encourage pedestrian activity and walking as a transportation mode[3]. Walkability is a term for the extent to which walking is readily available as a safe, connected, accessible and pleasant mode of transport. There are several criteria that are widely accepted as key aspects of the walkability of urban areas that should be satisfied. The underlying principle is that pedestrians should not be delayed, diverted, or placed in danger. The widely accepted characteristics of walkability are as follows:

- Connectivity: People can walk from one place to another without encountering major obstacles, obstructions, or loss of connectivity.
- Convivial: Pedestrian routes are friendly and attractive, and are perceived as such by pedestrians.
- Conspicuous: Suitable levels of lighting, visibility and surveillance over its entire length, with high quality delineation and signage.
- Comfortable: High quality and well-maintained footpaths of suitable widths, attractive landscaping and architecture, shelter and rest spaces, and a suitable allocation of space for pedestrians.
- Convenient: Walking is a realistic travel choice, partly because of the impact of the other criteria set forth above, but also because walking routes are of a suitable length as a result of land use planning with minimal delays.

A review of the proposed project pedestrian walkway network indicates that these five primary characteristics are accommodated as part of the proposed project. The interior of the project site is planned to provide a combination of landscape and hardscape improvements that facilitate internal accessibility and encourage active transportation. The project site is accessible from nearby commercial uses (e.g., retail, restaurants, etc.) and other amenities, along San Bernardino Road, as well as nearby public bus transit stops and sidewalks on San Bernardino Road and Cutter Way.

3.4 Bicycle Access

Bicycle access to the proposed project will be provided by the existing street network. Currently, there are no formal, designated on-street or off-street bicycle facilities in the project vicinity, although bicycle parking is provided along major corridors in the vicinity such as

[3] For example, refer to http://www.walkscore.com/, which generates a walkability score of approximately 64 (Somewhat Walkable) out of 100 for the project site. Walk Score calculates the walkability of an address by locating nearby stores, restaurants, schools, parks, etc. Walk Score measures how easy it is to live a car-lite lifestyle—not how pretty the area is for walking.

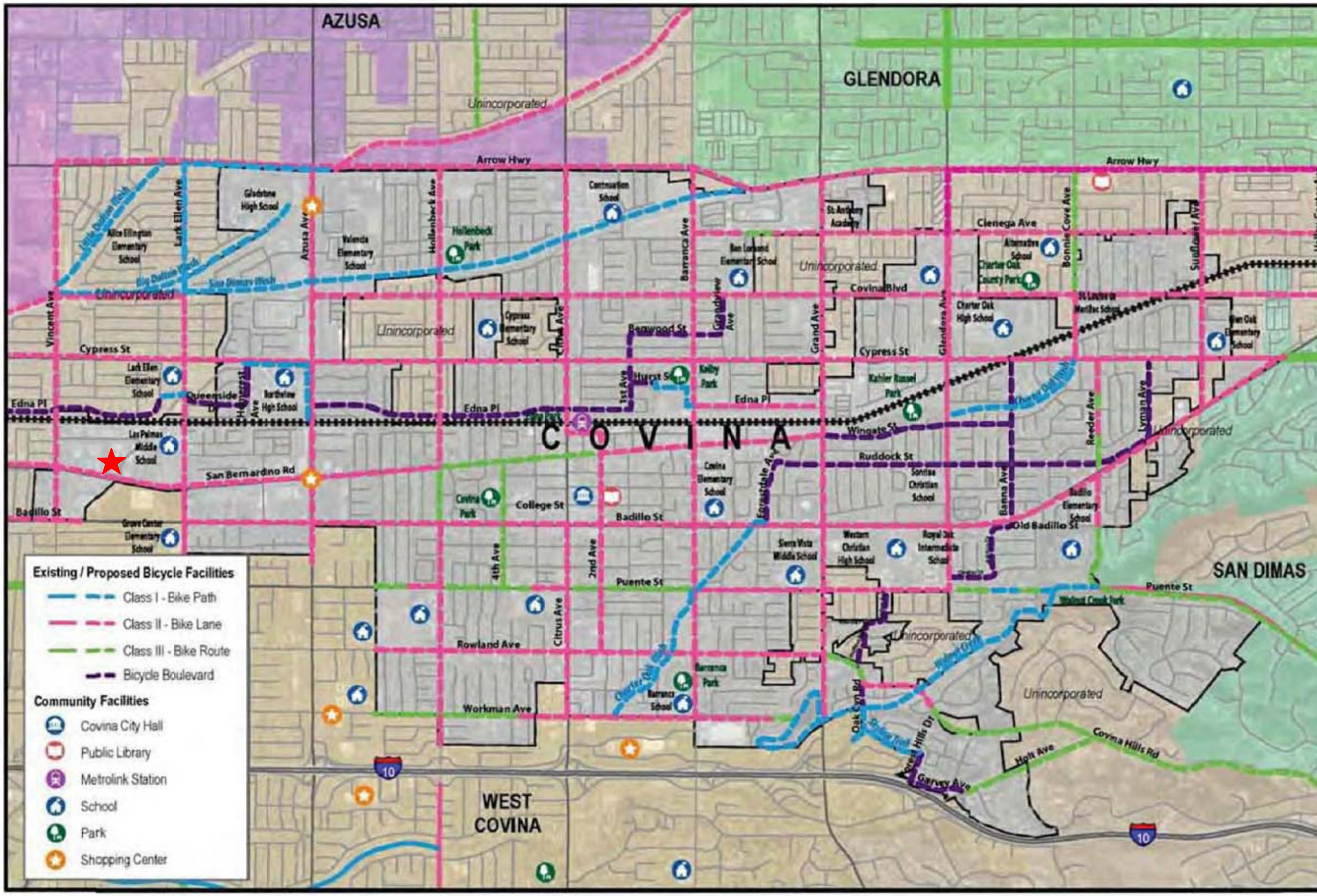
Badillo Street. The City of Covina Bicycle Master Plan[4] proposes a number of bicycle facilities near the project site. The proposed facilities within a quarter-mile radius include:

- San Bernardino Road: Class II Bike Lane west of Hollenbeck Avenue and east of Second Avenue, Class III Bike Route from Hollenbeck Avenue to Second Avenue

- Badillo Street: Class II Bike Lane from Lark Ellen Avenue to Cypress Street

The project is well-located to further facilitate and encourage bicycling as a mode of transportation as these facilities are constructed. The existing and proposed bicycle facilities in the project vicinity are illustrated in ***Figure 3-1***.

[4] City of Covina Bicycle Master Plan, Prepared by Alta Planning + Design, September 2011.



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SOURCE: CITY OF COVINA BICYCLE MASTER PLAN, SEPTEMBER 2011

★ PROJECT SITE

FIGURE 3-1
CITYWIDE BICYCLE NETWORK

LINSCOTT, LAW & GREENSPAN, engineers

529 CUTTER WAY LIVE/WORK PROJECT

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4.0 EXISTING STREET SYSTEM

4.1 Regional Highway System

Regional access to the project site is provided by the San Bernardino (I-10) and Foothill (I-210) Freeways. A brief description of the I-10 and I-210 Freeways is provided in the following paragraphs.

San Bernardino (I-10) Freeway is a major east-west freeway located approximately one mile south of the project site. The I-10 Freeway connects the City of Santa Monica with the City of Los Angeles and the municipalities of the San Gabriel Valley and San Bernardino County to the east. In the project vicinity, four mixed-flow mainline lanes are provided in each direction on the I-10 Freeway with auxiliary merge/weave lanes provided between some interchanges. Full access interchanges (i.e., eastbound and westbound on- and off-ramps) are provided at Vincent Avenue and Azusa Avenue.

Foothill (I-210) Freeway is a major east-west freeway located approximately two miles north of the project site. The I-210 Freeway connects the foothill communities from the westerly terminus in Sylmar to the easterly terminus in Redlands. In the project vicinity, four mixed-flow mainline lanes and one High Occupancy Vehicle lane are provided in each direction on the I-210 Freeway. Full access interchanges (i.e., eastbound and westbound on- and off-ramps) are provided at North Vernon Avenue (northerly extension of Lark Ellen Avenue) and Azusa Avenue.

4.2 Local Street System

Immediate access to the project site is provided via Cutter Way and San Bernardino Road. The list of study intersections selected in consultation with City staff for analysis of potential impacts related to the proposed project is presented in ***Table 4-1***. Two of the eight study intersections selected for analysis are presently controlled by stop signs, with the remaining six study intersections presently controlled by traffic signals. The existing lane configurations at the study intersections are displayed in ***Figure 4-1***.

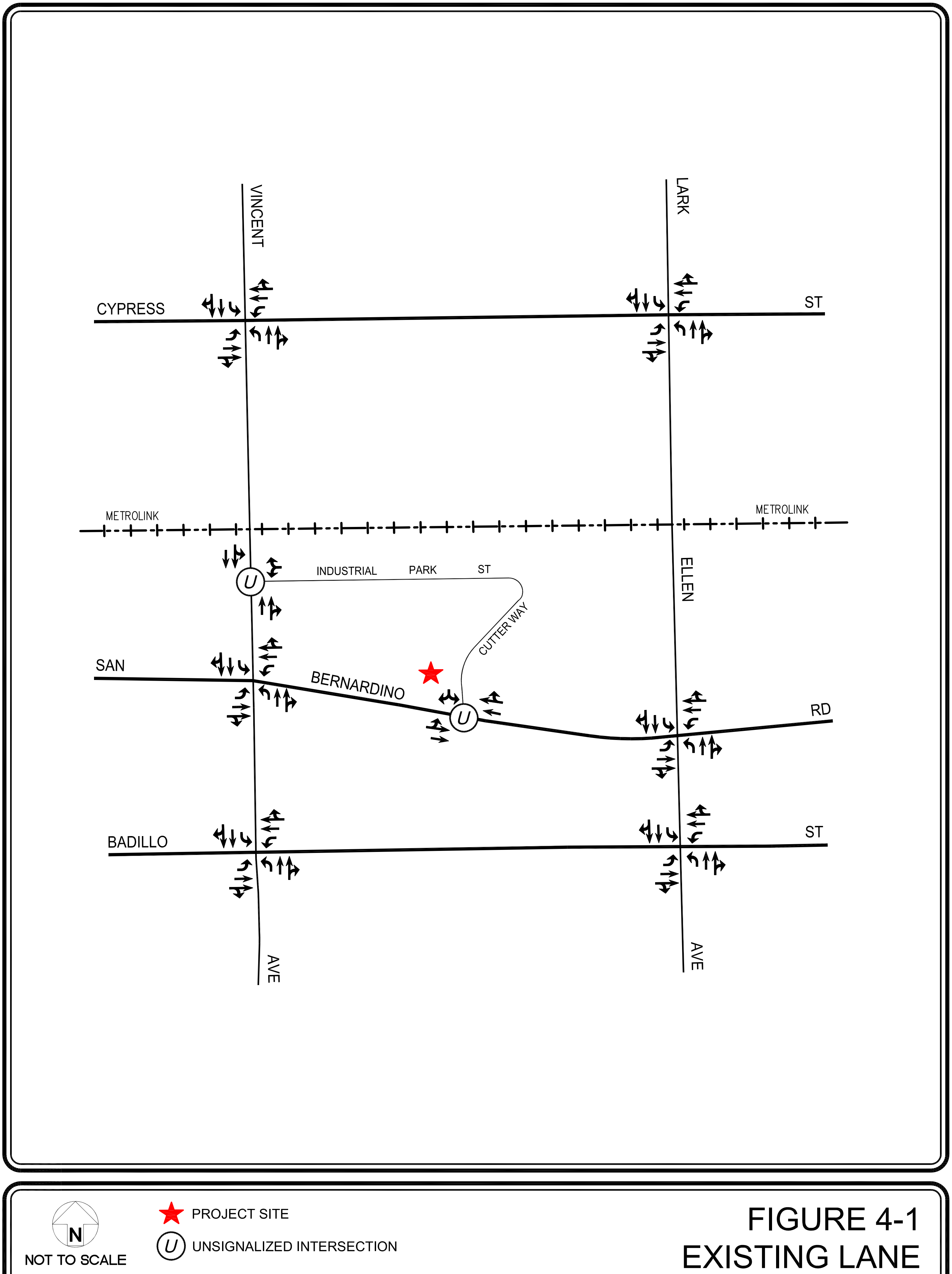
4.3 Roadway Classifications

The City of Covina utilizes similar roadway categories recognized by regional, state and federal transportation agencies. There are four general categories in the roadway hierarchy, ranging from freeways with the highest capacity to two-lane undivided roadways with the lowest capacity. The roadway categories are summarized as follows:

- *Freeways* are limited-access and high speed travel ways included in the state and federal highway systems. Their purpose is to carry regional through-traffic. Access is provided by interchanges with typical spacing of one mile or greater. No local access is provided to adjacent land uses.

Table 4-1
LIST OF STUDY INTERSECTIONS

NO.	INTERSECTION	TRAFFIC CONTROL	JURISDICTION(S)
1	Vincent Avenue/Cypress Street	Signalized	County of Los Angeles
2	Vincent Avenue/Industrial Park Street	Unsignalized	City of Covina/County of Los Angeles
3	Vincent Avenue/San Bernardino Road	Signalized	City of Covina
4	Vincent Avenue/Badillo Street	Signalized	City of Covina/City of West Covina
5	Cutter Way/San Bernardino Road	Unsignalized	City of Covina/City of West Covina
6	Lark Ellen Avenue/Cypress Street	Signalized	County of Los Angeles
7	Lark Ellen Avenue/San Bernardino Road	Signalized	City of Covina
8	Lark Ellen Avenue/Badillo Street	Signalized	City of Covina/City of West Covina



LINSCOTT, LAW & GREENSPAN, engineers

FIGURE 4-1
EXISTING LANE CONFIGURATIONS
529 CUTTER WAY LIVE/WORK PROJECT

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- *Arterial* roadways are major streets that primarily serve through-traffic and provide access to abutting properties as a secondary function. Arterials are generally designed with two to six travel lanes and their major intersections are signalized. This roadway type is divided into two categories: principal and minor arterials. Principal arterials are typically four-or-more lane roadways and serve both local and regional through-traffic. Minor arterials are typically two-to-four lane streets that service local and commuter traffic.

- *Collector* roadways are streets that provide access and traffic circulation within residential and non-residential (e.g., commercial and industrial) areas. Collector roadways connect local streets to arterials and are typically designed with two through travel lanes (i.e., one through travel lane in each direction) that may accommodate on-street parking. They may also provide access to abutting properties.

- *Local* roadways distribute traffic within a neighborhood, or similar adjacent neighborhoods, and are not intended for use as a through-street or a link between higher capacity facilities such as collector or arterial roadways. Local streets are fronted by residential uses and do not typically serve commercial uses.

4.4 Roadway Descriptions

A review of the important roadways in the project site vicinity and study area is summarized in ***Table 4-2***. As indicated in *Table 4-2*, the important roadways within the project study area were reviewed in terms of the number of lanes provided, parking restrictions, posted speed limits, etc. Additionally, the roadway classifications of key roads in the project study area are also presented in *Table 4-2*.

4.5 Existing Transit Services

Public transit service within the project study area is currently provided by the Foothill Transit Authority, the City of West Covina transit system, and Metrolink, as described in the following sections. A summary of the existing transit services, including the transit routes, destinations and number of trains and buses during the weekday AM and PM peak hours is presented in ***Table 4-3***.

4.5.1 *Public Bus Transit*

Public bus transit service in the project study area is provided by Foothill Transit and the City of West Covina. A summary of the existing transit service, including the transit route, destinations and peak hour headways is presented in *Table 4-3*. The existing public transit routes in the project site vicinity are illustrated in ***Figure 4-2***.

4.5.2 *Regional Rail Transit*

Metrolink provides a rail stop for the San Bernardino Line, which extends between Union Station in Downtown Los Angeles and the City of San Bernardino. This Metrolink stop provides connectivity between the proposed project and the regional network of rail lines operated by

Table 4-2
EXISTING ROADWAY DESCRIPTIONS

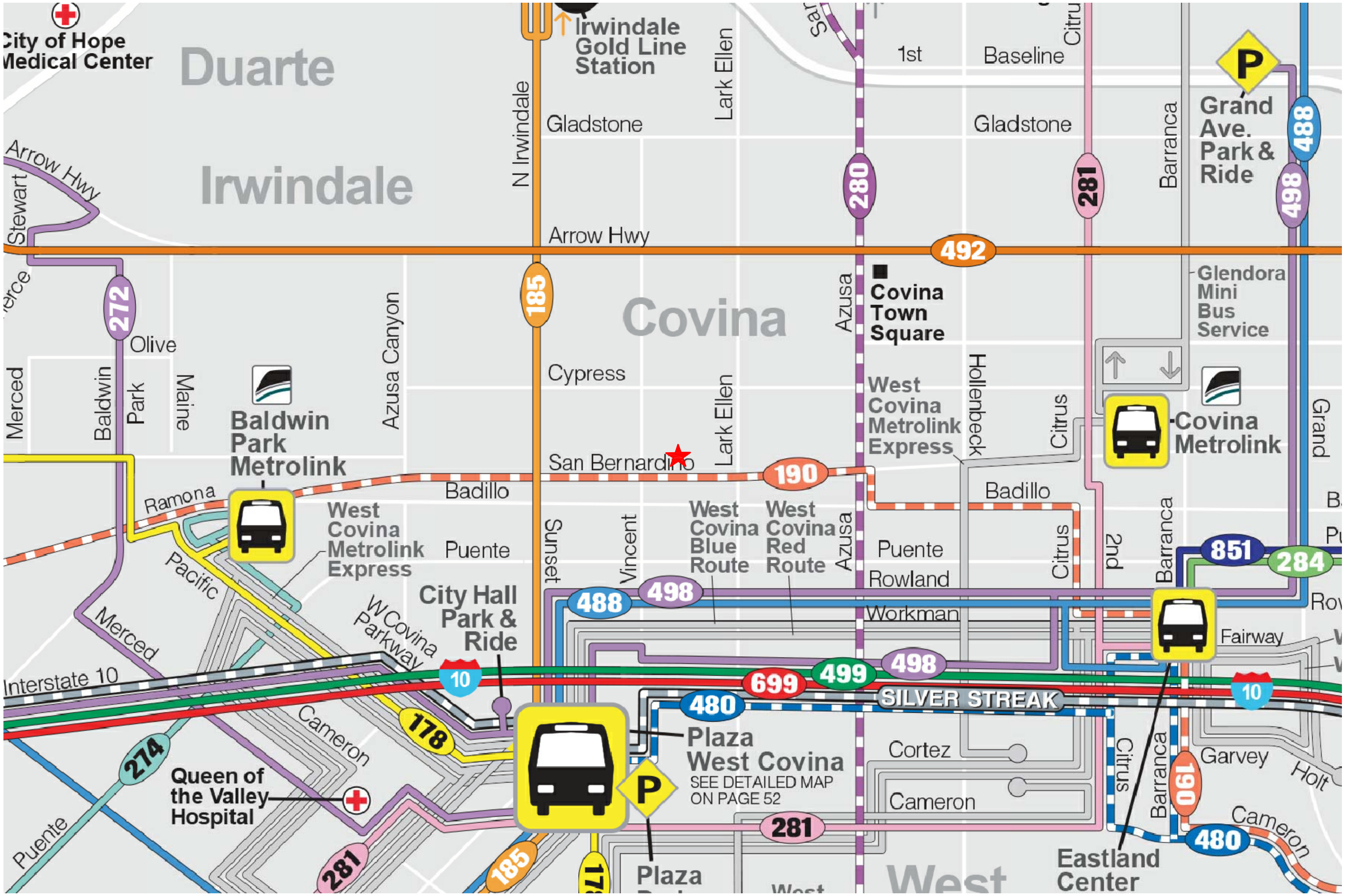
Roadway	Classification [1]	Travel Lanes Direction [2]	Travel Lanes No. Lanes [3]		Median Types [4]	Speed Limit
Vincent Avenue						
-North of San Bernardino Road	Secondary Highway	NB-SB	4	[5]	N/A	40 to 45
-San Bernardino Road to Badillo Street	Collector	NB-SB	4	[6]	RMI	35
-South of Badillo Street	Residential Thoroughfare	NB-SB	4	[7]	RMI	35
Cutter Way	Local Street	NB-SB	2	[6]	N/A	25
Lark Ellen Avenue						
-North of Edna Place	Secondary Highway	NB-SB	4	[5]	N/A	40
-North of Badillo Street	Collector	NB-SB	4	[6]	N/A	40
-South of Badillo Street	Residential Main	NB-SB	4	[7]	N/A	40
Cypress Street	Secondary Highway	EB-WB	4	[5]	N/A	40
Industrial Park Street	Local Street	EB-WB	2	[6]	N/A	25
San Bernardino Road						
-East of Vincent Avenue	Secondary Highway	EB-WB	4	[5]	2WLT	40
-West of Vincent Avenue	Collector	EB-WB	4	[6]	N/A	35 to 40
Badillo Street						
-West of Lark Ellen Avenue	Commercial/Mixed-Use Main	EB-WB	4	[7]	RMI	40
-East of Lark Ellen Avenue	Secondary Arterial	EB-WB	4	[6][8]	RMI	45

Notes:
[1] Roadway classifications obtained from the Los Angeles County General Plan *Highway Plan* , adopted May 2014,
City of Covina General Plan *Circulation Element,* adopted April 18, 2000 and West Covina *General Plan* , adopted December 2016.
[2] Direction of roadways in the project area: NB-SB = northbound and southbound; and EB-WB = eastbound and westbound.
[3] Number of lanes in both directions on the roadway.
[4] Median type of the road: RMI = Raised Median Island; 2WLT = 2-Way Left-Turn Lane; and N/A = Not Applicable.
[5] County of Los Angeles
[6] City of Covina
[7] City of West Covina
[8] Class II Bike Lane

Table 4-3
EXISTING TRANSIT ROUTES [1]

ROUTE	DESTINATIONS	ROADWAY(S) NEAR SITE	NO. OF BUSES/TRAINS DURING PEAK HOUR DIR	AM	PM
Foothill Transit 190	Pomona to El Monte via Walnut, Covina, West Covina and Baldwin Park	Vincent Avenue, Lark Ellen Avenue, San Bernardino Road	EB WB	4 4	4 3
Foothill Transit 280	Puente Hills to Azusa via La Puente, West Covina and Covina	Azusa Avenue, San Bernardino Road	NB SB	4 4	4 4
Foothill Transit 488	Citrus Gold Line Station to El Monte Transit Station via Glendora, Covina, West Covina and Baldwin Park	Vincent Avenue, Workman Avenue	EB WB	3 3	2 2
Foothill Transit 492	Montclair to El Monte via Claremont, La Verne, San Dimas, Glendora, Covina, Irwindale and Arcadia	Vincent Avenue, Lark Ellen Avenue, Arrow Highway	EB WB	2 3	2 2
West Covina Blue Line	City of West Covina	Vincent Avenue, Lark Ellen Avenue, Badillo Street	Clockwise C/Clockwise	0 2	0 2
West Covina Red Line	City of West Covina	Lark Ellen Avenue, Puente Avenue	Clockwise C/Clockwise	2 0	2 0
Metrolink - San Bernardino Line	San Bernardino to Downtown Los Angeles via Rialto, Fontana, Rancho Cucamonga, Upland, Montclair, Claremont, Pomona, Covina, Baldwin Park, El Monte and Cal State LA	Citrus Avenue, Front Street	EB WB	1 2	2 1
			Total	**34**	**30**

[1] Sources: Foothill Transit, City of West Covina (Go West Shuttle) and Metrolink websites, 2019.



MAP SOURCE: FOOTHILL TRANSIT WEBSITE 2019

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LINSCOTT, LAW & GREENSPAN, engineers

FIGURE 4-2
EXISTING TRANSIT ROUTES

529 CUTTER WAY LIVE/WORK PROJECT

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Amtrak, Metro and SCRRA. The Covina station is located north of Front Street on the east side of Citrus Avenue (approximately two miles east of the site) and connects with the public bus transit services. As summarized in *Table 4-3*, during the weekday AM peak hour, three trains per hour are provided at the Covina station: two travel westbound to Los Angeles Union Station, and one travels eastbound to the City of San Bernardino. During the weekday PM peak hour, three trains per hour are provided at the Covina station: two travel eastbound to the City of San Bernardino, and one travels westbound to Los Angeles Union Station. An illustration of the regional rail network serving the greater Los Angeles area is presented in ***Figure 4-3***.

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MAP SOURCE: METROLINK 2019

FIGURE 4-3
REGIONAL RAIL NETWORK

LINSCOTT, LAW & GREENSPAN, engineers

529 CUTTER WAY LIVE/WORK PROJECT

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5.0 TRAFFIC COUNTS

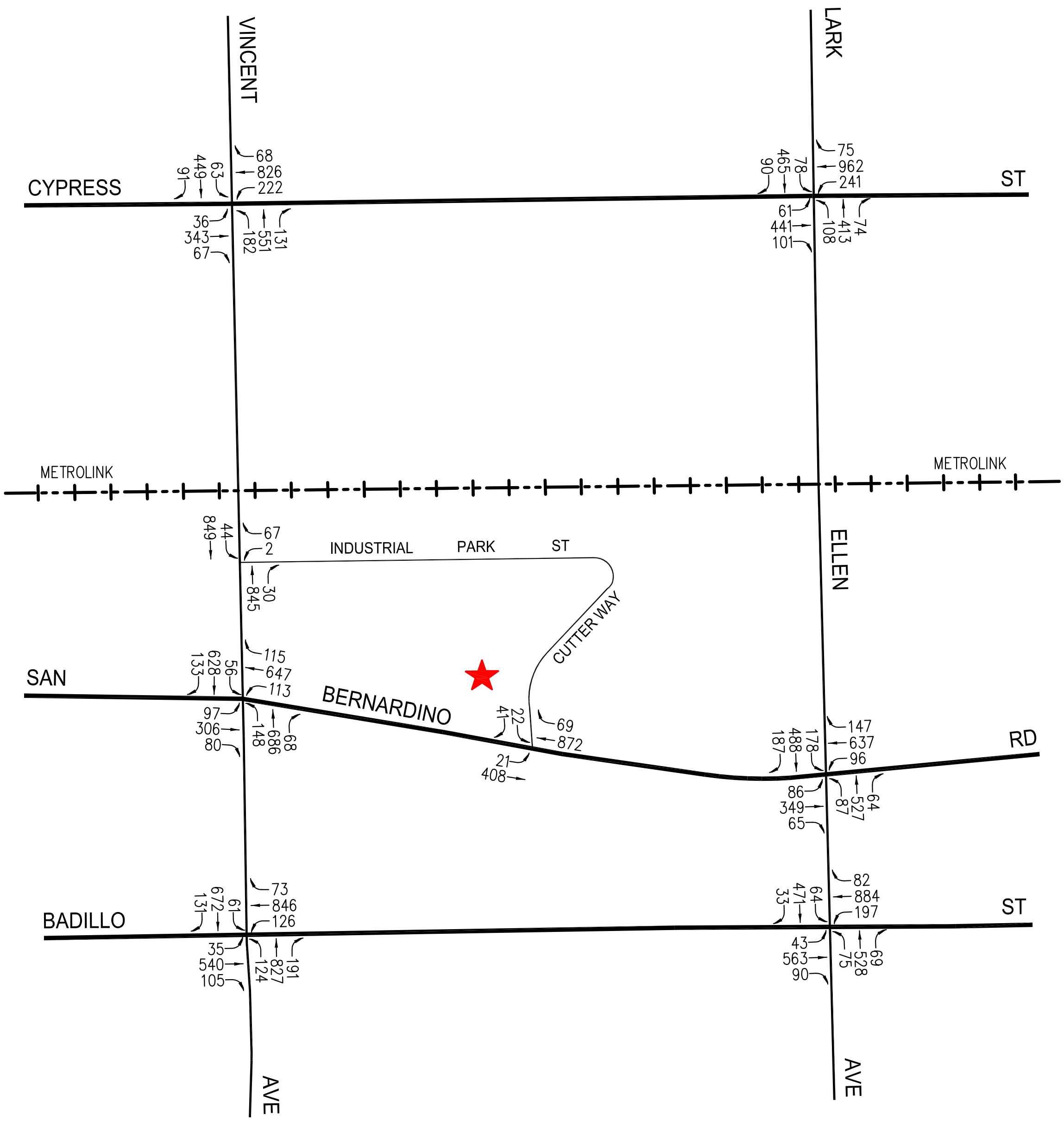
Existing manual counts of vehicular turning movements were conducted for a typical weekday at each of the eight (8) study intersections during the morning (AM) and afternoon (PM) commute periods to determine the peak hour traffic volumes. The manual counts were conducted in Fall 2019 by an independent traffic count subconsultant from 7:00 AM to 9:00 AM to determine the weekday AM peak commute hour and from 4:00 PM to 6:00 PM to determine the weekday PM peak commute hour. The traffic counts were increased by an annual ambient traffic growth rate (i.e., 1.0% per year) to reflect existing (2020) conditions. In conjunction with the manual turning movement vehicle counts, a count of bicycle and pedestrian volumes were collected during the peak periods. It is noted that all of the traffic counts were conducted when local schools were in regular session. Traffic volumes at the study intersections show the morning and afternoon peak periods typically associated with the peak commute hours in the metropolitan area.

The existing weekday AM and PM peak hour manual counts of vehicle movements at the study intersections are summarized in ***Table 5-1***. The existing traffic volumes at the study intersections during the weekday AM and PM peak hours are shown in ***Figures 5-1*** and ***5-2***, respectively. For each study intersection, the highest one-hour total traffic volumes (i.e., four consecutive 15-minute time intervals) traversing through the intersection during the 7:00 to 9:00 AM and 4:00 to 6:00 PM time periods were selected so as to determine the respective weekday AM and PM peak hour traffic volumes for each study intersection. For purposes of the transportation impact analysis, this common traffic engineering practice ensures that a more conservative (i.e., worst case) assessment of existing operating conditions be attained for each study intersection. Therefore, the traffic volumes shown in *Figures 5-1* and *5-2* for the study intersections do not necessarily reflect the same exact one hour time period during the morning and/or afternoon peak commuter conditions (i.e., one intersection's peak hour may have occurred between 7:30 and 8:30 AM, while another intersection's peak hour may have occurred between 7:45 and 8:45 AM). Summary data worksheets of the manual vehicle, pedestrian and bicycle counts of the study intersections are contained in ***Appendix A***.

Table 5-1
EXISTING TRAFFIC VOLUMES [1]
WEEKDAY AM AND PM PEAK HOURS

NO.	INTERSECTION	DATE	DIR	AM PEAK HOUR BEGAN	AM PEAK HOUR VOLUME	PM PEAK HOUR BEGAN	PM PEAK HOUR VOLUME
1	Vincent Avenue/ Cypress Street	11/06/2019	NB	7:15 AM	864	4:45 PM	679
			SB		603		639
			EB		446		1,151
			WB		1,116		510
2	Vincent Avenue/ Industrial Park Street	11/06/2019	NB	7:15 AM	875	4:45 PM	789
			SB		893		758
			EB		0		0
			WB		69		45
3	Vincent Avenue/ San Bernardino Road	11/06/2019	NB	7:15 AM	902	4:30 PM	779
			SB		817		746
			EB		483		923
			WB		875		506
4	Vincent Avenue/ Badillo Street	11/06/2019	NB	7:15 AM	1,142	4:45 PM	885
			SB		864		888
			EB		680		1,214
			WB		1,045		689
5	Cutter Way/ San Bernardino Road	11/06/2019	NB	7:15 AM	0	4:45 PM	0
			SB		63		26
			EB		429		851
			WB		941		479
6	Lark Ellen Avenue/ Cypress Street	09/19/2019	NB	7:00 AM	595	4:15 PM	667
			SB		633		570
			EB		603		1,270
			WB		1,278		586
7	Lark Ellen Avenue/ San Bernardino Road	09/18/2019	NB	7:15 AM	678	5:00 PM	783
			SB		853		673
			EB		500		1,000
			WB		880		541
8	Lark Ellen Avenue/ Badillo Street	09/18/2019	NB	7:15 AM	672	4:45 PM	732
			SB		568		683
			EB		696		1,042
			WB		1,163		615

[1] Counts conducted by City Traffic Counters. The traffic counts were adjusted by 1% per year to account for ambient growth in determining year 2020 conditions.



PROJECT SITE

NOT TO SCALE

LINSCOTT, LAW & GREENSPAN, engineers

FIGURE 5-1
EXISTING TRAFFIC VOLUMES
WEEKDAY AM PEAK HOUR
529 CUTTER WAY LIVE/WORK PROJECT

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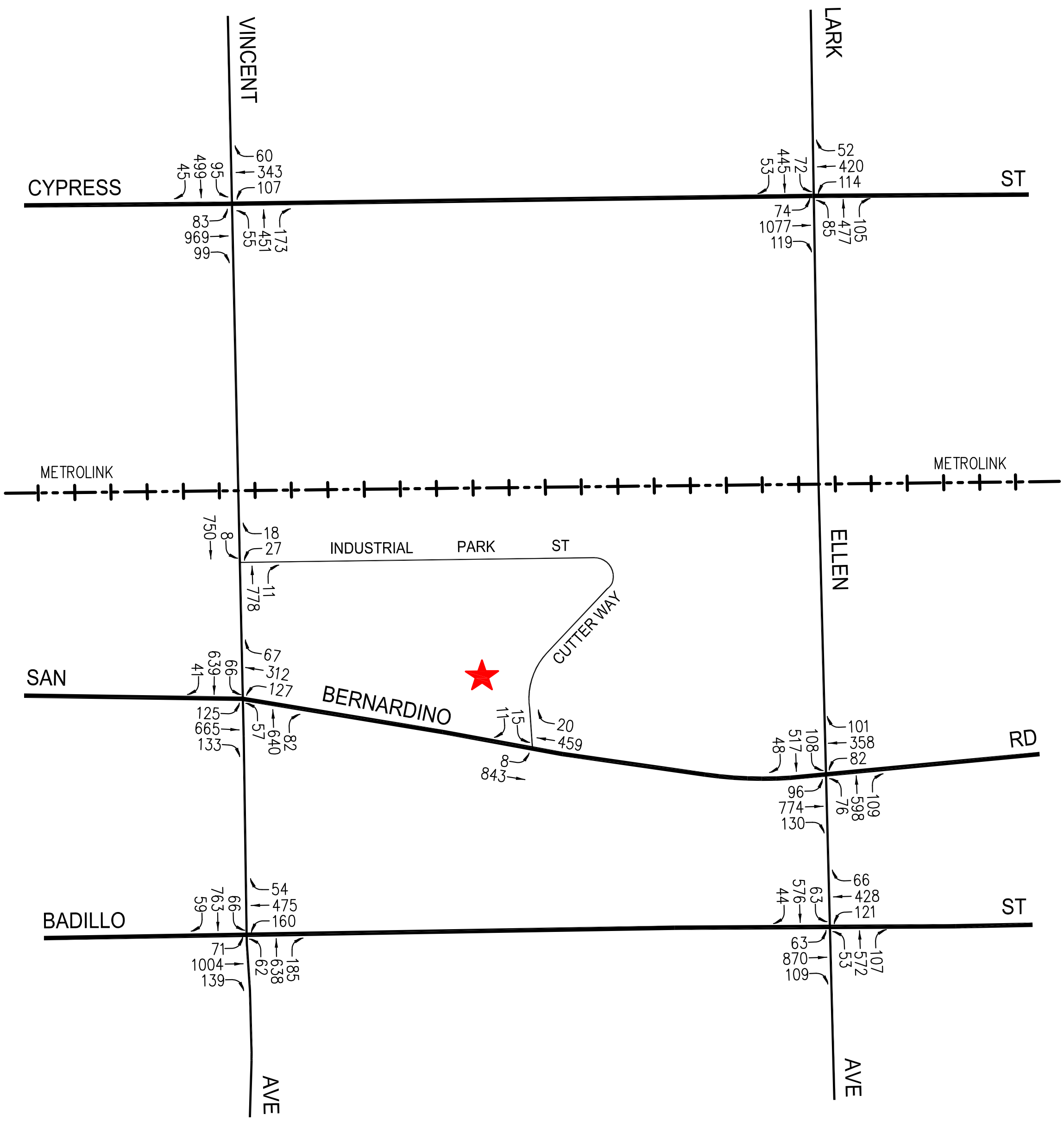

PROJECT SITE

NOT TO SCALE

LINSCOTT, LAW & GREENSPAN, engineers

FIGURE 5-2
EXISTING TRAFFIC VOLUMES
WEEKDAY PM PEAK HOUR
529 CUTTER WAY LIVE/WORK PROJECT

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6.0 CUMULATIVE DEVELOPMENT PROJECTS

The forecast of future pre-project conditions was prepared in accordance to procedures outlined in Section 15130 of the CEQA Guidelines. Specifically, the CEQA Guidelines provide two options for developing the future traffic volume forecast:

> "(A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the [lead] agency, or
>
> (B) A summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect. Such plans may include: a general plan, regional transportation plan, or plans for the reduction of greenhouse gas emissions. A summary of projections may also be contained in an adopted or certified prior environmental document for such a plan. Such projections may be supplemented with additional information such as a regional modeling program. Any such document shall be referenced and made available to the public at a location specified by the lead agency."

Accordingly, the transportation analysis provides a highly conservative estimate of future pre-project traffic volumes as it incorporates both the "A" and "B" options outlined in the CEQA Guidelines for purposes of developing the forecast.

6.1 Related Projects

A forecast of on-street traffic conditions prior to occupancy of the proposed project was prepared by incorporating the potential trips associated with other known development projects (related projects) in the area. With this information, the potential impact of the proposed project can be evaluated within the context of the cumulative impact of all ongoing development. The related projects research was based on information on file at the City of Covina Community Development Department, the City of West Covina Planning Department, and the County of Los Angeles Department of Regional Planning. The related projects in the study area are presented in ***Table 6-1***. The locations of the related projects are shown in ***Figure 6-1***.

Traffic volumes expected to be generated by the related projects were calculated using rates provided in the ITE *Trip Generation Manual*[5]. The related projects' respective traffic generation for the weekday AM and PM peak hours, as well as on a daily basis for a typical weekday, is summarized in *Table 6-1*. As shown in *Table 6-1*, the related projects are expected to generate a combined total of 14,147 daily trips during a typical weekday, 1,046 vehicle trips (552 inbound trips and 494 outbound trips) during the weekday AM peak hour, and 1,224 vehicle trips (588

[5] Institute of Transportation Engineers *Trip Generation Manual*, 9th and 10th Editions, Washington, D.C., 2012, 2017.

