Appendix A Initial Study, Notice of Preparation, and Public Comment Letters

Appendices

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February 2024 | **Initial Study**

ARTESIA DOWNTOWN SPECIFIC PLAN

City of Artesia

Prepared for:

City of Artesia
Peter Kann, Planning Manager
18747 Clarkdale Avenue
Artesia, California 90701
562.865.6262

Prepared by:

PlaceWorks
Contact: Addie Farrell, Principal
700 Flower St, Suite 600
Los Angeles, California 90017
213.623.1443
info@placeworks.com
www.placeworks.com

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Abbreviations and Acronyms

AAQS	ambient air quality standards
AB	Assembly Bill
ACM	asbestos-containing materials
ADT	average daily traffic
amsl	above mean sea level
AQMP	air quality management plan
AST	aboveground storage tank
BAU	business as usual
bgs	below ground surface
BMP	best management practices
CAA	Clean Air Act
CAFE	corporate average fuel economy
CalARP	California Accidental Release Prevention Program
CalEMA	California Emergency Management Agency
Cal/EPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
CALGreen	California Green Building Standards Code
Cal/OSHA	California Occupational Safety and Health Administration
CalRecycle	California Department of Resources, Recycling, and Recovery
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDE	California Department of Education
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
cfs	cubic feet per second
CGS	California Geologic Survey
CMP	congestion management program
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level

Abbreviations and Acronyms

CO	carbon monoxide
CO_2e	carbon dioxide equivalent
Corps	US Army Corps of Engineers
CSO	combined sewer overflows
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
EIR	environmental impact report
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GHG	greenhouse gases
GWP	global warming potential
HCM	Highway Capacity Manual
HQTA	high quality transit area
HVAC	heating, ventilating, and air conditioning system
IPCC	Intergovernmental Panel on Climate Change
L_{dn}	day-night noise level
L_{eq}	equivalent continuous noise level
LBP	lead-based paint
LCFS	low-carbon fuel standard
LOS	level of service
LST	localized significance thresholds
M_W	moment magnitude
MCL	maximum contaminant level
MEP	maximum extent practicable
mgd	million gallons per day
MMT	million metric tons

Abbreviations and Acronyms

MPO	metropolitan planning organization
MT	metric ton
MWD	Metropolitan Water District of Southern California
NAHC	Native American Heritage Commission
NO_X	nitrogen oxides
NPDES	National Pollution Discharge Elimination System
O_3	ozone
OES	California Office of Emergency Services
PM	particulate matter
POTW	publicly owned treatment works
ppm	parts per million
PPV	peak particle velocity
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
RMP	risk management plan
RMS	root mean square
RPS	renewable portfolio standard
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SIP	state implementation plan
SLM	sound level meter
SoCAB	South Coast Air Basin
SO_X	sulfur oxides
SQMP	stormwater quality management plan
SRA	source receptor area [or state responsibility area]
SUSMP	standard urban stormwater mitigation plan
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
TNM	transportation noise model

Abbreviations and Acronyms

tpd	tons per day
TRI	toxic release inventory
TTCP	traditional tribal cultural places
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank
UWMP	urban water management plan
V/C	volume-to-capacity ratio
VdB	velocity decibels
VHFHSZ	very high fire hazard severity zone
VMT	vehicle miles traveled
VOC	volatile organic compound
WQMP	water quality management plan
WSA	water supply assessment

1. Introduction

In compliance with the California Environmental Quality Act (CEQA), the City of Artesia, as lead agency, is preparing the environmental documentation for the Artesia Downtown Specific Plan (Specific Plan or proposed project) to determine whether approval of the requested discretionary actions and subsequent development would have a significant impact on the environment. As defined by Section 15063 of the CEQA Guidelines, an Initial Study is prepared primarily to provide the lead agency with the information to use as the basis for determining whether an environmental impact report (EIR), negative declaration, or mitigated negative declaration (MND) would provide the necessary environmental documentation and clearance for the proposed project.

1.1 PROJECT LOCATION

The Downtown Artesia Specific Plan area (Specific Plan area or project site) is in an urbanized area in the City of Artesia, Los Angeles County. The City is 19 miles southeast of Downtown Los Angeles; it shares its eastern, southern, and western boundaries with the City of Cerritos and its northern boundary with the City of Norwalk. See Figure 1, *Regional Location*.

The project site encompasses the blocks adjoining Pioneer Boulevard to the southeast and ending at 180th Street to the north. The northern portion of the project site (north of the Southeast Gateway Line) is bounded by Alburtis Avenue and Corby Avenues to the west, 180th Street to the north, Arline Avenue to the east, and 188th Street to the south. The project site extends south of the Southeast Gateway Line to the future Pioneer Boulevard Light Rail Station[1] and includes the area between 188th Street and the La Belle Chateau Mobile Home Park, and Pioneer Boulevard on the east and Jersey Avenue on the west. The nearest freeway providing regional access to the project area is State Route (SR-) 91, a multilane freeway that divides the northern end of the city. See Figure 2, *Local Vicinity* and Figure 3, *Aerial Photograph*.

1.2 ENVIRONMENTAL SETTING

1.2.1 Existing Land Use

As shown in Figure 3, *Aerial Photograph*, the project site is fully built up and consists primarily of one- and two-story commercial uses and multifamily residential properties. The southern portion of the project site is anchored by a shopping center and La Belle Chateau Estates Mobile Home Park, which is bordered by South Street to the north, the City of Cerritos to the west and south, and Pioneer Boulevard to the east. The northern portion of the project site is anchored by a shopping center to the north and south of 183rd Street and to the east and west of Arline Avenue and Alburtis Avenue, respectively. The north and south ends of the project site

[1] The Pioneer Boulevard Light Rail Station would be developed as the southern terminus of a 14.5-mile segment that connects southeast Los Angeles to downtown Los Angeles. The forecast completion date is 2035 (Metro 2021).

1. Introduction

are connected by the Pioneer Boulevard corridor which includes one- and two-story retail, restaurant and office uses. Multi-family residential, mixed-use residential, commercial, general office and industrial uses are located on various parcels throughout the entire project site to the east and west of Pioneer Boulevard. Limited vacant parcels exist within the project area south of 188th Street. The Southeast Gateway Line bisects the project site.

Zoning Designations

As shown in Figure 4, *Existing Zoning Map*, the primary zoning designation in the project site is Commercial General, located in the northern area, along Pioneer Boulevard, and on the south part of the project site. Multi-Family Residential zoning is designated along the east side of the project site, fronting Arline Avenue, and on the west side of the project site, fronting Corby Avenue. Multi-Family Residential zoning is also designated between 188th Street to the north and to the Commercial General zoning designation to south. Light Manufacturing/Industrial zoning is designated along Corby Avenue to the east and west, between 187th Street to the north, and South Street to the South. Zoning designations in the southern portion of the project site, located south of South Street, includes Commercial Planned Development and the South Street Specific Plan.

General Plan Land Use Designations

As shown in Figure 5, *General Plan Land Use Map*, the project site includes two General Plan land use designations. Between the future Pioneer Boulevard Light Rail Station in the south to the 180th in the north the project site has a General Plan land use designation of City Center Mixed-Use. Between the future Pioneer Boulevard Light Rail Station to the north and the La Belle Chateau Estates Mobile Home Park to the south, the project site has a General Plan land use designation of South Street Gateway Commercial.

1.2.2 Surrounding Land Uses

As shown in Figure 3, *Aerial Photograph*, and similar to the project site, existing land uses surrounding the project site primarily include one-to two-story multi-family and single-family residences. The multi-family residential buildings within the east and west area of the project site create a transition to the single-family homes found just outside the project site, which are located beyond Alburtis Street to the west and Arline Avenue to the east.

As shown in Figure 4, *Existing Zoning Map*, parcels to the east and west of the project site are zoned Multi-Family Residential and Single Family Residential. As shown in Figure 5, *General Plan Land Use Map*, parcels directly to the west of the project site include a General Plan land use designation of High Density Residential to the north of 185th Street and a Low Density Residential land use designation to the south of 185th Street. Parcels directly to the east of the project site have a General Plan land use designation of High Density Residential between Ashworth Street in the north to 187th Street to the south, followed by Low Density Residential east of Clarkdale Street.

Parcels north of the project site include a zoning designation of Pioneer Specific Plan, Mulit-Family Residential, and Service and Professional and Commercial General. Parcels to the south of the project site are located within the City of Cerritos and include RS-5000 (Single Family Residential - min lot size 5,000 square feet) and RS-6500 (Single Family Residential - min lot size 6,500 square feet) to the east and west of Pioneer Boulevard, as well as CC (Community Commercial), MC (Industrial Commercial) and OS (Open Space) as designated by the City Cerritos Zoning Map (Cerritos 2020). Properties south of the project include General Plan land use designations of Low Density - 2 to 5.5 Units / Acre, as well as Community Commercial, Industrial/Commercial, and Public and Quasi Public (Cerritos 2020b).

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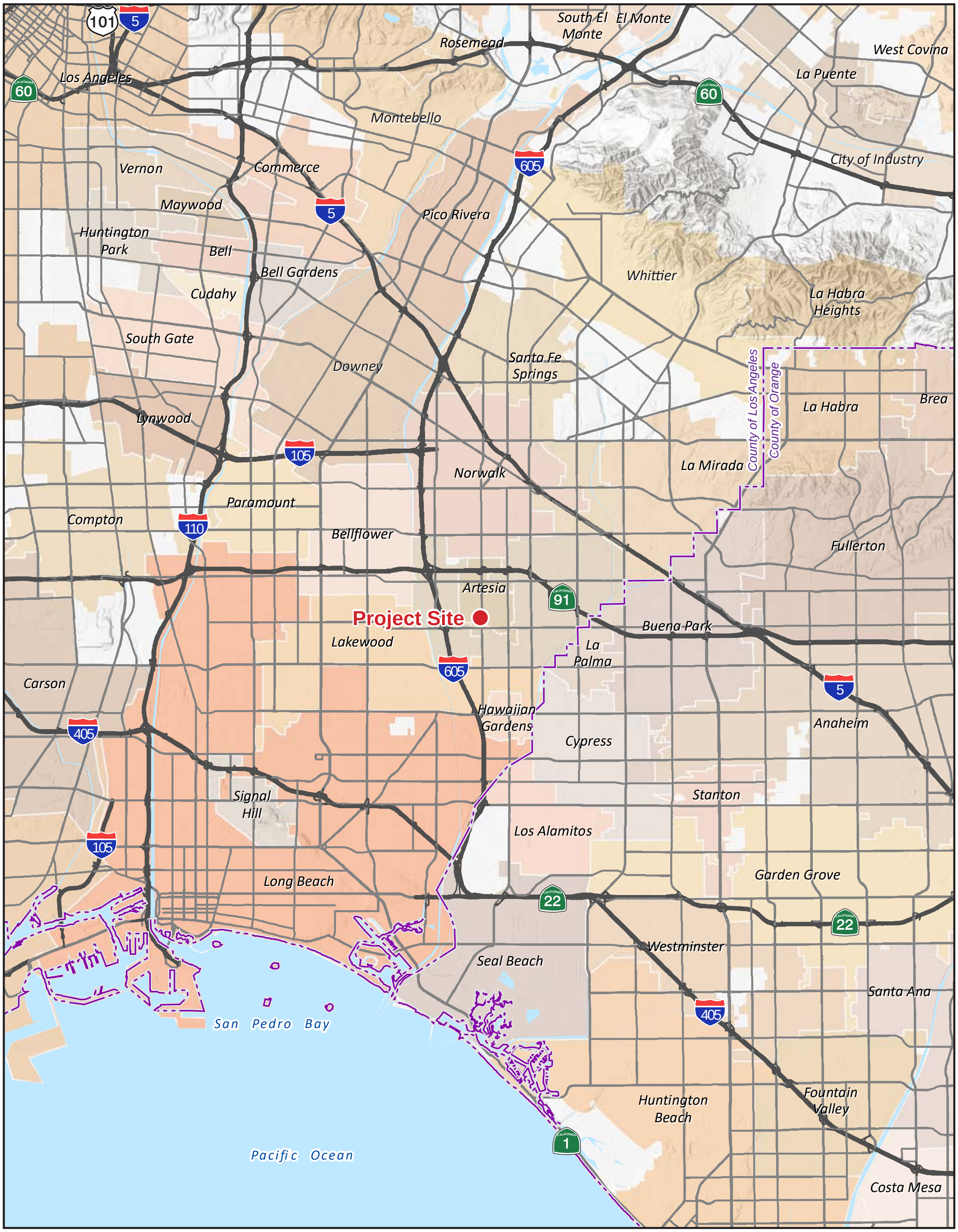
Figure 1 - Regional Location



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1. Introduction

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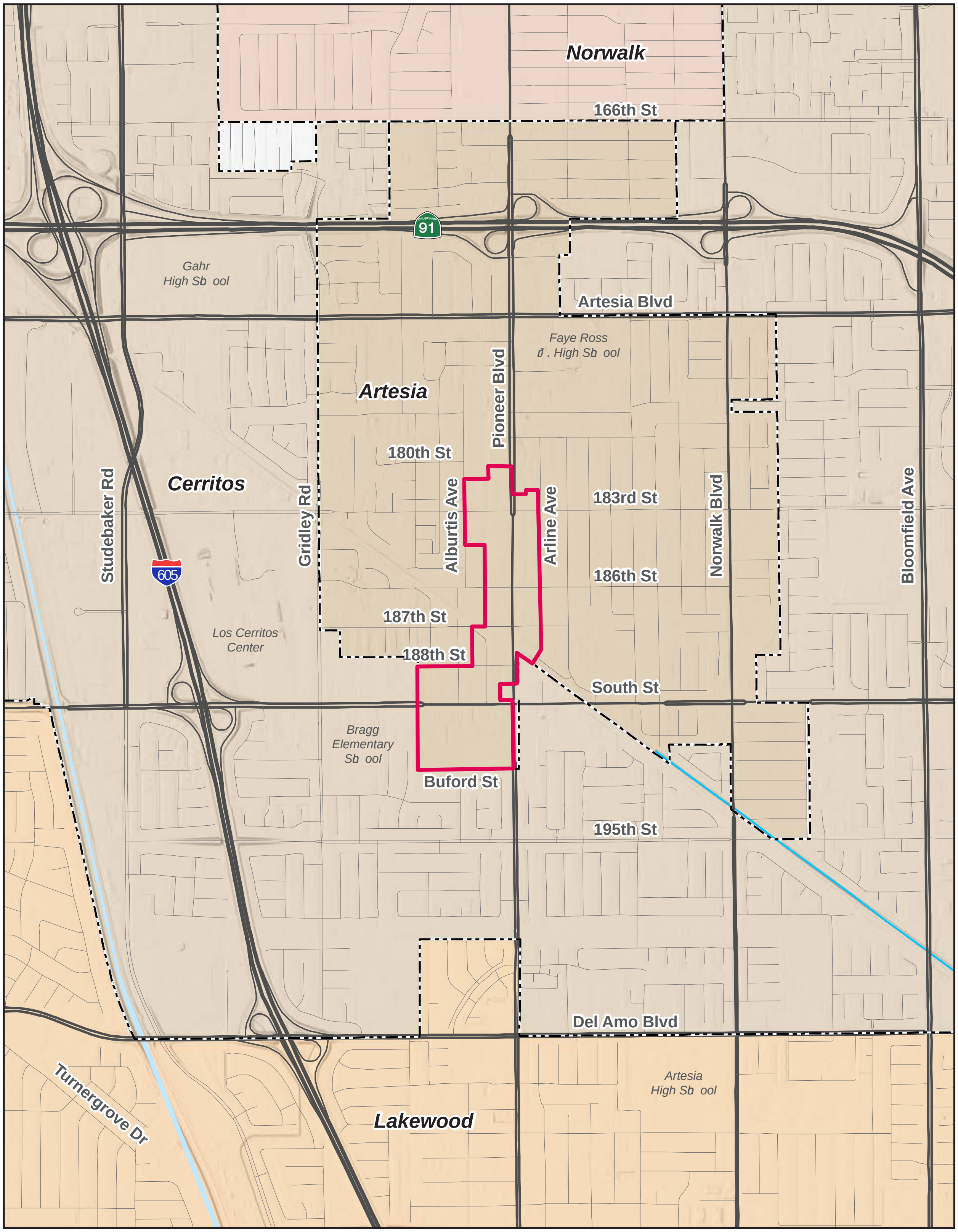
Figure 2 - Local Vicinity



Downtown Artesia Specific Plan Boundary

City Boundary

0 2,000

Scale (Feet)

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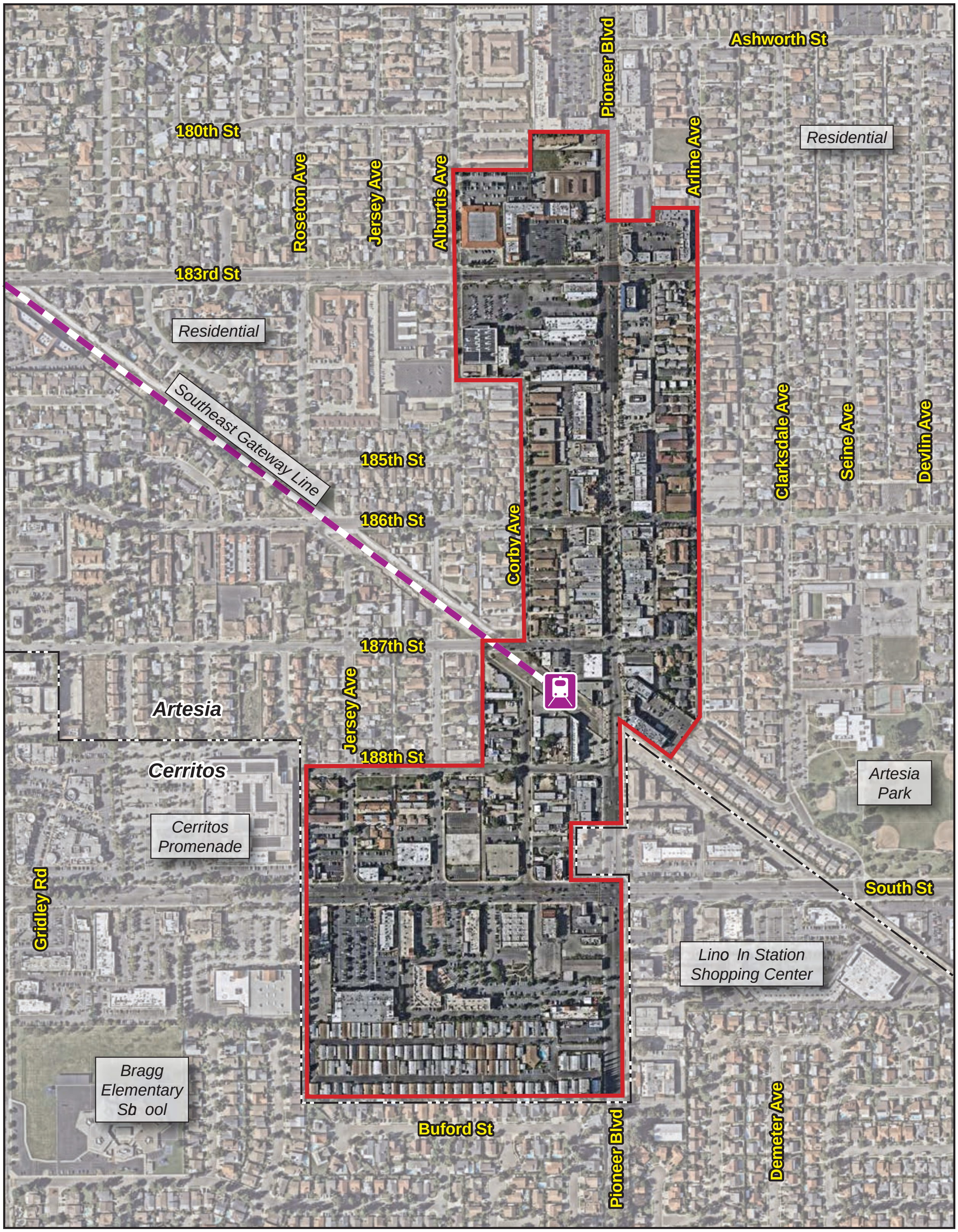
Figure 3 - Aerial Photograph



Downtown Artesia Specific Plan Boundary
City Boundary
Future Metro Rail
Future Metro Pioneer Station
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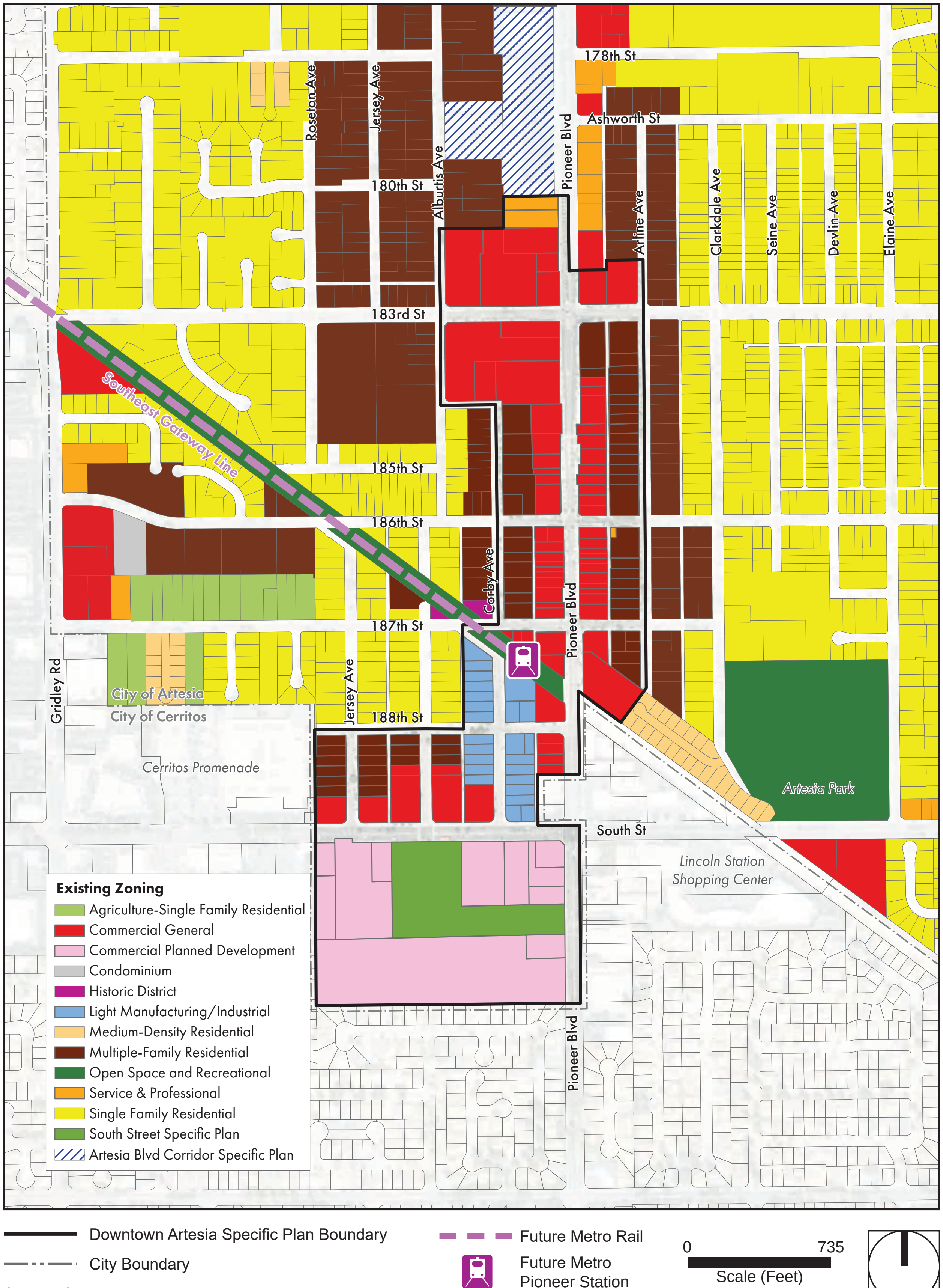
Figure 4 - Existing Zoning Map



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1. Introduction

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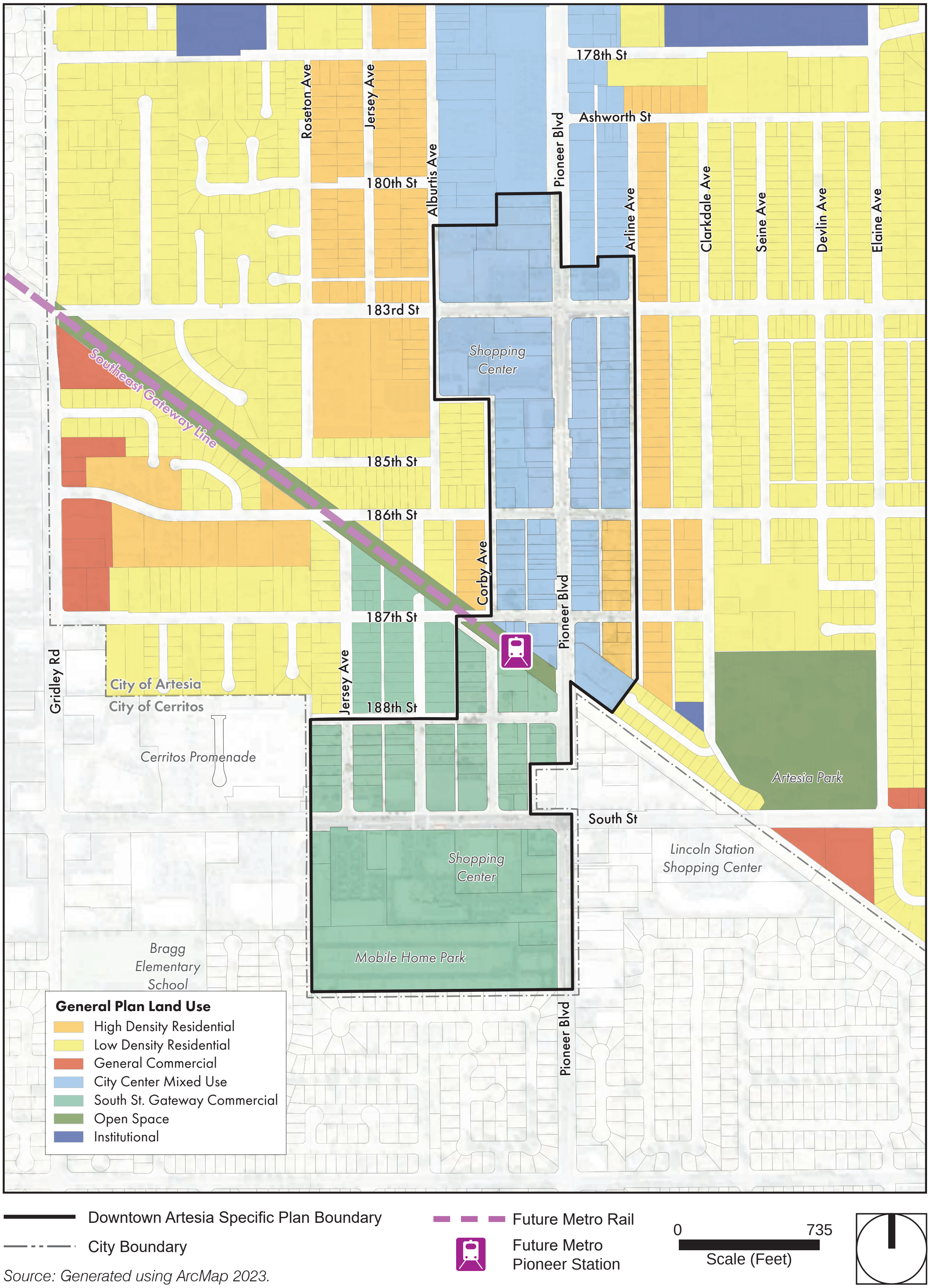
Figure 5 - General Plan Land Use Map



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1.3 PROJECT DESCRIPTION

The Artesia Downtown Specific Plan (proposed project) would implement new land use, zoning, and development standards to guide the scale of future development and growth in Artesia's Downtown district as the city prepares for the planned expansion of a new Metro light rail line (referred to as the Southeast Gateway Line Branch) that would connect southeastern Los Angeles County communities, including Artesia, to Downtown Los Angeles. The new Metro light rail line extension is anticipated to connect to Pioneer Boulevard in 2035[2].

While there are no specific development projects proposed at this time, the Artesia Downtown Plan will establish goals and objectives, development standards, and implementation actions associated with land use, mobility, and infrastructure, and establishes a transit-oriented plan that would provide new opportunities for housing, retail/commercial, and entertainment uses. The proposed project would establish the necessary plans, development standards, regulations, infrastructure requirements, and implementation programs on which subsequent project-related development activities in the Specific Plan area would be based. Below is a discussion of each component of the proposed project.

Land Use Plan

As shown in Figure 6, *Proposed Zoning Districts*, the land use plan divides the project site into six zoning districts. These distinct zoning districts would allow for a range of land uses and density within a defined building envelope. The zones would also implement the City's urban design objectives for each part of the project site to establish and maintain attractive distinctions between each zone. The six zoning districts include:

- **Downtown North.** The Downtown North District would become the northern gateway and anchor to downtown Artesia. This district would allow for higher density mixed-use development at 65 dwelling units per acre (du/ac) or 75 du/ac with a density bonus. The southwest corner of this district would encompass approximately 5.5 acres and would allow 4- to 5-story mixed-use development and 2- and 3-story townhomes. Where the City owns property at the northwest corner of 183rd Street and Pioneer Boulevard, a public private partnership is encouraged to develop a parking structure with ground-floor retail uses as well as potentially civic and/or community uses. The parking structure would serve visitors, residents, and employees as they travel to and from downtown Artesia and SR-91 to the north.

- **Pioneer Boulevard.** The Pioneer Boulevard District would front Pioneer Boulevard north of the future Metro transit station and is in the center of downtown Artesia. This area is currently known as "Little India" and is composed of narrow parcels with a continuous street frontage of 1-story commercial establishments such as restaurants, markets, and jewelry shops. Although significant new development is not expected in this district, the district would allow for 3-story buildings at 50 du/ac or 60 du/ac with a density bonus.

2 The Pioneer Boulevard Light Rail Station would be developed as the southern terminus of a 14.5-mile segment that connects southeast Los Angeles to downtown Los Angeles. The forecast completion date is 2035 (Metro 2021).

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- **Downtown Neighborhood.** The Downtown Neighborhood District would be in the residential west and east edges of the Downtown area along Corby Avenue and Arline Avenue. The downtown neighborhood would retain its residential character at 40 du/ac.

- **188th Street / Corby Avenue.** The 188th/Corby District would be south of the future Metro station and presently includes residential and light industrial uses. This district would allow for residential uses such as duplex, triplex, and townhomes at 65 du/ac as well as limited commercial office and retail uses.

- **Downtown South.** The Downtown South District would become the southern gateway to downtown Artesia and the city. The district would allow 4- to 6-story mixed-use development at 75 du/ac or 85 du/ac with a density bonus and incorporate land uses such as ground-floor retail, a hotel, townhomes, and neighborhood parks for residents and visitors. A Metro parking structure is planned in the South Street Mixed District just south of the transit station.[3]

- **Chateau Estates.** The Le Belle Chateau Estates Mobile Home Park District sits at the southern edge of the project site. The mobile home park use would be maintained.

Development Standards

The proposed project would establish development standards related to the physical form and design of both new and renovated buildings and properties in the project site. Development standards would include requirements for site planning (i.e., setbacks from public rights-of-way and other structures), open space and landscaping standard, building mass, scale, and maximum heights, materials and finishes, parking and loading, and frontage design standards.

Mobility and Infrastructure

The proposed project would provide information related to existing mobility and public infrastructure systems in the Downtown Specific Plan area. The mobility chapter would provide a discussion on existing conditions and connections for transit, automobiles, pedestrians, and cyclists, and provide a summary of the mobility network including road classification and improvements. The infrastructure chapter would discuss existing hydrology and water quality, water providers and distribution, sewer, and wastewater. The proposed project would provide a summary of the necessary or required improvements associated with future development.

Implementation Actions

The goals and objectives of the proposed project would be implemented through a number of documents, policies, and programs. The proposed project would establish the implementation process associated with the Specific Plan.

[3] A 3.3-acre, 4-story parking structure with up to 1,100 parking spaces would be located south of the Pioneer Station. Access to the parking facility and station platform would be via Pioneer Boulevard and Corby Avenue. Pedestrian access from Pioneer Boulevard to the parking facility would be via Pioneer Boulevard from the southeast end of the station platform (Metro 2021).

Incentives and Bonuses

A bonus system would be implemented as part of the proposed project to allow for additional height or floor area for qualified projects. Bonuses would be granted to projects that provide additional public benefits, such as open space, reuse of existing buildings, affordable housing, or supportive commercial or retail space.

1.4 CITY ACTION REQUESTED

The following discretionary approvals by the City of Artesia are required to implement the proposed project:

- Adoption of the Artesia Downtown Specific Plan
- Amendment to the City of Artesia Zoning Ordinance and Zoning Map
- Amendment to the City of Artesia General Plan

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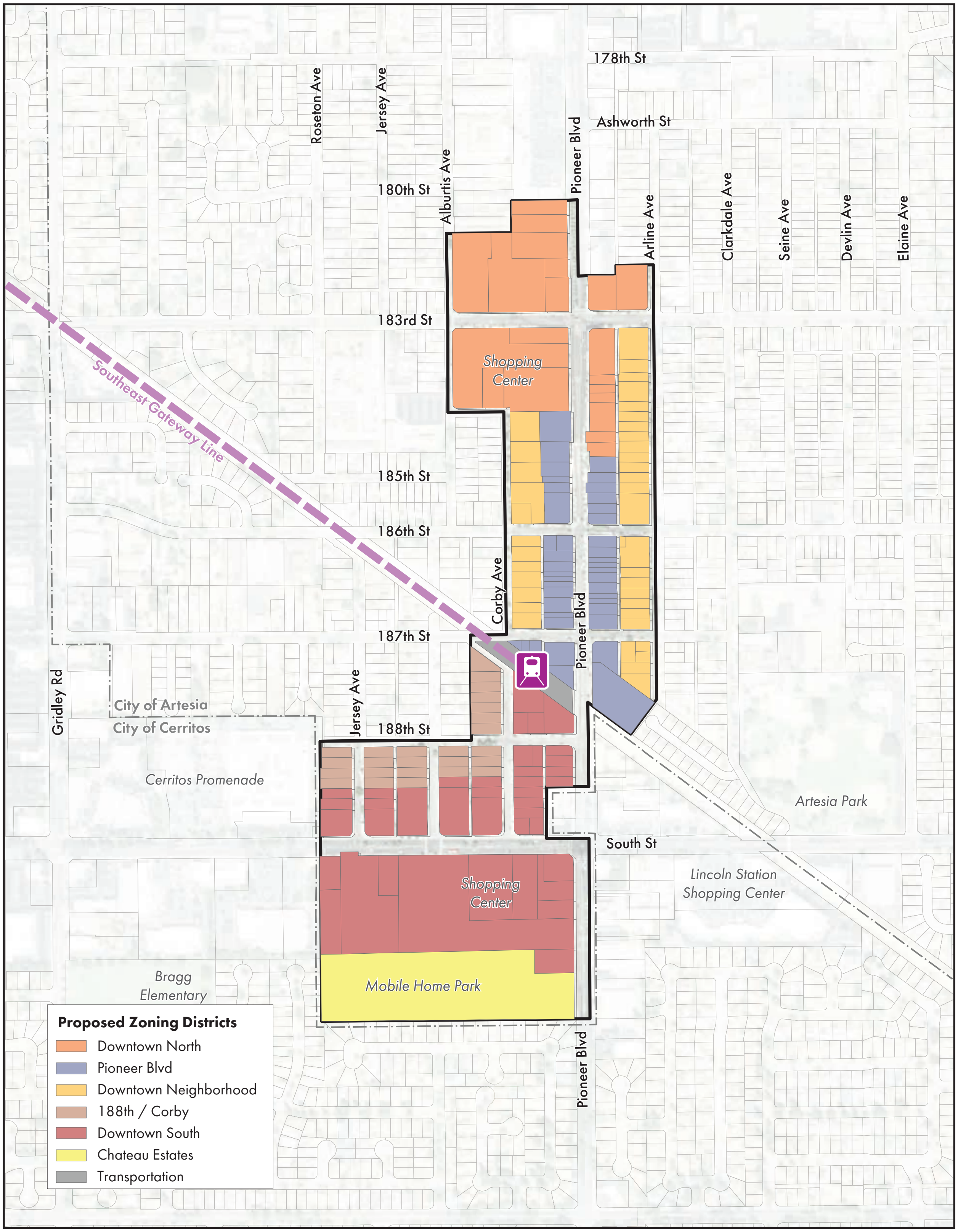
Figure 6 - Proposed Zoning Districts



Downtown Artesia Specific Plan Boundary
City Boundary
Future Metro Rail
Future Metro Pioneer Station
0 735
Scale (Feet)

Source: Generated using ArcMap 2023.

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2. Environmental Checklist

2.1 PROJECT INFORMATION

1. **Project Title:** Artesia Downtown Specific Plan

2. **Lead Agency** Name and Address:
   City of Artesia
   18747 Clarkdale Ave
   Artesia, California 90701

3. **Contact Person and Phone Number:**
   Peter Kann, Planning Manager
   562.865.6262

4. **Project Location:** The Downtown Artesia Specific Plan area (Specific Plan area or project site) is in an urbanized area in the City of Artesia, Los Angeles County. The City is 19 miles southeast of Downtown Los Angeles; it shares its eastern, southern, and western boundaries with the City of Cerritos and its northern boundary with the City of Norwalk. The project site encompasses the blocks adjoining Pioneer Boulevard to the southeast and ending at 180th Street to the north. The northern portion of the project site (north of the Southeast Gateway Line) is bounded by Alburtis Avenue and Corby Avenues to the west, 180th Street to the north, Arline Avenue to the east, and 188th Street to the south. The project site extends south of the Southeast Gateway Line to the future Pioneer Boulevard Light Rail Station and includes the area between 188th Street and the La Belle Chateau Mobile Home Park, and Pioneer Boulevard on the east and Jersey Avenue on the west.

5. **Project Sponsor's Name and Address:**
   City of Artesia
   Peter Kann, Planning Manager
   18747 Clarkdale Avenue
   Artesia, California 90701
   562.865.6262

6. **General Plan Designation:** The project site includes two General Plan land use designations. Between the future Pioneer Boulevard Light Rail Station in the south to the 180th in the north the project site has a General Plan land use designation of City Center Mixed-Use. Between the future Pioneer Boulevard Light Rail Station to the north and the La Belle Chateau Estates Mobile Home Park to the south, the project site has a General Plan land use designation of South Street Gateway Commercial.

7. **Zoning:** The primary zoning designation in the project site is Commercial General, located in the northern area, along Pioneer Boulevard, and on the south part of the project site. Multi-Family Residential zoning is designated along the east side of the project site, fronting Arline Avenue, and on the west side of the project

2. Environmental Checklist

site, fronting Corby Avenue. Multi-Family Residential zoning is also designated between 188th Street to the north and to the Commercial General zoning designation to south. Light Manufacturing/Industrial zoning is designated along Corby Avenue to the east and west, between 187th Street to the north, and South Street to the South. Zoning designations in the southern portion of the project site, located south of South Street, includes Commercial Planned Development and the South Street Specific Plan.

8. **Description of Project:** The Artesia Downtown Specific Plan (proposed project) would implement new land use, zoning, and development standards to guide the scale of future development and growth in Artesia's Downtown district as the city prepares for the planned expansion of a new Metro light rail line (referred to as the Southeast Gateway Line Branch) that would connect southeastern Los Angeles County communities, including Artesia, to Downtown Los Angeles. The new Metro light rail line extension is anticipated to connect to Pioneer Boulevard in 2035. While there are no specific development projects proposed at this time, the Artesia Downtown Plan will establish goals and objectives, development standards, and implementation actions associated with land use, mobility, and infrastructure, and establishes a transit-oriented plan that would provide new opportunities for housing, retail/commercial, and entertainment uses. The proposed project would establish the necessary plans, development standards, regulations, infrastructure requirements, and implementation programs on which subsequent project-related development activities in the Specific Plan area would be based.

9. **Surrounding Land Uses and Setting:** Land uses surrounding the project site primarily include one-to two-story multi-family and single-family residences. The multi-family residential buildings within the east and west area of the project site create a transition to the single-family homes found just outside the project site, which are generally located beyond Alburtis Street to the west and Arline Avenue to the east.

10. **Other Public Agencies Whose Approval Is Required (e.g., permits, financing approval, or participating agreement):** Los Angeles County Metropolitan Transportation Authority (Metro)

11. **Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?**

    Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.94 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3I contains provisions specific to confidentiality.

    The City prepared letters addressed to each Native American Tribe from the Native American Heritage Commission Tribal Consultation List. Outreach letters were sent to tribal representatives initiating consultation with tribes pursuant to Assembly Bill (AB) 52 and Senate Bill (SB) 18.

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

2.3 DETERMINATION (TO BE COMPLETED BY THE LEAD AGENCY)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☒ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

[signature] 2/27/2024

Signature *Date*

2.4 EVALUATION OF ENVIRONMENTAL IMPACTS

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

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

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

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

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

   a) **Earlier Analyses Used.** Identify and state where they are available for review.

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

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

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

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

2. Environmental Checklist

8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9. The explanation of each issue should identify:

   a) the significance criteria or threshold, if any, used to evaluate each question; and
   b) the mitigation measure identified, if any, to reduce the impact to less than significance.

	Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS. Except as provided in Public Resources Code Section 21099, would the project:					
a)	Have a substantial adverse effect on a scenic vista?				X
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c)	In nonurbanized 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?	X			
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	X			
II. AGRICULTURE AND FORESTRY 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 Dept. 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:					
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?				X
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
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))?				X
d)	Result in the loss of forest land or conversion of forest land to non-forest use?				X

2. Environmental Checklist

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?				X
III. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	X			
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?	X			
c) Expose sensitive receptors to substantial pollutant concentrations?	X			
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	X			
IV. BIOLOGICAL RESOURCES. Would the project:				
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 Wildlife or U.S. Fish and Wildlife Service?				X
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?				X
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?				X
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?			X	
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
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?				X
V. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?	X			
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	X			
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	X			

2. Environmental Checklist

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. ENERGY. Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	X			
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	X			
VII. GEOLOGY AND SOILS. Would the project:				
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.			X	
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?				X
b) Result in substantial soil erosion or the loss of topsoil?			X	
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?			X	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?			X	
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?				X
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	X			
VIII. GREENHOUSE GAS EMISSIONS. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	X			
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	X			
IX. HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
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?			X	

2. Environmental Checklist

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?			X	
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?				X
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?				X
X. HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?			X	
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	X			
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 a substantial erosion or siltation on- or off-site;			X	
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	X			
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	X			
iv) impede or redirect flood flows?				X
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				X
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	X			
XI. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?				X
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	X			

2. Environmental Checklist

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?				X
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?				X
XIII. NOISE. Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	X			
b) Generation of excessive groundborne vibration or groundborne noise levels?	X			
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?				X
XIV. POPULATION AND HOUSING. Would the project:				
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)?	X			
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X
XV. PUBLIC SERVICES. Would the project:				
a) 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:				
Fire protection?	X			
Police protection?	X			
Schools?	X			
Parks?	X			
Other public facilities?	X			
XVI. RECREATION.				
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?	X			

2. Environmental Checklist

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	X			
XVII. TRANSPORTATION. Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	X			
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	X			
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	X			
d) Result in inadequate emergency access?	X			
XVIII. TRIBAL CULTURAL RESOURCES.				
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) 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	X			
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivisiI(c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivIon (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	X			
XIX. UTILITIES AND SERVICE SYSTEMS. Would the project:				
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?	X			
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	X			
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?	X			

2. Environmental Checklist

	Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	X			
e)	Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	X			
XX. WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:					
a)	Substantially impair an adopted emergency response plan or emergency evacuation plan?				X
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?				X
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?				X
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?				X
XXI. MANDATORY FINDINGS OF SIGNIFICANCE.					
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?	X			
b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	X			
c)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	X			

2. Environmental Checklist

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3. Environmental Analysis

Section 2.4 provided a checklist of environmental impacts. This section provides an evaluation of the impact categories and questions contained in the checklist and identifies mitigation measures, if applicable.

3.1 AESTHETICS

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

a) Have a substantial adverse effect on a scenic vista?

No Impact. The project site is in a highly urbanized and developed area of the city and surrounded by commercial and residential uses. There are no designated scenic vistas or other scenic resources within Artesia (Artesia 2010). Views in the project area include commercial uses and multifamily and single-family residences. Furthermore, the proposed land use changes are limited to the urbanized downtown area of the city; therefore, future infill and redevelopment pursuant to the proposed project would not impact any scenic vistas in the project area or the region. No impact would occur, and no further analysis is required in the EIR.

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

No Impact. The State Scenic Highway System involves highways, mainly state highways, which have been designated by the California Department of Transportation (Caltrans) as scenic highways. There are no officially designated state scenic highways or eligible state scenic highways that traverse Artesia (Caltrans 2023). Therefore, no impact would occur within a state scenic highway with buildout pursuant to the proposed project, and no further analysis is required in the EIR.

c) In nonurbanized 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?

Potentially Significant Impact. The proposed project would establish zoning districts, development standards, and implementation actions associated with land use, mobility, and infrastructure to facilitate new development and growth in the city's downtown area. Impacts may occur if the proposed project is inconsistent with regulations pertaining to scenic quality. This issue will be further discussed in the EIR.

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

Potentially Significant Impact. Future buildout facilitated by the proposed project has the potential to increase density and development and thereby result in an increase in lighting and glare in the project area. Lighting and glare impacts resulting from the proposed project will be further discussed in the EIR.

3.2 AGRICULTURE AND FORESTRY 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 Dept. 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:

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?

No Impact. The project site is in a highly urbanized and developed area of the city. Land uses within the downtown area consist of single- and multifamily residential neighborhoods and commercial uses. Based on the maps from the Department of Conservation Farmland Mapping and Monitoring Program, the project site is identified as urban and built-up land (DOC 2022). No parcels in the project site are zoned or used for agriculture. Therefore, development in the project site would not convert prime farmland, unique farmland, or farmland of statewide importance to a nonagricultural use. No impact would occur, and no further analysis is required in the EIR.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. The project site is in a highly urbanized and developed area of the city. Land uses in the downtown area consist of single- and multifamily residential neighborhoods and commercial uses. No parcels in the project site are zoned or used for agriculture. Therefore, the proposed project would not conflict with an existing zone for agricultural use or conflict with a Williamson Act contract. Thus, no impact would occur, and no further analysis is required in the EIR.

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))?

No Impact. The project site is in a highly urbanized and developed area of the city. Land uses in the project area consist of single- and multifamily residential neighborhoods and commercial uses. No forest lands or timberland are in the city limits, or in proximity. The project site is zoned mainly with commercial and residential uses and is not zoned for nor used as forest land or timberland. The proposed project would not result in the loss of forest land or the conversion of forest land to nonforest use. Thus, no impact would occur, and no further analysis is required in the EIR.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. The project site mainly consists of commercial and residential uses. The project site and surrounding area do not contain forest land, and development of the proposed project would not result in the loss of forest land or conversion of forest land to nonforest use. Thus, no impact would occur, and no further analysis is required in the EIR.

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?

No Impact. The project site and surrounding area are currently developed with existing residential and commercial uses, and there is no farmland and forest land in or around the area. The project site is characterized as urban and built-up land. Development facilitated by the proposed project would not result in the conversion of farmland to nonagricultural uses nor the conversion of forest land to nonforest uses. No impact would occur, and no further evaluation of this issue in the EIR is required.

3.3 AIR QUALITY

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

a) Conflict with or obstruct implementation of the applicable air quality plan?

Potentially Significant Impact. The City of Artesia is in the South Coast Air Basin (SoCAB) and is subject to the air quality management plan (AQMP) prepared by the South Coast Air Quality Management District (AQMD). Implementation of the proposed project would potentially generate criteria air pollutants that have the potential to increase the severity of the nonattainment designation of the SoCAB or exceed the assumptions of the South Coast AQMD's AQMP. Potential impacts associated with consistency with the AQMP will be further analyzed in the EIR.

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

Potentially Significant Impact. The SoCAB is designated nonattainment for ozone (O_3) and fine particulate matter ($PM_{2.5}$) under the California and National Ambient Air Quality Standards (AAQS), nonattainment for particulate matter (PM_{10}) under the California AAQS, and nonattainment for lead (Pb) under the National AAQS (CARB 2018). Construction or operational phases of future infill and redevelopment that occur pursuant to the proposed project may have the potential to exceed the South Coast AQMD's regional significance thresholds and cumulatively contribute to the nonattainment designations of the SoCAB. Any project that produces a significant project-level regional air quality impact in a nonattainment area adds to the cumulative impact. Due to the extent of the SoCAB area and the number of cumulative project emissions, a project would be cumulatively significant when project-related emissions exceed the South Coast AQMD regional significance emissions thresholds (SCAQMD 1993). Therefore, air quality impacts of the proposed project will be further discussed in the EIR.

c) Expose sensitive receptors to substantial pollutant concentrations?

Potentially Significant Impact. Air pollutant emissions associated with future development pursuant to the proposed project would occur over the short term from construction activities, and over the long term from project-generated vehicle trips and stationary sources. During construction activities, off-road equipment exhaust and fugitive dust have the potential to elevate concentrations of air pollutants at onsite and offsite sensitive receptors. Air pollutant emissions generated by the proposed project will be evaluated against South Coast AQMD's localized significance thresholds (LST). During operation, on-road emissions from vehicles traveling to and from the project site have the potential to generate elevated concentrations of carbon monoxide (CO) at congested intersections. Localized impacts from project-related construction and operational activities will be examined further in the EIR.

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

Potentially Significant Impact. Air pollutant emissions would occur over the short term for site preparation and construction activities of future development, and over the long term associated with project-related vehicle trips generated during operation. The EIR will evaluate the increase in air pollutant emissions generated by construction and operation of the proposed project against South Coast AQMD's regional significance thresholds. Mitigation measures will be recommended, if applicable, to minimize the proposed project's contribution to air pollutant emissions in the SoCAB. This issue will be further discussed in the EIR.

3.4 BIOLOGICAL RESOURCES

Would the project:

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 Wildlife or U.S. Fish and Wildlife Service?

No Impact. Special-status species include those listed as endangered threatened under the federal Endangered Species Act or California Endangered Species Act, species otherwise given certain designations by the California Department of Fish and Wildlife, and plant species listed as rare by the California Native Plant Society. The project site is in a highly urbanized and developed area of the city and surrounded by urban uses, including various commercial and residential uses. The project site does not contain any natural habitat that could contain any sensitive species or other sensitive natural communities (CNDDB 2024). Considering the surrounding urbanized context and lack of habitat, the project site does not have the capacity to support candidate, sensitive, or special-status species. Therefore, no impacts related to special-status species would occur, and no further evaluation of this issue in the EIR is required.

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

No Impact. The project site is in a highly urbanized area of Artesia. The project site does not contain any riparian habitat or other sensitive natural community, and no watercourse runs through or adjacent to the project site. The surrounding areas are fully developed with commercial and residential uses. No riparian habitat exists on-site (USFWS 2023). Therefore, no impact to riparian or other sensitive natural communities would occur. No further evaluation of this issue in the EIR is required.

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?

No Impact. As discussed previously, the project site is located in a highly developed area. No watercourse runs through or adjacent to the project site. According to the National Wetland Inventory, there are no state or federally protected wetlands near or within the project site (USFWS 2023). Thus, the proposed project would not have a substantial adverse effect on states or federally protected wetlands. Therefore, no impact would occur, and no further evaluation of this issue in the EIR is required.

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?

Less Than Significant Impact. The project site is substantially disturbed by past and existing developments. No migratory wildlife corridors or native wildlife nurseries exist near or within the project site, and the proposed project would not interfere with the movement of native resident or migratory fish or wildlife species or wildlife corridors or nursery sites (CDFW 2024). Street trees and landscaped areas within the project site may provide nesting sites for resident or migratory birds. The Migratory Bird Treaty Act prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service. Compliance with the existing California Department of Fish and Wildlife regulations would ensure that impacts remain less than significant to nesting and migratory birds. No further evaluation of this issue in the EIR is required.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact. Chapter 4, Tree Protection, in Title 7 of the Artesia Municipal Code (AMC) outlines the tree protection ordinance and preservation regulations for all trees within the public rights-of-way in parks and at City facilities. Future development projects pursuant to the proposed project would be reviewed to ensure compliance with the City's tree protection ordinance and preservation regulations. The land use changes proposed by the project would not interfere with any local policies or ordinances protecting biological resources, and no impact will occur. No further analysis is required in the EIR.

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?

No Impact. The project site is within an urban and highly developed area. The project site is not within the area of an adopted habitat conservation plan; natural community conservation plan; or other approved local, regional, or state habitat conservation plan (CDFW 2023). Therefore, the proposed project would not affect any such plan and no impact would occur. No further analysis is required in the EIR.

3.5 CULTURAL RESOURCES

Would the project:

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

Potentially Significant Impact. Section 15064.5 defines historic resources as resources listed or determined to be eligible for listing by the State Historical Resources Commission, a local register of historical resources, or the lead agency. Generally a resource is considered "historically significant" if it meets one of the following ceria:

- i) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- ii) Is associated with the lives of persons important in our past;
- iii) Embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of an important creative individual, or possesses high artistic values;
- iv) Has yielded, or may be likely to yield, information important in prehistory or history.

The project site, which contains the city's downtown area, developed over the last century as a center for commercial uses around what was the original city commercial core on Pioneer Boulevard between 186th and 187th Streets. Although the original core has transformed over decades and no historic resources have been identified in the city (Artesia 2010), future development pursuant to the proposed project could adversely impact potentially eligible historical resources. As part of the EIR, a cultural resources records search will be conducted to assess potential impacts to historic resources. This issue will be further discussed in the EIR.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

Potentially Significant Impact. No known significant archaeological sites or resources exist in the city (Artesia 2010), which is highly developed and has been subject to extensive subsurface disruption. Nonetheless, future development pursuant to the proposed project could have ground-disturbing activities, such as grading or excavation, with the potential to unearth undocumented subsurface archaeological resources. As part of the EIR, a cultural resources records search will be conducted to assess potential impacts to archaeological resources. This issue will be further discussed in the EIR.

c) Disturb any human remains, including those interred outside of dedicated cemeteries?

Potentially Significant Impact. The project site is in a highly urbanized area with past ground-disturbance activity. While discovery of human remains is unlikely given this disturbance, future development pursuant to the proposed project has the potential to disturb human remains during ground-disturbing activities such as grading or excavation. This issue will be further discussed in the EIR.

3.6 ENERGY

Would the project:

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

Potentially Significant Impact. Construction of any future development facilitated by the proposed project would require energy use and would vary depending on construction phases. During the operation of any future development, compliance with existing energy standards would likely minimize environmental impacts. However, changes to policies and land use designations pursuant to the proposed project may increase energy uses in the future. The EIR will evaluate the potential for the proposed project to generate a substantial increase in energy use.

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

Potentially Significant Impact. The state's electricity grid is transitioning to renewable energy under California's Renewable Energy Program. Renewable sources of energy include wind, small hydropower, solar, geothermal, biomass, and biogas. Electricity production from renewable sources is generally considered carbon neutral. A project found to be consistent with the adopted implementation of state and local plans is presumed to have less than significant energy consumption impacts. Energy consumption will be addressed and reviewed in the EIR to determine the significance of potential impacts.

3.7 GEOLOGY AND SOILS

Would the project:

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

3. Environmental Analysis

substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Less Than Significant Impact. There are no mapped surface or subsurface faults that traverse Artesia, and the city is not listed in a State-designated Alquist-Priolo Earthquake Fault Zone (DOC 2023). The faults nearest to Artesia are the Norwalk Fault, approximately 2.5 miles northeast of the project site, and Newport-Inglewood Fault, approximately 5.0 miles southwest of the project site (DOC 2023). Nonetheless, the proposed project would facilitate growth and development in a seismically active region. All future development facilitated by the proposed project would need to comply with applicable California Building Codes and City requirements with respect to seismic activity and building safety. Compliance with the City's building code and project-level review and approval by the City's Department of Building and Safety, would lessen potential impacts associated seismic activity. Therefore, impacts would be less than significant, and no further analysis is required in the EIR.

ii) Strong seismic ground shaking?

Less Than Significant Impact. Southern California is a seismically active region. Impacts from ground shaking could occur many miles from an earthquake epicenter. The degree of ground shaking in the city is dependent on the particular fault, fault location, distance from the city, and magnitude of the earthquake. Additionally, the soil and geologic structure underlying the city influences the amount of damage that the city may experience. The city consists of alluvium deposits that may become unstable during intense ground shaking (Artesia 2010). However, compliance with the City's building code and project-level review and approval by the City's Department of Building and Safety, would lessen potential impacts associated with strong seismic ground shaking. Therefore, impacts would be less than significant, and no further analysis is required in the EIR.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. Liquefication normally occurs under saturated conditions in soils such as sand in which the strength is purely frictional. Primary factors that trigger liquefication are moderate to strong ground shaking (seismic source); relatively clean, loose granular soils (primarily poorly graded sands and silty sands); and saturated soil conditions (shallow groundwater). Soils in the project site consists of younger alluvium, predominantly marine and nonmarine sand and silt (Artesia 2010). According to the Seismic Hazard Zones Map of the Los Alamitos and Whittier Quadrangles (DOC, 1999), the city of Artesia is in a mapped liquefication zone of required investigation. All future development facilitated by the proposed project would be required to comply with the City's building code and project-level review and approval by the City's Department of Building and Safety. Therefore, impacts would be less than significant, and no further analysis is required in the EIR.

iv) Landslides?

No Impact. According to the United States Geological Survey (USGS), a landslide is the movement of a mass of rock, debris, or earth down a slope. Slope movement occurs when forces acting down-slope (mainly due to gravity) exceed the strength of the earth materials that compose the slope. Causes include factors that increase the effects of down-slope forces and factors that contribute to low or reduced strength. Landslides can be initiated in slopes already on the verge of movement by rainfall, snowmelt, changes in water level, stream erosion, changes in ground water, earthquakes, volcanic activity, disturbance by human activities, or any combinations of these factors (USGS 2023). According to the Seismic Hazard Zones Map Los Alamitos and Whittier Quadrangles, Artesia is not in a mapped earthquake-induced landslide zone of required investigation. The project site has a relatively flat topography and is not adjacent to steep slopes or areas that would otherwise be subject to landslides, debris flow, and/or rockfall. Earthquake-induced land sliding is not anticipated in the area. Thus, the proposed project would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death related to landslides. Therefore, no impact would occur, and no further analysis is required in the EIR.

b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. The soils in the project site consist of sand, silt, and clay silt soils, which have a high erodibility potential. However, Artesia is approximately 99 percent built out and has a relatively flat topography (Artesia 2010). Therefore, conditions that contribute to substantial soil erosion or loss of topsoil are not present in the city. All future development projects would be subject to compliance with AMC Title 6, Chapter 7, Storm Water Management and Discharge Control, which requires compliance with the National Pollutant Discharge Elimination System (NPDES) standards and implementation of best management practices (BMP) to minimize short- and long-term erosion. Therefore, impacts would be less than significant, and no further analysis is required in the EIR.