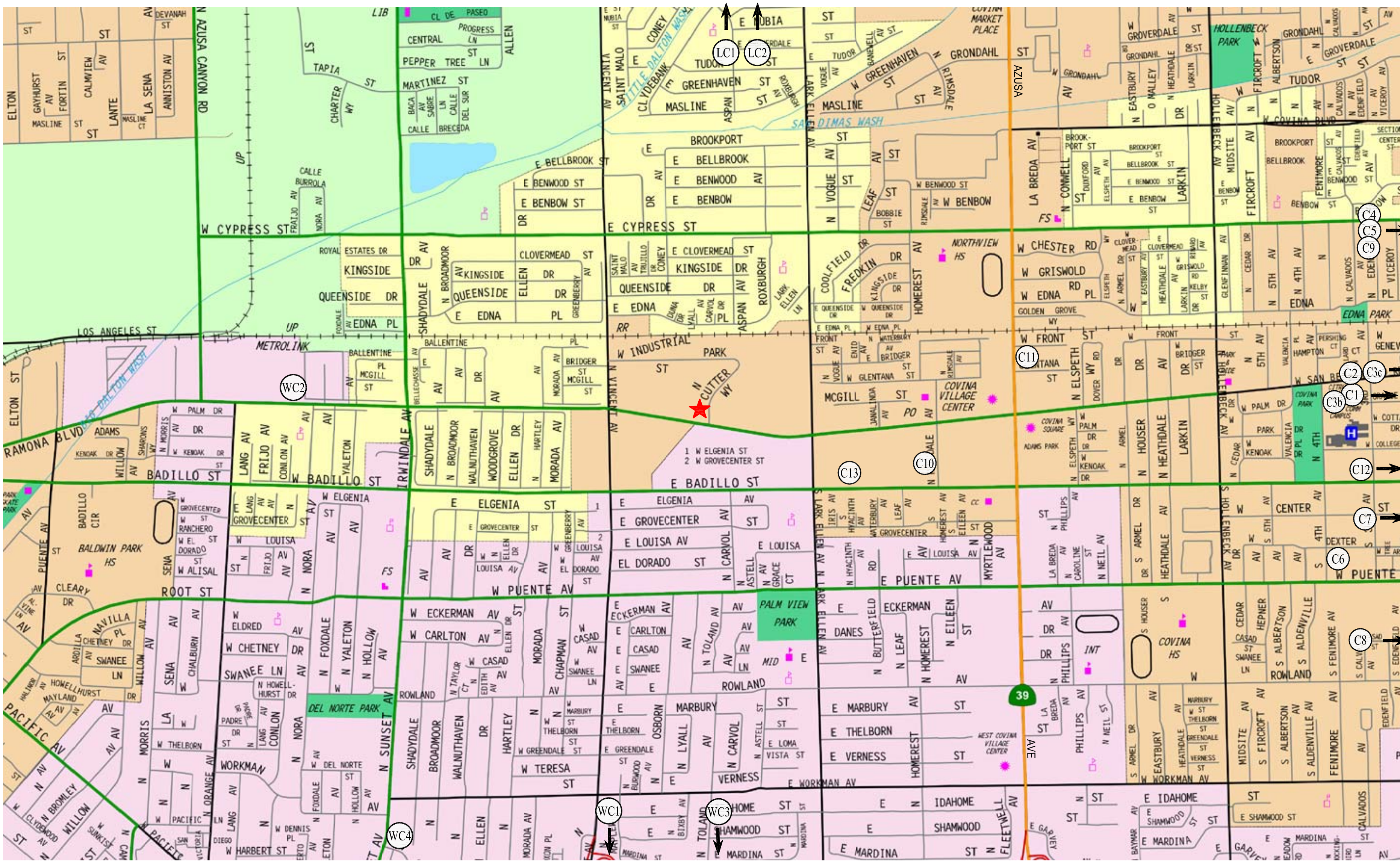
TABLE 6-1
RELATED PROJECTS LIST AND TRIP GENERATION [1]

MAP NO.	PROJECT STATUS	PROJECT NAME/NUMBER ADDRESS/LOCATION	LAND USE DATA: LAND-USE	LAND USE DATA: SIZE	PROJECT DATA SOURCE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2] IN	AM OUT	AM TOTAL	PM PEAK HOUR VOLUMES [2] IN	PM OUT	PM TOTAL
City of Covina												
C1	Under Construction	City Ventures Covina 3 400 Block North Citrus Avenue	Condominium Retail	68 DU 5,794 GLSF	[3] [4]	395 247	5 4	25 2	30 6	23 10	12 11	35 21
C2	Proposed	Covina Townhomes (Site A) Project NWC of Citrus Avenue & San Bernardino Road	Townhome Restaurant Retail	161 DU 3,800 GSF 13,500 GLSF	[5]	1,700	36	72	108	87	58	145
C3b C3c	Under Construction	Covina Townhomes Project (Sites B1, B2 & C)	Townhome Retail Office	18 DU 3,370 GLSF 1,030 GSF	[6]	219	6	7	13	11	10	21
C4	Built	1162 North Citrus Avenue	Condominium	117 DU	[3]	680	9	42	51	41	20	61
C5	Approved	North Citrus Avenue & East Covina Boulevard	Office Event Center	15,000 GSF 25,000 GSF	[7] [8]	165 846	20 34	3 17	23 51	4 34	18 35	22 69
C6	Under Construction	276 West Dexter Street	Condominium	3 DU	[3]	17	0	1	1	1	1	2
C7	Built	172 East Center Street	Apartment	5 DU	[9]	33	1	2	3	2	1	3
C8	Approved	525 South Citrus Avenue	Retail/Office Restaurant	5,900 GLSF 5,000 GSF	[4] [10]	252 2,481	4 116	2 111	6 227	11 85	11 78	22 163
C9	Under Construction	Covina Transit Center Park & Ride North Citrus Avenue & Covina Boulevard	Retail Parking Structure	4,800 GLSF 359 Occupied Spaces	[11] [12]	181 1,393	3 128	2 30	5 158	9 49	9 148	18 197
C10	Proposed	Covina Bowl 1060 West San Bernardino Road	Townhome Office	113 DU 12,000 GSF	[13] [14]	615 117	11 12	30 2	41 14	31 2	19 12	50 14
C11	Proposed	Avid Hotel 578 North Azusa Avenu	Hotel	68 Occ. Rooms		832	24	18	42	25	25	50
C12	Proposed	135 East Badillo Street	Retail Condominium	25,024 GLSF 10 DU	[11] [16]	945 73	15 1	9 4	24 5	46 4	49 2	95 6
C13	Proposed	1201 West Badillo Street	Apartment	28 DU	[16]	205	3	10	13	10	6	16

TABLE 6-1 (Continued)
RELATED PROJECTS LIST AND TRIP GENERATION [1]

MAP NO.	PROJECT STATUS	PROJECT NAME/NUMBER ADDRESS/LOCATION	LAND USE DATA		PROJECT DATA SOURCE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2]			PM PEAK HOUR VOLUMES [2]		
			LAND-USE	SIZE			IN	OUT	TOTAL	IN	OUT	TOTAL
City of West Covina												
WC1	Built	200 South Vincent Avenue	Fast-Food Restaurant	4,214 GSF	[15]	1,985	86	83	169	72	66	138
WC2	Proposed	1611-1623 West San Bernardino Road	Condominium	24 DU	[16]	176	3	8	11	8	5	13
WC3	Proposed	1388 East Garvey Avenue North	Public Storage	78,474 GSF	[17]	118	5	3	8	6	7	13
WC4	Proposed	1415 West Garvey Avenue North	Assisted Living	80,086 GSF	[18]	336	24	7	31	11	27	38
County of Los Angeles												
LC1	Proposed	16741 East Arrow Highway	Retail	1,856 GLSF	[10]	70	1	1	2	3	4	7
LC2	Proposed	16722 East Arrow Highway	Condominium	9 DU	[16]	66	1	3	4	3	2	5
TOTAL						14,147	552	494	1,046	588	636	1,224

[1] Sources: City of Covina Community Development Department, City of West Covina Planning Department and County of Los Angeles Department of Regional Planning. Trip generations for the related projects are based on ITE "Trip Generation Manual", 9th Edition, 2012 and 10th Edition, 2017 (as referenced in the Project Data Source column), except as noted.
[2] Trips are one-way traffic movements, entering or leaving.
[3] ITE Land Use Code 230 (Residential Condominium/Townhouse) 9th Edition trip generation average rates.
[4] ITE Land Use Code 820 (Shopping Center) 9th Edition trip generation average rates.
[5] Source: "Covina Townhomes (Site A) Project Traffic Impact Study", prepared by LLG Engineers, May 9, 2018.
[6] Source: "Covina Townhomes Project Traffic Impact Study", prepared by LLG Engineers, October 9, 2017.
[7] ITE Land Use Code 710 (General Office) 9th Edition trip generation average rates.
[8] ITE Land Use Code 495 (Recreational Community Center) 9th Edition trip generation average rates.
[9] ITE Land Use Code 220 (Apartment) 9th Edition trip generation average rates.
[10] ITE Land Use Code 934 (Fast-Food Restaurant with Drive-Through) 9th Edition trip generation average rates.
[11] ITE Land Use Code 820 (Shopping Center) 10th Edition trip generation average rates.
[12] ITE Land Use Code 090 (Park-and-Ride Lot w/ Bus or Light Rail Service) 10th Edition trip generation average rates.
[13] ITE Land Use Code 221 (Multifamily Housing -Mid-Rise) 10th Edition trip generation average rates.
[14] ITE Land Use Code 710 (General Office) 10th Edition trip generation average rates.
[15] ITE Land Use Code 934 (Fast-Food Restaurant with Drive-Through) 10th Edition trip generation average rates.
[16] ITE Land Use Code 220 (Multifamily Housing - Low-Rise) 10th Edition trip generation average rates.
[17] ITE Land Use Code 151 (Mini-Warehouse) 10th Edition trip generation average rates.
[18] ITE Land Use Code 254 (Assisted Living) 10th Edition trip generation average rates.



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MAP SOURCE: RAND MCNALLY & COMPANY

★ PROJECT SITE

(C) CITY OF COVINA RELATED PROJECT

(WC) CITY OF WEST COVINA RELATED PROJECT

(LC) COUNTY OF LOS ANGELES RELATED PROJECT

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FIGURE 6-1
LOCATION OF RELATED PROJECTS

529 CUTTER WAY LIVE/WORK PROJECT

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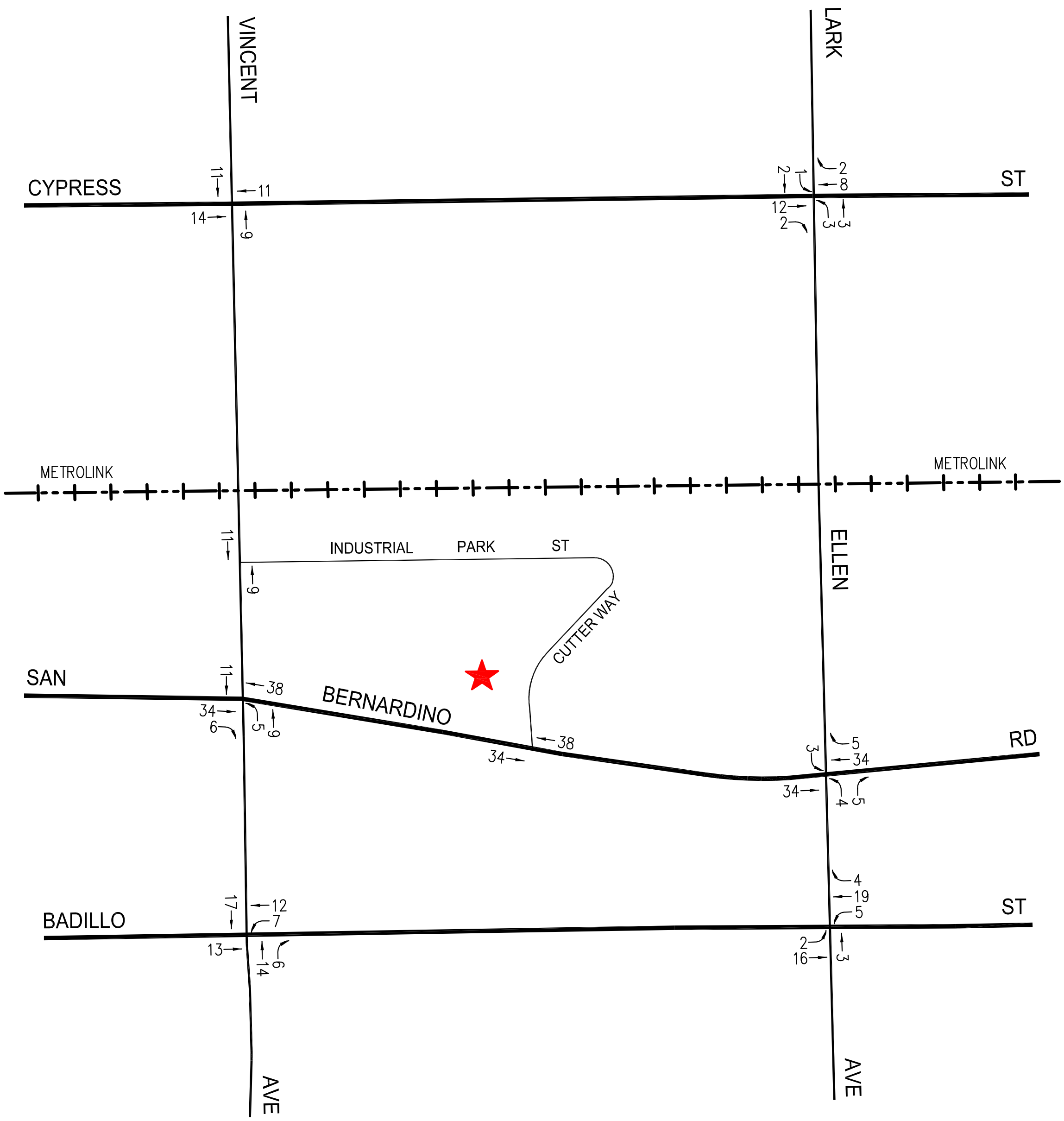
inbound trips and 636 outbound trips) during the weekday PM peak hour. The anticipated distribution of the related projects traffic volumes to the study intersections during the weekday AM and PM peak hours is displayed in ***Figures 6-2*** and ***6-3***, respectively.

6.2 Ambient Traffic Growth Factor

In order to account for unknown related projects not included in this analysis, the existing traffic volumes were increased at an annual rate of one percent (1.0%) per year to the year 2023 (i.e., the anticipated year of project build-out). The ambient growth factor was based on general traffic growth factors provided in the *2010 Congestion Management Program* (the "CMP manual"). The general traffic growth factors provided in the CMP manual for the Regional Statistical Area (RSA) 26, which includes the Covina and West Covina areas, has an annual traffic volume growth rate of approximately 0.46% per year between years 2010 and 2020. Thus, application of a one percent (1.0%) annual growth factor allows for a conservative, worst-case forecast of future traffic volumes in the area. Further, it is noted that the CMP manual's traffic growth rate is intended to anticipate future traffic generated by development projects in the project vicinity. Thus, the inclusion in this traffic analysis of both a forecast of traffic generated by the known related projects plus the use of an ambient growth traffic factor based on CMP traffic model data results in a conservative estimate of future traffic volumes at the study intersections.



PROJECT SITE

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FIGURE 6-2

RELATED PROJECTS TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

529 CUTTER WAY LIVE/WORK PROJECT

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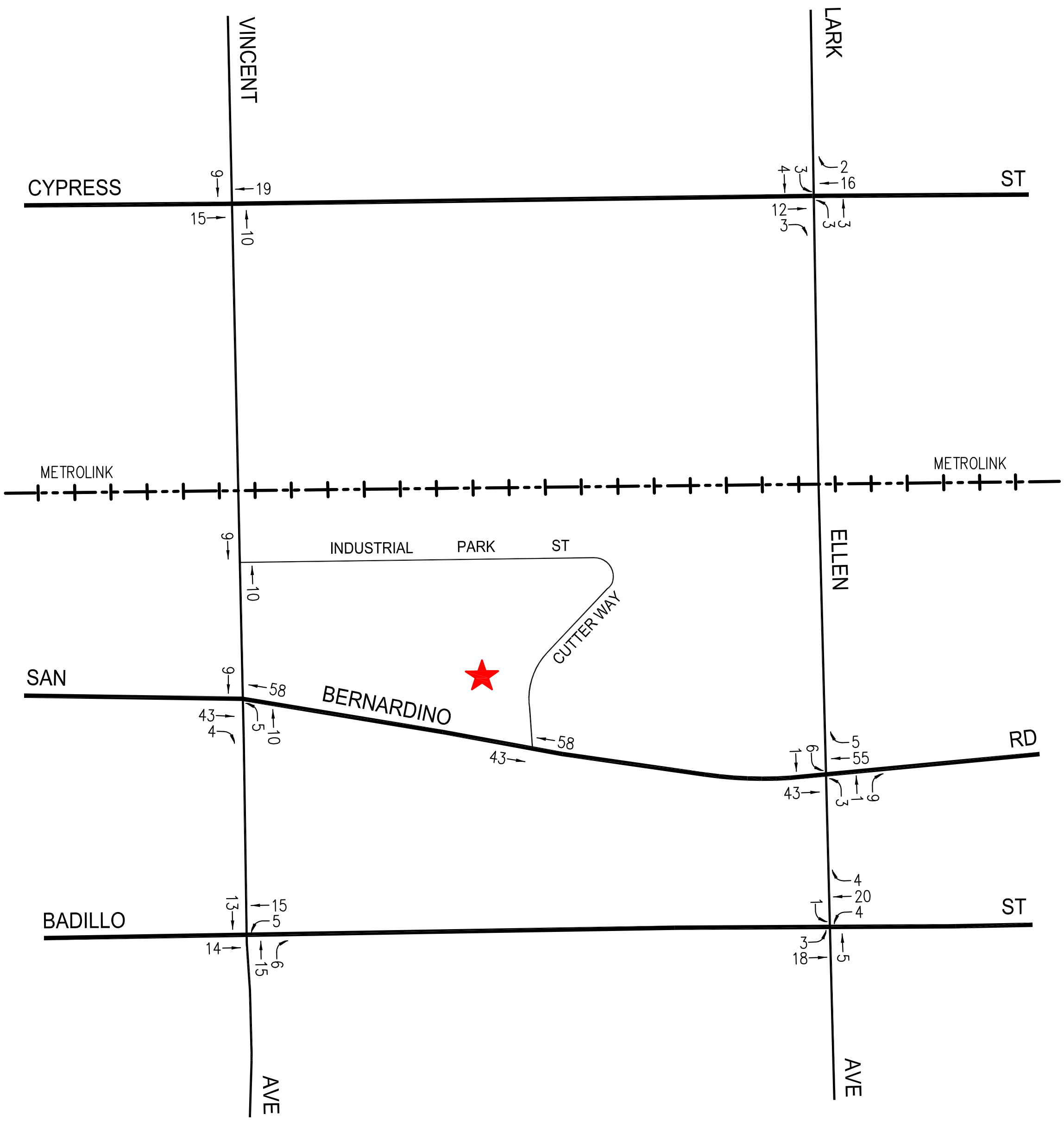

FIGURE 6-3

RELATED PROJECTS TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR

529 CUTTER WAY LIVE/WORK PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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7.0 TRAFFIC FORECASTING METHODOLOGY

In order to estimate the traffic impact characteristics of the proposed project, a multi-step process has been utilized. The first step of the forecasting process is trip generation, which estimates the total arriving and departing traffic volumes on a peak hour and daily basis. The traffic generation potential is typically forecast by applying the appropriate vehicle trip generation equations or rates to the project development tabulation.

The second step of the forecasting process is trip distribution, which identifies the origins and destinations of inbound and outbound project traffic volumes. These origins and destinations are typically based on demographics and existing/anticipated travel patterns in the study area.

The third step is traffic assignment, which involves the allocation of project traffic to study area streets and intersections. Traffic assignment is typically based on minimization of travel time, which may or may not involve the shortest route, depending on prevailing operating conditions and travel speeds. Traffic distribution patterns are indicated by general percentage orientation, while traffic assignment allocates specific volume forecasts to individual roadway links and intersection turning movements throughout the study area.

With the forecasting process complete and project traffic assignments developed, the impact of the proposed project is isolated by comparing operational (i.e., Levels of Service) conditions at selected key intersections using existing and expected future traffic volumes with and without forecast project traffic. The need for site-specific traffic improvements can then be evaluated and the significance of the project’s impacts identified.

7.1 Project Traffic Generation

Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Traffic volumes expected to be generated by the proposed project during the weekday AM and PM peak hours, as well as on a daily basis for a weekday, were estimated using rates published in the Institute of Transportation Engineers’ (ITE) *Trip Generation Manual*[6]. Traffic volumes expected to be generated by the proposed project were based upon rates per dwelling unit. ITE Land Use Code 221 (Multifamily Housing [Mid-Rise]) trip generation average rates were used to forecast the traffic volumes expected to be generated by the proposed project development site.

The trip generation rates and forecast of the vehicular trips anticipated to be generated by the proposed project are presented in ***Table 7-1***. The project trip generation forecast was submitted for review and approval by City staff. As summarized in *Table 7-1*, the proposed project is expected to generate 22 vehicle trips (6 inbound trips and 16 outbound trips) during the weekday AM peak hour. During the weekday PM peak hour, the proposed project is expected to generate 27 vehicle trips (16 inbound trips and 11 outbound trips). Over a 24-hour period, the proposed

Table 7-1
PROJECT TRIP GENERATION [1]

LAND USE	SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2]			PM PEAK HOUR VOLUMES [2]		
			IN	OUT	TOTAL	IN	OUT	TOTAL
Proposed Uses								
Apartment [3]	49 DU	266	5	13	18	13	9	22
Live/Work [3]	11 DU	60	1	3	4	3	2	5
TOTAL		**326**	**6**	**16**	**22**	**16**	**11**	**27**

[1] Source: ITE "Trip Generation Manual", 10th Edition, 2017.
[2] Trips are one-way traffic movements, entering or leaving.
[3] ITE Land Use Code 221 (Multifamily Housing [Mid-Rise]) trip generation average rates.
- Daily Trip Rate: 5.44 trips/dwelling unit; 50% inbound/50% outbound
- AM Peak Hour Trip Rate: 0.36 trips/dwelling unit; 26% inbound/74% outbound
- PM Peak Hour Trip Rate: 0.44 trips/dwelling unit; 61% inbound/39% outbound

project is forecast to generate 326 daily vehicle trip ends (163 inbound trips and 163 outbound trips) during a typical weekday. While this level of commuter peak hour trip generation is relatively low (i.e., less than one vehicle entering or exiting the project site every two [2] minutes during the commute peak hours), it is conservative in that no reductions have been incorporated in the forecast to account for future residents who utilize transit, walk or bike to/from their destinations.

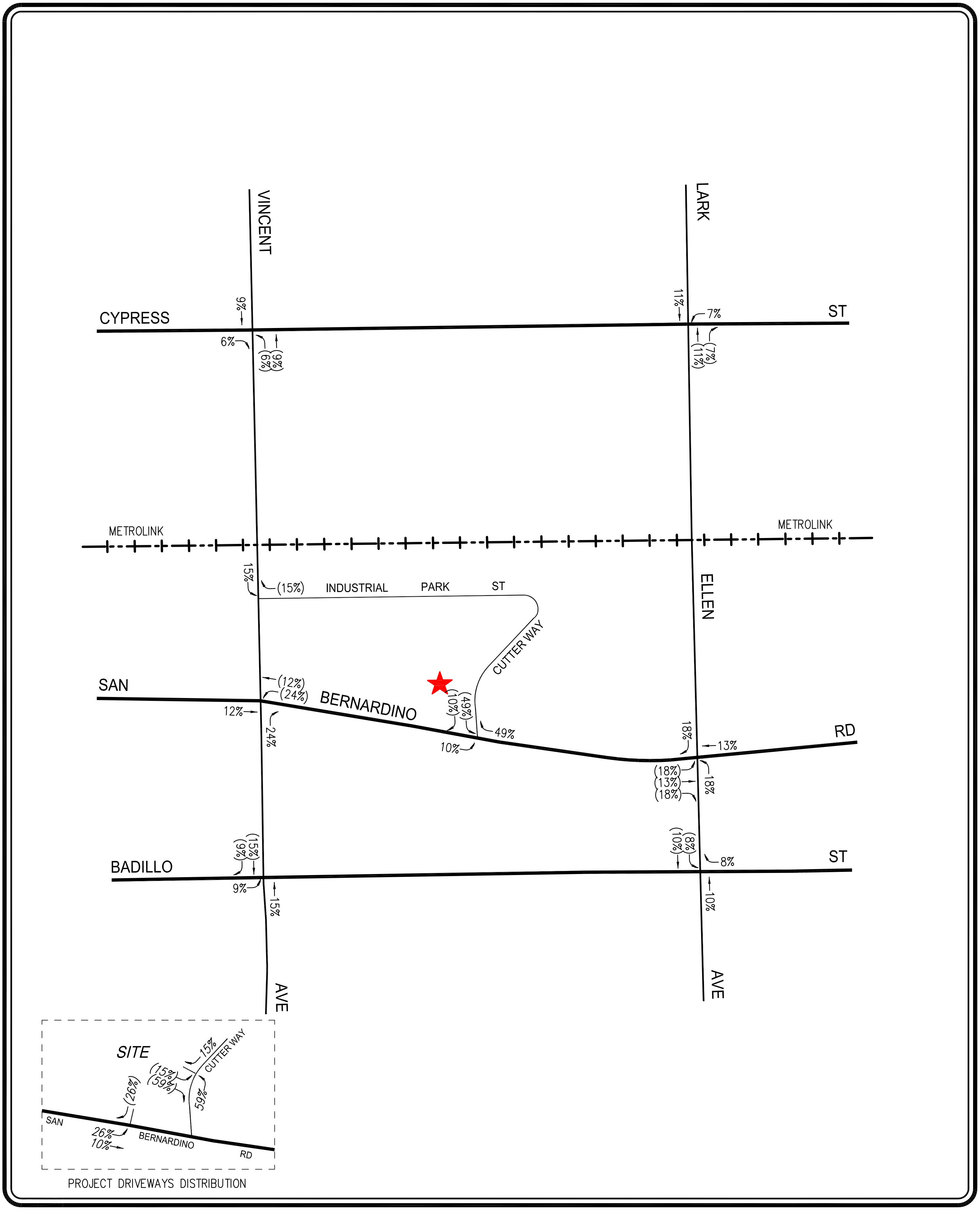
7.2 Project Traffic Distribution and Assignment

Project traffic volumes both entering and exiting the site have been distributed and assigned to the adjacent street system based on the following considerations:

- The site's proximity to major traffic corridors (i.e., San Bernardino Road, Badillo Street, Vincent Avenue, and Lark Ellen Avenue, etc.);
- Expected traffic flow patterns based on adjacent roadway channelization and presence of traffic signals;
- Existing intersection traffic volumes;
- Proposed ingress/egress planned for the proposed project;
- Nearby population and employment centers; and
- Input from City staff.

The project traffic volume distribution percentages during weekday AM and PM peak hours at the study intersections are illustrated in ***Figure 7-1***. The forecast new weekday AM and PM peak hour project traffic volumes associated with the build-out of the project development site are presented in ***Figures 7-2*** and ***7-3***, respectively. The traffic volume assignments presented in *Figures 7-2* and *7-3* reflect the traffic distribution characteristics shown in *Figure 7-1* and the project traffic generation forecast presented in *Table 7-1*.

[6] Institute of Transportation Engineers *Trip Generation Manual*, 10th Edition, 2017.



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XX = INBOUND PERCENTAGE

(XX) = OUTBOUND PERCENTAGE

FIGURE 7-1
PROJECT TRIP DISTRIBUTION

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529 CUTTER WAY LIVE/WORK PROJECT

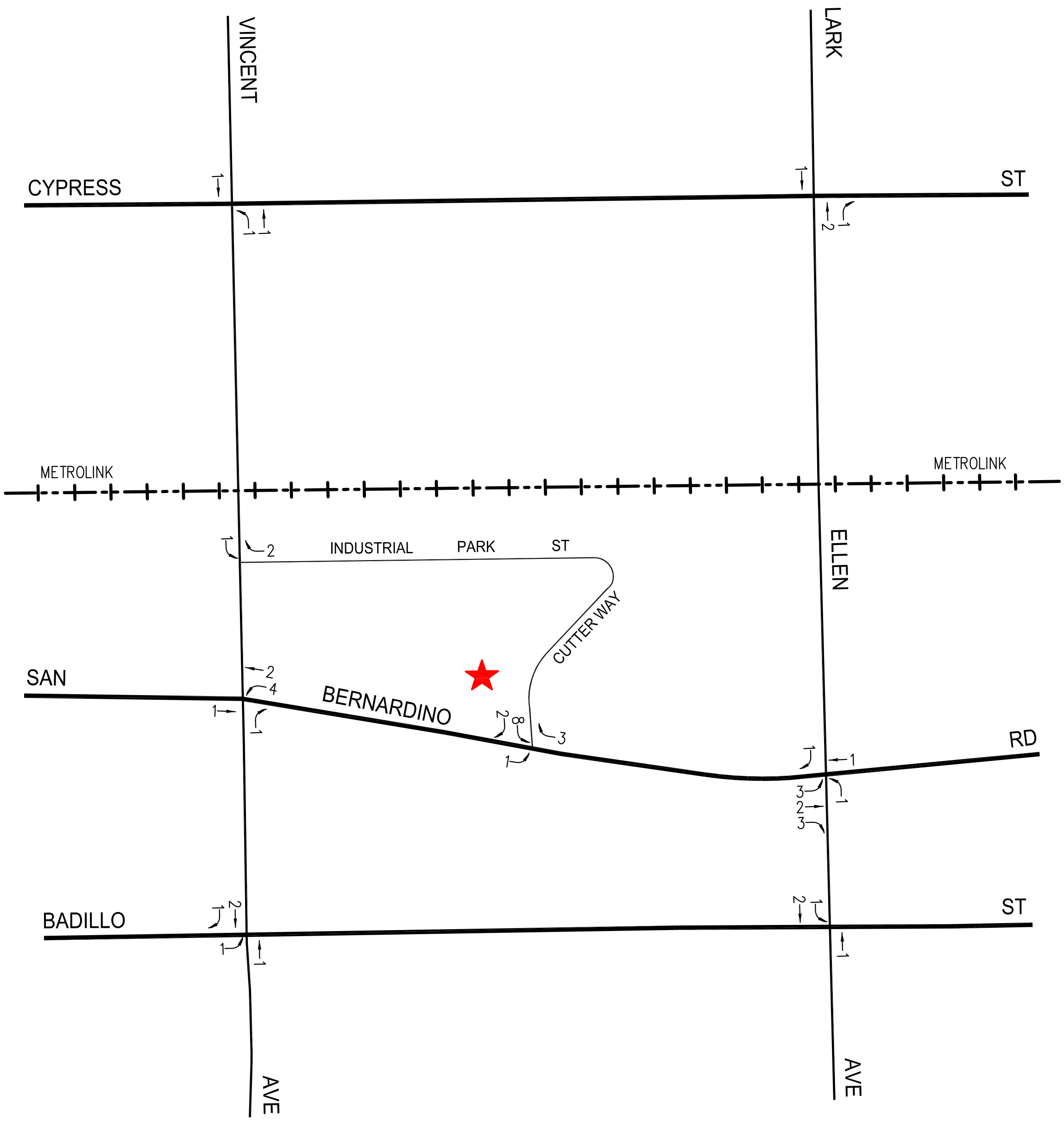

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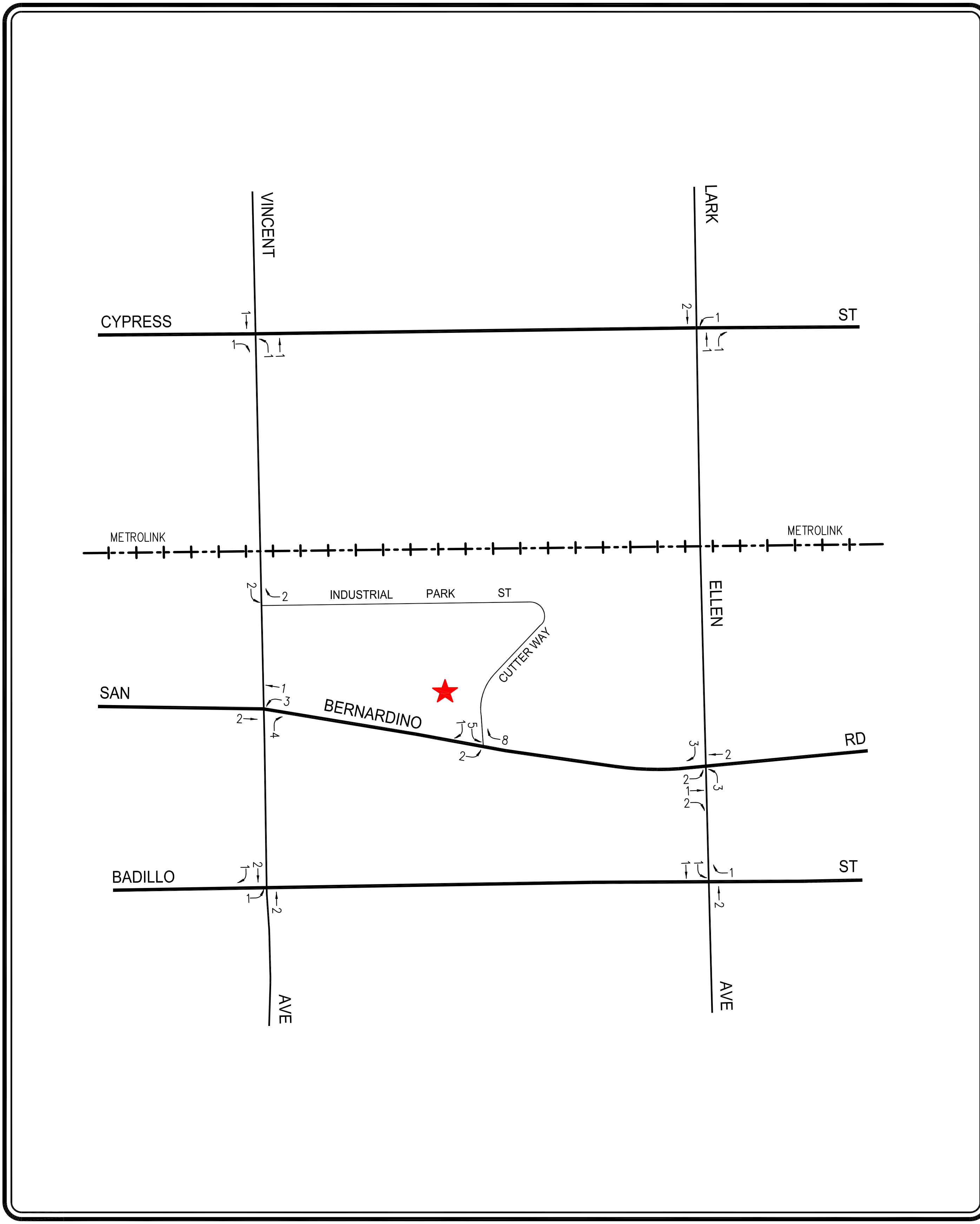
FIGURE 7-2
PROJECT TRAFFIC VOLUMES
WEEKDAY AM PEAK HOUR
529 CUTTER WAY LIVE/WORK PROJECT



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LINSCOTT, LAW & GREENSPAN, engineers

FIGURE 7-3
PROJECT TRAFFIC VOLUMES
WEEKDAY PM PEAK HOUR
529 CUTTER WAY LIVE/WORK PROJECT

8.0 TRANSPORTATION IMPACT ANALYSIS METHODOLOGY

8.1 Signalized Intersections

As previously noted, six of the eight study intersections are currently signalized. The signalized intersections were evaluated using the Intersection Capacity Utilization (ICU) method of analysis which determines Volume-to-Capacity (*v/c*) ratios on a critical lane basis (i.e., based on the individual *v/c* ratios for key conflicting traffic movements). The overall intersection *v/c* ratio is subsequently assigned a Level of Service (LOS) value to describe intersection operations. Level of Service varies from LOS A (free flow) to LOS F (jammed condition). A description of the ICU method and corresponding Level of Service is provided in ***Appendix B***.

As directed by the City of Covina's *Traffic Impact Analysis Guidelines* (May 2014), the ICU calculations use a lane capacity of 1,600 vehicles per hour (vph) for left-turn, through, and right-turn lanes, and a dual turn-lane capacity of 2,880 vph. A clearance interval of 0.05 also is included in the ICU calculations.

8.2 Unsignalized Intersections

The remaining two study intersections are unsignalized. The respective *Highway Capacity Manual* (HCM) methodologies outlined in Chapter 19 for unsignalized/two-way stop-controlled (TWSC) intersections were utilized for the analysis of the unsignalized locations. The TWSC methodology estimates the average control delay for each minor-street movement (or shared movement) as well as major-street left-turns and determines the LOS for each constrained movement. Average control delay for any particular movement is a function of the capacity of the approach and the degree of saturation. The average control delay is measured in seconds per vehicle, and includes delay due to deceleration to a stop at the back of the queue from free-flow speed, move-up time within the queue, stopped delay at the front of the queue, and delay due to acceleration back to free-flow speed. A description of the HCM method and corresponding Level of Service also is provided in *Appendix B*.

8.3 Impact Criteria and Thresholds

The relative impact of the added project traffic volumes to be generated by the proposed project during the weekday AM and PM peak hours was evaluated based on analysis of existing and future operating conditions at the study intersections, without and with the proposed project. The previously discussed capacity analysis procedures were utilized to evaluate the future *v/c* or delay relationships and service level characteristics at each study intersection.

As indicated previously in *Table 4-1*, two (2) of the eight (8) study intersections are located within the City of Covina, two (2) study intersections are located solely in the unincorporated area of the County of Los Angeles, three (3) study intersections are shared between the Cities of Covina and West Covina, and one (1) intersection is shared between the City of Covina and the unincorporated area of the County of Los Angeles. Each study intersection was evaluated for potential traffic impacts with application of the significant traffic impact criteria based on the intersection's respective jurisdiction (e.g., study intersections in the City of Covina were evaluated for potential traffic impacts using the criteria of the City of Covina, etc.). For intersections that are shared between jurisdictions, the criteria for both jurisdictions were applied. The impact criteria for each of the three jurisdictions are discussed in detail below.

8.3.1 *City of Covina Impact Criteria and Thresholds*

The significance of the potential impacts of project-generated traffic at the City of Covina study intersections was identified using the traffic impact criteria set forth in the City of Covina's *Traffic Impact Analysis Guidelines* (May 2014). According to the City's traffic study guidelines, a significant transportation impact is determined based on the impact threshold criteria presented in ***Table 8-1***.

TABLE 8-1
CITY OF COVINA
SIGNALIZED INTERSECTION IMPACT THRESHOLD CRITERIA

Pre-Project *v/c*	Level of Service	Project Related Increase in *v/c*
0.71 to 0.80	C	equal to or greater than 0.04
0.81 to 0.90	D	equal to or greater than 0.02
0.91 or more	E / F	equal to or greater than 0.01
UNSIGNALIZED INTERSECTION IMPACT THRESHOLD CRITERIA		
Pre-Project Delay	**Level of Service**	**Project Related Increase in Delay**
≤ 25.0 seconds	A/B/C	LOS D or worse
> 25.0 seconds	D/E/F	equal to or greater than 5.0 seconds

The City's traffic study guidelines require mitigation of project traffic impacts whenever traffic generated by the proposed development exceeds the criteria above.

8.3.2 *City of West Covina Impact Criteria and Thresholds*

The significance of the potential impacts of project-generated traffic at the City of West Covina study intersections was identified using the traffic impact criteria as summarized below. According to the City of West Covina, a significant transportation impact is determined based on the impact threshold criteria presented in ***Table 8-2***.

TABLE 8-2
CITY OF WEST COVINA
INTERSECTION IMPACT THRESHOLD CRITERIA

Final *v/c*	Level of Service	Project Related Increase in *v/c*
> 0.800	D, E, F	equal to or greater than 0.02

Similar to the City of Covina, the City of West Covina's method requires mitigation of project traffic impacts whenever traffic generated by the proposed development exceeds the criteria above.

8.3.3 *County of Los Angeles Impact Criteria and Thresholds*

For the County of Los Angeles study intersections, the significance of the potential project generated traffic impacts was identified using the traffic impact analysis guidelines set forth in the County of Los Angeles Department of Public Works' *Traffic Impact Analysis Report Guidelines*, January 1997. According to the County's published guidelines, the impact is considered significant if the project-related increase in the *v/c* ratio equals or exceeds the threshold criteria presented in ***Table 8-3***.

TABLE 8-3
COUNTY OF LOS ANGELES
INTERSECTION IMPACT THRESHOLD CRITERIA

Final *v/c*	Level of Service	Project Related Increase in *v/c*
> 0.70 - 0.80	C	equal to or greater than 0.04
> 0.80 - 0.90	D	equal to or greater than 0.02
> 0.90	E and F	equal to or greater than 0.01

Pursuant to the County's *Traffic Impact Analysis Report Guidelines*, the ICU calculations for the County study intersections also utilize a lane capacity of 1,600 vehicles per hour (vph) per lane and 2,880 vph for dual left-turn and right-turn lanes. A clearance interval of 0.10 is included in the ICU calculations for the County study intersections.

8.4 Transportation Impact Analysis Scenarios

Level of Service calculations have been prepared for the following scenarios for the study intersections:

[a] Existing conditions.

[b] Existing with project conditions.

[c] Condition [b] with implementation of project mitigation measures, where necessary.

[d] Condition [a] plus 1.0 percent (1.0%) annual ambient traffic growth through year 2023 and with completion and occupancy of the related projects (i.e., future without project conditions).

[e] Condition [d] with completion and occupancy of the proposed project.

[f] Condition [e] with implementation of project mitigation measures, where necessary.

The traffic volumes for each new condition were added to the volumes in the prior condition to determine the change in capacity utilization at the study intersections.

9.0 TRANSPORTATION ANALYSIS

The transportation impact analysis prepared for the study intersections using the ICU and HCM methodologies and the significance criteria for the respective jurisdictions is summarized in ***Table 9-1***. The ICU and HCM data worksheets for the analyzed intersections are contained in *Appendix B*.

9.1 Existing Conditions

As indicated in column [1] of *Table 9-1*, all of the study intersections are presently operating at LOS D or better during the weekday AM and PM peak hours under existing conditions. As previously mentioned, the existing traffic volumes at the study intersections during the weekday AM and PM peak hours are displayed in *Figures 5-1* and *5-2*, respectively.

9.2 Existing With Project Conditions

As shown in column [2] of *Table 9-1,* application of the respective jurisdiction's threshold criteria to the "Existing With Project" scenario indicates that the proposed project is not expected to create significant impacts at any of the study intersections. Incremental, but not significant, impacts are noted at the study intersections. Because there are no significant impacts, no traffic mitigation measures are required or recommended for the study intersections under the "Existing With Project" condition. The existing with project traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in ***Figures 9-1*** and ***9-2***, respectively.

9.3 Future Without Project Conditions

The future cumulative baseline conditions were forecast based on the addition of traffic generated by the completion and occupancy of the related projects, as well as the growth in traffic due to the combined effects of continuing development, intensification of existing developments and other factors (i.e., ambient growth). The *v/c* ratios and delays at the study intersections are incrementally increased with the addition of ambient traffic and traffic generated by the related projects listed in *Table 6-1*. As presented in column [3] of *Table 9-1*, all of the study intersections are expected to continue operating at LOS D or better during the weekday AM and PM peak hours with the addition of growth in ambient traffic and related projects traffic under the Future Without Project condition. The future without project (existing, ambient growth, related projects) traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in ***Figures 9-3*** and ***9-4***, respectively.