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?

Less Than Significant Impact. Lateral spreading is a phenomenon in which soils move sideways during seismic shaking, and it is often associated with liquefication. The amount of movement depends on the soil strength, duration and intensity of seismic shaking, topography, and free-face geometry. According to the Seismic Hazard Zones Map Los Alamitos and Whittier Quadrangles (DOC,1999), the city of Artesia is in a mapped liquefication zone of required investigation. All future development would need to comply with regulatory building codes and local requirements and future project specific geotechnical investigations if required. Therefore, impacts would be less than significant, and no further analysis is required in the EIR.

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

Less Than Significant Impact. Expansive soils are fine-grained soils with variable amounts of clay minerals that can undergo significant volumetric changes as a result of changes in moisture content. The soils in the project site consist of sand, silt, and clay silt soils, which have a high expansion potential (Artesia 2010). All future development would need to comply with applicable California Building Codes and City requirements as well as adhere to any recommendations made from registered geotechnical engineers. Therefore, impacts would be less than significant, and no further analysis is required in the EIR.

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?

No Impact. The Sanitation Districts of Los Angeles County own, operate, and maintain trunk sewer lines for the regional conveyance of wastewater, and the City is responsible for the operation and maintenance of the local sewer lines. Future development in the city would connect to the existing wastewater infrastructure. Because Artesia is a fully urbanized city and sewers are available for the disposal of wastewater, the use of septic tanks or alternative wastewater disposal systems would not be required. Therefore, no impact would occur, and no further analysis is required in the EIR.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Potentially Significant Impact. The project site is in a highly urbanized area of Artesia. The city does not contain unique geologic features and is not known to contain documented paleontological resources (Artesia 2010). Given the geology of the city, it is unlikely that the proposed project would encounter unique paleontological resources. Nonetheless, future development pursuant to the proposed project could have the potential to unearth undocumented subsurface paleontological resources. As such, this issue will be further discussed in the EIR.

3.8 GREENHOUSE GAS EMISSIONS

Would the project:

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

Potentially Significant Impact. Development under the proposed project would generate greenhouse gas (GHG) emissions. The EIR will discuss potential climate change impacts from GHG emissions generated by construction and operation of future development and land use changes facilitated by the proposed project. This issue will be further discussed in the EIR.

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

Potentially Significant Impact. The California Air Resources Board (CARB) adopted the Scoping Plan in conformance with AB 32. In addition, SB 375, the Sustainable Communities and Climate Protection Act of 2008, was adopted by the legislature to reduce per capita vehicle miles traveled and associated GHG emissions from passenger vehicles. Applicable plans adopted for the purpose of reducing GHG emissions include CARB's Scoping Plan and SCAG's 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Construction of the proposed project could conflict with GHG reduction strategies and goals of CARB's Scoping Plan and SCAG's 2020 RTP/SCS. The EIR will discuss consistency of the proposed project with the GHG reduction strategies of the Scoping Plan. Mitigation measures will be recommended, as applicable, to minimize the proposed project's contribution to GHG emissions.

3.9 HAZARDS AND HAZARDOUS MATERIALS

Would the project:

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

Less Than Significant Impact. Land use changes associated with the proposed project are not anticipated to result in significant amounts of hazardous materials being transported, used, or disposed of in conjunction with future development. Any potential materials associated with future uses would be utilized and stored in compliance with established State and federal requirements. All future development in the project site would be subject to compliance with existing regulations, standards, and guidelines established by federal, State, and local agencies related to storage, use, and disposal of hazardous materials. Therefore, no significant impacts would occur, and no further analysis is warranted in the EIR.

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?

Less Than Significant Impact. Land use changes associated with the proposed project are not anticipated to create a significant hazard to the public or the environment through reasonably foreseeable upset or accident conditions involving the release of hazardous materials into the environment. Future developments would be subject to compliance with all applicable federal, State, and local laws and regulations pertaining to the transport, use, disposal, handling, and storage of hazardous waste, reducing the likelihood and severity of accidents during transit. There are no hazardous sites currently within the project site (DTSC 2024). Furthermore, future development projects would be evaluated on a project-by-project basis to ensure consistency with all applicable federal, State, and local laws and regulations pertaining to the transport, use, disposal, handling, and storage of hazardous waste. Therefore, impacts would be less than significant, and no further analysis would be required in the EIR.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Less Than Significant Impact. Implementation of the proposed project's land use changes would facilitate growth and development in the project site, and there are several schools within one-quarter mile of the project site. As discussed above, land use changes associated with the proposed project are not anticipated to create a significant hazard to the public or the environment. Future developments would be subject to compliance with all applicable federal, State, and local laws and regulations pertaining to the transport, use, disposal, handling, and storage of hazardous waste, reducing the likelihood and severity of accidents during transit. There are no hazardous sites currently within the project site (DTSC 2024). Furthermore, future development projects would be evaluated on a project-by-project basis to ensure consistency with all applicable federal, State, and local laws and regulations pertaining to the transport, use, disposal, handling, and storage of hazardous waste. Therefore, impacts would be less than significant and no further analysis would be required in the EIR.

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?

Less Than Significant Impact. Government Code Section 65962.5 requires lists of the following types of hazardous materials sites: hazardous waste facilities; hazardous waste discharges for which the State Water Quality Control Board has issued certain types of orders; public drinking water wells containing detectable levels of organic contaminants; underground storage tanks with reported unauthorized releases; and solid waste disposal facilities from which hazardous waste has migrated. There are no hazardous sites currently within the project site (DTSC 2024). Future development would be evaluated on a project-by-project basis to determine if such sites are listed on a current regulatory hazardous materials site list and would be required to follow all state and federal regulations, which would ensure any future development related impacts would be less than significant. Therefore, no further analysis would be required in the EIR.

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

No Impact. There are no public airports or public use airports within two miles of the city of Artesia. The nearest public airport to the project area is Long Beach Airport, approximately 6 miles southwest of the City. The nearest airfield, the Los Alamitos Army Airfield, is located approximately 9 miles south of the city. Therefore, the proposed project would not result in a safety hazard for people residing or working on the project site. No impact would occur. This issue will not be further discussed in the EIR.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. The City's Emergency Operations Plan anticipates that all major streets in the city would serve as evacuation routes (Artesia 2020). Construction activities associated with future development in the city could temporarily impact street traffic adjacent to the proposed development sites during the construction phase due to roadway improvements and potential extension of construction activities into the right-of-way. This could reduce the number of lanes or temporarily close certain street segments. All future development would be evaluated on a project-by-project basis and would be required to follow all state, local and federal regulations to ensure impacts would be less than significant. As noted in Section 3.17 Transportation (d), of this Initial Study, emergency access will be further discussed in the EIR.

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

No Impact. The City of Artesia and the surrounding cities, Cerritos, and Norwalk, are entirely urbanized. There are no wildlands adjacent to urbanized areas or residencies intermixed with wildlands in the city. The project site is not in or adjacent to lands classified as high fire hazard severity zones (FHSZ). The nearest State responsibility area in a very high FHSZ is approximately 15 miles east of the project site (CALFIRE 2023). Therefore, the proposed project would not expose people or structures to a significant risk involving wildland fires. No impact would occur, and no further analysis of this issue is warranted in the EIR.

3.10 HYDROLOGY AND WATER QUALITY

Would the project:

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less Than Significant Impact. The proposed project would be required to comply with all applicable federal, State, and local regulations for water quality during construction. Specifically, the proposed project would be required to comply with the NDPES Construction General Permit and with AMC Title 6 Chapter 7, Storm Water Management and Discharge Control. A Storm Water Pollution Prevention Plan (SWPPP) would be prepared to specify Best Management Practices (BMPs) to prevent construction pollutants. The proposed project would not otherwise substantially degrade water quality. Therefore, with adherence to regulatory code, impacts would be less than significant, and no further analysis is required in the EIR.

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

Potentially Significant Impact. Artesia receives its potable water service from the Golden State Water Company (GSC), which owns and operates the Artesia System. According to the 2020 Urban Water Management Plan, water supply for the Artesia System is obtained from local groundwater, recycled water, and imported water and expected to supply water through 2045 (GSC 2021) . Groundwater within the Artesia System is supplied by six active wells in the Central Basin of the Coastal Plain of Los Angeles. Development in accordance to the proposed project would increase demand for water. Therefore, this issue will be further discussed in the EIR.

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 a substantial erosion or siltation on- or off-site?

Less Than Significant Impact. The potential for soil erosion may increase with development, which may result in an increase in runoff which may accelerate the rates of erosion. The proposed project would be required to prepare a SWPPP, which would be prepared with BMPs to control potential erosion and be complaint with NPDES requirements and AMC Title 6, Chapter 7, Storm Water Management and Discharge Control. The proposed project would adhere to policies and regulatory codes that regulate water quality during construction and stormwater during operation. Therefore, with adherence to regulatory code, impacts would be less than significant, and no further analysis is required in the EIR.

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ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

Less Than Significant Impact. The addition of new impervious surfaces (i.e., roads, parking lots, buildings) associated with development pursuant to the proposed project could potentially reduce the amount of rainfall that can infiltrate into the subsurface. Increase in runoff could amplify drainage volumes and velocities, causing storm drainage facilities that are at or near capacity to fail during peak events. Excess runoff could potentially result in localized ponding and/or flooding. Therefore, no impact would occur, and no further analysis is required for the EIR.

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?

Less Than Significant Impact. The City of Artesia is highly developed and has an existing stormwater infrastructure. Stormwater drainage in the city is provided by a network of regional drainage channels and local drainage facilities. Surface water is deposited into regional channels, which are owned and maintained by Los Angeles County. Drainage patterns could change slightly due to project-related grading, thereby increasing the amount of impermeable surfaces. However, all future development would be required to incorporate adequate drainage that would transport runoff to local catch basins and nearby storm channels and comply with the policies and policy actions of the updated 2010 General Plan Community Facilities and Infrastructure Element (and Community Safety Element which would protect community members from potential harm cause by drainage and flooding. This issue will not be further discussed in the EIR.

iv) Impede or redirect flood flows?

No Impact. The proposed project is located within Flood Zone X, which is an area with reduced flood risk due to levee (FEMA 2023). There are no courses of a stream or river that run through the city. Thus, construction and operation of the proposed project would not impede or redirect flood flow. Therefore, no impact would occur, and no further analysis is required in the EIR.

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

No Impact. A seiche is a surface wave created when a body of water is shaken, usually by earthquake activity. Seiches are of concern relative to water storage facilities because inundation from a seiche can occur if the wave overflows a containment wall, such as the wall of a reservoir, water storage tank, dam, or other artificial body of water. The closest dam in the region is the Whittier Narrows Dam approximately 16 miles north of Artesia. According to the General Plan, the City is located within an inundation zone associated with the Whittier Narrows Dam. However, the City is already buildout and proposed land uses, and development would be largely similar to existing uses. Therefore, the land uses associated with the proposed project would not increase the potential for release of pollutants in the unlikely event of inundation associated with failure of the Dam. Additionally, the city is in Zone X, which is an area with reduced flood risk due to levees (FEMA 2023).

There are no significant bodies of water in the city limits; therefore, Artesia is not subject to seiche. It is not subject to tsunamis because it is not in a coastal area, and the Department of Conservation's Tsunami Hazard

Area Map indicates that Artesia is outside the tsunami hazard area (DOC 2023). Therefore, no impact would occur, and no further analysis is required in the EIR.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Potentially Significant Impact. The proposed project would comply with all federal, State, and local regulations. The proposed project would be subject to AMC Title 6, Chapter 7, Storm Water Management and Discharge Control, and NPDES requirements. Prior to issuance of any grading permit, all future developments are required to prepare a water quality management plan (WQMP) and a SWPPP that includes BMPs. However, development in accordance to the proposed project would increase demand for water. Compliance with all federal, State, and local regulations would reduce the impacts to less than significant. Therefore, this issue will not be further discussed in the EIR.

3.11 LAND USE AND PLANNING

Would the project:

a) Physically divide an established community?

No Impact. The proposed project would establish zoning districts, development standards, and implementation actions associated with land use, mobility, and infrastructure to facilitate new development and growth within the city's downtown area. The proposed project would encourage uses that are compatible with existing uses and would not divide an established community. The project area has a mix of primarily residential and commercial uses with a small portion of the project area being used for industrial or other facilities. Proposed land use changes would not physically divide existing communities. Therefore, no impact would occur, and no further analysis is required in the EIR.

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

Potentially Significant Impact. The proposed project would establish zoning districts, development standards, and implementation actions associated with land use, mobility, and infrastructure to facilitate new development and growth in the city's downtown area. The proposed project would be required to remain consistent with the City's general plan and implement relevant goals and policies of applicable plans and regulations. This issue will be further discussed in the EIR.

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3.12 MINERAL RESOURCES

Would the project:

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

No Impact. According to the Department of Conservation Mineral Land Classification maps, the project site is within a Mineral Resource Zone classified MRZ-1, which is an area where adequate information indicates that no significant mineral deposits are present (DOC 2023). The project site is in a highly urbanized area and there are no active, dry, or plugged wells in the project site or immediate vicinity, nor are there any planned oil extraction activities within the project site. No oil fields or other mineral resources exist on the project site. Therefore, no impact would occur, and no further analysis is required in the EIR.

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?

No Impact. As discussed above, the project site is classified MRZ-1, which indicates that there are no significant mineral deposits present (DOC 2023). The proposed project would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general land, specific plan, or other land use plan. Therefore, no impact would occur, and no further analysis is required in the EIR.

3.13 NOISE

Would the project result in:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Potentially Significant Impact. Noise that exceeds adopted thresholds may be generated during construction and operation of future development facilitated by the proposed project. The EIR will address potential noise impacts associated with the proposed project.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Potentially Significant Impact. Noise that exceeds adopted thresholds may be generated during construction of future development facilitated by the proposed project. Thus, the proposed project has the potential to result in adverse impacts associated with groundborne noise or vibration. This issue will be further discussed in the EIR.

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?**

No Impact. Artesia is not in an airport land use plan, and no public airports are within two miles of the city. The nearest public airport to the project area is the Long Beach Airport, approximately 6 miles southwest of the city. The nearest airfield, the Los Alamitos Army Airfield, is approximately 9 miles south of the city. The project limits are not within the 65 dBA CNEL noise contour of either the Long Beach Airport or the Los Alamitos Army Airfield. The proposed project would not introduce new public airports or private airstrips in the City; no impact would occur. No further analysis would be required in the EIR.

3.14 POPULATION AND HOUSING

Would the project:

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)?**

Potentially Significant Impact. The proposed project is the adoption and implementation of a new Specific Plan and associated zoning map and general plan amendments. The project area has a mix of primarily residential and commercial uses. Associated zoning updates may result in more housing opportunities, which may lead to a growth in population. This issue will be further discussed in the EIR.

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

No Impact. The Specific Plan does not propose any policies that are intended to or that would indirectly result in displacement or demolition of any permanent or temporary residential structures. Associated zoning and general plan updates would result in more housing opportunities in the planning area. Therefore, no impact would occur, and this issue will not be further discussed in the EIR.

3.15 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:

a) **Fire protection?**

Potentially Significant Impact. Fire protection services in Artesia are provided through the Los Angeles County Fire Department (LACFD). Two fire stations provide services to the city; Fire Station #30 is at 19030 Pioneer Boulevard in Cerritos to the south, and Fire Station #115 is at 11317 Alondra Boulevard in Norwalk to the north. The land use changes associated with the proposed project would result in an increase in residential and commercial uses in the project area, which would increase demand for fire protection services. This issue will be further discussed in the EIR.

b) Police protection?

Potentially Significant Impact. Police protection services to Artesia are provided under contract with the County of Los Angeles Sheriff's Department. The city is served by the Lakewood Sheriff's Station at 5130 Clark Avenue in the city of Lakewood. The Lakewood Station provides general and specialized community-oriented law enforcement services in contract with the cities of Artesia, Bellflower, Hawaiian Gardens, Lakewood, and Paramount. The land use changes associated with the proposed project would result in an increase in residential and commercial uses in the project area, which would increase demand for police services. This issue will be further discussed in the EIR.

c) Schools?

Potentially Significant Impact. Artesia is served by the ABC Unified School District (ABCUSD). The proposed project would increase residential and commercial uses as buildout of the proposed project occurs, and thus would potentially increase students in the ABCUSD. Typically, the demand for schools is created by new housing development or activities that generate additional population. Therefore, the increase in students and impacts to school facilities will be further discussed in the EIR.

d) Parks?

Potentially Significant Impact. The potential for population growth associated with zoning updates could incrementally increase the use of existing parks and/or recreational facilities. Artesia is largely built out, with little available vacant land for parkland dedication and conversion. The EIR will further evaluate the potential significant impact associated with parks and recreational facilities.

e) Other public facilities?

Potentially Significant Impact. Los Angeles County Library is responsible for maintenance and library improvements to meet future library service demands. The Artesia Library is the main library that serves the city at 18801 Elaine Avenue. The EIR will further evaluate the proposed project's potential to result in substantial adverse physical impacts associated with the provision of new or physically altered library facilities.

3.16 RECREATION

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?

Potentially Significant Impact. The potential for population growth associated with zoning updates could incrementally increase the use of existing parks and/or recreational facilities. Artesia is largely built out, with little available vacant land for parkland dedication and conversion. The EIR will further evaluate the potential significant impact associated with parks and the potential need for the expansion of recreational facilities.

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?

Potentially Significant Impact. The potential for population growth associated with land use and zoning updates could incrementally increase the use of existing parks and /or recreational facilities. Artesia is largely built out with little available vacant land for parkland dedication and conversion. The EIR will further evaluate the potential significant impact associated with parks and the potential need for the expansion of recreational facilities, which might have an adverse physical impact on the environment.

3.17 TRANSPORTATION

Would the project:

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Potentially Significant Impact. The proposed land use changes associated with the project would increase pedestrian, bicyclist, and vehicle traffic in the project area. The EIR will further evaluate whether this increase would conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?

Potentially Significant Impact. The proposed land use changes, and thus future growth and development, associated with the proposed project may increase the vehicle miles traveled (VMT) over existing conditions. Therefore, the EIR will further evaluate the project's VMT for consistency with State CEQA Guidelines Section 5064.3(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)?

Potentially Significant Impact. The proposed project is the adoption and implementation of a new Specific Plan and associated zoning map and general plan amendments that would work to achieve safe pedestrian and vehicular access. The EIR will further evaluate the project's design features for hazards and evaluate the project's use for incompatibility.

d) Result in inadequate emergency access?

Potentially Significant Impact. The project site is in an urbanized downtown area where adequate circulation and access is provided to facilitate emergency response. The Artesia Emergency Operations Plan outlines emergency response actions in the event of a large-scale disaster, such as a hazardous materials emergency. Access and circulation features for future development would need to accommodate emergency ingress and egress by fire trucks, police units, and ambulance vehicles. Emergency site access will be reviewed in the EIR.

3.18 TRIBAL CULTURAL RESOURCES

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

i) **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**

Potentially Significant Impact. The potential for tribal cultural resources to be unearthed during ground-distributing activities associated with future development pursuant to the proposed project will be addressed. The City will initiate consultation with California Native American Tribes pursuant to SB 18 and AB 52, and the results of tribal consultation will be further discussed in the EIR.

ii) **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.**

Potentially Significant Impact. The potential for tribal cultural resources to be unearthed during ground-distributing activities associated with future development pursuant to the proposed project will be analyzed. The City will initiate consultation with California Native American Tribes pursuant to AB 52 and SB 18, and the results of tribal consultation will be further discussed in the EIR.

3.19 UTILITIES AND SERVICE SYSTEMS

Would the project:

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?**

Potentially Significant Impact. Future buildout and population growth in the project site pursuant to the proposed project would increase demand for utilities, potentially resulting in adverse impacts to utilities and service systems. Wastewater treatment and storm drainage are provided and under the management of the Golden State Water Company. Natural Gas is provided by SoCalGas, and electricity service is provided by Southern California Edison. The land use changes associated with the proposed project would result in an increase in residential and commercial uses in the project area, which would increase demand for utility services. The EIR will further evaluate these potential impacts.

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

Potentially Significant Impact. The City's potable water needs are served by the Golden State Water Company. The 2020 Urban Water Management Plan discussed the reliability of supply for the Artesia System and estimated that water supply projects will meet demand through 2045. The project would increase water demands in the project site. The EIR will further evaluate these potential impacts.

c) **Result in a determination by the waste water 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?**

Potentially Significant Impact. Future development facilitated by the proposed project would increase utility usage and wastewater generation within the downtown area, potentially resulting in the need to relocate or construct new utility facilities. The EIR will further evaluate these potential impacts.

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?**

Potentially Significant Impact. CR&R Incorporated provides solid waste and recycling services for the city. Future development facilitated by the proposed project must comply with the City's Source Reduction and Recycling Element (SRRE) program and divert solid waste to meet the State diversion goals of AB 939 as well as State and county waste reduction programs and policies to reduce the volume of solid waste entering landfills (Artesia 2010). The City of Artesia also implemented source-separated collection in order to comply with the Senate Bill (SB) 1383, which requires all cities to implement an Organic Waste Recycling Program for its residents in order to divert food waste from being sent to landfills. Review of future projects will continue to be carried out to ensure that the projects are consistent with all general plan policies and policy actions and the SRRE program. The project would increase utility usage and demands in the project site, potentially resulting in the need to relocate or construct new utility facilities, insufficient water supplies, a determination by the wastewater provider of insufficient capacity, or excessive waste. The EIR will further evaluate these potential impacts.

e) **Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?**

Potentially Significant Impact. Future development pursuant to the proposed project would increase utility usage and demands within the project site, potentially resulting in the need to relocate or construct new utility facilities, insufficient water supplies, a determination by the wastewater provider of insufficient capacity, or excessive waste. All future development must be compliant with federal, state, and local management regulations. The EIR will further evaluate these potential impacts.

3.20 WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

No Impact. Wildland fire protection in California is the responsibility of either the local government, state, or the federal government. State responsibility areas (SRA) are areas where the State of California has the primary fiscal responsibility for the prevention and suppression of wildland fires. The city of Artesia does not contain moderate, high, or very high fire hazard severity zones. The project site is not in or adjacent to lands classified as high FHSZ. The nearest SRA is a very high FHSZ approximately 15 miles east of the project site (CALFIRE 2023). Therefore, no impact would occur. No further analysis is required in the EIR.

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?

No Impact. The project site is highly developed in an urbanized area and not in or adjacent to a high FHSZ or an SRA. The project site and surrounding area are generally flat. There is no wildland susceptible to wildfire on or near the site. Therefore, no impact would occur, and no further analysis is required in the EIR.

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?

No Impact. The project site is not in or near an SRA or lands classified as high FHSZ. The proposed project is in an urbanized area and would not require the installation or maintenance of associated infrastructure that may exacerbate fire risk. Therefore, no impact would occur, and no further analysis is required in the EIR.

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?

No Impact. The project site is not in or near a high FHSZ or an SRA. The proposed project would not expose people or structures to significant risk due to post-wildfire slope or drainage changes, and no impact would occur. No further analysis is required in the EIR.

3.21 MANDATORY FINDINGS OF SIGNIFICANCE

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?

Potentially Significant Impact. As discussed in Section 3.4, *Biological Resources*, the proposed project would not have the potential to substantially reduce the habitat of fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of a rare or endangered plant or animal. Impacts to cultural resource impacts will be further analyzed in the EIR.

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

Potentially Significant Impact. Implementation of the proposed project could result in cumulative impacts to aesthetics, air quality, cultural resources, energy, geology and soils, GHG emissions, hazards and hazardous materials, land use and planning, noise, population and housing, public services, recreation, transportation, tribal cultural resources, and utilities and service systems. Cumulative impacts of these resources will be further analyzed in the EIR.

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

Potentially Significant Impact. As discussed in this Initial Study, the proposed project could potentially have harmful effects on the environment, which could affect humans directly or indirectly. Impacts would be potentially significant, and these issues will be discussed in the EIR.

3. Environmental Analysis

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4. References

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4. References

South Coast Air Quality Management District (SCAQMD). 1993. Final Localized Significance Threshold Methodology.

United States Fish and Wildlife Service (USFWS). 2023. National Wetland Inventory. https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/.

5. List of Preparers

LEAD AGENCY: CITY OF ARTESIA

Peter Kann, Planning Manager

Karen Lee, Special Projects Manager

PLACEWORKS

Addie Farrell, Principal

Jennifer Kelley, Senior Associate

Itzeel Padilla, Planner

Cary Nakama, Graphics Specialist

5. List of Preparers

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THE CITY OF ARTESIA, CALIFORNIA

18747 CLARKDALE AVENUE, ARTESIA, CALIFORNIA 90701
Telephone 562 / 865-6262
FAX 562 / 865-6240

"Service Builds Tomorrow's Progress"

NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT AND NOTICE OF PUBLIC SCOPING MEETING FOR THE ARTESIA DOWNTOWN SPECIFIC PLAN

ATTENTION:	Agencies, Organizations, and Interested Parties
DATE:	February 27, 2024
SUBJECT:	Notice of Preparation of a Draft Environmental Impact Report, and Notice of Public Scoping Meeting
PROJECT NAME:	Artesia Downtown Specific Plan
PROJECT No:	Project No. 2024-06
CEQA LEAD AGENCY:	City of Artesia
MEETING LOCATION:	March 4, 2024 at 6:00 P.M. to 7:00 P.M. Albert O. Little Community Center 18750 Clarkdale Avenue Artesia, CA 90701

The City of Artesia (City) intends to prepare a Draft Environmental Impact Report (EIR) for the proposed Artesia Downtown Specific Plan (Specific Plan area or project site). In accordance with State California Environmental Quality Act (CEQA) Guidelines Section 15082, the City has prepared this Notice of Preparation to provide the public, nearby residents and property owners, responsible and trustee agencies, and other interested parties with information describing the proposed project and its potential environmental effects.

The Draft EIR will be prepared by outside consultants under the supervision of the City of Artesia Planning Department. The City requests your written comments as to the Draft EIR's scope and content, including mitigation measures to avoid/reduce the proposed project's potential environmental impacts. Comments must be submitted in writing according to directions below. If you represent a public agency, the City seeks written comments as to the scope and content of the environmental information in the Draft EIR.

A Public Scoping Meeting will be held to receive input as to what environmental topics the Draft EIR should study. No decisions about the proposed project are made at the Public Scoping Meeting. Additional proposed project details, meeting information, and instructions for public comment submittal are provided below.

PROJECT LOCATION: The Downtown Artesia Specific Plan area (Specific Plan area or project site) is in an urbanized area in the City of Artesia, Los Angeles County. The City is 19 miles southeast of Downtown Los Angeles; it shares its eastern, southern, and western boundaries with the City of Cerritos and its northern boundary with the City of Norwalk. The project site encompasses the blocks adjoining Pioneer Boulevard to the southeast and ending at 180th Street to the north. The northern portion of the project site (north of the Southeast Gateway Line) is bounded by Alburtis Avenue and Corby Avenues to the west, 180th Street to the north, Arline Avenue to the east, and 188th Street to the south. The project site extends south of the Southeast Gateway Line to the future Pioneer Boulevard Light Rail Station and includes the area between 188th Street and the La Belle Chateau Mobile Home Park, and Pioneer Boulevard on the east and Jersey Avenue on the west. The nearest freeway providing regional access to the project area is State Route (SR-) 91, a multilane freeway that divides the northern end of the city. See Figure 1, *Location Map*.

PROJECT DESCRIPTION: The Artesia Downtown Specific Plan (proposed project) would implement new land use, zoning, and development standards to guide the scale of future development and growth in Artesia's Downtown district as the city prepares for the planned expansion of a new Metro light rail line (referred to as the Southeast Gateway Line Branch) that would connect southeastern Los Angeles County communities, including Artesia, to Downtown Los Angeles. The new Metro light rail line extension is anticipated to connect to Pioneer Boulevard in 2035.

While there are no specific development projects proposed at this time, the Artesia Downtown Plan will establish goals and objectives, development standards, and implementation actions associated with land use, mobility, and infrastructure, and establishes a transit-oriented plan that would provide new opportunities for housing, retail/commercial, and entertainment uses. The proposed project would establish the necessary plans, development standards, regulations, infrastructure requirements, and implementation programs on which subsequent project-related development activities in the Specific Plan area would be based. Below is a discussion of each component of the proposed project.

Land Use Plan

As shown in Figure 2, *Proposed Zoning Districts*, the land use plan divides the project site into six zoning districts. These distinct zoning districts would allow for a range of land uses and density within a defined building envelope. The zones would also implement the City's urban design objectives for each part of the project site to establish and maintain attractive distinctions between each zone. The six zoning districts include:

- **Downtown North.** The Downtown North District would become the northern gateway and anchor to downtown Artesia. This district would allow for higher density mixed-use development at 65 dwelling units per acre (du/ac) or 75 du/ac with a density bonus. The southwest corner of this district would encompass approximately 5.5 acres and would allow 4- to 5-story mixed-use development and 2- and 3-story townhomes. Where the City owns property at the northwest corner of 183rd Street and Pioneer Boulevard, a public private partnership is encouraged to develop a parking structure with ground-floor retail uses as well as potentially civic and/or community uses. The parking structure would serve visitors, residents, and employees as they travel to and from downtown Artesia and SR-91 to the north.

- **Pioneer Boulevard.** The Pioneer Boulevard District would front Pioneer Boulevard north of the future Metro transit station and is in the center of downtown Artesia. This area is currently known as "Little India" and is composed of narrow parcels with a continuous street frontage of 1-story commercial establishments such as restaurants, markets, and jewelry shops. Although significant new development is not expected in this district, the district would allow for 3-story buildings at 50 du/ac or 60 du/ac with a density bonus.

- **Downtown Neighborhood**. The Downtown Neighborhood District would be in the residential west and east edges of the Downtown area along Corby Avenue and Arline Avenue. The downtown neighborhood would retain its residential character at 40 du/ac.

- **188th Street / Corby Avenue.** The 188th/Corby District would be south of the future Metro station and presently includes residential and light industrial uses. This district would allow for residential uses such as duplex, triplex, and townhomes at 65 du/ac as well as limited commercial office and retail uses.

- **Downtown South.** The Downtown South District would become the southern gateway to downtown Artesia and the city. The district would allow 4- to 6-story mixed-use development at 75 du/ac or 85 du/ac with a density bonus and incorporate land uses such as ground-floor retail, a hotel, townhomes, and neighborhood parks for residents and visitors. A Metro parking structure is planned in the South Street Mixed District just south of the transit station.

- **Chateau Estates.** The Le Belle Chateau Estates Mobile Home Park District sits at the southern edge of the project site. The mobile home park use would be maintained.

Development Standards

The proposed project would establish development standards related to the physical form and design of both new and renovated buildings and properties in the project site. Development standards would include requirements for site planning (i.e., setbacks from public rights-of-way and other structures), open space and landscaping standard, building mass, scale, and maximum heights, materials and finishes, parking and loading, and frontage design standards.

Mobility and Infrastructure

The proposed project would provide information related to existing mobility and public infrastructure systems in the Downtown Specific Plan area. The mobility chapter would provide a discussion on existing conditions and connections for transit, automobiles, pedestrians, and cyclists, and provide a summary of the mobility network including road classification and improvements. The infrastructure chapter would discuss existing hydrology and water quality, water providers and distribution, sewer, and wastewater. The proposed project would provide a summary of the necessary or required improvements associated with future development.

Implementation Actions

The goals and objectives of the proposed project would be implemented through a number of documents, policies, and programs. The proposed project would establish the implementation process associated with the Specific Plan.

Incentives and Bonuses

A bonus system would be implemented as part of the proposed project to allow for additional height or floor area for qualified projects. Bonuses would be granted to projects that provide additional public benefits, such as open space, reuse of existing buildings, affordable housing, or supportive commercial or retail space.

POTENTIAL ENVIRONMENTAL EFFECTS:

The EIR will analyze the following environmental topics in comprehensive detail:

- ✓ Aesthetics
- ✓ Air Quality
- ✓ Cultural Resources
- ✓ Energy
- ✓ Geology and Soils
- ✓ Greenhouse Gas Emissions
- ✓ Hydrology/Water Quality
- ✓ Land Use and Planning
- ✓ Noise
- ✓ Population and Housing
- ✓ Public Services
- ✓ Recreation
- ✓ Transportation
- ✓ Utilities and Service Systems
- ✓ Tribal Cultural Resources

PUBLIC SCOPING MEETING

As a part of the NOP process, the City will conduct a public Scoping Meeting to present the proposed project and environmental process and to receive public comments and suggestions regarding the proposed project. All interested parties are invited to attend the scoping meeting to assist in identifying issues to be addressed in the Draft EIR. The Scoping Meeting will involve a presentation about the proposed project, the environmental review process, and schedule.

Written comments may be submitted, but there will be no verbal comments or public testimony taken at the Public Scoping Meeting. Furthermore, no decisions about the Project will be made at the Public Scoping Meeting. The date, time, and location of the Public Scoping Meeting are as follows:

Date:	March 4, 2024
Time:	6:00 P.M. to 7:00 P.M
Location:	Albert O. Little Community Center 18750 Clarkdale Avenue Artesia, CA 90701

FILE REVIEW AND COMMENTS

The Initial Study is available for public review and download at: https://cityofartesia.us/522/Artesia-Downtown-Specific-Plan

Copies of the Initial Study are also available for public review at the following locations:

• Artesia City Hall, Planning Department, 18747 Clarkdale Avenue, Artesia, CA 90701
• Artesia Public Library, 18801 Elaine Avenue, CA 90701

Please contact the City of Artesia Staff Planner, listed below, if you are having issues accessing the Initial Study document.

SUBMITTAL OF WRITTEN COMMENTS

The City solicits comments regarding the scope, content and specificity of the Draft EIR from all interested parties, responsible agencies, agencies with jurisdiction by law, trustee agencies, and involved agencies. The City will consider all written comments regarding the Project's potential environmental impacts and issues to be addressed in the Draft EIR.

Please submit all comments in writing so they are received no later than March 27, 2024, 5:00 P.M.

Please direct your comments to:

E-mail: planning@cityofartesia.us

THE CITY OF ARTESIA, CALIFORNIA

18747 CLARKDALE AVENUE, ARTESIA, CALIFORNIA 90701
Telephone 562 / 865-6262
FAX 562 / 865-6240

"Service Builds Tomorrow's Progress"

Mail: City of Artesia
Planning Department
ATTN: Peter Kann, Planning Manager
Community Development
18747 Clarkdale Avenue
Artesia, California 90701

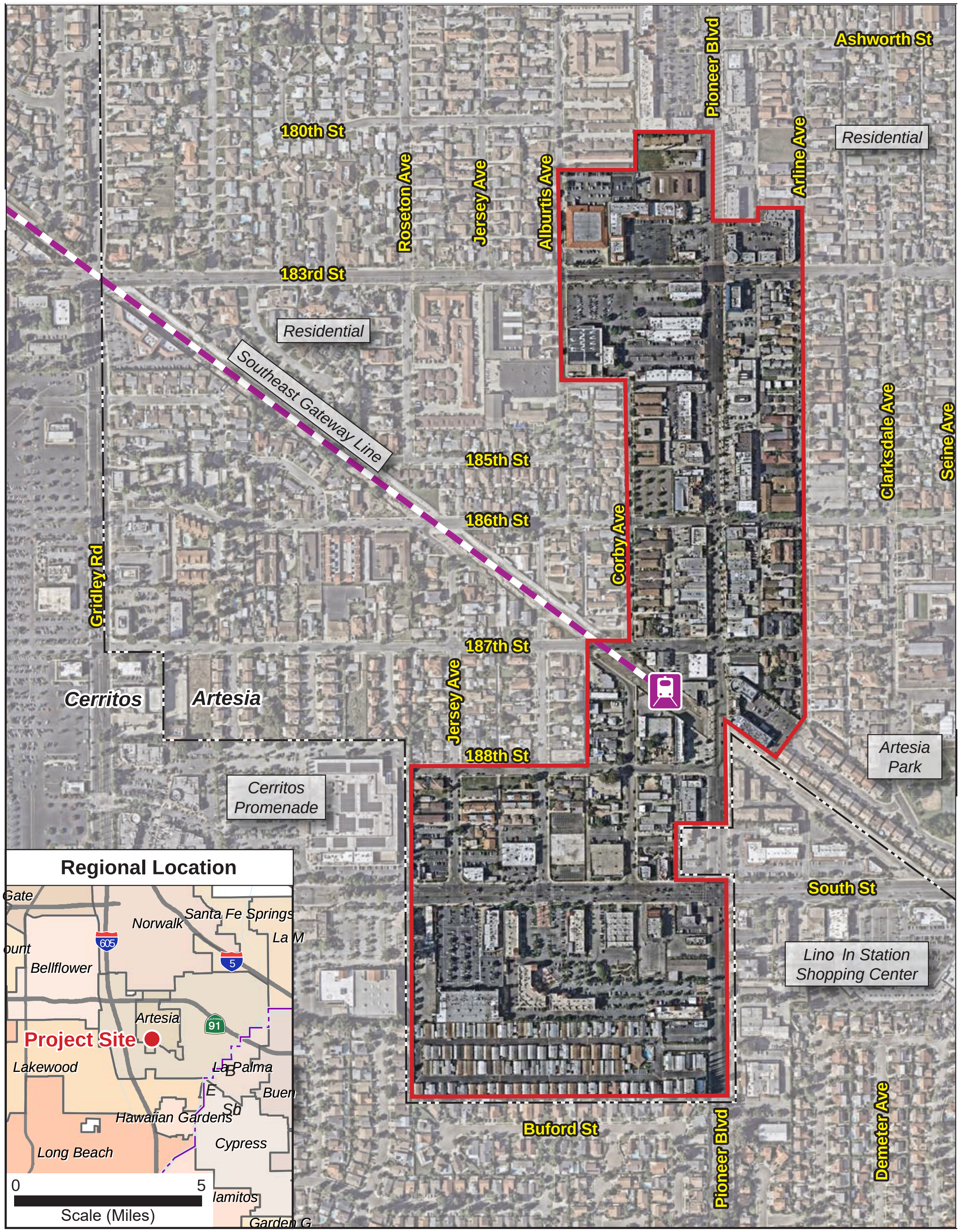
THE CITY REQUESTS THAT ALL WRITTEN COMMENTS BE SUBMITTED ELECTRONICLLY VIA EMAIL. WRITTEN COMMENTS WILL ALSO BE ACCEPTED VIA MAIL, AND AT THE PUBLIC SCOPING MEETING.

In accordance with State CEQA Guidelines Section 15082, this Notice of Preparation is being circulated for a 30-day comment period. The City of Artesia requests that written comments be provided at the earliest possible date, but no later than 5:00 P.M. on March 27, 2024.

Peter Kann, Planning Manager
Community Development
18747 Clarkdale Avenue
Artesia, California 90701
Tel: (562) 865-6262
Email: PKann@cityofartesia.us

Attachments:
Figure 1, *Location Map*
Figure 2, *Proposed Zoning Districts.*

Figure 1 - Project Location Map

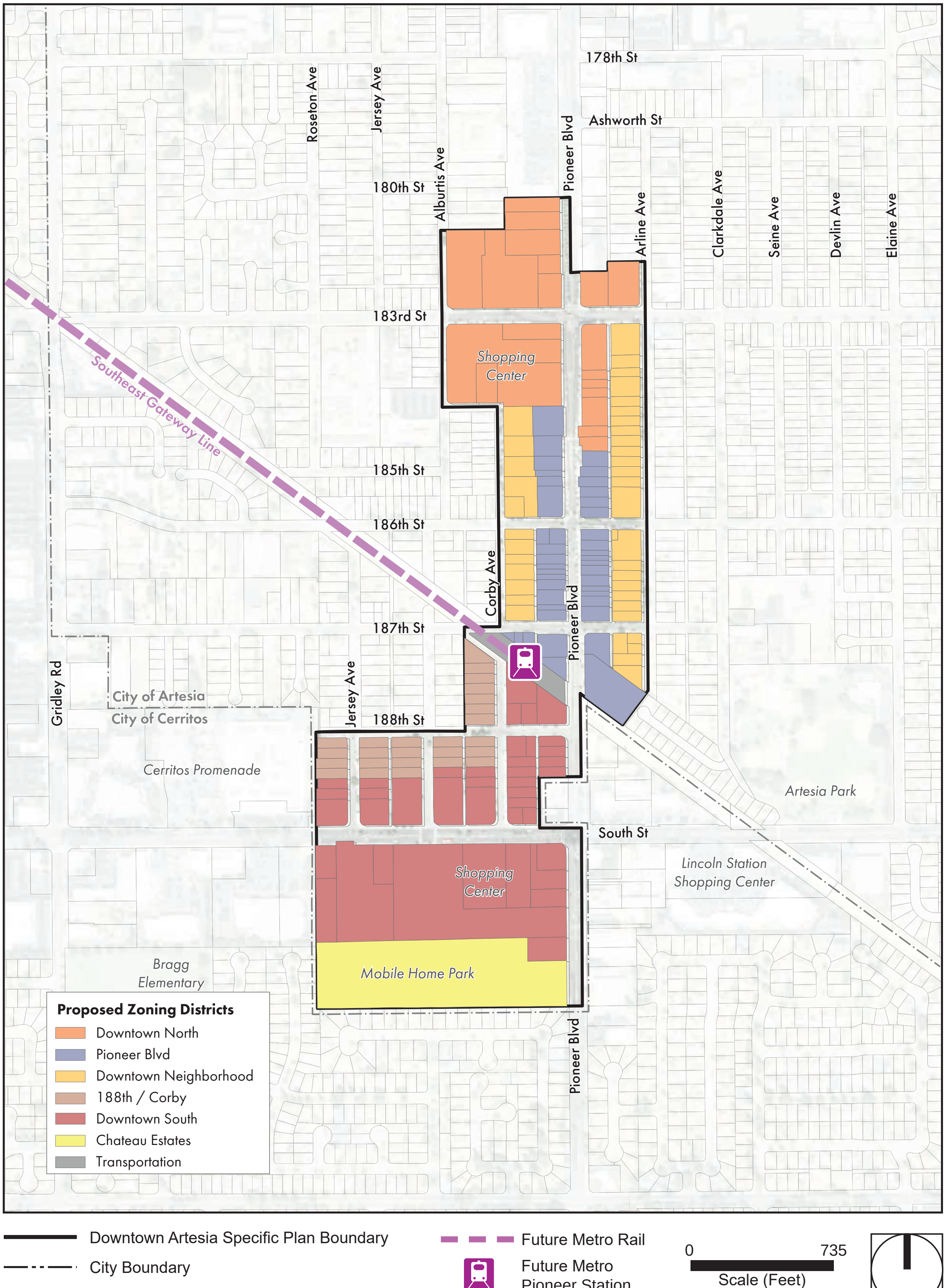


Downtown Artesia Specific Plan Boundary
City Boundary
Future Metro Rail
Future Metro Pioneer Station
0 675
Scale (Feet)

Source: Generated using ArcMap 2023.

PlaceWorks

Figure 2 - Proposed Zoning Districts



Source: Generated using ArcMap 2023.

CITY OF CERRITOS[SM]

CIVIC CENTER · 18125 BLOOMFIELD AVENUE
P.O. BOX 3130 · CERRITOS, CALIFORNIA 90703-3130
PHONE: (562) 860-0311 · CERRITOS.US

Cerritos
All-America City
2008

March 12, 2024

City of Artesia
Planning Department
18747 Clarkdale Avenue
Artesia, CA 90701
Via email: planning@cityofartesia.us

Subject: **CITY OF CERRITOS COMMENT LETTER – NOTICE OF PREPARATION (NOP) OF A DRAFT ENVIRONMENTAL IMPACT REPORT (EIR) FOR A PROPOSED ARTESIA DOWNTOWN SPECIFIC PLAN**

Dear Mr. Kann:

Thank you for informing the City of Cerritos about the City of Artesia's preparation of a Draft Environmental Impact Report (EIR) for a proposed Artesia Downtown Specific Plan ("Project"), and the opportunity to review preliminary project information. The City of Cerritos hereby submits this letter in response to the City of Artesia's Notice of Preparation (NOP) of a Draft EIR for the Project, which proposes to establish new land use, zoning, and development standards in the City of Artesia's Downtown district, in advance Metro's development of the new Southeast Gateway Line, with terminus station in the City of Artesia. As described in the NOP, the proposed Project would establish a transit-oriented development plan, providing new opportunities for housing, retail/commercial, and entertainment uses. The proposed Project would establish a specific plan, development standards, regulations, infrastructure requirements, and implementation programs for future development activities within the Project area.

Due to the Project's proximity to the City of Cerritos, the City of Cerritos hereby requests that, in preparing the draft EIR and new development standards applicable to the Project area, that the City of Artesia specifically ensure that any potential impacts to City of Cerritos properties as a result of any established development standards be appropriately addressed and/or mitigated, including potential impacts to privacy, aesthetics, vehicular circulation, noise, design/building intensity, and parking. In addition, the City of Cerritos requests a copy of any future notices related to the Project, including future entitlement review projects for physical development within the Project area, in conformance with any newly established development standards. Should you wish to meet with City of Cerritos representatives to discuss potential impacts, the City welcomes the opportunity to work closely to ensure that appropriate mitigation measures are implemented.

The City of Cerritos looks forward to the future development of properties within the City of Artesia, in a manner which complements and supports the existing and surrounding communities and land uses, and looks forward to reviewing the draft EIR for the Project in the near future. Your thoughtful consideration of the matters contained herein is greatly appreciated.

Sincerely,

Kristin Aguila
Director of Community Development

cc Robert A. Lopez, City Manager
Sandy Cisneros, Current Planning Manager
Sabrina Chan, Advance Planning Manager
Peter Kann, Planning Manager, City of Artesia *(via email pkann@cityofartesia.us)*

DEPARTMENT OF TRANSPORTATION
DISTRICT 7
100 S. MAIN STREET, MS 16
LOS ANGELES, CA 90012
PHONE (213) 266-3574
FAX (213) 897-1337
TTY 711
www.dot.ca.gov

Making Conservation a California Way of Life

March 18, 2024

Governor's Office of Planning & Research

March 18 2024

STATE CLEARINGHOUSE

Peter Kann, Planning Manager
City of Artesia, Planning Department
18747 Clarkdale Avenue
Artesia, California 90701

RE: Artesia Downtown Specific Plan – Notice of Preparation (NOP)
SCH #2024020999
GTS #07-LA-2024-04467
Vic. LA 91 PM 18.09
LA 605 PM 03.76

Dear Peter Kann,

Thank you for including the California Department of Transportation (Caltrans) in the review process for the above referenced project. The Artesia Downtown Specific Plan (proposed project) would implement new land use, zoning, and development standards to guide the scale of future development and growth in Artesia's Downtown district as the city prepares for the planned expansion of a new Metro light rail line (referred to as the Southeast Gateway Line Branch) that would connect southeastern Los Angeles County communities, including Artesia, to Downtown Los Angeles. The new Metro light rail line extension is anticipated to connect to Pioneer Boulevard in 2035. While there are no specific development projects proposed at this time, the Artesia Downtown Plan will establish goals and objectives, development standards, and implementation actions associated with land use, mobility, and infrastructure, and establishes a transit-oriented plan that would provide new opportunities for housing, retail/commercial, and entertainment uses. The proposed project would establish the necessary plans, development standards, regulations, infrastructure requirements, and implementation programs on which subsequent project-related development activities in the Specific Plan area would be based.

After reviewing the NOP, Caltrans has the following comments:

The scope and nature of the Artesia Downtown Specific Plan provides a valuable opportunity to apply proven policies that improve walkability, reduce automobile dependance, and provide a path to housing affordability. Caltrans recommends the following:

- Eliminate car parking requirements. Research looking at the relationship between land-use, parking, and transportation indicates that the amount of car parking supplied can undermine a city's ability to encourage public transit and active modes of transportation. The city should instead use this valuable space as an opportunity to build residential, commercial, and office uses in close proximity, thus increasing accessibility and allowing residents to utilize both transit and active modes to meet their everyday transportation needs. To reduce vehicle miles traveled, we recommend eliminating car parking requirements, or even implementing parking maximums, as alternatives to building an unnecessary amount of parking.

- Prepare for adaptive reuse. Consider adopting Form-Based Codes (FBC) as an alternative to separating uses. FBCs allow for a community's vision to be created and maintained through form, mass, and streetscape requirements, while allowing tremendous flexibility for adaptive reuse into the future. This reduces wasteful demolition of single-use developments and improves the public realm for residents and visitors alike.

- Connect to transit infrastructure. As mentioned in the NOP, Artesia's Downtown Plan area will have a forthcoming Metro Southeast Gateway Line station as a high-quality connection to local and regional transit. Investments should be made to connect all areas of the Plan area to this robust existing network of transit stops and stations. Streetscape and transit stop investments can dramatically improve walkability and encourage transit use.

- Protect vulnerable road users. The most effective methods to reduce pedestrian and bicyclist exposure to vehicles is through physical design and geometrics. These methods include the construction of physically separated facilities such as Class IV bike lanes, wide sidewalks, pedestrian refuge islands, landscaping, street furniture, and reductions in crossing distances through roadway narrowing.

In addition to the above recommendations, Caltrans looks forward to reviewing the DEIR's Transportation Impact Analysis including, but not limited to, the following:

1. A robust VMT Analysis.

2. Multi-Modal (Pedestrians, Bicyclists, Transit, Trucks, Cars etc) Conflict Analysis at all locations within the general plan that interact with Caltrans ROW, and specifically identify the physically protective infrastructure needed for people walking, riding bikes, and using transit.

3. Mitigation measures that include:
   a) Reducing car infrastructure and parking.
   b) Enhancing bicycle and pedestrian infrastructure.
   c) Enhancing transit infrastructure.
   d) Transportation Demand Management (TDM) measures.
   e) Transportation System Management (TSM) investments.

Caltrans looks forward to reviewing the DEIR that should demonstrate how planned development patterns align with adopted VMT policies. Caltrans supports collaboration with local agencies to work towards a safe, functional, interconnected, multi-modal transportation network integrated through efficient and equitable land use planning and policies. If you have any questions, please contact project coordinator Anthony Higgins, at anthony.higgins@dot.ca.gov and refer to GTS #07-LA-2024-04467.

Sincerely,

Miya Edmonson

Miya Edmonson
LDR/CEQA Branch Chief

Cc: State Clearinghouse

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

February 27, 2024

Governor's Office of Planning & Research
Mar 01 2024
STATE CLEARINGHOUSE

Peter Kann
City of Artesia
18747 Clarkdale Ave
Artesia CA 90701

Re: 2024020999, Artesia Downtown Specific Plan Project, Los Angeles County

Dear Mr. Kann:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements**. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe. (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
   a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
   b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (https://ohp.parks.ca.gov/?page_id=30331) for an archaeological records search. The records search will determine:
   a. If part or all of the APE has been previously surveyed for cultural resources.
   b. If any known cultural resources have already been recorded on or adjacent to the APE.
   c. If the probability is low, moderate, or high that cultural resources are located in the APE.
   d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
   a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
   b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@NAHC.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

cc: State Clearinghouse

COMMENT CARD Artesia Downtown Specific Plan Scoping Meeting
March 4, 2024 at 6:00 PM

Consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines, the following 20 environmental topics would be analyzed further in the Draft EIR:

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

* *Topics to be addressed in Impacts Found not to be Significant section of EIR*

Please identify any comments or concerns you may have regarding the Artesia Downtown Specific Plan, including any additional environmental topic areas, potential mitigation measures, or project alternatives (please print):

Health, fiscal, and ecological impacts of various levels of multi-modal transit infrastructure options.

Health, fiscal, and developmental impacts of various levels of sound dampening building materials.

Health, heat island, water management, and air quality effects of (not) incorporating various street trees.

Health, fiscal, heat island, water management, and air quality effects resulting from (not) building parklets.

Health, tax base, and safety improvements of different levels of housing density.

Benefits of incorporating bioretention cells into the design of streetscaping to promote traffic calming.

Health, fiscal, transportation, air quality, aesthetics impacts of full pedestrianization of Pioneer Blvd.

Health, noise, fiscal, and emergency services impact of modal filters for low traffic neighbourhoods.

Aesthetics, air quality, population and housing, and fiscal impact of road diets.

Name: Lorelei Hellena Bailey

Address: 17716 Roseton Avenue Artesia, California 90701

Please return this comment card to Planning Manager Peter Kann at the end of the Scoping Meeting or fold in half, tape, and mail to the City of Artesia using the address provided (see reverse). Comments may also be submitted via email to planning@cityofartesia.us. **Comments must be submitted by March 27, 2024, at 5:00 p.m.**

Appendix B Buildout Scenarios Memo

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Artesia Downtown Specific Plan
Buildout Scenarios Memo

The scenarios below identify a proposed project and three buildout strategies for the Artesia DTSP area. All scenarios include buildout calculations for the 53 parcels selected by the Redevelopment Opportunity Analysis.

Notes

- Total Units Proposed by Housing Element in the SP boundary: 1,783
  - Minimum density proposed by Housing Element: 40 du /acre
- Total Existing housing units: 314

Redevelopment Opportunity Analysis

The Artesia Downtown Specific Plan proposes six (6) new zones in the plan area:

- 188th/Corby
- Downtown South
- Pioneer Blvd
- Downtown North
- Downtown Neighborhood (housing only)
- Chateau Estates

These zones may allow for a range of residential density and FAR intensity. The total buildout for the Specific Plan area will depend on the maximum density and FAR permitted in each zone, as shown below, but is based on a selection of parcels considered to have the highest likelihood of redevelopment.

The process for identifying the selected parcels is as follows:

- A point-based opportunity score was given to all parcels in the Downtown Specific Plan boundary. The score ranged from 0, least probability for redevelopment, to 6, highest likelihood of redevelopment. Where 4-6 were considered the most likely to redevelop.
- The criteria for the opportunity score included the following indicators:

Development Opportunity Criteria	Points
Includes existing office, commercial, or vacant uses	1 point
Is a contiguous parcel with the same owner – *where parcels with the same owner received different scores, the higher score was given to all.*	1 point
Has a lot width greater than 200 ft	1 point
Ratio of assessed value of improvements to assessed value of the land is less than 1	1 point
Has a lot size greater than 20,000 sf and lot coverage below 40%	2 points
Max Development Opportunity Score – *Sum of Development Opportunity Criteria Points*	6 points

- Next, the parcels were grouped by Development Opportunity Score and assessed a second time based on location such as proximity to the rail station, or adjacent to housing, as well as consistency with surrounding uses and existing residential uses.
- Based on the second review, a percentage of parcels in each Development Opportunity Score group (0-6) were identified as those for redevelopment for the buildout assumptions.
- The percentage of parcels selected directly relates to the Development Opportunity Score and the second review, for example of all parcels which scored **0** on the Development Opportunity Score only 16% are considered to redevelop in the buildout assumptions below. Using **Score 0** as a base, the percentage of parcels was approximately doubled for **Score Groups 1-3** and then approximately Doubled again for **Score Groups 4-6**.
- The final percentage of parcels select, by Development Opportunity Score is:
    - Development Opportunity Score 0: 16%
    - Development Opportunity Score 1-3: 34%
    - Development Opportunity Score 4-5: 78%
- Therefore, the buildout scenarios below reflect redevelopment potential on the selected parcels as described above and shown in the maps below.