9.4 Future With Project Conditions

As shown in column [4] of *Table 9-1,* application of the respective jurisdiction's threshold criteria to the "Future With Proposed Project" scenario indicates that the proposed project is not expected to create significant impacts at any of the study intersections. Incremental, but not significant, impacts are noted at the study intersections. Because there are no significant impacts, no traffic mitigation measures are required or recommended for the study intersections

Table 9-1
SUMMARY OF VOLUME TO CAPACITY RATIOS AND LEVELS OF SERVICE
WEEKDAY AM AND PM PEAK HOURS

			[1]		[2]				[3]		[4]			
NO.	INTERSECTION	PEAK HOUR	YEAR 2020 EXISTING V/C or DELAY	LOS	YEAR 2020 EXISTING W/ PROJECT V/C or Delay	LOS	CHANGE V/C or DELAY [(2)-(1)]	SIGNIF. IMPACT	YEAR 2023 FUTURE PRE-PROJECT V/C or DELAY	LOS	YEAR 2023 FUTURE W/ PROJECT V/C or DELAY	LOS	CHANGE V/C or DELAY [(4)-(3)]	SIGNIF. IMPACT
1	Vincent Avenue/ Cypress Street [c]	AM	0.684	B	0.685	B	0.001	No	0.709	C	0.710	C	0.001	No
		PM	0.755	C	0.756	C	0.001	No	0.783	C	0.783	C	0.000	No
2	Vincent Avenue/ Industrial Park Street [a, c, d]	AM	14.1	B	14.1	B	0.0	No	14.5	B	14.6	B	0.1	No
		PM	26.3	D	26.1	D	-0.2	No	28.7	D	28.5	D	-0.2	No
		AM	0.430	A	0.432	A	0.002	No	0.443	A	0.445	A	0.002	No
		PM	0.377	A	0.379	A	0.002	No	0.389	A	0.391	A	0.002	No
3	Vincent Avenue/ San Bernardino Road [a]	AM	0.679	B	0.680	B	0.001	No	0.716	C	0.717	C	0.001	No
		PM	0.646	B	0.649	B	0.003	No	0.681	B	0.685	B	0.004	No
4	Vincent Avenue/ Badillo Street [a, b]	AM	0.715	C	0.716	C	0.001	No	0.746	C	0.747	C	0.001	No
		PM	0.806	D	0.806	D	0.000	No	0.843	D	0.843	D	0.000	No
5	Cutter Way/ San Bernardino Road [a, b, d]	AM	21.8	C	24.7	C	2.9	No	25.1	D	29.1	D	4.0	No
		PM	16.7	C	17.8	C	1.1	No	18.9	C	20.4	C	1.5	No
		AM	0.390	A	0.398	A	0.008	No	0.412	A	0.420	A	0.008	No
		PM	0.332	A	0.337	A	0.005	No	0.354	A	0.358	A	0.004	No
6	Lark Ellen Avenue/ Cypress Street [c]	AM	0.703	C	0.703	C	0.000	No	0.727	C	0.727	C	0.000	No
		PM	0.772	C	0.773	C	0.001	No	0.799	C	0.801	D	0.002	No
7	Lark Ellen Avenue/ San Bernardino Road [a]	AM	0.645	B	0.647	B	0.002	No	0.678	B	0.680	B	0.002	No
		PM	0.672	B	0.673	B	0.001	No	0.711	C	0.712	C	0.001	No
8	Lark Ellen Avenue/ Badillo Street [a, b]	AM	0.605	B	0.606	B	0.001	No	0.631	B	0.632	B	0.001	No
		PM	0.683	B	0.684	B	0.001	No	0.713	C	0.714	C	0.001	No

[a] City of Covina intersection impact threshold criteria is as follows:

Signalized intersections:

Level of Service	Pre-Project V/C	Project-Related Increase in V/C
C	> 0.700 - 0.800	equal to or greater than 0.040
D	> 0.800 - 0.900	equal to or greater than 0.020
E/F	> 0.900	equal to or greater than 0.010

Unsignalized intersections:

Level of Service	Pre-Project Delay	Project-Related Increase in Delay
A/B/C	≤ 25.0 sec.	LOS D or worse
D/E/F	> 25.0 sec.	equal to or greater than 5.0 seconds

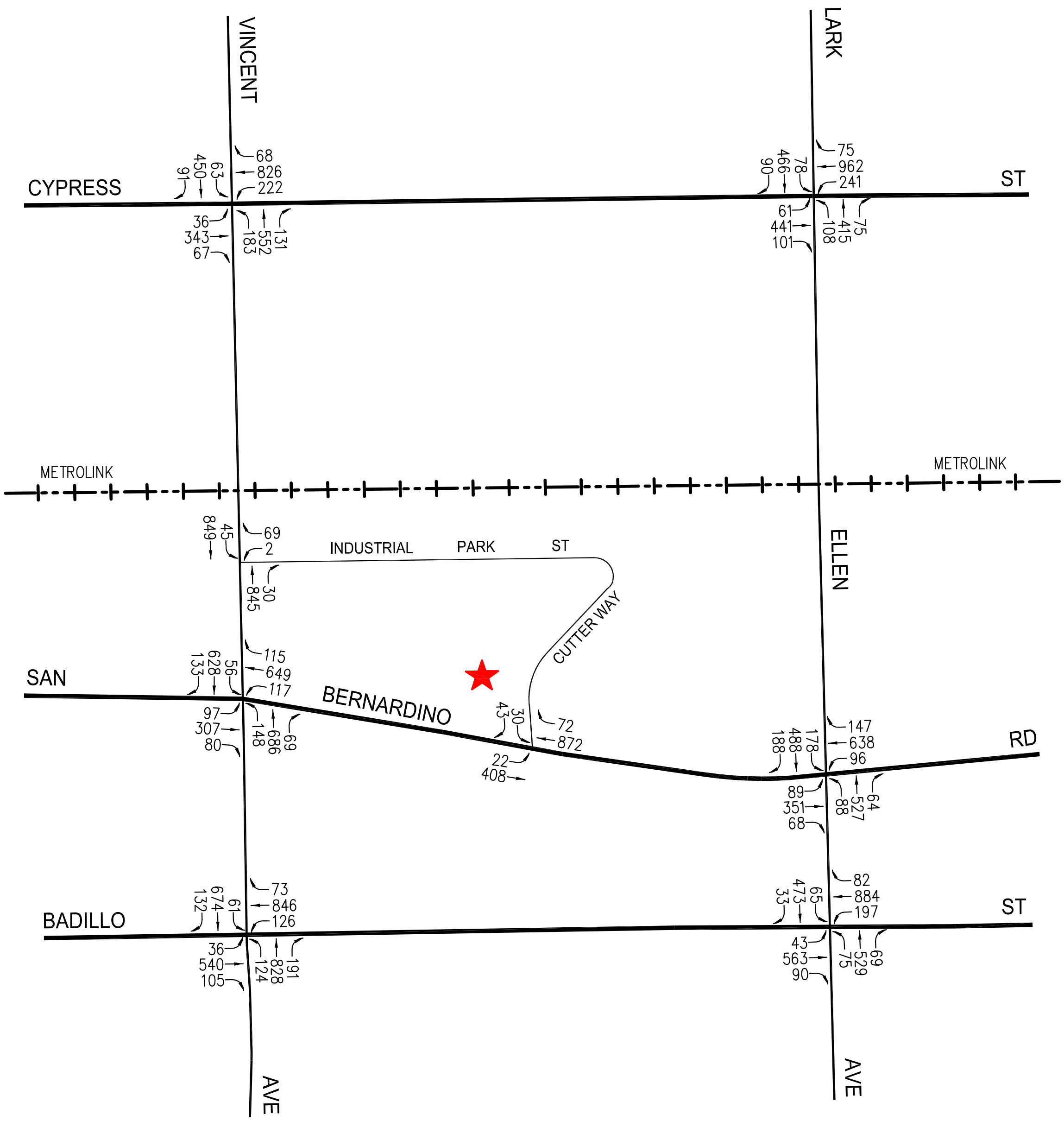
[b] City of West Covina intersection impact threshold criteria is as follows:

Level of Service	Final V/C	Project-Related Increase in V/C
D/E/F	> 0.800	equal to or greater than 0.020

[c] According to the County of Los Angeles Department of Public Works' *Traffic Impact Analysis Report Guidelines*, January 1, 1997, page 6: an impact is considered significant if the project-related increase in the volume-to-capacity ratio (v/c) equals or exceeds the thresholds shown below:

Level of Service	Pre-Project ICU	Project-Related Increase in V/C
C	> 0.700 - 0.800	equal to or greater than 0.040
D	> 0.800 - 0.900	equal to or greater than 0.020
E/F	> 0.900	equal to or greater than 0.010

[d] Unsignalized intersection. Two-way stop controlled.



NOT TO SCALE

★ PROJECT SITE

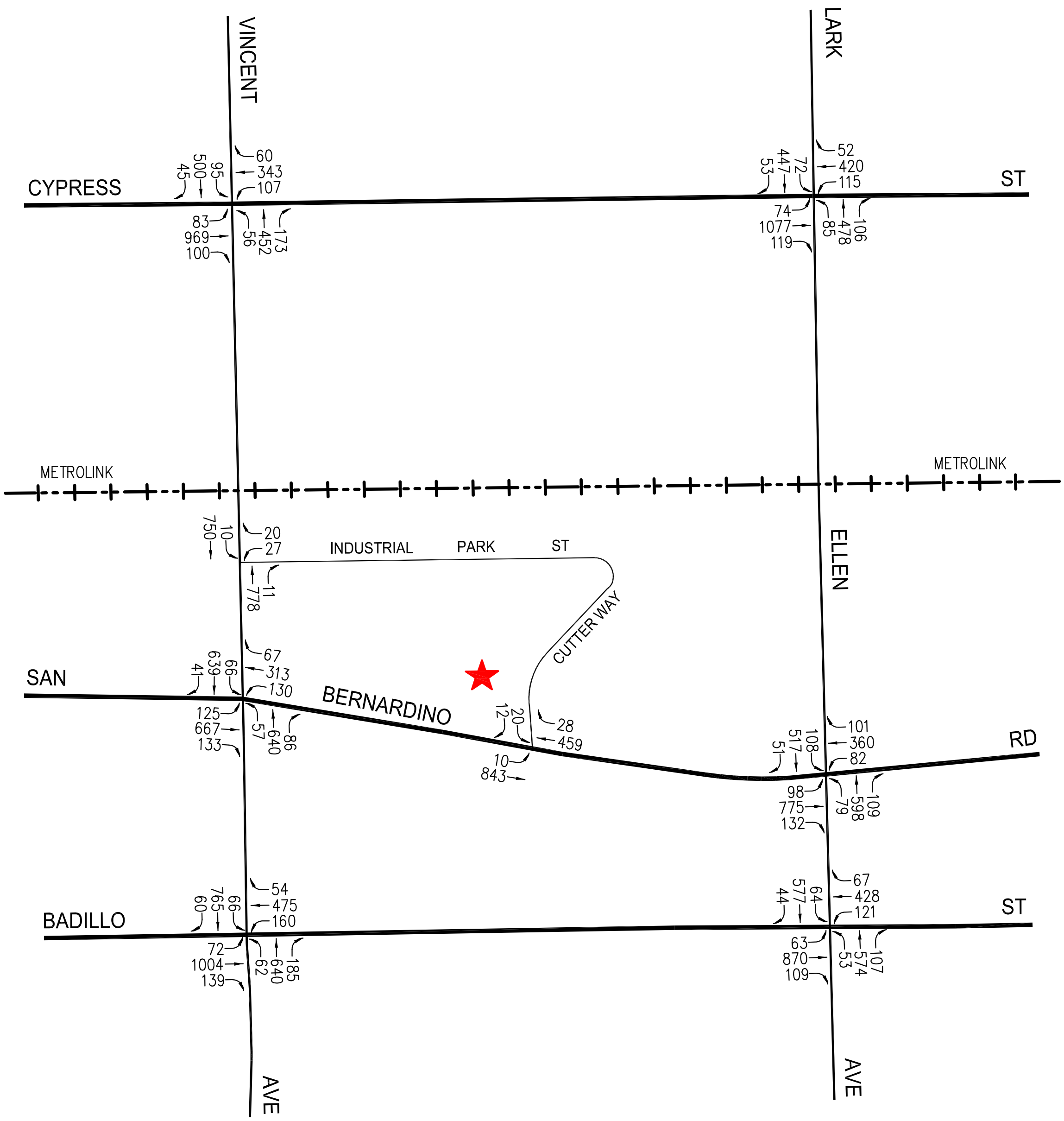
FIGURE 9-1

EXISTING WITH PROJECT TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

529 CUTTER WAY LIVE/WORK PROJECT

LINSCOTT, LAW & GREENSPAN, engineers



PROJECT SITE

N

NOT TO SCALE

FIGURE 9-2

EXISTING WITH PROJECT TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR

529 CUTTER WAY LIVE/WORK PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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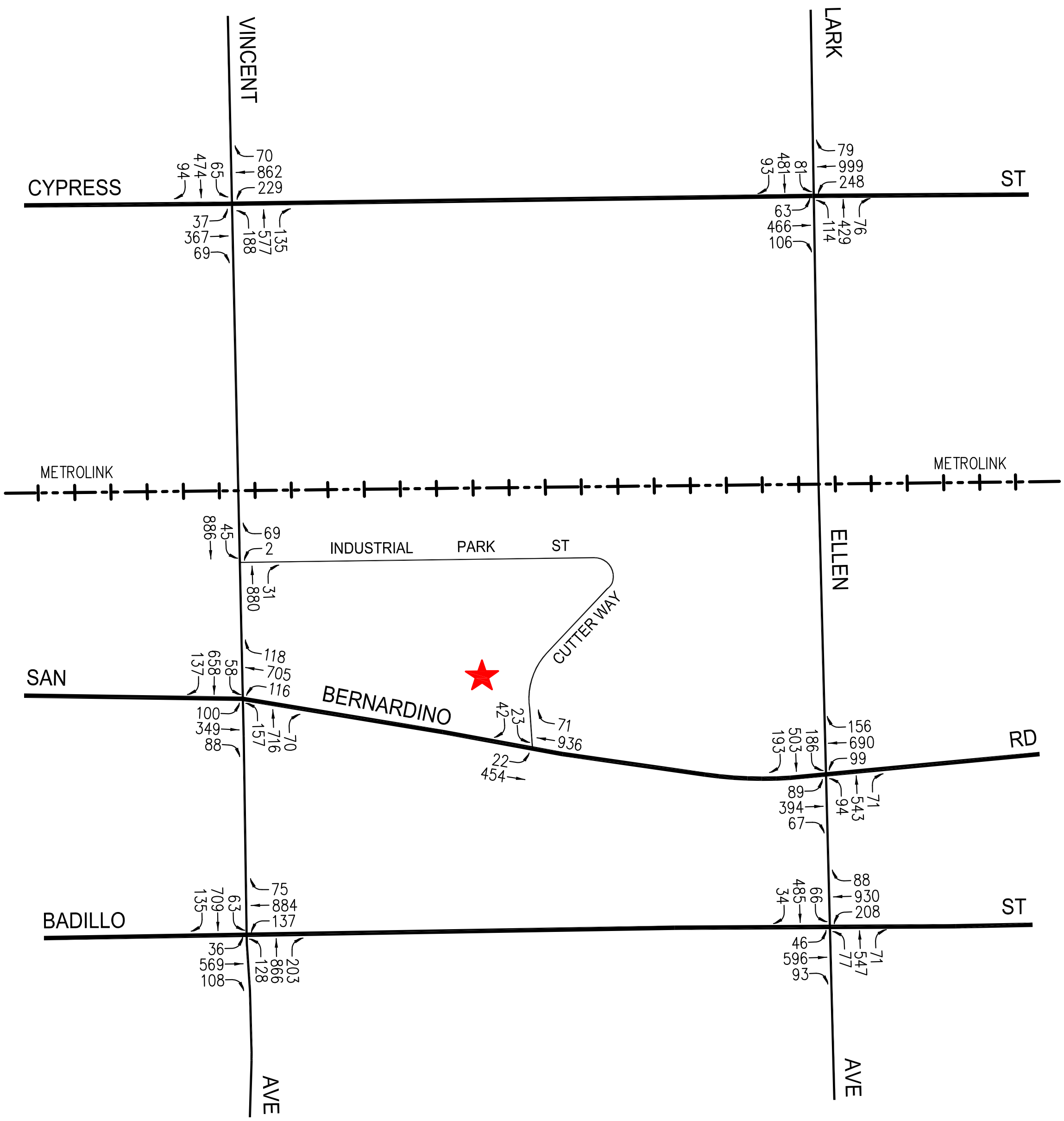

N

NOT TO SCALE

★ PROJECT SITE

FIGURE 9-3

FUTURE WITHOUT PROJECT TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

529 CUTTER WAY LIVE/WORK PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

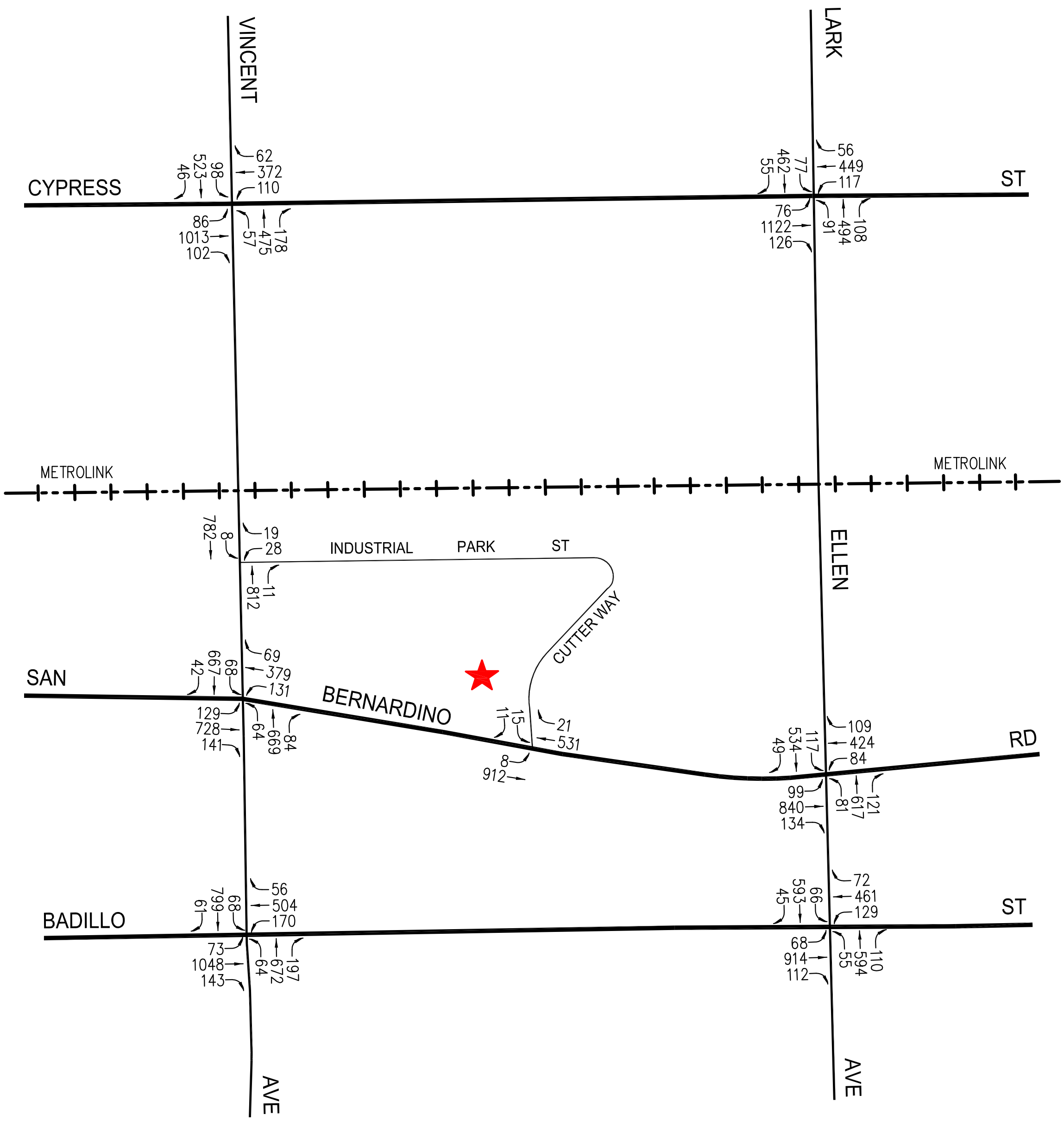

FIGURE 9-4

FUTURE WITHOUT PROJECT TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR

529 CUTTER WAY LIVE/WORK PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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under the "Future With Proposed Project" condition. The future with project (existing, ambient growth, related projects and project) traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in ***Figures 9-5*** and ***9-6***, respectively.

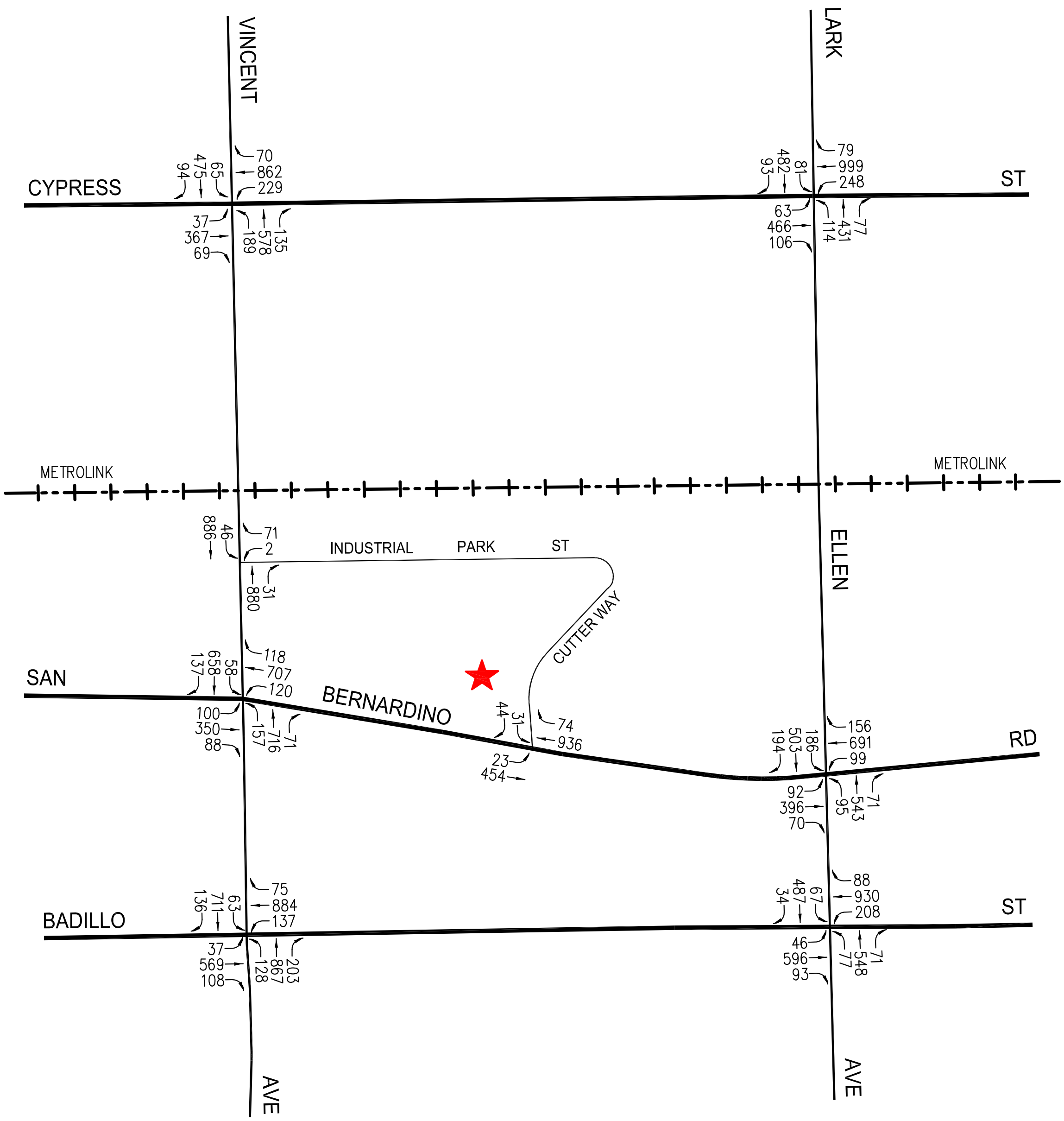

FIGURE 9-5

FUTURE WITH PROJECT TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR

529 CUTTER WAY LIVE/WORK PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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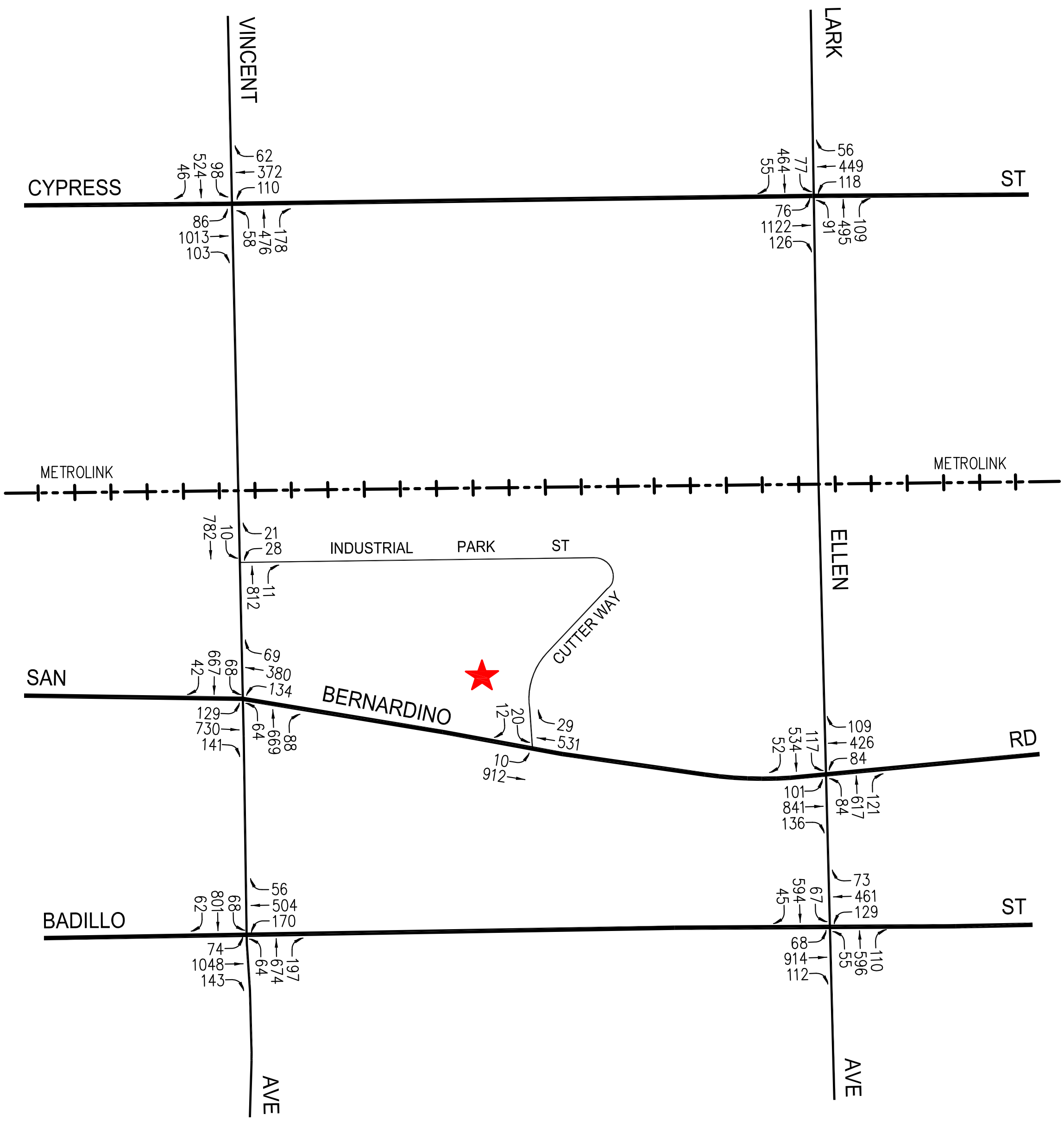

FIGURE 9-6

FUTURE WITH PROJECT TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR

529 CUTTER WAY LIVE/WORK PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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10.0 SUMMARY AND CONCLUSIONS

- ***Project Description*** **–** The proposed project consists of the development of 49 multi-family residential apartment units and 11 live/work units. The apartment units will be comprised of one- to three-bedroom unit types and the live/work units will be one- to two-bedroom unit types. Completion of the project is anticipated to occur by the year 2023.

- ***Vehicular Site Access*** – Vehicular access to the site is planned to be provided via a total of two driveways with one each on Cutter Way and San Bernardino Road. Development of the proposed project involves the closure of the two existing driveways and the construction of two new driveways.

- ***Study Scope*** **–** Eight (8) study intersections were selected for detailed peak hour level of service analyses under existing and future conditions, without and with the proposed project traffic. The analysis focused on assessing potential traffic impacts assuming full build-out of the project area during the AM and PM peak hours during typical weekday conditions.

- ***Project Trip Generation*** **–** The proposed project is expected to generate 22 vehicle trips (6 inbound trips and 16 outbound trips) during the weekday AM peak hour. During the weekday PM peak hour, the proposed project is expected to generate 27 vehicle trips (16 inbound trips and 11 outbound trips). Over a 24-hour period, the proposed project is forecast to generate 326 daily vehicle trip ends (163 inbound trips and 163 outbound trips) during a typical weekday. While this level of commuter peak hour trip generation is relatively low (i.e., less than one vehicle entering or exiting the project site every two [2] minutes during the commute peak hours), it is conservative in that no reductions have been incorporated in the forecast to account for future residents who utilize transit, walk or bike to/from their destinations.

- ***Related Projects*** – The City of Covina Community Development Department, the City of West Covina Planning Department, and the County of Los Angeles Department of Regional Planning were consulted to obtain the list of development projects (related projects) in the area. A total of 19 related projects was identified and considered as part of the cumulative traffic analysis.

- ***Traffic Impact Analysis*** – It is concluded that the proposed project is not anticipated to result in a significant traffic impact at any of the study intersections for existing and future conditions based on application of the impact threshold criteria for the City of Covina, City of West Covina, and the County of Los Angeles. Incremental but not significant impacts are noted at the study intersections evaluated in this analysis. As no significant impacts are expected due to the proposed project, no traffic mitigation measures are required or recommended.

Appendix A

Traffic Count Data

File Name : Vincent_Cypress
Site Code : 00000000
Start Date : 11/6/2019
Page No : 1

Groups Printed- Vehicles

	Vincent Avenue Southbound			Cypress Street Westbound			Vincent Avenue Northbound			Cypress Street Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	7	84	12	59	262	12	37	79	15	7	47	8	629
07:15 AM	10	93	14	56	241	9	40	96	25	4	85	21	694
07:30 AM	29	133	26	58	206	14	49	135	40	6	120	19	835
07:45 AM	13	125	37	59	214	31	60	165	43	14	63	10	834
Total	59	435	89	232	923	66	186	475	123	31	315	58	2992
08:00 AM	10	94	13	47	157	13	31	150	22	12	72	16	637
08:15 AM	5	94	18	49	140	12	18	113	19	6	69	7	550
08:30 AM	9	68	5	36	149	10	20	69	23	7	64	9	469
08:45 AM	4	74	4	34	102	12	16	69	16	2	58	8	399
Total	28	330	40	166	548	47	85	401	80	27	263	40	2055
04:00 PM	23	105	6	20	58	11	11	99	33	26	237	19	648
04:15 PM	24	128	7	22	71	10	11	123	42	13	227	23	701
04:30 PM	13	106	3	20	91	16	12	97	41	19	227	21	666
04:45 PM	18	112	12	23	79	12	18	121	44	23	222	22	706
Total	78	451	28	85	299	49	52	440	160	81	913	85	2721
05:00 PM	20	140	17	31	116	10	9	109	44	18	220	21	755
05:15 PM	21	125	12	28	78	13	10	116	47	19	264	30	763
05:30 PM	35	117	4	24	67	24	17	101	36	22	253	25	725
05:45 PM	23	81	9	27	81	11	14	87	39	20	231	26	649
Total	99	463	42	110	342	58	50	413	166	79	968	102	2892
Grand Total	264	1679	199	593	2112	220	373	1729	529	218	2459	285	10660
Apprch %	12.3	78.4	9.3	20.3	72.2	7.5	14.2	65.7	20.1	7.4	83	9.6	
Total %	2.5	15.8	1.9	5.6	19.8	2.1	3.5	16.2	5	2	23.1	2.7	

CITY TRAFFIC COUNTERS
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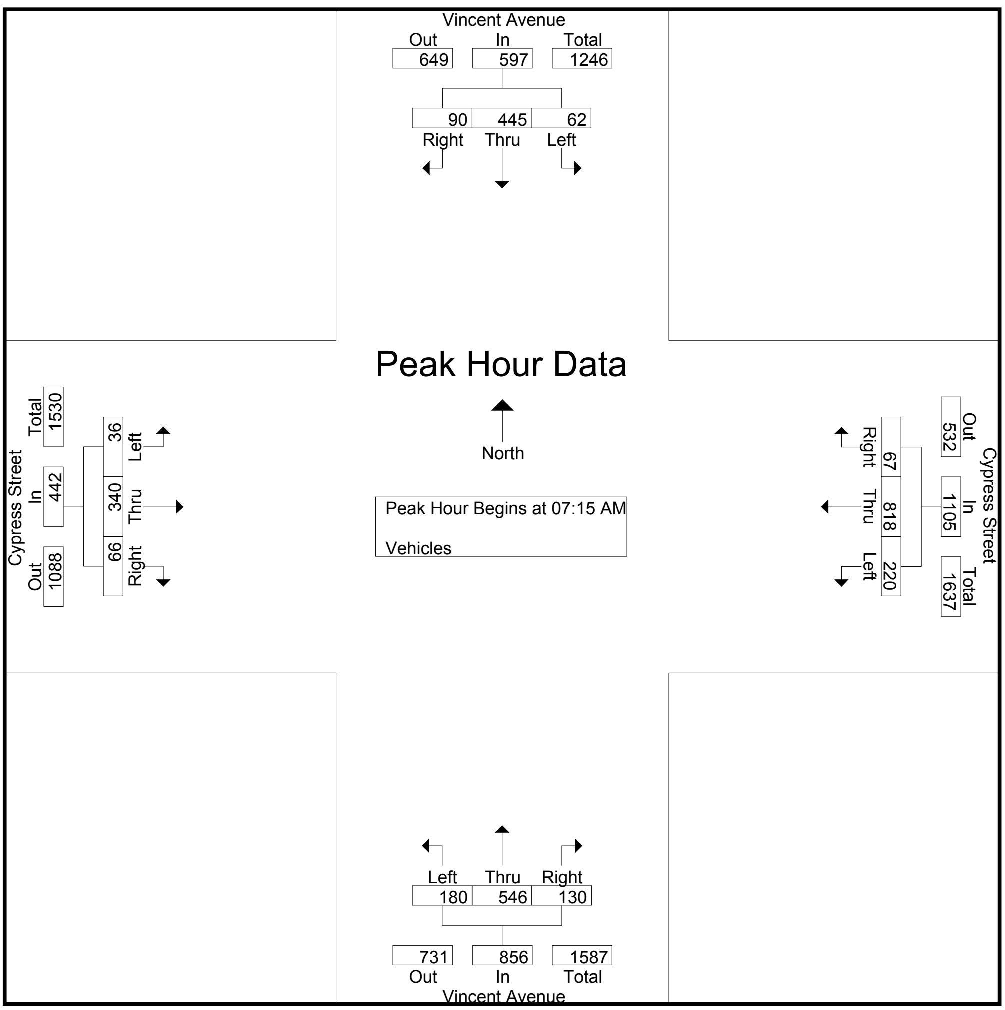
File Name : Vincent_Cypress
Site Code : 00000000
Start Date : 11/6/2019
Page No : 2

	Vincent Avenue Southbound				Cypress Street Westbound				Vincent Avenue Northbound				Cypress Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	10	93	14	117	56	**241**	9	**306**	40	96	25	161	4	85	**21**	110	694
07:30 AM	**29**	**133**	26	**188**	58	206	14	278	49	135	40	224	6	**120**	19	**145**	**835**
07:45 AM	13	125	**37**	175	**59**	214	**31**	304	**60**	**165**	**43**	**268**	**14**	63	10	87	834
08:00 AM	10	94	13	117	47	157	13	217	31	150	22	203	12	72	16	100	637
Total Volume	62	445	90	597	220	818	67	1105	180	546	130	856	36	340	66	442	3000
% App. Total	10.4	74.5	15.1		19.9	74	6.1		21	63.8	15.2		8.1	76.9	14.9		
PHF	.534	.836	.608	.794	.932	.849	.540	.903	.750	.827	.756	.799	.643	.708	.786	.762	.898



CITY TRAFFIC COUNTERS
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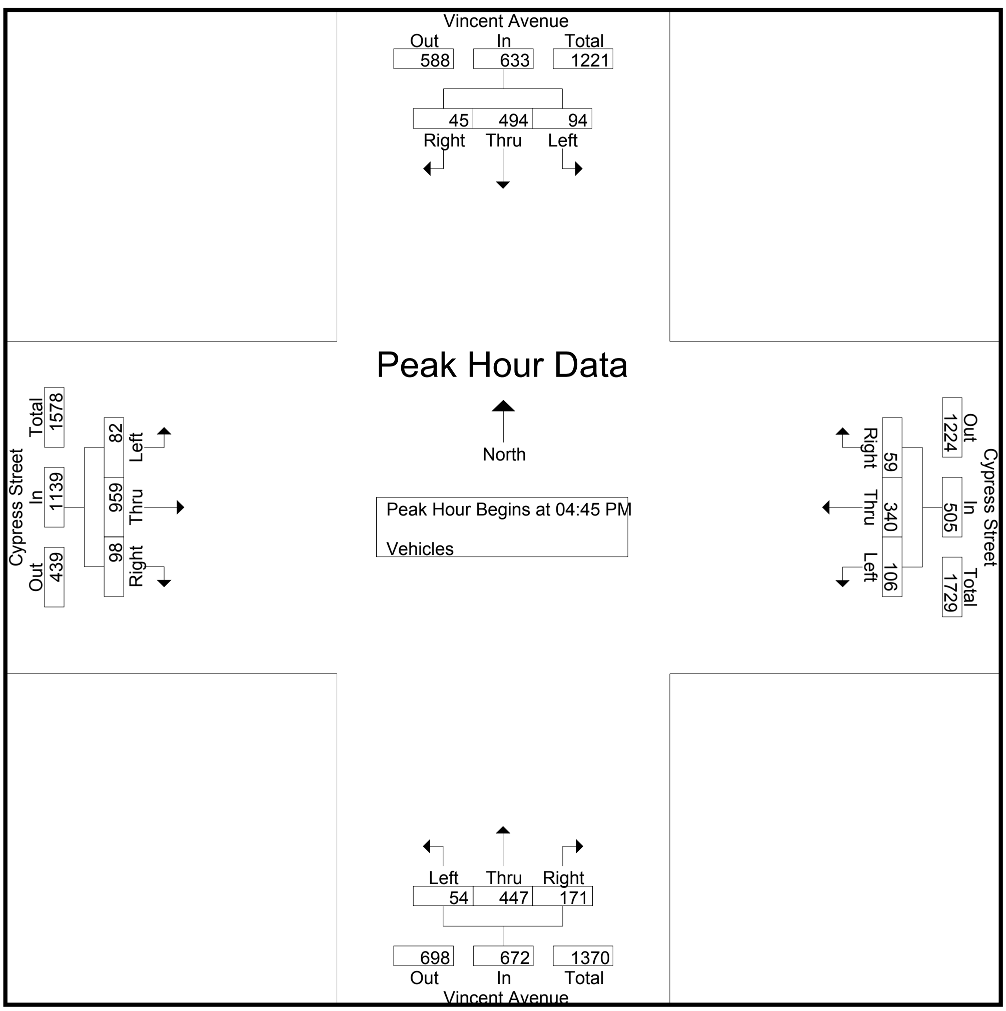
File Name : Vincent_Cypress
Site Code : 00000000
Start Date : 11/6/2019
Page No : 3

	Vincent Avenue Southbound				Cypress Street Westbound				Vincent Avenue Northbound				Cypress Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	18	112	12	142	23	79	12	114	**18**	**121**	44	**183**	**23**	222	22	267	706
05:00 PM	20	**140**	**17**	**177**	**31**	**116**	10	**157**	9	109	44	162	18	220	21	259	755
05:15 PM	21	125	12	158	28	78	13	119	10	116	**47**	173	19	**264**	**30**	**313**	**763**
05:30 PM	**35**	117	4	156	24	67	**24**	115	17	101	36	154	22	253	25	300	725
Total Volume	94	494	45	633	106	340	59	505	54	447	171	672	82	959	98	1139	2949
% App. Total	14.8	78	7.1		21	67.3	11.7		8	66.5	25.4		7.2	84.2	8.6		
PHF	.671	.882	.662	.894	.855	.733	.615	.804	.750	.924	.910	.918	.891	.908	.817	.910	.966



CITY TRAFFIC COUNTERS
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File Name : Vincent_IndustrialPark
Site Code : 00000000
Start Date : 11/6/2019
Page No : 1

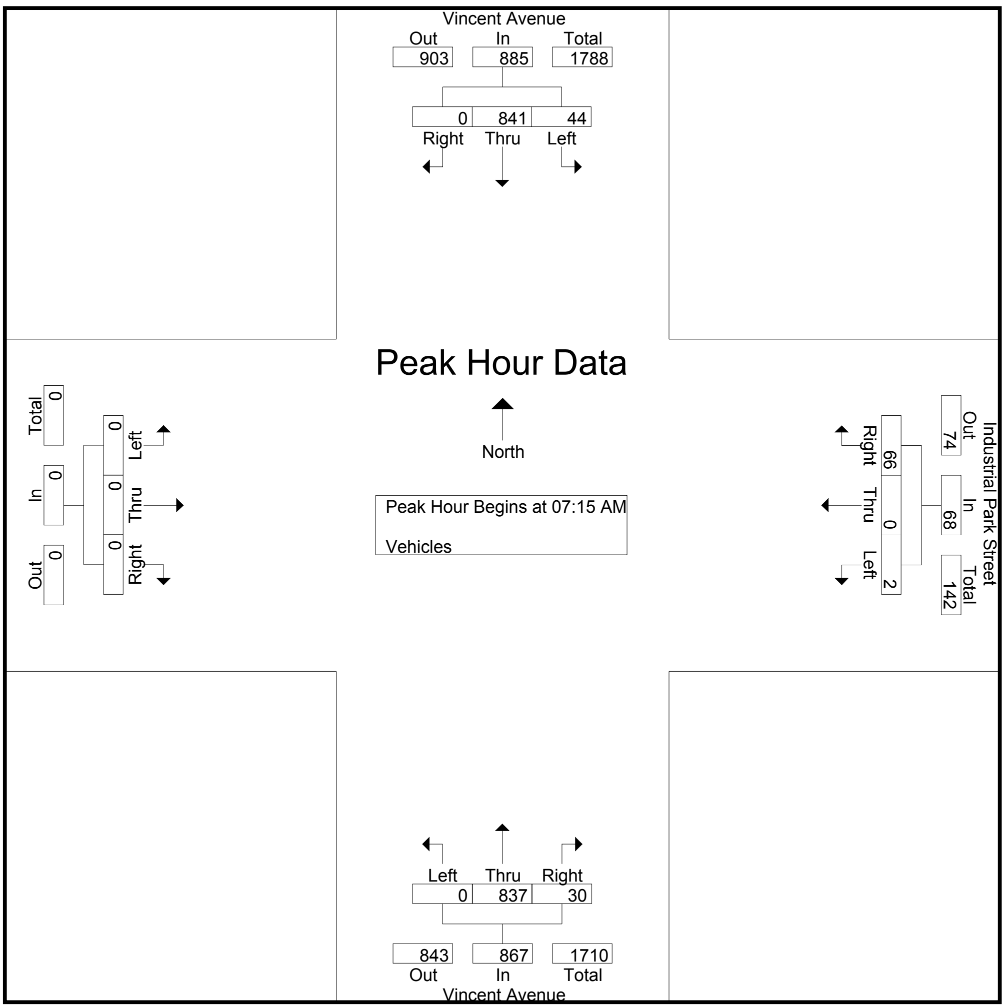
Groups Printed- Vehicles

	Vincent Avenue Southbound			Industrial Park Street Westbound			Vincent Avenue Northbound			Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	3	172	0	4	0	1	0	123	13	0	0	0	316
07:15 AM	9	203	0	1	0	9	0	164	7	0	0	0	393
07:30 AM	15	230	0	0	0	16	0	208	10	0	0	0	479
07:45 AM	17	216	0	1	0	34	0	253	5	0	0	0	526
Total	44	821	0	6	0	60	0	748	35	0	0	0	1714
08:00 AM	3	192	0	0	0	7	0	212	8	0	0	0	422
08:15 AM	5	152	0	3	0	5	0	144	3	0	0	0	312
08:30 AM	2	130	0	2	0	3	0	121	7	0	0	0	265
08:45 AM	3	121	0	1	0	2	0	106	3	0	0	0	236
Total	13	595	0	6	0	17	0	583	21	0	0	0	1235
04:00 PM	0	149	0	5	0	12	0	160	2	0	0	0	328
04:15 PM	2	177	0	3	0	9	0	189	1	0	0	0	381
04:30 PM	1	171	0	8	0	3	0	172	2	0	0	0	357
04:45 PM	1	177	0	5	0	7	0	208	3	0	0	0	401
Total	4	674	0	21	0	31	0	729	8	0	0	0	1467
05:00 PM	4	201	0	5	0	5	0	161	2	0	0	0	378
05:15 PM	3	188	0	9	0	3	0	216	1	0	0	0	420
05:30 PM	0	177	0	8	0	3	0	185	5	0	0	0	378
05:45 PM	3	163	0	1	0	8	0	154	3	0	0	0	332
Total	10	729	0	23	0	19	0	716	11	0	0	0	1508
Grand Total	71	2819	0	56	0	127	0	2776	75	0	0	0	5924
Apprch %	2.5	97.5	0	30.6	0	69.4	0	97.4	2.6	0	0	0	
Total %	1.2	47.6	0	0.9	0	2.1	0	46.9	1.3	0	0	0	

CITY TRAFFIC COUNTERS
WWW.CTCOUNTERS.COM

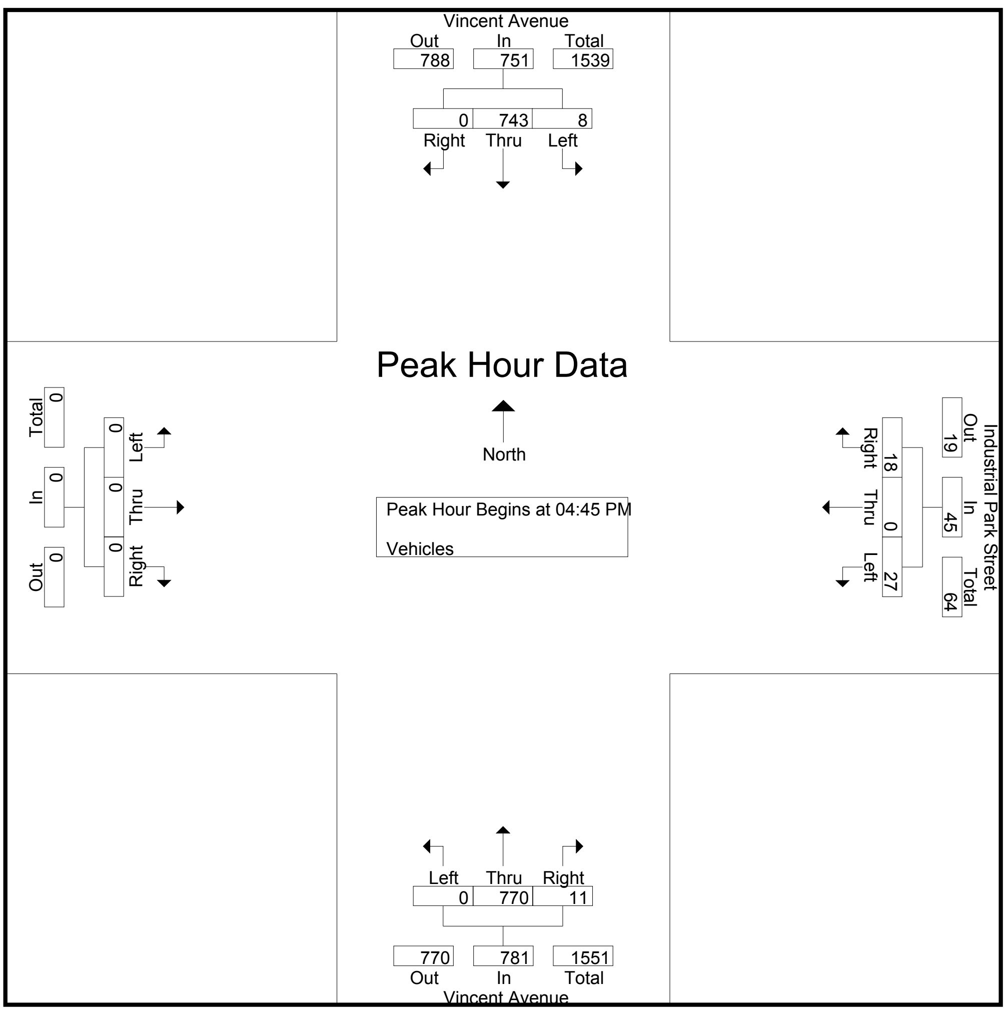
File Name : Vincent_IndustrialPark
Site Code : 00000000
Start Date : 11/6/2019
Page No : 2

	Vincent Avenue Southbound				Industrial Park Street Westbound				Vincent Avenue Northbound				Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	9	203	0	212	**1**	0	9	10	0	164	7	171	0	0	0	0	393
07:30 AM	15	**230**	0	**245**	0	0	16	16	0	208	**10**	218	0	0	0	0	479
07:45 AM	**17**	216	0	233	1	0	**34**	**35**	0	**253**	5	**258**	0	0	0	0	**526**
08:00 AM	3	192	0	195	0	0	7	7	0	212	8	220	0	0	0	0	422
Total Volume	44	841	0	885	2	0	66	68	0	837	30	867	0	0	0	0	1820
% App. Total	5	95	0		2.9	0	97.1		0	96.5	3.5		0	0	0		
PHF	.647	.914	.000	.903	.500	.000	.485	.486	.000	.827	.750	.840	.000	.000	.000	.000	.865



File Name : Vincent_IndustrialPark
Site Code : 00000000
Start Date : 11/6/2019

	Vincent Avenue Southbound				Industrial Park Street Westbound				Vincent Avenue Northbound				Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	1	177	0	178	5	0	**7**	**12**	0	208	3	211	0	0	0	0	401
05:00 PM	**4**	**201**	0	**205**	5	0	5	10	0	161	2	163	0	0	0	0	378
05:15 PM	3	188	0	191	**9**	0	3	12	0	**216**	1	**217**	0	0	0	0	**420**
05:30 PM	0	177	0	177	8	0	3	11	0	185	**5**	190	0	0	0	0	378
Total Volume	8	743	0	751	27	0	18	45	0	770	11	781	0	0	0	0	1577
% App. Total	1.1	98.9	0		60	0	40		0	98.6	1.4		0	0	0		
PHF	.500	.924	.000	.916	.750	.000	.643	.938	.000	.891	.550	.900	.000	.000	.000	.000	.939



CITY TRAFFIC COUNTERS
WWW.CTCOUNTERS.COM

File Name : Vincent_SanBernardino
Site Code : 00000000
Start Date : 11/6/2019
Page No : 1

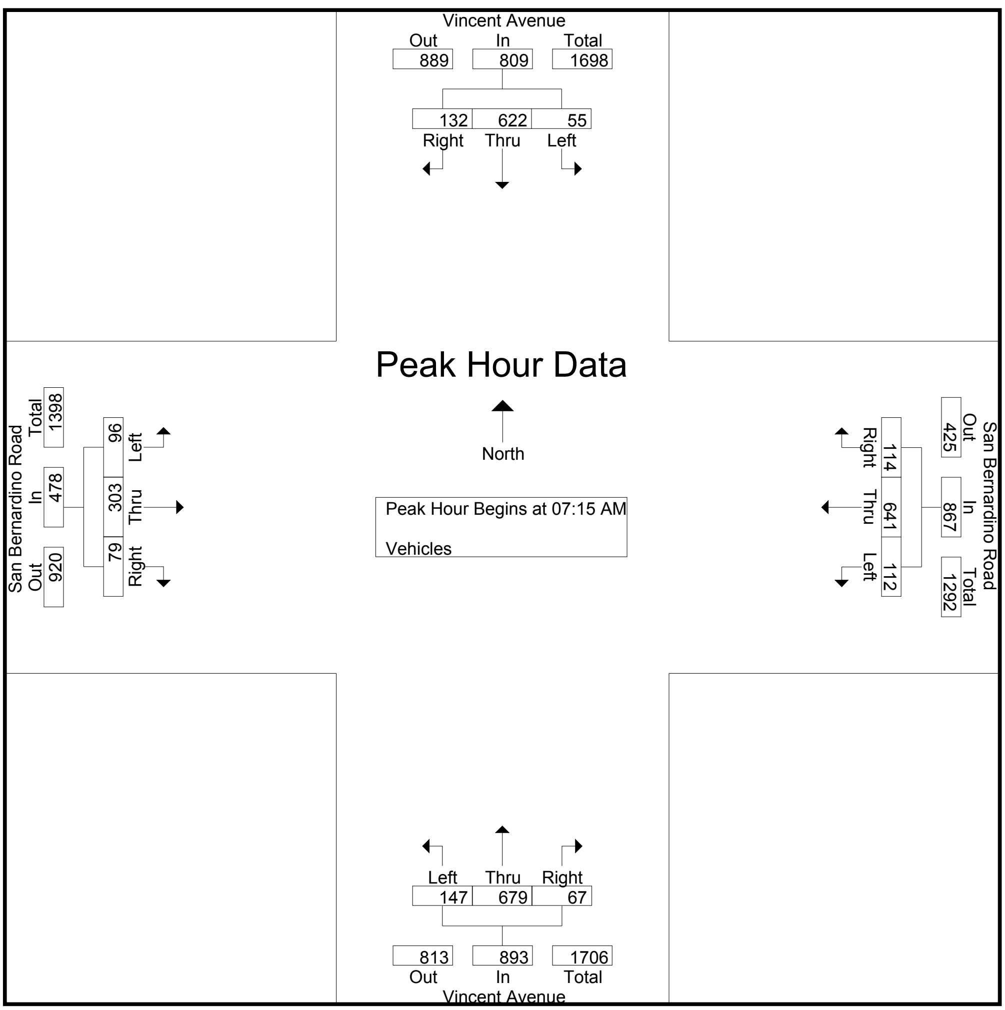
Groups Printed- Vehicles

	Vincent Avenue Southbound			San Bernardino Road Westbound			Vincent Avenue Northbound			San Bernardino Road Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	6	132	34	21	161	7	48	113	15	12	42	20	611
07:15 AM	16	153	22	37	173	15	53	136	12	19	61	18	715
07:30 AM	12	186	38	24	172	31	34	170	21	23	82	28	821
07:45 AM	13	152	37	22	179	46	31	188	19	29	79	22	817
Total	47	623	131	104	685	99	166	607	67	83	264	88	2964
08:00 AM	14	131	35	29	117	22	29	185	15	25	81	11	694
08:15 AM	7	131	20	19	84	8	14	124	17	21	76	19	540
08:30 AM	11	103	18	13	86	7	25	117	14	10	62	16	482
08:45 AM	8	105	14	12	81	11	11	80	14	8	61	13	418
Total	40	470	87	73	368	48	79	506	60	64	280	59	2134
04:00 PM	12	143	6	27	90	23	15	133	12	14	150	46	671
04:15 PM	11	147	3	32	59	17	17	143	28	25	168	33	683
04:30 PM	16	144	14	33	82	16	9	142	11	28	159	44	698
04:45 PM	18	149	9	25	70	21	14	171	22	32	187	30	748
Total	57	583	32	117	301	77	55	589	73	99	664	153	2800
05:00 PM	13	155	6	32	82	18	12	135	25	27	151	32	688
05:15 PM	18	185	12	36	75	11	21	186	23	37	161	26	791
05:30 PM	13	150	11	27	75	24	12	152	23	24	147	34	692
05:45 PM	15	135	10	28	57	14	16	134	18	23	154	21	625
Total	59	625	39	123	289	67	61	607	89	111	613	113	2796
Grand Total	203	2301	289	417	1643	291	361	2309	289	357	1821	413	10694
Apprch %	7.3	82.4	10.3	17.7	69.9	12.4	12.2	78	9.8	13.8	70.3	15.9	
Total %	1.9	21.5	2.7	3.9	15.4	2.7	3.4	21.6	2.7	3.3	17	3.9	

CITY TRAFFIC COUNTERS
WWW.CTCOUNTERS.COM

File Name : Vincent_SanBernardino
Site Code : 00000000
Start Date : 11/6/2019

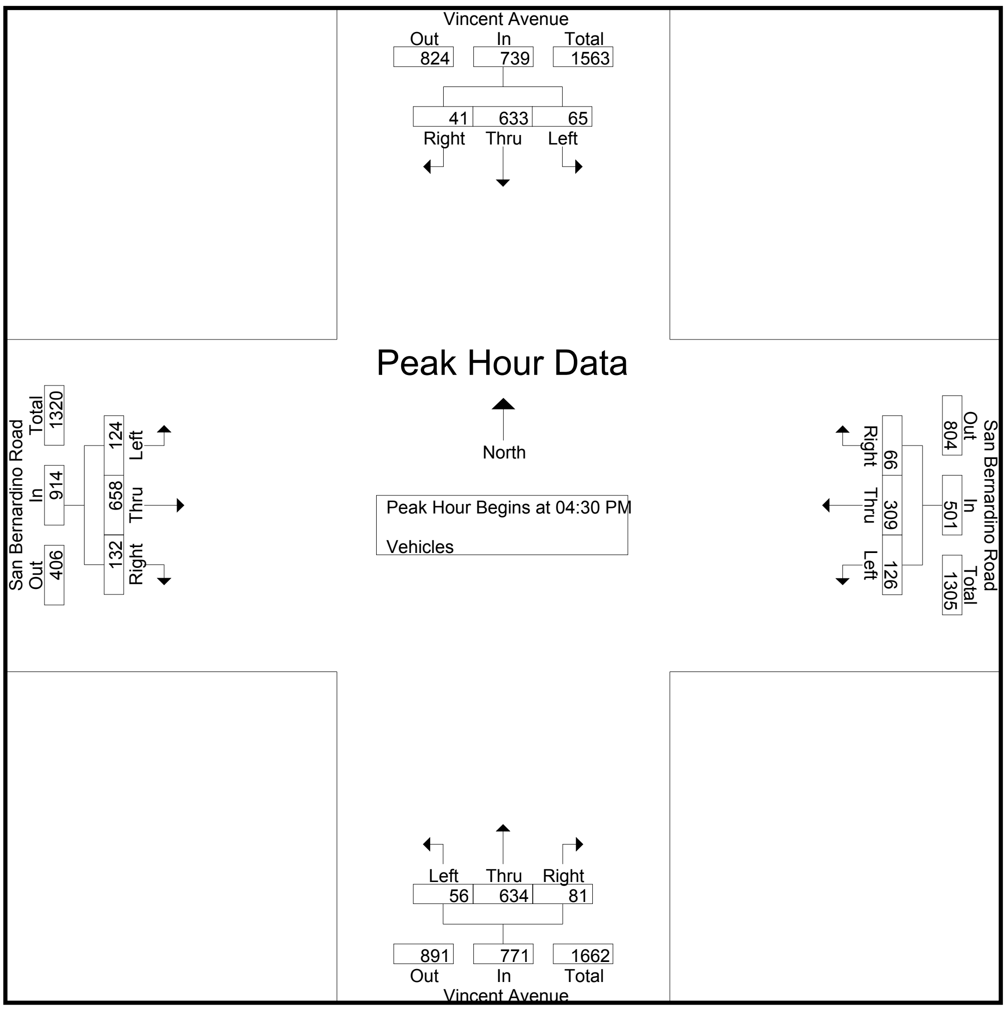
	Vincent Avenue Southbound				San Bernardino Road Westbound				Vincent Avenue Northbound				San Bernardino Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**16**	153	22	191	**37**	173	15	225	**53**	136	12	201	19	61	18	98	715
07:30 AM	12	**186**	**38**	**236**	24	172	31	227	34	170	**21**	225	23	**82**	**28**	**133**	**821**
07:45 AM	13	152	37	202	22	**179**	**46**	**247**	31	**188**	19	**238**	**29**	79	22	130	817
08:00 AM	14	131	35	180	29	117	22	168	29	185	15	229	25	81	11	117	694
Total Volume	55	622	132	809	112	641	114	867	147	679	67	893	96	303	79	478	3047
% App. Total	6.8	76.9	16.3		12.9	73.9	13.1		16.5	76	7.5		20.1	63.4	16.5		
PHF	.859	.836	.868	.857	.757	.895	.620	.878	.693	.903	.798	.938	.828	.924	.705	.898	.928



CITY TRAFFIC COUNTERS
WWW.CTCOUNTERS.COM

File Name : Vincent_SanBernardino
Site Code : 00000000
Start Date : 11/6/2019
Page No : 3

	Vincent Avenue Southbound				San Bernardino Road Westbound				Vincent Avenue Northbound				San Bernardino Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	16	144	**14**	174	33	**82**	16	131	9	142	11	162	28	159	**44**	231	698
04:45 PM	**18**	149	9	176	25	70	**21**	116	14	171	22	207	32	**187**	30	**249**	748
05:00 PM	13	155	6	174	32	82	18	**132**	12	135	**25**	172	27	151	32	210	688
05:15 PM	18	**185**	12	**215**	**36**	75	11	122	**21**	**186**	23	**230**	**37**	161	26	224	**791**
Total Volume	65	633	41	739	126	309	66	501	56	634	81	771	124	658	132	914	2925
% App. Total	8.8	85.7	5.5		25.1	61.7	13.2		7.3	82.2	10.5		13.6	72	14.4		
PHF	.903	.855	.732	.859	.875	.942	.786	.949	.667	.852	.810	.838	.838	.880	.750	.918	.924



CITY TRAFFIC COUNTERS
WWW.CTCOUNTERS.COM

File Name : Vincent_Badillo
Site Code : 00000000
Start Date : 11/6/2019
Page No : 1

Groups Printed- Vehicles

	Vincent Avenue Southbound			**Badillo Street Westbound**			**Vincent Avenue Northbound**			**Badillo Street Eastbound**			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	6	131	27	11	266	11	36	157	21	7	70	17	760
07:15 AM	18	174	35	29	248	22	44	190	35	9	109	26	939
07:30 AM	19	188	34	34	233	26	23	216	50	8	166	24	1021
07:45 AM	18	161	40	30	177	9	37	221	52	13	128	27	913
Total	61	654	136	104	924	68	140	784	158	37	473	94	3633
08:00 AM	5	142	21	32	180	15	19	192	52	5	132	27	822
08:15 AM	7	140	27	22	151	11	14	140	28	9	98	18	665
08:30 AM	6	116	16	29	112	10	22	134	23	6	94	12	580
08:45 AM	5	100	10	18	118	7	13	89	29	10	109	13	521
Total	23	498	74	101	561	43	68	555	132	30	433	70	2588
04:00 PM	17	171	9	25	104	7	14	134	53	9	210	27	780
04:15 PM	21	200	16	32	105	15	15	162	38	14	263	27	908
04:30 PM	16	199	10	29	99	14	15	150	46	15	194	23	810
04:45 PM	9	167	14	35	114	18	13	164	57	16	247	39	893
Total	63	737	49	121	422	54	57	610	194	54	914	116	3391
05:00 PM	23	209	16	39	130	12	14	156	44	19	224	31	917
05:15 PM	13	183	16	38	125	12	23	151	36	20	256	35	908
05:30 PM	20	196	12	46	101	11	11	161	46	15	267	33	919
05:45 PM	23	148	9	26	87	11	22	148	63	15	240	37	829
Total	79	736	53	149	443	46	70	616	189	69	987	136	3573
Grand Total	226	2625	312	475	2350	211	335	2565	673	190	2807	416	13185
Apprch %	7.1	83	9.9	15.6	77.4	6.9	9.4	71.8	18.8	5.6	82.2	12.2	
Total %	1.7	19.9	2.4	3.6	17.8	1.6	2.5	19.5	5.1	1.4	21.3	3.2	

File Name : Vincent_Badillo
Site Code : 00000000
Start Date : 11/6/2019
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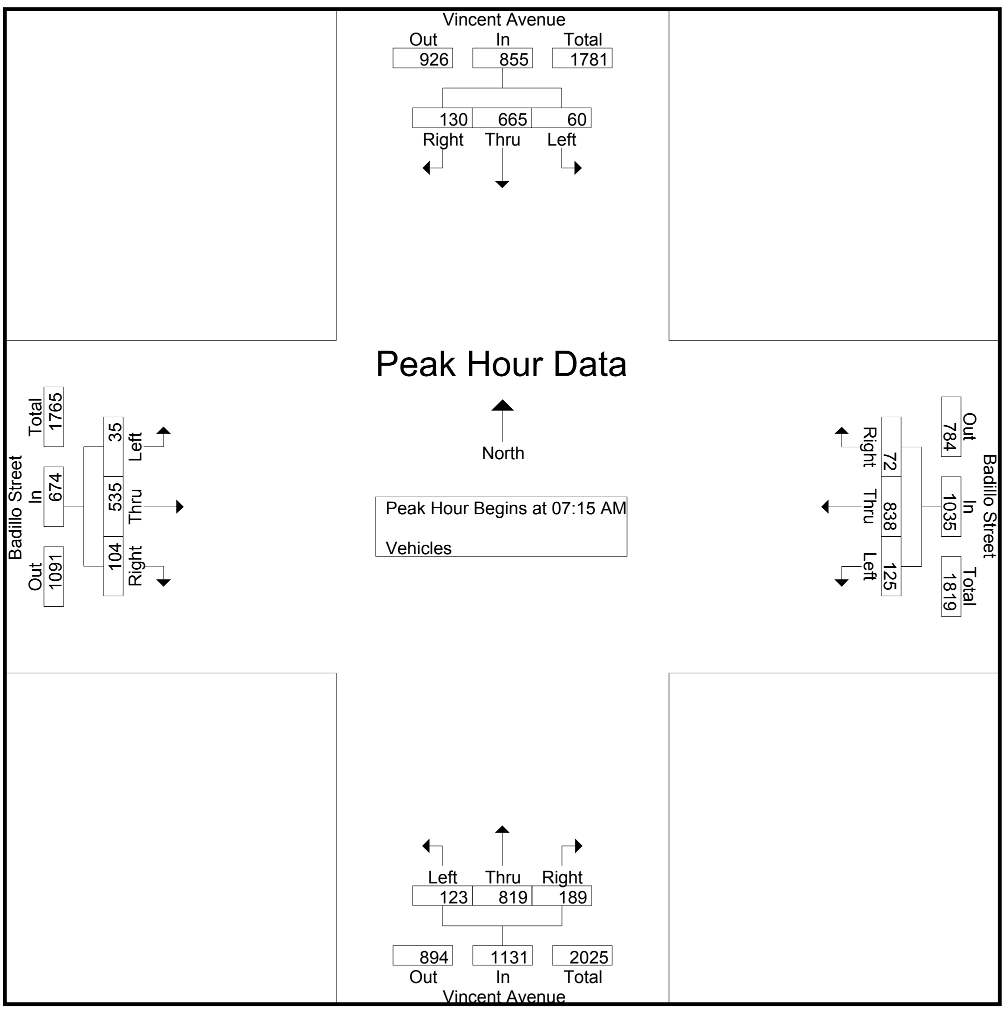
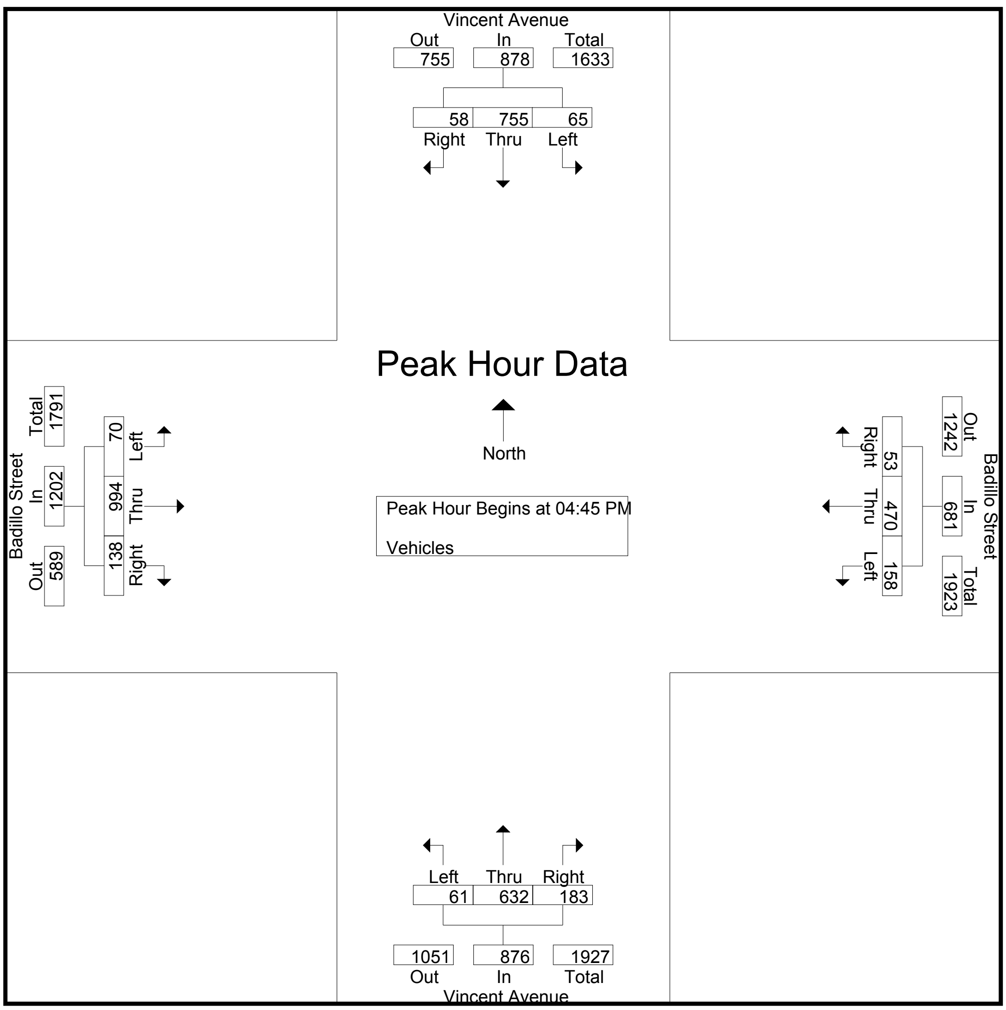
	Vincent Avenue Southbound				Badillo Street Westbound				Vincent Avenue Northbound				Badillo Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	18	174	35	227	29	**248**	22	**299**	**44**	190	35	269	9	109	26	144	939
07:30 AM	**19**	**188**	34	**241**	**34**	233	**26**	293	23	216	50	289	8	**166**	24	**198**	**1021**
07:45 AM	18	161	**40**	219	30	177	9	216	37	**221**	**52**	**310**	**13**	128	**27**	168	913
08:00 AM	5	142	21	168	32	180	15	227	19	192	52	263	5	132	27	164	822
Total Volume	60	665	130	855	125	838	72	1035	123	819	189	1131	35	535	104	674	3695
% App. Total	7	77.8	15.2		12.1	81	7		10.9	72.4	16.7		5.2	79.4	15.4		
PHF	.789	.884	.813	.887	.919	.845	.692	.865	.699	.926	.909	.912	.673	.806	.963	.851	.905



File Name : Vincent_Badillo
Site Code : 00000000
Start Date : 11/6/2019

	Vincent Avenue Southbound				Badillo Street Westbound				Vincent Avenue Northbound				Badillo Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	9	167	14	190	35	114	**18**	167	13	**164**	**57**	**234**	16	247	**39**	302	893
05:00 PM	**23**	**209**	**16**	**248**	39	**130**	12	**181**	14	156	44	214	19	224	31	274	917
05:15 PM	13	183	16	212	38	125	12	175	**23**	151	36	210	**20**	256	35	311	908
05:30 PM	20	196	12	228	**46**	101	11	158	11	161	46	218	15	**267**	33	**315**	**919**
Total Volume	65	755	58	878	158	470	53	681	61	632	183	876	70	994	138	1202	3637
% App. Total	7.4	86	6.6		23.2	69	7.8		7	72.1	20.9		5.8	82.7	11.5		
PHF	.707	.903	.906	.885	.859	.904	.736	.941	.663	.963	.803	.936	.875	.931	.885	.954	.989



CITY TRAFFIC COUNTERS
WWW.CTCOUNTERS.COM

File Name : Cutter_SanBernardino
Site Code : 00000000
Start Date : 11/6/2019
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Groups Printed- Vehicles

	Cutter Way Southbound			San Bernardino Road Westbound			Driveway Northbound			San Bernardino Road Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	5	0	2	2	192	8	3	0	2	1	48	2	265
07:15 AM	2	0	3	1	238	8	0	0	4	2	81	2	341
07:30 AM	8	0	22	6	220	32	1	0	6	11	93	6	405
07:45 AM	10	3	15	2	233	19	4	1	12	5	96	10	410
Total	25	3	42	11	883	67	8	1	24	19	318	20	1421
08:00 AM	2	1	1	9	172	9	1	0	16	3	96	6	316
08:15 AM	3	0	0	1	107	4	2	0	4	3	89	3	216
08:30 AM	4	0	0	1	111	8	2	0	5	2	88	0	221
08:45 AM	3	0	0	0	104	2	1	2	4	1	78	2	197
Total	12	1	1	11	494	23	6	2	29	9	351	11	950
04:00 PM	8	0	2	0	107	5	0	0	5	3	184	2	316
04:15 PM	7	1	2	0	96	13	0	0	7	2	198	3	329
04:30 PM	7	0	2	7	108	2	2	0	7	2	191	3	331
04:45 PM	3	0	1	0	112	8	1	0	6	0	224	3	358
Total	25	1	7	7	423	28	3	0	25	7	797	11	1334
05:00 PM	5	0	4	2	115	6	4	0	8	0	194	3	341
05:15 PM	5	0	1	2	109	5	3	0	7	5	196	2	335
05:30 PM	2	0	5	5	118	1	0	0	6	3	194	2	336
05:45 PM	3	0	4	0	80	14	2	1	6	4	195	3	312
Total	15	0	14	9	422	26	9	1	27	12	779	10	1324
Grand Total	77	5	64	38	2222	144	26	4	105	47	2245	52	5029
Apprch %	52.7	3.4	43.8	1.6	92.4	6	19.3	3	77.8	2	95.8	2.2	
Total %	1.5	0.1	1.3	0.8	44.2	2.9	0.5	0.1	2.1	0.9	44.6	1	

CITY TRAFFIC COUNTERS
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File Name : Cutter_SanBernardino
Site Code : 00000000
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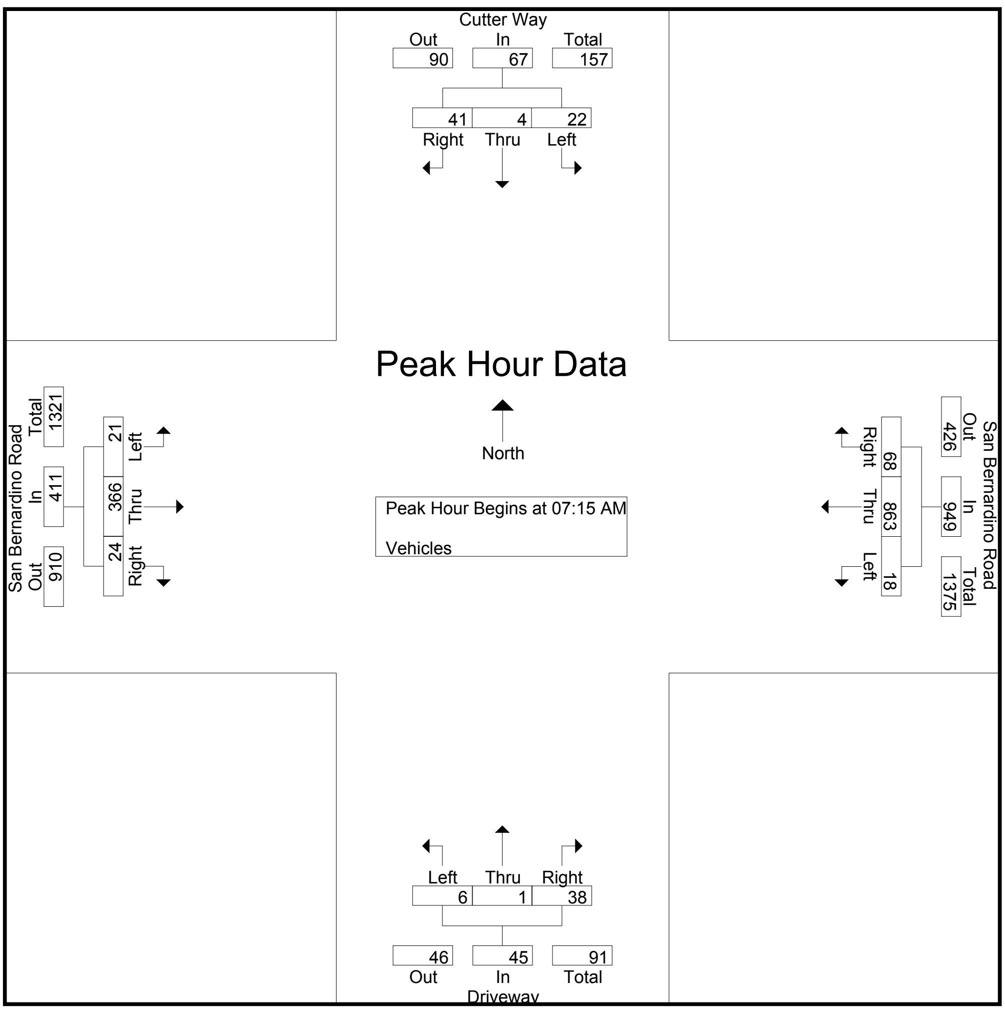
	Cutter Way Southbound				San Bernardino Road Westbound				Driveway Northbound				San Bernardino Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	2	0	3	5	1	**238**	8	247	0	0	4	4	2	81	2	85	341
07:30 AM	8	0	**22**	**30**	6	220	**32**	**258**	1	0	6	7	**11**	93	6	110	405
07:45 AM	**10**	**3**	15	28	2	233	19	254	**4**	**1**	12	**17**	5	**96**	**10**	**111**	**410**
08:00 AM	2	1	1	4	**9**	172	9	190	1	0	**16**	17	3	96	6	105	316
Total Volume	22	4	41	67	18	863	68	949	6	1	38	45	21	366	24	411	1472
% App. Total	32.8	6	61.2		1.9	90.9	7.2		13.3	2.2	84.4		5.1	89.1	5.8		
PHF	.550	.333	.466	.558	.500	.907	.531	.920	.375	.250	.594	.662	.477	.953	.600	.926	.898



File Name : Cutter_SanBernardino
Site Code : 00000000
Start Date : 11/6/2019
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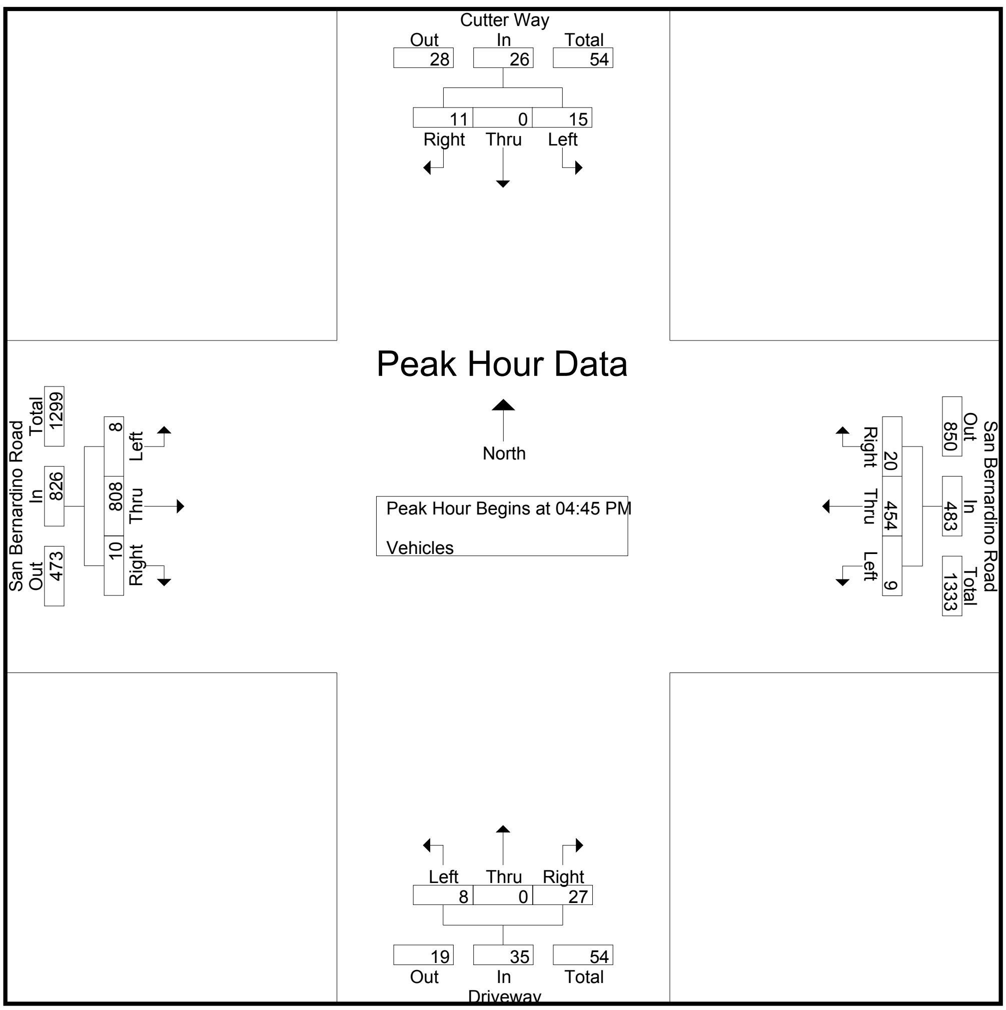
	Cutter Way Southbound				San Bernardino Road Westbound				Driveway Northbound				San Bernardino Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	3	0	1	4	0	112	**8**	120	1	0	6	7	0	**224**	**3**	**227**	**358**
05:00 PM	**5**	0	4	**9**	2	115	6	123	**4**	0	**8**	**12**	0	194	3	197	341
05:15 PM	5	0	1	6	2	109	5	116	3	0	7	10	**5**	196	2	203	335
05:30 PM	2	0	**5**	7	**5**	**118**	1	**124**	0	0	6	6	3	194	2	199	336
Total Volume	15	0	11	26	9	454	20	483	8	0	27	35	8	808	10	826	1370
% App. Total	57.7	0	42.3		1.9	94	4.1		22.9	0	77.1		1	97.8	1.2		
PHF	.750	.000	.550	.722	.450	.962	.625	.974	.500	.000	.844	.729	.400	.902	.833	.910	.957