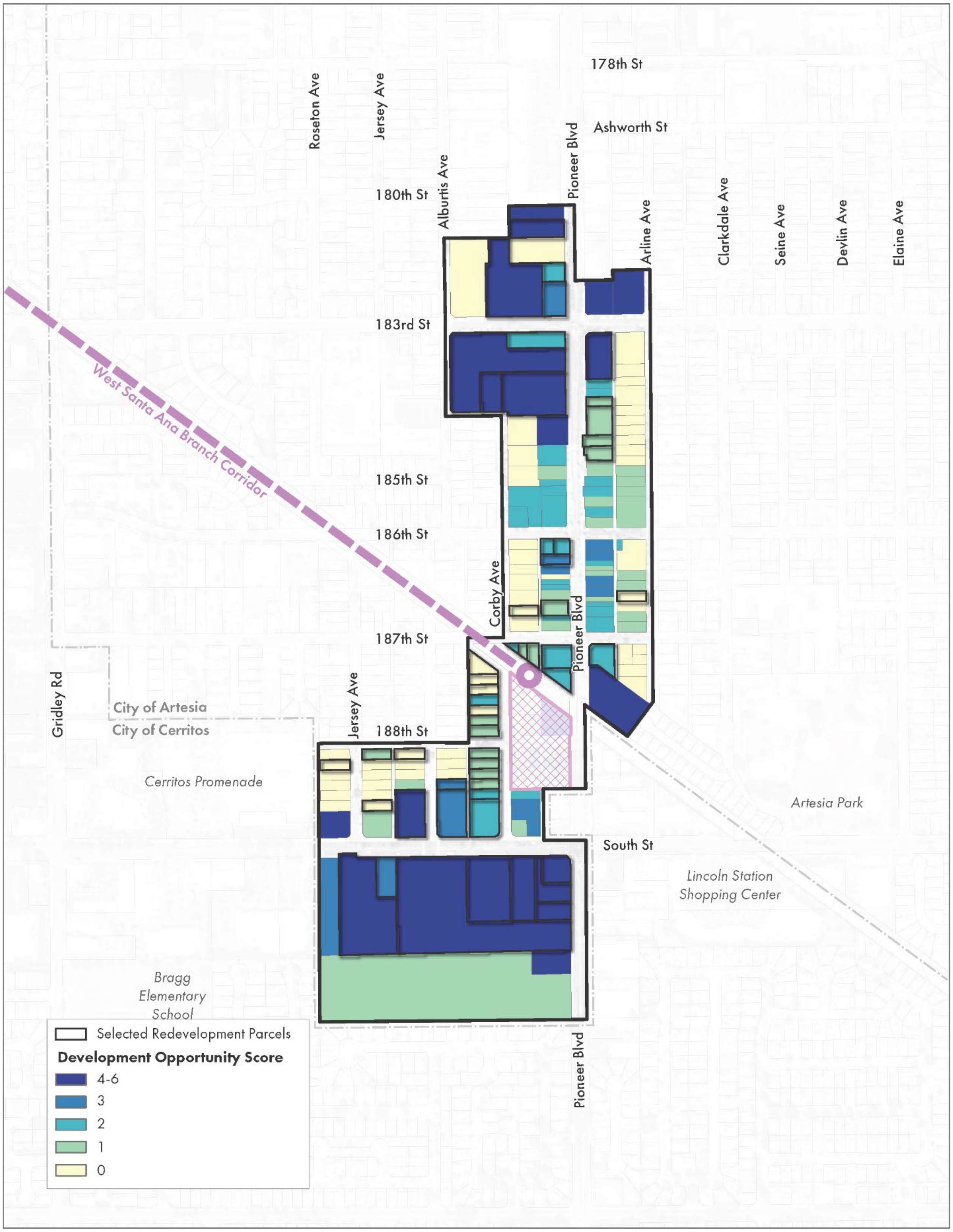

Figure 1: Opportunity Score on Parcels in the Artesia Downtown Specific Plan

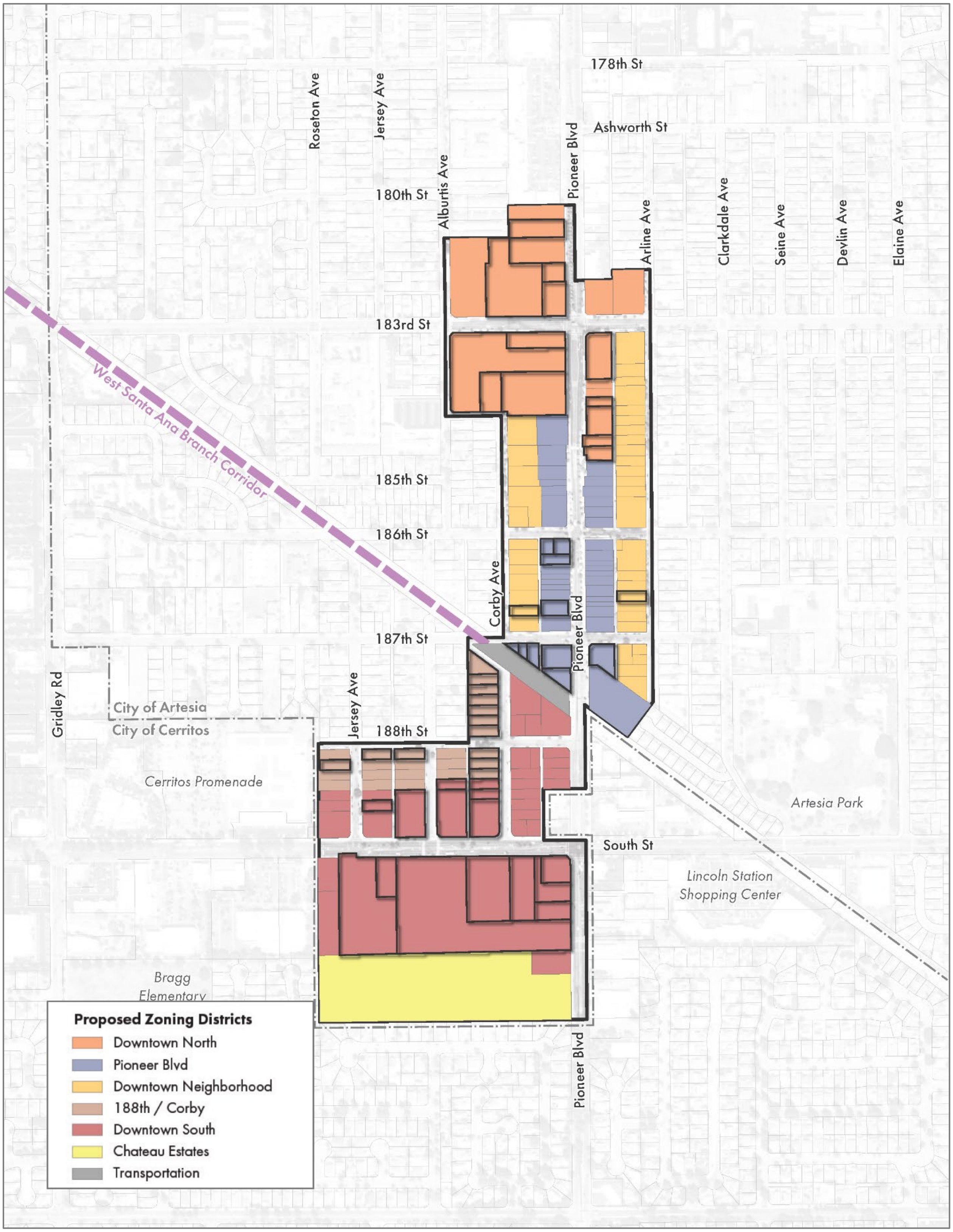

Figure 2: Proposed Zoning and Selected Redevelopment Parcels in the Artesia Downtown Specific Plan

Proposed CEQA Project: Redevelopment with Commercial Incentives Utilized (Density Bonus)

The proposed CEQA project includes estimates for full redevelopment of selected opportunity sites. In the Downtown South, Pioneer Boulevard and Downtown North Use zones, the buildout assumes that all new development on opportunity sites takes advantage of the **Downtown Density Bonus Program**, meaning all new development provides the necessary commercial uses (assumed at 20 percent of the land, assuming at least 2 stories) and therefore receives a density bonus to increase residential density.

- 188th/Corby: 65 du/acre
- Downtown South: 75 du/acre
    - *Density Bonus: 85 du/acre*
- Pioneer Blvd: 50 du/acre
    - *Density Bonus: 60 du/acre*
- Downtown North: 65 du/acre
    - *Density Bonus: 75 du/acre*
- Downtown Neighborhood (housing only): 40 du/acre
- Chateau Estates: Not included

Proposed Zone	Buildout of Units on Selected Sites[1]
188th/Corby	150
Downtown South	1,094
Pioneer Blvd	90
Downtown North	634
Downtown Neighborhood (housing only)	13
Chateau Estates	0
Commercial as Mixed Use[2]	502,936
Total Residential	**1,981**
Total Commercial	**502,919**

1. On sites where commercial uses are identified for 20% of the site, the residential units total the density x remaining acreage at 80%.
2. Commercial buildout assumes 20% of land at a minimum of 2 stories on selected sites in the South St. Mixed Use, Downtown North, and the Pioneer Blvd. Mixed Use zones.

Alternative A: Redevelopment at Reduced Commercial Incentives

Alternative A includes estimates for full redevelopment of selected sites. However, Alternative A assumes that in the proposed Downtown South, Pioneer Boulevard, and Downtown North Mixed-Use Districts, the development of commercial uses (at 20 percent of the land maximum) **would not utilize the Downtown Density Bonus Program** and therefore **would not receive a density bonus** to increase residential density.

- 188th/Corby: 65 du/acre
- Downtown South: 75 du/acre
- Pioneer Blvd: 50 du/acre
- Downtown North: 65 du/acre
- Downtown Neighborhood (housing only): 40 du/acre
- Chateau Estates: Not included

Proposed Zone	Buildout of Units on Selected Sites[1]
188th/Corby	150
Downtown South	967
Pioneer Blvd	74
Downtown North	550
Downtown Neighborhood (housing only)	13
Chateau Estates	0
Commercial as Mixed Use[2]	251,459
Total Residential	**1,754**
Total Commercial	**251,459**

1. On sites where commercial uses are identified for 20% of the site, the residential units total the density x remaining acreage at 80%.
2. Commercial buildout assumes a maximum of 20% of land on selected sites in the South St. Mixed Use, Downtown North, and the Pioneer Blvd. Mixed Use zones.

Alternative B: Redevelopment with No Commercial Incentives Utilized

Alternative B includes estimates for full redevelopment of selected sites at reduced densities from the proposed CEQA project. Alternative B also assumes that in the proposed Downtown South, Pioneer Boulevard, and Downtown North Mixed-Use Districts, the development of commercial uses (at 20 percent of the land maximum) **would not utilize the Downtown Density Bonus Program** and therefore **would not receive a density bonus** to increase residential density.

- 188th/Corby: 55 du/acre
- Downtown South: 65 du/acre
- Pioneer Blvd: 40 du/acre
- Downtown North: 55 du/acre
- Downtown Neighborhood (housing only): 40 du/acre
- Chateau Estates: Not included

Proposed Zone	Buildout of Units on Selected Sites[1]
188th/Corby	125
Downtown South	837
Pioneer Blvd	58
Downtown North	465
Downtown Neighborhood (housing only)	13
Chateau Estates	0
Commercial as Mixed Use[2]	251,459
Total Residential	**1,498**
Total Commercial	**251,459**

1. On sites where commercial uses are identified for 20% of the site, the residential units total the density x remaining acreage at 80%.
2. Commercial buildout assumes a maximum of 20% of land on selected sites in the South St. Mixed Use, Downtown North, and the Pioneer Blvd. Mixed Use zones.

Alternative C: Redevelopment at Lowest Density with No Commercial Incentives Utilized

Alternative C includes estimates for full redevelopment of selected sites at the lowest possible densities. Alternative C also assumes that in the proposed Downtown South, Pioneer Boulevard, and Downtown North Mixed-Use Districts, the development of commercial uses (at 20 percent of the land maximum) **would not utilize the Downtown Density Bonus Program** and therefore **would not receive a density bonus** to increase residential density.

- 188th/Corby: 40 du/acre
- Downtown South: 40 du/acre
- Pioneer Blvd: 40 du/acre
- Downtown North: 40 du/acre
- Downtown Neighborhood (housing only): 40 du/acre
- Chateau Estates: Not included

Proposed Zone	Buildout of Units on Selected Sites[1]
188th/Corby	92
Downtown South	510
Pioneer Blvd	58
Downtown North	337
Downtown Neighborhood (housing only)	13
Chateau Estates	0
Commercial as Mixed Use[2]	251,459
Total Residential	**1,010**
Total Commercial	**251,459**

1. On sites where commercial uses are identified for 20% of the site, the residential units total the density x remaining acreage at 80%.
2. Commercial buildout assumes a maximum of 20% of land on selected sites in the South St. Mixed Use, Downtown North, and the Pioneer Blvd. Mixed Use zones.

Appendix C Air Quality and Greenhouse Gas Emissions Modeling Data

Appendices

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1. Criteria Air Pollutant and GHG Emissions Worksheets

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Regional Construction Emissions Worksheet: Artesia Downtown Specific Plan

Maximum Emissions per phase (tons/year)

Demolition

Summer			ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		2025										
	Off-Road Equipment											
	Demolition											
	Onsite Truck											
	Total		0	0	0	0	0	0	0	0	0	0
Offsite												
	Worker											
	Vendor											
	Hauling											
	Total		0	0	0	0	0	0	0	0	0	0
TOTAL			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Winter			ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		2025										
	Off-Road Equipment		2.397956721	22.1951974	19.9231137	0.03251	0.917481722		0.9174817	0.844083181		0.844083181
	Demolition							14.7339544	14.733954		2.231141666	2.231141666
	Onsite Truck		0	0	0	0	0	0	0	0	0	0
	Total		2.397956721	22.1951974	19.9231137	0.03251	0.917481722	14.7339544	15.651436	0.844083181	2.231141666	3.075224847
Offsite												
	Worker		0.063658478	0.07209116	0.88493552	0	0	0.1960641	0.1960641	0	0.045957111	0.045957111
	Vendor		0	0	0	0	0	0	0	0	0	0
	Hauling		0.174057895	15.1619562	5.73634281	0.079461	0.151354692	3.182080492	3.3334352	0.151354692	0.871197469	1.02255216
	Total		0.237716373	15.2340474	6.62127833	0.079461	0.151354692	3.378144592	3.5294993	0.151354692	0.91715458	1.068509271
TOTAL			2.6357	37.4292	26.5444	0.1120	1.0688	18.1121	19.1809	0.9954	3.1483	4.1437

Max			ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		2025										
	Off-Road Equipment		2.397956721	22.1951974	19.9231137	0.03251	0.917481722	0	0.9174817	0.844083181	0	0.844083181
	Demolition		0	0	0	0	0	14.7339544	14.733954	0	2.231141666	2.231141666
	Onsite Truck		0	0	0	0	0	0	0	0	0	0
	Total		2.397956721	22.1951974	19.9231137	0.03251	0.917481722	14.7339544	15.651436	0.844083181	2.231141666	3.075224847
Offsite												
	Worker		0.063658478	0.07209116	0.88493552	0	0	0.1960641	0.1960641	0	0.045957111	0.045957111
	Vendor		0	0	0	0	0	0	0	0	0	0
	Hauling		0.174057895	15.1619562	5.73634281	0.079461	0.151354692	3.182080492	3.3334352	0.151354692	0.871197469	1.02255216
	Total		0.237716373	15.2340474	6.62127833	0.079461	0.151354692	3.378144592	3.5294993	0.151354692	0.91715458	1.068509271
TOTAL			2.6357	37.4292	26.5444	0.1120	1.0688	18.1121	19.1809	0.9954	3.1483	4.1437

Site Preparation

Summer			ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		2025										
	Off-Road Equipment											
	Dust From Material Movement											
	Onsite Truck											
	Total		0	0	0	0	0	0	0	0	0	0
Offsite												
	Worker											
	Vendor											
	Hauling											
	Total		0	0	0	0	0	0	0	0	0	0
TOTAL			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Winter			ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		2025										
	Off-Road Equipment		3.310349421	31.6407783	30.1754694	0.048876	1.365552588		1.3655526	1.256308376		1.256308376
	Dust From Material Movement							7.666233427	7.6662334		3.939953946	3.939953946
	Onsite Truck		0.000600484	0.01926096	0.01232632	4.93E-05	5.45644E-05	1.020266205	1.0203208	5.45644E-05	0.101886102	0.101940666
	Total		3.310949905	31.6600393	30.1877957	0.048925	1.365607153	8.686499632	10.052107	1.256362941	4.041840048	5.298202988
Offsite												
	Worker		0.074268225	0.08410635	1.03242477	0	0	0.22874145	0.2287415	0	0.05361663	0.05361663
	Vendor		0.003650855	0.15040817	0.07132395	0.000899	0.001798972	0.034223638	0.0360226	0.000899486	0.009455396	0.010354882
	Hauling		0	0	0	0	0	0	0	0	0	0
	Total		0.07791908	0.23451453	1.10374872	0.000899	0.001798972	0.262965088	0.2647641	0.000899486	0.063072025	0.063971511
TOTAL			3.3889	31.8946	31.2915	0.0498	1.3674	8.9495	10.3169	1.2573	4.1049	5.3622

Max			ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		2025										
	Off-Road Equipment		3.310349421	31.6407783	30.1754694	0.048876	1.365552588	0	1.3655526	1.256308376	0	1.256308376
	Dust From Material Movement		0	0	0	0	0	7.666233427	7.6662334	0	3.939953946	3.939953946
	Onsite Truck		0.000600484	0.01926096	0.01232632	4.93E-05	5.45644E-05	1.020266205	1.0203208	5.45644E-05	0.101886102	0.101940666
	Total		3.310949905	31.6600393	30.1877957	0.048925	1.365607153	8.686499632	10.052107	1.256362941	4.041840048	5.298202988
Offsite												
	Worker		0.074268225	0.08410635	1.03242477	0	0	0.22874145	0.2287415	0	0.05361663	0.05361663
	Vendor		0.003650855	0.15040817	0.07132395	0.000899	0.001798972	0.034223638	0.0360226	0.000899486	0.009455396	0.010354882
	Hauling		0	0	0	0	0	0	0	0	0	0
	Total		0.07791908	0.23451453	1.10374872	0.000899	0.001798972	0.262965088	0.2647641	0.000899486	0.063072025	0.063971511
TOTAL			3.3889	31.8946	31.2915	0.0498	1.3674	8.9495	10.3169	1.2573	4.1049	5.3622

Grading

Summer			ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		2025										
	Off-Road Equipment											
	Dust From Material Movement											
	Onsite Truck											
	Total		0	0	0	0	0	0	0	0	0	0
Offsite												
	Worker											
	Vendor											
	Hauling											
	Total		0	0	0	0	0	0	0	0	0	0
TOTAL			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Winter			ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		2025										
	Off-Road Equipment		3.196768393	29.6782439	28.3100263	0.06093	1.23497486		1.2349749	1.136176866		1.136176866
	Dust From Material Movement							3.589399008	3.589399		1.424964421	1.424964421
	Onsite Truck		0.000627766	0.02381709	0.01371771	7.66E-05	0.000109129	2.040532409	2.0406415	0.000109129	0.203772203	0.203881332
	Total		3.197396159	29.702061	28.323744	0.061007	1.235083989	5.629931417	6.8650154	1.136285995	1.628736624	2.765022619
Offsite												
	Worker		0.084877971	0.09612155	1.17991403	0	0	0.2614188	0.2614188	0	0.061276148	0.061276148
	Vendor		0.00730171	0.30081635	0.1426479	0.001799	0.003597944	0.068447276	0.0720452	0.001798972	0.018910791	0.020709763
	Hauling		0	0	0	0	0	0	0	0	0	0
	Total		0.092179681	0.39693789	1.32256193	0.001799	0.003597944	0.329866076	0.333464	0.001798972	0.080186939	0.081985911
TOTAL			3.2896	30.0990	29.6463	0.0628	1.2387	5.9598	7.1985	1.1381	1.7089	2.8470

Max			ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		2025										
	Off-Road Equipment		3.196768393	29.6782439	28.3100263	0.06093	1.23497486	0	1.2349749	1.136176866	0	1.136176866
	Dust From Material Movement		0	0	0	0	0	3.589399008	3.589399	0	1.424964421	1.424964421
	Onsite Truck		0.000627766	0.02381709	0.01371771	7.66E-05	0.000109129	2.040532409	2.0406415	0.000109129	0.203772203	0.203881332

			ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
	Total		**3.197396159**	**29.702061**	**28.323744**	**0.061007**	**1.235083989**	**5.629931417**	**6.8650154**	**1.136285995**	**1.628736624**	**2.765022619**
Offsite												
	Worker		0.084877971	0.09612155	1.17991403	0	0	0.2614188	0.2614188	0	0.061276148	0.061276148
	Vendor		0.00730171	0.30081635	0.1426479	0.001799	0.003597944	0.068447276	0.0720452	0.001798972	0.018910791	0.020709763
	Hauling		0	0	0	0	0	0	0	0	0	0
	Total		**0.092179681**	**0.39693789**	**1.32256193**	**0.001799**	**0.003597944**	**0.329866076**	**0.333464**	**0.001798972**	**0.080186939**	**0.081985911**
TOTAL			***3.2896***	***30.0990***	***29.6463***	***0.0628***	***1.2387***	***5.9598***	***7.1985***	***1.1381***	***1.7089***	***2.8470***

Building Construction

	Summer		ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		**2025**										
	Off-Road Equipment		1.126902364	10.4442181	13.0400815	0.0234	0.431840681		0.4318407	0.397293427		0.397293427
	Onsite Truck		0	0	0	0	0	0	0	0	0	0
	Total		**1.126902364**	**10.4442181**	**13.0400815**	**0.0234**	**0.431840681**	**0**	**0.4318407**	**0.397293427**	**0**	**0.397293427**
Offsite												
	Worker		6.908441897	6.97947986	112.097906	0	0	21.05877316	21.058773	0	4.936142711	4.936142711
	Vendor		0.275004041	10.6084106	5.18875549	0.066157	0.132313265	2.517127079	2.6494403	0.066156633	0.695438402	0.761595035
	Hauling		0	0	0	0	0	0	0	0	0	0
	Total		**7.183445938**	**17.5878905**	**117.286661**	**0.066157**	**0.132313265**	**23.57590024**	**23.708214**	**0.066156633**	**5.631581113**	**5.697737746**
TOTAL			***8.3103***	***28.0321***	***130.3267***	***0.0896***	***0.5642***	***23.5759***	***24.1401***	***0.4635***	***5.6316***	***6.0950***

	Winter		ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		**2025**										
	Off-Road Equipment		1.126902364	10.4442181	13.0400815	0.0234	0.431840681		0.4318407	0.397293427		0.397293427
	Onsite Truck		0	0	0	0	0	0	0	0	0	0
	Total		**1.126902364**	**10.4442181**	**13.0400815**	**0.0234**	**0.431840681**	**0**	**0.4318407**	**0.397293427**	**0**	**0.397293427**
Offsite												
	Worker		6.837403934	7.74313796	95.0487944	0	0	21.05877316	21.058773	0	4.936142711	4.936142711
	Vendor		0.268518097	11.0624267	5.24583188	0.066157	0.132313265	2.517127079	2.6494403	0.066156633	0.695438402	0.761595035
	Hauling		0	0	0	0	0	0	0	0	0	0
	Total		**7.10592203**	**18.8055647**	**100.294626**	**0.066157**	**0.132313265**	**23.57590024**	**23.708214**	**0.066156633**	**5.631581113**	**5.697737746**
TOTAL			***8.2328***	***29.2498***	***113.3347***	***0.0896***	***0.5642***	***23.5759***	***24.1401***	***0.4635***	***5.6316***	***6.0950***

	Max		ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		**2025**										
	Off-Road Equipment		1.126902364	10.4442181	13.0400815	0.0234	0.431840681	0	0.4318407	0.397293427	0	0.397293427
	Onsite Truck		0	0	0	0	0	0	0	0	0	0
	Total		**1.126902364**	**10.4442181**	**13.0400815**	**0.0234**	**0.431840681**	**0**	**0.4318407**	**0.397293427**	**0**	**0.397293427**
Offsite												
	Worker		6.908441897	7.74313796	112.097906	0	0	21.05877316	21.058773	0	4.936142711	4.936142711
	Vendor		0.275004041	11.0624267	5.24583188	0.066157	0.132313265	2.517127079	2.6494403	0.066156633	0.695438402	0.761595035
	Hauling		0	0	0	0	0	0	0	0	0	0
	Total		**7.183445938**	**18.8055647**	**117.343737**	**0.066157**	**0.132313265**	**23.57590024**	**23.708214**	**0.066156633**	**5.631581113**	**5.697737746**
TOTAL			***8.3103***	***29.2498***	***130.3838***	***0.0896***	***0.5642***	***23.5759***	***24.1401***	***0.4635***	***5.6316***	***6.0950***

	Summer		ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		**2026**										
	Off-Road Equipment		1.07100914	9.85400878	12.9663789	0.023397	0.378654016		0.378654	0.348361696		0.348361696
	Onsite Truck		0	0	0	0	0	0	0	0	0	0
	Total		**1.07100914**	**9.85400878**	**12.9663789**	**0.023397**	**0.378654016**	**0**	**0.378654**	**0.348361696**	**0**	**0.348361696**
Offsite												
	Worker		5.931669906	6.25134074	104.052856	0	0	21.05877316	21.058773	0	4.936142711	4.936142711
	Vendor		0.275004041	10.1128845	4.89169924	0.066157	0.132313265	2.517127079	2.6494403	0.066156633	0.695438402	0.761595035
	Hauling		0	0	0	0	0	0	0	0	0	0
	Total		**6.206673947**	**16.3642252**	**108.944555**	**0.066157**	**0.132313265**	**23.57590024**	**23.708214**	**0.066156633**	**5.631581113**	**5.697737746**
TOTAL			***7.2777***	***26.2182***	***121.9109***	***0.0896***	***0.5110***	***23.5759***	***24.0869***	***0.4145***	***5.6316***	***6.0461***

	Winter		ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		**2026**										
	Off-Road Equipment		1.07100914	9.85400878	12.9663789	0.023397	0.378654016		0.378654	0.348361696		0.348361696
	Onsite Truck		0	0	0	0	0	0	0	0	0	0
	Total		**1.07100914**	**9.85400878**	**12.9663789**	**0.023397**	**0.378654016**	**0**	**0.378654**	**0.348361696**	**0**	**0.348361696**
Offsite												
	Worker		5.896150925	7.01499884	88.7974537	0	0	21.05877316	21.058773	0	4.936142711	4.936142711
	Vendor		0.262032152	10.5733865	5.00844632	0.066157	0.132313265	2.517127079	2.6494403	0.066156633	0.695438402	0.761595035
	Hauling		0	0	0	0	0	0	0	0	0	0
	Total		**6.158183077**	**17.5883853**	**93.8059**	**0.066157**	**0.132313265**	**23.57590024**	**23.708214**	**0.066156633**	**5.631581113**	**5.697737746**
TOTAL			***7.2292***	***27.4424***	***106.7723***	***0.0896***	***0.5110***	***23.5759***	***24.0869***	***0.4145***	***5.6316***	***6.0461***

	Max		ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		**2026**										
	Off-Road Equipment		1.07100914	9.85400878	12.9663789	0.023397	0.378654016	0	0.378654	0.348361696	0	0.348361696
	Onsite Truck		0	0	0	0	0	0	0	0	0	0
	Total		**1.07100914**	**9.85400878**	**12.9663789**	**0.023397**	**0.378654016**	**0**	**0.378654**	**0.348361696**	**0**	**0.348361696**
Offsite												
	Worker		5.931669906	7.01499884	104.052856	0	0	21.05877316	21.058773	0	4.936142711	4.936142711
	Vendor		0.275004041	10.5733865	5.00844632	0.066157	0.132313265	2.517127079	2.6494403	0.066156633	0.695438402	0.761595035
	Hauling		0	0	0	0	0	0	0	0	0	0
	Total		**6.206673947**	**17.5883853**	**109.061303**	**0.066157**	**0.132313265**	**23.57590024**	**23.708214**	**0.066156633**	**5.631581113**	**5.697737746**
TOTAL			***7.2777***	***27.4424***	***122.0277***	***0.0896***	***0.5110***	***23.5759***	***24.0869***	***0.4145***	***5.6316***	***6.0461***

Asphalt Paving

		Summer	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		2025										
	Off-Road Equipment											
	Paving											
	Onsite Truck											
	Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Offsite												
	Worker											
	Vendor											
	Hauling											
	Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TOTAL			***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***

		Winter	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		2025										
	Off-Road Equipment		0.799681451	7.45410096	9.98167862	0.013954	0.348588244		0.3485882	0.320701184		0.320701184
	Paving		0									
	Onsite Truck		0	0	0	0	0	0	0	0	0	0
	Total		**0.799681451**	**7.45410096**	**9.98167862**	**0.013954**	**0.348588244**	**0**	**0.3485882**	**0.320701184**	**0**	**0.320701184**
Offsite												
	Worker		0.063658478	0.07209116	0.88493552	0	0	0.1960641	0.1960641	0	0.045957111	0.045957111
	Vendor		0	0	0	0	0	0	0	0	0	0
	Hauling		0	0	0	0	0	0	0	0	0	0
	Total		**0.063658478**	**0.07209116**	**0.88493552**	**0**	**0**	**0.1960641**	**0.1960641**	**0**	**0.045957111**	**0.045957111**
TOTAL			***0.8633***	***7.5262***	***10.8666***	***0.0140***	***0.3486***	***0.1961***	***0.5447***	***0.3207***	***0.0460***	***0.3667***

		Max	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		2025										
	Off-Road Equipment		0.799681451	7.45410096	9.98167862	0.013954	0.348588244	0	0.3485882	0.320701184	0	0.320701184
	Paving		0	0	0	0	0	0	0	0	0	0
	Onsite Truck		0	0	0	0	0	0	0	0	0	0
	Total		**0.799681451**	**7.45410096**	**9.98167862**	**0.013954**	**0.348588244**	**0**	**0.3485882**	**0.320701184**	**0**	**0.320701184**
Offsite												
	Worker		0.063658478	0.07209116	0.88493552	0	0	0.1960641	0.1960641	0	0.045957111	0.045957111
	Vendor		0	0	0	0	0	0	0	0	0	0
	Hauling		0	0	0	0	0	0	0	0	0	0
	Total		**0.063658478**	**0.07209116**	**0.88493552**	**0**	**0**	**0.1960641**	**0.1960641**	**0**	**0.045957111**	**0.045957111**
TOTAL			***0.8633***	***7.5262***	***10.8666***	***0.0140***	***0.3486***	***0.1961***	***0.5447***	***0.3207***	***0.0460***	***0.3667***

Architectural Coating

		Summer	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		2025										
	Off-Road Equipment											
	Architectural Coatings											
	Onsite truck											
	Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Offsite												
	Worker											
	Vendor											
	Hauling											
	Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TOTAL			***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***

		Winter	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		2025										
	Off-Road Equipment		0.127960056	0.8822797	1.13984314	0.001726	0.027426557		0.0274266	0.025232433		0.025232433
	Architectural Coatings		508.758267									
	Onsite truck		0	0	0	0	0	0	0	0	0	0
	Total		**508.8862271**	**0.8822797**	**1.13984314**	**0.001726**	**0.027426557**	**0**	**0.0274266**	**0.025232433**	**0**	**0.025232433**
Offsite												
	Worker		1.367480787	1.54862759	19.0097589	0	0	4.211754632	4.2117546	0	0.987228542	0.987228542
	Vendor		0	0	0	0	0	0	0	0	0	0
	Hauling		0	0	0	0	0	0	0	0	0	0
	Total		**1.367480787**	**1.54862759**	**19.0097589**	**0**	**0**	**4.211754632**	**4.2117546**	**0**	**0.987228542**	**0.987228542**
TOTAL			***510.2537***	***2.4309***	***20.1496***	***0.0017***	***0.0274***	***4.2118***	***4.2392***	***0.0252***	***0.9872***	***1.0125***

		Max	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Onsite		2025										
	Off-Road Equipment		0.127960056	0.8822797	1.13984314	0.001726	0.027426557	0	0.0274266	0.025232433	0	0.025232433
	Architectural Coatings		508.758267	0	0	0	0	0	0	0	0	0
	Onsite truck		0	0	0	0	0	0	0	0	0	0
	Total		**508.8862271**	**0.8822797**	**1.13984314**	**0.001726**	**0.027426557**	**0**	**0.0274266**	**0.025232433**	**0**	**0.025232433**
Offsite												
	Worker		1.367480787	1.54862759	19.0097589	0	0	4.211754632	4.2117546	0	0.987228542	0.987228542
	Vendor		0	0	0	0	0	0	0	0	0	0
	Hauling		0	0	0	0	0	0	0	0	0	0
	Total		**1.367480787**	**1.54862759**	**19.0097589**	**0**	**0**	**4.211754632**	**4.2117546**	**0**	**0.987228542**	**0.987228542**
TOTAL			***510.2537***	***2.4309***	***20.1496***	***0.0017***	***0.0274***	***4.2118***	***4.2392***	***0.0252***	***0.9872***	***1.0125***

	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Maximum Daily Emissions	510	37	130	0	1	24	24	1	6	6
South Coast Regional Significance Thresholds	**75**	**100**	**550**	**150**			**150**			**55**
Exceeds Threshold?	Yes	No	No	No			No			No

	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
2025 Demolition	2.6357	37.4292	26.5444	0.1120	1.0688	18.1121	19.1809	0.9954	3.1483	4.1437
2025 Site Preparation	3.3889	31.8946	31.2915	0.0498	1.3674	8.9495	10.3169	1.2573	4.1049	5.3622
2025 Grading	3.2896	30.0990	29.6463	0.0628	1.2387	5.9598	7.1985	1.1381	1.7089	2.8470
2025 Building Construction	8.3103	29.2498	130.3838	0.0896	0.5642	23.5759	24.1401	0.4635	5.6316	6.0950
2025 Asphalt Paving	0.8633	7.5262	10.8666	0.0140	0.3486	0.1961	0.5447	0.3207	0.0460	0.3667
2025 Architectural Coating	510.2537	2.4309	20.1496	0.0017	0.0274	4.2118	4.2392	0.0252	0.9872	1.0125
Maximum Daily Emissions	528.7415	138.6297	248.8823	0.3298	4.6151	61.0051	65.6202	4.2002	15.6269	19.8271
South Coast Regional Significance Thresholds	**75**	**100**	**550**	**150**			**150**			**55**
Exceeds Threshold?	Yes	Yes	No	No			No			No

Regional Operational Emissions Worksheet: Artesia Downtown Specific Plan

Regional Emission (Pounds Per Day)

Existing Land Uses Designated for Redevelopment - Baseline Year

Summer	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Mobile[1]	98.6949307	71.24426258	786.4111161	1.6852378	1.138192336	148.2996584	149.4378507	1.058926445	37.66647679	38.7254032
Area	13.82538323	0.232521314	19.5375508	0.0015703	0.038729275		0.038729275	0.030579437		0.03057944
Energy	0.070146358	1.268975324	1.024297553	0.0076523	0.096929507		0.096929507	0.096929507		0.09692951
Total	112.590	72.746	806.973	1.694	1.274	148.300	149.574	1.186	37.666	38.853

Winter	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Mobile[1]	97.14846414	78.08980834	730.6773969	1.6135074	1.13936708	148.2996584	149.4390255	1.060050369	37.66647679	38.7265272
Area	10.70288791	0.066352941	0.028235294	0.0004235	0.005364706		0.005364706	0.005364706		0.00536471
Energy	0.070146358	1.268975324	1.024297553	0.0076523	0.096929507		0.096929507	0.096929507		0.09692951
Total	107.921	79.425	731.730	1.622	1.242	148.300	149.541	1.162	37.666	38.829

Max Daily	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Mobile[1]	98.695	78.090	786.411	1.685	1.139	148.300	149.439	1.060	37.666	38.727
Area	13.825	0.233	19.538	0.002	0.039	0.000	0.039	0.031	0.000	0.031
Energy	0.070	1.269	1.024	0.008	0.097	0.000	0.097	0.097	0.000	0.097
Total	112.590	79.425	806.973	1.694	1.274	148.300	149.574	1.186	37.666	38.853
Regional Thresholds	**55**	**55**	**550**	**150**			**150**			**55**
Exceeds Thresholds?	Yes	Yes	Yes	No			No			No

[1] *Based on calendar year 2045 emissions.*

Existing Land Uses Designated for Redevelopment - Year 2045

Summer	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Mobile[1]	54.09863607	29.84486536	449.6414951	1.2794755	0.457305419	147.0383166	147.495622	0.426353277	37.30258186	37.7289351
Area	13.82780266	0.231484151	19.55331089	0.0015703	0.038602501		0.038602501	0.030491541		0.03049154
Energy	0.070146358	1.268975324	1.024297553	0.0076523	0.096929507		0.096929507	0.096929507		0.09692951
Total	67.997	31.345	470.219	1.289	0.593	147.038	147.631	0.554	37.303	37.856

Winter	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Mobile[1]	54.0660392	32.69987618	414.0755437	1.2235037	0.457532278	147.0383166	147.4958489	0.426570323	37.30258186	37.7291522
Area	10.70288791	0.066352941	0.028235294	0.0004235	0.005364706		0.005364706	0.005364706		0.00536471
Energy	0.070146358	1.268975324	1.024297553	0.0076523	0.096929507		0.096929507	0.096929507		0.09692951
Total	64.839	34.035	415.128	1.232	0.560	147.038	147.598	0.529	37.303	37.831

Max Daily	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Mobile[1]	54.099	32.700	449.641	1.279	0.458	147.038	147.496	0.427	37.303	37.729
Area	13.828	0.231	19.553	0.002	0.039	0.000	0.039	0.030	0.000	0.030
Energy	0.070	1.269	1.024	0.008	0.097	0.000	0.097	0.097	0.000	0.097
Total	67.997	34.035	470.219	1.289	0.593	147.038	147.631	0.554	37.303	37.856
Regional Thresholds	**55**	**55**	**550**	**150**			**150**			**55**
Exceeds Thresholds?	Yes	No	No	No			No			No

[1] *Based on calendar year 2045 emissions.*

Proposed Project Buildout Year

Summer	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Mobile[1]	63.52489881	37.34868353	514.2520309	1.4241197	0.55649888	158.6132155	159.1697144	0.520357215	40.29123692	40.8115941
Area	75.85758194	34.08287606	148.8134067	0.2159326	2.745957243		2.745957243	2.724281963		2.72428196
Energy	0.834675734	14.6553495	8.930240829	0.0910555	1.153370035		1.153370035	1.153370035		1.15337003
Total	140.217	86.087	671.996	1.731	4.456	158.613	163.069	4.398	40.291	44.689

Winter	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Mobile[1]	63.49432566	40.75511599	476.108614	1.3652401	0.556854714	158.6132155	159.1700702	0.520697656	40.29123692	40.8119346
Area	62.50073127	32.86129421	13.98352931	0.2097528	2.656870448		2.656870448	2.656870448		2.65687045
Energy	0.834675734	14.6553495	8.930240829	0.0910555	1.153370035		1.153370035	1.153370035		1.15337003
Total	126.830	88.272	499.022	1.666	4.367	158.613	162.980	4.331	40.291	44.622

Max Daily	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Mobile[1]	63.525	40.755	514.252	1.424	0.557	158.613	159.170	0.521	40.291	40.812
Area	75.858	34.083	148.813	0.216	2.746	0.000	2.746	2.724	0.000	2.724
Energy	0.835	14.655	8.930	0.091	1.153	0.000	1.153	1.153	0.000	1.153
Total	140.217	88.272	671.996	1.731	4.456	158.613	163.069	4.398	40.291	44.689
Regional Thresholds	**55**	**55**	**550**	**150**			**150**			**55**
Exceeds Thresholds?	Yes	Yes	Yes	No			Yes			No

[1] *Based on calendar year 2045 emissions.*

Net Change

Summer	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Mobile[1]	9.426262733	7.503818175	64.61053577	0.1446442	0.099193461	11.57489889	11.67409235	0.094003938	2.988655061	3.082659
Area	62.02977928	33.85139191	129.2600958	0.2143623	2.707354742		2.707354742	2.693790421		2.69379042
Energy	0.764529376	13.38637418	7.905943276	0.0834032	1.056440527		1.056440527	1.056440527		1.05644053
Total	72.221	54.742	201.777	0.442	3.863	11.575	15.438	3.844	2.989	6.833

Winter	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Mobile[1]	9.428286468	8.055239813	62.03307033	0.1417364	0.099322436	11.57489889	11.67422133	0.094127333	2.988655061	3.08278239
Area	51.79784336	32.79494127	13.95529402	0.2093293	2.651505743		2.651505743	2.651505743		2.65150574
Energy	0.764529376	13.38637418	7.905943276	0.0834032	1.056440527		1.056440527	1.056440527		1.05644053
Total	61.991	54.237	83.894	0.434	3.807	11.575	15.382	3.802	2.989	6.791

Max Daily	ROG	NOx	CO	SO2	Exhaust PM10	Fugitive PM10	PM10 Total	Exhaust PM2.5	Fugitive PM2.5	PM2.5 Total
Mobile[1]	9.426	8.055	64.611	0.145	0.099	11.575	11.674	0.094	2.989	3.083
Area	62.030	33.851	129.260	0.214	2.707	0.000	2.707	2.694	0.000	2.694
Energy	0.765	13.386	7.906	0.083	1.056	0.000	1.056	1.056	0.000	1.056
Total	***72.221***	***55.293***	***201.777***	***0.442***	***3.863***	***11.575***	***15.438***	***3.844***	***2.989***	***6.833***
Regional Thresholds	**55**	**55**	**550**	**150**			**150**			**55**
Exceeds Thresholds?	Yes	Yes	No	No			No			No

[1] *Based on calendar year 2045 emissions.*

GHG Emissions Worksheet: Artesia Downtown Specific Plan

Construction Emissions

Year		Annual Emissions (MTCO2e)
2025		4521
2026		3611
	Total	**8,132**

Operation Emissions

Proposed Project

Source		Buildout $MTCO_2e$/Year	Percent of Project Total
Mobile[1]		20235.75846	66%
Area		517.9230677	2%
Energy		6248.722275	20%
Water		604.6585957	2%
Waste		2684.094806	9%
Refrig.		64.41625653	0%
Amortized Construction		271	1%
	Total All Sectors	***30,627***	***100%***
	No Net Increase GHG Thresnod	0	
	Exceed Threshold?	**Yes**	

[1] Based on calendar year 2045 emission rates.

Existing Land Uses Designated for Redevelopment - Baseline Year

Source		Buildout $MTCO_2e$/Year	Percent of Project Total
Mobile[1]		23,294	94.65%
Area		10	0.04%
Energy		1,096	4.45%
Water		65	0.26%
Waste		143	0.58%
Refrig.		1	0.01%
	Total All Sectors	***24,610***	***100%***
	No Net Increase GHG Thresnod	3,000	
	Exceed Threshold?	**Yes**	

[1] Based on calendar year 2045 emission rates.

Net Change

Source		Existing (MTCO2e/Yr)	Proposed Project (MTCO2e/Yr)	Net Change ($MTCO_2e$/Yr)	Percent Change
Mobile[1]		23,294	20,236	(3,059)	-13%
Area		10	518	508	5124%
Energy		1,096	6,249	5,153	470%
Water		65	605	540	831%
Waste		143	2,684	2,541	1772%
Refrig.		1	64	63	4269%
Amortized Construction		0	271	271	
	Total All Sectors	***24,610***	***30,627***	***6,017***	

[1] Based on calendar year 2045 emission rates.

2. Criteria Air Pollutant and GHG Modeling Inputs and Assumptions

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CalEEMod Project Characteristics Inputs (Construction): Proposed Land Uses

Name:	Proposed Construction
Project Location:	City of Artesia
County/Air Basin:	Los Angeles County
Land Use Setting:	Suburban
Operational Year:	2045
Utility Company:	Southern California Edison; Southern California Gas
Air Basin:	SoCAB
Air District:	South Coast AQMD

Total Project Site Acreage Disturbed: 31.64 acres

ITE Land Use	CalEEMod Land Use	Dwelling Units	Rooms	Building Square Feet
Multi-Family Residential[1]	Apartment Low-Rise	1,981	0	2,099,860
General Office	General Office	0	0	105,730
Fine Dining Restaurant [4]	Quality Restaurant	0	0	23,418
High-Turnover (Sit-Down) Restaurant [4]	High Turnover Sit Down Restaurant	0	0	135,177
Retail	Regional Shopping Center	0	0	133,818
Retail	Strip Mall Retail	0	0	24,777
Hotel [7]	Hotel	0	150	80,000
	Total	**1,981**	**150**	**2,602,780**

[1] *Building square footage based on CalEEMod default of 1,060 BSF per apartment low-rise dwelling unit.*

CalEEMod Land Use Inputs (Passenger Vehicles and Truck Only Model Runs)

Land Use	Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet	Landscaping Square Feet
Apartment Low-Rise	Residential	Apartment Low-Rise	1,981	DU	4.52	2,099,860	0
General Office	Commercial	General Office	105.730	1000 sqft	4.52	105,730	
Quality Restaurant	Recreation	Quality Restaurant	23.418	1000 sqft	4.52	23,418	
High Turnover Sit Down Restaurant	Recreation	High Turnover Sit Down Restaurant	135.177	1000 sqft	4.52	135,177	
Regional Shopping Center	Retail	Regional Shopping Center	133.818	1000 sqft	4.52	133,818	
Strip Mall Retail	Retail	Strip Mall Retail	24.777	1000 sqft	4.52	24,777	
Hotel	Recreation	Hotel	150	Room	4.52	80,000	
					31.64		

Demoliion

Exising Uses Designated for Redelopment

CalEEMod Land Use	Dwelling Units	Building Square Feet	Acres
Single-Family[1]	4	7,800	0.375
Apartment Low-Rise[1]	15	15,900	1.406
General Office Building	0	43,422	3.525
Regional Shopping Center	0	309,506	21.197
Strip Mall Retail	0	44,711	2.899
General Light Industrial	0	26,379	2.236
Total	**19**	**447,718**	**31.639**

Total Building Square Footage Demolition:	447,718	building square feet
Daily Haul Trips:[2]	172	trips per day
Total Haul Trips:	5,160	trips

[1] *Building square footage based on CalEEMod defaults of 1,950 building square feet (BSF) per single-family residential unit and 1,060 BSF per apartment low-rise dwelling unit.*

[2] *CalEEMod default.*

Architectural Coating

Land Use	Land Use Amount	Paintable Surface Area Factor	Total Paintable Surface Area	Interior Area	Exterior Area
Multi-Family	2,099,860	2.70	5,669,622	4,252,217	1,417,406
			Total Residential Building	**4,252,217**	**1,417,406**
General Office	105,730	2.0	211,460	158,595	52,865
Quality Restaurant	23,418	2.0	46,836	35,127	11,709
High Turnover Sit Down Restaurant	135,177	2.0	270,354	202,766	67,589
Regional Shopping Center	133,818	2.0	267,636	200,727	66,909
Strip Mall Retail	24,777	2.0	49,554	37,166	12,389
Hotel	80,000	2.0	160,000	120,000	40,000

Reduction Measures

Dust From Material Movement

	Frequency[1]	PM10 % Reduction[2]	PM2.5 % Reduction[2]
Water Exposed Area[1]	2x daily	61.00%	61%

Onroad Fugitive Dust

	PM10 % Reduction[2]	PM2.5 % Reduction[2]
Limit Vehicle Speeds on Unpaved Roads to 25 MPH[1]	44%	44%
Sweep Paved Roads Once Per Month[1]	9%	9%

[1] *Based on South Coast AQMD Rule 403*

[2] *CalEEmod default values.*

CalEEMod Project Characteristics Inputs (Operation): Existing Uses to be Redeveloped

Name:	Existing
Project Location:	City of Artesia
County/Air Basin:	Los Angeles County
Land Use Setting:	Suburban
Operational Year:	2024; 2045
Utility Company:	Southern California Edison; Southern California Gas
Air Basin:	SoCAB
Air District:	South Coast AQMD

Total Project Site Acreage Disturbed: 31.64 acres

CalEEMod Land Use	Dwelling Units	Building Square Feet	Acres
Single-Family[1]	4	7,800	0.375
Apartment Low-Rise[1]	15	15,900	1.406
General Office Building	0	43,422	3.525
Regional Shopping Center	0	309,506	21.197
Strip Mall Retail	0	44,711	2.899
General Light Industrial	0	26,379	2.236
Total	**19**	**447,718**	**31.639**

[1] *Building square footage based on CalEEMod defaults of 1,950 building square feet (BSF) per single-family residential unit and 1,060 BSF per apartment low-rise dwelling unit.*

CalEEMod Land Use Inputs (Passenger Vehicles and Truck Only Model Runs)

Land Use	Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet	Landscaping Square Feet
Single-Family	Residential	Single-Family	4	DU	0.375	7,800	0
Apartment Low-Rise	Residential	Apartment Low-Rise	15	DU	1.406	15,900	
General Office Building	Commercial	General Office Building	43.422	1000 sqft	3.525	43,422	
Regional Shopping Center	Retail	Regional Shopping Center	309.506	1000 sqft	21.197	309,506	
Strip Mall Retail	Retail	Strip Mall Retail	44.711	1000 sqft	2.899	44,711	
General Light Industrial	Industrial	General Light Industrial	26.379	1000 sqft	2.236	26,379	
					31.639		

Trip Generation

Single Family

	Weekday[1]	Saturday[2]	Sunday[2]
Daily Trips	37	38	34
Daily Trip Generation Rate	9.2500000000	9.4800000000	8.4800000000

[1] *Provided by Linscott, Law, & Greenspan Engineers.*
[2] *11th Edition ITE Trip Generation handbook for Land Use 210 - Single Family Detached based on land use utilized by Linscott, Law, & Greenspan Engineers.*

Multi-Family

	Weekday[1]	Saturday[2]	Sunday[2]
Daily Trips	101	68	58
Daily Trip Generation Rate	6.7333333333	4.5500000000	3.8600000000

[1] *Provided by Linscott, Law, & Greenspan Engineers.*
[2] *11th Edition ITE Trip Generation handbook for Land Use 220 - Multi-Family Housing (Low Rise) based on land use utilized by Linscott, Law, & Greenspan Engineers.*

General Office Building

	Weekday[1]	Saturday[2]	Sunday[2]
Daily Trips	470	96	30
Daily Trip Generation Rate	10.8240062641	2.21	0.70

[1] *Provided by Linscott, Law, & Greenspan Engineers.*
[2] *11th Edition ITE Trip Generation handbook for Land Use 710 - General Office Building based on land use utilized by Linscott, Law, & Greenspan Engineers.*

Regional Shopping Center

	Weekday[1]	Saturday[2]	Sunday[2]
Daily Trips	20,897	25,092	13,210
Daily Trip Generation Rate	67.5172694552	81.07	42.68

[1] *Provided by Linscott, Law, & Greenspan Engineers.*
[2] *11th Edition ITE Trip Generation handbook for Land Use 821 - Shopping Plaza (40-150k) based on land use utilized by Linscott, Law, & Greenspan Engineers.*

Strip Mall Retail

	Weekday[1]	Saturday[2]	Sunday[2]
Daily Trips	2,435	2,435	2,435
Daily Trip Generation Rate	54.4608709266	54.4608709266	54.4608709266

[1] *Provided by Linscott, Law, & Greenspan Engineers.*
[2] *Assumes same as weekeday. No Saturday or Sunday trip generation rates provided in the 11th Edition ITE Trip Generation handbook.*

General Light Industrial

	Weekday[1]	Saturday[2]	Sunday[2]
Daily Trips	128	18	132
Daily Trip Generation Rate	4.8523446681	0.69	5.00

[1] *Provided by Linscott, Law, & Greenspan Engineers.*
[2] *11th Edition ITE Trip Generation handbook for Land Use 110 - General Light Industrial based on land use utilized by Linscott, Law, & Greenspan Engineers.*

Vehicle Miles Traveled

Baseline Year Average Trip Length:[1] 7.40 miles per trip
Buildout Year 2045 Average Trip Length:[1] 7.43 miles per trip

Land Use	Average Daily Trips			Total Annual Trips	Total Annual VMT Baseline Year	Total Annual VMT Building Year
	Weekday	Saturday	Sunday			
Single-Family	37	38	34	13,356	98,832	99,233
Apartment Low-Rise	101	68	58	32,820	242,867	243,851
General Office Building	470	96	30	128,771	952,903	956,766
Regional Shopping Center	20,897	25,092	13,210	7,424,891	54,944,194	55,166,941
Strip Mall Retail	2,435	2,435	2,435	886,340	6,558,916	6,585,506
General Light Industrial	128	18	132	41,085	304,029	305,262
Total	**24,068**	**27,747**	**15,899**	**8,527,262**	**63,101,740**	**63,357,558**

[1] *Provided by Linscott, Law, & Greenspan Engineers*

Hearths

	Dwelling Units with Gas Fireplace	Dwelling Units W/O Fireplace
Single Family	4	0
Multi-Family Low Rise	0	15

** Assumed natural gas fireplaces for single-family units and no fireplaces for multi-family units.*

Architectural Coating[1]

Land Use	Land Use Amount	Paintable Surface Area Factor	Total Paintable Surface Area	Interior Area	Exterior Area
Single-Family	7,800	2.70	21,060	15,795	5,265
Multi-Family	15,900	2.70	42,930	32,198	10,733
			Total Residential Building	**47,993**	**15,998**
General Office Building	43,422	2.0	86,844	65,133	21,711
Regional Shopping Center	309,506	2.0	619,012	464,259	154,753
Strip Mall Retail	44,711	2.0	89,422	67,067	22,356
General Light Industrial	26,379	2.0	52,758	39,569	13,190
			Total Non-Residential Building	**636,027**	**212,009**

[1] *Based on CalEEMod default methodology.*

Energy

Default CalEEMod Energy Usage

	Title 24 Electricity	Non-Title 24 Electricity	Total Electricity Demand	Title 24 Natural Gas	Non-Title 24 Natural Gas	Total Natural Gas Demand
Land Use	**killwatt hours per year**			**kilo-British Thermal Units per year**		
Single-Family	6,130.46	21,450.12	27,581	134,989.55	18,351.84	153,341
Apartment Low-Rise	14,863.82	42,661.86	57,526	213,146.54	31,438.59	244,585
General Office Building	626,140.47	147,652.00	773,792	871,763.16	228,831.15	1,100,594
Regional Shopping Center	2,408,131.51	631,640.31	3,039,772	441,359.53	1,411,635.61	1,852,995
Strip Mall Retail	347,876.84	91,246	439,123	63,758	203,924	267,682
General Light Industrial	215,857.12	37,190	253,047	425,060	704,013	1,129,072
Total	**3,619,000.22**	**971,840.24**	**4,590,840.46**	**2,150,076.79**	**2,598,193.86**	**4,748,270.65**

Water Use

Indoor Water Demand

	Potable Water Demand (gal/day)	Total Annual Water Demand (gpy)[2]
Single-Family	1,216	443,866
Apartment Low-Rise	2,736	998,699
General Office Building	10,155	3,706,454
Regional Shopping Center	54,286	19,814,319
Strip Mall Retail	16,991	6,201,783
General Light Industrial	771	281,460
Total	86,155	31,446,582

Land Use	Annual Electricity (kWh/yr)	Annual Natural Gas (KBTU/yr)
Single-Family	27,581	153,341
Apartment Low-Rise	57,526	244,585
General Office Building	773,792	1,100,594
Regional Shopping Center	3,039,772	1,852,995
Strip Mall Retail	439,123	267,682
General Light Industrial	253,047	1,129,072
Total	**4,590,840**	**4,748,271**

[1] *Table 5.15-6, Net Increase in Water Demand Under the Proposed Project, Chapter 5.15, Utilities and Service Systems, of this Draft EIR.*
[2] *Assumes 365 days per year.*

	CalEEMod Default	Adjusted	
Septic Tank	10.33%	0%	10.33%
Aerobic	87.46%	97.7899990081786000%	
Facultative Lagoons	2.21%	2.2100000381469700%	
Total	100.00%	100.00%	

Summary

Land Use	Total Annual Indoor Water Demand (gpy)[1]	Total Outdoor Water (gpy)[1]
Single-Family	443,866	0
Apartment Low-Rise	998,699	0
General Office Building	3,706,454	0
Regional Shopping Center	19,814,319	0
Strip Mall Retail	6,201,783	0
General Light Industrial	281,460	0
	31,446,582	0

[1] *Evenly distributed among the land uses for purposes of modeling.*

Solid Waste

	Factor (residents or employees)	Waste Generation Rate (pounds/person/day)[1]	Waste Generation (pounds/day)	Waste Generation (pounds/year)[2]	Waste Generation (tons/year)
Residential	67	6.1	408.7	149175.5	74.58775
Employees	300	13.2	3960	1445400	722.7
TOTAL			**4,369**	**1,594,576**	**797**

[1] *Table 5.15-8, Estimated Solid Waste Generation, Chapter 5.15, Utilities and Service Systems, of this Draft EIR.*
[2] *Assumes 365 days per year for modeling purposes.*

Land Use	Total Annual Solid Waste (tpy)[1]	Amount[2]	unit	Solid Waste Generation Rate
Single-Family	37	12	resident	3.108
Apartment Low-Rise	37	44	resident	0.848
Total	**75**			

Land Use	Total Annual Solid Waste (gpy)[1]	Solid Waste Generation Rate
General Office Building	181	4.16
Regional Shopping Center	181	0.58
Strip Mall Retail	181	4.04
General Light Industrial	181	6.85
	723	

[1] *Evenly distributed among the land uses for purposes of modeling.*
[2] *CalEEMod default.*

Carbon Intensity Factors

Southern California Edison Carbon Intensity Factors

SCE CO_2e Intensity Factor[1]	405	pounds per megawatt hour
CO2:[1,2]	402.9829999	pounds per megawatt hour
CH4:[3]	0.033	pound per megawatt hour
N2O:[3]	0.004	pound per megawatt hour

[1] *Based on CO_2e intensity factor of 405 pounds per megawatt hour for year 2022; Southern California Edison. 2024. 2023 Sustainability Report. https://download.edison.com/406/files/20245/eix-2023-sustainability-report.pdf?Signature=f5MEnkVHx0Bs72YlK4GYg%2F2v2uc%3D&Expires=1726864139&AWSAccessKeyId=AKIAJX7XEOOELCYGIVDQ&versionId=xtFaY0bJYnXT90468zJhc4oar_ZyN5Wo&response-content-disposition=attachment*

[2] *Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007.*
[3] *CalEEMod default values.*

General Conversion Factors	
lbs to kg	0.4536
kg to MTons	0.001
Mmbtu to Therm	0.1
Therms to kwh	29.30711111
kilowatt hrs to megawatt hrs	0.001
lbs to Tons	2000
Tons to MTon	0.9071847

Source: California Air Resources Board (CARB). 2010. Local Government Operations Protocol. Version 1.1. Appendix F, Standard Conversion Factors

	Global Warming Potentials (GWP)
CO_2	1
CH_4	25
N_2O	298

Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007.