CITY TRAFFIC COUNTERS
WWW.CTCOUNTERS.COM

File Name : LarkEllen_Cypress
Site Code : 00000000
Start Date : 9/19/2019
Page No : 1

Groups Printed- Vehicles

	Lark Ellen Ave Southbound			Cypress St Westbound			Lark Ellen Ave Northbound			Cypress St Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	14	87	15	30	300	17	22	78	7	12	66	16	664
07:15 AM	17	107	18	48	258	9	30	73	11	9	82	28	690
07:30 AM	32	146	27	75	228	22	27	128	23	19	162	36	925
07:45 AM	14	120	29	86	166	26	28	130	32	20	127	20	798
Total	77	460	89	239	952	74	107	409	73	60	437	100	3077
08:00 AM	19	76	20	23	128	23	35	108	18	21	78	14	563
08:15 AM	14	91	11	25	138	12	21	101	25	12	66	11	527
08:30 AM	11	73	13	11	130	11	17	93	10	7	82	13	471
08:45 AM	4	70	7	10	99	6	17	97	15	7	87	19	438
Total	48	310	51	69	495	52	90	399	68	47	313	57	1999
04:00 PM	11	100	10	25	68	19	20	95	41	22	257	34	702
04:15 PM	20	109	10	29	92	12	20	136	25	14	275	27	769
04:30 PM	20	97	9	34	109	17	20	86	33	23	272	31	751
04:45 PM	16	132	21	23	100	9	20	115	25	15	271	27	774
Total	67	438	50	111	369	57	80	432	124	74	1075	119	2996
05:00 PM	15	103	12	27	115	13	24	135	21	21	248	33	767
05:15 PM	18	129	9	19	86	13	19	139	28	21	245	27	753
05:30 PM	18	102	6	25	99	20	18	115	37	15	266	33	754
05:45 PM	24	131	7	32	77	19	23	116	19	37	223	34	742
Total	75	465	34	103	377	65	84	505	105	94	982	127	3016
Grand Total	267	1673	224	522	2193	248	361	1745	370	275	2807	403	11088
Apprch %	12.3	77.3	10.4	17.6	74	8.4	14.6	70.5	14.9	7.9	80.5	11.6	
Total %	2.4	15.1	2	4.7	19.8	2.2	3.3	15.7	3.3	2.5	25.3	3.6	

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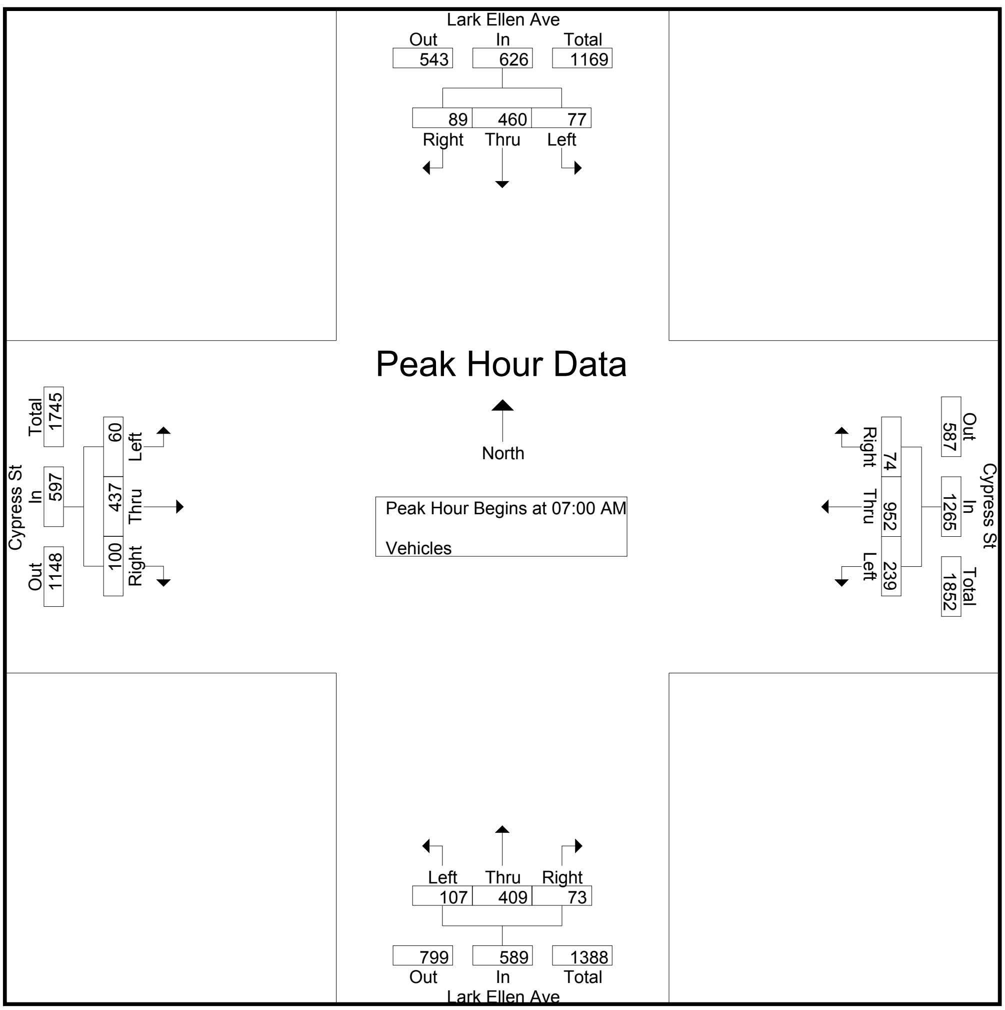
	Lark Ellen Ave Southbound				Cypress St Westbound				Lark Ellen Ave Northbound				Cypress St Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	14	87	15	116	30	**300**	17	**347**	22	78	7	107	12	66	16	94	664
07:15 AM	17	107	18	142	48	258	9	315	**30**	73	11	114	9	82	28	119	690
07:30 AM	**32**	**146**	27	**205**	75	228	22	325	27	128	23	178	19	**162**	**36**	**217**	**925**
07:45 AM	14	120	**29**	163	**86**	166	**26**	278	28	**130**	**32**	**190**	**20**	127	20	167	798
Total Volume	77	460	89	626	239	952	74	1265	107	409	73	589	60	437	100	597	3077
% App. Total	12.3	73.5	14.2		18.9	75.3	5.8		18.2	69.4	12.4		10.1	73.2	16.8		
PHF	.602	.788	.767	.763	.695	.793	.712	.911	.892	.787	.570	.775	.750	.674	.694	.688	.832



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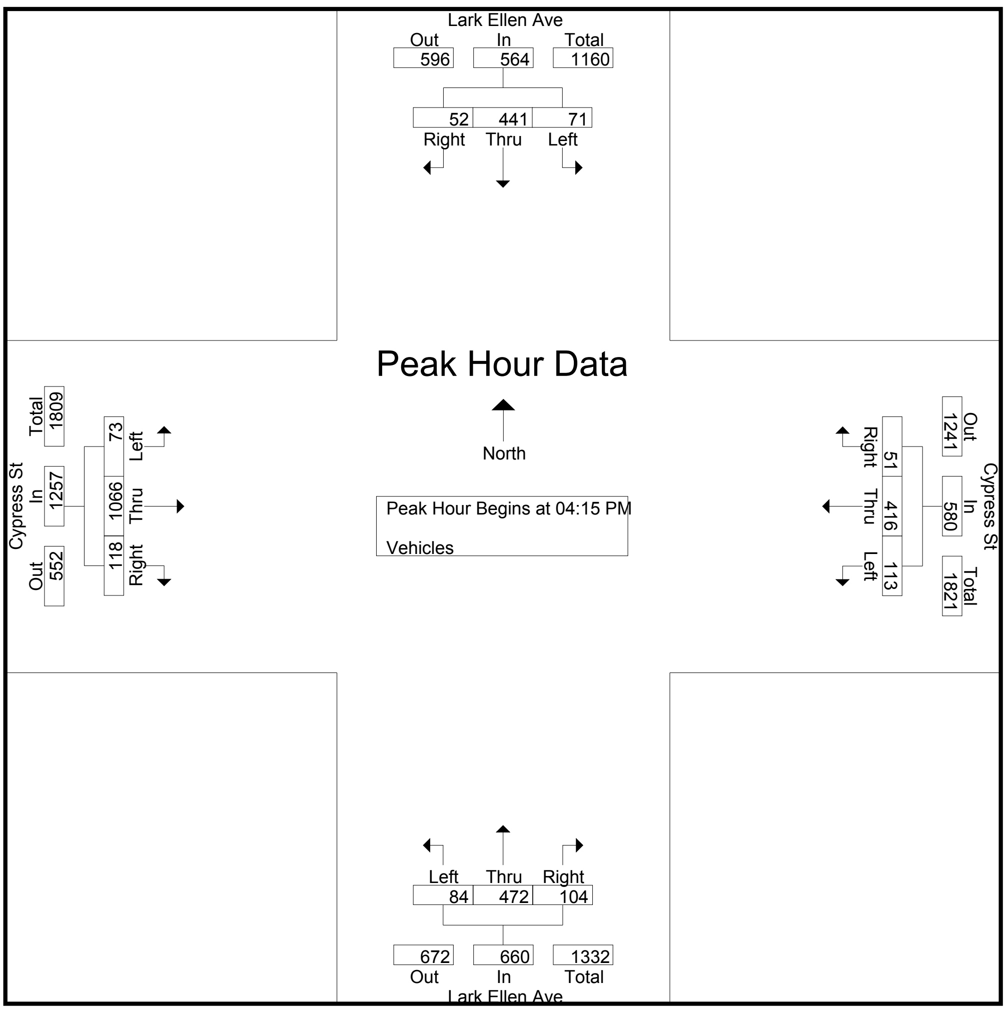
	Lark Ellen Ave Southbound				Cypress St Westbound				Lark Ellen Ave Northbound				Cypress St Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	**20**	109	10	139	29	92	12	133	20	**136**	25	**181**	14	**275**	27	316	769
04:30 PM	20	97	9	126	**34**	109	**17**	**160**	20	86	**33**	139	**23**	272	31	**326**	751
04:45 PM	16	**132**	**21**	**169**	23	100	9	132	20	115	25	160	15	271	27	313	**774**
05:00 PM	15	103	12	130	27	**115**	13	155	**24**	135	21	180	21	248	**33**	302	767
Total Volume	71	441	52	564	113	416	51	580	84	472	104	660	73	1066	118	1257	3061
% App. Total	12.6	78.2	9.2		19.5	71.7	8.8		12.7	71.5	15.8		5.8	84.8	9.4		
PHF	.888	.835	.619	.834	.831	.904	.750	.906	.875	.868	.788	.912	.793	.969	.894	.964	.989



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File Name : LarkEllen_SanBernardino
Site Code : 00000000
Start Date : 9/18/2019
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Groups Printed- Vehicles

	Lark Ellen Ave Southbound			**San Bernardino Rd Westbound**			**Lark Ellen Ave Northbound**			**San Bernardino Rd Eastbound**			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	15	85	15	15	188	11	34	89	13	10	35	12	522
07:15 AM	24	115	29	18	166	26	22	107	10	23	72	13	625
07:30 AM	59	132	59	12	186	72	20	151	12	25	83	14	825
07:45 AM	64	147	76	30	147	28	22	143	25	24	87	13	806
Total	162	479	179	75	687	137	98	490	60	82	277	52	2778
08:00 AM	29	89	21	35	132	20	22	121	16	13	104	24	626
08:15 AM	21	94	17	12	116	13	14	139	19	14	76	11	546
08:30 AM	16	99	10	14	77	23	13	113	15	6	59	11	456
08:45 AM	22	95	13	13	58	14	22	118	14	11	66	18	464
Total	88	377	61	74	383	70	71	491	64	44	305	64	2092
04:00 PM	33	113	17	13	93	17	19	118	27	15	169	32	666
04:15 PM	17	108	12	14	78	26	18	121	20	29	162	26	631
04:30 PM	29	143	20	15	85	23	23	113	27	16	185	28	707
04:45 PM	29	102	19	23	87	30	11	120	48	26	162	34	691
Total	108	466	68	65	343	96	71	472	122	86	678	120	2695
05:00 PM	27	123	7	23	78	22	18	141	23	21	202	35	720
05:15 PM	27	148	11	22	94	26	23	138	26	24	176	40	755
05:30 PM	30	122	12	15	81	24	18	156	30	21	183	26	718
05:45 PM	23	119	18	21	101	28	16	157	29	29	205	28	774
Total	107	512	48	81	354	100	75	592	108	95	766	129	2967
Grand Total	465	1834	356	295	1767	403	315	2045	354	307	2026	365	10532
Apprch %	17.5	69.1	13.4	12	71.7	16.3	11.6	75.4	13	11.4	75.1	13.5	
Total %	4.4	17.4	3.4	2.8	16.8	3.8	3	19.4	3.4	2.9	19.2	3.5	

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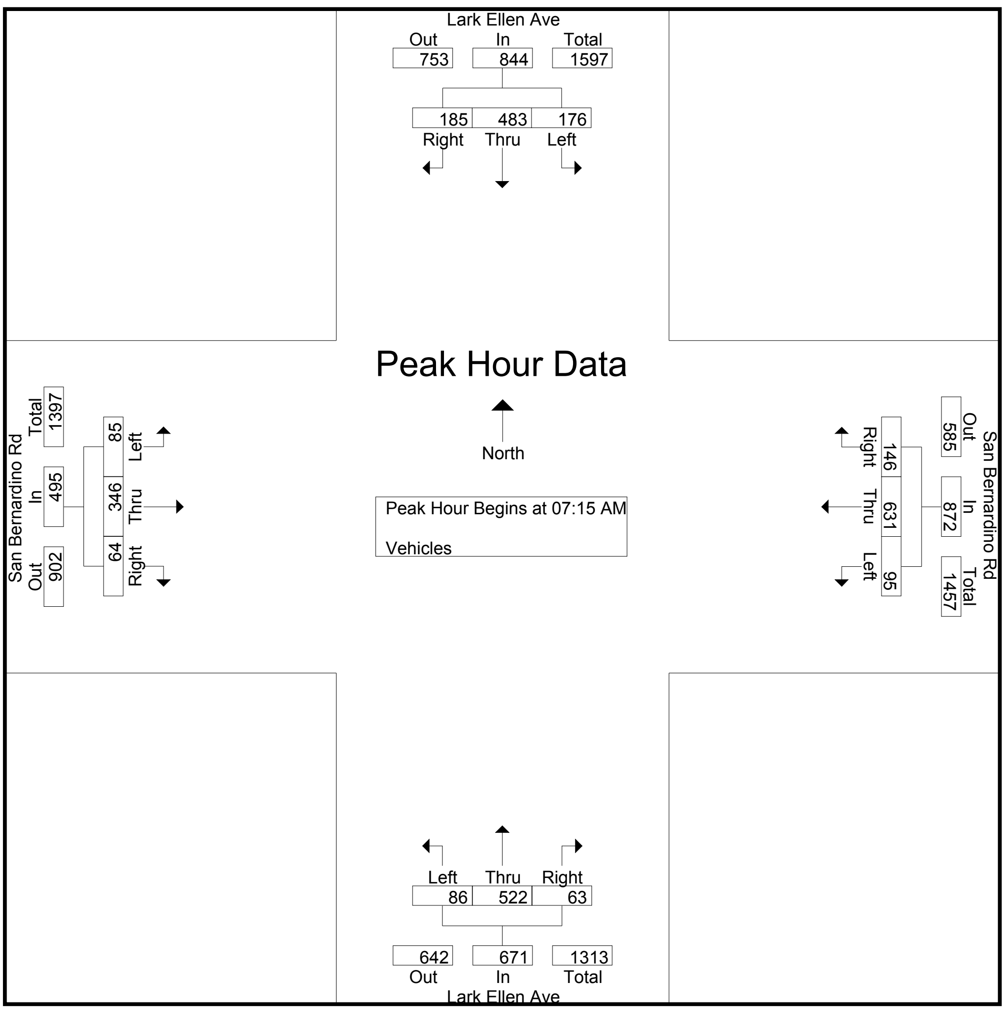
	Lark Ellen Ave Southbound				San Bernardino Rd Westbound				Lark Ellen Ave Northbound				San Bernardino Rd Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	24	115	29	168	18	166	26	210	**22**	107	10	139	23	72	13	108	625
07:30 AM	59	132	59	250	12	**186**	**72**	**270**	20	**151**	12	183	**25**	83	14	122	**825**
07:45 AM	**64**	**147**	**76**	**287**	30	147	28	205	22	143	**25**	**190**	24	87	13	124	806
08:00 AM	29	89	21	139	**35**	132	20	187	22	121	16	159	13	**104**	**24**	**141**	626
Total Volume	176	483	185	844	95	631	146	872	86	522	63	671	85	346	64	495	2882
% App. Total	20.9	57.2	21.9		10.9	72.4	16.7		12.8	77.8	9.4		17.2	69.9	12.9		
PHF	.688	.821	.609	.735	.679	.848	.507	.807	.977	.864	.630	.883	.850	.832	.667	.878	.873



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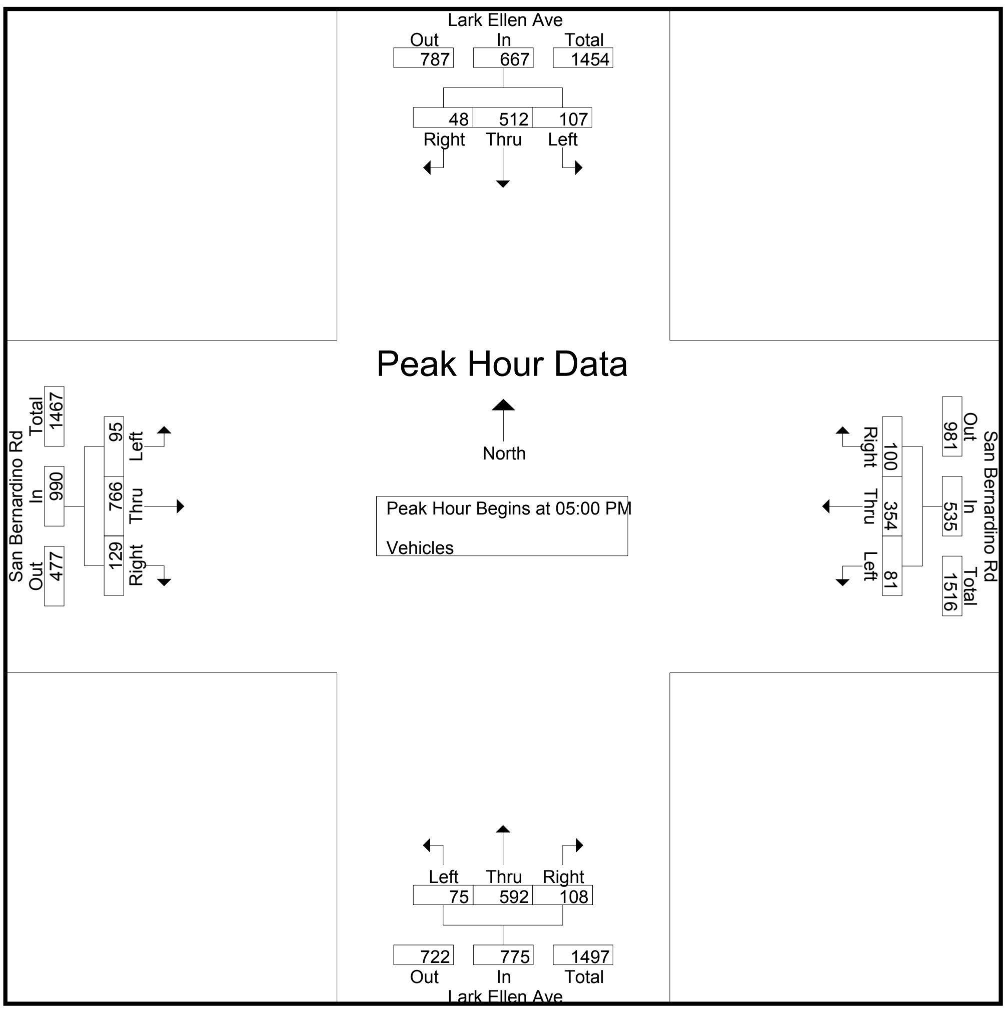
	Lark Ellen Ave Southbound				San Bernardino Rd Westbound				Lark Ellen Ave Northbound				San Bernardino Rd Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	27	123	7	157	**23**	78	22	123	18	141	23	182	21	202	35	258	720
05:15 PM	27	**148**	11	**186**	22	94	26	142	**23**	138	26	187	24	176	**40**	240	755
05:30 PM	**30**	122	12	164	15	81	24	120	18	156	**30**	**204**	21	183	26	230	718
05:45 PM	23	119	**18**	160	21	**101**	**28**	**150**	16	**157**	29	202	**29**	**205**	28	**262**	**774**
Total Volume	107	512	48	667	81	354	100	535	75	592	108	775	95	766	129	990	2967
% App. Total	16	76.8	7.2		15.1	66.2	18.7		9.7	76.4	13.9		9.6	77.4	13		
PHF	.892	.865	.667	.897	.880	.876	.893	.892	.815	.943	.900	.950	.819	.934	.806	.945	.958



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Groups Printed- Vehicles

	Lark Ellen Ave Southbound			**Badillo St Westbound**			**Lark Ellen Ave Northbound**			**Badillo St Eastbound**			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	12	82	12	32	252	22	10	104	18	11	71	7	633
07:15 AM	16	100	6	50	231	27	16	102	11	6	100	16	681
07:30 AM	12	123	5	48	217	25	21	129	13	12	155	22	782
07:45 AM	16	140	6	54	229	18	11	141	17	13	150	22	817
Total	56	445	29	184	929	92	58	476	59	42	476	67	2913
08:00 AM	19	103	16	43	198	11	26	151	27	12	152	29	787
08:15 AM	18	86	6	34	154	12	14	153	28	10	118	7	640
08:30 AM	13	95	12	26	165	15	17	108	21	11	119	5	607
08:45 AM	18	88	9	27	116	12	15	129	23	12	115	8	572
Total	68	372	43	130	633	50	72	541	99	45	504	49	2606
04:00 PM	14	131	7	19	94	13	18	124	27	18	219	30	714
04:15 PM	18	133	14	24	129	14	13	120	21	21	234	19	760
04:30 PM	13	162	13	27	91	19	10	125	18	19	223	23	743
04:45 PM	13	149	6	28	85	17	8	140	30	14	226	21	737
Total	58	575	40	98	399	63	49	509	96	72	902	93	2954
05:00 PM	19	150	16	39	114	17	17	136	21	19	211	28	787
05:15 PM	12	143	16	20	111	15	11	149	30	12	198	30	747
05:30 PM	18	128	6	33	114	16	16	141	25	17	226	29	769
05:45 PM	10	123	7	23	94	13	13	139	22	14	204	25	687
Total	59	544	45	115	433	61	57	565	98	62	839	112	2990
Grand Total	241	1936	157	527	2394	266	236	2091	352	221	2721	321	11463
Apprch %	10.3	82.9	6.7	16.5	75.1	8.3	8.8	78.1	13.1	6.8	83.4	9.8	
Total %	2.1	16.9	1.4	4.6	20.9	2.3	2.1	18.2	3.1	1.9	23.7	2.8	

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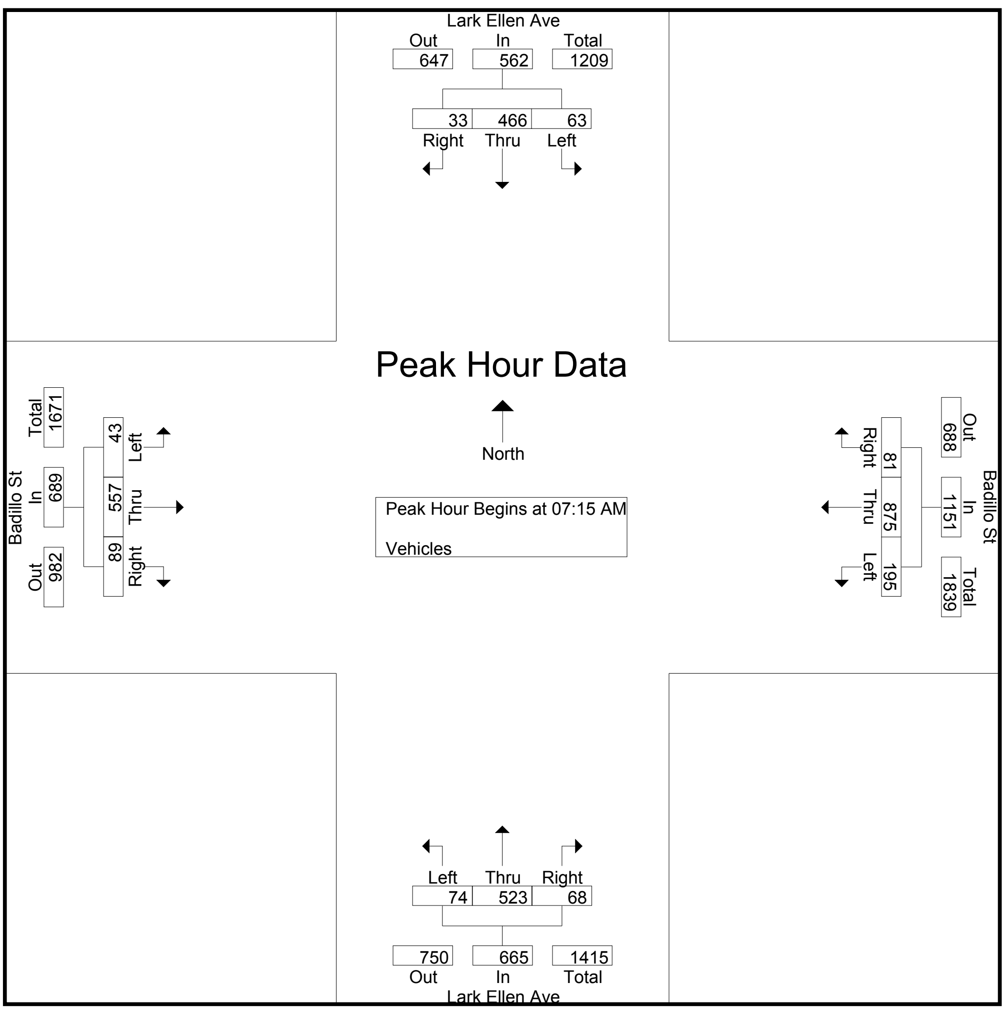
	Lark Ellen Ave Southbound				Badillo St Westbound				Lark Ellen Ave Northbound				Badillo St Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	16	100	6	122	50	**231**	**27**	**308**	16	102	11	129	6	100	16	122	681
07:30 AM	12	123	5	140	48	217	25	290	21	129	13	163	12	**155**	22	189	782
07:45 AM	16	**140**	6	**162**	**54**	229	18	301	11	141	17	169	**13**	150	22	185	**817**
08:00 AM	**19**	103	**16**	138	43	198	11	252	**26**	**151**	**27**	**204**	12	152	**29**	**193**	787
Total Volume	63	466	33	562	195	875	81	1151	74	523	68	665	43	557	89	689	3067
% App. Total	11.2	82.9	5.9		16.9	76	7		11.1	78.6	10.2		6.2	80.8	12.9		
PHF	.829	.832	.516	.867	.903	.947	.750	.934	.712	.866	.630	.815	.827	.898	.767	.892	.938



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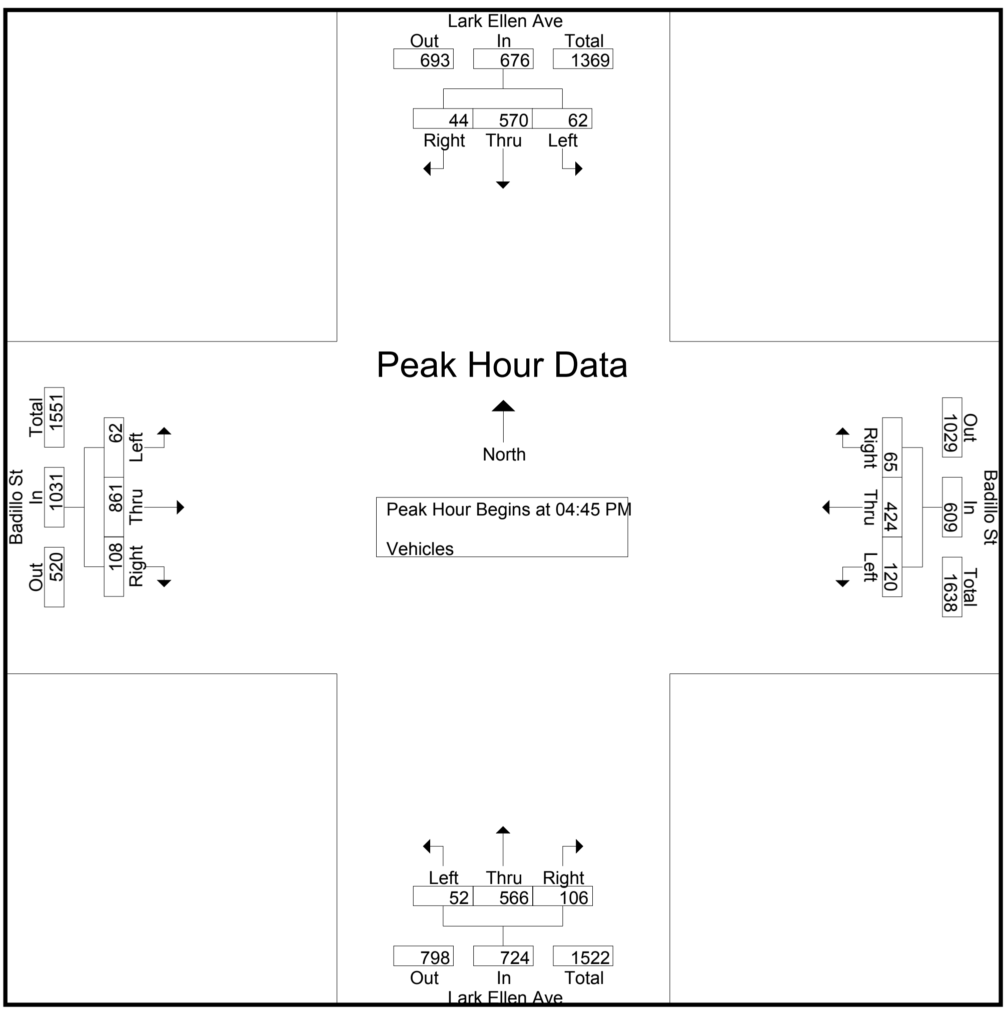
	Lark Ellen Ave Southbound				Badillo St Westbound				Lark Ellen Ave Northbound				Badillo St Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	13	149	6	168	28	85	**17**	130	8	140	**30**	178	14	**226**	21	261	737
05:00 PM	**19**	**150**	**16**	**185**	**39**	**114**	17	**170**	**17**	136	21	174	**19**	211	28	258	**787**
05:15 PM	12	143	16	171	20	111	15	146	11	**149**	30	**190**	12	198	**30**	240	747
05:30 PM	18	128	6	152	33	114	16	163	16	141	25	182	17	226	29	**272**	769
Total Volume	62	570	44	676	120	424	65	609	52	566	106	724	62	861	108	1031	3040
% App. Total	9.2	84.3	6.5		19.7	69.6	10.7		7.2	78.2	14.6		6	83.5	10.5		
PHF	.816	.950	.688	.914	.769	.930	.956	.896	.765	.950	.883	.953	.816	.952	.900	.948	.966



APPENDIX B

ICU/HCM AND LEVELS OF SERVICE EXPLANATION

ICU AND HCM DATA WORKSHEETS
WEEKDAY AM AND PM PEAK HOURS

INTERSECTION CAPACITY UTILIZATION (ICU) DESCRIPTION

Level of Service is a term used to describe prevailing conditions and their effect on traffic. Broadly interpreted, the Levels of Service concept denotes any one of a number of differing combinations of operating conditions which may occur as a roadway is accommodating various traffic volumes. Level of Service is a qualitative measure of the effect of such factors as travel speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience.

Six Levels of Service, A through F, have been defined in the 1965 *Highway Capacity Manual*, published by the Transportation Research Board. Level of Service A describes a condition of free flow, with low traffic volumes and relatively high speeds, while Level of Service F describes forced traffic flow at low speeds with jammed conditions and queues which cannot clear during the green phases.

The Intersection Capacity Utilization (ICU) method of intersection capacity analysis has been used in our studies. It directly relates traffic demand and available capacity for key intersection movements, regardless of present signal timing, The capacity per hour of green time for each approach is calculated based on the methods of the *Highway Capacity Manual*. The proportion of total signal time needed by each key movement is determined and compared to the total time available (100 percent of the hour). The result of summing the requirements of the conflicting key movements plus an allowance for clearance times is expressed as a decimal fraction. Conflicting key traffic movements are those opposing movements whose combined green time requirements are greatest.

The resulting ICU represents the proportion of the total hour required to accommodate intersection demand volumes if the key conflicting traffic movements are operating at capacity. Other movements may be operating near capacity, or may be operating at significantly better levels. The ICU may be translated to a Level of Service as tabulated below.

The Levels of Service (abbreviated from the *Highway Capacity Manual*) are listed here with their corresponding ICU and Load Factor equivalents. Load Factor is that proportion of the signal cycles during the peak hour which are fully loaded; i.e. when all of the vehicles waiting at the beginning of green are not able to clear on that green phase.

Intersection Capacity Utilization Characteristics

Level of Service	Load Factor	Equivalent ICU
A	0.0	0.00 - 0.60
B	0.0 - 0.1	0.61 - 0.70
C	0.1 - 0.3	0.71 - 0.80
D	0.3 - 0.7	0.81 - 0.90
E	0.7 - 1.0	0.91 - 1.00
F	Not Applicable	Not Applicable

SERVICE LEVEL A
There are no loaded cycles and few are even close to loaded at this service level. No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.

SERVICE LEVEL B
This level represents stable operation where an occasional approach phase is fully utilized and a substantial number are approaching full use. Many drivers begin to feel restricted within platoons of vehicles.

SERVICE LEVEL C
At this level stable operation continues. Loading is still intermittent but more frequent than at Level B. Occasionally drivers may have to wait through more than one red signal indication and backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so.

SERVICE LEVEL D
This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak hour, but enough cycles with lower demand occur to permit periodic clearance of queues, thus preventing excessive backups. Drivers frequently have to wait through more than one red signal. This level is the lower limit of acceptable operation to most drivers.

SERVICE LEVEL E
This represents near capacity and capacity operation. At capacity (ICU = 1.0) it represents the most vehicles that the particular intersection can accommodate. However, full utilization of every signal cycle is seldom attained no matter how great the demand. At this level all drivers wait through more than one red signal, and frequently through several.

SERVICE LEVEL F
Jammed conditions. Traffic backed up from a downstream location on one of the street restricts or prevents movement of traffic through the intersection under consideration.

LEVEL OF SERVICE FOR UNSIGNALIZED INTERSECTIONS

In the *Highway Capacity Manual (HCM)*, published by the Transportation Research Board, 2000, level of service for unsignalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, in the absence of incidents, control, traffic, or geometric delay. Only the portion of total delay attributed to the traffic control measures, either traffic signals or stop signs, is quantified. This delay is called *control delay*. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Level of Service criteria for unsignalized intersections are stated in terms of the average control delay per vehicle. The level of service is determined by the computed or measured control delay and is defined for each minor movement. Average control delay for any particular minor movement is a function of the service time for the approach and the degree of utilization. (Level of service is not defined for the intersection as a whole for two-way stop controlled intersections.)

Level of Service Criteria for TWSC/AWSC Intersections

Level of Service	Average Control Delay (Sec/Veh)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Level of Service (LOS) values are used to describe intersection operations with service levels varying from LOS A (free flow) to LOS F (jammed condition). The following descriptions summarize *HCM* criteria for each level of service:

LOS A describes operations with very low control delay, up to 10 seconds per vehicle.

LOS B describes operations with control delay greater than 10 and up to 15 seconds per vehicle.

LOS C describes operations with control delay greater than 15 and up to 25 seconds per vehicle.

LOS D describes operations with control delay greater than 25 and up to 35 seconds per vehicle.

LOS E describes operations with control delay greater than 35 and up to 50 seconds per vehicle.

LOS F describes operations with control delay in excess of 50 seconds per vehicle. For two-way stop controlled intersections, LOS F exists when there are insufficient gaps of suitable size to allow side-street demand to safely cross through a major-street traffic stream. This level of service is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches.