CalEEMod Project Characteristics Inputs (Operation): Proposed Land Uses

Name:	Proposed
Project Location:	City of Artesia
County/Air Basin:	Los Angeles County
Land Use Setting:	Suburban
Operational Year:	2045
Utility Company:	Southern California Edison; Southern California Gas
Air Basin:	SoCAB
Air District:	South Coast AQMD

Total Project Site Acreage Disturbed: 31.64 acres

ITE Land Use	CalEEMod Land Use	Dwelling Units	Rooms	Building Square Feet
Multi-Family Residential[1]	Apartment Low-Rise	1,981	0	0
General Office	General Office	0	0	105,730
Fine Dining Restaurant [4]	Quality Restaurant	0	0	23,418
High-Turnover (Sit-Down) Restaurant [4]	High Turnover Sit Down Restaurant	0	0	135,177
Retail	Regional Shopping Center	0	0	133,818
Retail	Strip Mall Retail	0	0	24,777
Hotel [7]	Hotel	0	150	80,000
	Total	**1,981**	**150**	**502,920**

[1] *Building square footage based on CalEEMod default of 1,060 BSF per apartment low-rise dwelling unit.*

CalEEMod Land Use Inputs (Passenger Vehicles and Truck Only Model Runs)

Land Use	Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet	Landscaping Square Feet
Apartment Low-Rise	Residential	Apartment Low-Rise	1,981	DU	4.52	2,099,860	0
General Office	Commercial	General Office	105.730	1000 sqft	4.52	105,730	
Quality Restaurant	Recreation	Quality Restaurant	23.418	1000 sqft	4.52	23,418	
High Turnover Sit Down Restaurant	Recreation	High Turnover Sit Down	135.177	1000 sqft	4.52	135,177	
Regional Shopping Center	Retail	Regional Shopping Center	133.818	1000 sqft	4.52	133,818	
Strip Mall Retail	Retail	Strip Mall Retail	24.777	1000 sqft	4.52	24,777	
Hotel	Recreation	Hotel	150	Room	4.52	80,000	
					31.64		

Trip Generation

Multi-Family

	Weekday[1]	Saturday[2]	Sunday[2]
Daily Trips	9,350	9,014	7,647
Daily Trip Generation Rate	4.72	4.55	3.86
Mixed-TOD Trip Reduction (25%)	*2,338*	*2,253*	*1,912*
Adjusted Daily Trips	7,013	6,760	5,735
Adjusted Daily Trip Generation Rate	3.5398788491	3.4125000000	2.8950000000

[1] *Provided by Linscott, Law, & Greenspan Engineers.*
[2] *11th Edition ITE Trip Generation handbook for Land Use 220 - Multi-Family Housing (Low Rise) based on land use utilized by Linscott, Law, & Greenspan Engineers.*

General Office

	Weekday[1]	Saturday[2]	Sunday[2]
Daily Trips	1,146	234	74
Daily Trip Generation Rate	10.84	2.21	0.70
Mixed-TOD Trip (25%) Plus Transit Adjustment (10%) Reductions	*401*	*82*	*26*
Adjusted Daily Trips	745	152	48
Adjusted Daily Trip Generation Rate	7.0453040764	1.4365000000	0.4550000000

[1] *Provided by Linscott, Law, & Greenspan Engineers.*

[2] *11th Edition ITE Trip Generation handbook for Land Use 710 - General Office Building based on land use utilized by Linscott, Law, & Greenspan Engineers.*

Quality Restaurant

	Weekday[1]	Saturday[2]	Sunday[2]
Daily Trips	1,963	2,109	1,685
Daily Trip Generation Rate	83.82	90.04	71.97
Mixed-TOD Trip (25%) Plus Transit Adjustment (10%)			
Reductions	*687*	*738*	*590*
Adjusted Daily Trips	1,276	1,371	1,096
Adjusted Daily Trip Generation Rate	54.4858655735	58.5260000000	46.7805000000

[1] *Provided by Linscott, Law, & Greenspan Engineers.*

[2] *11th Edition ITE Trip Generation handbook for Land Use 931 - Fine Dining Restaurant based on land use utilized by the Linscott, Law, & Greenspan Engineers.*

High Turnover Sit Down Restaurant

	Weekday[1]	Saturday[2]	Sunday[2]
Daily Trips	14,491	16,546	19,282
Daily Trip Generation Rate	107.20	122.40	142.64
Mixed-TOD Trip (25%) Plus Transit Adjustment (10%)			
Reductions	*5,072*	*5,791*	*6,749*
Adjusted Daily Trips	9,419	10,755	12,533
Adjusted Daily Trip Generation Rate	69.6801230979	79.5600000000	92.7160000000

[1] *Provided by Linscott, Law, & Greenspan Engineers.*

[2] *11th Edition ITE Trip Generation handbook for Land Use 932 - High Turnover (Sit Dow) Restaurant based on land use utilized by the Linscott, Law, & Greenspan Engineers.*

Regional Shopping Center

	Weekday[1]	Saturday[2]	Sunday[2]
Daily Trips	9,035	10,849	5,711
Daily Trip Generation Rate	67.52	81.07	42.68
Mixed-TOD Trip (25%) Plus Transit Adjustment (10%)			
Reductions	*3,162*	*3,797*	*1,999*
Adjusted Daily Trips	5,873	7,052	3,712
Adjusted Daily Trip Generation Rate	43.8860990300	52.6955000000	27.7420000000

[1] *Provided by Linscott, Law, & Greenspan Engineers.*

[2] *11th Edition ITE Trip Generation handbook for Land Use 821 - Shopping Plaza (40-150k) based on land use utilized by Linscott, Law, & Greenspan Engineers.*

Strip Mall Retail

	Weekday[1]	Saturday[2]	Sunday[2]
Daily Trips	1,349	1,349	1,349
Mixed-TOD Trip (25%) Plus Transit Adjustment (10%)			
Reductions	*472*	*472*	*472*
Adjusted Daily Trips	877	877	877
Daily Trip Generation Rate	35.3896759091	35.3896759091	35.3896759091

[1] *Provided by Linscott, Law, & Greenspan Engineers.*

[2] *Assumes same as weekeday. No Saturday or Sunday trip generation rates provided in the 11th Edition ITE Trip Generation handbook.*

Hotel

	Weekday[1]	Saturday[2]	Sunday[2]
Daily Trips	1,199	1,211	891
Daily Trip Generation Rate	7.993333333	8.07	5.94
Mixed-TOD Trip (25%) Plus Transit Adjustment (10%)			
Reductions	*420*	*424*	*312*
Adjusted Daily Trips	779	787	579
Adjusted Daily Trip Generation Rate	5.1956666667	5.2455000000	3.8610000000
	25,981	27,753	24,580

[1] *Provided by Linscott, Law, & Greenspan Engineers.*

[2] *11th Edition ITE Trip Generation handbook for Land Use 310 - Lodging based on land use utilized by the Linscott, Law, and Greenspan Engineers.*

Vehicle Miles Traveled

Project Opening Year Average Trip Length:[1] 7.36 miles per trip

Land Use	Average Daily Trips			Total Annual Trips	Total Annual VMT
	Weekday	Saturday	Sunday		Buildout Year
Apartment Low-Rise	7,013	6,760	5,735	2,472,998	18,201,267
General Office	745	152	48	204,073	1,501,980
Quality Restaurant	1,276	1,371	1,096	459,983	3,385,471
High Turnover Sit Down Restaurant	9,419	10,755	12,533	3,659,942	26,937,174
Regional Shopping Center	5,873	7,052	3,712	2,086,642	15,357,687
Strip Mall Retail	877	877	877	319,173	2,349,116
Hotel	779	787	579	273,662	2,014,150
Total	**25,981**	**27,753**	**24,580**	**9,476,474**	**69,746,846**

[1] *Provided by Linscott, Law, & Greenspan Engineers.*

Hearths

Land Use	Dwelling Units with Gas Fireplace	Dwelling Units W/O Fireplace
Multi-Family Low Rise	1,981	0

** Assumed natural gas fireplaces for multi-family units. No wood burning fireplaces per South Coast AQMD Rule 445.*

Energy

Default CalEEMod Energy Usage

Land Use	Title 24 Electricity	Non-Title 24 Electricity	Total Electricity Demand	Title 24 Natural Gas	Non-Title 24 Natural Gas	Total Natural Gas Demand
	killwatt hours per year			kilo-British Thermal Units per year		
Apartment Low-Rise	1,963,015.20	5,634,209.75	7,597,225	28,149,553.14	4,151,989.99	32,301,543
General Office	1,524,614.99	359,523.88	1,884,139	2,122,691.71	557,190.30	2,679,882
Quality Restaurant	433,718.04	377,254.82	810,973	491,660.82	2,204,491.14	2,696,152
High Turnover Sit Down Restaurant	2,503,574.34	2,177,648.60	4,681,223	2,838,040.58	12,725,104.59	15,563,145
Regional Shopping Center	1,041,179.63	273,096	1,314,276	190,826	610,335	801,161
Strip Mall Retail	192,779.06	50,565	243,344	35,332	113,006	148,339
Hotel	850,330.64	269,166	1,119,496	1,179,402	1,130,334	2,309,736
Total	**8,509,211.90**	**9,141,463.57**	**17,650,675.47**	**35,007,507.15**	**21,492,450.61**	**56,499,957.76**

Water Use

Indoor Water Demand

	Potable Water Demand (gal/day)	Total Annual Water Demand (gpy)[2]
Apartment Low-Rise	309,553	112,986,860
General Office	19,781	7,219,980
Quality Restaurant	21,906	7,995,739
High Turnover Sit Down Restaurant	126,450	46,154,240
Regional Shopping Center	12,518	4,569,023
Strip Mall Retail	2,318	845,975
Hotel	17,540	6,401,918
Total	510,065	186,173,734

[1] *Table 5.15-6, Net Increase in Water Demand Under the Proposed Project, Chapter 5.15, Utilities and Service Systems, of this Draft EIR.*
[2] *Assumes 365 days per year.*

	CalEEMod Default	Adjusted
Septic Tank	10.33%	0%
Aerobic	87.46%	97.7899990081786000%
Facultative Lagoons	2.21%	2.2100000381469700%
Total	100.00%	100.00%

Summary

Land Use	Total Annual Indoor Water Demand (gpy)[1]	Total Outdoor Water (gpy)[1]
Apartment Low-Rise	112,986,860	0
General Office	7,219,980	0
Quality Restaurant	7,995,739	0
High Turnover Sit Down Restaurant	46,154,240	0
Regional Shopping Center	4,569,023	0
Strip Mall Retail	845,975	0
Hotel	6,401,918	0
	186,173,734	0

[1] *Evenly distributed among the land uses for purposes of modeling.*

Solid Waste

	Factor (residents or employees)	Waste Generation Rate (pounds/person/day)[1]	Waste Generation (pounds/day)	Waste Generation (pounds/year)[2]	Waste Generation (tons/year)
Residential	6934	6.1	42297.4	15438551	7719.2755
Employees	356	13.2	4699.2	1715208	857.604
TOTAL	**n/a**	**n/a**	**46,997**	**17,153,759**	**8,577**

[1] *Table 5.15-8, Estimated Solid Waste Generation, Chapter 5.15, Utilities and Service Systems, of this Draft EIR.*
[2] *Assumes 365 days per year for modeling purposes.*

Land Use	Total Annual Solid Waste (tpy)	Amount[2]	unit	Solid Waste Generation Rate
Apartment Low-Rise	7,719	5,864	resident	1.316

Land Use	Total Annual Solid Waste (gpy)[1]	Solid Waste Generation Rate
General Office	143	1.35
Quality Restaurant	143	6.10
High Turnover Sit Down Restaurant	143	1.06
Regional Shopping Center	143	1.07
Strip Mall Retail	143	5.77
Hotel	143	0.95
Total	**858**	**NA**

[1] *Evenly distributed among the land uses for purposes of modeling.*
[2] *CalEEMod default.*

Architectural Coating[1]

Land Use	Land Use Amount	Paintable Surface Area Factor	Total Paintable Surface Area	Interior Area	Exterior Area
Multi-Family	2,099,860	2.70	5,669,622	4,252,217	1,417,406
			Total Residential Building	**4,252,217**	**1,417,406**
General Office	105,730	2.0	211,460	158,595	52,865
Quality Restaurant	23,418	2.0	46,836	35,127	11,709
High Turnover Sit Down Restaurant	135,177	2.0	270,354	202,766	67,589
Regional Shopping Center	133,818	2.0	267,636	200,727	66,909
Strip Mall Retail	24,777	2.0	49,554	37,166	12,389
Hotel	80,000	2.0	160,000	120,000	40,000

[1] *Based on CalEEMod default methodology.*

Carbon Intensity Factors

Southern California Edison Carbon Intensity Factors

SCE CO_2e Intensity Factor[1]	405	pounds per megawatt hour
CO2:[1,2]	402.983	pounds per megawatt hour
CH4:[3]	0.033	pound per megawatt hour
N2O:[3]	0.004	pound per megawatt hour

[1] *Based on CO_2e intensity factor of 405 pounds per megawatt hour for year 2022; Southern California Edison. 2024. 2023 Sustainability Report. https://download.edison.com/406/files/20245/eix-2023-sustainability-report.pdf?Signature=f5MEnkVHx0Bs72YlK4GYg%2F2v2uc%3D&Expires=1726864139&AWSAccessKeyId=AKIAJX7XEOOELCYGIVDQ&versionId=xtFaY0bJYnXT90468zJhc4oar_ZyN5Wo&response-content-disposition=attachment*

[2] *Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007.*

[3] *CalEEMod default values.*

General Conversion Factors

lbs to kg	0.4536
kg to MTons	0.001
Mmbtu to Therm	0.1
Therms to kwh	29.30711111
kilowatt hrs to megawatt hrs	0.001
lbs to Tons	2000
Tons to MTon	0.9071847

Source: California Air Resources Board (CARB). 2010. Local Government Operations Protocol. Version 1.1. Appendix F, Standard Conversion Factors

	Global Warming Potentials (GWP)
CO_2	1
CH_4	25
N_2O	298

Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007.

Construction Activities and Schedule Assumptions

Construction Activities	Construction Schedule			
	Start Date	End Date	Duration (Calendar Days)	Duration (Work Days)
CalEEMod Default Schedule				
Demolition	1/1/2025	2/12/2025	42	30
Site Preparation	2/13/2025	3/13/2025	28	20
Grading	3/14/2025	5/16/2025	63	45
Building Construction	5/17/2025	4/17/2027	700	500
Paving	4/18/2027	6/6/2027	49	35
Architectural Coating	6/7/2027	7/26/2027	49	35
Adjusted CalEEMod Schedule				
Demolition	1/1/2025	2/12/2025	42	30
Site Preparation	1/1/2025	1/29/2025	28	20
Grading	1/1/2025	3/5/2025	63	45
Building Construction	1/1/2025	12/2/2026	700	500
Paving	1/1/2025	2/18/2025	49	35
Architectural Coating	1/1/2025	2/18/2025	49	35

Construction Equipment Mix

CalEEMod defaults unless otherwise noted.

Equipment	Pieces of Equipment	Hrs Op	HP	LF	Worker Trips/ Day	Vendor Trips/Day	Onsite Truck Travel Distance (miles)
Demolition					**Default**	**Default**	
Concrete/Industrial Saws	**1**	8	**33**	**0.73**			**n/a**
Excavators	**3**	8	**36**	**0.38**			**n/a**
Rubber Tired Dozers	**2**	8	**367**	**0.40**			**n/a**
Site Preparation					**Default**	**8**	
Rubber Tired Dozers	**3**	8	**367**	**0.40**			**n/a**
Tractors/Loaders/Backhoes	**4**	8	**84**	**0.37**			**n/a**
Water truck[1]	**4**		**n/a**	**n/a**		**8**	**n/a**
Onsite Truck[2]	**1**		**n/a**	**n/a**			**1.2375**
Grading					**Default**	**16**	
Excavator	**2**	8	**36**	**0.38**			**n/a**
Graders	**1**	8	**148**	**0.41**			**n/a**
Rubber Tired Dozers	**1**	8	**367**	**0.40**			**n/a**
Scrapers	**2**	8	**423**	**0.48**			**n/a**
Tractors/Loaders/Backhoes	**2**	8	**84**	**0.37**			**n/a**
Water truck[1]	**8**		**n/a**	**n/a**		**16**	**n/a**
Onsite Truck[2]	**1**		**n/a**	**n/a**			**2.475**
Building Construction					**Default**	**Default**	
Cranes	**1**	7	**367**	**0.29**			**n/a**
Forklifts	**3**	8	**82**	**0.20**			**n/a**
Generator Sets	**1**	8	**14**	**0.74**			**n/a**
Tractors/Loaders/Backhoes	**3**	7	**84**	**0.37**			**n/a**
Welders	**1**	8	**46**	**0.45**			**n/a**
Asphalt Paving					**Default**	**Default**	
Pavers	**2**	8	**81**	**0.42**			**n/a**
Paving Equipment	**2**	8	**89**	**0.36**			**n/a**
Rollers	**2**	8	**36**	**0.38**			**n/a**
Architectural Coating					**Default**	**Default**	
Air Compressors	**1**	6	**37**	**0.48**			**n/a**

[1] *Based on 10,000 gallons per acre disturbed and a 4,000 gallon water truck. 2005, June 5. Maricopa Air Quality Department. Guidance for Application for Dust Control Permit. https://www.epa.gov/sites/default/files/2019-04/documents/mr_guidanceforapplicationfordustcontrolpermit.pdf*

[2] *Represents onsite water truck travel distance and based on 0.825 mi/acre.*

Future With Project Traffic Volumes

AM Peak Hour															
		Northbound			Southbound			Eastbound			Westbound			Intersection
No.	Intersection	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Total
1	Gridely Road/South Street	148	242	59	89	153	267	201	542	79	57	800	95	2,732
2	Pioneer Boulevard/183rd Street	58	338	46	111	402	91	76	304	43	49	347	86	1,951
3	Pioneer Boulevard/187th Street	27	338	22	21	393	66	72	15	24	49	24	16	1,067
4	Pioneer Boulevard/South Street	82	222	98	59	275	135	129	398	92	84	720	54	2,348
5	I-605 Freeway SB Off-Ramp/South Street	0	0	0	428	0	661	0	654	560	0	982	390	3,675
6	I-605 Freeway NB Off-Ramp/South Street	544	0	313	0	0	0	0	764	326	0	740	452	3,139
7	Pioneer Boulevard/SR-91 Freeway WB Off-Ramp	19	785	481	0	1045	5	0	0	18	217	3	89	2,662
8	Pioneer Boulevard/SR-91 Freeway EB Off-Ramp-Frampton Court	0	970	13	175	853	253	314	56	502	4	0	164	3,304

PM Peak Hour														
		Northbound			Southbound			Eastbound			Westbound			Intersection
No.	Intersection	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Total
1	Gridely Road/South Street	125	276	64	204	284	392	315	982	143	93	801	155	3,834
2	Pioneer Boulevard/183rd Street	80	419	43	132	485	140	182	473	65	81	551	83	2,734
3	Pioneer Boulevard/187th Street	33	430	49	6	496	60	50	43	46	26	38	11	1,288
4	Pioneer Boulevard/South Street	182	334	182	102	302	199	113	751	175	153	753	82	3,328
5	I-605 Freeway SB Off-Ramp/South Street	0	0	0	865	0	579	0	976	559	0	970	418	4,367
6	I-605 Freeway NB Off-Ramp/South Street	432	0	576	0	0	0	0	1448	410	0	915	718	4,499
7	Pioneer Boulevard/SR-91 Freeway WB Off-Ramp	29	1003	368	0	960	6	0	0	15	237	3	99	2,720
8	Pioneer Boulevard/SR-91 Freeway EB Off-Ramp-Frampton Court	0	1125	5	14	677	160	406	15	521	13	0	115	3,051
													Maximum Peak Hour Total	**4,499**

Source: Linscott, Law, & Greenspan Engineers.

3. CalEEMod Output: Construction

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ART-02 Construction Detailed Report

Table of Contents

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	ART-02 Construction
Construction Start Date	1/1/2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.30
Precipitation (days)	8.00
Location	18635 Pioneer Blvd, Artesia, CA 90701, USA
County	Los Angeles-South Coast
City	Artesia
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	4709
EDFZ	7
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.28

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Low Rise	1,981	Dwelling Unit	4.52	2,099,860	0.00	—	5,864	—

General Office Building	106	1000sqft	4.52	105,730	0.00	—	—	—
Quality Restaurant	23.4	1000sqft	4.52	23,418	0.00	—	—	—
High Turnover (Sit Down Restaurant)	135	1000sqft	4.52	135,177	0.00	—	—	—
Regional Shopping Center	134	1000sqft	4.52	133,818	0.00	—	—	—
Strip Mall	24.8	1000sqft	4.52	24,777	0.00	—	—	—
Hotel	150	Room	4.52	80,000	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	9.72	8.31	28.0	130	0.09	0.56	23.6	24.1	0.46	5.63	6.10	—	34,008	34,008	1.43	2.09	107	34,774
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	533	529	139	232	0.33	4.62	61.0	65.6	4.20	15.6	19.8	—	67,214	67,214	3.05	4.38	4.03	68,600
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	56.9	55.7	30.9	94.9	0.09	0.75	19.9	20.6	0.66	4.79	5.45	—	26,739	26,739	1.18	1.68	34.9	27,305
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	10.4	10.2	5.64	17.3	0.02	0.14	3.63	3.77	0.12	0.87	0.99	—	4,427	4,427	0.20	0.28	5.78	4,521

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	9.72	8.31	28.0	130	0.09	0.56	23.6	24.1	0.46	5.63	6.10	—	34,008	34,008	1.43	2.09	107	34,774
2026	8.64	7.28	26.2	122	0.09	0.51	23.6	24.1	0.41	5.63	6.05	—	33,398	33,398	1.38	2.09	98.6	34,155
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	533	529	139	232	0.33	4.62	61.0	65.6	4.20	15.6	19.8	—	67,214	67,214	3.05	4.38	4.03	68,600
2026	8.63	7.23	27.4	107	0.09	0.51	23.6	24.1	0.41	5.63	6.05	—	32,268	32,268	1.42	2.09	2.56	32,929
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	56.9	55.7	30.9	94.9	0.09	0.75	19.9	20.6	0.66	4.79	5.45	—	26,739	26,739	1.18	1.68	34.9	27,305
2026	5.64	4.72	18.4	72.7	0.06	0.33	15.4	15.7	0.27	3.67	3.94	—	21,352	21,352	0.93	1.37	28.0	21,812
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	10.4	10.2	5.64	17.3	0.02	0.14	3.63	3.77	0.12	0.87	0.99	—	4,427	4,427	0.20	0.28	5.78	4,521
2026	1.03	0.86	3.36	13.3	0.01	0.06	2.81	2.87	0.05	0.67	0.72	—	3,535	3,535	0.15	0.23	4.63	3,611

3. Construction Emissions Details

3.1. Demolition (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.86	2.40	22.2	19.9	0.03	0.92	—	0.92	0.84	—	0.84	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	14.7	14.7	—	2.23	2.23	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	0.20	1.82	1.64	< 0.005	0.08	—	0.08	0.07	—	0.07	—	282	282	0.01	< 0.005	—	282
Demolition	—	—	—	—	—	—	1.21	1.21	—	0.18	0.18	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.33	0.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.6	46.6	< 0.005	< 0.005	—	46.8
Demolition	—	—	—	—	—	—	0.22	0.22	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.88	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	197	197	0.01	0.01	0.02	199
Vendor	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	0.00
Hauling	0.91	0.17	15.2	5.74	0.08	0.15	3.18	3.33	0.15	0.87	1.02	—	11,895	11,895	0.65	1.87	0.72	12,468
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	16.4	16.4	< 0.005	< 0.005	0.03	16.6
Vendor	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	0.00
Hauling	0.08	0.01	1.26	0.47	0.01	0.01	0.26	0.27	0.01	0.07	0.08	—	977	977	0.05	0.15	0.98	1,025
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.71	2.71	< 0.005	< 0.005	< 0.005	2.75
Vendor	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	0.00
Hauling	0.01	< 0.005	0.23	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	162	162	0.01	0.03	0.16	170

3.3. Site Preparation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.94	3.31	31.6	30.2	0.05	1.37	—	1.37	1.26	—	1.26	—	5,295	5,295	0.21	0.04	—	5,314

Dust From Material Movement	—	—	—	—	—	—	7.67	7.67	—	3.94	3.94	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.02	1.02	< 0.005	0.10	0.10	—	5.91	5.91	< 0.005	< 0.005	< 0.005	6.21
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.22	0.18	1.73	1.65	< 0.005	0.07	—	0.07	0.07	—	0.07	—	290	290	0.01	< 0.005	—	291
Dust From Material Movement	—	—	—	—	—	—	0.42	0.42	—	0.22	0.22	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.34
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.32	0.30	< 0.005	0.01	—	0.01	0.01	—	0.01	—	48.0	48.0	< 0.005	< 0.005	—	48.2
Dust From Material Movement	—	—	—	—	—	—	0.08	0.08	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.05	0.05	< 0.005	< 0.005	< 0.005	0.06
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.08	1.03	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	229	229	0.01	0.01	0.02	232

Vendor	0.01	< 0.005	0.15	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	127	127	0.01	0.02	0.01	132
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	12.8	12.8	< 0.005	< 0.005	0.02	12.9
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.95	6.95	< 0.005	< 0.005	0.01	7.26
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.11	2.11	< 0.005	< 0.005	< 0.005	2.14
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.15	1.15	< 0.005	< 0.005	< 0.005	1.20
Hauling	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	0.00

3.5. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.80	3.20	29.7	28.3	0.06	1.23	—	1.23	1.14	—	1.14	—	6,599	6,599	0.27	0.05	—	6,622
Dust From Material Movement	—	—	—	—	—	—	3.59	3.59	—	1.42	1.42	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	2.04	2.04	< 0.005	0.20	0.20	—	10.1	10.1	< 0.005	< 0.005	< 0.005	10.6

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	0.39	3.66	3.49	0.01	0.15	—	0.15	0.14	—	0.14	—	814	814	0.03	0.01	—	816
Dust From Material Movement	—	—	—	—	—	—	0.44	0.44	—	0.18	0.18	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.25	0.25	< 0.005	0.02	0.02	—	1.24	1.24	< 0.005	< 0.005	< 0.005	1.30
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.67	0.64	< 0.005	0.03	—	0.03	0.03	—	0.03	—	135	135	0.01	< 0.005	—	135
Dust From Material Movement	—	—	—	—	—	—	0.08	0.08	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.04	0.04	< 0.005	< 0.005	< 0.005	—	0.21	0.21	< 0.005	< 0.005	< 0.005	0.22
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.10	1.18	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	262	262	0.01	0.01	0.03	265
Vendor	0.02	0.01	0.30	0.14	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	254	254	0.01	0.04	0.02	265
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.15	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	32.8	32.8	< 0.005	< 0.005	0.05	33.2

Vendor	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	31.3	31.3	< 0.005	< 0.005	0.04	32.7
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.43	5.43	< 0.005	< 0.005	0.01	5.50
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.18	5.18	< 0.005	< 0.005	0.01	5.41
Hauling	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	0.00

3.7. Building Construction (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.96	0.80	7.46	9.31	0.02	0.31	—	0.31	0.28	—	0.28	—	1,713	1,713	0.07	0.01	—	1,719
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	1.36	1.70	< 0.005	0.06	—	0.06	0.05	—	0.05	—	284	284	0.01	< 0.005	—	285
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	7.71	6.91	6.98	112	0.00	0.00	21.1	21.1	0.00	4.94	4.94	—	22,276	22,276	0.94	0.76	81.6	22,609
Vendor	0.67	0.28	10.6	5.19	0.07	0.13	2.52	2.65	0.07	0.70	0.76	—	9,334	9,334	0.39	1.31	25.5	9,759
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	7.64	6.84	7.74	95.0	0.00	0.00	21.1	21.1	0.00	4.94	4.94	—	21,115	21,115	0.98	0.80	2.11	21,380
Vendor	0.66	0.27	11.1	5.25	0.07	0.13	2.52	2.65	0.07	0.70	0.76	—	9,338	9,338	0.39	1.31	0.66	9,738
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	5.43	4.86	5.97	71.3	0.00	0.00	15.0	15.0	0.00	3.51	3.51	—	15,306	15,306	0.70	0.55	25.2	15,511
Vendor	0.47	0.19	7.95	3.71	0.05	0.09	1.79	1.88	0.05	0.49	0.54	—	6,668	6,668	0.28	0.93	7.91	6,962
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.99	0.89	1.09	13.0	0.00	0.00	2.73	2.73	0.00	0.64	0.64	—	2,534	2,534	0.12	0.09	4.17	2,568

Vendor	0.09	0.04	1.45	0.68	0.01	0.02	0.33	0.34	0.01	0.09	0.10	—	1,104	1,104	0.05	0.15	1.31	1,153
Hauling	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	0.00

3.9. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.84	0.70	6.46	8.50	0.02	0.25	—	0.25	0.23	—	0.23	—	1,572	1,572	0.06	0.01	—	1,577
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.15	0.13	1.18	1.55	< 0.005	0.05	—	0.05	0.04	—	0.04	—	260	260	0.01	< 0.005	—	261
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	6.70	5.93	6.25	104	0.00	0.00	21.1	21.1	0.00	4.94	4.94	—	21,828	21,828	0.91	0.76	73.9	22,153
Vendor	0.66	0.28	10.1	4.89	0.07	0.13	2.52	2.65	0.07	0.70	0.76	—	9,172	9,172	0.38	1.31	24.8	9,597
Hauling	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	6.70	5.90	7.01	88.8	0.00	0.00	21.1	21.1	0.00	4.94	4.94	—	20,694	20,694	0.94	0.76	1.92	20,947
Vendor	0.65	0.26	10.6	5.01	0.07	0.13	2.52	2.65	0.07	0.70	0.76	—	9,177	9,177	0.38	1.31	0.64	9,577
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	4.37	3.84	5.01	60.9	0.00	0.00	13.7	13.7	0.00	3.22	3.22	—	13,766	13,766	0.62	0.50	20.9	13,952
Vendor	0.43	0.18	6.97	3.25	0.04	0.09	1.64	1.73	0.04	0.45	0.50	—	6,014	6,014	0.25	0.86	7.01	6,283
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.80	0.70	0.91	11.1	0.00	0.00	2.51	2.51	0.00	0.59	0.59	—	2,279	2,279	0.10	0.08	3.47	2,310
Vendor	0.08	0.03	1.27	0.59	0.01	0.02	0.30	0.32	0.01	0.08	0.09	—	996	996	0.04	0.14	1.16	1,040
Hauling	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	0.00

3.11. Paving (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.08	0.71	0.96	< 0.005	0.03	—	0.03	0.03	—	0.03	—	145	145	0.01	< 0.005	—	145
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.13	0.17	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24.0	24.0	< 0.005	< 0.005	—	24.1
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.07	0.88	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	197	197	0.01	0.01	0.02	199
Vendor	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	0.00
Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.09	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	19.1	19.1	< 0.005	< 0.005	0.03	19.4
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.17	3.17	< 0.005	< 0.005	0.01	3.21
Vendor	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	0.00
Hauling	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	0.00

3.13. Architectural Coating (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.13	0.88	1.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134

Architectural Coating	509	509	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.8	12.8	< 0.005	< 0.005	—	12.8
Architectural Coatings	48.8	48.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.12	2.12	< 0.005	< 0.005	—	2.13
Architectural Coatings	8.90	8.90	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	1.53	1.37	1.55	19.0	0.00	0.00	4.21	4.21	0.00	0.99	0.99	—	4,223	4,223	0.20	0.16	0.42	4,276
Vendor	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	0.00

Hauling	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.13	0.16	1.91	0.00	0.00	0.40	0.40	0.00	0.09	0.09	—	411	411	0.02	0.01	0.68	416
Vendor	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	0.00
Hauling	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.03	0.35	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	68.0	68.0	< 0.005	< 0.005	0.11	68.9
Vendor	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	0.00
Hauling	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	0.00

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	1/1/2025	2/12/2025	5.00	30.0	—
Site Preparation	Site Preparation	1/1/2025	1/28/2025	5.00	20.0	—
Grading	Grading	1/1/2025	3/4/2025	5.00	45.0	—

Building Construction	Building Construction	1/1/2025	12/1/2026	5.00	500	—
Paving	Paving	1/1/2025	2/18/2025	5.00	35.0	—
Architectural Coating	Architectural Coating	1/1/2025	2/18/2025	5.00	35.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Back hoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Tractors/Loaders/Back hoes	Diesel	Average	2.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Back hoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38

Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	172	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	4.00	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	1.00	1.24	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	8.00	10.2	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	1.00	2.48	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	1,611	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	294	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2

Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	322	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%
Sweep paved roads once per month	9%	9%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	4,252,217	1,417,406	754,380	251,460	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	447,718	—
Site Preparation	—	—	30.0	0.00	—

Grading	—	—	135	0.00	—
Paving	0.00	0.00	0.00	0.00	0.00

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Apartments Low Rise	—	0%
General Office Building	0.00	0%
Quality Restaurant	0.00	0%
High Turnover (Sit Down Restaurant)	0.00	0%
Regional Shopping Center	0.00	0%
Strip Mall	0.00	0%
Hotel	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	532	0.03	< 0.005
2026	0.00	532	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	7.52	annual days of extreme heat
Extreme Precipitation	4.10	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters

Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	37.6
AQ-PM	72.4
AQ-DPM	49.2
Drinking Water	47.9
Lead Risk Housing	72.5
Pesticides	43.9
Toxic Releases	89.3
Traffic	39.5
Effect Indicators	—
CleanUp Sites	27.5
Groundwater	67.5
Haz Waste Facilities/Generators	26.7
Impaired Water Bodies	0.00
Solid Waste	86.9
Sensitive Population	—
Asthma	23.2

Cardio-vascular	46.8
Low Birth Weights	75.6
Socioeconomic Factor Indicators	—
Education	66.3
Housing	81.3
Linguistic	44.8
Poverty	42.8
Unemployment	25.2

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	55.20338766
Employed	42.62799949
Median HI	48.26126011
Education	—
Bachelor's or higher	52.44450148
High school enrollment	9.29038881
Preschool enrollment	21.429488
Transportation	—
Auto Access	34.87745413
Active commuting	67.53496728
Social	—
2-parent households	19.00423457
Voting	30.50173232
Neighborhood	—
Alcohol availability	31.23315796

Park access	81.35506224
Retail density	47.32452201
Supermarket access	69.71641216
Tree canopy	39.75362505
Housing	—
Homeownership	38.72706275
Housing habitability	18.33696907
Low-inc homeowner severe housing cost burden	20.62107019
Low-inc renter severe housing cost burden	23.55960477
Uncrowded housing	28.33311947
Health Outcomes	—
Insured adults	31.82343128
Arthritis	0.0
Asthma ER Admissions	68.2
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	26.2
Cognitively Disabled	9.0
Physically Disabled	30.9
Heart Attack ER Admissions	37.8
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	75.1

Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	90.9
Elderly	40.9
English Speaking	13.9
Foreign-born	93.7
Outdoor Workers	93.4
Climate Change Adaptive Capacity	—
Impervious Surface Cover	15.3
Traffic Density	49.9
Traffic Access	23.0
Other Indices	—
Hardship	53.9
Other Decision Support	—
2016 Voting	27.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	64.0
Healthy Places Index Score for Project Location (b)	35.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No

Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Based on land use numbers determined for the project.
Operations: Vehicle Data	Based on trip generation and VMT data provided by traffic consultant.
Operations: Hearths	Assumes natural gas fireplace for multi-family units. No wood fireplaces per South Coast AQMD Rule 445.
Operations: Water and Waste Water	Water demand based on values found in the Utilities chapter of the DEIR. For purposes of modeling, no septic is assumed. See AQ/GHG appendix of the DEIR for details.
Characteristics: Utility Information	Based on year 2022 CO2e intensity factor of 405 lbs/MWh as reported in SCE's 2023 Sustainability Report.
Operations: Solid Waste	Based on solid waste data from Chapter 5.19, Utilities & Service System, of the DEIR. See AQ/GHG appendix of the DEIR for details.
Construction: Construction Phases	Assumes all activities overlap. See AQ/GHG appendix of the DEIR for details.

4. CalEEMod Output: Operation Existing to be Redeveloped Baseline Year

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ART-02 Existing Op_Baseline Yr v2 Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	ART-02 Existing Op_Baseline Yr v2
Operational Year	2024
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.30
Precipitation (days)	8.00
Location	18635 Pioneer Blvd, Artesia, CA 90701, USA
County	Los Angeles-South Coast
City	Artesia
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	4709
EDFZ	7
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.28

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Single Family Housing	4.00	Dwelling Unit	0.38	7,800	0.00	—	12.0	—

Apartments Low Rise	15.0	Dwelling Unit	1.41	15,900	0.00	—	44.0	—
General Office Building	43.4	1000sqft	3.52	43,422	0.00	—	—	—
Regional Shopping Center	310	1000sqft	21.2	309,506	0.00	—	—	—
Strip Mall	44.7	1000sqft	2.90	44,711	0.00	—	—	—
General Light Industry	26.4	1000sqft	2.24	26,379	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	122	113	72.7	807	1.69	1.27	148	150	1.19	37.7	38.9	315	179,277	179,591	36.3	7.35	684	183,375
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	117	108	79.4	732	1.62	1.24	148	150	1.16	37.7	38.8	315	171,943	172,257	36.8	7.74	26.4	175,510
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	101	92.8	66.7	635	1.36	1.06	122	123	0.99	31.1	32.1	315	145,277	145,592	35.0	6.47	251	148,646
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	18.4	16.9	12.2	116	0.25	0.19	22.3	22.5	0.18	5.67	5.85	52.1	24,052	24,104	5.80	1.07	41.5	24,610

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	108	98.7	71.2	786	1.69	1.14	148	149	1.06	37.7	38.7	—	172,287	172,287	9.23	7.15	676	175,324
Area	14.1	13.8	0.23	19.5	< 0.005	0.04	—	0.04	0.03	—	0.03	0.00	163	163	< 0.005	< 0.005	—	163
Energy	0.14	0.07	1.27	1.02	0.01	0.10	—	0.10	0.10	—	0.10	—	6,590	6,590	0.55	0.05	—	6,620
Water	—	—	—	—	—	—	—	—	—	—	—	67.2	236	304	1.77	0.15	—	392
Waste	—	—	—	—	—	—	—	—	—	—	—	247	0.00	247	24.7	0.00	—	866
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.91	8.91
Total	122	113	72.7	807	1.69	1.27	148	150	1.19	37.7	38.9	315	179,277	179,591	36.3	7.35	684	183,375
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	106	97.1	78.1	731	1.61	1.14	148	149	1.06	37.7	38.7	—	165,032	165,032	9.71	7.54	17.5	167,539
Area	10.7	10.7	0.07	0.03	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	84.2	84.2	< 0.005	< 0.005	—	84.3
Energy	0.14	0.07	1.27	1.02	0.01	0.10	—	0.10	0.10	—	0.10	—	6,590	6,590	0.55	0.05	—	6,620
Water	—	—	—	—	—	—	—	—	—	—	—	67.2	236	304	1.77	0.15	—	392
Waste	—	—	—	—	—	—	—	—	—	—	—	247	0.00	247	24.7	0.00	—	866
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.91	8.91
Total	117	108	79.4	732	1.62	1.24	148	150	1.16	37.7	38.8	315	171,943	172,257	36.8	7.74	26.4	175,510
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	87.6	79.9	65.3	620	1.35	0.94	122	123	0.88	31.1	31.9	—	138,391	138,391	7.98	6.26	242	140,699
Area	13.0	12.8	0.12	13.4	< 0.005	0.02	—	0.02	0.02	—	0.02	0.00	59.7	59.7	< 0.005	< 0.005	—	59.9
Energy	0.14	0.07	1.27	1.02	0.01	0.10	—	0.10	0.10	—	0.10	—	6,590	6,590	0.55	0.05	—	6,620
Water	—	—	—	—	—	—	—	—	—	—	—	67.2	236	304	1.77	0.15	—	392
Waste	—	—	—	—	—	—	—	—	—	—	—	247	0.00	247	24.7	0.00	—	866

Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.91	8.91
Total	101	92.8	66.7	635	1.36	1.06	122	123	0.99	31.1	32.1	315	145,277	145,592	35.0	6.47	251	148,646
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	16.0	14.6	11.9	113	0.25	0.17	22.3	22.5	0.16	5.67	5.83	—	22,912	22,912	1.32	1.04	40.0	23,294
Area	2.38	2.34	0.02	2.44	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	9.88	9.88	< 0.005	< 0.005	—	9.91
Energy	0.03	0.01	0.23	0.19	< 0.005	0.02	—	0.02	0.02	—	0.02	—	1,091	1,091	0.09	0.01	—	1,096
Water	—	—	—	—	—	—	—	—	—	—	—	11.1	39.1	50.3	0.29	0.02	—	64.9
Waste	—	—	—	—	—	—	—	—	—	—	—	41.0	0.00	41.0	4.10	0.00	—	143
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.47	1.47
Total	18.4	16.9	12.2	116	0.25	0.19	22.3	22.5	0.18	5.67	5.85	52.1	24,052	24,104	5.80	1.07	41.5	24,610

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.14	0.13	0.10	1.05	< 0.005	< 0.005	0.20	0.20	< 0.005	0.05	0.05	—	231	231	0.01	0.01	0.91	235
Apartments Low Rise	0.39	0.35	0.25	2.81	0.01	< 0.005	0.53	0.53	< 0.005	0.13	0.14	—	616	616	0.03	0.03	2.41	626
General Office Building	1.79	1.64	1.18	13.1	0.03	0.02	2.47	2.48	0.02	0.63	0.64	—	2,865	2,865	0.15	0.12	11.2	2,915

Regional	95.7	87.6	63.2	698	1.50	1.01	132	133	0.94	33.4	34.4	—	152,931	152,931	8.19	6.35	600	155,627
Strip Mall	9.29	8.50	6.14	67.7	0.15	0.10	12.8	12.9	0.09	3.24	3.34	—	14,841	14,841	0.80	0.62	58.2	15,103
General Light Industry	0.50	0.46	0.33	3.67	0.01	0.01	0.69	0.70	< 0.005	0.18	0.18	—	804	804	0.04	0.03	3.15	818
Total	108	98.7	71.2	786	1.69	1.14	148	149	1.06	37.7	38.7	—	172,287	172,287	9.23	7.15	676	175,324
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.14	0.13	0.10	0.98	< 0.005	< 0.005	0.20	0.20	< 0.005	0.05	0.05	—	221	221	0.01	0.01	0.02	225
Apartments Low Rise	0.38	0.35	0.28	2.61	0.01	< 0.005	0.53	0.53	< 0.005	0.13	0.14	—	590	590	0.03	0.03	0.06	599
General Office Building	1.77	1.62	1.30	12.1	0.03	0.02	2.47	2.48	0.02	0.63	0.64	—	2,744	2,744	0.16	0.13	0.29	2,786
Regional Shopping Center	94.5	86.2	69.3	649	1.43	1.01	132	133	0.94	33.4	34.4	—	146,491	146,491	8.62	6.69	15.5	148,716
Strip Mall	9.17	8.37	6.73	62.9	0.14	0.10	12.8	12.9	0.09	3.24	3.34	—	14,216	14,216	0.84	0.65	1.51	14,432
General Light Industry	0.50	0.45	0.36	3.41	0.01	0.01	0.69	0.70	< 0.005	0.18	0.18	—	770	770	0.05	0.04	0.08	782
Total	106	97.1	78.1	731	1.61	1.14	148	149	1.06	37.7	38.7	—	165,032	165,032	9.71	7.54	17.5	167,539
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.03	0.02	0.02	0.18	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	35.9	35.9	< 0.005	< 0.005	0.06	36.5

Apartments Low Rise	0.06	0.06	0.05	0.44	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.02	—	88.2	88.2	0.01	< 0.005	0.15	89.7
General Office Building	0.24	0.22	0.18	1.71	< 0.005	< 0.005	0.34	0.34	< 0.005	0.09	0.09	—	346	346	0.02	0.02	0.60	352
Regional Shopping Center	13.9	12.7	10.4	98.6	0.22	0.15	19.4	19.6	0.14	4.94	5.07	—	19,950	19,950	1.15	0.90	34.8	20,283
Strip Mall	1.66	1.52	1.24	11.8	0.03	0.02	2.32	2.34	0.02	0.59	0.61	—	2,382	2,382	0.14	0.11	4.16	2,421
General Light Industry	0.08	0.07	0.06	0.55	< 0.005	< 0.005	0.11	0.11	< 0.005	0.03	0.03	—	110	110	0.01	< 0.005	0.19	112
Total	16.0	14.6	11.9	113	0.25	0.17	22.3	22.5	0.16	5.67	5.83	—	22,912	22,912	1.32	1.04	40.0	23,294

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	30.5	30.5	< 0.005	< 0.005	—	30.6
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	63.5	63.5	0.01	< 0.005	—	63.8
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	854	854	0.07	0.01	—	859

Regiona Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	3,356	3,356	0.27	0.03	—	3,373
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	485	485	0.04	< 0.005	—	487
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	279	279	0.02	< 0.005	—	281
Total	—	—	—	—	—	—	—	—	—	—	—	—	5,069	5,069	0.42	0.05	—	5,094
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	30.5	30.5	< 0.005	< 0.005	—	30.6
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	63.5	63.5	0.01	< 0.005	—	63.8
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	854	854	0.07	0.01	—	859
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	3,356	3,356	0.27	0.03	—	3,373
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	485	485	0.04	< 0.005	—	487
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	279	279	0.02	< 0.005	—	281
Total	—	—	—	—	—	—	—	—	—	—	—	—	5,069	5,069	0.42	0.05	—	5,094
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	5.04	5.04	< 0.005	< 0.005	—	5.07

Apartments	—	—	—	—	—	—	—	—	—	—	—	—	10.5	10.5	< 0.005	< 0.005	—	10.6
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	141	141	0.01	< 0.005	—	142
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	556	556	0.05	0.01	—	558
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	80.3	80.3	0.01	< 0.005	—	80.7
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	46.3	46.3	< 0.005	< 0.005	—	46.5
Total	—	—	—	—	—	—	—	—	—	—	—	—	839	839	0.07	0.01	—	843

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	49.1	49.1	< 0.005	< 0.005	—	49.3
Apartments Low Rise	0.01	< 0.005	0.06	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	78.4	78.4	0.01	< 0.005	—	78.6
General Office Building	0.03	0.02	0.30	0.25	< 0.005	0.02	—	0.02	0.02	—	0.02	—	353	353	0.03	< 0.005	—	354

Regional Shopping	0.05	0.03	0.50	0.42	< 0.005	0.04	—	0.04	0.04	—	0.04	—	594	594	0.05	< 0.005	—	596
Strip Mall	0.01	< 0.005	0.07	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	85.8	85.8	0.01	< 0.005	—	86.0
General Light Industry	0.03	0.02	0.30	0.25	< 0.005	0.02	—	0.02	0.02	—	0.02	—	362	362	0.03	< 0.005	—	363
Total	0.14	0.07	1.27	1.02	0.01	0.10	—	0.10	0.10	—	0.10	—	1,522	1,522	0.13	< 0.005	—	1,526
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	49.1	49.1	< 0.005	< 0.005	—	49.3
Apartments Low Rise	0.01	< 0.005	0.06	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	78.4	78.4	0.01	< 0.005	—	78.6
General Office Building	0.03	0.02	0.30	0.25	< 0.005	0.02	—	0.02	0.02	—	0.02	—	353	353	0.03	< 0.005	—	354
Regional Shopping Center	0.05	0.03	0.50	0.42	< 0.005	0.04	—	0.04	0.04	—	0.04	—	594	594	0.05	< 0.005	—	596
Strip Mall	0.01	< 0.005	0.07	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	85.8	85.8	0.01	< 0.005	—	86.0
General Light Industry	0.03	0.02	0.30	0.25	< 0.005	0.02	—	0.02	0.02	—	0.02	—	362	362	0.03	< 0.005	—	363
Total	0.14	0.07	1.27	1.02	0.01	0.10	—	0.10	0.10	—	0.10	—	1,522	1,522	0.13	< 0.005	—	1,526
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.14	8.14	< 0.005	< 0.005	—	8.16

Apartments Low Rise	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.0	13.0	< 0.005	< 0.005	—	13.0
General Office Building	0.01	< 0.005	0.05	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	58.4	58.4	0.01	< 0.005	—	58.6
Regional Shopping Center	0.01	< 0.005	0.09	0.08	< 0.005	0.01	—	0.01	0.01	—	0.01	—	98.3	98.3	0.01	< 0.005	—	98.6
Strip Mall	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	14.2	14.2	< 0.005	< 0.005	—	14.2
General Light Industry	0.01	< 0.005	0.06	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	59.9	59.9	0.01	< 0.005	—	60.1
Total	0.03	0.01	0.23	0.19	< 0.005	0.02	—	0.02	0.02	—	0.02	—	252	252	0.02	< 0.005	—	253

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.01	< 0.005	0.07	0.03	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	84.2	84.2	< 0.005	< 0.005	—	84.3
Consumer Products	9.58	9.58	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.12	1.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landscape Equipment	3.38	3.12	0.17	19.5	< 0.005	0.03	—	0.03	0.03	—	0.03	—	78.7	78.7	< 0.005	< 0.005	—	79.0
Total	14.1	13.8	0.23	19.5	< 0.005	0.04	—	0.04	0.03	—	0.03	0.00	163	163	< 0.005	< 0.005	—	163
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.01	< 0.005	0.07	0.03	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	84.2	84.2	< 0.005	< 0.005	—	84.3
Consumer Products	9.58	9.58	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.12	1.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	10.7	10.7	0.07	0.03	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	84.2	84.2	< 0.005	< 0.005	—	84.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	0.96	0.96	< 0.005	< 0.005	—	0.96
Consumer Products	1.75	1.75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.20	0.20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.42	0.39	0.02	2.44	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.93	8.93	< 0.005	< 0.005	—	8.96
Total	2.38	2.34	0.02	2.44	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	9.88	9.88	< 0.005	< 0.005	—	9.91

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.95	3.34	4.28	0.03	< 0.005	—	5.54
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	2.13	7.51	9.64	0.06	< 0.005	—	12.5
General Office Building	—	—	—	—	—	—	—	—	—	—	—	7.92	27.9	35.8	0.21	0.02	—	46.2
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	42.3	149	191	1.12	0.09	—	247
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	13.3	46.6	59.9	0.35	0.03	—	77.4
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	0.60	2.12	2.72	0.02	< 0.005	—	3.51
Total	—	—	—	—	—	—	—	—	—	—	—	67.2	236	304	1.77	0.15	—	392
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.95	3.34	4.28	0.03	< 0.005	—	5.54
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	2.13	7.51	9.64	0.06	< 0.005	—	12.5

General Office Building	—	—	—	—	—	—	—	—	—	—	—	7.92	27.9	35.8	0.21	0.02	—	46.2
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	42.3	149	191	1.12	0.09	—	247
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	13.3	46.6	59.9	0.35	0.03	—	77.4
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	0.60	2.12	2.72	0.02	< 0.005	—	3.51
Total	—	—	—	—	—	—	—	—	—	—	—	67.2	236	304	1.77	0.15	—	392
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.16	0.55	0.71	< 0.005	< 0.005	—	0.92
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	0.35	1.24	1.60	0.01	< 0.005	—	2.06
General Office Building	—	—	—	—	—	—	—	—	—	—	—	1.31	4.61	5.92	0.03	< 0.005	—	7.66
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	7.01	24.7	31.7	0.18	0.02	—	40.9
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	2.19	7.72	9.91	0.06	< 0.005	—	12.8
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	0.10	0.35	0.45	< 0.005	< 0.005	—	0.58
Total	—	—	—	—	—	—	—	—	—	—	—	11.1	39.1	50.3	0.29	0.02	—	64.9

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.72	0.00	1.72	0.17	0.00	—	6.00
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	5.92	0.00	5.92	0.59	0.00	—	20.7
General Office Building	—	—	—	—	—	—	—	—	—	—	—	21.8	0.00	21.8	2.18	0.00	—	76.1
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	175	0.00	175	17.5	0.00	—	613
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	25.3	0.00	25.3	2.53	0.00	—	88.5
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	17.6	0.00	17.6	1.76	0.00	—	61.7
Total	—	—	—	—	—	—	—	—	—	—	—	247	0.00	247	24.7	0.00	—	866
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.72	0.00	1.72	0.17	0.00	—	6.00

Apartments	—	—	—	—	—	—	—	—	—	—	—	5.92	0.00	5.92	0.59	0.00	—	20.7
General Office Building	—	—	—	—	—	—	—	—	—	—	—	21.8	0.00	21.8	2.18	0.00	—	76.1
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	175	0.00	175	17.5	0.00	—	613
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	25.3	0.00	25.3	2.53	0.00	—	88.5
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	17.6	0.00	17.6	1.76	0.00	—	61.7
Total	—	—	—	—	—	—	—	—	—	—	—	247	0.00	247	24.7	0.00	—	866
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.99
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	0.98	0.00	0.98	0.10	0.00	—	3.43
General Office Building	—	—	—	—	—	—	—	—	—	—	—	3.60	0.00	3.60	0.36	0.00	—	12.6
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	29.0	0.00	29.0	2.90	0.00	—	101
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	4.19	0.00	4.19	0.42	0.00	—	14.7
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	2.92	0.00	2.92	0.29	0.00	—	10.2
Total	—	—	—	—	—	—	—	—	—	—	—	41.0	0.00	41.0	4.10	0.00	—	143

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.06	0.06
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.11	0.11
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.11	0.11
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.49	1.49
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28	0.28
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.87	6.87
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.91	8.91
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.06	0.06

Apartments	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.11	0.11
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.11	0.11
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.49	1.49
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28	0.28
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.87	6.87
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.91	8.91
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.25
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.05
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.14	1.14
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.47	1.47

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	37.0	37.9	33.9	13,392	274	281	251	99,104
Apartments Low Rise	101	68.3	57.9	32,910	747	505	428	243,534
General Office Building	470	96.0	30.4	129,124	3,478	710	225	955,520
Regional Shopping Center	20,897	25,092	13,210	7,445,289	154,638	185,678	97,752	55,095,140
Strip Mall	2,435	2,435	2,435	888,775	18,019	18,019	18,019	6,576,935
General Light Industry	128	18.2	132	41,198	947	135	976	304,864

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—
Wood Fireplaces	0
Gas Fireplaces	4
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	0
Conventional Wood Stoves	0
Catalytic Wood Stoves	0

Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0
Apartments Low Rise	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	15
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
47992.5	15,998	636,027	212,009	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO_2 and CH_4 and N_2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)

Single Family Housing	27,581	403	0.0330	0.0040	153,341
Apartments Low Rise	57,526	403	0.0330	0.0040	244,585
General Office Building	773,792	403	0.0330	0.0040	1,100,594
Regional Shopping Center	3,039,772	403	0.0330	0.0040	1,852,995
Strip Mall	439,123	403	0.0330	0.0040	267,682
General Light Industry	253,047	403	0.0330	0.0040	1,129,072

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	443,866	0.00
Apartments Low Rise	998,699	0.00
General Office Building	3,706,454	0.00
Regional Shopping Center	19,814,319	0.00
Strip Mall	6,201,783	0.00
General Light Industry	281,460	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	3.18	—
Apartments Low Rise	11.0	—
General Office Building	40.4	—
Regional Shopping Center	325	—
Strip Mall	46.9	—
General Light Industry	32.7	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Apartments Low Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Low Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
General Office Building	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
General Office Building	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Regional Shopping Center	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Regional Shopping Center	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
Strip Mall	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Strip Mall	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
Strip Mall	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
General Light Industry	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	7.52	annual days of extreme heat
Extreme Precipitation	4.10	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A

Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	37.6
AQ-PM	72.4
AQ-DPM	49.2
Drinking Water	47.9
Lead Risk Housing	72.5
Pesticides	43.9
Toxic Releases	89.3
Traffic	39.5
Effect Indicators	—
CleanUp Sites	27.5
Groundwater	67.5
Haz Waste Facilities/Generators	26.7
Impaired Water Bodies	0.00
Solid Waste	86.9
Sensitive Population	—
Asthma	23.2
Cardio-vascular	46.8
Low Birth Weights	75.6
Socioeconomic Factor Indicators	—
Education	66.3
Housing	81.3
Linguistic	44.8
Poverty	42.8
Unemployment	25.2

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	55.20338766
Employed	42.62799949
Median HI	48.26126011
Education	—
Bachelor's or higher	52.44450148
High school enrollment	9.29038881
Preschool enrollment	21.429488
Transportation	—
Auto Access	34.87745413
Active commuting	67.53496728
Social	—
2-parent households	19.00423457
Voting	30.50173232
Neighborhood	—
Alcohol availability	31.23315796
Park access	81.35506224
Retail density	47.32452201
Supermarket access	69.71641216
Tree canopy	39.75362505
Housing	—
Homeownership	38.72706275
Housing habitability	18.33696907
Low-inc homeowner severe housing cost burden	20.62107019
Low-inc renter severe housing cost burden	23.55960477

Uncrowded housing	28.33311947
Health Outcomes	—
Insured adults	31.82343128
Arthritis	0.0
Asthma ER Admissions	68.2
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	26.2
Cognitively Disabled	9.0
Physically Disabled	30.9
Heart Attack ER Admissions	37.8
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	75.1
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0

Children	90.9
Elderly	40.9
English Speaking	13.9
Foreign-born	93.7
Outdoor Workers	93.4
Climate Change Adaptive Capacity	—
Impervious Surface Cover	15.3
Traffic Density	49.9
Traffic Access	23.0
Other Indices	—
Hardship	53.9
Other Decision Support	—
2016 Voting	27.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	64.0
Healthy Places Index Score for Project Location (b)	35.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Based on land use numbers determined for the project.
Operations: Vehicle Data	Based on data provided by traffic consultant.
Operations: Hearths	Assumes natural gas fireplace for single-family homes and no fireplaces for multi-family units.
Operations: Water and Waste Water	Water demand based on values found in the Utilities chapter of the DEIR. For purposes of modeling, no septic is assumed.
Characteristics: Utility Information	Based on year 2022 CO2e intensity factor of 405 lbs/MWh as reported in SCE's 2023 Sustainability Report.

5. CalEEMod Output: Operation Existing to be Redeveloped – Year 2045

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ART-02 Existing Op_Yr 2045 Detailed Report

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7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	ART-02 Existing Op_Yr 2045
Operational Year	2045
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.30
Precipitation (days)	8.00
Location	18635 Pioneer Blvd, Artesia, CA 90701, USA
County	Los Angeles-South Coast
City	Artesia
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	4709
EDFZ	7
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.28

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Single Family Housing	4.00	Dwelling Unit	0.38	7,800	0.00	—	12.0	—

Apartments Low Rise	15.0	Dwelling Unit	1.41	15,900	0.00	—	44.0	—
General Office Building	43.4	1000sqft	3.52	43,422	0.00	—	—	—
Regional Shopping Center	310	1000sqft	21.2	309,506	0.00	—	—	—
Strip Mall	44.7	1000sqft	2.90	44,711	0.00	—	—	—
General Light Industry	26.4	1000sqft	2.24	26,379	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	72.6	68.0	31.3	470	1.29	0.59	147	148	0.55	37.3	37.9	315	137,167	137,481	31.4	4.60	40.1	139,678
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	69.2	64.8	34.0	415	1.23	0.56	147	148	0.53	37.3	37.8	315	131,427	131,741	31.6	4.83	9.71	133,981
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	61.0	57.3	28.6	366	1.03	0.50	121	122	0.47	30.8	31.2	315	111,340	111,655	30.8	4.04	20.1	113,650
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	11.1	10.5	5.21	66.9	0.19	0.09	22.1	22.2	0.09	5.61	5.70	52.1	18,434	18,486	5.10	0.67	3.32	18,816

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	58.3	54.1	29.8	450	1.28	0.46	147	147	0.43	37.3	37.7	—	130,177	130,177	4.36	4.40	31.2	131,628
Area	14.1	13.8	0.23	19.6	< 0.005	0.04	—	0.04	0.03	—	0.03	0.00	163	163	< 0.005	< 0.005	—	163
Energy	0.14	0.07	1.27	1.02	0.01	0.10	—	0.10	0.10	—	0.10	—	6,590	6,590	0.55	0.05	—	6,620
Water	—	—	—	—	—	—	—	—	—	—	—	67.2	236	304	1.77	0.15	—	392
Waste	—	—	—	—	—	—	—	—	—	—	—	247	0.00	247	24.7	0.00	—	866
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.91	8.91
Total	72.6	68.0	31.3	470	1.29	0.59	147	148	0.55	37.3	37.9	315	137,167	137,481	31.4	4.60	40.1	139,678
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	58.3	54.1	32.7	414	1.22	0.46	147	147	0.43	37.3	37.7	—	124,516	124,516	4.54	4.63	0.81	126,009
Area	10.7	10.7	0.07	0.03	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	84.2	84.2	< 0.005	< 0.005	—	84.3
Energy	0.14	0.07	1.27	1.02	0.01	0.10	—	0.10	0.10	—	0.10	—	6,590	6,590	0.55	0.05	—	6,620
Water	—	—	—	—	—	—	—	—	—	—	—	67.2	236	304	1.77	0.15	—	392
Waste	—	—	—	—	—	—	—	—	—	—	—	247	0.00	247	24.7	0.00	—	866
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.91	8.91
Total	69.2	64.8	34.0	415	1.23	0.56	147	148	0.53	37.3	37.8	315	131,427	131,741	31.6	4.83	9.71	133,981
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	47.9	44.4	27.2	352	1.03	0.38	121	122	0.35	30.8	31.1	—	104,454	104,454	3.73	3.84	11.2	105,703
Area	13.0	12.8	0.12	13.4	< 0.005	0.02	—	0.02	0.02	—	0.02	0.00	59.7	59.7	< 0.005	< 0.005	—	59.9
Energy	0.14	0.07	1.27	1.02	0.01	0.10	—	0.10	0.10	—	0.10	—	6,590	6,590	0.55	0.05	—	6,620
Water	—	—	—	—	—	—	—	—	—	—	—	67.2	236	304	1.77	0.15	—	392
Waste	—	—	—	—	—	—	—	—	—	—	—	247	0.00	247	24.7	0.00	—	866

Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.91	8.91
Total	61.0	57.3	28.6	366	1.03	0.50	121	122	0.47	30.8	31.2	315	111,340	111,655	30.8	4.04	20.1	113,650
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	8.74	8.09	4.96	64.2	0.19	0.07	22.1	22.2	0.06	5.61	5.68	—	17,294	17,294	0.62	0.64	1.85	17,500
Area	2.38	2.34	0.02	2.44	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	9.88	9.88	< 0.005	< 0.005	—	9.91
Energy	0.03	0.01	0.23	0.19	< 0.005	0.02	—	0.02	0.02	—	0.02	—	1,091	1,091	0.09	0.01	—	1,096
Water	—	—	—	—	—	—	—	—	—	—	—	11.1	39.1	50.3	0.29	0.02	—	64.9
Waste	—	—	—	—	—	—	—	—	—	—	—	41.0	0.00	41.0	4.10	0.00	—	143
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.47	1.47
Total	11.1	10.5	5.21	66.9	0.19	0.09	22.1	22.2	0.09	5.61	5.70	52.1	18,434	18,486	5.10	0.67	3.32	18,816

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.08	0.07	0.04	0.60	< 0.005	< 0.005	0.20	0.20	< 0.005	0.05	0.05	—	175	175	0.01	0.01	0.04	177
Apartments Low Rise	0.21	0.19	0.11	1.61	< 0.005	< 0.005	0.53	0.53	< 0.005	0.13	0.13	—	465	465	0.02	0.02	0.11	470
General Office Building	0.97	0.90	0.50	7.48	0.02	0.01	2.44	2.45	0.01	0.62	0.63	—	2,164	2,164	0.07	0.07	0.52	2,189

Regional	51.8	48.0	26.5	399	1.14	0.41	131	131	0.38	33.1	33.5	—	115,552	115,552	3.87	3.90	27.7	116,839
Strip Mall	5.03	4.66	2.57	38.7	0.11	0.04	12.7	12.7	0.04	3.21	3.25	—	11,214	11,214	0.38	0.38	2.69	11,339
General Light Industry	0.27	0.25	0.14	2.10	0.01	< 0.005	0.69	0.69	< 0.005	0.17	0.18	—	607	607	0.02	0.02	0.15	614
Total	58.3	54.1	29.8	450	1.28	0.46	147	147	0.43	37.3	37.7	—	130,177	130,177	4.36	4.40	31.2	131,628
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.08	0.07	0.04	0.56	< 0.005	< 0.005	0.20	0.20	< 0.005	0.05	0.05	—	167	167	0.01	0.01	< 0.005	169
Apartments Low Rise	0.21	0.19	0.12	1.48	< 0.005	< 0.005	0.53	0.53	< 0.005	0.13	0.13	—	445	445	0.02	0.02	< 0.005	450
General Office Building	0.97	0.90	0.54	6.88	0.02	0.01	2.44	2.45	0.01	0.62	0.63	—	2,070	2,070	0.08	0.08	0.01	2,095
Regional Shopping Center	51.8	48.0	29.0	368	1.09	0.41	131	131	0.38	33.1	33.5	—	110,527	110,527	4.03	4.11	0.72	111,852
Strip Mall	5.02	4.66	2.82	35.7	0.11	0.04	12.7	12.7	0.04	3.21	3.25	—	10,726	10,726	0.39	0.40	0.07	10,855
General Light Industry	0.27	0.25	0.15	1.93	0.01	< 0.005	0.69	0.69	< 0.005	0.17	0.18	—	581	581	0.02	0.02	< 0.005	588
Total	58.3	54.1	32.7	414	1.22	0.46	147	147	0.43	37.3	37.7	—	124,516	124,516	4.54	4.63	0.81	126,009
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	0.01	0.01	0.01	0.10	< 0.005	< 0.005	0.03	0.03	< 0.005	0.01	0.01	—	27.1	27.1	< 0.005	< 0.005	< 0.005	27.4

Apartments Low Rise	0.03	0.03	0.02	0.25	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.02	—	66.6	66.6	< 0.005	< 0.005	0.01	67.4
General Office Building	0.13	0.12	0.07	0.97	< 0.005	< 0.005	0.33	0.34	< 0.005	0.08	0.09	—	261	261	0.01	0.01	0.03	264
Regional Shopping Center	7.61	7.05	4.32	55.9	0.16	0.06	19.3	19.3	0.06	4.89	4.94	—	15,058	15,058	0.54	0.55	1.61	15,238
Strip Mall	0.91	0.84	0.52	6.68	0.02	0.01	2.30	2.31	0.01	0.58	0.59	—	1,798	1,798	0.06	0.07	0.19	1,819
General Light Industry	0.04	0.04	0.02	0.31	< 0.005	< 0.005	0.11	0.11	< 0.005	0.03	0.03	—	83.3	83.3	< 0.005	< 0.005	0.01	84.3
Total	8.74	8.09	4.96	64.2	0.19	0.07	22.1	22.2	0.06	5.61	5.68	—	17,294	17,294	0.62	0.64	1.85	17,500

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	30.5	30.5	< 0.005	< 0.005	—	30.6
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	63.5	63.5	0.01	< 0.005	—	63.8
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	854	854	0.07	0.01	—	859

Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	3,356	3,356	0.27	0.03	—	3,373
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	485	485	0.04	< 0.005	—	487
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	279	279	0.02	< 0.005	—	281
Total	—	—	—	—	—	—	—	—	—	—	—	—	5,069	5,069	0.42	0.05	—	5,094
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	30.5	30.5	< 0.005	< 0.005	—	30.6
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	63.5	63.5	0.01	< 0.005	—	63.8
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	854	854	0.07	0.01	—	859
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	3,356	3,356	0.27	0.03	—	3,373
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	485	485	0.04	< 0.005	—	487
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	279	279	0.02	< 0.005	—	281
Total	—	—	—	—	—	—	—	—	—	—	—	—	5,069	5,069	0.42	0.05	—	5,094
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	5.04	5.04	< 0.005	< 0.005	—	5.07

Apartments	—	—	—	—	—	—	—	—	—	—	—	—	10.5	10.5	< 0.005	< 0.005	—	10.6
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	141	141	0.01	< 0.005	—	142
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	556	556	0.05	0.01	—	558
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	80.3	80.3	0.01	< 0.005	—	80.7
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	46.3	46.3	< 0.005	< 0.005	—	46.5
Total	—	—	—	—	—	—	—	—	—	—	—	—	839	839	0.07	0.01	—	843

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	49.1	49.1	< 0.005	< 0.005	—	49.3
Apartments Low Rise	0.01	< 0.005	0.06	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	78.4	78.4	0.01	< 0.005	—	78.6
General Office Building	0.03	0.02	0.30	0.25	< 0.005	0.02	—	0.02	0.02	—	0.02	—	353	353	0.03	< 0.005	—	354

Regional Shopping	0.05	0.03	0.50	0.42	< 0.005	0.04	—	0.04	0.04	—	0.04	—	594	594	0.05	< 0.005	—	596
Strip Mall	0.01	< 0.005	0.07	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	85.8	85.8	0.01	< 0.005	—	86.0
General Light Industry	0.03	0.02	0.30	0.25	< 0.005	0.02	—	0.02	0.02	—	0.02	—	362	362	0.03	< 0.005	—	363
Total	0.14	0.07	1.27	1.02	0.01	0.10	—	0.10	0.10	—	0.10	—	1,522	1,522	0.13	< 0.005	—	1,526
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	49.1	49.1	< 0.005	< 0.005	—	49.3
Apartments Low Rise	0.01	< 0.005	0.06	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	78.4	78.4	0.01	< 0.005	—	78.6
General Office Building	0.03	0.02	0.30	0.25	< 0.005	0.02	—	0.02	0.02	—	0.02	—	353	353	0.03	< 0.005	—	354
Regional Shopping Center	0.05	0.03	0.50	0.42	< 0.005	0.04	—	0.04	0.04	—	0.04	—	594	594	0.05	< 0.005	—	596
Strip Mall	0.01	< 0.005	0.07	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	85.8	85.8	0.01	< 0.005	—	86.0
General Light Industry	0.03	0.02	0.30	0.25	< 0.005	0.02	—	0.02	0.02	—	0.02	—	362	362	0.03	< 0.005	—	363
Total	0.14	0.07	1.27	1.02	0.01	0.10	—	0.10	0.10	—	0.10	—	1,522	1,522	0.13	< 0.005	—	1,526
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.14	8.14	< 0.005	< 0.005	—	8.16

Apartme Low Rise	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.0	13.0	< 0.005	< 0.005	—	13.0
General Office Building	0.01	< 0.005	0.05	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	58.4	58.4	0.01	< 0.005	—	58.6
Regional Shopping Center	0.01	< 0.005	0.09	0.08	< 0.005	0.01	—	0.01	0.01	—	0.01	—	98.3	98.3	0.01	< 0.005	—	98.6
Strip Mall	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	14.2	14.2	< 0.005	< 0.005	—	14.2
General Light Industry	0.01	< 0.005	0.06	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	59.9	59.9	0.01	< 0.005	—	60.1
Total	0.03	0.01	0.23	0.19	< 0.005	0.02	—	0.02	0.02	—	0.02	—	252	252	0.02	< 0.005	—	253

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.01	< 0.005	0.07	0.03	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	84.2	84.2	< 0.005	< 0.005	—	84.3
Consumer Products	9.58	9.58	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.12	1.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landscape Equipment	3.38	3.12	0.17	19.5	< 0.005	0.03	—	0.03	0.03	—	0.03	—	78.7	78.7	< 0.005	< 0.005	—	79.0
Total	14.1	13.8	0.23	19.6	< 0.005	0.04	—	0.04	0.03	—	0.03	0.00	163	163	< 0.005	< 0.005	—	163
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.01	< 0.005	0.07	0.03	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	84.2	84.2	< 0.005	< 0.005	—	84.3
Consumer Products	9.58	9.58	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	1.12	1.12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	10.7	10.7	0.07	0.03	< 0.005	0.01	—	0.01	0.01	—	0.01	0.00	84.2	84.2	< 0.005	< 0.005	—	84.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	0.96	0.96	< 0.005	< 0.005	—	0.96
Consumer Products	1.75	1.75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.20	0.20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.42	0.39	0.02	2.44	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.93	8.93	< 0.005	< 0.005	—	8.96
Total	2.38	2.34	0.02	2.44	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	0.00	9.88	9.88	< 0.005	< 0.005	—	9.91

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.95	3.34	4.28	0.03	< 0.005	—	5.54
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	2.13	7.51	9.64	0.06	< 0.005	—	12.5
General Office Building	—	—	—	—	—	—	—	—	—	—	—	7.92	27.9	35.8	0.21	0.02	—	46.2
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	42.3	149	191	1.12	0.09	—	247
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	13.3	46.6	59.9	0.35	0.03	—	77.4
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	0.60	2.12	2.72	0.02	< 0.005	—	3.51
Total	—	—	—	—	—	—	—	—	—	—	—	67.2	236	304	1.77	0.15	—	392
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.95	3.34	4.28	0.03	< 0.005	—	5.54
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	2.13	7.51	9.64	0.06	< 0.005	—	12.5

General Office Building	—	—	—	—	—	—	—	—	—	—	—	7.92	27.9	35.8	0.21	0.02	—	46.2
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	42.3	149	191	1.12	0.09	—	247
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	13.3	46.6	59.9	0.35	0.03	—	77.4
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	0.60	2.12	2.72	0.02	< 0.005	—	3.51
Total	—	—	—	—	—	—	—	—	—	—	—	67.2	236	304	1.77	0.15	—	392
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.16	0.55	0.71	< 0.005	< 0.005	—	0.92
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	0.35	1.24	1.60	0.01	< 0.005	—	2.06
General Office Building	—	—	—	—	—	—	—	—	—	—	—	1.31	4.61	5.92	0.03	< 0.005	—	7.66
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	7.01	24.7	31.7	0.18	0.02	—	40.9
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	2.19	7.72	9.91	0.06	< 0.005	—	12.8
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	0.10	0.35	0.45	< 0.005	< 0.005	—	0.58
Total	—	—	—	—	—	—	—	—	—	—	—	11.1	39.1	50.3	0.29	0.02	—	64.9

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.72	0.00	1.72	0.17	0.00	—	6.00
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	5.92	0.00	5.92	0.59	0.00	—	20.7
General Office Building	—	—	—	—	—	—	—	—	—	—	—	21.8	0.00	21.8	2.18	0.00	—	76.1
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	175	0.00	175	17.5	0.00	—	613
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	25.3	0.00	25.3	2.53	0.00	—	88.5
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	17.6	0.00	17.6	1.76	0.00	—	61.7
Total	—	—	—	—	—	—	—	—	—	—	—	247	0.00	247	24.7	0.00	—	866
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	1.72	0.00	1.72	0.17	0.00	—	6.00

Apartments	—	—	—	—	—	—	—	—	—	—	—	5.92	0.00	5.92	0.59	0.00	—	20.7
General Office Building	—	—	—	—	—	—	—	—	—	—	—	21.8	0.00	21.8	2.18	0.00	—	76.1
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	175	0.00	175	17.5	0.00	—	613
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	25.3	0.00	25.3	2.53	0.00	—	88.5
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	17.6	0.00	17.6	1.76	0.00	—	61.7
Total	—	—	—	—	—	—	—	—	—	—	—	247	0.00	247	24.7	0.00	—	866
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.99
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	0.98	0.00	0.98	0.10	0.00	—	3.43
General Office Building	—	—	—	—	—	—	—	—	—	—	—	3.60	0.00	3.60	0.36	0.00	—	12.6
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	29.0	0.00	29.0	2.90	0.00	—	101
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	4.19	0.00	4.19	0.42	0.00	—	14.7
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	2.92	0.00	2.92	0.29	0.00	—	10.2
Total	—	—	—	—	—	—	—	—	—	—	—	41.0	0.00	41.0	4.10	0.00	—	143

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.06	0.06
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.11	0.11
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.11	0.11
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.49	1.49
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28	0.28
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.87	6.87
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.91	8.91
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.06	0.06

Apartments	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.11	0.11
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.11	0.11
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.49	1.49
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28	0.28
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.87	6.87
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.91	8.91
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.02	0.02
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.25	0.25
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.05
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.14	1.14
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.47	1.47

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	37.0	37.9	33.9	13,392	272	279	250	98,568
Apartments Low Rise	101	68.3	57.9	32,910	743	502	426	242,217
General Office Building	470	96.0	30.4	129,124	3,459	706	224	950,355
Regional Shopping Center	20,897	25,092	13,210	7,445,289	153,802	184,675	97,224	54,797,328
Strip Mall	2,435	2,435	2,435	888,775	17,922	17,922	17,922	6,541,384
General Light Industry	128	18.2	132	41,198	942	134	971	303,216

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—
Wood Fireplaces	0
Gas Fireplaces	4
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	0
Conventional Wood Stoves	0
Catalytic Wood Stoves	0

Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0
Apartments Low Rise	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	15
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
47992.5	15,998	636,027	212,009	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)

Single Family Housing	27,581	403	0.0330	0.0040	153,341
Apartments Low Rise	57,526	403	0.0330	0.0040	244,585
General Office Building	773,792	403	0.0330	0.0040	1,100,594
Regional Shopping Center	3,039,772	403	0.0330	0.0040	1,852,995
Strip Mall	439,123	403	0.0330	0.0040	267,682
General Light Industry	253,047	403	0.0330	0.0040	1,129,072

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	443,866	0.00
Apartments Low Rise	998,699	0.00
General Office Building	3,706,454	0.00
Regional Shopping Center	19,814,319	0.00
Strip Mall	6,201,783	0.00
General Light Industry	281,460	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	3.18	—
Apartments Low Rise	11.0	—
General Office Building	40.4	—
Regional Shopping Center	325	—
Strip Mall	46.9	—
General Light Industry	32.7	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
Apartments Low Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Low Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
General Office Building	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
General Office Building	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Regional Shopping Center	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Regional Shopping Center	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
Strip Mall	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Strip Mall	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
Strip Mall	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
General Light Industry	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	7.52	annual days of extreme heat
Extreme Precipitation	4.10	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A

Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	37.6
AQ-PM	72.4
AQ-DPM	49.2
Drinking Water	47.9
Lead Risk Housing	72.5
Pesticides	43.9
Toxic Releases	89.3
Traffic	39.5
Effect Indicators	—
CleanUp Sites	27.5
Groundwater	67.5
Haz Waste Facilities/Generators	26.7
Impaired Water Bodies	0.00
Solid Waste	86.9
Sensitive Population	—
Asthma	23.2
Cardio-vascular	46.8
Low Birth Weights	75.6
Socioeconomic Factor Indicators	—
Education	66.3
Housing	81.3
Linguistic	44.8
Poverty	42.8
Unemployment	25.2

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	55.20338766
Employed	42.62799949
Median HI	48.26126011
Education	—
Bachelor's or higher	52.44450148
High school enrollment	9.29038881
Preschool enrollment	21.429488
Transportation	—
Auto Access	34.87745413
Active commuting	67.53496728
Social	—
2-parent households	19.00423457
Voting	30.50173232
Neighborhood	—
Alcohol availability	31.23315796
Park access	81.35506224
Retail density	47.32452201
Supermarket access	69.71641216
Tree canopy	39.75362505
Housing	—
Homeownership	38.72706275
Housing habitability	18.33696907
Low-inc homeowner severe housing cost burden	20.62107019
Low-inc renter severe housing cost burden	23.55960477

Uncrowded housing	28.33311947
Health Outcomes	—
Insured adults	31.82343128
Arthritis	0.0
Asthma ER Admissions	68.2
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	26.2
Cognitively Disabled	9.0
Physically Disabled	30.9
Heart Attack ER Admissions	37.8
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	75.1
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0

Children	90.9
Elderly	40.9
English Speaking	13.9
Foreign-born	93.7
Outdoor Workers	93.4
Climate Change Adaptive Capacity	—
Impervious Surface Cover	15.3
Traffic Density	49.9
Traffic Access	23.0
Other Indices	—
Hardship	53.9
Other Decision Support	—
2016 Voting	27.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	64.0
Healthy Places Index Score for Project Location (b)	35.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Based on land use numbers determined for the project.
Operations: Vehicle Data	Based on data provided by traffic consultant.
Operations: Hearths	Assumes natural gas fireplace for single-family homes and no fireplaces for multi-family units.
Operations: Water and Waste Water	Water demand based on values found in the Utilities chapter of the DEIR. For purposes of modeling, no septic is assumed.
Characteristics: Utility Information	Based on year 2022 CO2e intensity factor of 405 lbs/MWh as reported in SCE's 2023 Sustainability Report.

6. CalEEMod Output: Operation Proposed Project

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ART-02 Proposed New Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	ART-02 Proposed New
Operational Year	2045
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.30
Precipitation (days)	8.00
Location	18635 Pioneer Blvd, Artesia, CA 90701, USA
County	Los Angeles-South Coast
City	Artesia
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	4709
EDFZ	7
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.28

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Low Rise	1,981	Dwelling Unit	4.52	2,099,860	0.00	—	5,864	—

General Office Building	106	1000sqft	4.52	105,730	0.00	—	—	—
Quality Restaurant	23.4	1000sqft	4.52	23,418	0.00	—	—	—
High Turnover (Sit Down Restaurant)	135	1000sqft	4.52	135,177	0.00	—	—	—
Regional Shopping Center	134	1000sqft	4.52	133,818	0.00	—	—	—
Strip Mall	24.8	1000sqft	4.52	24,777	0.00	—	—	—
Hotel	150	Room	4.52	80,000	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	149	140	86.1	672	1.73	4.46	159	163	4.40	40.3	44.7	5,259	227,024	232,283	489	7.10	427	247,047
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	135	127	88.3	499	1.67	4.37	159	163	4.33	40.3	44.6	5,259	220,678	225,938	489	7.35	390	240,744
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	131	125	52.7	520	1.29	1.87	135	137	1.83	34.4	36.2	5,259	163,569	168,828	487	6.48	403	183,349
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	23.8	22.7	9.62	94.9	0.24	0.34	24.7	25.0	0.33	6.27	6.60	871	27,081	27,951	80.7	1.07	66.7	30,356

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	68.8	63.5	37.3	514	1.42	0.56	159	159	0.52	40.3	40.8	—	145,126	145,126	5.22	5.40	37.7	146,905
Area	78.6	75.9	34.1	149	0.22	2.75	—	2.75	2.72	—	2.72	0.00	42,102	42,102	0.80	0.08	—	42,147
Energy	1.67	0.83	14.7	8.93	0.09	1.15	—	1.15	1.15	—	1.15	—	37,595	37,595	3.20	0.23	—	37,743
Water	—	—	—	—	—	—	—	—	—	—	—	626	2,200	2,826	16.5	1.39	—	3,652
Waste	—	—	—	—	—	—	—	—	—	—	—	4,634	0.00	4,634	463	0.00	—	16,212
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	389	389
Total	149	140	86.1	672	1.73	4.46	159	163	4.40	40.3	44.7	5,259	227,024	232,283	489	7.10	427	247,047
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	68.8	63.5	40.8	476	1.37	0.56	159	159	0.52	40.3	40.8	—	139,171	139,171	5.40	5.66	0.98	140,993
Area	64.4	62.5	32.9	14.0	0.21	2.66	—	2.66	2.66	—	2.66	0.00	41,712	41,712	0.79	0.08	—	41,755
Energy	1.67	0.83	14.7	8.93	0.09	1.15	—	1.15	1.15	—	1.15	—	37,595	37,595	3.20	0.23	—	37,743
Water	—	—	—	—	—	—	—	—	—	—	—	626	2,200	2,826	16.5	1.39	—	3,652
Waste	—	—	—	—	—	—	—	—	—	—	—	4,634	0.00	4,634	463	0.00	—	16,212
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	389	389
Total	135	127	88.3	499	1.67	4.37	159	163	4.33	40.3	44.6	5,259	220,678	225,938	489	7.35	390	240,744
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	58.4	53.8	35.0	418	1.18	0.48	135	136	0.45	34.4	34.8	—	120,649	120,649	4.61	4.86	14.0	122,225
Area	70.6	69.9	3.09	93.3	0.02	0.24	—	0.24	0.23	—	0.23	0.00	3,124	3,124	0.06	0.01	—	3,128
Energy	1.67	0.83	14.7	8.93	0.09	1.15	—	1.15	1.15	—	1.15	—	37,595	37,595	3.20	0.23	—	37,743

Water	—	—	—	—	—	—	—	—	—	—	—	626	2,200	2,826	16.5	1.39	—	3,652
Waste	—	—	—	—	—	—	—	—	—	—	—	4,634	0.00	4,634	463	0.00	—	16,212
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	389	389
Total	131	125	52.7	520	1.29	1.87	135	137	1.83	34.4	36.2	5,259	163,569	168,828	487	6.48	403	183,349
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	10.7	9.82	6.39	76.3	0.22	0.09	24.7	24.8	0.08	6.27	6.35	—	19,975	19,975	0.76	0.80	2.31	20,236
Area	12.9	12.7	0.56	17.0	< 0.005	0.04	—	0.04	0.04	—	0.04	0.00	517	517	0.01	< 0.005	—	518
Energy	0.30	0.15	2.67	1.63	0.02	0.21	—	0.21	0.21	—	0.21	—	6,224	6,224	0.53	0.04	—	6,249
Water	—	—	—	—	—	—	—	—	—	—	—	104	364	468	2.73	0.23	—	605
Waste	—	—	—	—	—	—	—	—	—	—	—	767	0.00	767	76.7	0.00	—	2,684
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	64.4	64.4
Total	23.8	22.7	9.62	94.9	0.24	0.34	24.7	25.0	0.33	6.27	6.60	871	27,081	27,951	80.7	1.07	66.7	30,356

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	15.9	14.7	8.62	119	0.33	0.13	36.6	36.7	0.12	9.30	9.42	—	33,503	33,503	1.21	1.25	8.71	33,914
General Office Building	1.69	1.56	0.92	12.6	0.03	0.01	3.89	3.90	0.01	0.99	1.00	—	3,559	3,559	0.13	0.13	0.93	3,602

Quality Restaurant	3.10	2.87	1.69	23.2	0.06	0.03	7.16	7.18	0.02	1.82	1.84	—	6,548	6,548	0.24	0.24	1.70	6,628
High Turnover (Sit Down Restaurant)	28.4	26.2	15.4	212	0.59	0.23	65.4	65.7	0.21	16.6	16.8	—	59,878	59,878	2.15	2.23	15.6	60,612
Regional Shopping Center	16.0	14.7	8.67	119	0.33	0.13	36.8	36.9	0.12	9.35	9.47	—	33,690	33,690	1.21	1.25	8.76	34,103
Strip Mall	1.99	1.83	1.08	14.8	0.04	0.02	4.58	4.59	0.02	1.16	1.18	—	4,189	4,189	0.15	0.16	1.09	4,241
Hotel	1.78	1.65	0.97	13.3	0.04	0.01	4.11	4.12	0.01	1.04	1.06	—	3,759	3,759	0.14	0.14	0.98	3,805
Total	68.8	63.5	37.3	514	1.42	0.56	159	159	0.52	40.3	40.8	—	145,126	145,126	5.22	5.40	37.7	146,905
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	15.9	14.7	9.41	110	0.32	0.13	36.6	36.7	0.12	9.30	9.42	—	32,128	32,128	1.25	1.31	0.23	32,549
General Office Building	1.69	1.56	1.00	11.7	0.03	0.01	3.89	3.90	0.01	0.99	1.00	—	3,413	3,413	0.13	0.14	0.02	3,457
Quality Restaurant	3.10	2.86	1.84	21.5	0.06	0.03	7.16	7.18	0.02	1.82	1.84	—	6,279	6,279	0.24	0.26	0.04	6,362
High Turnover (Sit Down Restaurant)	28.4	26.2	16.8	196	0.56	0.23	65.4	65.7	0.21	16.6	16.8	—	57,421	57,421	2.23	2.33	0.40	58,173
Regional Shopping Center	16.0	14.7	9.46	111	0.32	0.13	36.8	36.9	0.12	9.35	9.47	—	32,307	32,307	1.25	1.31	0.23	32,730

Strip Mall	1.99	1.83	1.18	13.7	0.04	0.02	4.58	4.59	0.02	1.16	1.18	—	4,017	4,017	0.16	0.16	0.03	4,070
Hotel	1.78	1.64	1.06	12.3	0.04	0.01	4.11	4.12	0.01	1.04	1.06	—	3,605	3,605	0.14	0.15	0.03	3,652
Total	68.8	63.5	40.8	476	1.37	0.56	159	159	0.52	40.3	40.8	—	139,171	139,171	5.40	5.66	0.98	140,993
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	2.78	2.56	1.67	19.9	0.06	0.02	6.44	6.46	0.02	1.64	1.66	—	5,213	5,213	0.20	0.21	0.60	5,281
General Office Building	0.23	0.21	0.14	1.64	< 0.005	< 0.005	0.53	0.53	< 0.005	0.14	0.14	—	430	430	0.02	0.02	0.05	436
Quality Restaurant	0.52	0.48	0.31	3.70	0.01	< 0.005	1.20	1.20	< 0.005	0.30	0.31	—	970	970	0.04	0.04	0.11	982
High Turnover (Sit Down Restaurant)	4.11	3.79	2.47	29.5	0.08	0.03	9.53	9.57	0.03	2.42	2.45	—	7,715	7,715	0.29	0.31	0.89	7,815
Regional Shopping Center	2.35	2.16	1.41	16.8	0.05	0.02	5.43	5.45	0.02	1.38	1.40	—	4,398	4,398	0.17	0.18	0.51	4,456
Strip Mall	0.36	0.33	0.22	2.57	0.01	< 0.005	0.83	0.83	< 0.005	0.21	0.21	—	673	673	0.03	0.03	0.08	682
Hotel	0.31	0.28	0.18	2.20	0.01	< 0.005	0.71	0.72	< 0.005	0.18	0.18	—	577	577	0.02	0.02	0.07	584
Total	10.7	9.82	6.39	76.3	0.22	0.09	24.7	24.8	0.08	6.27	6.35	—	19,975	19,975	0.76	0.80	2.31	20,236

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	8,388	8,388	0.69	0.08	—	8,430
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	2,080	2,080	0.17	0.02	—	2,091
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	—	895	895	0.07	0.01	—	900
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	5,168	5,168	0.42	0.05	—	5,194
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	1,451	1,451	0.12	0.01	—	1,458
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	269	269	0.02	< 0.005	—	270
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	1,236	1,236	0.10	0.01	—	1,242
Total	—	—	—	—	—	—	—	—	—	—	—	—	19,487	19,487	1.60	0.19	—	19,585
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	8,388	8,388	0.69	0.08	—	8,430
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	2,080	2,080	0.17	0.02	—	2,091
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	—	895	895	0.07	0.01	—	900

High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	5,168	5,168	0.42	0.05	—	5,194
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	1,451	1,451	0.12	0.01	—	1,458
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	269	269	0.02	< 0.005	—	270
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	1,236	1,236	0.10	0.01	—	1,242
Total	—	—	—	—	—	—	—	—	—	—	—	—	19,487	19,487	1.60	0.19	—	19,585
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	1,389	1,389	0.11	0.01	—	1,396
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	344	344	0.03	< 0.005	—	346
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	—	148	148	0.01	< 0.005	—	149
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	856	856	0.07	0.01	—	860
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	240	240	0.02	< 0.005	—	241
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	44.5	44.5	< 0.005	< 0.005	—	44.7
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	205	205	0.02	< 0.005	—	206
Total	—	—	—	—	—	—	—	—	—	—	—	—	3,226	3,226	0.26	0.03	—	3,243

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.95	0.48	8.16	3.47	0.05	0.66	—	0.66	0.66	—	0.66	—	10,352	10,352	0.92	0.02	—	10,381
General Office Building	0.08	0.04	0.72	0.60	< 0.005	0.05	—	0.05	0.05	—	0.05	—	859	859	0.08	< 0.005	—	861
Quality Restaurant	0.08	0.04	0.72	0.61	< 0.005	0.06	—	0.06	0.06	—	0.06	—	864	864	0.08	< 0.005	—	866
High Turnover (Sit Down Restaurant)	0.46	0.23	4.18	3.51	0.03	0.32	—	0.32	0.32	—	0.32	—	4,988	4,988	0.44	0.01	—	5,002
Regional Shopping Center	0.02	0.01	0.22	0.18	< 0.005	0.02	—	0.02	0.02	—	0.02	—	257	257	0.02	< 0.005	—	257
Strip Mall	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	47.5	47.5	< 0.005	< 0.005	—	47.7
Hotel	0.07	0.03	0.62	0.52	< 0.005	0.05	—	0.05	0.05	—	0.05	—	740	740	0.07	< 0.005	—	742
Total	1.67	0.83	14.7	8.93	0.09	1.15	—	1.15	1.15	—	1.15	—	18,107	18,107	1.60	0.03	—	18,158
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.95	0.48	8.16	3.47	0.05	0.66	—	0.66	0.66	—	0.66	—	10,352	10,352	0.92	0.02	—	10,381

General Office Building	0.08	0.04	0.72	0.60	< 0.005	0.05	—	0.05	0.05	—	0.05	—	859	859	0.08	< 0.005	—	861
Quality Restaurant	0.08	0.04	0.72	0.61	< 0.005	0.06	—	0.06	0.06	—	0.06	—	864	864	0.08	< 0.005	—	866
High Turnover (Sit Down Restaurant)	0.46	0.23	4.18	3.51	0.03	0.32	—	0.32	0.32	—	0.32	—	4,988	4,988	0.44	0.01	—	5,002
Regional Shopping Center	0.02	0.01	0.22	0.18	< 0.005	0.02	—	0.02	0.02	—	0.02	—	257	257	0.02	< 0.005	—	257
Strip Mall	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	47.5	47.5	< 0.005	< 0.005	—	47.7
Hotel	0.07	0.03	0.62	0.52	< 0.005	0.05	—	0.05	0.05	—	0.05	—	740	740	0.07	< 0.005	—	742
Total	1.67	0.83	14.7	8.93	0.09	1.15	—	1.15	1.15	—	1.15	—	18,107	18,107	1.60	0.03	—	18,158
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	0.17	0.09	1.49	0.63	0.01	0.12	—	0.12	0.12	—	0.12	—	1,714	1,714	0.15	< 0.005	—	1,719
General Office Building	0.01	0.01	0.13	0.11	< 0.005	0.01	—	0.01	0.01	—	0.01	—	142	142	0.01	< 0.005	—	143
Quality Restaurant	0.01	0.01	0.13	0.11	< 0.005	0.01	—	0.01	0.01	—	0.01	—	143	143	0.01	< 0.005	—	143
High Turnover (Sit Down Restaurant)	0.08	0.04	0.76	0.64	< 0.005	0.06	—	0.06	0.06	—	0.06	—	826	826	0.07	< 0.005	—	828
Regional Shopping Center	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	42.5	42.5	< 0.005	< 0.005	—	42.6

Strip Mall	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.87	7.87	< 0.005	< 0.005	—	7.89
Hotel	0.01	0.01	0.11	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	123	123	0.01	< 0.005	—	123
Total	0.30	0.15	2.67	1.63	0.02	0.21	—	0.21	0.21	—	0.21	—	2,998	2,998	0.27	0.01	—	3,006

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	3.85	1.92	32.9	14.0	0.21	2.66	—	2.66	2.66	—	2.66	0.00	41,712	41,712	0.79	0.08	—	41,755
Consumer Products	55.7	55.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	4.88	4.88	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	14.2	13.4	1.22	135	0.01	0.09	—	0.09	0.07	—	0.07	—	390	390	0.02	< 0.005	—	392
Total	78.6	75.9	34.1	149	0.22	2.75	—	2.75	2.72	—	2.72	0.00	42,102	42,102	0.80	0.08	—	42,147
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	3.85	1.92	32.9	14.0	0.21	2.66	—	2.66	2.66	—	2.66	0.00	41,712	41,712	0.79	0.08	—	41,755
Consumer Products	55.7	55.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architect Coatings	4.88	4.88	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	64.4	62.5	32.9	14.0	0.21	2.66	—	2.66	2.66	—	2.66	0.00	41,712	41,712	0.79	0.08	—	41,755
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.05	0.02	0.41	0.17	< 0.005	0.03	—	0.03	0.03	—	0.03	0.00	473	473	0.01	< 0.005	—	473
Consumer Products	10.2	10.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.89	0.89	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	1.78	1.67	0.15	16.9	< 0.005	0.01	—	0.01	0.01	—	0.01	—	44.3	44.3	< 0.005	< 0.005	—	44.4
Total	12.9	12.7	0.56	17.0	< 0.005	0.04	—	0.04	0.04	—	0.04	0.00	517	517	0.01	< 0.005	—	518

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	241	849	1,091	6.37	0.54	—	1,410
General Office Building	—	—	—	—	—	—	—	—	—	—	—	15.4	54.3	69.7	0.41	0.03	—	90.1

Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	17.1	60.1	77.2	0.45	0.04	—	99.7
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	98.6	347	446	2.60	0.22	—	576
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	9.76	34.3	44.1	0.26	0.02	—	57.0
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	1.81	6.36	8.17	0.05	< 0.005	—	10.6
Hotel	—	—	—	—	—	—	—	—	—	—	—	241	849	1,091	6.37	0.54	—	1,410
Total	—	—	—	—	—	—	—	—	—	—	—	626	2,200	2,826	16.5	1.39	—	3,652
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	241	849	1,091	6.37	0.54	—	1,410
General Office Building	—	—	—	—	—	—	—	—	—	—	—	15.4	54.3	69.7	0.41	0.03	—	90.1
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	17.1	60.1	77.2	0.45	0.04	—	99.7
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	98.6	347	446	2.60	0.22	—	576
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	9.76	34.3	44.1	0.26	0.02	—	57.0

Strip Mall	—	—	—	—	—	—	—	—	—	—	—	1.81	6.36	8.17	0.05	< 0.005	—	10.6
Hotel	—	—	—	—	—	—	—	—	—	—	—	241	849	1,091	6.37	0.54	—	1,410
Total	—	—	—	—	—	—	—	—	—	—	—	626	2,200	2,826	16.5	1.39	—	3,652
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	40.0	141	181	1.05	0.09	—	233
General Office Building	—	—	—	—	—	—	—	—	—	—	—	2.55	8.98	11.5	0.07	0.01	—	14.9
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	2.83	9.95	12.8	0.07	0.01	—	16.5
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	16.3	57.4	73.8	0.43	0.04	—	95.3
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	1.62	5.69	7.30	0.04	< 0.005	—	9.44
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	0.30	1.05	1.35	0.01	< 0.005	—	1.75
Hotel	—	—	—	—	—	—	—	—	—	—	—	40.0	141	181	1.05	0.09	—	233
Total	—	—	—	—	—	—	—	—	—	—	—	104	364	468	2.73	0.23	—	605

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	4,172	0.00	4,172	417	0.00	—	14,595
General Office Building	—	—	—	—	—	—	—	—	—	—	—	76.9	0.00	76.9	7.69	0.00	—	269
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	77.0	0.00	77.0	7.69	0.00	—	269
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	77.2	0.00	77.2	7.72	0.00	—	270
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	77.2	0.00	77.2	7.71	0.00	—	270
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	77.0	0.00	77.0	7.70	0.00	—	270
Hotel	—	—	—	—	—	—	—	—	—	—	—	76.8	0.00	76.8	7.68	0.00	—	269
Total	—	—	—	—	—	—	—	—	—	—	—	4,634	0.00	4,634	463	0.00	—	16,212
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	4,172	0.00	4,172	417	0.00	—	14,595
General Office Building	—	—	—	—	—	—	—	—	—	—	—	76.9	0.00	76.9	7.69	0.00	—	269
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	77.0	0.00	77.0	7.69	0.00	—	269

High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	77.2	0.00	77.2	7.72	0.00	—	270
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	77.2	0.00	77.2	7.71	0.00	—	270
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	77.0	0.00	77.0	7.70	0.00	—	270
Hotel	—	—	—	—	—	—	—	—	—	—	—	76.8	0.00	76.8	7.68	0.00	—	269
Total	—	—	—	—	—	—	—	—	—	—	—	4,634	0.00	4,634	463	0.00	—	16,212
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	691	0.00	691	69.0	0.00	—	2,416
General Office Building	—	—	—	—	—	—	—	—	—	—	—	12.7	0.00	12.7	1.27	0.00	—	44.6
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	12.7	0.00	12.7	1.27	0.00	—	44.6
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	12.8	0.00	12.8	1.28	0.00	—	44.7
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	12.8	0.00	12.8	1.28	0.00	—	44.7
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	12.8	0.00	12.8	1.27	0.00	—	44.6
Hotel	—	—	—	—	—	—	—	—	—	—	—	12.7	0.00	12.7	1.27	0.00	—	44.5
Total	—	—	—	—	—	—	—	—	—	—	—	767	0.00	767	76.7	0.00	—	2,684

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15.0	15.0
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.26	0.26
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36.6	36.6
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	211	211
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.64	0.64
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.15	0.15
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	125	125
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	389	389
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15.0	15.0
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.26	0.26
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36.6	36.6
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	211	211
Regional Shopping Center	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.64	0.64
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.15	0.15
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	125	125
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	389	389
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Apartments Low Rise	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.49	2.49
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	0.04
Quality Restaurant	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.06	6.06
High Turnover (Sit Down Restaurant)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	35.0	35.0

Regional	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.11	0.11
Strip Mall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.03	0.03
Hotel	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20.7	20.7
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	64.4	64.4

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Low Rise	7,013	6,760	5,735	2,479,792	51,612	49,755	42,210	18,251,270
General Office Building	745	152	48.1	204,634	5,482	1,118	354	1,506,106
Quality Restaurant	1,276	1,371	1,096	461,246	9,391	10,087	8,063	3,394,772
High Turnover (Sit Down Restaurant)	9,419	10,755	12,533	3,669,997	69,325	79,154	92,243	27,011,177
Regional Shopping Center	5,873	7,052	3,712	2,092,375	43,223	51,900	27,323	15,399,878
Strip Mall	877	877	877	320,050	6,454	6,454	6,454	2,355,570
Hotel	779	787	579	274,414	5,736	5,791	4,263	2,019,683

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Apartments Low Rise	—
Wood Fireplaces	0
Gas Fireplaces	1981

Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	0
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
4252216.5	1,417,406	754,380	251,460	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Low Rise	7,597,225	403	0.0330	0.0040	32,301,543
General Office Building	1,884,139	403	0.0330	0.0040	2,679,882
Quality Restaurant	810,973	403	0.0330	0.0040	2,696,152
High Turnover (Sit Down Restaurant)	4,681,223	403	0.0330	0.0040	15,563,145

Regional Shopping Center	1,314,276	403	0.0330	0.0040	801,161
Strip Mall	243,344	403	0.0330	0.0040	148,339
Hotel	1,119,496	403	0.0330	0.0040	2,309,736

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Low Rise	112,986,860	0.00
General Office Building	7,219,980	0.00
Quality Restaurant	7,995,739	0.00
High Turnover (Sit Down Restaurant)	46,154,240	0.00
Regional Shopping Center	4,569,023	0.00
Strip Mall	845,975	0.00
Hotel	112,986,860	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Low Rise	7,740	—
General Office Building	143	—
Quality Restaurant	143	—
High Turnover (Sit Down Restaurant)	143	—
Regional Shopping Center	143	—
Strip Mall	143	—
Hotel	143	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Low Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Low Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00
General Office Building	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
General Office Building	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Quality Restaurant	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Quality Restaurant	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Quality Restaurant	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
High Turnover (Sit Down Restaurant)	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
High Turnover (Sit Down Restaurant)	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
High Turnover (Sit Down Restaurant)	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Regional Shopping Center	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Regional Shopping Center	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

Strip Mall	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Strip Mall	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00
Strip Mall	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Hotel	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Hotel	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Hotel	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	7.52	annual days of extreme heat
Extreme Precipitation	4.10	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2

Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	37.6
AQ-PM	72.4
AQ-DPM	49.2
Drinking Water	47.9
Lead Risk Housing	72.5
Pesticides	43.9
Toxic Releases	89.3
Traffic	39.5
Effect Indicators	—
CleanUp Sites	27.5
Groundwater	67.5

Haz Waste Facilities/Generators	26.7
Impaired Water Bodies	0.00
Solid Waste	86.9
Sensitive Population	—
Asthma	23.2
Cardio-vascular	46.8
Low Birth Weights	75.6
Socioeconomic Factor Indicators	—
Education	66.3
Housing	81.3
Linguistic	44.8
Poverty	42.8
Unemployment	25.2

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	55.20338766
Employed	42.62799949
Median HI	48.26126011
Education	—
Bachelor's or higher	52.44450148
High school enrollment	9.29038881
Preschool enrollment	21.429488
Transportation	—
Auto Access	34.87745413
Active commuting	67.53496728

Social	—
2-parent households	19.00423457
Voting	30.50173232
Neighborhood	—
Alcohol availability	31.23315796
Park access	81.35506224
Retail density	47.32452201
Supermarket access	69.71641216
Tree canopy	39.75362505
Housing	—
Homeownership	38.72706275
Housing habitability	18.33696907
Low-inc homeowner severe housing cost burden	20.62107019
Low-inc renter severe housing cost burden	23.55960477
Uncrowded housing	28.33311947
Health Outcomes	—
Insured adults	31.82343128
Arthritis	0.0
Asthma ER Admissions	68.2
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	26.2
Cognitively Disabled	9.0
Physically Disabled	30.9

Heart Attack ER Admissions	37.8
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	75.1
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	90.9
Elderly	40.9
English Speaking	13.9
Foreign-born	93.7
Outdoor Workers	93.4
Climate Change Adaptive Capacity	—
Impervious Surface Cover	15.3
Traffic Density	49.9
Traffic Access	23.0
Other Indices	—
Hardship	53.9
Other Decision Support	—
2016 Voting	27.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	64.0
Healthy Places Index Score for Project Location (b)	35.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Based on land use numbers determined for the project.
Operations: Vehicle Data	Based on trip generation and VMT data provided by traffic consultant.
Operations: Hearths	Assumes natural gas fireplace for multi-family units. No wood fireplaces per South Coast AQMD Rule 445.
Operations: Water and Waste Water	Water demand based on values found in the Utilities chapter of the DEIR. For purposes of modeling, no septic is assumed. See AQ/GHG appendix of the DEIR for details.
Characteristics: Utility Information	Based on year 2022 CO2e intensity factor of 405 lbs/MWh as reported in SCE's 2023 Sustainability Report.
Operations: Solid Waste	Based on solid waste data from Chapter 5.19, Utilities & Service System, of the DEIR. See AQ/GHG appendix of the DEIR for details.

7. Energy Demand Calculations

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Operation-Related Vehicle Fuel/Energy Usage

PROJECT LAND USE COMMUTE

Vehicle Type	Gas			Diesel			CNG			Electricity		
	VMT	Gallons	Mile/Gal	VMT	Gallons	Mile/Gal	VMT	Gallons	Mile/Gal	VMT	kWh	Mile/kWh
Existing (2024)	58,437,609	2,381,955	24.53	2,077,248	196,924	10.55	87,300	16,537	5.28	2,672,940	976,504	2.74
Existing - Year 2045 No Project	54,094,266	1,783,850	30.32	2,031,032	175,845	11.55	46,314	3,975	11.65	7,185,947	2,191,445	3.28
Future (2045) - With Project	59,712,994	1,969,137	30.32	2,241,994	194,110	11.55	51,124	4,388	11.65	7,932,345	2,419,068	3.28
Net Change from Existing 2024	**1,275,385**	**(412,819)**	**5.79**	**164,745**	**(2,814)**	**1.00**	**(36,176)**	**(12,149)**	**6.37**	**5,259,405**	**1,442,564**	**0.54**
Net Change from No Project 2045	**5,618,729**	**185,287**	**0.00**	**210,962**	**18,265**	**0.00**	**4,811**	**413**	**0.00**	**746,399**	**227,624**	**0.00**

Existing Land Uses to be Redeveloped - Baseline Year 2024

Land Use	Annual VMT
Single Family Housing	99,104
Apartments Low Rise	243,534
General Office Building	955,520
Regional Shopping Center	55,095,140
Strip Mall	6,576,935
General Light Industry	304,864
Total	63,275,097

Existing (2024)

Vehicle type	Fleet percent	VMT	
	All Vehicles	All Vehicles	Total
HHD	0.83%	526,072	526,072
LDA	51.18%	32,381,237	32,381,237
LDT1	4.47%	2,830,176	2,830,176
LDT2	22.78%	14,411,545	14,411,545
LHD1	2.57%	1,626,081	1,626,081
LHD2	0.63%	399,098	399,098
MCY	2.10%	1,327,894	1,327,894
MDV	13.87%	8,774,817	8,774,817
MH	0.29%	184,197	184,197
MHD	1.07%	678,462	678,462
OBUS	0.09%	55,341	55,341
SBUS	0.06%	40,508	40,508
UBUS	0.06%	39,672	39,672
	100.00%	63,275,097	63,275,097

EXISTING CONDITIONS

Vehicle type	Gas percent	Diesel percent	CNG percent	Electricity percent	
HHD	0.04%	94.44%	5.29%	0.23%	<< Equal to T7 (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
LDA	92.60%	0.18%	0.00%	7.22%	
LDT1	99.56%	0.02%	0.00%	0.42%	
LDT2	98.54%	0.33%	0.00%	1.13%	
LHD1	66.30%	33.18%	0.00%	0.52%	
LHD2	39.17%	60.31%	0.00%	0.52%	
MCY	100.00%	0.00%	0.00%	0.00%	
MDV	97.22%	1.14%	0.00%	1.64%	
MH	72.54%	27.46%	0.00%	0.00%	
MHD	23.82%	74.60%	1.25%	0.33%	<< Equal to T6 (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
OBUS	43.73%	50.15%	5.95%	0.18%	<< Motor coach, all other buses, and OBUS (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
SBUS	46.60%	24.60%	28.53%	0.28%	
UBUS	6.83%	0.27%	91.09%	1.80%	

EXISTING CONDITIONS

Vehicle type	Gasoline			Diesel			CNG			Electricity		
	VMT	mpg	Gallons	VMT	mpg	Gallons	VMT	mpg	Gallons	VMT	m/kWh	kWh
HHD	226	4.05	56	496,804	6.04	82,243	27,824	5.85	4,757	1,218	0.56	2,166
LDA	29,984,347	28.97	1,035,029	57,957	40.08	1,446	0	0.00	0	2,338,933	2.71	861,808
LDT1	2,817,604	24.21	116,367	587	23.02	26	0	0.00	0	11,985	2.76	4,348
LDT2	14,201,386	23.75	597,915	46,929	31.45	1,492	0	0.00	0	163,230	2.90	56,374
LHD1	1,078,142	13.52	79,771	539,499	20.44	26,400	0	0.00	0	8,440	1.79	0
LHD2	156,311	11.79	13,256	240,700	17.23	13,969	0	0.00	0	2,086	1.79	0
MCY	1,327,894	41.21	32,223	0	0.00	0	0	0.00	0	0	0.00	0
MDV	8,530,710	19.35	440,859	100,227	23.53	4,259	0	0.00	0	143,880	2.78	51,808
MH	133,624	4.84	27,621	50,573	9.96	5,077	0	0.00	0	0	0.00	0
MHD	161,581	5.15	31,351	506,145	8.90	56,879	8,491	8.12	0	2,245	0.96	0
OBUS	24,198	5.03	4,809	27,754	7.36	3,771	3,291	8.61	0	98	0.95	0
SBUS	18,875	8.95	2,109	9,965	7.32	1,362	11,556	4.19	0	112	0.86	0
UBUS	2,711	4.59	591	109	5.82	0	36,138	3.07	11,780	714	0.48	0
	58,437,609		**2,381,955**	**2,077,248**	**16.26**	**196,924**	**87,300**		**16,537**	**2,672,940**		**976,504**

11

Existing Land Uses to be Redeveloped - Year 2045 No Project

Land Use	Annual VMT
Single Family Housing	99,233
Apartments Low Rise	243,851
General Office Building	956,766
Regional Shopping Center	55,166,941
Strip Mall	6,585,506
General Light Industry	305,262
Total	63,357,558

Future (2045) - No Project

Vehicle type	Fleet percent	VMT	
	All Vehicles	All Vehicles	Total
HHD	1.25%	791,962	791,962
LDA	43.62%	27,637,886	27,637,886
LDT1	3.57%	2,264,353	2,264,353
LDT2	26.78%	16,966,645	16,966,645
LHD1	3.32%	2,102,784	2,102,784
LHD2	0.94%	592,629	592,629
MCY	2.59%	1,643,873	1,643,873
MDV	16.03%	10,156,341	10,156,341
MH	0.27%	172,440	172,440
MHD	1.41%	891,320	891,320
OBUS	0.07%	45,011	45,011
SBUS	0.06%	39,126	39,126
UBUS	0.08%	53,187	53,187
	100.00%	63,357,558	63,357,558

PROPOSED CONDITIONS

Vehicle type	Gas percent	Diesel percent	CNG percent	Electricity percent	
HHD	0.01%	81.38%	3.30%	15.30%	<< Equal to T7 (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
LDA	85.70%	0.05%	0.00%	14.25%	
LDT1	95.77%	0.00%	0.00%	4.23%	
LDT2	95.43%	0.36%	0.00%	4.21%	
LHD1	31.68%	23.43%	0.00%	44.89%	
LHD2	16.03%	40.45%	0.00%	43.52%	
MCY	100.00%	0.00%	0.00%	0.00%	
MDV	93.06%	0.99%	0.00%	5.96%	
MH	64.76%	35.24%	0.00%	0.00%	
MHD	7.01%	43.57%	0.88%	48.53%	<< Equal to T6 (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
OBUS	15.63%	59.29%	8.02%	17.06%	<< Motor coach, all other buses, and OBUS (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
SBUS	31.55%	7.70%	21.34%	39.41%	
UBUS	1.79%	0.00%	0.61%	97.60%	

PROPOSED CONDITIONS

Vehicle type	Gasoline			Diesel			CNG			Electricity		
	VMT	mpg	Gallons	VMT	mpg	Gallons	VMT	mpg	Gallons	VMT	m/kWh	kWh
HHD	76	5.27	14	644,538	7.51	85,794	26,163	6.62	3,952	121,185	0.56	216,780
LDA	23,684,521	35.71	663,221	13,746	52.80	260	0	0.00	0	3,939,619	2.69	1,466,091
LDT1	2,168,497	30.75	70,528	25	28.38	1	0	0.00	0	95,832	2.78	34,514
LDT2	16,190,639	29.83	542,714	60,976	38.31	1,592	0	0.00	0	715,030	2.81	254,315
LHD1	666,137	16.41	40,588	492,728	21.51	22,910	0	0.00	0	943,919	1.78	0
LHD2	95,020	14.59	6,513	239,689	18.41	13,020	0	0.00	0	257,920	1.78	0
MCY	1,643,873	41.87	39,258	0	0.00	0	0	0.00	0	0	0.00	0
MDV	9,450,985	24.55	384,956	100,467	29.45	3,412	0	0.00	0	604,889	2.75	219,745
MH	111,666	4.84	23,071	60,774	9.94	6,115	0	0.00	0	0	0.00	0
MHD	62,521	5.98	10,462	388,389	9.92	39,133	7,866	8.31	0	432,544	0.95	0
OBUS	7,035	5.74	1,226	26,686	8.22	3,246	3,610	9.68	0	7,680	0.95	0
SBUS	12,344	10.00	1,234	3,013	8.32	362	8,348	4.64	0	15,420	0.86	0
UBUS	952	15.20	63	0	0.00	0	326	13.81	24	51,909	0.48	0
	54,094,266		**1,783,850**	**2,031,032**	**18.77**	**175,845**	**46,314**		**3,975**	**7,185,947**		**2,191,445**
				11.55								

Proposed Project - Year 2045

Land Use	Annual VMT
Apartments Low Rise	18,251,270
General Office Building	1,506,106
Quality Restaurant	3,394,772
High Turnover (Sit Down Restaura	27,011,177
Regional Shopping Center	15,399,878
Strip Mall	2,355,570
Hotel	2,019,683
Total	69,938,458

Future (2045) - With Project

Vehicle type	Fleet percent	VMT	
	All Vehicles	All Vehicles	Total
HHD	1.25%	874,223	874,223
LDA	43.62%	30,508,612	30,508,612
LDT1	3.57%	2,499,550	2,499,550
LDT2	26.78%	18,728,956	18,728,956
LHD1	3.32%	2,321,198	2,321,198
LHD2	0.94%	654,185	654,185
MCY	2.59%	1,814,621	1,814,621
MDV	16.03%	11,211,272	11,211,272
MH	0.27%	190,351	190,351
MHD	1.41%	983,901	983,901
OBUS	0.07%	49,686	49,686
SBUS	0.06%	43,190	43,190
UBUS	0.08%	58,712	58,712
	100.00%	69,938,458	69,938,458

PROPOSED CONDITIONS

Vehicle type	Gas percent	Diesel percent	CNG percent	Electricity percent	
HHD	0.01%	81.38%	3.30%	15.30%	<< Equal to T7 (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
LDA	85.70%	0.05%	0.00%	14.25%	
LDT1	95.77%	0.00%	0.00%	4.23%	
LDT2	95.43%	0.36%	0.00%	4.21%	
LHD1	31.68%	23.43%	0.00%	44.89%	
LHD2	16.03%	40.45%	0.00%	43.52%	
MCY	100.00%	0.00%	0.00%	0.00%	
MDV	93.06%	0.99%	0.00%	5.96%	
MH	64.76%	35.24%	0.00%	0.00%	
MHD	7.01%	43.57%	0.88%	48.53%	<< Equal to T6 (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
OBUS	15.63%	59.29%	8.02%	17.06%	<< Motor coach, all other buses, and OBUS (https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf)
SBUS	31.55%	7.70%	21.34%	39.41%	
UBUS	1.79%	0.00%	0.61%	97.60%	

PROPOSED CONDITIONS

Vehicle type	Gasoline			Diesel			CNG			Electricity		
	VMT	mpg	Gallons	VMT	mpg	Gallons	VMT	mpg	Gallons	VMT	m/kWh	kWh
HHD	83	5.27	16	711,486	7.51	94,705	28,881	6.62	4,362	133,773	0.56	239,296
LDA	26,144,614	35.71	732,109	15,173	52.80	287	0	0.00	0	4,348,825	2.69	1,618,373
LDT1	2,393,737	30.75	77,854	27	28.38	1	0	0.00	0	105,786	2.78	38,099
LDT2	17,872,347	29.83	599,085	67,310	38.31	1,757	0	0.00	0	789,300	2.81	280,731
LHD1	735,328	16.41	44,804	543,908	21.51	25,290	0	0.00	0	1,041,963	1.78	0
LHD2	104,890	14.59	7,189	264,586	18.41	14,373	0	0.00	0	284,710	1.78	0
MCY	1,814,621	41.87	43,336	0	0.00	0	0	0.00	0	0	0.00	0
MDV	10,432,652	24.55	424,942	110,902	29.45	3,766	0	0.00	0	667,718	2.75	242,570
MH	123,264	4.84	25,467	67,086	9.94	6,750	0	0.00	0	0	0.00	0
MHD	69,015	5.98	11,549	428,731	9.92	43,198	8,683	8.31	0	477,472	0.95	0
OBUS	7,765	5.74	1,353	29,458	8.22	3,583	3,985	9.68	0	8,478	0.95	0
SBUS	13,627	10.00	1,362	3,326	8.32	400	9,215	4.64	0	17,022	0.86	0
UBUS	1,051	15.20	69	0	0.00	0	360	13.81	26	57,300	0.48	0
	59,712,994		**1,969,137**	**2,241,994**	**18.77**	**194,110**	**51,124**		**4,388**	**7,932,345**		**2,419,068**
				11.550								

8. Mass Emissions and Health Effects

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We Can Model Regional Emissions, But Are the Results Meaningful for CEQA?

Authors: AEP Climate Change Committee (Michael Hendrix, Dave Mitchell, Haseeb Qureshi, Jennifer Reed, Brian Schuster, Nicole Vermilion, and Rich Walters)

On December 24, 2018, the California Supreme Court, *Sierra Club v. County of Fresno (Friant Ranch, L.P.] (2018) 6 Cal.5th 502, Case No. S219783 (Friant Ranch*), held that simply identifying that a project exceeds an emissions threshold is not sufficient to identify a project's significant effect on the environment relative to the health effects of project emissions. The Court found that an EIR should make a reasonable effort to substantively connect a project's criteria pollutant emissions to likely health consequences, or explain why it is not currently feasible to provide such an analysis. In 2019, there were several CEQA documents that included health effects modeling to provide additional analysis for projects with criteria air pollutant emissions that exceed a significance threshold. While it is technically possible to conduct this modeling, we argue that this additional layer of quantitative analysis may not always provide decision-makers and the public with additional meaningful information. It is the air districts that are best suited to provide frameworks for how to identify health effects of regional criteria pollutant emissions under CEQA.

Introduction

Significance thresholds for regional criteria pollutants used by California air districts and lead agencies represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable national or state ambient air quality standard (AAQS). By analyzing the project's emissions against these thresholds, the CEQA document assesses whether these emissions directly contribute to any regional or local exceedances of the applicable AAQS and exposure levels. The basis of the ruling in Friant Ranch was that the EIR did not provide a meaningful analysis of the adverse health effects that would be associated with the project's criteria pollutant emissions, which were identified as being far above the relevant thresholds. The discussion of the adverse health effects in the EIR was general in nature and did not connect the levels of the pollutants that would be emitted by the project to adverse health effects.

The process of correlating project-related criteria pollutant emissions to health-based consequences is called a health impact assessment (HIA). An HIA involves two steps: 1) running a regional photochemical grid model (PGM) to estimate the small increases in concentrations of ozone and particulate matter (PM) in the region as a result of a project's emissions of criteria and precursor pollutants; and 2) running the U.S. EPA Benefits Mapping and Analysis Program (BenMAP) to estimate the resulting health impacts from these increases in concentrations of ozone and PM.

Limitations of Regional-Scale Dispersion Models

It is technically feasible to conduct regional-scale criteria pollutant modeling for a development project. Particulate matter (PM) can be divided into two categories: directly emitted PM and secondary PM. Secondary PM, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur oxides (SO_x) and NO_x, Ozone (O_3) is a secondary pollutant formed from the oxidation of reactive organic gases (ROGs) and nitrogen oxides (NOx) in the presence of sunlight. Rates of ozone formation are a function of a variety of complex physical factors, including the presence of sunlight and precursor pollutants, natural topography, nearby structures that cause building downwash, atmospheric stability, and wind patterns. Secondary formation of PM and ozone can occur far from the original emissions source from regional transport due to wind and topography (e.g. low-level jet stream). As such, modeling concentrations of secondary PM and ozone require photochemical grid models (PGMs), such as CMAQ and CAMx. These models have a much larger "grid" system and much lower resolution than localized dispersion modeling (e.g., AERMOD). For example, common grid cells in PGMs are 4x4 kilometers, while AERMOD can identify concentrations at the meter-level.