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INTERSECTION CAPACITY UTILIZATION

Vincent Avenue @ Cypress Street
Peak hr: AM
Annual Growth: 1.00%

N-S St: Vincent Avenue
E-W St: Cypress Street
Project: 529 Cutter Way Live/Work Project/1-19-4360-1
File: ICU1

Date: 8/27/2020
Date of Count: 2020
Projection Year: 2023

	2020 EXISTING TRAFFIC			2020 EXISTING WITH PROJECT				2020 EXISTING W/ PROJECT + MITIGATION				2023 FUTURE PRE-PROJECT					2023 FUTURE WITH PROJECT			
Movement	1 Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Amb. Grow. Volume	Added Rel. Proj. Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	182	1600	0.114 *	1	183	1600	0.114 *	0	183	1600	0.114 *	6	0	188	1600	0.118 *	1	189	1600	0.118 *
NB Thru	551	3200	0.213	1	552	3200	0.213	0	552	3200	0.213	17	9	577	3200	0.223	1	578	3200	0.223
NB Right	131	0	0.000	0	131	0	0.000	0	131	0	0.000	4	0	135	0	0.000	0	135	0	0.000
SB Left	63	1600	0.039	0	63	1600	0.039	0	63	1600	0.039	2	0	65	1600	0.041	0	65	1600	0.041
SB Thru	449	3200	0.169 *	1	450	3200	0.169 *	0	450	3200	0.169 *	14	11	474	3200	0.178 *	1	475	3200	0.178 *
SB Right	91	0	0.000	0	91	0	0.000	0	91	0	0.000	3	0	94	0	0.000	0	94	0	0.000
EB Left	36	1600	0.023 *	0	36	1600	0.023 *	0	36	1600	0.023 *	1	0	37	1600	0.023 *	0	37	1600	0.023 *
EB Thru	343	3200	0.128	0	343	3200	0.128	0	343	3200	0.128	10	14	367	3200	0.136	0	367	3200	0.136
EB Right	67	0	0.000	0	67	0	0.000	0	67	0	0.000	2	0	69	0	0.000	0	69	0	0.000
WB Left	222	1600	0.139	0	222	1600	0.139	0	222	1600	0.139	7	0	229	1600	0.143	0	229	1600	0.143
WB Thru	826	3200	0.279 *	0	826	3200	0.279 *	0	826	3200	0.279 *	25	11	862	3200	0.291 *	0	862	3200	0.291 *
WB Right	68	0	0.000	0	68	0	0.000	0	68	0	0.000	2	0	70	0	0.000	0	70	0	0.000
Yellow Allowance			0.100 *				0.100 *				0.100 *					0.100 *				0.100 *
ICU			0.684				0.685				0.685					0.709				0.710
LOS			B				B				B					C				C

* Key conflicting movement as a part of ICU
1 Counts conducted by: City Traffic Counters
2 Capacity expressed in veh/hour of green

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Ste 500, Pasadena 91106
(626) 796.2322   Fax (626) 792.0941

INTERSECTION CAPACITY UTILIZATION

Vincent Avenue @ Cypress Street
Peak hr: PM
Annual Growth: 1.00%

N-S St: Vincent Avenue
E-W St: Cypress Street
Project: 529 Cutter Way Live/Work Project/1-19-4360-1
File: ICU1

Date: 8/27/2020
Date of Count: 2020
Projection Year: 2023

Movement	2020 EXISTING TRAFFIC			2020 EXISTING WITH PROJECT				2020 EXISTING W/ PROJECT + MITIGATION			
	1 Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	55	1600	0.034	1	56	1600	0.035	0	56	1600	0.035
NB Thru	451	3200	0.195 *	1	452	3200	0.195 *	0	452	3200	0.195 *
NB Right	173	0	0.000	0	173	0	0.000	0	173	0	0.000
SB Left	95	1600	0.059 *	0	95	1600	0.059 *	0	95	1600	0.059 *
SB Thru	499	3200	0.170	1	500	3200	0.170	0	500	3200	0.170
SB Right	45	0	0.000	0	45	0	0.000	0	45	0	0.000
EB Left	83	1600	0.052	0	83	1600	0.052	0	83	1600	0.052
EB Thru	969	3200	0.334 *	0	969	3200	0.334 *	0	969	3200	0.334 *
EB Right	99	0	0.000	1	100	0	0.000	0	100	0	0.000
WB Left	107	1600	0.067 *	0	107	1600	0.067 *	0	107	1600	0.067 *
WB Thru	343	3200	0.126	0	343	3200	0.126	0	343	3200	0.126
WB Right	60	0	0.000	0	60	0	0.000	0	60	0	0.000
Yellow Allowance			0.100 *				0.100 *				0.100 *
ICU			0.755				0.756				0.756
LOS			C				C				C

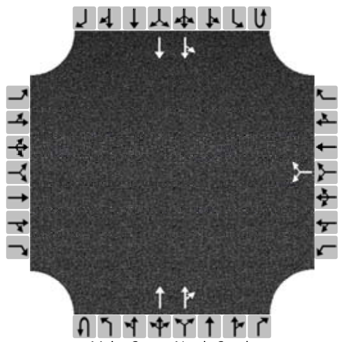
Movement	2023 FUTURE PRE-PROJECT					2023 FUTURE WITH PROJECT			
	Added Amb. Grow. Volume	Added Rel. Proj. Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	2	0	57	1600	0.036	1	58	1600	0.036
NB Thru	14	10	475	3200	0.204 *	1	476	3200	0.204 *
NB Right	5	0	178	0	0.000	0	178	0	0.000
SB Left	3	0	98	1600	0.061 *	0	98	1600	0.061 *
SB Thru	15	9	523	3200	0.178	1	524	3200	0.178
SB Right	1	0	46	0	0.000	0	46	0	0.000
EB Left	3	0	86	1600	0.054	0	86	1600	0.054
EB Thru	29	15	1013	3200	0.348 *	0	1013	3200	0.349 *
EB Right	3	0	102	0	0.000	1	103	0	0.000
WB Left	3	0	110	1600	0.069 *	0	110	1600	0.069 *
WB Thru	10	19	372	3200	0.136	0	372	3200	0.136
WB Right	2	0	62	0	0.000	0	62	0	0.000
Yellow Allowance					0.100 *				0.100 *
ICU					0.783				0.783
LOS					C				C

* *Key conflicting movement as a part of ICU*
1 *Counts conducted by: City Traffic Counters*
2 *Capacity expressed in veh/hour of green*

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DR	Intersection	Int-2
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	8/27/2020	East/West Street	Industrial Park Street
Analysis Year	2020	North/South Street	Vincent Avenue
Time Analyzed	Weekday AM Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	2	0	0	0	2	0
Configuration							LR				T	TR		LT	T	
Volume (veh/h)						2		67			845	30		44	849	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

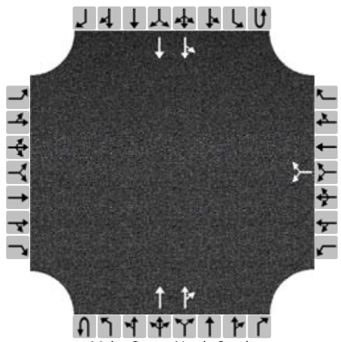
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							75							48		
Capacity, c (veh/h)							472							712		
v/c Ratio							0.16							0.07		
95% Queue Length, Q_{95} (veh)							0.6							0.2		
Control Delay (s/veh)							14.1							10.4		
Level of Service (LOS)							B							B		
Approach Delay (s/veh)					14.1								1.1			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DR	Intersection	Int-2
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	8/27/2020	East/West Street	Industrial Park Street
Analysis Year	2020	North/South Street	Vincent Avenue
Time Analyzed	Weekday PM Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	2	0	0	0	2	0
Configuration							LR				T	TR		LT	T	
Volume (veh/h)						27		18			778	11		8	750	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

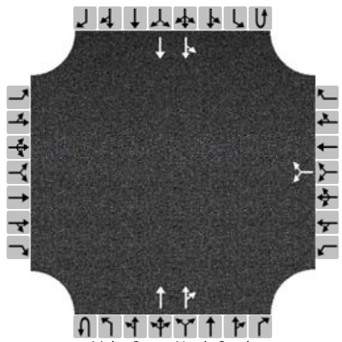
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							49							9		
Capacity, c (veh/h)							217							772		
v/c Ratio							0.23							0.01		
95% Queue Length, Q_{95} (veh)							0.8							0.0		
Control Delay (s/veh)							26.3							9.7		
Level of Service (LOS)							D							A		
Approach Delay (s/veh)					26.3								0.2			
Approach LOS					D											

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DR	Intersection	Int-2
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	8/27/2020	East/West Street	Industrial Park Street
Analysis Year	2020	North/South Street	Vincent Avenue
Time Analyzed	Exist + Project AM PH	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	2	0	0	0	2	0
Configuration							LR				T	TR		LT	T	
Volume (veh/h)						2		69			845	30		45	849	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

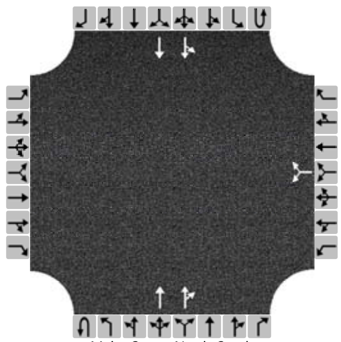
Delay, Queue Length, and Level of Service

	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Flow Rate, v (veh/h)							77							49		
Capacity, c (veh/h)							473							712		
v/c Ratio							0.16							0.07		
95% Queue Length, Q_{95} (veh)							0.6							0.2		
Control Delay (s/veh)							14.1							10.4		
Level of Service (LOS)							B							B		
Approach Delay (s/veh)					14.1								1.2			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DR	Intersection	Int-2
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	8/27/2020	East/West Street	Industrial Park Street
Analysis Year	2020	North/South Street	Vincent Avenue
Time Analyzed	Existing + Project PM PH	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	2	0	0	0	2	0
Configuration							LR				T	TR		LT	T	
Volume (veh/h)						27		20			778	11		10	750	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

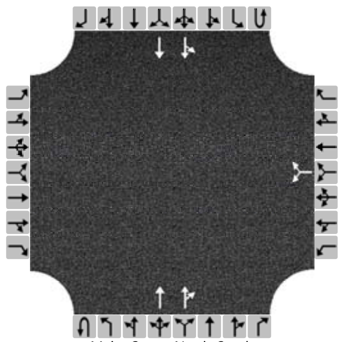
Delay, Queue Length, and Level of Service

	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Flow Rate, v (veh/h)							51							11		
Capacity, c (veh/h)							221							772		
v/c Ratio							0.23							0.01		
95% Queue Length, Q_{95} (veh)							0.9							0.0		
Control Delay (s/veh)							26.1							9.7		
Level of Service (LOS)							D							A		
Approach Delay (s/veh)					26.1								0.2			
Approach LOS					D											

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DR	Intersection	Int-2
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	8/27/2020	East/West Street	Industrial Park Street
Analysis Year	2023	North/South Street	Vincent Avenue
Time Analyzed	Future Pre-Project AM PH	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	2	0	0	0	2	0
Configuration							LR				T	TR		LT	T	
Volume (veh/h)						2		69			880	31		45	886	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

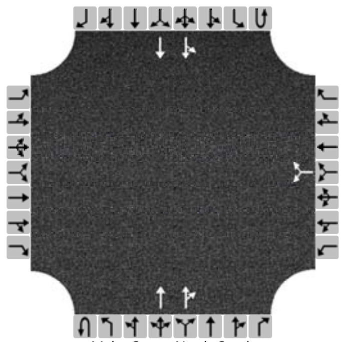
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							77							49		
Capacity, c (veh/h)							454							688		
v/c Ratio							0.17							0.07		
95% Queue Length, Q_{95} (veh)							0.6							0.2		
Control Delay (s/veh)							14.5							10.6		
Level of Service (LOS)							B							B		
Approach Delay (s/veh)					14.5								1.2			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DR	Intersection	Int-2
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	8/27/2020	East/West Street	Industrial Park Street
Analysis Year	2023	North/South Street	Vincent Avenue
Time Analyzed	Future Pre-Project PM PH	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	2	0	0	0	2	0
Configuration							LR				T	TR		LT	T	
Volume (veh/h)						28		19			812	11		8	782	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							51							9		
Capacity, c (veh/h)							202							748		
v/c Ratio							0.25							0.01		
95% Queue Length, Q_{95} (veh)							1.0							0.0		
Control Delay (s/veh)							28.7							9.9		
Level of Service (LOS)							D							A		
Approach Delay (s/veh)					28.7								0.2			
Approach LOS					D											

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DR	Intersection	Int-2
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	8/27/2020	East/West Street	Industrial Park Street
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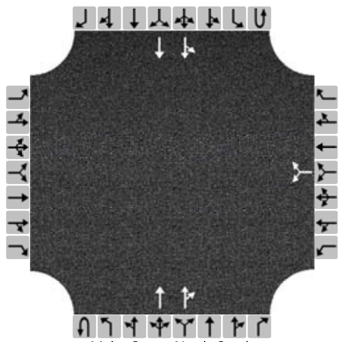
Time Analyzed	Future + Project AM PH	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	2	0	0	0	2	0
Configuration							LR				T	TR		LT	T	
Volume (veh/h)						2		71			880	31		46	886	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

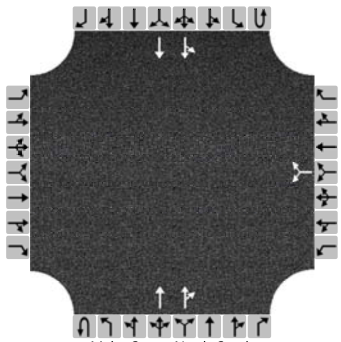
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							79							50		
Capacity, c (veh/h)							455							688		
v/c Ratio							0.17							0.07		
95% Queue Length, Q_{95} (veh)							0.6							0.2		
Control Delay (s/veh)							14.6							10.6		
Level of Service (LOS)							B							B		
Approach Delay (s/veh)					14.6								1.2			
Approach LOS					B											

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DR	Intersection	Int-2
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	8/27/2020	East/West Street	Industrial Park Street
Analysis Year	2023	North/South Street	Vincent Avenue
Time Analyzed	Future + Project PM PH	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	2	0	0	0	2	0
Configuration							LR				T	TR		LT	T	
Volume (veh/h)						28		21			812	11		10	782	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.9						4.1		
Critical Headway (sec)						6.86		6.96						4.16		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							53							11		
Capacity, c (veh/h)							206							748		
v/c Ratio							0.26							0.01		
95% Queue Length, Q_{95} (veh)							1.0							0.0		
Control Delay (s/veh)							28.5							9.9		
Level of Service (LOS)							D							A		
Approach Delay (s/veh)					28.5								0.3			
Approach LOS					D											

LINSCOTT, LAW & GREENSPAN, ENGINEERS
600 S. Lake Avenue, Ste 500, Pasadena 91106
(626) 796.2322   Fax (626) 792.0941

INTERSECTION CAPACITY UTILIZATION

Vincent Avenue @ Industrial Park Street
Peak hr: AM
Annual Growth: 1.00%

N-S St: Vincent Avenue
E-W St: Industrial Park Street
Project: 529 Cutter Way Live/Work Project/1-19-4360-1
File: ICU2

Date: 8/27/2020
Date of Count: 2020
Projection Year: 2023

	2020 EXISTING TRAFFIC			2020 EXISTING WITH PROJECT				2020 EXISTING W/ PROJECT + MITIGATION				2023 FUTURE PRE-PROJECT					2023 FUTURE WITH PROJECT			
Movement	1 Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Amb. Grow. Volume	Added Rel. Proj. Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0.000
NB Thru	845	3200	0.273 *	0	845	3200	0.273 *	0	845	3200	0.273 *	26	9	880	3200	0.285 *	0	880	3200	0.285 *
NB Right	30	0	0.000	0	30	0	0.000	0	30	0	0.000	1	0	31	0	0.000	0	31	0	0.000
SB Left	44	0	0.014 *	1	45	0	0.014 *	0	45	0	0.014 *	1	0	45	0	0.014 *	1	46	0	0.014 *
SB Thru	849	3200	0.279	0	849	3200	0.279	0	849	3200	0.279	26	11	886	3200	0.291	0	886	3200	0.291
SB Right	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0.000
EB Left	0	0	0.000 *	0	0	0	0.000 *	0	0	0	0.000 *	0	0	0	0	0.000 *	0	0	0	0.000 *
EB Thru	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0.000
EB Right	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0.000
WB Left	2	0	0.001	0	2	0	0.001	0	2	0	0.001	0	0	2	0	0.001	0	2	0	0.001
WB Thru	0	1600	0.043 *	0	0	1600	0.044 *	0	0	1600	0.044 *	0	0	0	1600	0.044 *	0	0	1600	0.046 *
WB Right	67	0	0.000	2	69	0	0.000	0	69	0	0.000	2	0	69	0	0.000	2	71	0	0.000
Yellow Allowance			0.100 *				0.100 *				0.100 *					0.100 *				0.100 *
ICU			0.430				0.432				0.432					0.443				0.445
LOS			A				A				A					A				A

* Key conflicting movement as a part of ICU
1 Counts conducted by: City Traffic Counters
2 Capacity expressed in veh/hour of green

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INTERSECTION CAPACITY UTILIZATION

Vincent Avenue @ Industrial Park Street
Peak hr: PM
Annual Growth: 1.00%

N-S St: Vincent Avenue
E-W St: Industrial Park Street
Project: 529 Cutter Way Live/Work Project/1-19-4360-1
File: ICU2

Date: 8/27/2020
Date of Count: 2020
Projection Year: 2023

	2020 EXISTING TRAFFIC			2020 EXISTING WITH PROJECT				2020 EXISTING W/ PROJECT + MITIGATION				2023 FUTURE PRE-PROJECT					2023 FUTURE WITH PROJECT			
Movement	1 Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Amb. Grow. Volume	Added Rel. Proj. Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0.000
NB Thru	778	3200	0.247 *	0	778	3200	0.247 *	0	778	3200	0.247 *	24	10	812	3200	0.257 *	0	812	3200	0.257 *
NB Right	11	0	0.000	0	11	0	0.000	0	11	0	0.000	0	0	11	0	0.000	0	11	0	0.000
SB Left	8	0	0.003 *	2	10	0	0.003 *	0	10	0	0.003 *	0	0	8	0	0.003 *	2	10	0	0.003 *
SB Thru	750	3200	0.237	0	750	3200	0.238	0	750	3200	0.238	23	9	782	3200	0.247	0	782	3200	0.248
SB Right	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0.000
EB Left	0	0	0.000 *	0	0	0	0.000 *	0	0	0	0.000 *	0	0	0	0	0.000 *	0	0	0	0.000 *
EB Thru	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0.000
EB Right	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0.000
WB Left	27	0	0.017	0	27	0	0.017	0	27	0	0.017	1	0	28	0	0.018	0	28	0	0.018
WB Thru	0	1600	0.028 *	0	0	1600	0.029 *	0	0	1600	0.029 *	0	0	0	1600	0.029 *	0	0	1600	0.031 *
WB Right	18	0	0.000	2	20	0	0.000	0	20	0	0.000	1	0	19	0	0.000	2	21	0	0.000
Yellow Allowance			0.100 *				0.100 *				0.100 *					0.100 *				0.100 *
ICU			0.377				0.379				0.379					0.389				0.391
LOS			A				A				A					A				A

** Key conflicting movement as a part of ICU*
1 Counts conducted by: City Traffic Counters
2 Capacity expressed in veh/hour of green

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INTERSECTION CAPACITY UTILIZATION

Vincent Avenue @ San Bernardino Road
Peak hr: AM
Annual Growth: 1.00%

N-S St: Vincent Avenue
E-W St: San Bernardino Road
Project: 529 Cutter Way Live/Work Project/1-19-4360-1
File: ICU3

Date: 8/27/2020
Date of Count: 2020
Projection Year: 2023

	2020 EXISTING TRAFFIC			2020 EXISTING WITH PROJECT				2020 EXISTING W/ PROJECT + MITIGATION				2023 FUTURE PRE-PROJECT					2023 FUTURE WITH PROJECT			
Movement	1 Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Amb. Grow. Volume	Added Rel. Proj. Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	148	1600	0.093 *	0	148	1600	0.093 *	0	148	1600	0.093 *	4	5	157	1600	0.098 *	0	157	1600	0.098 *
NB Thru	686	3200	0.236	0	686	3200	0.236	0	686	3200	0.236	21	9	716	3200	0.246	0	716	3200	0.246
NB Right	68	0	0.000	1	69	0	0.000	0	69	0	0.000	2	0	70	0	0.000	1	71	0	0.000
SB Left	56	1600	0.035	0	56	1600	0.035	0	56	1600	0.035	2	0	58	1600	0.036	0	58	1600	0.036
SB Thru	628	3200	0.238 *	0	628	3200	0.238 *	0	628	3200	0.238 *	19	11	658	3200	0.248 *	0	658	3200	0.248 *
SB Right	133	0	0.000	0	133	0	0.000	0	133	0	0.000	4	0	137	0	0.000	0	137	0	0.000
EB Left	97	1600	0.061 *	0	97	1600	0.061 *	0	97	1600	0.061 *	3	0	100	1600	0.063 *	0	100	1600	0.063 *
EB Thru	306	3200	0.121	1	307	3200	0.121	0	307	3200	0.121	9	34	349	3200	0.137	1	350	3200	0.137
EB Right	80	0	0.000	0	80	0	0.000	0	80	0	0.000	2	6	88	0	0.000	0	88	0	0.000
WB Left	113	1600	0.071	4	117	1600	0.073	0	117	1600	0.073	3	0	116	1600	0.073	4	120	1600	0.075
WB Thru	647	3200	0.238 *	2	649	3200	0.239 *	0	649	3200	0.239 *	20	38	705	3200	0.257 *	2	707	3200	0.258 *
WB Right	115	0	0.000	0	115	0	0.000	0	115	0	0.000	3	0	118	0	0.000	0	118	0	0.000
Yellow Allowance			0.050 *				0.050 *				0.050 *					0.050 *				0.050 *
ICU			0.679				0.680				0.680					0.716				0.717
LOS			B				B				B					C				C

** Key conflicting movement as a part of ICU*
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INTERSECTION CAPACITY UTILIZATION

Vincent Avenue @ San Bernardino Road
Peak hr: PM
Annual Growth: 1.00%

N-S St: Vincent Avenue
E-W St: San Bernardino Road
Project: 529 Cutter Way Live/Work Project/1-19-4360-1
File: ICU3

Date: 8/27/2020
Date of Count: 2020
Projection Year: 2023

	2020 EXISTING TRAFFIC			2020 EXISTING WITH PROJECT				2020 EXISTING W/ PROJECT + MITIGATION				2023 FUTURE PRE-PROJECT					2023 FUTURE WITH PROJECT			
Movement	1 Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Amb. Grow. Volume	Added Rel. Proj. Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	57	1600	0.036	0	57	1600	0.036	0	57	1600	0.036	2	5	64	1600	0.040	0	64	1600	0.040
NB Thru	640	3200	0.226 *	0	640	3200	0.227 *	0	640	3200	0.227 *	19	10	669	3200	0.235 *	0	669	3200	0.237 *
NB Right	82	0	0.000	4	86	0	0.000	0	86	0	0.000	2	0	84	0	0.000	4	88	0	0.000
SB Left	66	1600	0.041 *	0	66	1600	0.041 *	0	66	1600	0.041 *	2	0	68	1600	0.043 *	0	68	1600	0.043 *
SB Thru	639	3200	0.213	0	639	3200	0.213	0	639	3200	0.213	19	9	667	3200	0.222	0	667	3200	0.222
SB Right	41	0	0.000	0	41	0	0.000	0	41	0	0.000	1	0	42	0	0.000	0	42	0	0.000
EB Left	125	1600	0.078	0	125	1600	0.078	0	125	1600	0.078	4	0	129	1600	0.081	0	129	1600	0.081
EB Thru	665	3200	0.249 *	2	667	3200	0.250 *	0	667	3200	0.250 *	20	43	728	3200	0.272 *	2	730	3200	0.272 *
EB Right	133	0	0.000	0	133	0	0.000	0	133	0	0.000	4	4	141	0	0.000	0	141	0	0.000
WB Left	127	1600	0.079 *	3	130	1600	0.081 *	0	130	1600	0.081 *	4	0	131	1600	0.082 *	3	134	1600	0.084 *
WB Thru	312	3200	0.118	1	313	3200	0.119	0	313	3200	0.119	9	58	379	3200	0.140	1	380	3200	0.140
WB Right	67	0	0.000	0	67	0	0.000	0	67	0	0.000	2	0	69	0	0.000	0	69	0	0.000
Yellow Allowance			0.050 *				0.050 *				0.050 *					0.050 *				0.050 *
ICU			0.646				0.649				0.649					0.681				0.685
LOS			B				B				B					B				B

** Key conflicting movement as a part of ICU*
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INTERSECTION CAPACITY UTILIZATION

Vincent Avenue @ Badillo Street
Peak hr: AM
Annual Growth: 1.00%

N-S St: Vincent Avenue
E-W St: Badillo Street
Project: 529 Cutter Way Live/Work Project/1-19-4360-1
File: ICU4

Date: 8/27/2020
Date of Count: 2020
Projection Year: 2023

	2020 EXISTING TRAFFIC			2020 EXISTING WITH PROJECT				2020 EXISTING W/ PROJECT + MITIGATION				2023 FUTURE PRE-PROJECT					2023 FUTURE WITH PROJECT			
Movement	1 Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Amb. Grow. Volume	Added Rel. Proj. Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	124	1600	0.078	0	124	1600	0.078	0	124	1600	0.078	4	0	128	1600	0.080	0	128	1600	0.080
NB Thru	827	3200	0.318 *	1	828	3200	0.318 *	0	828	3200	0.318 *	25	14	866	3200	0.334 *	1	867	3200	0.334 *
NB Right	191	0	0.000	0	191	0	0.000	0	191	0	0.000	6	6	203	0	0.000	0	203	0	0.000
SB Left	61	1600	0.038 *	0	61	1600	0.038 *	0	61	1600	0.038 *	2	0	63	1600	0.039 *	0	63	1600	0.039 *
SB Thru	672	3200	0.251	2	674	3200	0.252	0	674	3200	0.252	20	17	709	3200	0.264	2	711	3200	0.265
SB Right	131	0	0.000	1	132	0	0.000	0	132	0	0.000	4	0	135	0	0.000	1	136	0	0.000
EB Left	35	1600	0.022 *	1	36	1600	0.023 *	0	36	1600	0.023 *	1	0	36	1600	0.023 *	1	37	1600	0.023 *
EB Thru	540	3200	0.202	0	540	3200	0.202	0	540	3200	0.202	16	13	569	3200	0.212	0	569	3200	0.212
EB Right	105	0	0.000	0	105	0	0.000	0	105	0	0.000	3	0	108	0	0.000	0	108	0	0.000
WB Left	126	1600	0.079	0	126	1600	0.079	0	126	1600	0.079	4	7	137	1600	0.086	0	137	1600	0.086
WB Thru	846	3200	0.287 *	0	846	3200	0.287 *	0	846	3200	0.287 *	26	12	884	3200	0.300 *	0	884	3200	0.300 *
WB Right	73	0	0.000	0	73	0	0.000	0	73	0	0.000	2	0	75	0	0.000	0	75	0	0.000
Yellow Allowance			0.050 *				0.050 *				0.050 *					0.050 *				0.050 *
ICU			0.715				0.716				0.716					0.746				0.747
LOS			C				C				C					C				C

* Key conflicting movement as a part of ICU
1 Counts conducted by: City Traffic Counters
2 Capacity expressed in veh/hour of green

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INTERSECTION CAPACITY UTILIZATION

Vincent Avenue @ Badillo Street
Peak hr: PM
Annual Growth: 1.00%

N-S St: Vincent Avenue
E-W St: Badillo Street
Project: 529 Cutter Way Live/Work Project/1-19-4360-1
File: ICU4

Date: 8/27/2020
Date of Count: 2020
Projection Year: 2023

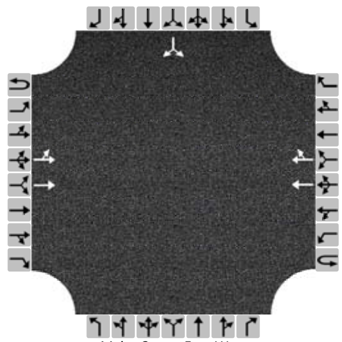
	2020 EXISTING TRAFFIC			2020 EXISTING WITH PROJECT				2020 EXISTING W/ PROJECT + MITIGATION				2023 FUTURE PRE-PROJECT					2023 FUTURE WITH PROJECT			
Movement	1 Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Amb. Grow. Volume	Added Rel. Proj. Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	62	1600	0.039	0	62	1600	0.039	0	62	1600	0.039	2	0	64	1600	0.040	0	64	1600	0.040
NB Thru	638	3200	0.257 *	2	640	3200	0.258 *	0	640	3200	0.258 *	19	15	672	3200	0.272 *	2	674	3200	0.272 *
NB Right	185	0	0.000	0	185	0	0.000	0	185	0	0.000	6	6	197	0	0.000	0	197	0	0.000
SB Left	66	1600	0.041 *	0	66	1600	0.041 *	0	66	1600	0.041 *	2	0	68	1600	0.043 *	0	68	1600	0.043 *
SB Thru	763	3200	0.257	2	765	3200	0.258	0	765	3200	0.258	23	13	799	3200	0.269	2	801	3200	0.270
SB Right	59	0	0.000	1	60	0	0.000	0	60	0	0.000	2	0	61	0	0.000	1	62	0	0.000
EB Left	71	1600	0.044	1	72	1600	0.045	0	72	1600	0.045	2	0	73	1600	0.046	1	74	1600	0.046
EB Thru	1004	3200	0.357 *	0	1004	3200	0.357 *	0	1004	3200	0.357 *	30	14	1048	3200	0.372 *	0	1048	3200	0.372 *
EB Right	139	0	0.000	0	139	0	0.000	0	139	0	0.000	4	0	143	0	0.000	0	143	0	0.000
WB Left	160	1600	0.100 *	0	160	1600	0.100 *	0	160	1600	0.100 *	5	5	170	1600	0.106 *	0	170	1600	0.106 *
WB Thru	475	3200	0.165	0	475	3200	0.165	0	475	3200	0.165	14	15	504	3200	0.175	0	504	3200	0.175
WB Right	54	0	0.000	0	54	0	0.000	0	54	0	0.000	2	0	56	0	0.000	0	56	0	0.000
Yellow Allowance			0.050 *				0.050 *				0.050 *					0.050 *				0.050 *
ICU			0.806				0.806				0.806					0.843				0.843
LOS			D				D				D					D				D

** Key conflicting movement as a part of ICU*
1 Counts conducted by: City Traffic Counters
2 Capacity expressed in veh/hour of green

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DR	Intersection	Int-5
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	8/27/2020	East/West Street	San Bernardino Road
Analysis Year	2020	North/South Street	Cutter Way
Time Analyzed	Weekday AM Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT	T				T	TR							LR	
Volume (veh/h)		21	408				872	69						22		41
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.16												6.86		6.96
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

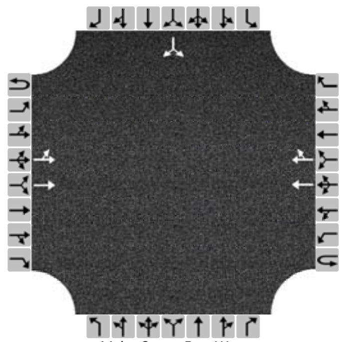
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		23													68	
Capacity, c (veh/h)		668													283	
v/c Ratio		0.03													0.24	
95% Queue Length, Q_{95} (veh)		0.1													0.9	
Control Delay (s/veh)		10.6													21.8	
Level of Service (LOS)		B													C	
Approach Delay (s/veh)	0.7												21.8			
Approach LOS													C			

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DR	Intersection	Int-5
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	8/27/2020	East/West Street	San Bernardino Road
Analysis Year	2020	North/South Street	Cutter Way
Time Analyzed	Weekday PM Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT	T				T	TR							LR	
Volume (veh/h)		8	843				459	20						15		11
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.16												6.86		6.96
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

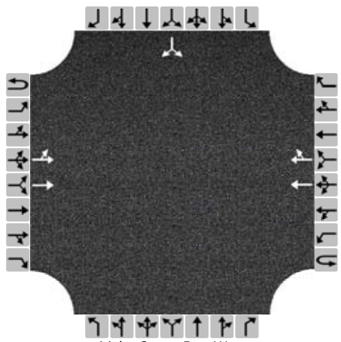
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		9													28	
Capacity, c (veh/h)		1035													335	
v/c Ratio		0.01													0.08	
95% Queue Length, Q_{95} (veh)		0.0													0.3	
Control Delay (s/veh)		8.5													16.7	
Level of Service (LOS)		A													C	
Approach Delay (s/veh)	0.2												16.7			
Approach LOS													C			

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DR	Intersection	Int-5
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	8/27/2020	East/West Street	San Bernardino Road
Analysis Year	2020	North/South Street	Cutter Way
Time Analyzed	Existing + Project AM PH	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT	T				T	TR							LR	
Volume (veh/h)		22	408				872	72						30		43
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.16												6.86		6.96
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

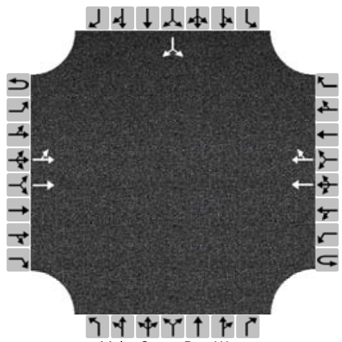
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		24													79	
Capacity, c (veh/h)		666													261	
v/c Ratio		0.04													0.30	
95% Queue Length, Q_{95} (veh)		0.1													1.2	
Control Delay (s/veh)		10.6													24.7	
Level of Service (LOS)		B													C	
Approach Delay (s/veh)	0.8												24.7			
Approach LOS													C			

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DR	Intersection	Int-5
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	8/27/2020	East/West Street	San Bernardino Road
Analysis Year	2020	North/South Street	Cutter Way
Time Analyzed	Existing + Project PM PH	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT	T				T	TR							LR	
Volume (veh/h)		10	843				459	28						20		12
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.16												6.86		6.96
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

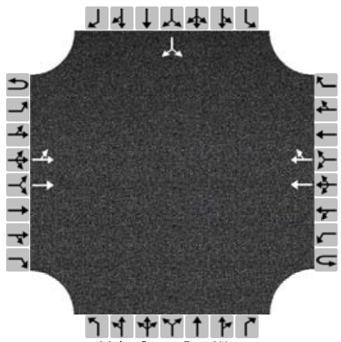
Delay, Queue Length, and Level of Service

	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Flow Rate, v (veh/h)		11													35	
Capacity, c (veh/h)		1027													315	
v/c Ratio		0.01													0.11	
95% Queue Length, Q_{95} (veh)		0.0													0.4	
Control Delay (s/veh)		8.5													17.8	
Level of Service (LOS)		A													C	
Approach Delay (s/veh)	0.2												17.8			
Approach LOS													C			

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DR	Intersection	Int-5
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	8/27/2020	East/West Street	San Bernardino Road
Analysis Year	2023	North/South Street	Cutter Way
Time Analyzed	Future Pre-Project AM PH	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT	T				T	TR							LR	
Volume (veh/h)		22	454				936	71						23		42
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.16												6.86		6.96
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

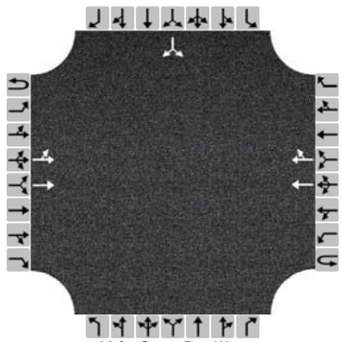
Delay, Queue Length, and Level of Service

	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Flow Rate, v (veh/h)		24													71	
Capacity, c (veh/h)		628													249	
v/c Ratio		0.04													0.28	
95% Queue Length, Q_{95} (veh)		0.1													1.1	
Control Delay (s/veh)		11.0													25.1	
Level of Service (LOS)		B													D	
Approach Delay (s/veh)	0.8												25.1			
Approach LOS													D			

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DR	Intersection	Int-5
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	8/27/2020	East/West Street	San Bernardino Road
Analysis Year	2023	North/South Street	Cutter Way
Time Analyzed	Future Pre-Project PM PH	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT	T				T	TR							LR	
Volume (veh/h)		8	912				531	21						15		11
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.16												6.86		6.96
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

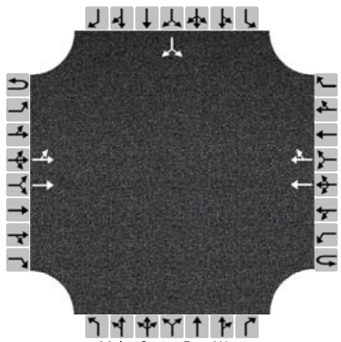
Delay, Queue Length, and Level of Service

	EB U	EB L	EB T	EB R	WB U	WB L	WB T	WB R	NB U	NB L	NB T	NB R	SB U	SB L	SB T	SB R
Flow Rate, v (veh/h)		9													28	
Capacity, c (veh/h)		966													286	
v/c Ratio		0.01													0.10	
95% Queue Length, Q_{95} (veh)		0.0													0.3	
Control Delay (s/veh)		8.8													18.9	
Level of Service (LOS)		A													C	
Approach Delay (s/veh)	0.2												18.9			
Approach LOS													C			

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DR	Intersection	Int-5
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	8/27/2020	East/West Street	San Bernardino Road
Analysis Year	2023	North/South Street	Cutter Way
Time Analyzed	Future + Project AM PH	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT	T				T	TR							LR	
Volume (veh/h)		23	454				936	74						31		44
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.16												6.86		6.96
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

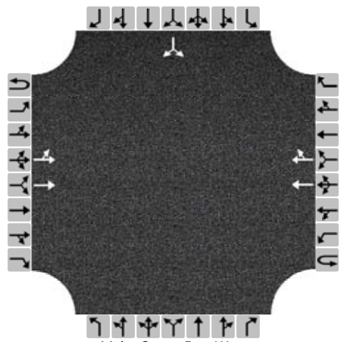
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		25													82	
Capacity, c (veh/h)		626													229	
v/c Ratio		0.04													0.36	
95% Queue Length, Q_{95} (veh)		0.1													1.5	
Control Delay (s/veh)		11.0													29.1	
Level of Service (LOS)		B													D	
Approach Delay (s/veh)	0.8												29.1			
Approach LOS													D			

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DR	Intersection	Int-5
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	8/27/2020	East/West Street	San Bernardino Road
Analysis Year	2023	North/South Street	Cutter Way
Time Analyzed	Future + Project PM PH	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		LT	T				T	TR							LR	
Volume (veh/h)		10	912				531	29						20		12
Percent Heavy Vehicles (%)		3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.16												6.86		6.96
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11													35	
Capacity, c (veh/h)		959													269	
v/c Ratio		0.01													0.13	
95% Queue Length, Q_{95} (veh)		0.0													0.4	
Control Delay (s/veh)		8.8													20.4	
Level of Service (LOS)		A													C	
Approach Delay (s/veh)	0.2												20.4			
Approach LOS													C			

LINSCOTT, LAW & GREENSPAN, ENGINEERS
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(626) 796.2322   Fax (626) 792.0941

INTERSECTION CAPACITY UTILIZATION

Cutter Way @ San Bernardino Road
Peak hr: AM
Annual Growth: 1.00%

N-S St: Cutter Way
E-W St: San Bernardino Road
Project: 529 Cutter Way Live/Work Project/1-19-4360-1
File: ICU5

Date: 8/27/2020
Date of Count: 2020
Projection Year: 2023

	2020 EXISTING TRAFFIC			2020 EXISTING WITH PROJECT				2020 EXISTING W/ PROJECT + MITIGATION				2023 FUTURE PRE-PROJECT					2023 FUTURE WITH PROJECT			
Movement	1 Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Amb. Grow. Volume	Added Rel. Proj. Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	0	0	0.000 *	0	0	0	0.000 *	0	0	0	0.000 *	0	0	0	0	0.000 *	0	0	0	0.000 *
NB Thru	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0.000
NB Right	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0.000
SB Left	22	0	0.014	8	30	0	0.019	0	30	0	0.019	1	0	23	0	0.014	8	31	0	0.019
SB Thru	0	1600	0.039 *	0	0	1600	0.046 *	0	0	1600	0.046 *	0	0	0	1600	0.041 *	0	0	1600	0.047 *
SB Right	41	0	0.000	2	43	0	0.000	0	43	0	0.000	1	0	42	0	0.000	2	44	0	0.000
EB Left	21	0	0.007 *	1	22	0	0.007 *	0	22	0	0.007 *	1	0	22	0	0.007 *	1	23	0	0.007 *
EB Thru	408	3200	0.134	0	408	3200	0.134	0	408	3200	0.134	12	34	454	3200	0.149	0	454	3200	0.149
EB Right	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0.000
WB Left	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0.000
WB Thru	872	3200	0.294 *	0	872	3200	0.295 *	0	872	3200	0.295 *	26	38	936	3200	0.315 *	0	936	3200	0.316 *
WB Right	69	0	0.000	3	72	0	0.000	0	72	0	0.000	2	0	71	0	0.000	3	74	0	0.000
Yellow Allowance			0.050 *				0.050 *				0.050 *					0.050 *				0.050 *
ICU			0.390				0.398				0.398					0.412				0.420
LOS			A				A				A					A				A

* Key conflicting movement as a part of ICU
1 Counts conducted by: City Traffic Counters
2 Capacity expressed in veh/hour of green

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INTERSECTION CAPACITY UTILIZATION

Cutter Way @ San Bernardino Road
Peak hr: PM
Annual Growth: 1.00%

N-S St: Cutter Way
E-W St: San Bernardino Road
Project: 529 Cutter Way Live/Work Project/1-19-4360-1
File: ICU5

Date: 8/27/2020
Date of Count: 2020
Projection Year: 2023

	2020 EXISTING TRAFFIC			2020 EXISTING WITH PROJECT				2020 EXISTING W/ PROJECT + MITIGATION				2023 FUTURE PRE-PROJECT					2023 FUTURE WITH PROJECT			
Movement	1 Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Amb. Grow. Volume	Added Rel. Proj. Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	0	0	0.000 *	0	0	0	0.000 *	0	0	0	0.000 *	0	0	0	0	0.000 *	0	0	0	0.000 *
NB Thru	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0.000
NB Right	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0.000
SB Left	15	0	0.009	5	20	0	0.013	0	20	0	0.013	0	0	15	0	0.009	5	20	0	0.013
SB Thru	0	1600	0.016 *	0	0	1600	0.020 *	0	0	1600	0.020 *	0	0	0	1600	0.016 *	0	0	1600	0.020 *
SB Right	11	0	0.000	1	12	0	0.000	0	12	0	0.000	0	0	11	0	0.000	1	12	0	0.000
EB Left	8	0	0.003	2	10	0	0.003	0	10	0	0.003	0	0	8	0	0.003	2	10	0	0.003
EB Thru	843	3200	0.266 *	0	843	3200	0.267 *	0	843	3200	0.267 *	26	43	912	3200	0.288 *	0	912	3200	0.288 *
EB Right	0	0	0.000	0	0	0	0.000	0	0	0	0.000	0	0	0	0	0.000	0	0	0	0.000
WB Left	0	0	0.000 *	0	0	0	0.000 *	0	0	0	0.000 *	0	0	0	0	0.000 *	0	0	0	0.000 *
WB Thru	459	3200	0.150	0	459	3200	0.152	0	459	3200	0.152	14	58	531	3200	0.173	0	531	3200	0.175
WB Right	20	0	0.000	8	28	0	0.000	0	28	0	0.000	1	0	21	0	0.000	8	29	0	0.000
Yellow Allowance			0.050 *				0.050 *				0.050 *					0.050 *				0.050 *
ICU			0.332				0.337				0.337					0.354				0.358
LOS			A				A				A					A				A

* *Key conflicting movement as a part of ICU*
1 *Counts conducted by: City Traffic Counters*
2 *Capacity expressed in veh/hour of green*

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INTERSECTION CAPACITY UTILIZATION

Lark Ellen Avenue @ Cypress Street
Peak hr: AM
Annual Growth: 1.00%

N-S St: Lark Ellen Avenue
E-W St: Cypress Street
Project: 529 Cutter Way Live/Work Project/1-19-4360-1
File: ICU6

Date: 8/27/2020
Date of Count: 2020
Projection Year: 2023

	2020 EXISTING TRAFFIC			2020 EXISTING WITH PROJECT				2020 EXISTING W/ PROJECT + MITIGATION				2023 FUTURE PRE-PROJECT					2023 FUTURE WITH PROJECT			
Movement	1 Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Amb. Grow. Volume	Added Rel. Proj. Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	108	1600	0.068 *	0	108	1600	0.068 *	0	108	1600	0.068 *	3	3	114	1600	0.071 *	0	114	1600	0.071 *
NB Thru	413	3200	0.152	2	415	3200	0.153	0	415	3200	0.153	13	3	429	3200	0.158	2	431	3200	0.159
NB Right	74	0	0.000	1	75	0	0.000	0	75	0	0.000	2	0	76	0	0.000	1	77	0	0.000
SB Left	78	1600	0.049	0	78	1600	0.049	0	78	1600	0.049	2	1	81	1600	0.051	0	81	1600	0.051
SB Thru	465	3200	0.173 *	1	466	3200	0.174 *	0	466	3200	0.174 *	14	2	481	3200	0.179 *	1	482	3200	0.180 *
SB Right	90	0	0.000	0	90	0	0.000	0	90	0	0.000	3	0	93	0	0.000	0	93	0	0.000
EB Left	61	1600	0.038 *	0	61	1600	0.038 *	0	61	1600	0.038 *	2	0	63	1600	0.039 *	0	63	1600	0.039 *
EB Thru	441	3200	0.169	0	441	3200	0.169	0	441	3200	0.169	13	12	466	3200	0.179	0	466	3200	0.179
EB Right	101	0	0.000	0	101	0	0.000	0	101	0	0.000	3	2	106	0	0.000	0	106	0	0.000
WB Left	241	1600	0.151	0	241	1600	0.151	0	241	1600	0.151	7	0	248	1600	0.155	0	248	1600	0.155
WB Thru	962	3200	0.324 *	0	962	3200	0.324 *	0	962	3200	0.324 *	29	8	999	3200	0.337 *	0	999	3200	0.337 *
WB Right	75	0	0.000	0	75	0	0.000	0	75	0	0.000	2	2	79	0	0.000	0	79	0	0.000
Yellow Allowance			0.100 *				0.100 *				0.100 *					0.100 *				0.100 *
ICU			0.703				0.703				0.703					0.727				0.727
LOS			C				C				C					C				C