Photochemical modeling also depends on all emission sources in the entire domain. Low resolution and spatial averaging produces "noise" and model uncertainty that can exceed a project's specific emissions. Additionally, regional-scale models are highly contingent upon background concentrations. Factors such as meteorology and topography greatly affect the certainty levels of predicted concentrations at receptor points. As a result, there are statistical ranges of uncertainty through all the modeling steps. Due to these factors, it is difficult to predict ground-level secondary PM and ozone concentrations associated with relatively small emission sources with a high degree of certainty. While it is possible to use a regional-scale model to predict these regional concentrations, when a project's emissions are less than the regional model's resolution, the resultant ambient air quality concentrations will be within the margin of uncertainty. In CEQA terms, this would fit the definition of "speculative". Only when the scale of emissions would result in changes in ambient air quality beyond the model margin of uncertainty would the results not be "speculative" as defined by CEQA.

Identifying Health Effects due to Ambient Air Quality Changes

BenMap is a model developed by the USEPA to understand the health effects from changes in ozone and PM concentrations. If there is an acceptable level of confidence that the results provided by the regional dispersion modeling are valid, then these concentrations can be translated into health outcomes using BenMap. The health outcomes in BenMap are based on changes in ambient air concentrations and the population exposed to these changes. Data provided by this analysis may indicate increased number of workdays lost to illness, hospital admissions (respiratory), emergency room visits (asthma), or mortality, among other health effects. These are called "health incidences."

Translating the incremental increase in PM and ozone concentrations to specific health effects is also subject to uncertainty. For example, regional models assign the same toxicity to PM regardless of the source of PM (such as road dust as exhaust), and thus potentially overpredict adverse health effects of PM. BenMap also assumes that health effects can occur at any concentration, including small incremental concentrations, and assumes that impacts seen at large concentration differences can be linearly scaled down to small increases in concentration, with no consideration of potential thresholds below which health impacts may not occur. Additionally, BenMap is used for assessing impacts over large areas and populations and was not intended to be used for individual projects. For health incidences, the number of hospitalizations or increase in morbidity predicted by BenMap is greatly affected by the population characteristics.[1] Small increases in emissions in an area with a high population have a much greater affect than large increases in emissions over an area with a small population. As a result, the same amount of emissions generated in an urban area could result in greater health consequences than if the same emissions occurred on the urban periphery, where fewer people may be affected. This will also depend on other factors including meteorology and photochemistry, as discussed above. Emissions in areas with conditions that favor high air dispersion or unfavorable ozone formation will likely have relatively lower effects on ambient air quality and health outcomes.

While BenMap provides additional statistical information about health consequences requested by the Court in the Friant Ranch decision, this information is only meaningful when presented with the full health context of the region or locality at hand. For example, if the BenMap analysis says that the project would result in two additional hospital admissions, this result alone is not useful unless one identifies how many hospital admissions are caused by poor air quality now (without the project) and how many hospital admissions occur

[1] BenMap assigns prevalence rate for asthma and other health effects based on indicators such as gender, race, age, ethnicity, etc. The BenMap user manual specifically states that there are a wide range of variables that can be included in the health effect function. The health effect function was developed based on epidemiological studies, and specifically states that "there are a number of issues that arise when deriving and choosing between health effect functions that go well beyond this user manual. Hence, it is important to have a trained health researcher assist in developing the impact function data file."

overall (due to air quality and other causes). Because health is not solely influenced by ambient air quality, and has many factors that are highly variable across geographies and populations, there is an added level of uncertainty in using a generalized identification of health effects due to air quality conditions overlaid onto a specific diverse set of health conditions and other factors. Regardless of the uncertainty levels, if regional health effects are identified for a project, then the CEQA analysis needs to provide a full health baseline for decision-makers and the public to be able to understand the marginal change due to project criteria pollutant emissions. Given the margin of uncertainty at each step in the process (regional scale modeling, existing ambient air quality effects on health, population health conditions vulnerability, and marginal health effects of air pollution), the identification of marginal health effects due to individual projects using regional air quality modelling and tools such as BenMap are likely to be within the level of uncertainty and thus defined as “speculative” per CEQA.

The Role of Air Districts

Regional, community, multiscale air quality modeling conducted by the air districts for each individual air basin or locality within the air basin would be the most appropriate indictor of health effects for projects. The AQMPs provide a forecast of regional emissions based on regional dispersion modeling for all sources within the air basin. Regional-scale models attempt to account for all emissions sources within an air basin.

The regional scale model requires inputs such as existing and future regional sources of pollutants and global meteorological data, which are generally not accessible by CEQA practitioners. Modeling of future years should consider future concentrations of air pollutants based on regional growth projections and existing programs, rules, and regulations adopted by Federal, State, and local air districts. In general, air pollution in California is decreasing as a result of Federal and State laws. Based on the air quality management plans (AQMPs) required for air districts in a nonattainment area, air quality in the air basins are anticipated to improve despite an increase in population and employment growth. Air districts are charged with assessing programs, rules, and regulations so that the increase in population and employment does not conflict with the mandate to achieve the AAQS. Because emissions forecasting and health outcomes based on the regional growth projections to achieve the AAQS is under the purview of the air districts, it should also fall on the air districts to identify the potential health outcomes associated with individual project’s criteria pollutant emissions.

The South Coast Air Quality Management District (South Coast AQMD) and the Sacramento Metropolitan Air Quality Management District (Sacramento Metropolitan AQMD) are exploring concepts for project-level analysis in light of Friant Ranch to assist local lead agencies.

» South Coast AQMD is looking at the largest land use development project they have had in the air basin and doing a sensitivity analysis (using CAMx for photochemical grid modeling and BenMap for health outcomes) to see how locating a very large project in different parts of the air basin (Los Angeles, Inland Empire, v. Orange County) would affect the health incidence.

» Sacramento Metropolitan AQMD is also looking at a screening process. Rather than looking at the upper end (i.e., largest project in the air basin), Sacramento Metropolitan AQMD is starting at the smallest project that exceeds the regional significance threshold and running CAMx and BenMap at different locations in the air basin to see how it affects regional health incidences.

Guidance from Air Districts would be the most effective way to incorporate meaningful information concerning regional health effects of project criteria pollutants in CEQA analyses, including guidance as to when modelling is and is not useful and meaningful, how modelling should be conducted, and how to best present additional information to inform decision-makers and the public about a project’s impacts.

So…until air districts do their part, what should we do?

PROJECTS WITH CRITERIA POLLUTANT EMISSIONS BELOW AIR DISTRICT THRESHOLDS

The Friant Ranch ruling was about providing disclosure of health effects of project emissions that were well over the significance thresholds. Since the air district thresholds are tied to a level the air districts find to not have a significant effect on ambient air quality, there should be no need to discuss the health effects of criteria pollutant emissions that are less than the significance thresholds.

PROJECTS WITH CRITERIA POLLUTANT EMISSIONS ABOVE AIR DISTRICT THRESHOLDS

Pursuant to Section 15125 of the CEQA Guidelines, the environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. For CEQA, the health effects associated with buildout of a project would occur at the project's horizon year. Because CEQA requires an analysis of the change from existing conditions, the change in effects would be associated with changes in ambient air quality and associated health outcomes between existing conditions and the project's horizon year. Therefore, in order to show how a project affects health outcomes in an air basin, the CEQA documents will need to qualitatively or quantitatively address: (1) existing ambient criteria pollutant concentrations, health incidences due to existing air quality, and health incidences overall; 2) future (without project) ambient criteria pollutant concentrations and health incidences, and 3) future (with project) ambient criteria pollutant concentrations and health incidences.

Projects with significant criteria pollutant emissions could use regional modelling and BenMap to identify health effects of project emissions, but it is likely that many (or most) projects that are not regionally substantial in scale will be shown to have minimal regional changes in PM and ozone concentrations and therefore minimal changes in associated health effects. In addition, many projects may have emissions that are less than the uncertainty level of regional air quality models and BenMap health effects modeling; in these cases, quantitative results will not be meaningful. Thus, absent better direction from air districts, CEQA lead agencies will have to determine on a case by case basis whether a qualitative discussion of health effects will suffice, or whether regional modeling, despite its limitations, should be conducted for the project.

Where a project has substantial criteria pollutant emissions when considered on a regional scale, and there is reason to believe that the modeling of ambient air quality and regional health effects would produce non-speculative results when considering modeling uncertainties, then CEQA lead agencies should use regional modelling.

Conclusion

The purpose of CEQA is to inform the public as to the potential for a project to result in one or more significant adverse effects on the environment (including health effects). A CEQA document must provide an understandable and clear environmental analysis and provide an adequate basis for decision making and public disclosure. Regional dispersion modeling of criteria pollutants and secondary pollutants like PM and ozone can provide additional information, but that information may be within the margin of modelling uncertainty and/or may not be meaningful for the public and decision-makers unless a full health context is presented in the CEQA document. Simply providing health outcomes based on use of a regional-scale model and BenMap may not satisfy the goal to provide decision-makers and the public with information that would assist in weighting the environmental consequences of a project. A CEQA document must provide an analysis that is understandable for decision making and public disclosure. Regional scale modeling may provide a technical method for this type of analysis, but it does not necessarily provide a meaningful way to connect the magnitude of a project's criteria pollutant emissions to health effects without speculation.

In order to accurately connect the dots, we urge California air districts to provide more guidance on how to identify and describe the health effects of exceeding regional criteria pollutant thresholds. The air districts are the primary agency responsible for ensuring that the air basins attain the AAQS and ensure the health and welfare of its residents relative to air quality. Because emissions forecasting and health outcomes are based on the regional growth projections to achieve the AAQS is under the purview of the air districts, it should fall on the air districts to identify the potential health outcomes associated with exceeding the CEQA thresholds for projects. The air districts should provide lead agencies with a consistent, reliable, and meaningful analytical approach to correlate specific health effects that may result from a project's criteria pollutant emissions.

Glossary

AAQS – Ambient Air Quality Standards

BenMap – Benefits Mapping and Analysis Program

CAMx – Comprehensive Air Quality Model with extensions

CMAQ – Community Multiscale Air Quality

NOx – Nitrogen Oxides

PM – Particulate Matter

SOx – Sulfur Oxides

State – California

USEPA – United States Environmental Protection Agency

S219783

IN THE SUPREME COURT OF C ALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,

Plaintiffs and Appellants,

v.

COUNTY OF FRESNO,

Defendant and Respondent,

and,

FRIANT RANCH, L.P.,

Real Party in Interest and Respondent.

SUPREME COURT
FILED

APR 13 2015

Frank A. McGuire Clerk

Deputy

After a Published Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726
Honorable Rosendo A. Pena, Jr.

APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*

Kurt R. Wiese, General Counsel (SBN 127251)
*Barbara Baird, Chief Deputy Counsel (SBN 81507)
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765
Telephone: 909-396-2302; Facsimile: 909-396-2961
Email: bbaird@aqmd.gov
Counsel for [Proposed] Amicus Curiae,
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

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State Cases

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TO THE HONORABLE CHIEF JUSTICE AND JUSTICES OF THE SUPREME COURT:

APPLICATION FOR LEAVE TO FILE *AMICUS CURIAE* BRIEF

Pursuant to Rule 8.520(f) of the California Rules of Court, the South Coast Air Quality Management District (SCAQMD) respectfully requests leave to file the attached *amicus curiae* brief. Because SCAQMD's position differs from that of either party, we request leave to submit this amicus brief in support of neither party.

HOW THIS BRIEF WILL ASSIST THE COURT

SCAQMD's proposed amicus brief takes a position on two of the issues in this case. In both instances, its position differs from that of either party. The issues are:

1) Does the California Environmental Quality Act (CEQA) require an environmental impact report (EIR) to correlate a project's air pollution emissions with specific levels of health impacts?

2) What is the proper standard of review for determining whether an EIR provides sufficient information on the health impacts caused by a project's emission of air pollutants?

This brief will assist the Court by discussing the practical realities of correlating identified air quality impacts with specific health outcomes. In short, CEQA requires agencies to provide detailed information about a project's air quality impacts that is sufficient for the public and decisionmakers to adequately evaluate the project and meaningfully understand its impacts. However, the level of analysis is governed by a rule of reason; CEQA only requires agencies to conduct analysis if it is reasonably feasible to do so.

With regard to health-related air quality impacts, an analysis that correlates a project's air pollution emissions with specific levels of health impacts will be feasible in some cases but not others. Whether it is feasible depends on a variety of factors, including the nature of the project and the nature of the analysis under consideration. The feasibility of analysis may also change over time as air districts and others develop new tools for measuring projects' air quality related health impacts. Because SCAQMD has among the most sophisticated air quality modeling and health impact evaluation capability of any of the air districts in the State, it is uniquely situated to express an opinion on the extent to which the Court should hold that CEQA requires lead agencies to correlate air quality impacts with specific health outcomes.

SCAQMD can also offer a unique perspective on the question of the appropriate standard of review. SCAQMD submits that the proper standard of review for determining whether an EIR is sufficient as an informational document is more nuanced than argued by either party. In our view, this is a mixed question of fact and law. It includes determining whether additional analysis is feasible, which is primarily a factual question that should be reviewed under the substantial evidence standard. However, it also involves determining whether the omission of a particular analysis renders an EIR insufficient to serve CEQA's purpose as a meaningful, informational document. If a lead agency has not determined that a requested analysis is infeasible, it is the court's role to determine whether the EIR nevertheless meets CEQA's purposes, and courts should not defer to the lead agency's conclusions regarding the legal sufficiency of an EIR's analysis. The ultimate question of whether an EIR's analysis is "sufficient" to serve CEQA's informational purposes is predominately a question of law that courts should review de novo.

This brief will explain the rationale for these arguments and may assist the Court in reaching a conclusion that accords proper respect to a lead agency's factual conclusions while maintaining judicial authority over the ultimate question of what level of analysis CEQA requires.

STATEMENT OF INTEREST OF *AMICUS CURIAE*

The SCAQMD is the regional agency primarily responsible for air pollution control in the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of the Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410; Cal. Code Regs., tit. 17, § 60104.) The SCAQMD participates in the CEQA process in several ways. Sometimes it acts as a lead agency that prepares CEQA documents for projects. Other times it acts as a responsible agency when it has permit authority over some part of a project that is undergoing CEQA review by a different lead agency. Finally, SCAQMD also acts as a commenting agency for CEQA documents that it receives because it is a public agency with jurisdiction by law over natural resources affected by the project.

In all of these capacities, SCAQMD will be affected by the decision in this case. SCAQMD sometimes submits comments requesting that a lead agency perform an additional type of air quality or health impacts analysis. On the other hand, SCAQMD sometimes determines that a particular type of health impact analysis is not feasible or would not produce reliable and informative results. Thus, SCAQMD will be affected by the Court's resolution of the extent to which CEQA requires EIRs to correlate emissions and health impacts, and its resolution of the proper standard of review.

CERTIFICATION REGARDING AUTHORSHIP AND FUNDING

No party or counsel in the pending case authored the proposed amicus curiae brief in whole or in part, or made any monetary contribution intended to fund the preparation or submission of the brief. No person or entity other than the proposed *Amicus Curiae* made any monetary contribution intended to fund the preparation or submission of the brief.

Respectfully submitted,

DATED: April 3, 2015

SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT
KURT R. WIESE, GENERAL COUNSEL
BARBARA BAIRD, CHIEF DEPUTY COUNSEL

By: Barbara Baird

Barbara Baird
Attorneys for [proposed] Amicus Curiae
SOUTH COAST AIR QUALITY
MANAGEMENT DISTICT

BRIEF OF AMICUS CURIAE

SUMMARY OF ARGUMENT

The South Coast Air Quality Management District (SCAQMD) submits that this Court should not try to establish a hard-and-fast rule concerning whether lead agencies are required to correlate emissions of air pollutants with specific health consequences in their environmental impact reports (EIR). The level of detail required in EIRs is governed by a few, core CEQA (California Environmental Quality Act) principles. As this Court has stated, "[a]n EIR must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project." (*Laurel Heights Improvement Assn. v. Regents of the Univ of Cal.* (1988) 47 Cal.3d 376, 405 ["*Laurel Heights I*"]) Accordingly, "an agency must use its best efforts to find out and disclose all that it reasonably can." (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 428 (quoting CEQA Guidelines § 15144)[1].). However, "[a]nalysis of environmental effects need not be exhaustive, but will be judged in light of what is reasonably feasible." (*Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1390; CEQA Guidelines §§ 15151, 15204(a).)

With regard to analysis of air quality related health impacts, EIRs must generally quantify a project's pollutant emissions, but in some cases it is not feasible to correlate these emissions to specific, quantifiable health impacts (e.g., premature mortality; hospital admissions). In such cases, a general description of the adverse health impacts resulting from the pollutants at issue may be sufficient. In other cases, due to the magnitude

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[1] The CEQA Guidelines are found at Cal. Code Regs., tit. 14 §§ 15000, *et seq*.

or nature of the pollution emissions, as well as the specificity of the project involved, it may be feasible to quantify health impacts. Or there may be a less exacting, but still meaningful analysis of health impacts that can feasibly be performed. In these instances, agencies should disclose those impacts.

SCAQMD also submits that whether or not an EIR complies with CEQA's informational mandates by providing sufficient, feasible analysis is a mixed question of fact and law. Pertinent here, the question of whether an EIR's discussion of health impacts from air pollution is sufficient to allow the public to understand and consider meaningfully the issues involves two inquiries: (1) Is it feasible to provide the information or analysis that a commenter is requesting or a petitioner is arguing should be required?; and (2) Even if it is feasible, is the agency relying on other policy or legal considerations to justify not preparing the requested analysis? The first question of whether an analysis is feasible is primarily a question of fact that should be judged by the substantial evidence standard. The second inquiry involves evaluating CEQA's information disclosure purposes against the asserted reasons to not perform the requested analysis. For example, an agency might believe that its EIR meets CEQA's informational disclosure standards even without a particular analysis, and therefore choose not to conduct that analysis. SCAQMD submits that this is more of a legal question, which should be reviewed de novo as a question of law.

ARGUMENT

I. RELEVANT FACTUAL AND LEGAL FRAMEWORK.

A. Air Quality Regulatory Background

The South Coast Air Quality Management District (SCAQMD) is one of the local and regional air pollution control districts and air quality management districts in California. The SCAQMD is the regional air pollution agency for the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410, 17 Cal. Code Reg. § 60104.) The SCAQMD also includes the Coachella Valley in Riverside County (Palm Springs area to the Salton Sea). (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "chapter 7" hyperlink; pp 7-1, 7-3 (last visited Apr. 1, 2015).) The SCAQMD's jurisdiction includes over 16 million residents and has the worst or nearly the worst air pollution levels in the country for ozone and fine particulate matter. (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "Executive Summary" hyperlink p. ES-1 (last visited Apr. 1, 2015).)

Under California law, the local and regional districts are primarily responsible for controlling air pollution from all sources except motor vehicles. (Health & Saf. Code § 40000.) The California Air Resources Board (CARB), part of the California Environmental Protection Agency, is primarily responsible for controlling pollution from motor vehicles. (*Id.*) The air districts must adopt rules to achieve and maintain the state and federal ambient air quality standards within their jurisdictions. (Health & Saf. Code § 40001.)

The federal Clean Air Act (CAA) requires the United States Environmental Protection Agency (EPA) to identify pollutants that are widely distributed and pose a threat to human health, developing a so-called "criteria" document. (42 U.S.C. § 7408; CAA § 108.) These pollutants are frequently called "criteria pollutants." EPA must then establish "national ambient air quality standards" at levels "requisite to protect public health", allowing "an adequate margin of safety." (42 U.S.C. § 7409; CAA § 109.) EPA has set standards for six identified pollutants: ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide, particulate matter (PM), and lead. (U.S. EPA, National Ambient Air Quality Standards (NAAQS), http://www.epa.gov/air/criteria.html (last updated Oct. 21, 2014).)[2]

Under the Clean Air Act, EPA sets emission standards for motor vehicles and "nonroad engines" (mobile farm and construction equipment, marine vessels, locomotives, aircraft, etc.). (42 U.S.C. §§ 7521, 7547; CAA §§ 202, 213.) California is the only state allowed to establish emission standards for motor vehicles and most nonroad sources; however, it may only do so with EPA's approval. (42 U.S.C. §§ 7543(b), 7543(e); CAA §§ 209(b), 209(c).) Sources such as manufacturing facilities, power plants and refineries that are not mobile are often referred to as "stationary sources." The Clean Air Act charges state and local agencies with the primary responsibility to attain the national ambient air quality standards. (42 U.S.C. § 7401(a)(3); CAA § 101(a)(3).) Each state must adopt and implement a plan including enforceable measures to achieve and maintain the national ambient air quality standards. (42 U.S.C. § 7410; CAA § 110.) The SCAQMD and CARB jointly prepare portion of the plan for the South Coast Air Basin and submit it for approval by EPA. (Health & Saf. Code §§ 40460, et seq.)

The Clean Air Act also requires state and local agencies to adopt a permit program requiring, among other things, that new or modified "major" stationary sources use technology to achieve the "lowest achievable emission rate," and to control minor stationary sources as

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[2] Particulate matter (PM) is further divided into two categories: fine particulate or $PM_{2.5}$ (particles with a diameter of less than or equal to 2.5 microns) and coarse particulate (PM_{10}) (particles with a diameter of 10 microns or less). (U.S. EPA, Particulate Matter (PM), http://www.epa.gov/airquality/particlepollution/ (last visited Apr. 1, 2015).)

needed to help attain the standards. (42 U.S.C. §§ 7502(c)(5), 7503(a)(2), 7410(a)(2)(C); CAA §§ 172(c)(5), 173(a)(2), 110(a)(2)(C).) The air districts implement these permit programs in California. (Health & Saf. Code §§ 42300, et seq.)

The Clean Air Act also sets out a regulatory structure for over 100 so-called "hazardous air pollutants" calling for EPA to establish "maximum achievable control technology" (MACT) for sources of these pollutants. (42 U.S.C. § 7412(d)(2); CAA § 112(d)(2).) California refers to these pollutants as "toxic air contaminants" (TACs) which are subject to two state-required programs. The first program requires "air toxics control measures" for specific categories of sources. (Health & Saf. Code § 39666.) The other program requires larger stationary sources and sources identified by air districts to prepare "health risk assessments" for impacts of toxic air contaminants. (Health & Saf. Code §§ 44320(b), 44322, 44360.) If the health risk exceeds levels identified by the district as "significant," the facility must implement a "risk reduction plan" to bring its risk levels below "significant" levels. Air districts may adopt additional more stringent requirements than those required by state law, including requirements for toxic air contaminants. (Health & Saf. Code § 41508; *Western Oil & Gas Assn. v. Monterey Bay Unified APCD* (1989) 49 Cal.3d 408, 414.) For example, SCAQMD has adopted a rule requiring new or modified sources to keep their risks below specified levels and use best available control technology (BACT) for toxics. (SCAQMD, *Rule 1401-New Source Review of Toxic Air Contaminants*, http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiv; then follow "Rule 1401" hyperlink (last visited Apr. 1, 2015).)

B. The SCAQMD's Role Under CEQA

The California Environmental Quality Act (CEQA) requires public agencies to perform an environmental review and appropriate analysis for projects that they implement or approve. (Pub. Resources Code § 21080(a).) The agency with primary approval authority for a particular project is generally the "lead agency" that prepares the appropriate CEQA document. (CEQA Guidelines §§ 15050, 15051.) Other agencies having a subsequent approval authority over all or part of a project are called "responsible" agencies that must determine whether the CEQA document is adequate for their use. (CEQA Guidelines §§ 15096(c), 15381.) Lead agencies must also consult with and circulate their environmental impact reports to "trustee agencies" and agencies "with jurisdiction by law" including "authority over resources which may be affected by the project." (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines §§ 15086(a)(3), 15073(c).) The SCAQMD has a role in all these aspects of CEQA.

Fulfilling its responsibilities to implement its air quality plan and adopt rules to attain the national ambient air quality standards, SCAQMD adopts a dozen or more rules each year to require pollution reductions from a wide variety of sources. The SCAQMD staff evaluates each rule for any adverse environmental impact and prepares the appropriate CEQA document. Although most rules reduce air emissions, they may have secondary environmental impacts such as use of water or energy or disposal of waste—e.g., spent catalyst from control equipment.[3]

[3] The SCAQMD's CEQA program for its rules is a "Certified Regulatory Program" under which it prepares a "functionally equivalent" document in lieu of a negative declaration or EIR. (Pub. Resources Code § 21080.5, CEQA Guidelines § 15251(l).)

The SCAQMD also approves a large number of permits every year to construct new, modified, or replacement facilities that emit regulated air pollutants. The majority of these air pollutant sources have already been included in an earlier CEQA evaluation for a larger project, are currently being evaluated by a local government as lead agency, or qualify for an exemption. However, the SCAQMD sometimes acts as lead agency for major projects where the local government does not have a discretionary approval. In such cases, SCAQMD prepares and certifies a negative declaration or environmental impact report (EIR) as appropriate.[4] SCAQMD evaluates perhaps a dozen such permit projects under CEQA each year. SCAQMD is often also a "responsible agency" for many projects since it must issue a permit for part of the projects (e.g., a boiler used to provide heat in a commercial building). For permit projects evaluated by another lead agency under CEQA, SCAQMD has the right to determine that the CEQA document is inadequate for its purposes as a responsible agency, but it may not do so because its permit program already requires all permitted sources to use the best available air pollution control technology. (SCAQMD, *Rule 1303(a)(1) – Requirements*, http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiii; then follow "Rule 1303" hyperlink (last visited Apr. 1, 2015).)

Finally, SCAQMD receives as many as 60 or more CEQA documents each month (around 500 per year) in its role as commenting agency or an agency with "jurisdiction by law" over air quality—a natural resource affected by the project. (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines § 15366(a)(3).) The SCAQMD staff provides comments on as many as 25 or 30 such documents each month.

[4] The SCAQMD's permit projects are not included in its Certified Regulatory Program, and are evaluated under the traditional local government CEQA analysis. (Pub. Resources Code §§ 21150-21154.)

(SCAQMD Governing Board Agenda, Apr. 3, 2015, Agenda Item 16, Attachment A, http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-april-3-2015; then follow "16. Lead Agency Projects and Environmental Documents Received by SCAQMD" hyperlink (last visited Apr. 1, 2015).) Of course, SCAQMD focuses its commenting efforts on the more significant projects.

Typically, SCAQMD comments on the adequacy of air quality analysis, appropriateness of assumptions and methodology, and completeness of the recommended air quality mitigation measures. Staff may comment on the need to prepare a health risk assessment detailing the projected cancer and noncancer risks from toxic air contaminants resulting from the project, particularly the impacts of diesel particulate matter, which CARB has identified as a toxic air contaminant based on its carcinogenic effects. (California Air Resources Board, Resolution 98-35, Aug. 27, 1998, http://www.arb.ca.gov/regact/diesltac/diesltac.htm; then follow Resolution 98-35 hyperlink (last visited Apr. 1, 2015).) Because SCAQMD already requires new or modified stationary sources of toxic air contaminants to use the best available control technology for toxics and to keep their risks below specified levels, (SCAQMD Rule 1401, supra, note 15), the greatest opportunity to further mitigate toxic impacts through the CEQA process is by reducing emissions—particularly diesel emissions—from vehicles.

II. THIS COURT SHOULD NOT SET A HARD-AND-FAST RULE CONCERNING THE EXTENT TO WHICH AN EIR MUST CORRELATE A PROJECT'S EMISSION OF POLLUTANTS WITH RESULTING HEALTH IMPACTS.

Numerous cases hold that courts do not review the correctness of an EIR's conclusions but rather its sufficiency as an informative document. (*Laurel Heights 1*, *supra*, 47 Cal.3d at p. 392; *Citizens of Goleta Valley v.*

Bd. of Supervisors (1990) 52 Cal.3d 553, 569; *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1197.)

As stated by the Court of Appeal in this case, where an EIR has addressed a topic, but the petitioner claims that the information provided about that topic is insufficient, courts must "draw[] a line that divides *sufficient* discussions from those that are *insufficient*." (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) The Court of Appeal readily admitted that "[t]he terms themselves – sufficient and insufficient – provide little, if any, guidance as to where the line should be drawn. They are simply labels applied once the court has completed its analysis." (*Id.*)

The CEQA Guidelines, however, provide guidance regarding what constitutes a sufficient discussion of impacts. Section 15151 states that "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." Case law reflects this: "Analysis of environmental effects need not be exhaustive, but will be judged in light of what was reasonably feasible." (*Association of Irritated Residents v. County of Madera, supra,* 107 Cal.App.4th at p. 1390; see also CEQA Guidelines § 15204(a).)

Applying this test, this Court cannot realistically establish a hard-and-fast rule that an analysis correlating air pollution impacts of a project to quantified resulting health impacts is always required, or indeed that it is never required. Simply put, in some cases such an analysis will be "feasible"; in some cases it will not.

For example, air pollution control districts often require a proposed new source of toxic air contaminants to prepare a "health risk assessment" before issuing a permit to construct. District rules often limit the allowable cancer risk the new source may cause to the "maximally exposed individual" (worker and residence exposures). (*See, e.g.*, SCAQMD Rule 1401(c)(8); 1401(d)(1), *supra* note 15.) In order to perform this analysis, it is necessary to have data regarding the sources and types of air toxic contaminants, location of emission points, velocity of emissions, the meteorology and topography of the area, and the location of receptors (worker and residence). (SCAQMD, *Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act (AB2588), pp. 11-16*; (last visited Apr. 1, 2015) http://www.aqmd.gov/home/library/documents-support-material; "Guidelines" hyperlink; AB2588; then follow AB2588 Risk Assessment Guidelines hyperlink.)

Thus, it is feasible to determine the health risk posed by a new gas station locating at an intersection in a mixed use area, where receptor locations are known. On the other hand, it may not be feasible to perform a health risk assessment for airborne toxics that will be emitted by a generic industrial building that was built on "speculation" (i.e., without knowing the future tenant(s)). Even where a health risk assessment can be prepared, however, the resulting maximum health risk value is only a calculation of risk—it does not necessarily mean anyone will contract cancer as a result of the project.

In order to find the "cancer burden" or expected additional cases of cancer resulting from the project, it is also necessary to know the numbers and location of individuals living within the "zone of impact" of the project: i.e., those living in areas where the projected cancer risk from the project exceeds one in a million. (SCAQMD, Health Risk Assessment Summary form, http://www.aqmd.gov/home/forms ; filter by "AB2588" category; then "Health Risk Assessment" hyperlink (last visited Apr. 1, 2015).) The affected population is divided into bands of those exposed to at least 1 in a million risk, those exposed to at least 10 in a million risk, etc. up to those exposed at the highest levels. (*Id.*) This data allows agencies to calculate an approximate number of additional cancer cases expected from the project. However, it is not possible to predict which particular individuals will be affected.

For the so-called criteria pollutants[5], such as ozone, it may be more difficult to quantify health impacts. Ozone is formed in the atmosphere from the chemical reaction of the nitrogen oxides (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. (U.S. EPA, Ground Level Ozone, http://www.epa.gov/airquality/ozonepollution/ (last updated Mar. 25, 2015).) It takes time and the influence of meteorological conditions for these reactions to occur, so ozone may be formed at a distance downwind from the sources. (U.S. EPA, *Guideline on Ozone Monitoring Site Selection* (Aug. 1998) EPA-454/R-98-002 § 5.1.2, http://www.epa.gov/ttnamti1/archive/cpreldoc.html (last visited Apr. 1, 2015).) NO_x and VOC are known as "precursors" of ozone.

Scientifically, health effects from ozone are correlated with increases in the ambient level of ozone in the air a person breathes. (U.S. EPA, *Health Effects of Ozone in the General Population,* Figure 9, http://www.epa.gov/apti/ozonehealth/population.html#levels (last visited Apr. 1, 2015).) However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels over an entire region. For example, the SCAQMD's 2012 AQMP showed that reducing NO_x by 432 tons per day (157,680 tons/year) and reducing VOC by 187 tons per day (68,255 tons/year) would reduce ozone levels at the SCAQMD's monitor site with the highest levels by only 9 parts per billion. (South Coast Air Quality Management District, *Final 2012 AQMP (February 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "Appendix V: Modeling & Attainment Demonstrations" hyperlink,

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[5] See discussion of types of pollutants, supra, Part I.A.

pp. v-4-2, v-7-4, v-7-24.) SCAQMD staff does not currently know of a way to accurately quantify ozone-related health impacts caused by NO_x or VOC emissions from relatively small projects.

On the other hand, this type of analysis may be feasible for projects on a regional scale with very high emissions of NO_x and VOCs, where impacts are regional. For example, in 2011 the SCAQMD performed a health impact analysis in its CEQA document for proposed Rule 1315, which authorized various newly-permitted sources to use offsets from the districts "internal bank" of emission reductions. This CEQA analysis accounted for essentially *all* the increases in emissions due to new or modified sources in the District between 2010 and 2030.[6] The SCAQMD was able to correlate this very large emissions increase (e.g., 6,620 pounds per day NO_x (1,208 tons per year), 89,180 pounds per day VOC (16,275 tons per year)) to expected health outcomes from ozone and particulate matter (e.g., 20 premature deaths per year and 89,947 school absences in the year 2030 due to ozone).[7] (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System* (see hyperlink in fn 6*)* at p. 4.1-35, Table 4.1-29.)

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[6] (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, Attachment G, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System, Vol. 1, p.4.0-6*, http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-february-4-2011; the follow "26. Adopt Proposed Rule 1315 – Federal New Source Review Tracking System" (last visited April 1, 2015).)

[7] The SCAQMD was able to establish the location of future NO_x and VOC emissions by assuming that new projects would be built in the same locations and proportions as existing stationary sources. This CEQA document was upheld by the Los Angeles County Superior Court in *Natural Res. Def. Council v SCAQMD*, Los Angeles Superior Court No. BS110792).

However, a project emitting only 10 tons per year of NO_x or VOC is small enough that its regional impact on ambient ozone levels may not be detected in the regional air quality models that are currently used to determine ozone levels. Thus, in this case it would not be feasible to directly correlate project emissions of VOC or NO_x with specific health impacts from ozone. This is in part because ozone formation is not linearly related to emissions. Ozone impacts vary depending on the location of the emissions, the location of other precursor emissions, meteorology and seasonal impacts, and because ozone is formed some time later and downwind from the actual emission. (EPA Guideline on Ozone Monitoring Site Selection (Aug. 1998) EPA-454/R-98-002, § 5.1.2; https://www.epa.gov/ttnamti1/archive/cpreldoc.html; then search "Guideline on Ozone Monitoring Site Selection" click on pdf) (last viewed Apr. 1, 2015).)

SCAQMD has set its CEQA "significance" threshold for NO_x and VOC at 10 tons per year (expressed as 55 lb/day). (SCAQMD, *Air Quality Analysis Handbook*, http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook; then follow "SCAQMD Air Quality Significance Thresholds" hyperlink (last visited Apr. 1, 2015).) This is because the federal Clean Air Act defines a "major" stationary source for "extreme" ozone nonattainment areas such as SCAQMD as one emitting 10 tons/year. (42 U.S.C. §§ 7511a(e), 7511a(f); CAA §§ 182(e), 182(f).) Under the Clean Air Act, such sources are subject to enhanced control requirements (42 U.S.C. §§ 7502(c)(5), 7503; CAA §§ 172(c)(5), 173), so SCAQMD decided this was an appropriate threshold for making a CEQA "significance" finding and requiring feasible mitigation. Essentially, SCAQMD takes the position that a source that emits 10 tons/year of NO_x or VOC would contribute cumulatively to ozone formation. Therefore, lead agencies that use SCAQMD's thresholds of significance may determine that many projects have "significant" air quality impacts and must apply all feasible mitigation measures, yet will not be able to precisely correlate the project to quantifiable health impacts, unless the emissions are sufficiently high to use a regional modeling program.

In the case of particulate matter ($PM_{2.5}$)[8], another "criteria" pollutant, SCAQMD staff is aware of two possible methods of analysis. SCAQMD used regional modeling to predict expected health impacts from its proposed Rule 1315, as mentioned above. Also, the California Air Resources Board (CARB) has developed a methodology that can predict expected mortality (premature deaths) from large amounts of $PM_{2.5}$. (California Air Resources Board, *Health Impacts Analysis: PM Premature Death Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort_arch.htm (last reviewed Jan. 19, 2012).) SCAQMD used the CARB methodology to predict impacts from three very large power plants (e.g., 731-1837 lbs/day). (Final Environmental Assessment for Rule 1315, *supra*, pp 4.0-12, 4.1-13, 4.1-37 (e.g., 125 premature deaths in the entire SCAQMD in 2030), 4.1-39 (0.05 to 1.77 annual premature deaths from power plants.) Again, this project involved large amounts of additional $PM_{2.5}$ in the District, up to 2.82 tons/day (5,650 lbs/day of $PM_{2.5}$, or, or 1029 tons/year. (*Id.* at table 4.1-4, p. 4.1-10.)

However, the primary author of the CARB methodology has reported that this $PM_{2.5}$ health impact methodology is not suited for small projects and may yield unreliable results due to various uncertainties.[9] (SCAQMD, *Final Subsequent Mitigated Negative Declaration for: Warren*

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[8] SCAQMD has not attained the latest annual or 24-hour national ambient air quality standards for "$PM_{2.5}$" or particulate matter less than 2.5 microns in diameter.

[9] Among these uncertainties are the representativeness of the population used in the methodology, and the specific source of PM and the corresponding health impacts. (*Id.* at p. 2-24.)

E&P, Inc. WTU Central Facility, New Equipment Project (certified July 19, 2011), http://www.aqmd.gov/home/library/documents-support-material/lead-agency-permit-projects/permit-project-documents---year-2011; then follow "Final Subsequent Mitigated Negative Declaration for Warren E&P Inc. WTU Central Facility, New Equipment Project" hyperlink, pp. 2-22, 2-23 (last visited Apr. 1, 2015).) Therefore, when SCAQMD prepared a CEQA document for the expansion of an existing oil production facility, with very small $PM_{2.5}$ increases (3.8 lb/day) and a very small affected population, staff elected not to use the CARB methodology for using estimated $PM_{2.5}$ emissions to derive a projected premature mortality number and explained why it would be inappropriate to do so. (*Id.* at pp 2-22 to 2-24.) SCAQMD staff concluded that use of this methodology for such a small source could result in unreliable findings and would not provide meaningful information. (*Id.* at pp. 2-23, 2-25.) This CEQA document was not challenged in court.

In the above case, while it may have been technically possible to plug the data into the methodology, the results would not have been reliable or meaningful. SCAQMD believes that an agency should not be required to perform analyses that do not produce reliable or meaningful results. This Court has already held that an agency may decline to use even the "normal" "existing conditions" CEQA baseline where to do so would be misleading or without informational value. (*Neighbors for Smart Rail v. Exposition Metro Line* (2013) 57 Cal.4th 439, 448, 457.) The same should be true for a decision that a particular study or analysis would not provide reliable or meaningful results.[10]

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[10] Whether a particular study would result in "informational value" is a part of deciding whether it is "feasible." CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and

Therefore, it is not possible to set a hard-and-fast rule on whether a correlation of air quality impacts with specific quantifiable health impacts is required in all cases. Instead, the result turns on whether such an analysis is reasonably feasible in the particular case.[11] Moreover, what is reasonably feasible may change over time as scientists and regulatory agencies continually seek to improve their ability to predict health impacts. For example, CARB staff has been directed by its Governing Board to reassess and improve the methodology for estimating premature deaths. (California Air Resources Board, *Health Impacts Analysis: PM Mortality Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort.htm (last reviewed Dec. 29, 2010).) This factor also counsels against setting any hard-and-fast rule in this case.

III. THE QUESTION OF WHETHER AN EIR CONTAINS SUFFICIENT ANALYSIS TO MEET CEQA'S REQUIREMENTS IS A MIXED QUESTION OF FACT AND LAW GOVERNED BY TWO DIFFERENT STANDARDS OF REVIEW.

A. Standard of Review for Feasibility Determination and Sufficiency as an Informative Document

A second issue in this case is whether courts should review an EIR's informational sufficiency under the "substantial evidence" test as argued by Friant Ranch or the "independent judgment" test as argued by Sierra Club.

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technological factors." (Pub. Resources Code § 21061.1.) A study cannot be "accomplished in a *successful* manner" if it produces unreliable or misleading results.

[11] In this case, the lead agency did not have an opportunity to determine whether the requested analysis was feasible because the comment was non-specific. Therefore, SCAQMD suggests that this Court, after resolving the legal issues in the case, direct the Court of Appeal to remand the case to the lead agency for a determination of whether the requested analysis is feasible. Because Fresno County, the lead agency, did not seek review in this Court, it seems likely that the County has concluded that at least some level of correlation of air pollution with health impacts is feasible.

As this Court has explained, "a reviewing court must adjust its scrutiny to the nature of the alleged defect, depending on whether the claim is predominantly one of improper procedure or a dispute over the facts." (*Vineyard Area Citizens v. City of Rancho Cordova, supra,* 40 Cal.4th at 435.) For questions regarding compliance with proper procedure or other legal questions, courts review an agency's action de novo under the "independent judgment" test. (*Id.*) On the other hand, courts review factual disputes only for substantial evidence, thereby "accord[ing] greater deference to the agency's substantive factual conclusions." (*Id.*)

Here, Friant Ranch and Sierra Club agree that the case involves the question of whether an EIR includes sufficient information regarding a project's impacts. However, they disagree on the proper standard of review for answering this question: Sierra Club contends that courts use the independent judgment standard to determine whether an EIR's analysis is sufficient to meet CEQA's informational purposes,[12] while Friant Ranch contends that the substantial evidence standard applies to this question.

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[12] Sierra Club acknowledges that courts use the substantial evidence standard when reviewing predicate factual issues, but argues that courts ultimately decide as a matter of law what CEQA requires. (Answering Brief, pp. 14, 23.)

SCAQMD submits that the issue is more nuanced than either party contends. We submit that, whether a CEQA document includes sufficient analysis to satisfy CEQA's informational mandates is a mixed question of fact and law,[13] containing two levels of inquiry that should be judged by different standards.[14]

The state CEQA Guidelines set forth standards for the adequacy of environmental analysis. Guidelines Section 15151 states:

> An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection, but for adequacy, completeness, and a good-faith effort at full disclosure.

In this case, the basic question is whether the underlying analysis of air quality impacts made the EIR "sufficient" as an informative document. However, whether the EIR's analysis was sufficient is judged in light of what was reasonably feasible. This represents a mixed question of fact and law that is governed by two different standards of review.

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[13] Friant Ranch actually states that the claim that an EIR lacks sufficient relevant information is, "most properly thought of as raising mixed questions of fact and law." (Opening Brief, p. 27.) However, the remainder of its argument claims that the court should apply the substantial evidence standard of review to all aspects of the issue.

[14] Mixed questions of fact and law issues may implicate predominantly factual subordinate questions that are reviewed under the substantial evidence test even though the ultimate question may be reviewed by the independent judgment test. *Crocker National Bank v. City and County of San Francisco* (1989) 49 Cal.3d 881, 888-889.

SCAQMD submits that an EIR's sufficiency as an informational document is ultimately a legal question that courts should determine using their independent judgment. This Court's language in *Laurel Heights I* supports this position. As this Court explained: "The court does not pass upon the correctness of the EIR's environmental conclusions, but only upon its *sufficiency as an informative document*." (*Laurel Heights I, supra*, 47 Cal.3d at 392-393) (emphasis added.) As described above, the Court in *Vineyard Area Citizens v. City of Rancho Cordova, supra,* 40 Cal.4th at 431, also used its independent judgment to determine what level of analysis CEQA requires for water supply impacts. The Court did not defer to the lead agency's opinion regarding the law's requirements; rather, it determined for itself what level of analysis was necessary to meet "[t]he law's informational demands." (*Id.* at p. 432.) Further, existing case law also holds that where an agency fails to comply with CEQA's information disclosure requirements, the agency has "failed to proceed in the manner required by law." (*Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 118.)

However, whether an EIR satisfies CEQA's requirements depends in part on whether it was reasonably feasible for an agency to conduct additional or more thorough analysis. EIRs must contain "a detailed statement" of a project's impacts (Pub. Res. Code § 21061), and an agency must "use its best efforts to find out and disclose all that it reasonably can." (CEQA Guidelines § 15144.) Nevertheless, "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." (CEQA Guidelines § 15151.)

SCAQMD submits that the question of whether additional analysis or a particular study suggested by a commenter is "feasible" is generally a question of fact. Courts have already held that whether a particular alternative is "feasible" is reviewed by the substantial evidence test.

(*Uphold Our Heritage v. Town of Woodside* (2007) 147 Cal.App.4th 587, 598-99; *Center for Biological Diversity v. County of San Bernardino* (2010) 185 Cal.App.4th 866, 883.) Thus, if a lead agency determines that a particular study or analysis is infeasible, that decision should generally be judged by the substantial evidence standard. However, SCAQMD urges this Court to hold that lead agencies must explain the basis of any determination that a particular analysis is infeasible in the EIR itself. An EIR must discuss information, including issues related to the feasibility of particular analyses "in sufficient detail to enable meaningful participation and criticism by the public. '[W]hatever is required to be considered in an EIR must be in that formal report; what any official might have known from other writings or oral presentations cannot supply what is lacking in the report.'" (*Laurel Heights I*, *supra*, 47 Cal.3d at p. 405 (quoting *Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 831) (discussing analysis of alternatives).) The evidence on which the determination is based should also be summarized in the EIR itself, with appropriate citations to reference materials if necessary. Otherwise commenting agencies such as SCAQMD would be forced to guess where the lead agency's evidence might be located, thus thwarting effective public participation.

Moreover, if a lead agency determines that a particular study or analysis would not result in reliable or useful information and for that reason is not feasible, that determination should be judged by the substantial evidence test. (See *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority*, *supra*, 57 Cal.4th 439, 448, 457:

whether "existing conditions" baseline would be misleading or uninformative judged by substantial evidence standard.[15])

If the lead agency's determination that a particular analysis or study is not feasible is supported by substantial evidence, then the agency has not violated CEQA's information disclosure provisions, since it would be infeasible to provide additional information. This Court's decisions provide precedent for such a result. For example, this Court determined that the issue of whether the EIR should have included a more detailed discussion of future herbicide use was resolved because substantial evidence supported the agency's finding that "the precise parameters of future herbicide use could not be predicted." *Ebbetts Pass Forest Watch v. California Dept. of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 955.

Of course, SCAQMD expects that courts will continue to hold lead agencies to their obligations to consult with, and not to ignore or misrepresent, the views of sister agencies having special expertise in the area of air quality. (*Berkeley Keep Jets Over the Bay v. Board of Port Commissioners* (2007) 91 Cal.App.4th 1344, 1364 n.11.) In some cases, information provided by such expert agencies may establish that the purported evidence relied on by the lead agency is not in fact "substantial". (*Id.* at pp. 1369-1371.)

In sum, courts retain ultimate responsibility to determine what CEQA requires. However, the law does not require exhaustive analysis, but only what is reasonably feasible. Agencies deserve deference for their factual determinations regarding what type of analysis is reasonably feasible. On the other hand, if a commenter requests more information, and the lead agency declines to provide it but does *not* determine that the

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[15] The substantial evidence standard recognizes that the courts "have neither the resources nor the scientific expertise" to weigh conflicting evidence on technical issues. (*Laurel Heights I, supra,* 47 Cal.3d 376, 393.)

requested study or analysis would be infeasible, misleading or uninformative, the question becomes whether the omission of that analysis renders the EIR inadequate to satisfy CEQA's informational purposes. (*Id.* at pp. 1370-71.) Again, this is predominantly a question of law and should be judged by the de novo or independent judgment standard of review. Of course, this Court has recognized that a "project opponent or reviewing court can always imagine some additional study or analysis that might provide helpful information. It is not for them to design the EIR. That further study...might be helpful does not make it necessary." (*Laurel Heights I, supra,* 47 Cal.3d 376, 415 – see also CEQA Guidelines § 15204(a) [CEQA "does not require a lead agency to conduct every test. . . recommended or demanded by commenters."].) Courts, then, must adjudicate whether an omission of particular information renders an EIR inadequate to serve CEQA's informational purposes.[16]

[16] We recognize that there is case law stating that the substantial evidence standard applies to "challenges to the scope of an EIR's analysis of a topic" as well as the methodology used and the accuracy of the data relied on in the document "because these types of challenges involve factual questions." (*Bakersfield Citizens for Local Control v. City of Bakersfield*, *supra*, 124 Cal.App.4th 1184, 1198, and cases relied on therein.) However, we interpret this language to refer to situations where the question of the scope of the analysis really is factual—that is, where it involves whether further analysis is feasible, as discussed above. This interpretation is supported by the fact that the *Bakersfield* court expressly rejected an argument that a claimed "omission of information from the EIR should be treated as inquiries whether there is substantial evidence supporting the decision approving the project. " *Bakersfield, supra,* 124 Cal.App.4th at p. 1208. And the *Bakersfield* court ultimately decided that the lead agency must analyze the connection between the identified air pollution impacts and resulting health impacts, even though the EIR already included some discussion of air-pollution-related respiratory illnesses. *Bakersfield, supra,* 124 Cal.App.4th at p. 1220. Therefore, the court must not have interpreted this question as one of the "scope of the analysis" to be judged by the substantial evidence standard.

B. Friant Ranch's Rationale for Rejecting the Independent Judgment Standard of Review is Unsupported by Case Law.

In its brief, Friant Ranch makes a distinction between cases where a required CEQA topic is not discussed at all (to be reviewed by independent judgment as a failure to proceed in the manner required by law) and cases where a topic is discussed, but the commenter claims the information provided is insufficient (to be judged by the substantial evidence test). (Opening Brief, pp. 13-17.) The Court of Appeal recognized these two types of cases, but concluded that both raised questions of law. (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) We believe the distinction drawn by Friant Ranch is unduly narrow, and inconsistent with cases which have concluded that CEQA documents are insufficient. In many instances, CEQA's requirements are stated broadly, and the courts must interpret the law to determine what level of analysis satisfies CEQA's mandate for providing meaningful information, even though the EIR discusses the issue to some extent.

For example, the CEQA Guidelines require discussion of the existing environmental baseline. In *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 954-955, the lead agency had discussed the environmental baseline by describing historic month-end water levels in the affected lakes. However, the court held that this was not an adequate baseline discussion because it failed to discuss the timing and amounts of past actual water releases, to allow comparison with the proposed project. The court evidently applied the independent judgment test to its decision, even though the agency discussed the issue to some extent.

Likewise, in *Vineyard Area Citizens* (2007) 40 Cal.4th 412, this Court addressed the question of whether an EIR's analysis of water supply impacts complied with CEQA. The parties agreed that the EIR was required to analyze the effects of providing water to the development project, "and that in order to do so the EIR had, in some manner, to identify the planned sources of that water." (*Vineyard Area Citizens, supra,* at p. 428.) However, the parties disagreed as to the level of detail required for this analysis and "what level of uncertainty regarding the availability of water supplies can be tolerated in an EIR . . . ." (*Id.*) In other words, the EIR had analyzed water supply impacts for the project, but the petitioner claimed that the analysis was insufficient.

This Court noted that neither CEQA's statutory language or the CEQA Guidelines specifically addressed the question of how precisely an EIR must discuss water supply impacts. (*Id.*) However, it explained that CEQA "states that '[w]hile foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can.'" (*Id.*, [Guidelines § 15144].) The Court used this general principle, along with prior precedent, to elucidate four "principles for analytical adequacy" that are necessary in order to satisfy "CEQA's informational purposes." (*Vineyard Area Citizens, supra,* at p. 430.) The Court did not defer to the agency's determination that the EIR's analysis of water supply impacts was sufficient. Rather, this Court used its independent judgment to determine for itself the level of analysis required to satisfy CEQA's fundamental purposes. (*Vineyard Area Citizens, supra*, at p. 441: an EIR does not serve its purposes where it neglects to explain likely sources of water and "... leaves long term water supply considerations to later stages of the project.")

Similarly, the CEQA Guidelines require an analysis of noise impacts of the project. (Appendix G, "Environmental Checklist Form."[17]) In *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1123, the court held that the lead agency's noise impact analysis was inadequate even though it had addressed the issue and concluded that the increase would not be noticeable. If the court had been using the substantial evidence standard, it likely would have upheld this discussion.

Therefore, we do not agree that the issue can be resolved on the basis suggested by Friant Ranch, which would apply the substantial evidence standard to *every* challenge to an analysis that addresses a required CEQA topic. This interpretation would subvert the courts' proper role in interpreting CEQA and determining what the law requires.

Nor do we agree that the Court of Appeal in this case violated CEQA's prohibition on courts interpreting its provisions "in a manner which imposes procedural or substantive requirements beyond those explicitly stated in this division or in the state guidelines." (Pub. Resources Code § 21083.1.) CEQA requires an EIR to describe *all* significant impacts of the project on the environment. (Pub. Resources Code § 21100(b)(2); *Vineyard Area Citizens, supra,* at p. 428.) Human beings are part of the environment, so CEQA requires EIRs to discuss a project's significant impacts on human health. However, except in certain particular circumstances,[18] neither the CEQA statute nor Guidelines specify the precise level of analysis that agencies must undertake to satisfy the law's requirements. (see, e.g., CEQA Guidelines § 15126.2(a) [EIRs must describe "health and safety problems caused by {a project's} physical changes"].) Accordingly, courts must interpret CEQA as a whole to

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[17] Association of Environmental Professionals, 2015 CEQA Statute and Guidelines (2015) p.287.

[18] E.g., Pub. Resources Code § 21151.8(C)(3)(B)(iii) (requiring specific type of health risk analysis for siting schools).

determine whether a particular EIR is sufficient as an informational document. A court determining whether an EIR's discussion of human health impacts is legally sufficient does not constitute imposing a new substantive requirement.[19] Under Friant Ranch's theory, the above-referenced cases holding a CEQA analysis inadequate would have violated the law. This is not a reasonable interpretation.

IV. COURTS MUST SCRUPULOUSLY ENFORCE THE REQUIREMENTS THAT LEAD AGENCIES CONSULT WITH AND OBTAIN COMMENTS FROM AIR DISTRICTS

Courts must "scrupulously enforce" CEQA's legislatively mandated requirements. (*Vineyard Area Citizens, supra*, 40 Cal.4th 412, 435.) Case law has firmly established that lead agencies must consult with the relevant air pollution control district before conducting an initial study, and must provide the districts with notice of the intention to adopt a negative declaration (or EIR). (*Schenck v. County of Sonoma* (2011) 198 Cal.App.4th 949, 958.) As *Schenck* held, neither publishing the notice nor providing it to the State Clearinghouse was a sufficient substitute for sending notice directly to the air district. (*Id.*) Rather, courts "must be satisfied that [administrative] agencies have fully complied with the procedural requirements of CEQA, since only in this way can the important public purposes of CEQA be protected from subversion." *Schenck,* 198 Cal.App.4th at p. 959 (citations omitted).[20]

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[19] We submit that Public Resources Code Section 21083.1 was intended to prevent courts from, for example, holding that an agency must analyze economic impacts of a project where there are no resulting environmental impacts (see CEQA Guidelines § 15131) , or imposing new procedural requirements, such as imposing additional public notice requirements not set forth in CEQA or the Guidelines.

[20] Lead agencies must consult air districts, as public agencies with jurisdiction by law over resources affected by the project, *before* releasing an EIR. (Pub. Resources Code §§ 21104(a); 21153.) Moreover, air

Lead agencies should be aware, therefore, that failure to properly seek and consider input from the relevant air district constitutes legal error which may jeopardize their project approvals. For example, the court in *Fall River Wild Trout Foundation v. County of Shasta,* (1999) 70 Cal.App.4th 482, 492 held that the failure to give notice to a trustee agency (Department of Fish and Game) was prejudicial error requiring reversal. The court explained that the lack of notice prevented the Department from providing any response to the CEQA document. (*Id.* at p. 492.) It therefore prevented relevant information from being presented to the lead agency, which was prejudicial error because it precluded informed decision-making. (*Id.*)[21]

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districts should be considered "state agencies" for purposes of the requirement to consult with "trustee agencies" as set forth in Public Resources Code § 20180.3(a). This Court has long ago held that the districts are not mere "local agencies" whose regulations are superseded by those of a state agency regarding matters of statewide concern, but rather have concurrent jurisdiction over such issues. (*Orange County Air Pollution Control District v. Public Util. Com.* (1971) 4 Cal.3d 945, 951, 954.) Since air pollution is a matter of statewide concern, *Id* at 952, air districts should be entitled to trustee agency status in order to ensure that this vital concern is adequately protected during the CEQA process.

[21] In *Schenck,* the court concluded that failure to give notice to the air district was not prejudicial, but this was partly because the trial court had already corrected the error before the case arrived at the Court of Appeal. The trial court issued a writ of mandate requiring the lead agency to give notice to the air district. The air district responded by concurring with the lead agency that air impacts were not significant. (*Schenck,* 198 Cal.App.4th 949, 960.) We disagree with the *Schenck* court that the failure to give notice to the air district would not have been prejudicial (even in the absence of the trial court writ) merely because the lead agency purported to follow the air district's published CEQA guidelines for significance. (*Id.*, 198 Cal.App.4th at p. 960.) In the first place, absent notice to the air district, it is uncertain whether the lead agency properly followed those guidelines. Moreover, it is not realistic to expect that an air district's published guidelines would necessarily fully address all possible air-quality related issues that can arise with a CEQA project, or that those

Similarly, lead agencies must obtain additional information requested by expert agencies, including those with jurisdiction by law, if that information is necessary to determine a project's impacts. (*Sierra Club v. State Bd. Of Forestry* (1994) 7 Cal.4th 1215, 1236-37.) Approving a project without obtaining that information constitutes a failure to proceed in the manner prescribed by CEQA. (*Id.* at p. 1236.)

Moreover, a lead agency can save significant time and money by consulting with the air district early in the process. For example, the lead agency can learn what the air district recommends as an appropriate analysis on the facts of its case, including what kinds of health impacts analysis may be available, and what models are appropriate for use. This saves the lead agency from the need to do its analysis all over again and possibly needing to recirculate the document after errors are corrected, if new significant impacts are identified. (CEQA Guidelines § 15088.5(a).) At the same time, the air district's expert input can help the lead agency properly determine whether another commenter's request for additional analysis or studies is reasonable or feasible. Finally, the air district can provide input on what mitigation measures would be feasible and effective.

Therefore, we suggest that this Court provide guidance to lead agencies reminding them of the importance of consulting with the relevant air districts regarding these issues. Otherwise, their feasibility decisions may be vulnerable to air district evidence that establishes that there is no substantial evidence to support the lead agency decision not to provide specific analysis. (*See Berkeley Keep Jets Over the Bay*, *supra*, 91 Cal.App.4th 1344, 1369-1371.)

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guidelines would necessarily be continually modified to reflect new developments. Therefore we believe that, had the trial court not already ordered the lead agency to obtain the air district's views, the failure to give notice would have been prejudicial, as in *Fall River, supra,* 70 Cal.App.4th 482, 492.

CONCLUSION

The SCAQMD respectfully requests this Court *not* to establish a hard-and-fast rule concerning whether CEQA requires a lead agency to correlate identified air quality impacts of a project with resulting health outcomes. Moreover, the question of whether an EIR is "sufficient as an informational document" is a mixed question of fact and law containing two levels of inquiry. Whether a particular proposed analysis is feasible is predominantly a question of fact to be judged by the substantial evidence standard of review. Where the requested analysis is feasible, but the lead agency relies on legal or policy reasons not to provide it, the question of whether the EIR is nevertheless sufficient as an informational document is predominantly a question of law to be judged by the independent judgment standard of review.

Respectfully submitted,

DATED: April 3, 2015

SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT
KURT R. WIESE, GENERAL COUNSEL
BARBARA BAIRD, CHIEF DEPUTY COUNSEL

By: Barbara Baird

Barbara Baird
Attorneys for Amicus Curiae
SOUTH COAST AIR QUALITY MANAGEMENT DISTICT

CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.520(c)(1) of the California Rules of Court, I hereby certify that this brief contains 8,476 words, including footnotes, but excluding the Application, Table of Contents, Table of Authorities, Certificate of Service, this Certificate of Word Count, and signature blocks. I have relied on the word count of the Microsoft Word Vista program used to prepare this Certificate.

DATED: April 3, 2015 Respectfully submitted,

Barbara Baird

Barbara Baird

PROOF OF SERVICE

I am employed in the County of Los Angeles, California. I am over the age of 18 years and not a party to the within action. My business address is 21865 Copley Drive, Diamond Bar, California 91765.

On April 3, 2015 I served true copies of the following document(s) described as **APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*** by placing a true copy of the foregoing document(s) in a sealed envelope addressed as set forth on the attached service list as follows:

BY MAIL: I enclosed the document(s) in a sealed envelope or package addressed to the persons at the addresses listed in the Service List and placed the envelope for collection and mailing following our ordinary business practices. I am readily familiar with this District's practice for collection and processing of correspondence for mailing. Under that practice, the correspondence would be deposited with the United States Postal Service, with postage thereon fully prepaid at Diamond Bar, California, in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on April 3, 2015 at Diamond Bar, California.

Patricia Anderson

Patricia Anderson

SERVICE LIST

James G. Moose, Tiffany K. Wright, Laura M. Harris REMY MOOSE MANLEY, LLP 555 Capitol Mall, Suite 800 Sacramento, CA 95814	Attorneys for Real Party in Interest and Respondent *Friant Ranch, L.P.*
Bryan N. Wagner WAGNER & WAGNER 7110 N. Fresno St, Suite 340 Fresno, CA 93720	Attorney for Real Party in Interest and Respondent *Friant Ranch, L.P.*
Sara Hedgpeth-Harris LAW OFFICE OF SARA HEDGPETH-HARRIS 5445 E. Lane Avenue Fresno, CA 93727	Attorney for Plaintiffs and Appellants *Sierra Club, et al*
Daniel C. Cederborg Bruce B. Johnson, Jr. Zachary Stephen Redmond OFFICE OF THE FRESNO COUNTY COUNSEL 2220 Tulare Street, Suite 500 Fresno, CA 93721	Attorneys for Respondents *County of Fresno*
Clerk of the Court California Court of Appeal Fifth Appellate District 2424 Ventura Street Fresno, CA 93721 *(via U.S. Mail & Electronic Transmission)*	
Clerk of the Court Superior Court of California County of Fresno 1130 O Street Fresno, CA 93721	

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.

CATHERINE T. REDMOND (State Bar No. 226957)
261 High Street
Duxbury, Massachusetts 02332
Tel. (339) 236-5720
Catherinetredmond22@gmail.com

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT
Annette Ballatore-Williamson, District Counsel (State Bar. No. 192176)
1990 E. Gettysburg Avenue
Fresno, California 93726
Tel. (559) 230-6033
Annette.Ballatore-Williamson@valleyair.org

Counsel for San Joaquin Valley Unified Air Pollution Control District

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CATHERINE T. REDMOND (State Bar No. 226957)
261 High Street
Duxbury, Massachusetts 02332
Tel. (339) 236-5720
Catherinetredmond22@gmail.com

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT
Annette Ballatore-Williamson, District Counsel (State Bar. No. 192176)
1990 E. Gettysburg Avenue
Fresno, California 93726
Tel. (559) 230-6033
Annette.Ballatore-Williamson@valleyair.org

Counsel for San Joaquin Valley Unified Air Pollution Control District

APPLICATION

Pursuant to California Rules of Court 8.520(f)(1), proposed Amicus Curiae San Joaquin Valley Unified Air Pollution Control District hereby requests permission from the Chief Justice to file an amicus brief in support of Defendant and Respondent, County of Fresno, and Defendant and Real Parties in Interest Friant Ranch, L.P. Pursuant to Rule 8.520(f)(5) of the California Rules of Court, the proposed amicus curiae brief is combined with this Application. The brief addresses the following issue certified by this Court for review:

> Is an EIR adequate when it identifies the health impacts of air pollution and quantifies a project's expected emissions, or does CEQA further require the EIR to *correlate* a project's air quality emissions to specific health impacts?

As of the date of this filing, the deadline for the final reply brief on the merits was March 5, 2015. Accordingly, under Rule 8.520(f)(2), this application and brief are timely.

1. Background and Interest of San Joaquin Valley Unified Air Pollution Control District

The San Joaquin Valley Unified Air Pollution Control District ("Air District") regulates air quality in the eight counties comprising the San Joaquin Valley ("Central Valley"): Kern, Tulare, Madera, Fresno, Merced, San Joaquin, Stanislaus, and Kings, and is primarily responsible for attaining air quality standards within its jurisdiction. After billions of dollars of investment by Central Valley businesses, pioneering air quality regulations, and consistent efforts by residents, the Central Valley air basin has made historic improvements in air quality.

The Central Valley's geographical, topographical and meteorological features create exceptionally challenging air quality conditions. For example, it receives air pollution transported from the San Francisco Bay Area and northern Central Valley communities, and the southern portion of the Central Valley includes three mountain ranges (Sierra, Tehachapi, and Coastal) that, under some meteorological conditions, effectively trap air pollution. Central Valley air pollution is only a fraction of what the Bay Area and Los Angeles produce, but these natural conditions result in air quality conditions that are only marginally better than Los Angeles, even though about ten times more pollution is emitted in the Los Angeles region. Bay Area air quality is much better than the Central Valley's, even though the Bay Area produces about six times more pollution. The Central Valley also receives air pollution transported from the Bay Area and northern counties in the Central Valley, including Sacramento, and transboundary anthropogenic ozone from as far away as China.

Notwithstanding these challenges, the Central Valley has reduced emissions at the same or better rate than other areas in California and has achieved unparalleled milestones in protecting public health and the environment:

- In the last decade, the Central Valley became the first air basin classified by the federal government under the Clean Air Act as a "serious nonattainment" area to come into attainment of health-based National Ambient Air Quality Standard ("NAAQS") for coarse particulate matter (PM10), an achievement made even more notable given the Valley's extensive agricultural sector. Unhealthy levels of particulate matter can cause and exacerbate a range of chronic and acute illnesses.
- In 2013, the Central Valley became the first air basin in the country to improve from a federal designation of "extreme" nonattainment to

actually attain (and quality for an attainment designation) of the 1-hour ozone NAAQS; ozone creates "smog" and, like PM10, causes adverse health impacts.

- The Central Valley also is in full attainment of federal standards for lead, nitrogen dioxide, sulfur dioxide, and carbon monoxide.
- The Central Valley continues to make progress toward compliance with its last two attainment standards, with the number of exceedences for the 8-hour ozone NAAQS reduced by 74% (for the 1997 standard) and 38% (for the 2008 standard) since 1991, and for the small particulate matter (PM2.5) NAAQS reduced by 85% (for the 1997 standard) and 61% (for the 2006 standard).

Sustained improvement in Central Valley air quality requires a rigorous and comprehensive regulatory framework that includes prohibitions (e.g., on wood-burning fireplaces in new residences), mandates (e.g., requiring the installation of best available pollution reduction technologies on new and modified equipment and industrial operations), innovations (e.g., fees assessed against residential development to fund pollution reduction actions to "offset" vehicular emissions associated with new residences), incentive programs (e.g., funding replacements of older, more polluting heavy duty trucks and school buses)[1], ongoing planning for continued air quality improvements, and enforcement of Air District permits and regulations.

The Air District is also an expert air quality agency for the eight counties and cities in the San Joaquin Valley. In that capacity, the Air District has developed air quality emission guidelines for use by the Central

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[1] San Joaquin's incentive program has been so successful that through 2012, it has awarded over $ 432 million in incentive funds and has achieved 93,349 tons of lifetime emissions reductions. *See* SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 2012 PM2.5 PLAN, 6-6 (2012) *available at* http://www.valleyair.org/Workshops/postings/2012/12-20-12PM25/FinalVersion/06%20Chapter%206% 20Incentives.pdf.

Valley counties and cities that implement the California Environment Quality Act (CEQA).[2] In its guidance, the Air District has distinguished between toxic air contaminants and criteria air pollutants.[3] Recognizing this distinction, the Air District's CEQA Guidance has adopted distinct thresholds of significance for *criteria* pollutants (i.e., ozone, PM2.5 and their respective precursor pollutants) based upon scientific and factual data which demonstrates the level that can be accommodated on a cumulative basis in the San Joaquin Valley without affecting the attainment of the applicable NAAQS.[4] For *toxic air* pollutants, the District has adopted different thresholds of significance which scientific and factual data demonstrates has the potential to expose sensitive receptors (i.e., children, the elderly) to levels which may result in localized health impacts.[5]

The Air District's CEQA Guidance was followed by the County of Fresno in its environment review of the Friant Ranch project, for which the Air District also served as a commenting agency. The Court of Appeal's holding, however, requiring correlation between the project's criteria

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2 *See, e.g.*, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, PLANNING DIVISION, GUIDE FOR ASSESSING AND MITIGATING AIR QUALITY IMPACTS (2015), *available at* http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf ("CEQA Guidance").

3 Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health, they are distinguishable from toxic air contaminants and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of toxic air contaminants occurs solely under section 112 of the Act. Compare 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 with 42 U.S.C. § 7411.

4 See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 64-66, 80.

5 See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 66, 99-101.

pollutants and local health impacts, departs from the Air District's Guidance and approved methodology for assessing criteria pollutants. A close reading of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants (for which a local health risk assessment is feasible and routinely performed) and criteria air pollutants (for which a local health risk assessment is not feasible and would result in speculative results).[6] The Air District has a direct interest in ensuring the lawfulness and consistent application of its CEQA Guidance, and will explain how the Court of Appeal departed from the Air District's long-standing CEQA Guidance in addressing criteria pollutants and toxic air contaminants in this amicus brief.

2. How the Proposed Amicus Curiae Brief Will Assist the Court

As counsel for the proposed amicus curiae, we have reviewed the briefs filed in this action. In addition to serving as a "commentary agency" for CEQA purposes over the Friant Ranch project, the Air District has a strong interest in assuring that CEQA is used for its intended purpose, and believes that this Court would benefit from additional briefing explaining the distinction between criteria pollutants and toxic air contaminants and the different methodologies employed by local air pollution control agencies such as the Air District to analyze these two categories of air pollutants under CEQA. The Air District will also explain how the Court of Appeal's opinion is based upon a fundamental misunderstanding of these two different approaches by requiring the County of Fresno to correlate the project's *criteria* pollution emissions with *local* health impacts. In doing

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[6] CEQA does not require speculation. *See, e.g.*, *Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 6 Cal. 4th 1112, 1137 (1993) (upholding EIR that failed to evaluate cumulative toxic air emission increases given absence of any acceptable means for doing so).

so, the Air District will provide helpful analysis to support its position that at least insofar as criteria pollutants are concerned, CEQA does not require an EIR to correlate a project's air quality emissions to specific health impacts, because such an analysis is not reasonably feasible.

Rule 8.520 Disclosure

Pursuant to Cal. R. 8.520(f)(4), neither the Plaintiffs nor the Defendant or Real Party In Interest or their respective counsel authored this brief in whole or in part. Neither the Plaintiffs nor the Defendant or Real Party in Interest or their respective counsel made any monetary contribution towards or in support of the preparation of this brief.

CONCLUSION

On behalf of the San Joaquin Valley Unified Air Pollution Control District, we respectfully request that this Court accept the filing of the attached brief.

Dated: April 2, 2015

Annette A. Ballatore-Williamson
District Counsel
Attorney for Proposed Amicus Curiae

SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL
DISTRICT

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

AMICUS CURIAE BRIEF OF
SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.

CATHERINE T. REDMOND (State Bar No. 226957)
261 High Street
Duxbury, Massachusetts 02332
Tel. (339) 236-5720
Catherinetredmond22@gmail.com

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT
Annette A. Ballatore-Williamson, District Counsel (State Bar. No. 192176)
1990 E. Gettysburg Avenue
Fresno, California 93726
Tel. (559) 230-6033
Annette.Ballatore-Williamson@valleyair.org
Counsel for San Joaquin Valley Unified Air Pollution Control District

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I. INTRODUCTION.

The San Joaquin Valley Unified Air Pollution Control District ("Air District") respectfully submits that the Court of Appeal erred when it held that the air quality analysis contained in the Environmental Impact Report ("EIR") for the Friant Ranch development project was inadequate under the California Environmental Quality Act ("CEQA") because it did not include an analysis of the correlation between the project's criteria air pollutants and the potential adverse human health impacts. A close reading of the portion of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants and criteria air pollutants.

Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants (hereinafter referred to as "TACs") regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health, they are distinguishable from TACs and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of TACs occurs solely under section 112 of the Act. *Compare* 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 *with* 42 U.S.C. § 7411.

The most relevant difference between criteria pollutants and TACs for purposes of this case is the manner in which human health impacts are accounted for. While it is common practice to analyze the correlation between an individual facility's TAC emissions and the expected localized human health impacts, such is not the case for criteria pollutants. Instead, the human health impacts associated with criteria air pollutants are analyzed and taken into consideration when EPA sets the national ambient air quality standard ("NAAQS") for each criteria pollutant. 42 U.S.C. § 7409(b)(1). The health impact of a particular criteria pollutant is analyzed on a regional and not a facility level based on how close the area is to complying with (attaining) the NAAQS. Accordingly, while the type of individual facility / health impact analysis that the Court of Appeal has required is a customary practice for TACs, it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task.

It is clear from a reading of both the administrative record and the Court of Appeal's decision that the Court did not have the expertise to fully appreciate the difference between TACs and criteria air pollutants. As a result, the Court has ordered the County of Fresno to conduct an analysis that is not practicable and not likely yield valid information. The Air District respectfully requests that this portion of the Court of Appeal's decision be reversed.

II. THE COURT OF APPEAL ERRED IN FINDING THE FRIANT RANCH EIR INADEQUATE FOR FAILING TO ANALYZE THE SPECIFIC HUMAN HEALTH IMPACTS ASSOCIATED CRITERIA AIR POLLUTANTS.

Although the Air District does not take lightly the amount of air emissions at issue in this case, it submits that the Court of Appeal got it wrong when it required Fresno County to revise the Friant Ranch EIR to include an analysis correlating the criteria air pollutant emissions associated with the project with specific, localized health-impacts. The type of analysis the Court of Appeal has required will not yield reliable information because currently available modeling tools are not well suited for this task. Further, in reviewing this issue de novo, the Court of Appeal failed to appreciate that it lacked the scientific expertise to appreciate the significant differences between a health risk assessment commonly performed for toxic air contaminants and a similar type of analysis it felt should have been conducted for criteria air pollutants.

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A. Currently Available Modeling Tools are not Equipped to Provide a Meaningful Analysis of the Correlation between an Individual Development Project's Air Emissions and Specific Human Health Impacts.

In order to appreciate the problematic nature of the Court of Appeals' decision requiring a health risk type analysis for criteria air pollutants, it is important to understand how the relevant criteria pollutants (ozone and particulate matter) are formed, dispersed and regulated.

Ground level ozone (smog) is not directly emitted into the air, but is formed when precursor pollutants such as oxides of nitrogen (NOx) and volatile organic compounds (VOCs) are emitted into the atmosphere and undergo complex chemical reactions in the process of sunlight.[1] Once formed, ozone can be transported long distances by wind.[2] Because of the complexity of ozone formation, a specific tonnage amount of NOx or VOCs emitted in a particular area does not equate to a particular concentration of ozone in that area. In fact, even rural areas that have relatively low tonnages of emissions of NOx or VOCs can have high levels of ozone concentration simply due to wind transport.[3] Conversely, the San Francisco Bay Area has six times more NOx and VOC emissions per square mile than the San Joaquin Valley, but experiences lower

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[1] *See* United States Environmental Protection Agency, *Ground-level Ozone: Basic Information*, available at: http://www.epa.gov/airquality/ozonepollution/basic.html (visited March 10, 2015).
[2] *Id.*
[3] *Id.*

concentrations of ozone (and better air quality) simply because sea breezes disperse the emissions.[4]

Particulate matter ("PM") can be divided into two categories: directly emitted PM and secondary PM.[5] While directly emitted PM can have a localized impact, the tonnage emitted does not always equate to the local PM concentration because it can be transported long distances by wind.[6] Secondary PM, like ozone, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur dioxides (SOx) and NOx.[7] Because of the complexity of secondary PM formation, the tonnage of PM-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary PM in that area.

The disconnect between the *tonnage* of precursor pollutants (NOx, SOx and VOCs) and the *concentration* of ozone or PM formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects, but the concentration of resulting ozone or PM. Indeed, the national ambient air quality standards ("NAAQS"), which are statutorily required to be set by the United States Environmental Protection

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[4] *San Joaquin Valley Air Pollution Control District 2007 Ozone Plan*, Executive Summary p. ES-6, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/03%20Executive%20Summary.pdf (visited March 10, 2015).
[5] United States Environmental Protection Agency, *Particulate Matter: Basic Information*, available at: http://www.epa.gov/airquality/particlepollution/basic.html (visited March 10, 2015).
[6] *Id.*
[7] *Id.*

Agency ("EPA") at levels that are "requisite to protect the public health," 42 U.S.C. § 7409(b)(1), are established as concentrations of ozone or particulate matter and not as tonnages of their precursor pollutants.[8]

Attainment of a particular NAAQS occurs when the concentration of the relevant pollutant remains below a set threshold on a consistent basis throughout a particular region. For example, the San Joaquin Valley attained the 1-hour ozone NAAQS when ozone concentrations remained at or below 0.124 parts per million Valley-wide on 3 or fewer days over a 3-year period.[9] Because the NAAQS are focused on achieving a particular concentration of pollution region-wide, the Air District's tools and plans for attaining the NAAQS are regional in nature.

For instance, the computer models used to simulate and predict an attainment date for the ozone or particulate matter NAAQS in the San Joaquin Valley are based on regional inputs, such as regional inventories of precursor pollutants (NOx, SOx and VOCs) and the atmospheric chemistry and meteorology of the Valley.[10] At a very basic level, the models simulate future ozone or PM levels based on predicted changes in precursor

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[8] See, e.g., United States Environmental Protection Agency, *Table of National Ambient Air Quality Standards*, available at: http://www.epa.gov/air/criteria.html#3 (visited March 10, 2015).
[9] *San Joaquin Valley Unified Air Pollution Control District 2013 Plan for the Revoked 1-Hour Ozone Standard*, Ch. 2 p. 2-16, available at: http://www.valleyair.org/Air_Quality_Plans/OzoneOneHourPlan2013/02Chapter2ScienceTrendsModeling.pdf (visited March 10, 2015).
[10] *Id.* at Ch. 2 p. 2-19 (visited March 12, 2015); *San Joaquin Valley Unified Air Pollution Control District 2008 PM2.5 Plan*, Appendix F, pp. F-2 – F-5, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Final_Adopted_PM2.5/20%20Appendix%20F.pdf
(visited March 19, 2015).

emissions Valley wide.[11] Because the NAAQS are set levels necessary to protect human health, the closer a region is to attaining a particular NAAQS, the lower the human health impact is from that pollutant.

The goal of these modeling exercises is not to determine whether the emissions generated by a particular factory or development project will affect the date that the Valley attains the NAAQS. Rather, the Air District's modeling and planning strategy is regional in nature and based on the extent to which *all* of the emission-generating sources in the Valley (current and future) must be controlled in order to reach attainment.[12]

Accordingly, the Air District has based its thresholds of significance for CEQA purposes on the levels that scientific and factual data demonstrate that the Valley can accommodate without affecting the attainment date for the NAAQS.[13] The Air District has tied its CEQA significance thresholds to the level at which stationary pollution sources permitted by the Air District must "offset" their emissions.[14] This "offset"

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[11] *Id.*

[12] Although the Air District does have a dispersion modeling tool used during its air permitting process that is used to predict whether a particular project's directly emitted PM will either cause an exceedance of the PM NAAQS or contribute to an existing exceedance, this model bases the prediction on a worst case scenario of emissions and meteorology and has no provision for predicting any associated human health impacts. Further, this analysis is only performed for stationary sources (factories, oil refineries, etc.) that are required to obtain a New Source Review permit from the Air District and not for development projects such as Friant Ranch over which the Air District has no preconstruction permitting authority. *See* San Joaquin Valley Unified Air Pollution Control District Rule 2201 §§ 2.0; 3.3.9; 4.14.1, available at: http://www.valleyair.org/rules/currntrules/Rule22010411.pdf (visited March 19, 2015).

[13] *San Joaquin Valley Unified Air Pollution Control District Guide to Assessing and Mitigating Air Quality Impacts*, (March 19, 2015) p. 22, available at: http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan%202002%20Rev.pdf (visited March 30, 2015).

[14] *Id.* at pp. 22, 25.

level allows for growth while keeping the cumulative effects of all new sources at a level that will not impede attainment of the NAAQS.[15] In the Valley, these thresholds are 15 tons per year of PM, and 10 tons of NOx or VOC per year. *Sierra Club, supra*, 172 Cal.Rptr.3d at 303; AR 4554. Thus, the CEQA air quality analysis for criteria pollutants is not really a localized, project-level impact analysis but one of regional, "cumulative impacts."

Accordingly, the significance thresholds applied in the Friant Ranch EIR (15 tons per year of PM and 10 tons of NOx or VOCs) are not intended to be indicative of any localized human health impact that the project may have. While the health effects of air pollution are of primary concern to the Air District (indeed, the NAAQS are established to protect human health), the Air District is simply not equipped to analyze whether and to what extent the criteria pollutant emissions of an individual CEQA project directly impact human health in a particular area. This is true even for projects with relatively high levels of emissions of criteria pollutant precursor emissions.

For instance, according to the EIR, the Friant Ranch project is estimated to emit 109.52 tons per year of ROG (VOC), 102.19 tons per year of NOx, and 117.38 tons per year of PM. Although these levels well

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[15] [15] *San Joaquin Valley Unified Air Pollution Control District Environmental Review Guidelines* (Aug. 2000) p. 4-11, available at: http://www.valleyair.org/transportation/CEQA%20Rules/ERG%20Adopted%20_August%202000_.pdf (visited March 12, 2015).

exceed the Air District's CEQA significance thresholds, this does not mean that one can easily determine the concentration of ozone or PM that will be created at or near the Friant Ranch site on a particular day or month of the year, or what specific health impacts will occur. Meteorology, the presence of sunlight, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone or PM. This is especially true for a project like Friant Ranch where most of the criteria pollutant emissions derive not from a single "point source," but from area wide sources (consumer products, paint, etc.) or mobile sources (cars and trucks) driving to, from and around the site.

In addition, it would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have. As discussed above, the currently available modeling tools are equipped to model the impact of *all* emission sources in the Valley on attainment. According to the most recent EPA-approved emission inventory, the NOx inventory for the Valley is for the year 2014 is 458.2 tons per day, or 167,243 tons per year and the VOC (or ROG) inventory is 361.7 tons per day, or 132,020.5 tons per year.[16] Running the photochemical grid model used for predicting ozone attainment with the

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[16] *San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan*, Appendix B pp. B-6, B-9,
available at:
http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/19%20Appendix%20B%20April%202007.pdf (visited March 12, 2015).

emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NOx and VOC in the Valley) is not likely to yield valid information given the relative scale involved.

Finally, even once a model is developed to accurately ascertain local increases in concentrations of photochemical pollutants like ozone and some particulates, it remains impossible, using today's models, to correlate that increase in concentration to a specific health impact. The reason is the same: such models are designed to determine regional, population-wide health impacts, and simply are not accurate when applied at the local level.

For these reasons, it is not the norm for CEQA practitioners, including the Air District, to conduct an analysis of the localized health impacts associated with a project's criteria air pollutant emissions as part of the EIR process. When the accepted scientific method precludes a certain type of analysis, "the court cannot impose a legal standard to the contrary." *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 717 n. 8. However, that is exactly what the Court of Appeal has done in this case. Its decision upends the way CEQA air quality analysis of criteria pollutants occurs and should be reversed.

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B. The Court of Appeal Improperly Extrapolated a Request for a Health Risk Assessment for Toxic Air Contaminants into a Requirement that the EIR contain an Analysis of Localized Health Impacts Associated with Criteria Air Pollutants.

The Court of Appeal's error in requiring the new health impact analysis for criteria air pollutants clearly stems from a misunderstanding of terms of art commonly used in the air pollution field. More specifically, the Court of Appeal (and Appellants Sierra Club et al.) appear to have confused the health risk analysis ("HRA") performed to determine the health impacts associated with a project's toxic air contaminants ("TACs"), with an analysis correlating a project's criteria air pollutants (ozone, PM and the like) with specific localized health impacts.

The first type of analysis, the HRA, is commonly performed during the Air District's stationary source permitting process for projects that emit TACs and is, thus, incorporated into the CEQA review process. An HRA is a comprehensive analysis to evaluate and predict the dispersion of TACs emitted by a project and the potential for exposure of human populations. It also assesses and quantifies both the individual and population-wide health risks associated with those levels of exposure. There is no similar analysis conducted for criteria air pollutants. Thus, the second type of analysis (required by the Court of Appeal), is not currently part of the Air District's process because, as outlined above, the health risks associated with exposure to criteria pollutants are evaluated on a regional level based on the region's attainment of the NAAQS.

The root of this confusion between the types of analyses conducted for TACs versus criteria air pollutants appears to stem from a comment that was presented to Fresno County by the City of Fresno during the administrative process.

In its comments on the draft EIR, the City of Fresno (the only party to raise this issue) stated:

> [t]he EIR must disclose the human health related effects of the Project's air pollution impacts. (CEQA Guidelines section 15126.2(a).) The EIR fails completely in this area. The EIR should be revised to disclose and determine the significance of TAC impacts, and of human health risks due to exposure to Project-related air emissions.

(AR 4602.)

In determining that the issue regarding the correlation between the Friant Ranch project's criteria air pollutants and adverse health impacts was adequately exhausted at the administrative level, the Court of Appeal improperly read the first two sentences of the City of Fresno's comment in isolation rather than in the context of the entire comment. *See Sierra Club v. County of Fresno* (2014) 172 Cal.Rptr.3d 271, 306. Although the comment first speaks generally in terms of "human health related effects" and "air pollution," it requests only that the EIR be revised to disclose "the significance of TACs" and the "human health risks due to exposure."

The language of this request in the third sentence of the comment is significant because, to an air pollution practitioner, the language would only have indicated only that a HRA for TACs was requested, and not a separate analysis of the health impacts associated with the project's criteria air pollutants. Fresno County clearly read the comment as a request to perform an HRA for TACs and limited its response accordingly. (AR 4602.)[17] The Air District submits that it would have read the City's comment in the same manner as the County because the City's use of the terms "human health risks" and "TACs" signal that an HRA for TACs is being requested. Indeed, the Air District was also concerned that an HRA be conducted, but understood that it was not possible to conduct such an analysis until the project entered the phase where detailed site specific information, such as the types of emission sources and the proximity of the sources to sensitive receptors became available. (AR 4553.)[18] The City of Fresno was apparently satisfied with the County's discussion of human health risks, as it did not raise the issue again when it commented on the final EIR. (AR 8944 – 8960.)

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[17] Appellants do not challenge the manner in which the County addressed TACs in the EIR. (Appellants' Answer Brief p. 28 fn. 7.)

[18] Appellants rely on the testimony of Air District employee, Dan Barber, as support for their position that the County should have conducted an analysis correlating the project's criteria air pollutant emissions with localized health impacts. (Appellants Answer Brief pp. 10-11; 28.) However, Mr. Barber's testimony simply reinforces the Air District's concern that a risk assessment (HRA) be conducted once the actual details of the project become available. (AR 8863.) As to criteria air pollutants, Mr. Barber's comments are aimed at the Air District's concern about the amount of emissions and the fact that the emissions will make it "more difficult for Fresno County and the Valley to reach attainment which means that the health of Valley residents maybe [sic] adversely impacted." Mr. Barber says nothing about conducting a separate analysis of the localized health impacts the project's emissions may have.

The Court of Appeal's holding, which incorrectly extrapolates a request for an HRA for TACs into a new analysis of the localized health impacts of the project's criteria air pollutants, highlights two additional errors in the Court's decision.

First, the Court of Appeal's holding illustrates why the Court should have applied the deferential substantial evidence standard of review to the issue of whether the EIR's air quality analysis was sufficient. The regulation of air pollution is a technical and complex field and the Court of Appeal lacked the expertise to fully appreciate the difference between TACs and criteria air pollutants and tools available for analyzing each type of pollutant.

Second, it illustrates that the Court likely got it wrong when it held that the issue regarding the criteria pollutant / localized health impact analysis was properly exhausted during the administrative process. In order to preserve an issue for the court, '[t]he "exact issue" must have been presented to the administrative agency....' [Citation.] *Citizens for Responsible Equitable Environmental Development v. City of San Diego*, (2011) 196 Cal.App.4th 515, 527 129 Cal.Rptr.3d 512, 521; *Sierra Club v. City of Orange* (2008) 163 Cal.App.4th 523, 535, 78 Cal.Rptr.3d 1, 13. "'[T]he objections must be sufficiently specific so that the agency has the opportunity to evaluate and respond to them.' [Citation.]" *Sierra Club v. City of Orange*,163 Cal.App.4th at 536.[19]

As discussed above, the City's comment, while specific enough to request a commonly performed HRA for TACs, provided the County with no notice that it should perform a new type of analysis correlating criteria pollutant tonnages to specific human health effects. Although the parties have not directly addressed the issue of failure to exhaust administrative remedies in their briefs, the Air District submits that the Court should consider how it affects the issues briefed by the parties since "[e]xhaustion of administrative remedies is a jurisdictional prerequisite to maintenance of a CEQA action." *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1199, 22 Cal.Rptr.3d 203.

III. CONCLUSION

For all of the foregoing reasons, the Air District respectfully requests that the portion of the Court of Appeal's decision requiring an analysis correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

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[19] *Sierra Club v. City of Orange*, is illustrative here. In that case, the plaintiffs challenged an EIR approved for a large planned community on the basis that the EIR improperly broke up the various environmental impacts by separate project components or "piecemealed" the analysis in violation of CEQA. In evaluating the defense that the plaintiffs had failed to adequately raise the issue at the administrative level, the Court held that comments such as *"the use of a single document for both a project-level and a program-level EIR [is] 'confusing',"* and *"[t]he lead agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project,"* were too vague to fairly raise the argument of piecemealing before the agency. *Sierra Club v. City of Orange*, 163 Cal.App.4th at 537.

correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

Respectfully submitted,

Dated: April 2, 2015

Catherine T. Redmond
Attorney for Proposed Amicus Curiae

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.204 of the California Rules of Court, I hereby certify that this document, based on the Word County feature of the Microsoft Word software program used to compose and print this document, contains, exclusive of caption, tables, certificate of word count, signature block and certificate of service, 3806 words.

Dated: April 2, 2015

Annette A. Ballatore-Williamson
District Counsel (SBN 192176)

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

PROOF OF SERVICE

I am over the age of 18 years and not a p[arty to the above-captioned action; that my business address is San Joaquin Valley Unified Air Pollution Control District located at 1990 E. Gettysburg Avenue, Fresno, California 93726.

On April 2, 2015, I served the document described below:

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO

On all parties to this action at the following addresses and in the following manner:

PLEASE SEE ATTACHED SERVICE LIST

(XX) **(BY MAIL)** I caused a true copy of each document(s) to be laced in a sealed envelope with first-class postage affixed and placed the envelope for collection. Mail is collected daily at my office and placed in a United State Postal Service collection box for pick-up and delivery that same day.

( ) **(BY ELECTRONIC MAIL)** I caused a true and correct scanned image (.PDF file) copy to be transmitted via electronic mail transfer system in place at the San Joaquin Valley Unified Air Pollution Control District ("District"), originating from the undersigned at 1990 E. Gettysburg Avenue, Fresno, CA, to the address(es) indicated below.

( ) **(BY OVERNIGHT MAIL)** I caused a true and correct copy to be delivered via Federal Express to the following person(s) or their representative at the address(es) listed below.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that I executed this document on April 2, 2015, at Fresno, California.

Esthela Soto

Esthela Soto

SERVICE LIST

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

Sara Hedgpeth-Harris, Esq. LAW OFFICE OF SARA HEDGPETH-HARRIS 2125 Kern Street, Suite 301 Fresno, California 93721 Telephone: (559) 233-0907 Facsimile: (559) 272-6046 Email: sara.hedgpethharris@shh-law.com	Attorney for Plaintiffs and Appellants, Sierra Club, et al
Daniel C. Cederborg, Esq. Bruce B. Johnson, Jr., Esq. OFFICE OF THE FRESNO COUNTY COUNSEL 2220 Tulare Street, Suite 500 Fresno, California 93721 Telephone: (559) 600-3479 Facsimile: (559) 600-3480 Email: bjohnson@co.fresno.ca.us	Attorneys for Defendant and Respondent, County of Fresno
Bryan N. Wagner, Esq. WAGNER & WAGNER 7110 N. Fresno Street, Suite 340 Fresno, California 93720 Telephone: (559) 224-0871 Facsimile: (559) 224-0885 Email: bryan@wagnerandwagner.com	Attorneys for Real Party in Interest/Respondent Friant Ranch, L.P.
Clerk of the Court Superior Court of California County of Fresno 1130 'O' Street Fresno, California 93721 Telephone: (559) 457-1900	
Clerk of the Court Fifth District Court of Appeal 2424 Ventura Street Fresno, California 93721 Telephone: (559) 445-5491	

R. Tyson Sohagim, Esq. THE SOHAGI LAW GROUP 11999 San Vicente Blvd., Suite 150 Los Angeles, California 90049 Telephone: (310) 475-5700 Facsimile: (310) 475-5707 Email: tsohagi@sohagi.com	Attorney for Amici Curiae; League of California Cities, and the California State Association of Counties
Marcia L. Scully, Esq. General Counsel METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA Post Office Box 54153 Los Angeles, California 90054 Telephone: (213) 217-6115	Attorney for Amicus Curiae, The Metropolitan Water District of Southern CA
Amy Minteer, Esq. CHATEN-BROWN & CARSTENS LLP 2200 Pacific Coast Highway, Suite 318 Hermosa Beach, California 90254 Telephone: (310) 798-2400 Facsimile: (310) 798-2402 Email: ACM@CBCEarthlaw.com	Attorney for Amici Curiae, Association of Irritated Residents, Medical Advocates for Healthy Air, and Coalition for Clean Air
Shanda M. Beltran, Esq. General Counsel BUILDING INDUSTRY LEGAL DEFENSE FOUNDATION 17744 Sky Park Cr., Suite 170 Irvine, California 92614 Telephone: (949) 553-9500 Facsimile: (949) 769-8943 Email: sbeltran@biasc.org	Attorney for Amicus Curiae, Building Industry Legal Defense Foundation
Gene Talmadge, President CALIFORNIA ASSOCIATION OF ENVIRONMENTAL PROFESSIONALS 40747 Baranda Court Palm Desert, California 92260 Telephone: (760) 340-4499 Facsimile: (760) 674-2479	Attorney for Amicus Curiae, California Association of Environmental Professionals
Jennifer L. Hernandez, Esq. HOLLAND & KNIGHT LLP 50 California Street, Suite 2800 San Francisco, California 94111	On behalf of Amicus Curiae, CEQA Research Council

Telephone: (415) 743-6927 Facsimile: (415) 743-6910 Email: Jennifer.hernandez@hklaw.com	

Appendix D Records Search Results from South Central Coastal Information Center at California State University, Fullerton

Appendices

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South Central Coastal Information Center
California State University, Fullerton
Department of Anthropology MH-426
800 North State College Boulevard
Fullerton, CA 92834-6846
657.278.5395

California Historical Resources Information System
Los Angeles, Orange, Ventura and San Bernardino Counties
sccic@fullerton.edu

3/21/2024 SCCIC File #: 25635.11775

Jennifer Kelley
PlaceWorks (ART-02.0)
700 Flower St #600
Los Angeles, CA 90017

Re: Record Search Results for the Artesia Downtown Specific Plan

The South Central Coastal Information Center received your records search request for the project area referenced above, located on the Los Alamitos, CA USGS 7.5' quadrangle(s). The following summary reflects the results of the records search for the project area and a ¼-mile radius. The search includes a review of all recorded archaeological and built-environment resources as well as a review of cultural resource reports on file. In addition, the California Points of Historical Interest (SPHI), the California Historical Landmarks (SHL), the California Register of Historical Resources (CAL REG), the National Register of Historic Places (NRHP), and the California State Built Environment Resources Directory (BERD) listings were reviewed for the above referenced project site and a ¼-mile radius. Due to the sensitive nature of cultural resources, archaeological site locations are not released.

RECORDS SEARCH RESULTS SUMMARY

Archaeological Resources* **(*see Recommendations section)**	Within project area: 0 Within ¼-mile radius: 0
Built-Environment Resources	Within project area: 0 Within ¼-mile radius: 1
Reports and Studies	Within project area: 2 Within ¼-mile radius: 1
OHP Built Environment Resources Directory (BERD) 2022	Within project area: 1 Within ¼-mile radius: 9
California Points of Historical Interest (SPHI) 2022	Within project area: 0 Within ¼-mile radius: 0
California Historical Landmarks (SHL) 2022	Within project area: 0 Within ¼-mile radius: 0
California Register of Historical Resources (CAL REG) 2022	Within project area: 0 Within ¼-mile radius: 0
National Register of Historic Places (NRHP) 2022	Within project area: 0 Within ¼-mile radius: 0

HISTORIC MAP REVIEW - Downey, CA (1943) 15' USGS historic map indicates that in 1943 there were several buildings and roads within the project area. There were additional buildings and roads within the project search radius which was located within the historic place name of Artesia. Also of note was the Pacific Electric rail line which ran through both the search radius and the project area.

RECOMMENDATIONS

**When we report that no archaeological resources are recorded in your project area or within a specified radius around the project area; that does not necessarily mean that nothing is there. It may simply mean that the area has not been studied and/or that no information regarding the archaeological sensitivity of the property has been filed at this office. The reported records search result does not preclude the possibility that surface or buried artifacts might be found during a survey of the property or ground-disturbing activities.*

According to our records, almost all of the Artesia Downtown Specific Plan boundary has not been subjected to any previous studies; consequently, the cultural resource sensitivity of the project boundary is unknown. Historic maps from the 1940's show the project boundary was mostly developed and the Pacific Electric Railroad (later the Southern Pacific Railroad) bisected the project boundary. The San Gabriel River is nearby to the west of the project boundary. Archaeological resources could be found buried or on the ground surface. Therefore, it is recommended that a qualified archaeologist be retained to examine soils for projects with undeveloped land and projects with ground disturbing activities – especially those projects with structures that are 45 years and older. Additionally any built-environment resources 45 years and older should be identified, recorded, and evaluated for local, state, or national significance (if applicable) by a qualified architectural historian prior to the approval of any project plans.

For your convenience, you may find a professional consultant**at www.chrisinfo.org. Any resulting reports by the qualified consultant should be submitted to the South Central Coastal Information Center as soon as possible.

**The SCCIC does not endorse any particular consultant and makes no claims about the qualifications of any person listed. Each consultant on this list self-reports that they meet current professional standards.

If you have any questions regarding the results presented herein, please contact the office at 657.278.5395 Monday through Thursday 9:00 am to 3:30 pm. Should you require any additional information for the above referenced project, reference the SCCIC number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System,

Stacy St. James

Digitally signed by Stacy St. James
Date: 2024.03.21 09:46:00 -07'00'

Isabela Kott
Assistant Coordinator, GIS Program Specialist

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the California Historical Resources Information System (CHRIS) Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

The California Office of Historic Preservation (OHP) contracts with the California Historical Resources Information System's (CHRIS) regional Information Centers (ICs) to maintain information in the CHRIS inventory and make it available to local, state, and federal agencies, cultural resource professionals, Native American tribes, researchers, and the public. Recommendations made by IC coordinators or their staff regarding the interpretation and application of this information are advisory only. Such recommendations do not necessarily represent the evaluation or opinion of the State Historic Preservation Officer in carrying out the OHP's regulatory authority under federal and state law.

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

NATIVE AMERICAN HERITAGE COMMISSION

January 18, 2024

Jennifer Kelley
Placeworks

Via Email to: jkelley@placeworks.com

Re: Native American Consultation, Pursuant to Senate Bill 18 (SB18), Government Codes §65352.3 and §65352.4, as well as Assembly Bill 52 (AB52), Public Resources Codes §21080.1, §21080.3.1 and §21080.3.2, Downtown Artesia Specific Plan Draft Environmental Impact Report Project, Los Angeles County

Dear Ms. Kelley:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties or projects.

Government Codes §65352.3 and §65352.4 require local governments to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of avoiding, protecting, and/or mitigating impacts to cultural places when creating or amending General Plans, Specific Plans and Community Plans.

Public Resources Codes §21080.3.1 and §21080.3.2 requires public agencies to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of avoiding, protecting, and/or mitigating impacts to tribal cultural resources as defined, for California Environmental Quality Act (CEQA) projects.

The law does not preclude local governments and agencies from initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction. The NAHC believes that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

Best practice for the AB52 process and in accordance with Public Resources Code §21080.3.1(d), is to do the following:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The NAHC also recommends, but does not require that lead agencies include in their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential affect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

   - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE, such as known archaeological sites;
   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the APE; and
   - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measures.

     All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code Section 6254.10.

3. The result of the Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was positive. Please contact the tribes on the attached list for more information.

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event, that they do, having the information beforehand well help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Appendix E Paleontological Records Search Results from the Natural History Museum of Los Angeles County

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Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Research & Collections

e-mail: **paleorecords@nhm.org**

January 7, 2024

Placeworks

Attn: Jennifer Kelley

re: Paleontological resources for the Artesia Downtown Specific Plan Project (Project No. ART-02.0)

Dear Jennifer:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for proposed development at the Artesia Downtown Specific Plan project area as outlined on the portion of the Los Alamitos USGS topographic quadrangle map that you sent to me via e-mail on December 21, 2023. We do not have any fossil localities that lie directly within the proposed project area, but we do have fossil localities nearby from the same sedimentary deposits that may occur in the proposed project area, either at the surface or at depth.

The following table shows the closest known localities in the collection of the Natural History Museum of Los Angeles County (NHMLA).

Locality Number	Location	Formation	Taxa	Depth
LACM VP 3347	11204 Bluefield; Whittier	La Habra Formation (lacustrine silt with caliche and plant detritus)	Horse (*Equus*)	2 feet bgs
LACM VP 3660	Cover St & Pixie Ave; Lakewood	Unknown formation (Pleistocene)	Mammoth (*Mammuthus*)	19 feet bgs
LACM VP 3245; LACM IP 2668, 423	south side of the San Diego Freeway where it crosses Cherry Ave	Fernando Formation (dark grey sand & silt)	Fish (Osteichthyes) in a dense shell bed	37 feet bgs
LACM VP 7493	30 yards south of Pacific Coast Highway & 10 yards west of Grand Avenue; Long Beach	Lakewood Formation	Camel family (Camelidae)	8.5 feet bgs
LACM VP 3260	Long Beach (more specific locality not available)	Unknown formation (Pleistocene)	Bison (*Bison*)	Unknown
LACM VP 4185-4201	Coyote Creek, adjacent to Ralph B Clark	La Habra Formation (Pleistocene; sandy	Bison (*Bison*), camel (*Camelops*), horse (*Equus*),	Surface, in creek

Locality Number	Location	Formation	Taxa	Depth
	Regional Park in West Coyote Hills	silt shot through with caliche)	mammoth (*Mammuthus*), mastodon (*Mamut*), elephant clade (Proboscidea), dire wolf *(Canis dirus*), Coyote (*C. latrans*), deer (*Odocoileus*), dwarf pronghorn (*Capromeryx*), unidentified artiodactyl; sea duck (*Chendytes*)	bed

VP, Vertebrate Paleontology; IP, Invertebrate Paleontology; bgs, below ground surface

This records search covers only the records of the NHMLA. It is not intended as a paleontological assessment of the project area for the purposes of CEQA or NEPA. Potentially fossil-bearing units are present in the project area, either at the surface or in the subsurface. As such, NHMLA recommends that a full paleontological assessment of the project area be conducted by a paleontologist meeting Bureau of Land Management or Society of Vertebrate Paleontology standards.

Sincerely,

Alyssa Bell, Ph.D.
Natural History Museum of Los Angeles County

enclosure: invoice

Appendix F Noise Modeling Data

Appendices

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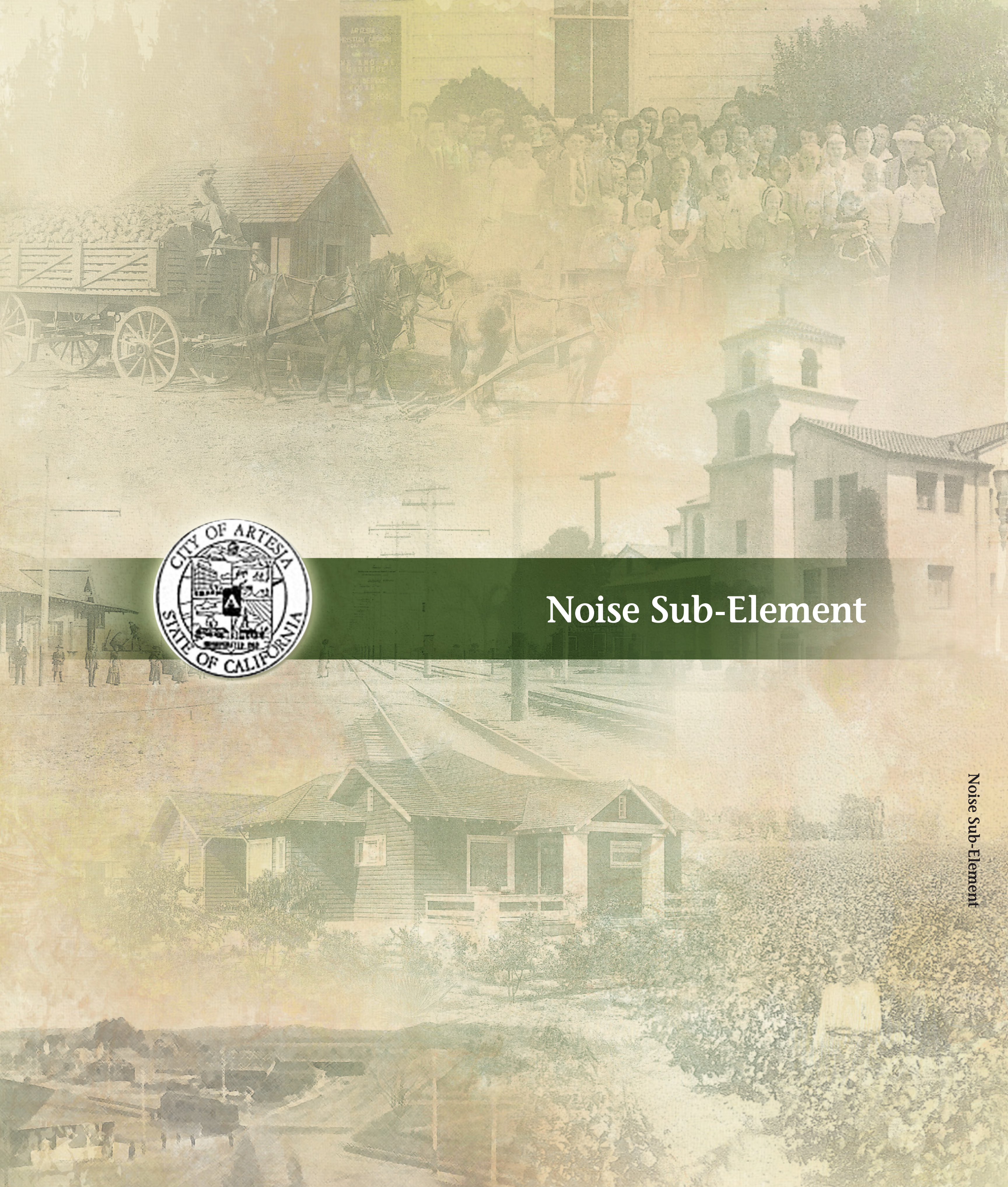

Noise Sub-Element

A. INTRODUCTION AND PURPOSE

The Noise Sub-Element identifies noise sources in the City, evaluates the potential for noise conflicts and problems, and identifies ways to reduce existing and potential noise impacts. The Sub-Element discusses compatibility of land uses, presence of sensitive receptors, and stationary noise generators. The Sub-Element also identifies projected noise levels and contains policies and programs to achieve and maintain appropriate noise levels, including how to prevent high noise levels in sensitive areas. It is important to note that the Sub-Element addresses noise that affects the community at large, rather than noise associated with site-specific conditions.

Government Code Section 65302(f) requires that a General Plan include:

> *"... a noise element which shall identify and appraise noise problems in the community. The Noise Element shall recognize the guidelines established by the Office of Noise Control in the State Department of Health Services and shall analyze and quantify…current and projected noise levels for all of the following sources: (1) highways and freeways; (2) primary arterials and major local streets; (3) passenger and freight on-line railroad operations and ground rapid transit systems; (4) commercial, general aviation, heliport, and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation; (5) local industrial plants, including but not limited to, railroad classification yards; (6) other ground stationary noise sources identified by local agencies as contributing to the community noise environment."*

B. BACKGROUND

Noise Definitions

Noise is often defined as unwanted sound. Health studies have shown that excessive noise can cause adverse physiological and psychological effects on human beings. While sound levels can be easily measured, impacts on an individual person vary based on subjective and physical responses.

Sound is created when an object vibrates and radiates part of its energy as acoustic pressure waves through a medium such as air, water, or a solid. The ear, which is the hearing mechanism of humans and most animals, receives these pressure waves and converts them to neurological impulses, which are then transferred to the brain for interpretation. The interpretation of sound depends both on the characteristics of the sound and the characteristics of the individual person hearing it.

Standard Units of Measurement

Sound is technically described in terms of its loudness (amplitude) and frequency (pitch).

The standard unit of measurement of loudness of sound is the decibel (dB). Everyday noises typically range from 30 dB (very quiet) to 100 dB (very loud). Decibels are based on a logarithmic scale. The scale compresses the wide range in noise levels to a more usable range of numbers, relating the sound pressure level of a noise source to the reference pressure level.

Frequency is the rate of repetition of sound pressure oscillations (waves) as they reach our ears and is expressed in hertz (Hz). When analyzing the total noise of any source, the frequency components are sometimes analyzed to determine the relative amounts of low-frequency, middle-frequency and high-frequency noise. Our ear is better equipped to hear mid- and high-frequencies than lower frequencies. Thus, we find mid- and high-frequency noise to be more annoying. High-frequency noise is also more capable of causing hearing loss. Engineering solutions to noise issues are different for different frequency ranges. Low-frequency noise is generally harder to control. The normal frequency range of hearing for most people extends from about 20 Hz to about 10,000 to 15,000 Hz. People respond to sound most readily when the predominant frequency is in the range of normal conversation, typically around 1,000 to 2,000 Hz.

Since the human ear is not equally sensitive to sound at all frequencies, several filters or scales have been developed that match the sensitivity of the human ear and thus help us evaluate the relative loudness of various sounds made up of different frequencies. The "A" filter is the most commonly used for environmental noise sources. The A-weighted decibel scale (dBA) performs this compensation by filtering or weighting frequencies to approximate the response of the human ear to sound. The A-weighted filter significantly deemphasizes those parts of the total noise that occur at frequencies that we do not hear as well (frequencies below about 500 Hz and above 10,000 Hz). The filter has very little effect, or is nearly "flat," in the middle range of frequencies, where our ears are most sensitive. Because this filter generally matches our ears' sensitivity, sounds having a higher A-weighted sound level or dBA are usually judged to be louder than those with a lower A-weighted sound level.

Equivalent Sound Level (L_{eq})

The equivalent sound level (L_{eq}) is a measure of the exposure resulting from the accumulation of A-weighted sound levels over a particular time period (e.g., 1 hour, 8 hours, a school day, nighttime, or a full 24-hour day). Since the length of the period can be different based on the timeframe of interest, the applicable period is identified along with the metric (e.g. L_{eq}(24)).

L_{eq} may be thought of as a constant sound level over the period of interest, containing as much total sound energy as the actual sound level that varies over time with peaks and valleys. The two signals (the constant one and time-varying one) would sound very different from each other if compared in real life. Variation in the "average" sound level suggested by L_{eq} is not an arithmetic value, but a logarithmic ("energy-averaged") sound level. Therefore, loud events dominate any noise environment described by the metric.

Community Noise Equivalent Level (CNEL)

Cumulative noise metrics were developed to assess community response to noise. These metrics take into account the loudness and duration of the noise, the total number of noise events and the time of day these events occur in one single-number rating scale. They are also designed to account for the known health effects of noise on people. These metrics are useful when evaluating noise within developed areas and developing policies for noise.

The community noise equivalent level (CNEL) is a 24-hour, time-weighted energy-average noise level based on dBA that measures the overall noise during the entire day. Noise that occurs during certain sensitive time periods is penalized and weighted higher by adding decibels to its L_{eq} measurement. On the CNEL scale, noise occurring between 7:00 p.m. and 10:00 p.m. is penalized by approximately five dB to account for the greater potential for noise to interfere during these hours, as well as the typically lower ambient (background) noise levels during these hours. Noise occurring during the night (from 10:00 p.m. to 7:00 a.m.) is penalized by 10 dB to account for our higher sensitivity to noise during the nighttime and the expected further decrease in ambient noise levels that typically occur at night.

Day-Night Average (L_{dn})

The day-night average noise level (L_{dn}) is a measure of the 24-hour average noise level at a given location. It was adopted by the EPA for developing criteria to evaluate community noise exposure. L_{dn} is based on a measure of the average noise level over a given time period. The L_{dn} is calculated by averaging the L_{eq} for each hour of the day at a given location after weighting or penalizing the nighttime hours (10:00 p.m. to 7:00 a.m.) by 10 dBA to take into account the increased sensitivity of people to noises that occur at night.

Other Noise Factors

As previously discussed, changes in the loudness of sound or the sound pressure are described in a logarithmic manner. In general, a 1dBA change in the sound pressure level of a given sound is detectable only under laboratory conditions. A 3 dBA change in sound pressure level is a detectable difference in most situations. A 5 dBA change is readily noticeable and a 10 dBA change is considered a doubling (or halving) of the subjective loudness.

When looking at noise generated by traffic, a 3 dBA increase or decrease in the average traffic noise level occurs through a doubling or halving of the traffic volume; or by about a 7 mile per hour increase or decrease in speed. Noise barriers can provide approximately a 5 dBA CNEL noise reduction, depending on the material, length, location, and height. A row of buildings provides up to a 5 dBA CNEL noise reduction with a 1.5 dBA CNEL reduction for each additional row up to a maximum reduction of approximately 10 dBA. The exact level of noise attenuation depends on the nature and orientation of the structure and intervening barriers.

Existing Conditions

Ambient Noise

Ambient noise is described as the all-encompassing background noise associated with a given environment and is usually a composite of sounds from a variety of close and distant sources.

Artesia's noise environment is primarily dominated by vehicular traffic along the 91 freeway and the major arterials. The major arterials that traverse the City are Artesia Boulevard, South Street and Pioneer Boulevard.

A Technical Memorandum identifying the existing noise conditions within the City was prepared by RBF Consulting in 2007. Locations for noise measurements were selected utilizing aerial photographs and a land use map. RBF utilized the aerial photograph to divide the City into a concentric grid pattern. The grid was then further grouped into similar land uses to determine specific areas to be measured. RBF determined seven areas that would provide sufficient data to establish an acoustical baseline for the City. RBF conducted one short-term noise measurement (10 minutes in length) in each designated area. Additionally, RBF conducted one long-term noise measurement (24 hours in length). The noise measurement sites were representative of typical existing noise exposure adjacent to major roadways as well as within residential and commercial uses.

Short-Term Measurements

Noise monitoring equipment used for the ambient short-term noise survey consisted of a Brüel & Kjær Hand-held Analyzer Type 2250 equipped with a 4189 microphone. The monitoring equipment complies with applicable requirements of the American National Standards Institute (ANSI) for Type I (precision) sound level meters. The results of the field measurements are indicated in Table N-1. Existing measured short-term noise levels ranged from 50.8 dBA to 66.5 dBA.

Long-Term Measurement

Noise monitoring equipment used for the ambient long-term noise survey consisted of a Larson Davis Laboratories Model LDL 820 sound level analyzer equipped with a Larson Davis Random Incidence Model 2561 microphone. The instrumentation was calibrated prior to use with a Larson Davis Model CAL250 acoustical calibrator to ensure the accuracy of the measurements, and complies with applicable requirements of the American National Standards Institute (ANSI) for Type I (precision) sound level meters. The result of the field measurement is indicated in Table N-1. The long-term noise level is approximately 63.1 dBA.

Table N-1 Noise Measurements			
Site No.	Location	Leq (dBA)	Time
LT-1[1]	Located along Pioneer Boulevard near service and professional uses.	63.1	10:02 A.M.
2	Located within residential uses.	50.8	10:35 A.M.
3	Located along abandoned railroad right-of-way within and adjacent to low and high density residential uses.	51.4	10:58 A.M.
4	Located along South Street within commercial general land uses.	66.5	11:22 A.M.
5	Located within residential uses to the south of South Street.	57.6	12:22 P.M.
6	Located within residential uses (specifically located at Trinity Christian Center and First Baptist Church) to the south of 183rd Street.	55.3	12:44 P.M.
7	Located within residential uses (to the north of Artesia Boulevard) that adjoin light manufacturing and industrial uses as well as commercial uses.	53.7	1:18 P.M.
8	Located within residential and commercial general uses to the east of Pioneer Boulevard and to the north of SR-91.	65.4	1:44 P.M.

Notes:
[1]Noise Measurement Long-Term 1 (LT-1) was taken over a 24-hour time period.
Source: Noise Monitoring Survey conducted by RBF Consulting, April 19 and 20, 2007.

Noise Sensitive Receptors

Human response to noise varies widely depending on the type of noise, time of day and the sensitivity of the receptor. The effects of noise on humans can range from temporary or permanent hearing loss to stress and annoyance due to such things as sleep deprivation and speech interference. Prolonged stress, regardless of the cause, is known to contribute to a variety of health disorders.