* Key conflicting movement as a part of ICU
1 Counts conducted by: City Traffic Counters
2 Capacity expressed in veh/hour of green

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INTERSECTION CAPACITY UTILIZATION

Lark Ellen Avenue @ Cypress Street
Peak hr: PM
Annual Growth: 1.00%

N-S St: Lark Ellen Avenue
E-W St: Cypress Street
Project: 529 Cutter Way Live/Work Project/1-19-4360-1
File: ICU6

Date: 8/27/2020
Date of Count: 2020
Projection Year: 2023

	2020 EXISTING TRAFFIC			2020 EXISTING WITH PROJECT				2020 EXISTING W/ PROJECT + MITIGATION				2023 FUTURE PRE-PROJECT					2023 FUTURE WITH PROJECT			
Movement	1 Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Amb. Grow. Volume	Added Rel. Proj. Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	85	1600	0.053	0	85	1600	0.053	0	85	1600	0.053	3	3	91	1600	0.057	0	91	1600	0.057
NB Thru	477	3200	0.182 *	1	478	3200	0.183 *	0	478	3200	0.183 *	14	3	494	3200	0.188 *	1	495	3200	0.189 *
NB Right	105	0	0.000	1	106	0	0.000	0	106	0	0.000	3	0	108	0	0.000	1	109	0	0.000
SB Left	72	1600	0.045 *	0	72	1600	0.045 *	0	72	1600	0.045 *	2	3	77	1600	0.048 *	0	77	1600	0.048 *
SB Thru	445	3200	0.156	2	447	3200	0.156	0	447	3200	0.156	13	4	462	3200	0.162	2	464	3200	0.162
SB Right	53	0	0.000	0	53	0	0.000	0	53	0	0.000	2	0	55	0	0.000	0	55	0	0.000
EB Left	74	1600	0.046	0	74	1600	0.046	0	74	1600	0.046	2	0	76	1600	0.048	0	76	1600	0.048
EB Thru	1077	3200	0.374 *	0	1077	3200	0.374 *	0	1077	3200	0.374 *	33	12	1122	3200	0.390 *	0	1122	3200	0.390 *
EB Right	119	0	0.000	0	119	0	0.000	0	119	0	0.000	4	3	126	0	0.000	0	126	0	0.000
WB Left	114	1600	0.071 *	1	115	1600	0.072 *	0	115	1600	0.072 *	3	0	117	1600	0.073 *	1	118	1600	0.074 *
WB Thru	420	3200	0.148	0	420	3200	0.148	0	420	3200	0.148	13	16	449	3200	0.158	0	449	3200	0.158
WB Right	52	0	0.000	0	52	0	0.000	0	52	0	0.000	2	2	56	0	0.000	0	56	0	0.000
Yellow Allowance			0.100 *				0.100 *				0.100 *					0.100 *				0.100 *
ICU			0.772				0.773				0.773					0.799				0.801
LOS			C				C				C					C				D

** Key conflicting movement as a part of ICU*
1 Counts conducted by: City Traffic Counters
2 Capacity expressed in veh/hour of green

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INTERSECTION CAPACITY UTILIZATION

Lark Ellen Avenue @ San Bernardino Road
Peak hr: AM
Annual Growth: 1.00%

N-S St: Lark Ellen Avenue
E-W St: San Bernardino Road
Project: 529 Cutter Way Live/Work Project/1-19-4360-1
File: ICU7

Date: 8/27/2020
Date of Count: 2020
Projection Year: 2023

	2020 EXISTING TRAFFIC			2020 EXISTING WITH PROJECT				2020 EXISTING W/ PROJECT + MITIGATION				2023 FUTURE PRE-PROJECT					2023 FUTURE WITH PROJECT			
Movement	1 Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Amb. Grow. Volume	Added Rel. Proj. Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	87	1600	0.054	1	88	1600	0.055	0	88	1600	0.055	3	4	94	1600	0.059	1	95	1600	0.059
NB Thru	527	3200	0.185 *	0	527	3200	0.185 *	0	527	3200	0.185 *	16	0	543	3200	0.192 *	0	543	3200	0.192 *
NB Right	64	0	0.000	0	64	0	0.000	0	64	0	0.000	2	5	71	0	0.000	0	71	0	0.000
SB Left	178	1600	0.111 *	0	178	1600	0.111 *	0	178	1600	0.111 *	5	3	186	1600	0.116 *	0	186	1600	0.116 *
SB Thru	488	3200	0.211	0	488	3200	0.211	0	488	3200	0.211	15	0	503	3200	0.218	0	503	3200	0.218
SB Right	187	0	0.000	1	188	0	0.000	0	188	0	0.000	6	0	193	0	0.000	1	194	0	0.000
EB Left	86	1600	0.054 *	3	89	1600	0.056 *	0	89	1600	0.056 *	3	0	89	1600	0.056 *	3	92	1600	0.058 *
EB Thru	349	3200	0.129	2	351	3200	0.131	0	351	3200	0.131	11	34	394	3200	0.144	2	396	3200	0.146
EB Right	65	0	0.000	3	68	0	0.000	0	68	0	0.000	2	0	67	0	0.000	3	70	0	0.000
WB Left	96	1600	0.060	0	96	1600	0.060	0	96	1600	0.060	3	0	99	1600	0.062	0	99	1600	0.062
WB Thru	637	3200	0.245 *	1	638	3200	0.245 *	0	638	3200	0.245 *	19	34	690	3200	0.264 *	1	691	3200	0.265 *
WB Right	147	0	0.000	0	147	0	0.000	0	147	0	0.000	4	5	156	0	0.000	0	156	0	0.000
Yellow Allowance			0.050 *				0.050 *				0.050 *					0.050 *				0.050 *
ICU			0.645				0.647				0.647					0.678				0.680
LOS			B				B				B					B				B

** Key conflicting movement as a part of ICU*
1 Counts conducted by: City Traffic Counter
2 Capacity expressed in veh/hour of green

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INTERSECTION CAPACITY UTILIZATION

Lark Ellen Avenue @ San Bernardino Road
Peak hr: PM
Annual Growth: 1.00%

N-S St: Lark Ellen Avenue
E-W St: San Bernardino Road
Project: 529 Cutter Way Live/Work Project/1-19-4360-1
File: ICU7

Date: 8/27/2020
Date of Count: 2020
Projection Year: 2023

	2020 EXISTING TRAFFIC			2020 EXISTING WITH PROJECT				2020 EXISTING W/ PROJECT + MITIGATION				2023 FUTURE PRE-PROJECT					2023 FUTURE WITH PROJECT			
Movement	1 Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Amb. Grow. Volume	Added Rel. Proj. Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	76	1600	0.048	3	79	1600	0.049	0	79	1600	0.049	2	3	81	1600	0.051	3	84	1600	0.053
NB Thru	598	3200	0.221 *	0	598	3200	0.221 *	0	598	3200	0.221 *	18	1	617	3200	0.231 *	0	617	3200	0.231 *
NB Right	109	0	0.000	0	109	0	0.000	0	109	0	0.000	3	9	121	0	0.000	0	121	0	0.000
SB Left	108	1600	0.068 *	0	108	1600	0.068 *	0	108	1600	0.068 *	3	6	117	1600	0.073 *	0	117	1600	0.073 *
SB Thru	517	3200	0.177	0	517	3200	0.178	0	517	3200	0.178	16	1	534	3200	0.182	0	534	3200	0.183
SB Right	48	0	0.000	3	51	0	0.000	0	51	0	0.000	1	0	49	0	0.000	3	52	0	0.000
EB Left	96	1600	0.060	2	98	1600	0.061	0	98	1600	0.061	3	0	99	1600	0.062	2	101	1600	0.063
EB Thru	774	3200	0.283 *	1	775	3200	0.283 *	0	775	3200	0.283 *	23	43	840	3200	0.304 *	1	841	3200	0.305 *
EB Right	130	0	0.000	2	132	0	0.000	0	132	0	0.000	4	0	134	0	0.000	2	136	0	0.000
WB Left	82	1600	0.051 *	0	82	1600	0.051 *	0	82	1600	0.051 *	2	0	84	1600	0.053 *	0	84	1600	0.053 *
WB Thru	358	3200	0.143	2	360	3200	0.144	0	360	3200	0.144	11	55	424	3200	0.167	2	426	3200	0.167
WB Right	101	0	0.000	0	101	0	0.000	0	101	0	0.000	3	5	109	0	0.000	0	109	0	0.000
Yellow Allowance			0.050 *				0.050 *				0.050 *					0.050 *				0.050 *
ICU			0.672				0.673				0.673					0.711				0.712
LOS			B				B				B					C				C

* Key conflicting movement as a part of ICU
1 Counts conducted by: City Traffic Counter
2 Capacity expressed in veh/hour of green

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INTERSECTION CAPACITY UTILIZATION

Lark Ellen Avenue @ Badillo Street
Peak hr: AM
Annual Growth: 1.00%

N-S St: Lark Ellen Avenue
E-W St: Badillo Street
Project: 529 Cutter Way Live/Work Project/1-19-4360-1
File: ICU8

Date: 8/27/2020
Date of Count: 2020
Projection Year: 2023

	2020 EXISTING TRAFFIC			2020 EXISTING WITH PROJECT				2020 EXISTING W/ PROJECT + MITIGATION				2023 FUTURE PRE-PROJECT					2023 FUTURE WITH PROJECT			
Movement	1 Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Amb. Grow. Volume	Added Rel. Proj. Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	75	1600	0.047	0	75	1600	0.047	0	75	1600	0.047	2	0	77	1600	0.048	0	77	1600	0.048
NB Thru	528	3200	0.187 *	1	529	3200	0.187 *	0	529	3200	0.187 *	16	3	547	3200	0.193 *	1	548	3200	0.193 *
NB Right	69	0	0.000	0	69	0	0.000	0	69	0	0.000	2	0	71	0	0.000	0	71	0	0.000
SB Left	64	1600	0.040 *	1	65	1600	0.041 *	0	65	1600	0.041 *	2	0	66	1600	0.041 *	1	67	1600	0.042 *
SB Thru	471	3200	0.158	2	473	3200	0.158	0	473	3200	0.158	14	0	485	3200	0.162	2	487	3200	0.163
SB Right	33	0	0.000	0	33	0	0.000	0	33	0	0.000	1	0	34	0	0.000	0	34	0	0.000
EB Left	43	1600	0.027 *	0	43	1600	0.027 *	0	43	1600	0.027 *	1	2	46	1600	0.029 *	0	46	1600	0.029 *
EB Thru	563	3200	0.204	0	563	3200	0.204	0	563	3200	0.204	17	16	596	3200	0.215	0	596	3200	0.215
EB Right	90	0	0.000	0	90	0	0.000	0	90	0	0.000	3	0	93	0	0.000	0	93	0	0.000
WB Left	197	1600	0.123	0	197	1600	0.123	0	197	1600	0.123	6	5	208	1600	0.130	0	208	1600	0.130
WB Thru	884	3200	0.302 *	0	884	3200	0.302 *	0	884	3200	0.302 *	27	19	930	3200	0.318 *	0	930	3200	0.318 *
WB Right	82	0	0.000	0	82	0	0.000	0	82	0	0.000	2	4	88	0	0.000	0	88	0	0.000
Yellow Allowance			0.050 *				0.050 *				0.050 *					0.050 *				0.050 *
ICU			0.605				0.606				0.606					0.631				0.632
LOS			B				B				B					B				B

* Key conflicting movement as a part of ICU
1 Counts conducted by: City Traffic Counters
2 Capacity expressed in veh/hour of green

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INTERSECTION CAPACITY UTILIZATION

Lark Ellen Avenue @ Badillo Street
Peak hr: PM
Annual Growth: 1.00%

N-S St: Lark Ellen Avenue
E-W St: Badillo Street
Project: 529 Cutter Way Live/Work Project/1-19-4360-1
File: ICU8

Date: 8/27/2020
Date of Count: 2020
Projection Year: 2023

	2020 EXISTING TRAFFIC			2020 EXISTING WITH PROJECT				2020 EXISTING W/ PROJECT + MITIGATION			
Movement	1 Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	53	1600	0.033	0	53	1600	0.033	0	53	1600	0.033
NB Thru	572	3200	0.212 *	2	574	3200	0.213 *	0	574	3200	0.213 *
NB Right	107	0	0.000	0	107	0	0.000	0	107	0	0.000
SB Left	63	1600	0.039 *	1	64	1600	0.040 *	0	64	1600	0.040 *
SB Thru	576	3200	0.194	1	577	3200	0.194	0	577	3200	0.194
SB Right	44	0	0.000	0	44	0	0.000	0	44	0	0.000
EB Left	63	1600	0.039	0	63	1600	0.039	0	63	1600	0.039
EB Thru	870	3200	0.306 *	0	870	3200	0.306 *	0	870	3200	0.306 *
EB Right	109	0	0.000	0	109	0	0.000	0	109	0	0.000
WB Left	121	1600	0.076 *	0	121	1600	0.076 *	0	121	1600	0.076 *
WB Thru	428	3200	0.154	0	428	3200	0.155	0	428	3200	0.155
WB Right	66	0	0.000	1	67	0	0.000	0	67	0	0.000
Yellow Allowance			0.050 *				0.050 *				0.050 *
ICU			0.683				0.684				0.684
LOS			B				B				B

	2023 FUTURE PRE-PROJECT					2023 FUTURE WITH PROJECT			
Movement	Added Amb. Grow. Volume	Added Rel. Proj. Volume	Total Volume	2 Capacity	V/C Ratio	Added Volume	Total Volume	2 Capacity	V/C Ratio
NB Left	2	0	55	1600	0.034	0	55	1600	0.034
NB Thru	17	5	594	3200	0.220 *	2	596	3200	0.221 *
NB Right	3	0	110	0	0.000	0	110	0	0.000
SB Left	2	1	66	1600	0.041 *	1	67	1600	0.042 *
SB Thru	17	0	593	3200	0.199	1	594	3200	0.200
SB Right	1	0	45	0	0.000	0	45	0	0.000
EB Left	2	3	68	1600	0.043	0	68	1600	0.043
EB Thru	26	18	914	3200	0.321 *	0	914	3200	0.321 *
EB Right	3	0	112	0	0.000	0	112	0	0.000
WB Left	4	4	129	1600	0.081 *	0	129	1600	0.081 *
WB Thru	13	20	461	3200	0.167	0	461	3200	0.167
WB Right	2	4	72	0	0.000	1	73	0	0.000
Yellow Allowance					0.050 *				0.050 *
ICU					0.713				0.714
LOS					C				C

** Key conflicting movement as a part of ICU*
1 Counts conducted by: City Traffic Counters
2 Capacity expressed in veh/hour of green

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MEMORANDUM

To:	Rafael Fajardo David Gilbertson City of Covina	Date:	November 18, 2020
From:	Clare M. Look-Jaeger. P.E. CL-Jaeger Chin S. Taing, PTP CST Linscott, Law & Greenspan, Engineers	LLG Ref:	1-19-4360-1
Subject:	**529 Cutter Way Live/Work Project – Supplemental Analyses** **City of Covina, California**		

Linscott, Law & Greenspan, Engineers (LLG) has prepared this memorandum to summarize the supplemental review conducted for the proposed 529 Cutter Way Live/Work project ("proposed project" herein). As you are aware, LLG previously prepared the *Transportation Impact Study* dated September 10, 2020 for the proposed project which was reviewed and approved by the City. As some of the study intersections are shared/located in the City of West Covina, a copy of the study was forwarded to the City of West Covina for review and comment. This supplemental review is provided in order to address the comments received from the City of West Covina regarding project site access, driveways sight distance, and traffic signal warrants analysis/left-turn queuing analysis for the Cutter Way/San Bernardino Road intersection. We understand that the preparation of a Vehicle Miles Traveled (VMT) screening assessment has been requested for inclusion into the environmental review document. Based on the City's adoption of Resolution CC 2020-56 and the City's new guidelines[1] regarding the VMT thresholds of significance for the purposes of analyzing transportation impacts under the California Environmental Quality Act (CEQA), the proposed project's VMT will be evaluated against these thresholds. These thresholds are also consistent with the recommended screening criteria contained in the State of California Governor's Office of Planning and Research (OPR)'s 2018 *Technical Advisory on Evaluating Transportation Impacts in CEQA*[2].

Overview of Senate Bill 743 and VMT-Based Analyses

On September 27, 2013, Governor Brown signed Senate Bill (SB) 743 (Steinberg, 2013). Among other things, SB 743 creates a process to change the methodology to analyze transportation impacts under California Environmental Quality Act (CEQA - Public Resources Code section 21000 and following), which could include analysis based on project vehicle miles traveled (VMT) rather than impacts to intersection Level of Service (LOS). Under SB 743, the focus of transportation analysis pursuant to CEQA shifts from driver delay, or LOS, to reduction of vehicle miles traveled,

[1] *City of Covina Transportation Study Guidelines for Vehicle Miles Traveled and Level of Service Assessment*, October 2020.
[2] *Technical Advisory on Evaluating Transportation Impacts in CEQA*, State of California Governor's Office of Planning and Research, December 2018.

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reduction in greenhouse gas emissions, creation of multimodal networks and promotion of mixed-use developments.

On December 30, 2013, the State of California Governor's Office of Planning and Research (OPR) released a preliminary evaluation of alternative methods of transportation analysis. The intent of the original guidance documentation was geared first towards projects located within areas that are designated as transit priority areas, to be followed by other areas of the State. OPR updated the technical advisory that accompanies the revised CEQA Guidelines in April 2018 and submitted the proposed updates to the CEQA Guidelines to the California Natural Resources Agency (NRA). In December 2018, the California Natural Resources Agency certified and adopted amendments to the CEQA Guidelines implementing SB 743 with an implementation date of July 1, 2020.

The updated CEQA Guidelines allow for Lead Agency discretion in establishing methodologies and thresholds provided there is substantial evidence to demonstrate that the established procedures promote the intended goals of the legislation. Where quantitative models or methods are unavailable, Section 15064.3 allows agencies to assess VMT qualitatively using factors such as availability of transit and proximity to other destinations. The *Technical Advisory on Evaluating Transportation Impacts in CEQA* ("*Technical Advisory*") provides considerations regarding methodologies and thresholds with a focus on office, residential, and retail developments as these projects tend to have the greatest influence on VMT. As of the preparation of this assessment, many jurisdictions including the City of Covina have now implemented updated procedures for VMT analysis.

Project Description

The project site is located at 529 Cutter Way, at the northwest corner of the Cutter Way/San Bernardino Road intersection. The project site location and general vicinity are shown in ***Figure 1.*** The proposed project consists of the development of 49 multi-family residential apartment units and 11 live/work units. The proposed units will be arranged in building blocks that will vary in height and number of stories (one to four stories). The taller units will be located towards the rear of the property and are planned to decrease or step back in height as the buildings are located closer to the street property lines. The apartment units are planned to be comprised of one- to three-bedroom unit types and the live/work units are planned as one- to two-bedroom unit types. The floor area sizes for the dwelling units are planned to range from 650 square feet for the one-bedroom units to over 1,200 square feet for the three-bedroom units. On-site amenities include an outdoor courtyard and a community center which will be centrally located within the site. On-site parking will be provided primarily

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through a partial subterranean parking structure and surface parking near the northern portion of the site. Vehicular access to the site is planned to be provided via a total of two (2) driveways with one (1) each on Cutter Way and San Bernardino Road. Project buildout and occupancy is anticipated by the year 2023.

VMT Screening Assessment

Pursuant to current statutes, the City of Covina has adopted vehicle miles traveled (VMT) as the metric for determining environmental impacts and has recently released its *Transportation Study Guidelines on Vehicle Miles Traveled and Level of Service Assessment*, dated October 2020. The guidelines outline the steps for complying with the new CEQA VMT analysis as well as the applicable General Plan consistency requirements related to Level of Service (LOS). The guidelines have established screening criteria pertaining to project trip generation forecasts, project land use types (i.e., local serving retail, affordable housing, etc.), proximity to transit, and locality within a low VMT-generating area. The guidelines provide the following three (3) types of potential screening criteria that may be applied to screen projects from project-level assessment:

- Transit Priority Areas Screening
- Low VMT-generating Areas Screening
- Project Type Screening

As outlined in the City's guidelines, residential and office development projects located within a low VMT-generating area may be presumed to have a less than significant impact absent any substantial evidence to the contrary. Other employment-related and mixed-use land use projects may also qualify for the screening if the project can reasonably be expected to generate VMT per resident, per worker or per service population that is similar to the existing land uses in the low VMT-generating area.

As the proposed project is residential and is located within the low VMT-generating area within the City as illustrated in ***Figure 2*** and the SGVCOG VMT Evaluation Tool worksheet (refer to ***Attachment A***), direct application of this screening criteria indicates that it may be presumed to result in a less than significant project impact with respect to VMT. The proposed project is consistent with the existing multi-family residential use located on the east side of Cutter Way north of San Bernardino Road. As shown in the attached worksheet from the VMT Evaluation Tool, the screening was prepared utilizing both VMT metrics (i.e., within the Tier 1 Traffic Analysis Zone [TAZ] for the Total VMT per service population and within the Tier 2

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TAZ for home-based VMT per capita). Thus, the project is screened out from the preparation of a VMT assessment based on this screening criteria.

Sight Distance Review

A review has been conducted so as to evaluate the adequacy of sight distances at the project driveway intersections with San Bernardino Road and Cutter Way which are being planned to serve as access points to and from the project site. The critical sight distance was determined to be between exiting motorists and motorists traveling on San Bernardino Road and Cutter Way. Specifically, sight distance analyses have been prepared at the subject driveway locations in order to determine the adequacy of motorists' lines of sight and focuses on the northbound and southbound approaching vehicles on Cutter Way and the eastbound and westbound approaching vehicles on San Bernardino Road as well as the exiting left-turn and/or right-turn vehicles at the project site driveways (i.e., intersection sight distance). The sight distance analysis is based on the criteria set forth in the American Association of State Highway and Transportation Officials' (AASHTO) *A Policy on Geometric Design of Highways and Streets*.[3] Stopping sight distance is the distance that a driver of a vehicle, traveling at a certain speed, is able to bring the vehicle to a stop after an object on the road becomes visible. Sight distance is also provided for intersections (including private streets and driveways) to allow the drivers of stopped vehicles a sufficient view of the intersecting roadway to decide when to enter the intersecting roadway or to cross it. If available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major roadway, then drivers have sufficient sight distance to anticipate and avoid collisions.

Description of Study Location

San Bernardino Road is currently designated as a Secondary Highway and Cutter Way is designated as a Local Street in the City's General Plan Circulation Element. At its intersection with Cutter Way, San Bernardino Road provides two eastbound through travel lanes and two westbound through travel lanes, with a two-way left-turn lane provided between Vincent Avenue and Cutter Way. The posted speed limit along San Bernardino Road is 40 miles per hour (mph) and along Cutter Way is 25 mph in the site vicinity.

[3] *A Policy on Geometric Design of Highways and Streets*, Chapter 9, American Association of State Highway and Transportation Officials (AASHTO), 7th Edition, 2018.

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Intersection Sight Distance at Project Driveways

According to Table 9-7 (*Design Intersection Sight Distance-Case B1-Left Turn from Stop*) of the AASHTO document, a design speed of 25 mph would require a minimum stopping sight distance of 155 feet and an intersection sight distance of 280 feet for passenger cars. Also, a design speed of 40 mph would require a minimum stopping sight distance of 305 feet and an intersection sight distance of 445 feet for passenger cars. It is noted that the sight distance values summarized in Table 9-7 of the AASHTO document are for a stopped vehicle to turn left onto a two-lane roadway without a median such as Cutter Way. San Bernardino Road provides two travel lanes in each direction along with a two-way left-turn lane and is posted for a speed limit of 40 mph along the project frontage. Adjustments were made to account for the additional lane and the two-way left-turn lane for this portion of San Bernardino Road. As such, the minimum adjusted intersection sight distance of 470 feet for passenger cars was utilized for the sight distance analysis. No adjustments were necessary for Cutter Way. As such, the minimum intersection sight distances of 280 feet and 470 feet for passenger cars were utilized for the sight distance analyses for the Cutter Way and San Bernardino Road project driveways, respectively.

Figures 3 and ***4*** provide a conceptual plan of the Cutter Way and San Bernardino Road project driveways, respectively, along with the adjacent street system. Also displayed are the minimum required intersection sight distances. According to AASHTO guidelines, *Figures 3* and *4* show that when an exiting motorist's vehicle (i.e., front bumper) is set back such that 15 feet exists between the edge of the travel way to the motorists' eye at the project driveway, a line of sight to meet the stated minimums currently exist for the critical cases, which is Case B1 – Left Turn from Stop. This is based on the AASHTO guidelines that when determining sight lines, the front of the stopped vehicle at the major street approach be set back 6.5 feet from the edge of the travel way (or equal to a distance of 15 feet between the edge of the travel way and the driver's eye at the project driveway). The lines of sight should be clear of any tall landscaping, signage, or objects (i.e., be less than 36 inches in height) so as to maintain clear lines of sight between exiting motorists and oncoming motorists. As shown in *Figure 3*, an adequate line is sight is provided for southbound motorists approaching the Cutter Way project driveway. While the intersection sight distance of less than 280 feet is provided for the oncoming northbound (approaching) vehicles on Cutter Way (i.e., 240 feet), these vehicles are controlled by the intersection of Cutter Way/San Bernardino Road and thus will not be traveling at the posted speed, just north of intersection. As illustrated in *Figure 4*, based on the design speed of 40 mph along San Bernardino Road, the sight distance analyses contained herein, and strict application of the AASHTO guidelines, it can be concluded that the existing intersection sight distance currently meets the minimum requirements for exiting

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project driveway motorists and oncoming westbound and eastbound (approaching) vehicles on San Bernardino Road.

In order to maintain the clear lines of sight at the project driveways, it is therefore recommended that red curb markings and signage be installed so as to remove any on-street parking on the west side of Cutter Way along the property frontage to San Bernardino Road. It is also recommended that the existing red curb markings and "No Stopping Any Time" signage restriction along the north side of San Bernardino Road along the project frontage be maintained. With the removal of on-street parking along this segment of Cutter Way and maintenance of the existing stopping restriction on San Bernardino Road, adequate intersection sight distances would exist between exiting motorists at the project driveways and oncoming (approaching) vehicles on Cutter Way and San Bernardino Road.

Traffic Signal Warrant Analyses

Traffic signal warrant analyses have been prepared to determine whether traffic signals are warranted at the Cutter Way/San Bernardino Road intersection (i.e., under the existing with project completion scenario). The warrant analysis is consistent with the signal warrants outlined in Chapter 4C of the *California Manual on Uniform Traffic Control Devices*[4] (MUTCD). It is important to note that the satisfaction of a traffic signal warrant is not necessarily justification for the installation of a traffic signal. Delay, congestion, approach conditions, driver confusion, future land use or other evidence of the need for right-of-way assignment beyond that which could be provided by stop sign control may be demonstrated. Conversely, if a traffic signal warrant is not met, these and other factors (e.g., corner sight distance) may be just cause for consideration of a traffic signal installation. The lead agency/agencies must carefully consider all aspects related to installation of traffic controls.

Traffic signal warrants were prepared for the Cutter Way/San Bernardino Road intersection. Specifically, Warrant No. 1 (Eight Hour Vehicular Volume), Warrant No. 2 (Four Hour Vehicular Volume), Warrant No. 3 (Peak Hour Volume) were prepared for existing with project traffic conditions, and Warrant No. 6 (Coordinated Signal System), Warrant No. 7 (Crash Experience), and Warrant No. 8 (Roadway Network) were prepared based on a review of existing roadway and collision records. The traffic signal warrant worksheets are provided in ***Attachment B***.

[4] *California Manual on Uniform Traffic Control Devices (MUTCD),* State of California Business, Transportation and Housing Agency, Department of Transportation, 2014 Edition, Revision 4.

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In reviewing the traffic signal warrant analysis, it is important to note the following:

- The Cutter Way/San Bernardino Road intersection was assumed as a two-way stop controlled intersection with the stop sign facing the Cutter Way southbound approach.
- For the signal warrant analyses, the minor street approach volumes consist of the southbound volumes for Cutter Way. The major street approach volumes consist of the eastbound and westbound volumes on San Bernardino Road.
- The traffic signal warrant calculations were based on existing AM and PM peak period volumes that were previously conducted in November 2019 and utilized for the *Transportation Impact Study*.
- Automatic 24-hour machine traffic counts were conducted at the following locations in October 2020 for the subject locations.
    - San Bernardino Road, west of Cutter Way
    - San Bernardino Road, east of Cutter Way
    - Cutter Way, north of San Bernardino Road

  The October 2020 traffic volumes at this location were compared to the November 2019 traffic volumes and adjusted upwards to account for the closures of schools and businesses due to the on-going pandemic. The year 2020 traffic volumes at this location were increased by 100% during the morning period and 20% during the afternoon/evening period.

The following paragraphs provide detailed discussions of the traffic signal warrants prepared for the subject intersection.

Warrant 1: Eight-Hour Vehicular Volume

The Eight Hour Vehicular Volume warrant consists of three conditions: Condition A - the Minimum Vehicular Volume, Condition B – the Interruption of Continuous Traffic, and the Combination of Conditions A and B.

The Minimum Vehicular Volume warrant (Condition A) is intended for application where a large volume of intersecting traffic is the principal reason for consideration of a signal installation. The warrant is satisfied when for each of any eight hours of an average day the traffic volumes provided in the table for Warrant 1 under Condition A exist on the major street and on the higher-volume minor street approach to the intersection.

The Interruption of Continuous Traffic warrant (Condition B) applies to operating conditions where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or hazard in entering or crossing the major street. The warrant is satisfied when, for

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each of any eight hours of an average day, the traffic volumes given in the table exist on the major street and on the higher-volume minor street approach to the intersection, and the signal installation will not seriously disrupt progressive traffic flow.

The Combination of Conditions A and B warrant applies at locations where Conditions A and B are not satisfied but where Conditions A and B are satisfied to the extent of 80 percent or more of the stated numerical values.

As shown in the worksheets provided in *Attachment B*, Conditions A and B associated with Warrant No. 1-Eight Hour Vehicular Volume are not met for the existing with project condition for the subject intersection. Therefore, Warrant No. 1 is <u>not satisfied</u> for the subject intersection.

<u>Warrant 2: Four-Hour Vehicular Volume</u>

The Four-Hour Vehicular Volume Warrant is satisfied when, for each of any four hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher volume minor street approach (one direction only) all fall above the curve in Figure 4C-1 for the combination of approach lanes. The lower threshold for a minor street approach with one lane is 80 vehicles per hour while a minor street with two or more lanes is 115 vehicles per hour. As shown in the worksheet contained in *Attachment B*, the signal warrant is met when the plotted points fall above the appropriate curve.

As indicated in Figure 4C-1 provided in *Attachment B*, the plotted points for the four highest hours of the day during existing with project condition fall below the applicable curve for the subject intersection. Thus, Warrant No. 2 is <u>not satisfied</u> for the Cutter Way/San Bernardino Road intersection.

<u>Warrant 3: Peak Hour Volume</u>

The Peak Hour Volume Warrant consists of Part A and Part B and is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The Peak Hour volume warrant applies when one of the following criteria are satisfied (Part A or Part B):

- Part A. If all three of the following conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:
  - The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds 4 vehicle-hours for a one-lane approach, or 5 vehicle-hours for a two-lane approach, and

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- The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes, and
- The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.

- Part B of Warrant No. 3 is satisfied when the plotted point, representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher volume minor street approach (one direction only) for one hour of an average day, falls above the curve in Figure 4C-3 for the applicable number of approach lanes. The lower threshold for a minor street approach with one lane is 100 vehicles per hour while a minor street with two or more lanes is 150 vehicles per hour for a minor street approach. As shown in the worksheets contained in *Attachment B*, the signal warrant is met when the plotted point falls above the appropriate curve.

As shown on the attached Figure 4C-3 provided in *Attachment B*, the plotted point for the peak hour falls below the applicable curve for the subject study intersection. As shown in *Attachment B*, the volume on the same minor-street approach (one direction only) does not equal or exceed 100 vehicles per hour for one moving lane of traffic. Therefore, Part B of Warrant No. 3-Peak Hour is <u>not met</u> for the existing with project condition for the Cutter Way/San Bernardino Road intersection.

<u>Warrant 6: Coordinated Signal System</u>

The Coordinated Signal System warrant applies when all of the following criteria are satisfied:

- The distance to the nearest traffic signal is greater than 1,000 feet, and
- On an isolated one-way street or street with one way traffic significance adjacent signals are so far apart that necessary platooning and speed control would be lost; or
- On a two-way street, where the adjacent signals do not provide the necessary degree of platooning and speed control, proposed signals could constitute a progressive signal system.

Warrant 6 is satisfied if the distance to the nearest traffic signal is greater than 1,000 feet; if the adjacent signals did not provide the necessary degree of platooning and the proposed and adjacent signals could constitute a progressive signal system. For the

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Cutter Way/San Bernardino Road intersection, the distance to the nearest traffic signal to the west (at Vincent Avenue/San Bernardino Road) and east (at Lark Ellen Avenue/San Bernardino Road) is approximately 1,327 feet and 1,380 feet, respectively. Thus, there are signalized intersections to the east and west on San Bernardino Road that are more than the 1,000-foot threshold for the subject intersection. However, the adjacent signals are observed to provide the necessary degree of platooning and speed control. Thus, Warrant 6 is not satisfied for the subject intersection.

Warrant 7: Crash Experience

The Crash Experience Warrant is intended for application where the severity and frequency of collisions are the primary reasons to consider installation of a traffic signal. The Crash Experience warrant applies when the following criteria are satisfied:

- Adequate trial of alternatives or less restrictive remedies has failed to reduce the collision frequency, and
- Five (5) or more reported collisions within the most recent 12-month period. Each collision needs to be susceptible to correction by a traffic control signal and involve personal injury or property damage apparently exceeding the applicable requirements for a reportable collision, and
- A minimum of 80 percent is satisfied for Warrant 1, Minimum Vehicular Volume or Warrant 2, Interruption of Continuous Traffic, or Warrant 4, Pedestrian Volume (such that pedestrian volumes are greater than or equal to 152 for any hour or greater than or equal to 80 for any four hours).

Research was conducted of available collision records in order to determine the existing collision history at the subject study intersection. Collision records for the Cutter Way/San Bernardino Road intersection were requested for the most recent five-year period, from 2015 to 2020 from the City of Covina. Based on the traffic collision history summary provided by City staff as contained in ***Attachment C***, for the five-year period between 2005 and 2020, no more than four (4) traffic collisions during a 12-month period were reported at this location. As shown in the collision data, a total of nine (9) collisions occurred over the most recent five-year period at this location. Furthermore, since neither Warrant 1 nor Warrant 2 is satisfied by at least 80 percent, Warrant 7 is not satisfied for the Cutter Way/San Bernardino Road intersection.

Warrant 8: Roadway Network

Warrant 8 applies when the minimum entering volumes on all approaches of the intersection are greater than 1,000 vehicles per hour and the common intersection of two or more major routes meets the threshold criteria. While the total entering volumes are greater than the 1,000 vehicles per hour threshold for the subject intersection, Cutter Way (north leg of the intersection) is not a major roadway. Thus, Warrant 8 is not satisfied for the subject intersection.

Project Driveway Vehicle Queuing Review

A vehicle queuing analysis was prepared for the Cutter Way/San Bernardino Road intersection, in order to evaluate the project's potential queuing impacts on the adjacent roadway. Specifically, the key traffic movements reviewed include the eastbound left-turn movement on San Bernardino Road at the San Bernardino Road/Cutter Way intersection. As noted previously, San Bernardino Road was restriped to provide a two-way left-turn lane along with two lanes in each direction between Vincent Avenue and Cutter Way.

In forecasting future vehicle queues, the HCS7 software considers traffic volume data, lane configurations, and available vehicle storage lengths for the respective traffic movements. For purposes of this analysis, the Cutter Way/San Bernardino Road intersection currently operates as a two-way stop-controlled intersection, with the stop-sign facing the minor street approach (i.e., Cutter Way).

This analysis has been prepared using the future with project weekday AM peak hour and PM peak hour traffic volume forecasts. The HCM analysis provides a forecast of the 95^{th} percentile vehicle queue for the analysis time periods. The 95^{th} percentile queue is the maximum back of vehicle queue with 95^{th} percentile traffic volumes and is typically utilized for design purposes. ***Table 1*** provides a summary of the forecast vehicle queuing anticipated for the eastbound left-turn movement at the Cutter Way/San Bernardino Road intersection during the weekday AM and PM peak hours under the future with project condition. Based on this analysis, vehicular queuing is expected to be fully accommodated within the two-way left-turn lane provided along San Bernardino Road, west of Cutter Way. Summary data worksheets of the queuing analyses are contained in ***Attachment D***.

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Summary of Key Findings and Conclusions

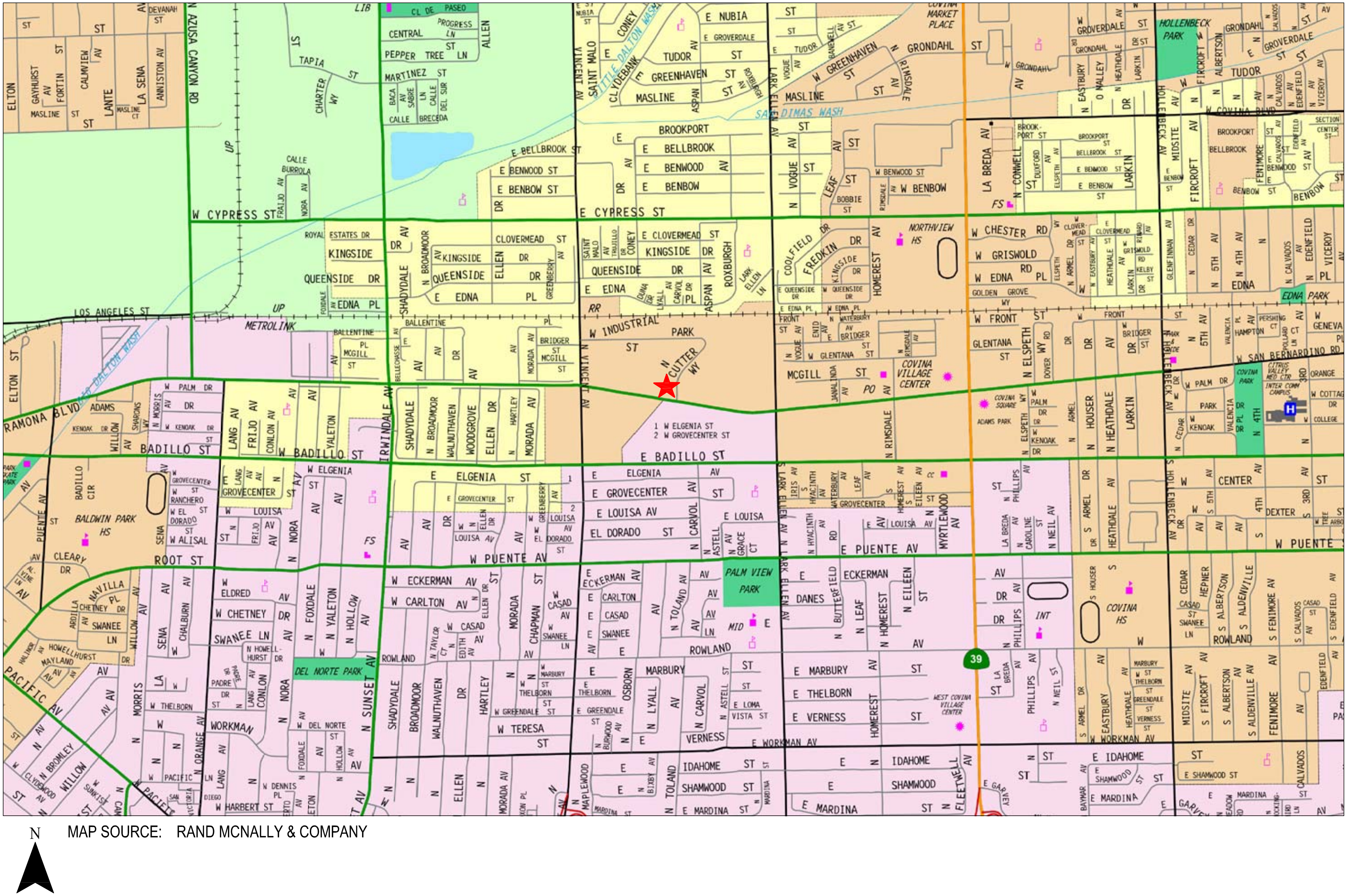
This supplemental memorandum has been prepared to address the comments received from the City of West Covina and City of Covina staffs regarding project site access, driveways sight distance, and traffic signal warrants analysis/left-turn queuing analysis for the Cutter Way/San Bernardino Road intersection. As the proposed project is residential in nature and is located within the low VMT-generating area within the City as confirmed in the SGVCOG VMT Evaluation Tool worksheet, direct application of this screening criteria indicates that project may be presumed to result in a less than significant impact with respect to VMT.

Based on the sight distance analysis, it is proposed that red curb markings and signage be installed to prohibit on-street parking along the west side of Cutter Way along the project's frontage to San Bernardino Road. It is recommended that the red curb markings and "No Stopping Any Time" signage restriction along the north side of San Bernardino Road along the project frontage be maintained. With the removal of on-street parking along this segment of Cutter Way and maintenance of the existing restriction along San Bernardino Road, adequate intersection sight distances would exist between exiting motorists at the project driveways and oncoming (approaching) vehicles on Cutter Way and San Bernardino Road.

Traffic signal warrant analyses have been prepared to determine whether a traffic signal installation may be warranted at the Cutter Way/San Bernardino Road intersection, under the existing with project scenario. In summary, Warrant Nos. 1 (Eight Hour Vehicular Volume), 2 (Four Hour Vehicular Volume), 3 (Peak Hour Volume), 6 (Coordinated Signal System), 7 (Crash Experience), and 8 (Roadway Network) were prepared and none of the warrants were satisfied based on strict application of the warrant thresholds.

A vehicle queuing analysis was prepared for the Cutter Way/San Bernardino Road intersection, in order to evaluate the project's potential queuing impacts on the adjacent roadway. Based on the summary of the forecast vehicle queuing anticipated for the eastbound left-turn movement at the Cutter Way/San Bernardino Road intersection during the weekday AM and PM peak hours, vehicular queuing is expected to be fully accommodated within the two-way left-turn lane provided along San Bernardino Road, west of Cutter Way.

Please feel free to call us at 626.796.2322 with any questions or comments regarding the above supplemental analyses prepared for the proposed 529 Cutter Way Live/Work Project.



Project Site

Figure 1

Vicinity Map

529 Cutter Way Live/Work Project

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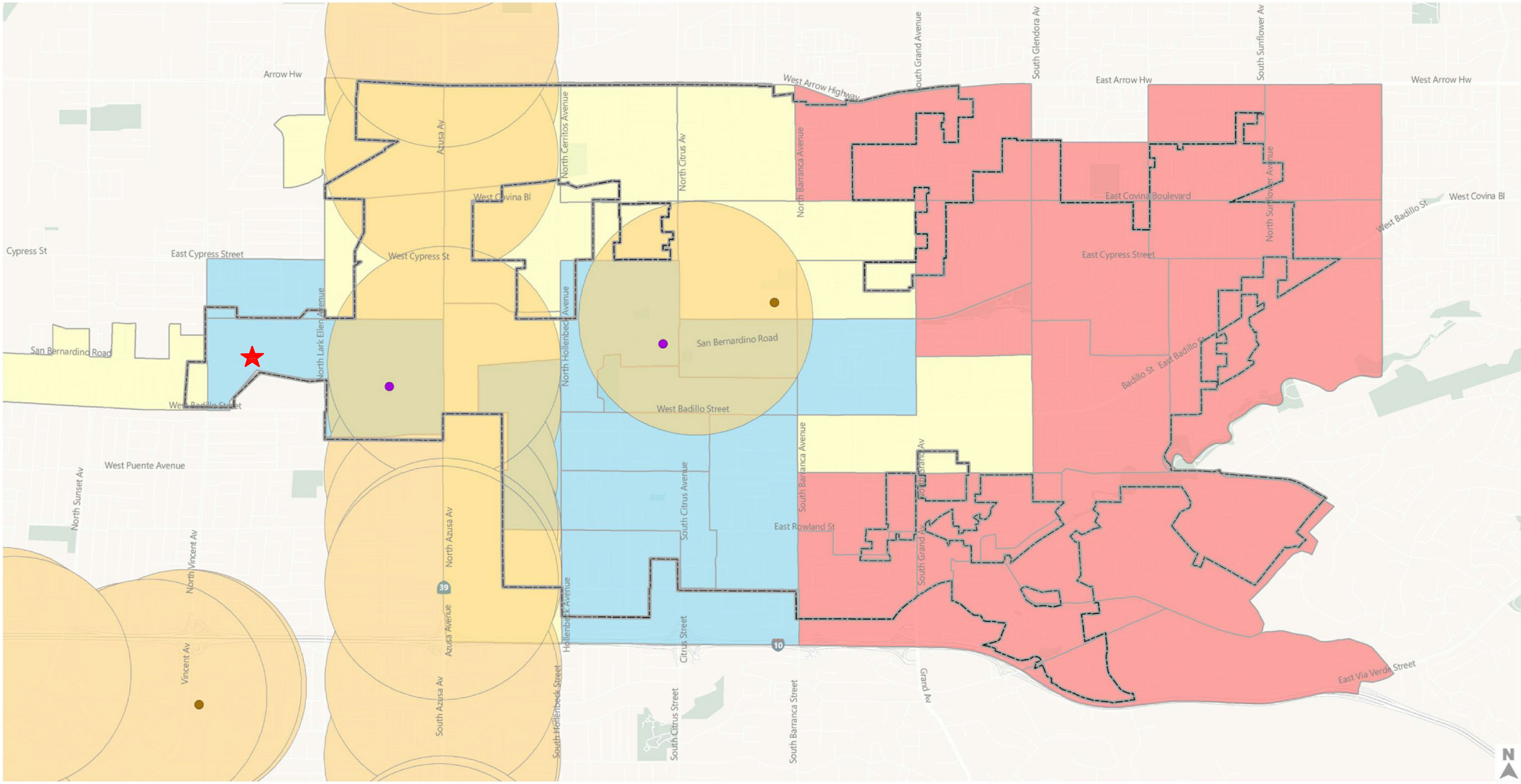

Home-Based VMT per Capita Comparison

15% or more below Subarea Average

0 to 15% below Subarea Average

Higher than Subarea Average

City Boundary

Transit Priority Area (TPA)

Test Project

Mixed Use

Multi-Family Residential

Single-Family Residential

Hotel

Medical

Industrial

N

MAP SOURCE: FEHR & PEERS

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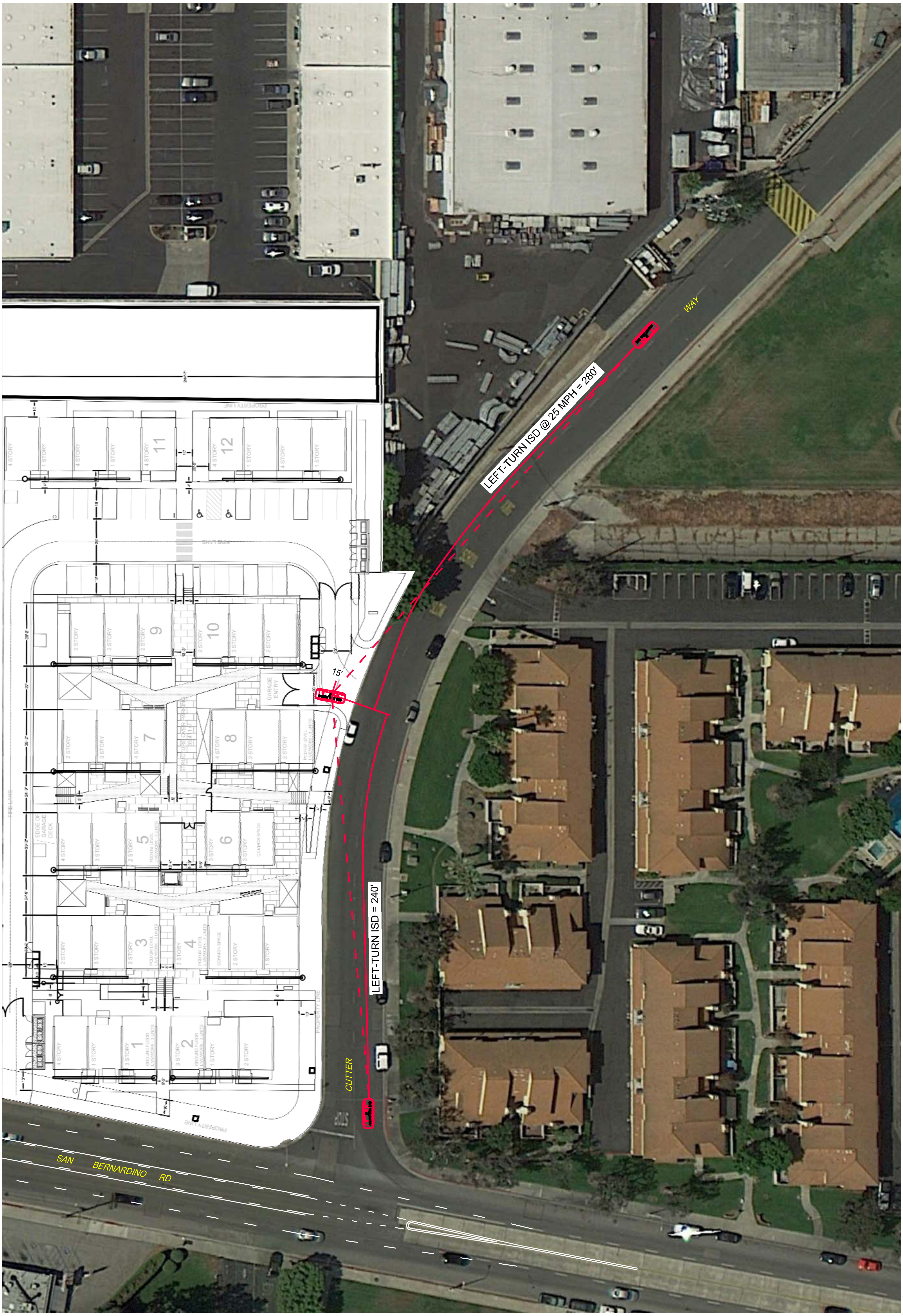
PROJECT SITE

Figure 2

Daily Residential Home-Based VMT per Capita

City of Covina

529 Cutter Way Live/Work Project



Map Source: Google Earth

N

SCALE 1" = 60'

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Figure 3
Intersection Sight Distance at Cutter Way Project Driveway
Horizontal Perspective

529 Cutter Way Live/Work Project

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Figure 4
Intersection Sight Distance at San Bernardino Road Project Driveway
Horizontal Perspective
529 Cutter Way Live/Work Project

Table 1
SUMMARY OF LEFT-TURN VEHICLE QUEUING ANALYSIS [1]
FUTURE YEAR 2023 WITH PROJECT CONDITION
WEEKDAY AM AND PM PEAK HOURS

LOCATION	PEAK HOUR	AVAILABLE STORAGE [2] (FEET)	FUTURE YEAR 2023 WITH PROJECT CONDITION	
			95th PERCENTILE QUEUE [3] (FEET)	EXCEEDS STORAGE? (YES/NO)
Cutter Way/ San Bernardino Road (EB Left-Turn)	AM	194	25	No
	PM	194	25	No

[1] Based on the Highway Capacity Manual 6th Edition operational analysis methodology for unsignalized (two-way stop-controlled) intersections.

[2] Available storage measured via Google Earth aerial imagery and the San Bernardino Road median striping exhibit provided by the City, dated 11/14/2019.

[3] The 95th percentile queue is the maximum back of queue with 95th percentile traffic volumes. An average vehicle length of 25 feet (including vehicle separation) was assumed for analysis purposes. A minimum of 25 feet (i.e., one vehicle) was reported for queues of less than 25 feet.

ATTACHMENT A

VMT EVALUATION TOOL WORKSHEET

SGVCOG VMT Evaluation Tool Report

Project Details

Timestamp of Analysis: November 09, 2020, 04:03:09 PM

Project Name: 529 Cutter Way Live/Work Project

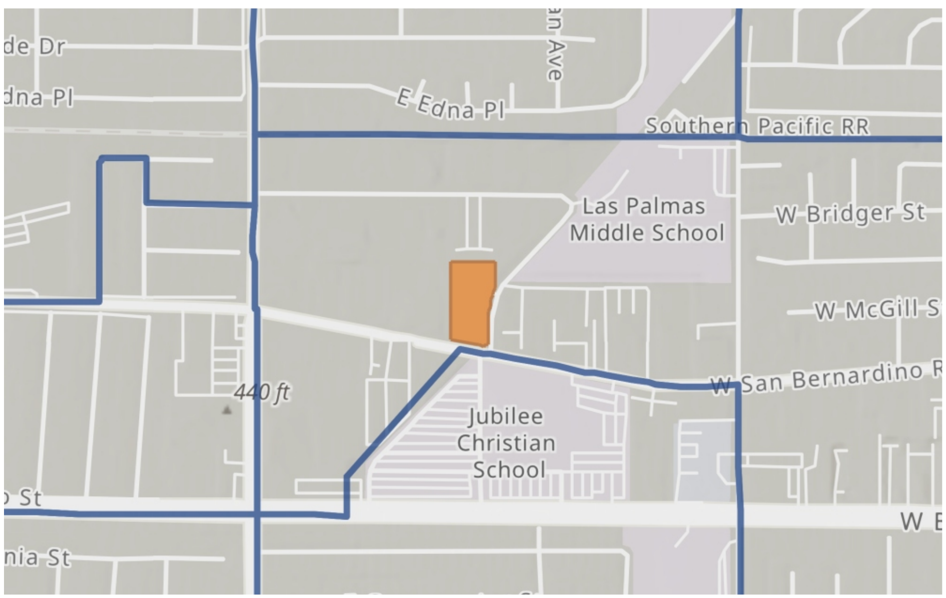
Project Description: Multi-family apartment residential units (49 units) and live/work units (11 units).

Project Location

Jurisdiction:
Covina

APN	TAZ
8434-013-010	22327200

Inside a TPA?
No (Fail)



Analysis Details

Data Version: SCAG Regional Travel Demand Model 2016 RTP Base Year 2012

Analysis Methodology: TAZ

Baseline Year: 2020

Project Land Use

Residential:

Single Family DU:	
Multifamily DU:	60
Total DUs:	60

Non-Residential:

Office KSF:

Local Serving Retail KSF:

Industrial KSF:

Residential Affordability (percent of all units):

Extremely Low Income:	0 %
Very Low Income:	0 %
Low Income:	0 %

Parking:

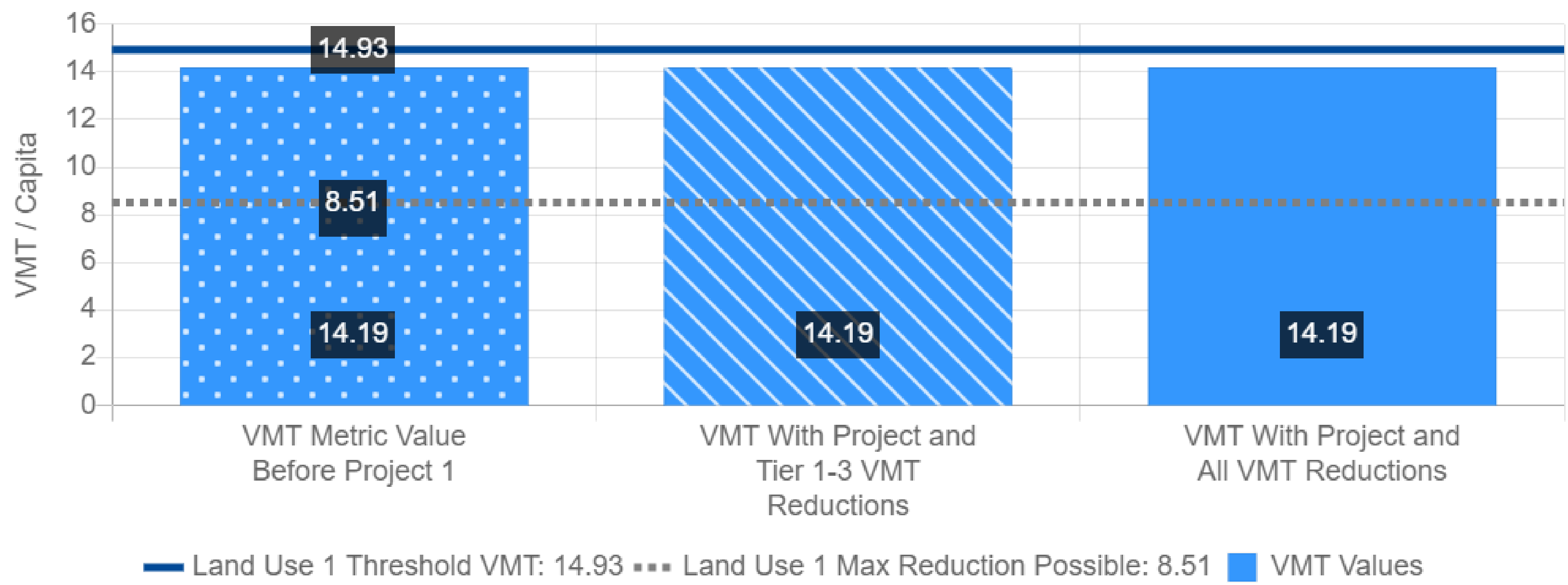
Motor Vehicle Parking:

Bicycle Parking:

Residential Vehicle Miles Traveled (VMT) Screening Results

Land Use Type 1:	Residential
VMT Without Project 1:	Home-based VMT per Capita
VMT Baseline Description 1:	Subarea Average
VMT Baseline Value 1:	17.56
VMT Threshold Description 1:	-15%
Land Use 1 has been Pre-Screened by the Local Jurisdiction:	N/A

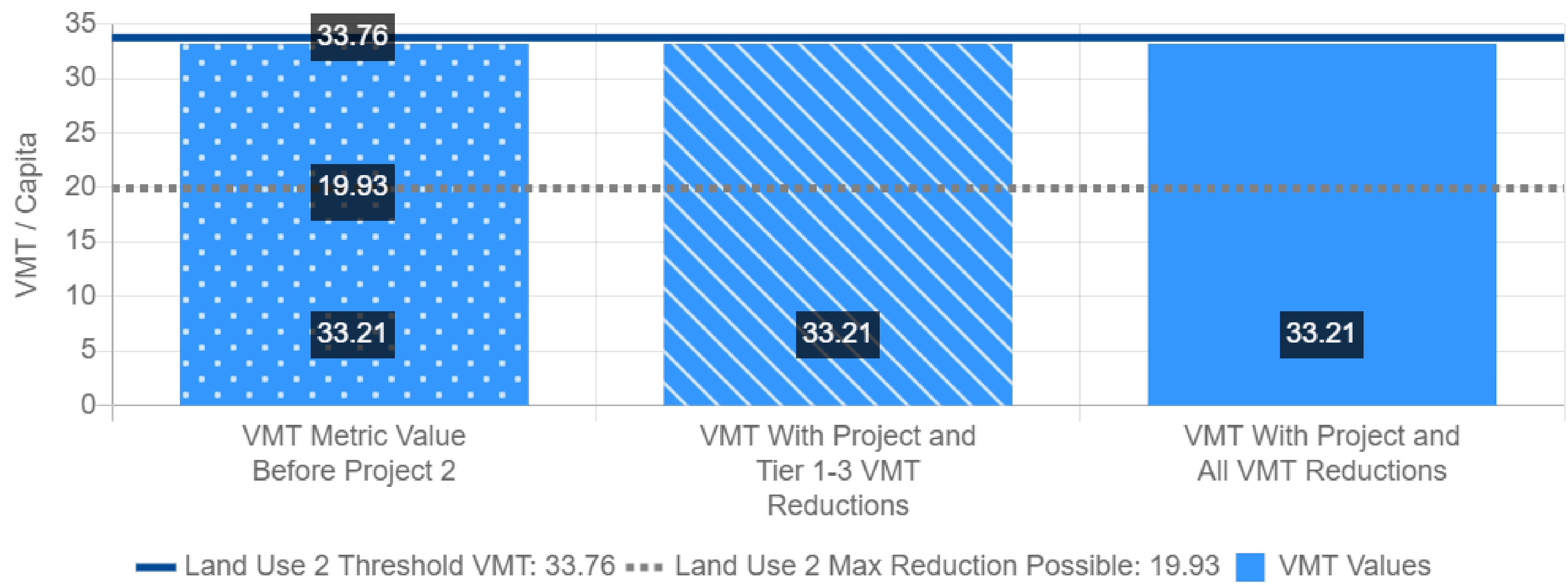
	Without Project	With Project & Tier 1-3 VMT Reductions	With Project & All VMT Reductions
Project Generated Vehicle Miles Traveled (VMT) Rate	14.19	14.19	14.19
Low VMT Screening Analysis	Yes (Pass)	Yes (Pass)	Yes (Pass)



Residential Vehicle Miles Traveled (VMT) Screening Results

Land Use Type 2:	Residential
VMT Without Project 2:	Total VMT per Service Population
VMT Baseline Description 2:	Subarea
VMT Baseline Value 2:	39.71
VMT Threshold Description 2:	-15%
Land Use 2 has been Pre-Screened by the Local Jurisdiction:	N/A

	Without Project	With Project & Tier 1-3 VMT Reductions	With Project & All VMT Reductions
Project Generated Vehicle Miles Traveled (VMT) Rate	33.21	33.21	33.21
Low VMT Screening Analysis	Yes (Pass)	Yes (Pass)	Yes (Pass)



ATTACHMENT B

TRAFFIC SIGNAL WARRANTS WORKSHEET

Existing with Project Condition

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

COUNT DATE 10/28/20
CALC CT DATE 11/9/20
CHK ______ DATE ______

DIST ____ CO ____ RTE ____ PM ____

Major St: San Bernardino Road — Critical Approach Speed 40 mph
Minor St: Cutter Way — Critical Approach Speed 25 mph

Speed limit or critical speed on major street traffic > 40 mph ☐ or
In built up area of isolated community of < 10,000 population ☐ } RURAL (R)
☑ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume SATISFIED YES ☐ NO ☑
(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume 100% SATISFIED YES ☐ NO ☑
80% SATISFIED YES ☐ NO ☑

APPROACH LANES	1 U	1 R	2 or More U	2 or More R	7:00 AM	9:00 AM	10:00 AM	11:00 AM	2:00 PM	3:00 PM	4:00 PM	5:00 PM
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	1322	1033	1095	1324	1037	1208	1283	1268
Highest Approach Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	80	45	55	61	39	47	39	35

MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)

Condition B - Interruption of Continuous Traffic 100% SATISFIED YES ☐ NO ☑
80% SATISFIED YES ☐ NO ☑

APPROACH LANES	1 U	1 R	2 or More U	2 or More R	7:00 AM	9:00 AM	10:00 AM	11:00 AM	2:00 PM	3:00 PM	4:00 PM	5:00 PM
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	1322	1033	1095	1324	1037	1208	1283	1268
Highest Approach Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	80	45	55	61	39	47	39	35

MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)

Combination of Conditions A & B SATISFIED YES ☐ NO ☑

REQUIREMENT	CONDITION	✓	FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME		Yes ☐ No ☑
	AND, B. INTERRUPTION OF CONTINUOUS TRAFFIC		
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Existing with Project Condition

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

[a] Basic minimum hourly volume
[b] Used for combination of Conditions A and B after adequate trial of other remedial measures
[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000
[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Existing with Project Condition

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☑**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	7:00 AM	11:00 AM	4:00 PM	5:00 PM
Both Approaches - Major Street		✓	1322	1324	1283	1268
Higher Approach - Minor Street	✓		80	61	39	35

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes ☐ No ☑
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes ☐ No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☐ NO ☑**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☐ NO ☑**
(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☐ No ☐
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☐ No ☑
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☐ No ☐

PART B **SATISFIED YES ☐ NO ☑**

APPROACH LANES	One	2 or More	7:00 AM
Both Approaches - Major Street		✓	1322
Higher Approach - Minor Street	✓		80

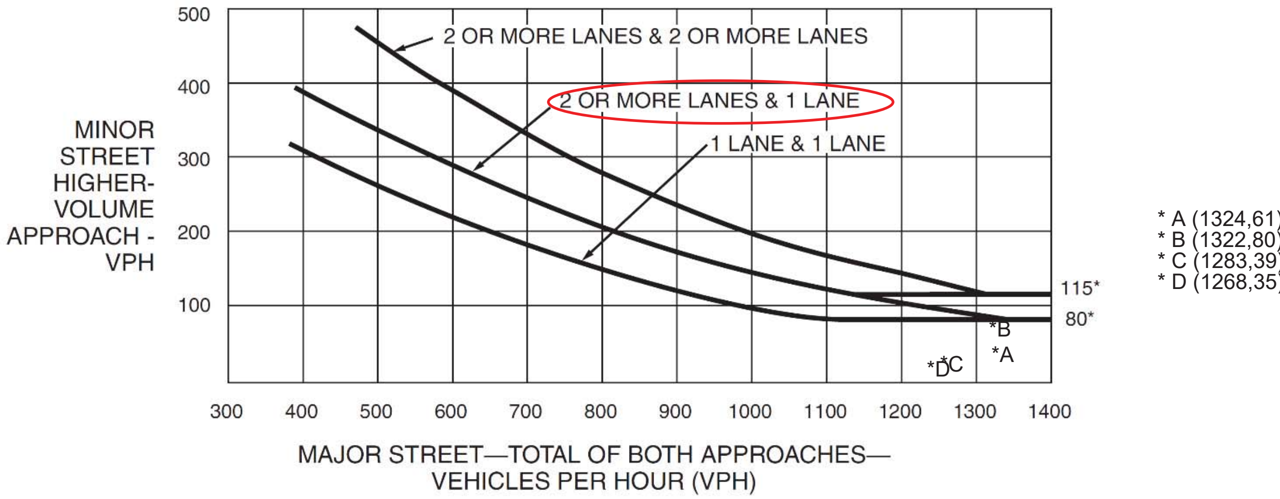
The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes ☐ No ☑
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Cutter Way and San Bernardino Road

Existing with Project Condition

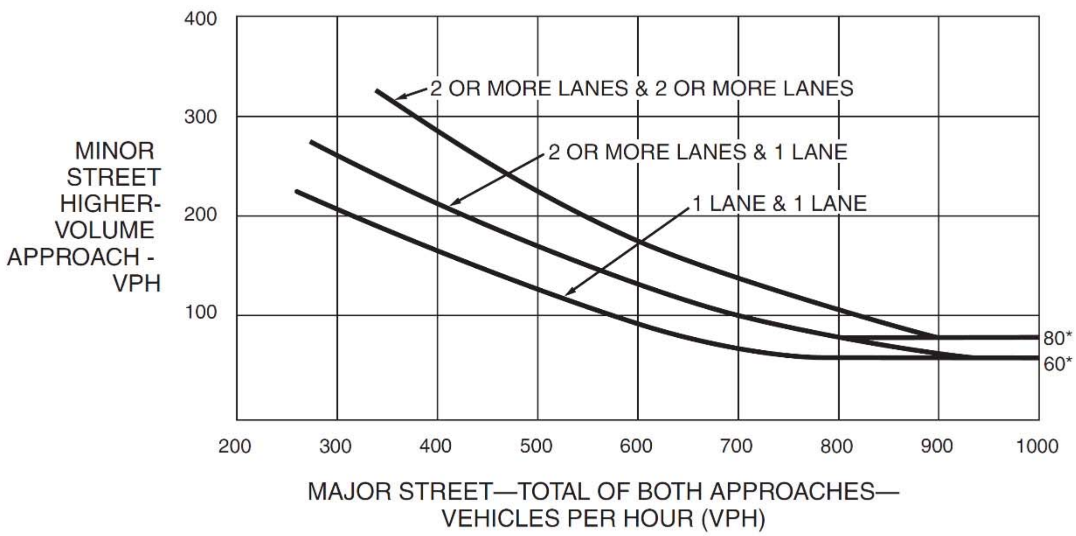
Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

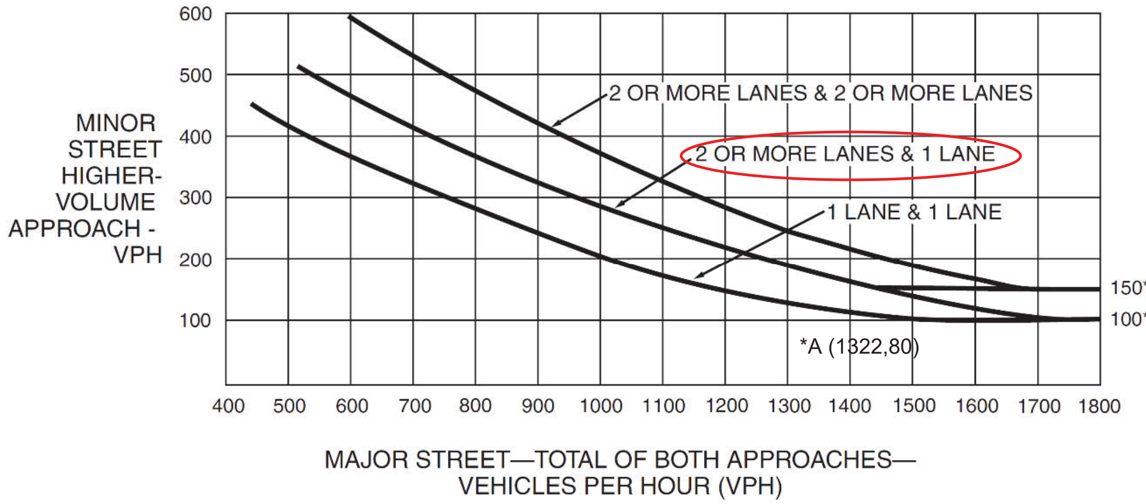
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Existing with Project Condition

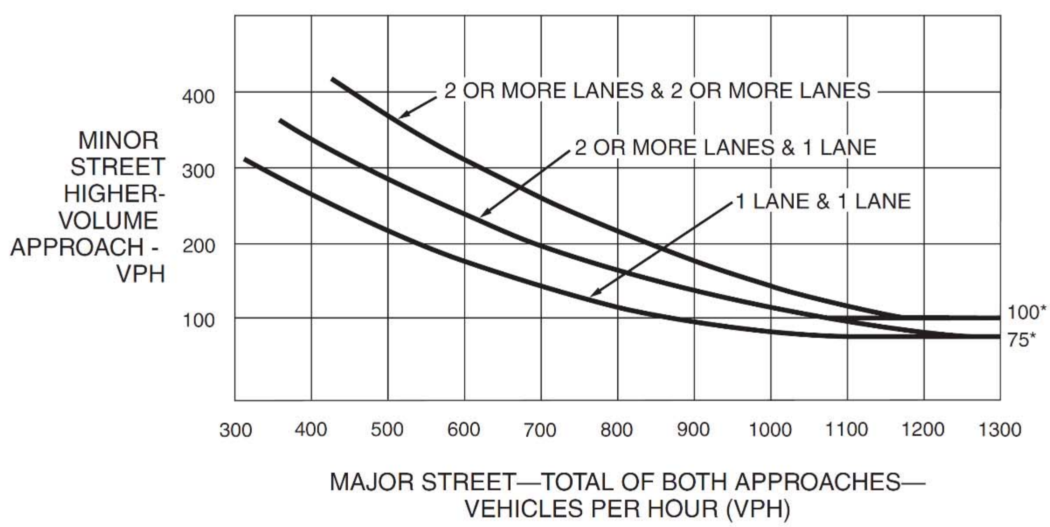
Figure 4C-3. Warrant 3, Peak Hour



*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.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Existing with Project Condition

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 4 of 5)

WARRANT 6 - Coordinated Signal System SATISFIED YES ☐ NO ☑
(All Parts Must Be Satisfied)

MINIMUM REQUIREMENTS	DISTANCE TO NEAREST SIGNAL	
≥ 1000 ft	N ______ ft, S ______ ft, E 1,380 ft, W 1,327 ft	Yes ☑ No ☐
On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning.		Yes ☐ No ☑
OR, On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.		

WARRANT 7 - Crash Experience Warrant SATISFIED YES ☐ NO ☑
(All Parts Must Be Satisfied)

Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency.			Yes ☐ No ☐
REQUIREMENTS	Number of crashes reported within a 12 month period susceptible to correction by a traffic signal, and involving injury or damage exceeding the requirements for a reportable crash.		Yes ☐ No ☑
5 OR MORE			
REQUIREMENTS	CONDITIONS	✓	Yes ☐ No ☐
ONE CONDITION SATISFIED 80%	Warrant 1, Condition A - Minimum Vehicular Volume		
	OR, Warrant 1, Condition B - Interruption of Continuous Traffic		
	OR, Warrant 4, Pedestrian Volume Condition Ped Vol ≥ 80% of Figure 4C-5 through Figure 4C-8		

WARRANT 8 - Roadway Network SATISFIED YES ☐ NO ☑
(All Parts Must Be Satisfied)

MINIMUM VOLUME REQUIREMENTS	ENTERING VOLUMES - ALL APPROACHES	✓	FULFILLED
1000 Veh/Hr	During Typical Weekday Peak Hour ______ Veh/Hr and has 5-year projected traffic volumes that meet one or more of Warrants 1, 2, and 3 during an average weekday.		Yes ☐ No ☑
	OR During Each of Any 5 Hrs. of a Sat. or Sun ______ Veh/Hr		

CHARACTERISTICS OF MAJOR ROUTES	MAJOR ROUTE A	MAJOR ROUTE B	
Hwy. System Serving as Principal Network for Through Traffic			
Rural or Suburban Highway Outside Of, Entering, or Traversing a City			
Appears as Major Route on an Official Plan			
Any Major Route Characteristics Met, Both Streets			Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Attachment Table B-1
Existing Plus Project Traffic Condition
Cutter Way/San Bernardino Road

	EXISTING YEAR 2020 VOLUMES [1]				TOTAL	EXISTING YEAR 2020 ADJUSTED VOLUMES [2]				TOTAL	PROPOSED PROJECT VOLUMES [3]				EXISTING PLUS PROJECT VOLUMES [4]				TOTAL
	Major Street			Minor Street	EXISTING	Major Street			Minor Street	EXISTING	Major Street			Minor Street	Major Street			Minor Street	EXISTING
	San Bernardino Road			Cutter Way	INTERSECTION	San Bernardino Road			Cutter Way	INTERSECTION	San Bernardino Road			Cutter Way	San Bernardino Road			Cutter Way	PLUS PROJECT INTERSECTION
HOUR	EB	WB	TOTAL	SB	VOLUME	EB	WB	TOTAL	SB	VOLUME	EB	WB	TOTAL	SB	EB	WB	TOTAL	SB	VOLUME
0:00	59	35	94	3	97	118	70	188	9	197	1	1	2	3	119	71	190	12	202
1:00	25	30	55	1	56	50	60	110	2	112	1	1	2	3	51	61	112	5	117
2:00	30	21	51	5	56	60	42	102	10	112	1	1	2	3	61	43	104	13	117
3:00	19	45	64	1	65	38	90	128	2	130	1	1	2	3	39	91	130	5	135
4:00	46	70	116	7	123	92	140	232	14	246	1	1	2	3	93	141	234	17	251
5:00	74	122	196	9	205	148	244	392	18	410	1	2	3	5	149	246	395	23	418
6:00	103	231	334	15	349	206	462	668	30	698	1	2	3	5	207	464	671	35	706
7:00	216	295	511	15	526	357	961	1318	70	1388	1	3	4	10	358	964	1322	80	1402
8:00	254	294	548	18	566	371	528	899	14	913	1	3	4	10	372	531	903	24	927
9:00	249	266	515	20	535	498	532	1030	40	1070	1	2	3	5	499	534	1033	45	1078
10:00	284	262	546	25	571	568	524	1092	50	1142	1	2	3	5	569	526	1095	55	1150
11:00	321	340	661	29	690	642	680	1322	58	1380	1	1	2	3	643	681	1324	61	1385
12:00	347	370	717	24	741	416	444	860	29	889	1	2	3	2	417	446	863	31	894
13:00	381	403	784	23	807	457	484	941	28	969	1	2	3	2	458	486	944	30	974
14:00	458	402	860	30	890	550	482	1032	36	1068	1	4	5	3	551	486	1037	39	1076
15:00	561	442	1003	37	1040	673	530	1203	44	1247	1	4	5	3	674	534	1208	47	1255
16:00	691	428	1119	35	1154	815	458	1273	33	1306	2	8	10	6	817	466	1283	39	1322
17:00	641	424	1065	30	1095	801	457	1258	29	1287	2	8	10	6	803	465	1268	35	1303
18:00	477	380	857	23	880	572	456	1028	28	1056	1	4	5	3	573	460	1033	31	1064
19:00	323	308	631	12	643	388	370	758	14	772	1	4	5	3	389	374	763	17	780
20:00	189	225	414	13	427	227	270	497	16	513	1	2	3	2	228	272	500	18	518
21:00	141	150	291	15	306	169	180	349	18	367	1	2	3	2	170	182	352	20	372
22:00	96	88	184	4	188	115	106	221	5	226	1	2	3	2	116	108	224	7	231
23:00	52	61	113	2	115	62	73	135	2	137	1	2	3	2	63	75	138	4	142

[1] Counts conducted by City Traffic Counters on Wednesday, October 28, 2020.

[2] Traffic volumes were generally adjusted upwards of 100% for the AM time period and 20% in the PM time period to account for closures of businesses/schools during the pandemic. For the morning (7:00 to 9:00 AM) and afternoon (4:00 to 6:00 PM) peak time periods, the manual traffic counts conducted in November 2019 were utilized instead.

[3] Proposed project volumes based on the forecast weekday AM and PM peak hour project trip generation in Table 7-1 of the *529 Cutter Way Live/Work Project Transportation Impact Study*, dated September 10, 2020.

[4] Existing with project volumes determined by adding proposed project volumes to existing volumes.

ATTACHMENT C

ACCIDENT COLLISION HISTORY

From: David Gilbertson <DGilbertson@covinaca.gov>
Sent: Monday, October 26, 2020 12:33 PM
To: Chin S. Taing; Rafael Fajardo
Cc: Clare Look-Jaeger
Subject: Re: 529 Cutter Way Live Work Project (4360) - Traffic Counts & Accident History Data

Chin,

Here is the accident history.

Incident number	Date	Time	Street
15-7191	07/14/15	16:10	CUTTER WY / SAN BERNARDINO RD
17-15273	05/25/17	14:38	SAN BERNARDINO RD / CUTTER WY
17-32331	11/01/17	18:46	SAN BERNARDINO RD / CUTTER WY
18-18297	06/22/18	16:48	SAN BERNARDINO RD / CUTTER WY
18-22331	08/01/18	17:51	SAN BERNARDINO RD / CUTTER WY
18-35108	12/10/18	16:10	SAN BERNARDINO RD / CUTTER WY
19-13247	05/21/19	12:02	SAN BERNARDINO RD / CUTTER WY
19-20326	07/29/19	18:59	SAN BERNARDINO RD / CUTTER WY
20-4235	02/11/20	11:19	SAN BERNARDINO RD / CUTTER WY; E/O

David Gilbertson
Contract Engineer

ATTACHMENT D

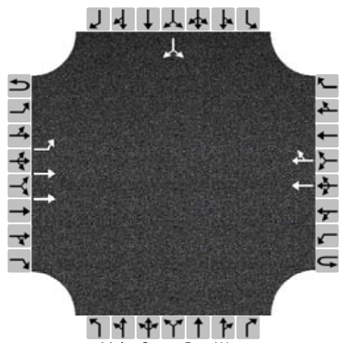
LEFT-TURN QUEUING ANALYSIS

HCS CALCULATION WORKSHEET -
AM & PM PEAK HOUR

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	CT	Intersection	Int-5
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	10/27/20	East/West Street	San Bernardino Road
Analysis Year	2023	North/South Street	Cutter Way
Time Analyzed	Future + Project AM PH	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		L	T				T	TR							LR	
Volume (veh/h)	0	23	454				936	74						31		44
Percent Heavy Vehicles (%)	3	3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.16												6.86		6.96
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

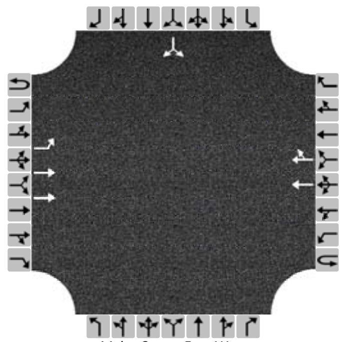
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		25													82	
Capacity, c (veh/h)		626													232	
v/c Ratio		0.04													0.35	
95% Queue Length, Q_{95} (veh)		0.1													1.5	
Control Delay (s/veh)		11.0													28.7	
Level of Service (LOS)		B													D	
Approach Delay (s/veh)	0.5												28.7			
Approach LOS													D			

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	CT	Intersection	Int-5
Agency/Co.	LLG Engineers	Jurisdiction	City of Covina
Date Performed	10/27/20	East/West Street	San Bernardino Road
Analysis Year	2023	North/South Street	Cutter Way
Time Analyzed	Future + Project PM PH	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	529 Cutter Way Live/Work Project/1-194360-1		

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		L	T				T	TR							LR	
Volume (veh/h)	0	10	912				531	29						20		12
Percent Heavy Vehicles (%)	3	3												3		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.16												6.86		6.96
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11													35	
Capacity, c (veh/h)		959													272	
v/c Ratio		0.01													0.13	
95% Queue Length, Q_{95} (veh)		0.0													0.4	
Control Delay (s/veh)		8.8													20.2	
Level of Service (LOS)		A													C	
Approach Delay (s/veh)	0.1												20.2			
Approach LOS													C			