Sensitive populations are more susceptible to the effects of noise and air pollution than are the general population. Land uses considered sensitive by the State of California include schools, playgrounds, athletic facilities, hospitals, rest homes, rehabilitation centers and long-term care and mental care facilities. Some jurisdictions also consider day care centers, single-family dwellings, mobile home parks, churches, and libraries to be sensitive to noise. Generally, a sensitive receptor is identified as a location where human populations (especially children, senior citizens, and sick persons) are present, and where there is a reasonable expectation of continuous human exposure to noise.

Moderately sensitive land uses typically include: multi-family dwellings, hotels, motels, dormitories and outpatient clinics. Land uses less sensitive to noise are business, commercial and professional developments. Noise receptors categorized as being least sensitive to noise include industrial, manufacturing, utilities, agriculture, natural open space, undeveloped land, parking lots, motorcycle parks, rifle ranges, warehousing, liquid and solid waste facilities, salvage yards and transit terminals. Some of these land uses generate high noise levels.

Noise and Land Use Compatibility Matrix

The State of California Office of Planning and Research (OPR) Noise Element Guidelines include recommended interior and exterior level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The OPR Guidelines describe the compatibility of various land uses with a range of environmental noise levels in terms of dBA CNEL.

A noise environment of 50 dBA CNEL to 60 dBA CNEL is considered to be "normally acceptable" for residential uses. The State indicates that locating residential units, parks, and institutions (such as churches, schools, libraries, and hospitals) in areas where exterior ambient noise levels exceed 65 dBA CNEL is undesirable. The OPR recommendations also note that, under certain conditions, more restrictive standards than the maximum levels cited may be appropriate. As an example, the standards for quiet suburban and rural communities may be reduced by 5 to 10 dB to reflect their lower existing outdoor noise levels in comparison with urban environments.

In addition, Title 25, Section 1092 of the California Code of Regulations sets forth requirements for the insulation of multiple-family residential dwelling units from excessive and potentially harmful noise. Whenever multiple-family residential dwelling units are proposed in areas with excessive noise exposure, the developer must incorporate construction features into the building's design that reduce interior noise levels to 45 dBA CNEL or lower.

Table N-2, Noise and Land Use Compatibility Matrix, illustrates the guidelines established by the State Department of Health Services for acceptable noise levels. These guidelines are incorporated into the land use planning process to reduce future noise and land use incompatibilities. This table is the primary tool that allows the City to ensure integrated planning for compatibility between land uses and outdoor noise.

Table N-2 Noise and Land Use Compatibility Matrix				
	Community Noise Exposure (L_{dn} or CNEL, dBA)			
Land Use Category	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 - Multiple Family	50 - 65	60 - 70	70 - 75	70 – 85
Transient Lodging - Motel, 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	NA	50 - 70	NA	65 – 85
Sports Arenas, Outdoor Spectator Sports	NA	50 - 75	NA	70 – 85
Playgrounds, Neighborhood Parks	50 - 70	NA	67.5 - 75	72.5 – 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 70	NA	70 - 80	80 – 85
Office Buildings, Business Commercial and Professional	50 - 70	67.5 - 77.5	75 - 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	75 - 85	NA

NA: Not Applicable

Source: Office of Planning and Research, California, *General Plan Guidelines*, October 2003.

Normally Acceptable – Specified land use is satisfactory, based upon the assumption that any 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 analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.
Normally Unacceptable – New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Clearly Unacceptable – New construction or development should generally not be undertaken.

City of Artesia Noise Standards

The City of Artesia has established citywide interior and exterior noise level standards in a comprehensive Noise Ordinance within the Municipal Code. The purpose of the Ordinance is to control loud, unnecessary and unusual noises, sounds, or vibrations emanating from areas of the City. The Noise Ordinance (Municipal Code Title 5, Chapter 2: Noise) establishes daytime and nighttime permissible sound limits or levels for all residentially zoned properties in the City as well as prohibited noises.

Permissible Exterior Sound Limits or Levels

The City's Noise Ordinance establishes permissible exterior sound limits provided below.

The source cannot cause the noise level to exceed the greater of either the actual measured ambient noise level, or the following ambient noise level for a cumulative period of more than thirty minutes in any hour as measured at any property line:

Time Period	Permissible Noise Level
7:00 a.m.- 10:00 p.m.	55 dBA
10:00 p.m.- 7:00 a.m.	50 dBA

If the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, the permissible noise level set forth above is reduced by 5 dBA.

The Ordinance allows for short term increases in noise levels as follows:

Permitted Increase in Noise Level	Duration of Increase in Minutes Per Hour
5 dBA	15
10 dBA	5
15 dBA	1
20 dBA	Less than 1 minute

Permissible Interior Sound Limits or Levels

The City's Noise Ordinance establishes permissible interior sound limits provided below.

The source cannot cause the noise level to exceed the greater of either the actual measured ambient noise level, or the following ambient noise level for a cumulative period of more than five minutes in any hour:

Time Period	Permissible Noise Level
7:00 a.m.- 10:00 p.m.	55 dBA
10:00 p.m.- 7:00 a.m.	45 dBA

If the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, the permissible noise level set forth above is reduced by 5 dBA.

The Ordinance allows for short term increases in noise levels as follows:

Permitted Increase in Noise Level	Duration of Increase in Minutes Per Hour
5 dBA	1
10 dBA	Less than 1 minute

Prohibited Noises

The Noise Ordinance states that it is unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary, or unusual noise, sound or vibration which unreasonably disturbs the peace and quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.

The Ordinance also regulates specific noise sources such as radios, mechanical devices near residential areas, construction, emergency signaling devices, commercial establishments adjacent to residential property, and leaf blowers.

C. COMMUNITY PLANNING PRINCIPLES

Community Planning Principle N 1

Potential noise impacts are closely related to land use planning decisions. Because future development in the City will be in the form of infill and redevelopment, the likelihood of noise impacts based on differing uses will increase. Land use planning decisions should consider both noise sources and receptors.

Community Planning Principle N 2

Transportation sources are the primary sources of noise in Artesia. Noise impacts resulting from transportation sources are difficult to mitigate at the source. Therefore sound attenuation measures are important to minimize exposure to noise.

Community Planning Principle N 3

Commercial and industrial uses, construction activity and other non-transportation related sources of noise can negatively impact the noise environment. Identifying and mitigating these potential noise sources will reduce negative impacts.

Community Planning Principle N 4

Residential uses and sensitive receptors such as schools, churches, and parks are most likely to be affected by intrusive noise. Special consideration should be given when planning for or implementing changes with the potential to increase noise around these uses.

D. COMMUNITY POLICY PROGRAM

Community Goal N 1
Land use planning decisions, including planning for new development, consider noise impacts.

Community Policy N 1.1
Permit only those new development or redevelopment projects that have incorporated appropriate mitigation measures, so that standards contained in the Noise Sub-Element or adopted ordinances are met.

Policy Action N 1.1.1
Enforce noise standards, as contained in the City's Noise Ordinance.

Policy Action N 1.1.2

Require a noise impact evaluation for projects, if determined necessary through the environmental review process. If noise abatement is found necessary, require implementation mitigation measures based on a technical study prepared by a qualified acoustical professional.

Policy Action N 1.1.3

Implement noise mitigation by placing conditions of approval on development projects, and require a clear description of mitigation on subdivision maps, site plans, and building plans for inspection purposes.

Community Policy N 1.2

Consider noise impacts associated with the development of non-residential uses in the vicinity of residential uses.

Policy Action N 1.2.1

Require that any proposed development near existing residential land uses demonstrate compliance with the City's Noise Ordinance prior to the approval of the project.

Policy Action N 1.2.2

Review the Noise Ordinance to determine if additional or modified standards are necessary to address mixed use development.

Policy Action N 1.2.3

Require the design of mixed use structures to incorporate techniques to prevent the transfer of noise and vibration from the non-residential to residential uses.

Policy Action N 1.2.4

Encourage commercial uses that are not noise intensive in mixed use developments.

Policy Action N 1.2.4

Orient residential uses away from major noise sources, particularly in mixed use areas.

Community Goal N 2

Noise impacts from transportation sources are minimized.

Community Policy N 2.1

Encourage outside agencies to minimize impacts of noise from regional transportation corridors.

Policy Action N 2.1.1

Coordinate sound attenuation projects with Caltrans to meet the State standard of 65 dBA CNEL for exterior noise levels for the 91 Freeway.

Policy Action N 2.1.2

Coordinate sound attenuation projects with Caltrans to mitigate noise to keep interior residential levels below the State standard of 45 dBA CNEL.

Community Policy N 2.2

Reduce noise impacts from transportation corridors under the City's jurisdiction.

Policy Action N 2.2.1

Ensure the inclusion of noise mitigation measures in the design of new roadway projects in the City to reduce noise impacts to residential neighborhoods.

Policy Action N 2.2.2

Evaluate truck movements and routes in the City to provide effective separation from residential or other noise sensitive land uses.

Policy Action N 2.2.3

Discourage through traffic on residential local streets to reduce noise.

Community Policy N 2.3

Encourage programs to retrofit existing homes to reduce noise impacts in the homes.

Community Goal N 3

Noise impacts from non-transportation sources are minimized.

Community Policy N 3.1

Ensure non-transportation sources of noise have incorporated appropriate mitigation measures, so that standards contained in the Noise Sub-Element or adopted ordinances are met.

Policy Action N 3.1.1

Require that noise mitigation techniques are incorporated into all construction-related activities.

Policy Action N 3.1.2

Enforce the Noise Ordinance to ensure that stationary noise and noise emanating from construction activities, private development, and/or special events are minimized.

Community Goal N 4

Noise impacts to noise sensitive receptors are minimized, ensuring that City and State interior and exterior noise levels are not exceeded.

Community Policy N 1.1

Ensure Community Noise Equivalent Levels (CNEL) for noise sensitive land uses meet normally acceptable levels, as defined by State standards.

Policy Action N4.1.1

Require buffers or appropriate mitigation of potential noise sources on noise sensitive areas.

Title 5. Public Welfare

Chapter 2. NOISE

Editor's Note: Former Chapter 2, Fortune-Telling, was repealed by Ordinance No. 375, § 3.

§ 5-2.01. Declaration of Policy.

In order to control loud, unnecessary and unusual noises, sounds or vibrations emanating from areas of the City, it is hereby declared to be the policy of the City to prohibit such noise, sound and vibration generated from or by all sources as specified in this chapter. It is determined that certain noise levels and vibrations are detrimental to the public health, welfare and safety, and are contrary to public interest. Creating, maintaining, causing or allowing to be created, caused or maintained, any noise, sound or vibration in a manner prohibited by or not in conformity with the provisions of this chapter is declared to be a public nuisance and shall be punishable as such.
(Ord. 599, § 1)

§ 5-2.02. Definitions.

For purposes of this chapter, unless it is plainly evident from the context that a different meaning is intended, the following definitions shall apply:

"Ambient noise level" shall mean the all encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding the alleged offensive noise, at the location and approximate time at which a comparison with the alleged offensive noise is to be made.

"Cumulative period" shall mean an addictive period of time composed of individual time segments which may be continuous or interrupted.

"Decibel (dB)" shall mean a unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base of 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 120 microPascals.

"Fixed noise source" shall mean a stationary device which creates sounds while fixed or motionless, including but not limited to industrial and commercial machinery and equipment, pumps, fans, compressors, generators, air conditioners and refrigeration equipment.

"Grading" shall mean any excavating or filling or earth material, or any combination thereof, conducted at a site to prepare said site for construction or other improvements thereon.

"Impact noise" shall mean the noise produced by the collision of one mass in motion with a second mass which may be either in motion or at rest.

"Impulsive noise" shall mean a sound of high intensity, short duration, usually less than one second, with an abrupt onset and rapid decay.

"Mobile noise source" shall mean any noise source other than a fixed noise source.

"Noise levels" shall mean the "A" weighted sound pressure level in decibels obtained by using a sound level meter at slow response with a reference pressure of 20 microNewtons per square meter. The unit of measurement shall be designated as dB(A).

"Person" shall mean a person, firm, association, co-partnership, joint venture, corporation or any entity, public or private in nature.

"Residential property" shall mean a parcel of real property which is zoned and used either in part or in whole for residential purposes, other than transient uses such as hotels and motels.

"Simple tone noise" shall mean a noise characterized by a predominant frequency or frequencies so that other frequencies cannot be readily distinguished.

"Sound level meter" shall mean an instrument meeting American National Standard Institutes Stand S1.4-1971 for Type 1 sound level meters or an instrument and the associated recording and analyzing equipment which will provide equivalent data.
(Ord. 599, § 1)

§ 5-2.03. Permissible Exterior Sound Limits or Levels.

(a) The noise, sound or vibration limits or levels imposed by this section shall apply to all residential-ly zoned properties in the City.

(b) Except as otherwise allowed in this chapter, no person, from any location within the City, shall create or allow the creation of noise, sound or vibration on any property owned, leased, occupied, or other controlled by such person, which causes the noise level on any residential property to exceed the greater of either the actual measured ambient noise level, or the following ambient noise level for a cumulative period of more than 30 minutes in any hour as measured at any property line:

Time Period	Permissible Noise Level
7:00 a.m. - 10:00 p.m.	55 dB(A)
10:00 p.m. - 7:00 a.m.	50 dB(A)

If the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, the permissible noise level set forth above shall be reduced by five dB(A).

(c) If the intruding noise source is continuous and cannot be reasonably discontinued for sufficient time in which the ambient noise level can be determined, the presumed ambient noise level shall be used.

(d) Increases in noise levels prescribed in this section are permitted in accordance with the following:

Permitted Increase in Noise Level	Duration of Increase in Minutes Per Hour
5 dB(A)	15
10 dB(A)	5
15 dB(A)	1
20 dB(A)	Less than one minute

(Ord. 599, § 1)

§ 5-2.04. Permissible Interior Sound Limits or Levels.

(a) The noise, sound or vibration limits or levels imposed by this section shall apply to all interior spaces within buildings or structures on residentially zoned properties in the City.

(b) Except as otherwise allowed in this chapter, no person, from any location within the City, shall create or allow the creation of noise, sound or vibration on any property owned, leased, occupied, or other controlled by such person, which causes the noise level on any residential property to exceed the greater of either the actual measured ambient noise level, or the following ambient noise level for a cumulative period of more than five minutes in any hour:

Time Period	Permissible Noise Level
7:00 a.m. - 10:00 p.m.	55 dB(A)
10:00 p.m. - 7:00 a.m.	45 dB(A)

If the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, the permissible noise level set forth above shall be reduced by five dB(A).

(c) If the intruding noise source is continuous and cannot be reasonably discontinued for sufficient time in which the ambient noise level can be determined, the presumed ambient noise level shall be used.

(d) Increases in noise levels prescribed in this section are permitted in accordance with the following:

Permitted Increase in Noise Level	Duration of Increase in Minutes Per Hour
5 dB(A)	1
10 dB(A)	Less than one minute

(Ord. 599, § 1)

§ 5-2.05. Prohibited Noises—General Standard.

Notwithstanding any other provision of this chapter, and in addition thereto, it is unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary, or unusual noise, sound or vibration which unreasonably disturbs the peace and quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area. The factors which shall be considered in determining whether such noise violates the provisions of this section shall include, but not be limited to, the following:

(a) The volume of the noise;

(b) The intensity of the noise;

(c) Whether the nature of the noise is usual or unusual;

(d) Whether the origin of the noise is natural or unnatural;

(e) The volume and intensity of the background noise, if any;

(f) The proximity of the noise to residential sleeping facilities;

(g) The nature and zoning of the area within which the noise emanates;

(h) The density of the inhabitation of the area within which the noise emanates;

(i) The time of the day or night the noise occurs;

(j) The duration of the noise;

(k) Whether the noise is recurrent, intermittent, or constant; and

(l) Whether the noise is produced by a commercial or noncommercial activity.
(Ord. 599, § 1)

§ 5-2.06. Prohibited Noises—Specific Violations.

Except as set forth in Section **5-2.07** of this chapter, the following acts and the causing or permitting thereof, are specifically declared to be a violation of this chapter:

(a) *Radios, Phonographs, Etc*. The using, operating or permitting to be played, used or operated between the hours of 10:00 p.m. and 7:00 a.m. of any radio, musical instrument, phonograph, television set, or instrument or device similar to those heretofore specifically mentioned (hereinafter "device") for the production or reproduction of sound in volume sufficiently loud as to be plainly audible at a distance of 50 feet or more from the property line of the property from which the noise, sound or vibration is emanating, and the using, operating or permitting to be played, used or operated between the hours of 7:00 a.m. and 10:00 p.m. of any such device for the production or reproduction of sound in volume sufficiently loud as to be plainly audible at a distance of 200 feet or more from the property line of the property from which the noise, sound or vibration is emanating.

(b) *Band or Orchestral Rehearsals*. The conducting of or carrying on, or allowing the conducting or carrying on of band or orchestral concerts or rehearsals or practice between the hours of 10:00 p.m. and 7:00 a.m. sufficiently loud as to be plainly audible at a distance of 50 feet or more from the property line of the property where the concert, rehearsal or practice is occurring, and the conducting of or carrying on, or allowing the conducting or carrying on of band or orchestral concerts or rehearsals or practice between the hours of 7:00 a.m. and 10:00 p.m. sufficiently loud as to be plainly audible at a distance of 200 feet or more from the property line of the property where the concert, rehearsal or practice is occurring.

(c) *Engines, Motors and Mechanical Devices Near Residential District*. The sustained, continuous or repeated operation or use between the hours of 8:00 p.m. and 7:00 a.m. of any motor or engine or the repair, modification, reconstruction, testing or operation of any automobile, motorcycle, machine, contrivance, or mechanical device or other contrivance or facility unless such motor, engine, automobile, motorcycle, machine or mechanical device is enclosed within a sound insulated structure so as to prevent noise and sound from being plainly audible at: (1) a distance of 50 feet or more from the property line of the property from which the noise, sound or vibration is emanating or (2) the exterior wall of any adjacent residence, whichever is less.

(d) *Motor Vehicles*. Racing the engine of any motor vehicle or needlessly bringing to a sudden start or stop of any motor vehicle.

(e) *Loading and Unloading*. Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans or similar objects between the hours of 8:00 p.m. and 7:00 a.m. in volume sufficiently loud as to be plainly audible at a distance of 50 feet or more from the property line of the property where the activity is occurring.

(f) *Construction*. Operating or causing the operation of any tools, equipment, impact devices, derricks or hoists used on construction, drilling, repair, alteration, demolition or earthwork, between the hours of 7:00 p.m. and 7:00 a.m. on weekdays or at any time on Sunday or Federal holiday.

(g) *Nonemergency Signaling Devices*. Sounding or permitting the sounding of any bell, chime, siren, whistle or similar device, intended primarily for nonemergency purposes between the hours of 8:00 p.m. and 7:00 a.m. Sound sources included within this provision may be exempted by a variance issued by the Planning Commission.

(h) *Emergency Signaling Devices*.

(1) The intentional sounding, or permitting the sounding, outdoors of any emergency signaling device including fire, burglar, civil defense alarm, siren, whistle or similar emergency signaling device, for testing, except as provided in Subsection **5-2.06(h)(2)5-2.06(h**)(2).

(2) Testing of an emergency signaling device shall not occur between the hours of 8:00 p.m. and 7:00 a.m. Any such testing shall use only the minimum cycle test time. In no case shall such test time exceed 60 seconds. Testing of the emergency signaling system shall not occur more than once in each calendar month.

(3) Sounding or permitting the sounding of any exterior burglar or fire alarm unless such alarm is terminated within 15 minutes of activation.

(4) Sounding or permitting the sounding of any motor vehicle alarm unless such alarm is terminated within five minutes of activation.

(5) Sounding or permitting the sounding of any motor vehicle alarm more than three times of any duration in any 24 hour period.

(i) *Commercial Establishments Adjacent to Residential Property*. Continuous, repeated or sustained noise, sound or vibration from the premises of any commercial establishment, including any outdoor area that is a part or under the control of the establishment, which is licensed by the City and is adjacent to one or more residential dwelling units, between the hours of 10:00 p.m. and 7:00 a.m., that is plainly audible from the exterior wall of the adjacent residential dwelling unit.

(j) *Leaf Blowers*. The use or operation or allowing the use or operation of any leaf blower, as defined and regulated in Chapter 12 of Title **5** of this Code, between the hours of 8:00 p.m. and 8:00 a.m. of the next day.

(Ord. 599, § 1)

§ 5-2.07. Exemptions.

The following activities shall be exempt from the provisions of this chapter:

(a) Outdoor events, such as gatherings, fairs, bazaars, festivals and similar events if and to the extent the events are conducted pursuant to a temporary use permit issued by the City.

(b) The emission of sound for the purpose of alerting persons to the existence of an emergency or the emission of sound in the performance of emergency work. For the purposes of this section, "emergency" means a condition that constitutes an immediate threat to public safety, health or welfare or to property.

(c) Noise sources associated with the maintenance of real property such as the operation of any mechanically powered saw, sander, drill, grinder, lawn or garden tool or similar tool, provided such activities take place between 7:00 a.m. and 7:00 p.m. on weekdays and the hours of 9:00 a.m. and 6:00 p.m. on weekends and holidays.

(d) Any activity to the extent regulation thereof has been preempted by State or Federal law.

(e) Activities of the Federal, State or local jurisdiction while performing governmental duties.

(f) Warning devices necessary for the protection of public safety as for example, police, fire and ambulance sirens and train horns.

(g) Activities conducted on public playgrounds, public or private school grounds including, but not limited to, school athletic and school entertainment events and band or orchestral rehearsals for school athletic or school entertainment events.

(Ord. 599, § 1)

§ 5-2.08. Noise Level Measurement.

(a) Using the "A" weighting scale of the sound level meter and the "slow" meter response ("fast" response for impulsive-type sounds), the noise level shall be measured at the street or at any point on the property where the noise is received. In general, the microphone shall be located four to five feet above the ground; 10 feet or more from the nearest structure or wall. In those cases where another elevation is deemed appropriate, it shall be utilized.

(b) If the noise complaint is related to interior noise levels, interior noise measurements shall be made within the structure or building from which the noise emanates. The measurements shall be made at a point at least four feet from the wall, ceiling, or floor nearest the noise source, with windows in the normal seasonal configuration.

(c) Calibration of the measurement equipment shall be performed immediately prior to recording any noise data utilizing an acoustic calibrator.

(Ord. 599, § 1)

§ 5-2.09. Penalty for Violation.

A violation of any of the provisions of this chapter is a misdemeanor which is punishable as provided in Chapter 2 of Title **1** of this Code.
(Ord. 599, § 1)

CONSTRUCTION NOISE MODELING

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 09/17/2024
Case Description: ART-02.0 Demolition

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor at 50 feet	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	50.0	0.0
Excavator	No	40		80.7	50.0	0.0
Dozer	No	40		81.7	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.6	84.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 09/17/2024
Case Description: ART-02.0 Site Preparation

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor at 50 feet	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	50.0	0.0
Backhoe	No	40		77.6	50.0	0.0
Dozer	No	40		81.7	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	81.7	80.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 09/17/2024
Case Description: ART-02.0 Grading

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor at 50 feet	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	50.0	0.0
Grader	No	40	85.0		50.0	0.0
Scraper	No	40		83.6	50.0	0.0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	83.6	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	85.0	84.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 09/17/2024
Case Description: ART-02.0 Building Construction

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor at 50 feet	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	50.0	0.0
Generator	No	50		80.6	50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	80.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	80.6	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.6	80.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 09/17/2024
Case Description: ART-02.0 Paving

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor at 50 feet	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	50.0	0.0
Paver	No	50		77.2	50.0	0.0
Roller	No	20		80.0	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	77.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	80.0	73.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.0	78.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 09/17/2024
Case Description: ART-02.0 Architectural Coating

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor at 50 feet	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	50.0	0.0
Compressor (air)	No	40		77.7	50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	77.7	73.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	77.7	73.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	77.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

TRAFFIC NOISE MODELING

Traffic Noise Calculator: FHWA 77-108 | **Artesia Downtown Specific Plan (ART-02.0) Existing 2024 Traffic Noise**

	Output						Inputs																Auto Inputs	
	dBA at 50 feet			Distance to CNEL Contour																				
ID	$L_{eq\text{-}24hr}$	L_{dn}	CNEL	70 dBA	65 dBA	60 dBA	Roadway	Segment From - To		ADT	Posted Speed Limit	Grade	% Autos	% Med Trucks	% Heavy Trucks	% Daytime	% Evening	% Night	Number of Lanes	Site Condition	Distance to Reciever		Ground Absorption	Lane Distance
1	64.9	67.6	68	31	97	308	Pioneer Road	the South	South St	11,980	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50		0	44
2	59.4	62.2	62	9	28	87	Pioneer Road	South St	187th St	8,960	25	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50		0	44
3	57.1	59.9	60	5	16	52	Pioneer Road	187th St	183rd St	8,040	25	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	2	Hard	50		0	20
4	62.3	65.1	65	17	54	171	Pioneer Road	183rd St	SR-91 EB Ramps	11,650	35	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	4	Hard	50		0	44
5	65.7	68.5	69	37	118	374	Pioneer Road	SR-91 WB Ramps	the North	19,520	35	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50		0	44
6	64.7	67.5	68	30	94	298	Gridley Rd	the North	South St	15,550	35	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50		0	44
7	62.8	65.6	66	19	60	191	Gridley Rd	South St	the South	9,970	35	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50		0	44
8	68.9	71.7	72	78	246	778	South St	the West	I-605 SB Ramps	30,320	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50		0	44
9	69.5	72.2	72	89	280	887	South St	I-605 NB Ramps	Gridley Rd	34,550	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50		0	44
10	67.4	70.2	70	55	175	553	South St	Gridley Rd	Pioneer Blvd	21,540	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50		0	44
11	67.0	69.8	70	50	160	505	South St	Pioneer Blvd	the East	19,670	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50		0	44
12	51.1	53.9	54	1	4	13	187th St	the West	Pioneer Blvd	2,000	25	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	2	Hard	50		0	20
13	50.4	53.2	53	1	3	11	187th St	Pioneer Blvd	the East	1,710	25	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	2	Hard	50		0	20
14	63.2	66.0	66	21	66	209	183rd St	the West	Pioneer Blvd	14,220	35	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	4	Hard	50		0	44
15	62.9	65.6	66	19	61	194	183rd St	Pioneer Blvd	the East	13,170	35	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	4	Hard	50		0	44

Traffic Noise Calculator: FHWA 77-108							Artesia Downtown Specific Plan (ART-02.0) Existing Plus Project Traffic Noise																
	Output						Inputs															Auto Inputs	
	dBA at 50 feet			Distance to CNEL Contour																			
ID	$L_{eq\text{-}24hr}$	L_{dn}	CNEL	70 dBA	65 dBA	60 dBA	Roadway	Segment From - To		ADT	Posted Speed Limit	Grade	% Autos	% Med Trucks	% Heavy Trucks	% Daytime	% Evening	% Night	Number of Lanes	Site Condition	Distance to Reciever	Ground Absorption	Lane Distance
1	65.0	67.8	68.0	32	101	318	Pioneer Road	the South	South St	12,390	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
2	60.1	62.8	63.1	10	32	102	Pioneer Road	South St	187th St	10,420	25	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
3	58.1	60.9	61.1	6	20	65	Pioneer Road	187th St	183rd St	10,060	25	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	2	Hard	50	0	20
4	62.9	65.7	65.9	20	62	197	Pioneer Road	183rd St	SR-91 EB Ramps	13,370	35	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
5	65.9	68.7	69.0	39	124	393	Pioneer Road	SR-91 WB Ramps	the North	20,520	35	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
6	64.9	67.7	67.9	31	98	311	Gridley Rd	the North	South St	16,240	35	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
7	62.7	65.5	65.7	19	59	188	Gridley Rd	South St	the South	9,800	35	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
8	68.9	71.7	72.0	79	249	788	South St	the West	I-605 SB Ramps	30,710	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
9	69.7	72.5	72.7	94	297	939	South St	I-605 NB Ramps	Gridley Rd	36,570	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
10	67.7	70.5	70.7	59	186	589	South St	Gridley Rd	Pioneer Blvd	22,960	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
11	67.1	69.9	70.1	52	163	515	South St	Pioneer Blvd	the East	20,080	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
12	52.4	55.2	55.4	2	5	17	187th St	the West	Pioneer Blvd	2,700	25	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	2	Hard	50	0	20
13	50.2	53.0	53.2	1	3	11	187th St	Pioneer Blvd	the East	1,640	25	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	2	Hard	50	0	20
14	63.4	66.2	66.4	22	69	219	183rd St	the West	Pioneer Blvd	14,910	35	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
15	63.0	65.8	66.0	20	63	201	183rd St	Pioneer Blvd	the East	13,630	35	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44

Traffic Noise Calculator: FHWA 77-108							Artesia Downtown Specific Plan (ART-02.0) Future Year Traffic Noise																
	Output						Inputs															Auto Inputs	
	dBA at 50 feet			Distance to CNEL Contour																			
ID	$L_{eq\text{-}24hr}$	L_{dn}	CNEL	70 dBA	65 dBA	60 dBA	Roadway	Segment From - To		ADT	Posted Speed Limit	Grade	% Autos	% Med Trucks	% Heavy Trucks	% Daytime	% Evening	% Night	Number of Lanes	Site Condition	Distance to Reciever	Ground Absorption	Lane Distance
1	65.2	68.0	68.2	33	104	330	Pioneer Road	the South	South St	12,870	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
2	59.8	62.6	62.8	10	30	96	Pioneer Road	South St	187th St	9,860	25	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
3	57.4	60.2	60.4	5	17	55	Pioneer Road	187th St	183rd St	8,510	25	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	2	Hard	50	0	20
4	62.7	65.5	65.7	19	59	187	Pioneer Road	183rd St	SR-91 EB Ramps	12,690	35	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
5	65.9	68.7	69.0	39	125	394	Pioneer Road	SR-91 WB Ramps	the North	20,580	35	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
6	64.7	67.5	67.8	30	94	298	Gridley Rd	the North	South St	15,570	35	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
7	62.8	65.5	65.8	19	60	190	Gridley Rd	South St	the South	9,900	35	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
8	68.9	71.7	72.0	78	248	785	South St	the West	I-605 SB Ramps	30,570	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
9	69.5	72.2	72.5	89	280	887	South St	I-605 NB Ramps	Gridley Rd	34,550	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
10	67.4	70.2	70.4	55	175	554	South St	Gridley Rd	Pioneer Blvd	21,570	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
11	67.0	69.8	70.1	51	161	509	South St	Pioneer Blvd	the East	19,820	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
12	51.1	53.9	54.1	1	4	13	187th St	the West	Pioneer Blvd	2,000	25	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	2	Hard	50	0	20
13	50.6	53.4	53.6	1	4	12	187th St	Pioneer Blvd	the East	1,800	25	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	2	Hard	50	0	20
14	63.2	66.0	66.2	21	66	209	183rd St	the West	Pioneer Blvd	14,220	35	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
15	62.9	65.6	65.9	19	61	194	183rd St	Pioneer Blvd	the East	13,170	35	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44

Traffic Noise Calculator: FHWA 77-108 | **Artesia Downtown Specific Plan (ART-02.0) Future Year Plus Project Traffic Noise**

	Output						Inputs															Auto Inputs	
	dBA at 50 feet			Distance to CNEL Contour																			
ID	$L_{eq\text{-}24hr}$	L_{dn}	CNEL	70 dBA	65 dBA	60 dBA	Roadway	Segment From - To		ADT	Posted Speed Limit	Grade	% Autos	% Med Trucks	% Heavy Trucks	% Daytime	% Evening	% Night	Number of Lanes	Site Condition	Distance to Reciever	Ground Absorption	Lane Distance
1	65.3	68.1	68.3	34	108	341	Pioneer Road	the South	South St	13,280	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
2	60.4	63.2	63.4	11	35	110	Pioneer Road	South St	187th St	11,320	25	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
3	58.3	61.1	61.3	7	21	68	Pioneer Road	187th St	183rd St	10,530	25	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	2	Hard	50	0	20
4	63.2	66.0	66.3	21	67	212	Pioneer Road	183rd St	SR-91 EB Ramps	14,410	35	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
5	66.0	68.7	69.0	40	125	396	Pioneer Road	SR-91 WB Ramps	the North	20,680	35	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
6	64.9	67.7	67.9	31	98	311	Gridley Rd	the North	South St	16,260	35	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
7	62.7	65.5	65.8	19	60	188	Gridley Rd	South St	the South	9,840	35	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
8	69.0	71.8	72.0	79	250	792	South St	the West	I-605 SB Ramps	30,840	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
9	69.7	72.5	72.7	94	297	939	South St	I-605 NB Ramps	Gridley Rd	36,570	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
10	67.7	70.5	70.7	59	187	590	South St	Gridley Rd	Pioneer Blvd	22,990	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
11	67.1	69.9	70.2	52	164	519	South St	Pioneer Blvd	the East	20,230	40	0.0%	96.0%	2.5%	1.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
12	52.4	55.2	55.4	2	5	17	187th St	the West	Pioneer Blvd	2,700	25	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	2	Hard	50	0	20
13	50.4	53.2	53.5	1	4	11	187th St	Pioneer Blvd	the East	1,730	25	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	2	Hard	50	0	20
14	63.4	66.2	66.4	22	69	219	183rd St	the West	Pioneer Blvd	14,910	35	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44
15	63.0	65.8	66.0	20	63	201	183rd St	Pioneer Blvd	the East	13,630	35	0.0%	98.0%	1.5%	0.5%	85.0%	5.0%	10.0%	4	Hard	50	0	44

Appendix G Local Transportation Assessment

Appendices

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600 S. Lake Avenue
Suite 500
Pasadena, CA 91106
626.796.2322 T
www.llgengineers.com

Pasadena
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San Diego

LOCAL TRANSPORTATION ASSESSMENT

ARTESIA DOWNTOWN SPECIFIC PLAN

City of Artesia, California
February 5, 2025

Prepared for:

PlaceWorks
3 MacArthur Place, Suite 1100
Santa Ana, California 92707

LLG Ref: 1-23-4585-1

Prepared by:

Grace Turney, P.E., RSP1
Transportation Engineer III

Under the Supervision of:

David S. Shender, P.E.
Principal

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LIST OF ABBREVIATIONS

ABBREVIATION	MEANING
ABM	Activity-Based Model
ADA	Americans with Disabilities Act
CEQA	California Environmental Quality Act
FAR	Floor Area Ratio
HCM	Highway Capacity Manual
HOV	High-Occupancy Vehicle
ITE	Institute of Transportation Engineers
LACPW	Los Angeles County Public Works
LD-IGR	Local Development and Intergovernmental Review
LOS	Level of Service
OCTA	Orange County Transportation Authority
SCAG	Southern California Association of Governments
SR	State Route
TISG	Transportation Impact Study Guide
VMT	Vehicle Miles Traveled

ARTESIA DOWNTOWN SPECIFIC PLAN

City of Artesia, California
February 5, 2025

1.0 INTRODUCTION

This local transportation assessment has been conducted to identify and evaluate the potential effects of the Artesia Downtown Specific Plan project ("proposed project" herein) on the local transportation network. The proposed Artesia Downtown Specific Plan area is located within the City of Artesia, California. The City of Artesia is located in southeast Los Angeles County and is situated adjacent to the City of Cerritos to the west, south, and east, and to the City of Norwalk to the north. The City of Artesia and the Artesia Downtown Specific Plan area and general vicinity are shown in ***Figure 1-1***.

The local transportation assessment follows the analysis criteria set forth by Los Angeles County in the Los Angeles County Public Works (LACPW) *Transportation Impact Analysis Guidelines*[1] ("County Guidelines" herein). In compliance with California Environmental Quality Act (CEQA) Sections 15064.3 and 15064.7, the County Guidelines utilize Vehicle Miles Traveled (VMT) for the purpose of analyzing transportation impacts under CEQA. The determination of transportation impacts based on VMT analysis is presented under separate cover in the "Artesia Downtown Specific Plan Transportation Impact Study," prepared by Linscott, Law & Greenspan, Engineers, September 9, 2024.

The County Guidelines require additional site access studies in order to identify a proposed project's effect on local transportation infrastructure. The site access studies prepared for the proposed project evaluate potential project-related effects on intersection operations and Level of Service (LOS) at eight (8) key intersections in the vicinity of the proposed project site, including four (4) intersections under local jurisdiction and four (4) intersections under the California Department of Transportation's (Caltrans) jurisdiction. Further, an analysis was also completed as it relates to the State Highway System and freeway off-ramp queuing at the four (4) freeway ramp intersections selected for analysis. The study intersections were determined in consultation with City of Artesia staff.

In summary, this report presents (i) a description of the proposed project, (ii) the existing transportation network context, (iii) the existing traffic volumes, (iv) forecasts future cumulative baseline conditions, (v) assesses the potential for project-related effects based on non-CEQA metrics, and (vi) recommends transportation network improvement measures, where necessary.

[1] Los Angeles County Public Works "Transportation Impact Analysis Guidelines", prepared by Public Works, July 23, 2020.

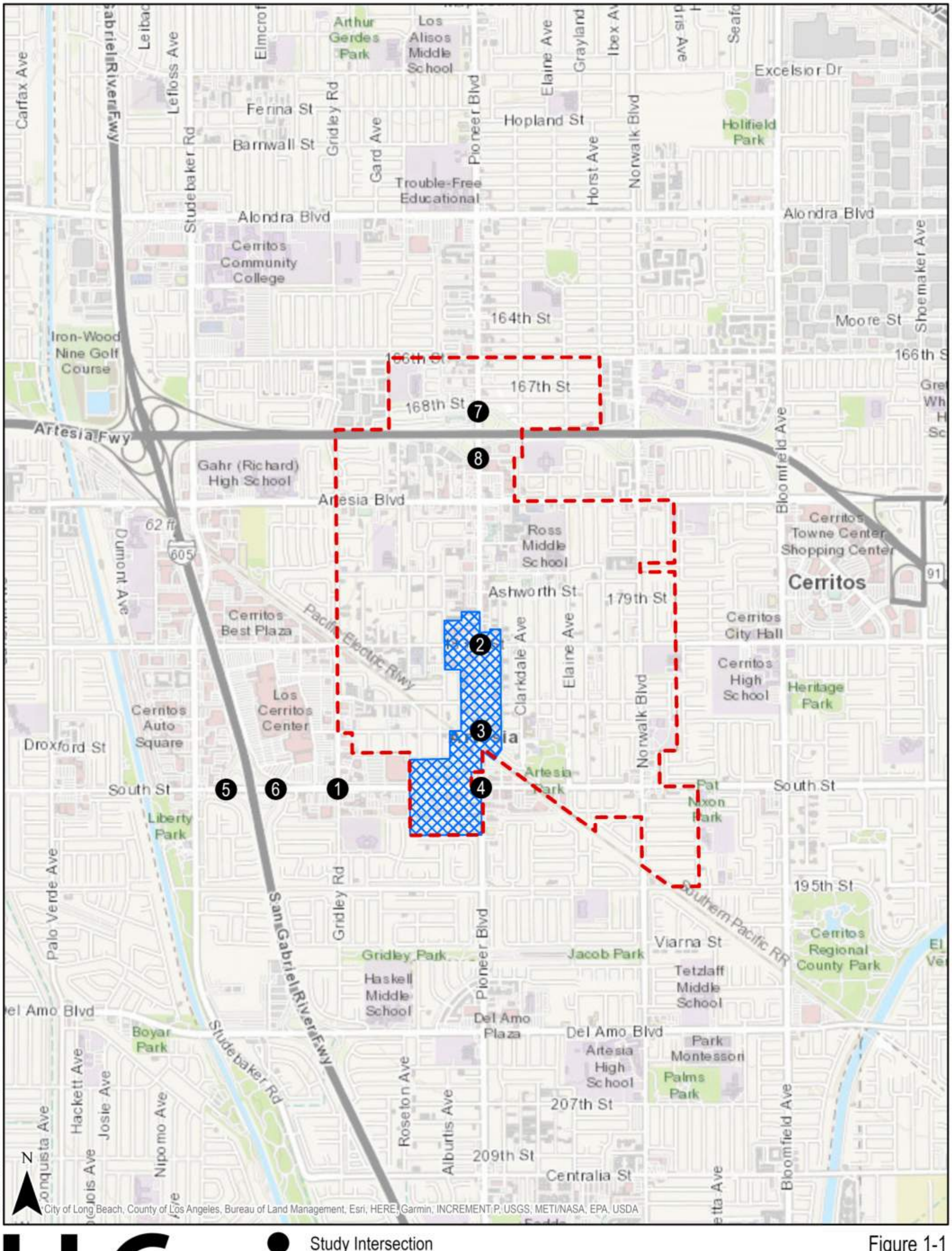

Figure 1-1
Vicinity Map
Artesia Downtown Specific Plan

1.1 Study Methodology

The non-CEQA analysis criteria for this local transportation assessment were identified in consultation with City of Artesia staff. It is noted that the City of Artesia does not have current analysis guidelines, therefore, the local transportation assessment has been prepared in compliance with the methodology set forth in the LACPW *Transportation Impact Analysis Guidelines*. The analysis criteria were therefore determined based on the County Guidelines, the proposed project description and location, and the characteristics of the surrounding transportation system. The City of Artesia confirmed the appropriateness of the analysis criteria when it approved the Transportation Impact Study Scope of Work. The approved Scope of Work is attached to this report in ***Appendix A***.

Pursuant to current statutes, the City of Artesia utilizes VMT as the metric for determining environmental impacts in CEQA in compliance with Senate Bill (SB) 743 (2013, Steinberg). However, the passage of SB 743 and the resulting implementation of VMT does not prevent agencies from continuing to analyze delay or LOS outside of CEQA review for other transportation planning or analysis purposes (i.e., general plans, impact fee programs, corridor studies, congestion reduction, or ongoing network monitoring). The County Guidelines therefore also require additional studies of the local transportation network. Specifically, the County Guidelines require an operational analysis of intersections in the vicinity of a proposed project in order to evaluate site access and circulation constraints that may be caused or worsened by project-generated traffic. For purposes of this analysis, eight (8) study intersections which are expected to be integral to access and circulation within the Specific Plan area were selected in coordination with City of Artesia staff, including four (4) intersections under the jurisdiction of the Cities of Artesia and Cerritos, and four (4) intersections under Caltrans' jurisdiction. The study intersections are summarized in ***Table 1-1***, along with the current traffic controls and the agencies which have jurisdiction at each intersection, and are also illustrated in *Figure 1-1*. This assessment utilizes the *Highway Capacity Manual* (HCM), 7th Edition[2] methodology to evaluate LOS and queuing at the study intersections.

As required by State law, the California Department of Transportation (Caltrans) has also formally adopted VMT as the metric for evaluating the transportation impacts of local development projects on the State Highway System as stated in the *Transportation Impact Study Guide*[3] (TISG). The TISG further states, "Additional future guidance will include the basis for requesting transportation impact analysis that is not based on VMT. This guidance will include a simplified safety analysis approach that reduces risks to all road users and that focuses on multi-modal conflict analysis as well as access management issues." While the final guidance is still being developed, Caltrans has released the "Interim Local Development and Intergovernmental Review (LD-IGR) Safety Review

[2] *Highway Capacity Manual 7th Edition*, Transportation Research Board of the National Academies of Sciences-Engineering-Medicine, 2022.

[3] "Vehicle Miles-Traveled Focused Transportation Impact Study Guide," Caltrans, May 20, 2020.

Table 1-1
LIST OF STUDY INTERSECTIONS

NO.	STUDY INTERSECTION	TRAFFIC CONTROL	JURISDICTION(S)
1	Gridley Road/ South Street	Signalized	City of Cerritos
2	Pioneer Boulevard/ 183rd Street	Signalized	City of Artesia
3	Pioneer Boulevard/ 187th Street	Signalized	City of Artesia
4	Pioneer Boulevard/ South Street	Signalized	City of Artesia
5	I-605 Freeway Southbound Off-Ramp/ South Street	Signalized	City of Cerritos/ Caltrans
6	I-605 Freeway Northbound Off-Ramp/ South Street	Signalized	City of Cerritos/ Caltrans
7	Pioneer Boulevard/ SR-91 Freeway Westbound Off-Ramp	Signalized	City of Artesia/ Caltrans
8	Pioneer Boulevard/ SR-91 Freeway Eastbound Off-Ramp-Frampton Court	Signalized	City of Artesia/ Caltrans

Practitioners Guidance."[4] The proposed project does not take direct access to/from a State facility; however, it is situated in the vicinity of the I-605 Freeway and SR-91 Freeway and is expected to generate net new project trips at four (4) nearby ramp intersections. The off-ramp locations selected for further study are summarized in *Table 1-1*. Therefore, the Caltrans interim safety guidance was reviewed and analyses relevant to the proposed project were identified for inclusion in the transportation impact analysis.

In summary, in order to evaluate the proposed project's effects on local transportation infrastructure, a non-CEQA assessment of eight (8) study intersections has been conducted for the weekday AM and PM peak hours utilizing the HCM operational analysis methodology. Further, the I-605 Freeway and SR-91 Freeway ramp intersections under Caltrans' jurisdiction were also evaluated based on the HCM operational analysis methodology.

[4] "Traffic Safety Bulletin 20-02-R1: Interim Local Development Intergovernmental Review Safety Review Practitioners Guidance", Memorandum from Rachel Carpenter, Chief Safety Officer, Caltrans, to District Directors, December 18, 2020.

2.0 ARTESIA DOWNTOWN SPECIFIC PLAN DESCRIPTION

2.1 Project Location

The proposed Artesia Downtown Specific Plan area is located within the City of Artesia, California. The City of Artesia is located in southeast Los Angeles County and is situated adjacent to the City of Cerritos to the west, south, and east, and to the City of Norwalk to the north. The City of Artesia and the Specific Plan area and general vicinity are shown in *Figure 1-1*.

The project site encompasses the blocks adjoining Pioneer Boulevard to the southeast and ending at 180th Street to the north. The northern portion of the project site is bounded by Alburtis Avenue and Corby Avenues to the west, 180th Street to the north, Arline Avenue to the east, and 188th Street to the south. The southern portion of the site is bounded by 188th Street to the north, the La Belle Chateau Estates Mobile Home Park to the south, Pioneer Boulevard to the east, and Jersey Avenue to the west.

2.2 Existing Land Use[5]

The project site is fully built up and consists primarily of one- and two- story commercial uses and multifamily residential properties. The southern portion of the project site is anchored by a shopping center and La Belle Chateau Estates Mobile Home Park, which is bordered by South Street to the north, the City of Cerritos to the west and south, and Pioneer Boulevard to the east. The northern portion of the project site is anchored by a shopping center to the north and south of 183rd Street and to the east and west of Arline Avenue and Alburtis Avenue, respectively. The north and south ends of the project site are connected by the Pioneer Boulevard corridor which includes one- and two-story retail, restaurant and office uses. Multi-family residential, mixed-use residential, commercial, general office and industrial uses are located on various parcels throughout the entire project site to the east and west of Pioneer Boulevard. Limited vacant parcels exist within the project area south of 188th Street.

2.3 Specific Plan Description[5]

The Artesia Downtown Specific Plan would implement new land use, zoning, and development standards to guide the scale of future development and growth in Artesia's Downtown district as the city prepares for the planned expansion of a new Metro light rail line (referred to as the Southeast Gateway Line, discussed further in *Section 2.5.2*) that would connect southeastern Los Angeles County communities, including Artesia, to Downtown Los Angeles. The new Metro light rail line extension is anticipated to connect to Pioneer Boulevard in 2035.

While there are no specific development projects proposed at this time, the Artesia Downtown Specific Plan will establish goals and objectives, development standards, and implementation actions associated with land use, mobility, and infrastructure, and establishes a transit-oriented

[5] "Artesia Downtown Specific Plan Initial Study," PlaceWorks, February 2024.

plan that would provide new opportunities for housing, retail/commercial, and entertainment uses. The proposed project would establish the necessary plans, development standards, regulations, infrastructure requirements, and implementation programs on which subsequent project-related development activities in the Specific Plan area would be based.

The land use plan divides the Specific Plan area into six zoning districts. These distinct zoning districts would allow for a range of land uses and density within a defined building envelope. The zones would also implement the City's urban design objectives for each part of the project site to establish and maintain attractive distinctions between each zone. The six zoning districts include:

- **Downtown North.** The Downtown North District would become the northern gateway and anchor to downtown Artesia. This district would allow for higher density mixed-use development at 65 dwelling units per acre (du/ac) or 75 du/ac with a density bonus. The southwest corner of this district would encompass approximately 5.5 acres and would allow 4- to 5-story mixed-use development and 2- and 3-story townhomes. Where the City owns property at the northwest corner of 183rd Street and Pioneer Boulevard, a public private partnership is encouraged to develop a parking structure with ground-floor retail uses as well as potentially civic and/or community uses. The parking structure would serve visitors, residents, and employees as they travel to and from downtown Artesia and the Artesia Freeway (SR-91) to the north.
- **Pioneer Boulevard.** The Pioneer Boulevard District would front Pioneer Boulevard north of the future Metro transit station and is in the center of downtown Artesia. This area is currently known as "Little India" and is composed of narrow parcels with a continuous street frontage of 1-story commercial establishments such as restaurants, markets, and jewelry shops. Although significant new development is not expected in this district, the district would allow for 3-story buildings at 50 du/ac or 60 du/ac with a density bonus.
- **Downtown Neighborhood.** The Downtown Neighborhood District would be in the residential west and east edges of the Downtown area along Corby Avenue and Arline Avenue. The downtown neighborhood would retain its residential character at 40 du/ac.
- **188th Street / Corby Avenue.** The 188th/Corby District would be south of the future Metro station and presently includes residential and light industrial uses. This district would allow for residential uses such as duplex, triplex, and townhomes at 65 du/ac as well as limited commercial office and retail uses.
- **Downtown South.** The Downtown South District would become the southern gateway to downtown Artesia and the city. The district would allow 4- to 6-story mixed-use development at 75 du/ac or 85 du/ac with a density bonus and incorporate land uses such as ground-floor retail, a hotel, townhomes, and neighborhood parks for residents and visitors. A Metro parking structure is planned in the South Street Mixed District just south of the transit station.

- **Chateau Estates.** The Le Belle Chateau Estates Mobile Home Park District sits at the southern edge of the project site. The mobile home park use would be maintained.

The location of each of the proposed zoning districts within the Specific Plan area is illustrated in ***Figure 2-1***.

2.4 Proposed Project Buildout Scenario

The Artesia Downtown Specific Plan proposes six (6) new land use zones within the Specific Plan area, as described in *Section 2.3*. These zones will allow for a range of residential density and Floor Area Ratio (FAR) intensity. The total buildout for the Specific Plan area depends on the maximum density and FAR permitted in each zone, but is based on a selection of parcels which have been identified as having the likelihood for redevelopment. The parcels identified for redevelopment were selected through the Redevelopment Opportunity Analysis conducted by PlaceWorks[6]. Based on this analysis, a total of 53 parcels were selected. The location of the selected parcels is displayed in *Figure 2-1*. The proposed project reflects full redevelopment of each of the selected parcels utilizing the following assumptions:

- Eighty percent (80%) of the area within each parcel will be developed with residential land uses at the maximum allowed density.
- Twenty percent (20%) of the area within each parcel will be developed with non-residential land uses.
    - Twenty-five percent (25%) of the non-residential space will be developed with office land uses.
    - Seventy-five percent (75%) of the non-residential space will be developed with restaurant and retail land uses in a 50:50 ratio (i.e., 50% assumed to be restaurant and 50% assumed to be retail).

Application of these assumptions to the 53 parcels identified for redevelopment results in the following development totals summarized in ***Table 2-1***.

Table 2-1
Summary of Specific Plan Development Totals

RESIDENTIAL DWELLING UNITS	OFFICE SPACE (SF)	COMMERCIAL SPACE (SF)
1,981	105,730	397,190 [1]

[1] The commercial space includes an 80,000 square-foot, 150-room hotel located in the proposed Downtown South Zoning District.

[6] "Artesia Downtown Specific Plan Buildout Memo," PlaceWorks, December 11, 2023.

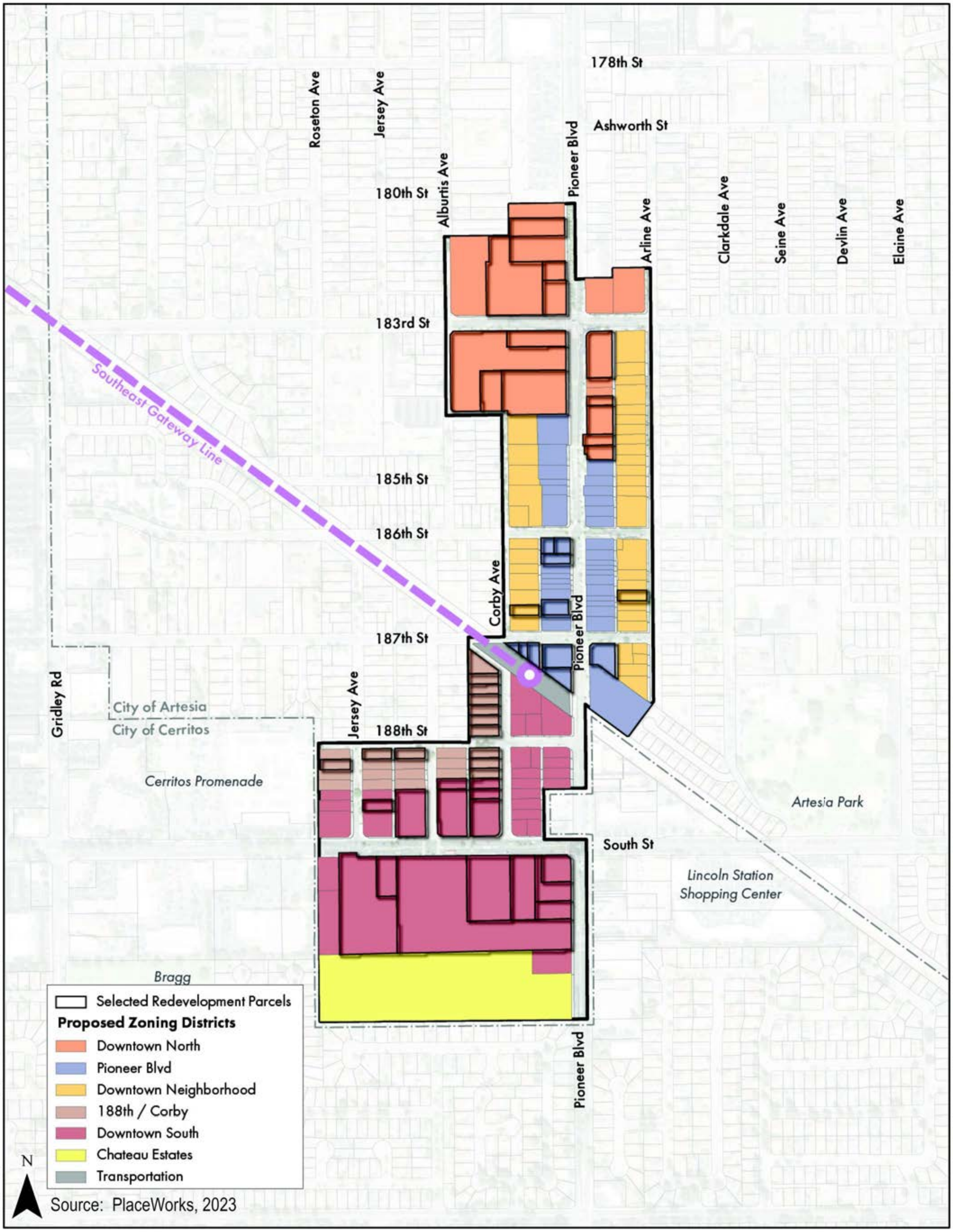

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Figure 2-1
Proposed Zoning and Selected Redevelopment Parcels

Artesia Downtown Specific Plan

2.5 Project Site Access

The following sections provide a brief description of the existing and anticipated access to and within the Specific Plan area.

2.5.1 *Vehicle Access*

The roadway network serving the Specific Plan area is situated in a regular grid system of roadways which provide access to the individual parcels within the Specific Plan. Principal roadways providing access to and within the Specific Plan area include Pioneer Boulevard which provides connection to the SR-91 Freeway to the north and communities located south of the Specific Plan area, as well as South Street which provides connection to the I-605 Freeway to the west and communities located east of the Specific Plan area. Both Pioneer Boulevard and South Street are designated as Primary Arterial Highways in the City of Artesia's General Plan 2030 Circulation and Mobility Sub-Element. Additional vehicular access within the Specific Plan is accommodated by 183rd Street, which is designated as a Secondary Arterial Highway, and by roadways such as 186th Street and 187th Street which are designated as Collector roadways. These roadways, along with local streets, provide direct access to the parcels included in the Specific Plan area.

2.5.2 *Transit Access*

Public bus transit access within the Specific Plan area is provided by the Los Angeles County Metropolitan Transportation Authority (Metro), Norwalk Transit System, and the Orange County Transportation Authority (OCTA). Additional discussion of the existing transit network is provided in *Section 3.2*, herein.

There are no existing light-rail lines providing service to the Specific Plan area. However, Metro plans to construct the new Southeast Gateway Light Rail Line, part of the West Santa Ana Branch Transit Corridor project, which will connect communities in southeast LA County to Downtown Los Angeles[7]. Metro planning documents indicate that the project area has population and employment densities which are five times higher than the average in LA County. The rail corridor is anticipated to serve commuters in a high travel demand corridor and provide relief to the limited transportation systems currently available in the adjacent communities. The new line will include 14.8 miles of new light rail transit connecting from the A (previously Blue) Line Slauson Station to the southern terminus at the Pioneer Station located in the City of Artesia. The project will construct nine (9) new stations along the Southeast Gateway Line and one new infill station on the C (previously Green) Line. Four (4) surface parking lots will be provided, and one parking garage will be constructed at the Pioneer Station in the City of Artesia. The Pioneer Station is planned to be located on the west side of Pioneer Boulevard between 187th Street and 188th Street. Construction of the Southeast Gateway Line and Pioneer Station is expected to result in the closure

[7] "West Santa Ana Branch Transit Corridor Fact Sheet", Metro, Spring 2023.

of 186th Street but will maintain through access along 187th Street[8]. The Southeast Gateway Line is currently expected to open in year 2035.

2.5.3 *Pedestrian and Bicycle Access*

Pedestrian access within the Specific Plan area is accommodated by a complete network of public sidewalks and supporting pedestrian infrastructure, including pedestrian-scale lighting, public benches, and public trash receptacles along Pioneer Boulevard between 183rd Street and 188th Street. The public sidewalks provide pedestrian access to all parcels within the Specific Plan area in a manner that promotes walkability (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 five basic components that are widely accepted as the key to achieving walkability, with the underlying principle being that pedestrians should not be delayed, diverted, or placed in danger. The five primary components of walkability include the following:

- Connectivity: People can walk from one place to another without encountering major obstacles, obstructions, or loss of interconnections.
- Convivial: Pedestrian routes are friendly and attractive, and are perceived as such by pedestrians.
- Conspicuous: Suitable levels of lighting and visibility 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 roadspace to 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.

These primary characteristics of walkability are currently provided within the Specific Plan area and are expected to be expanded as redevelopment within the Specific Plan area occurs.

Bicycle access is accommodated by on-street bicycle lanes provided on both sides of South Street and on Pioneer Boulevard south of South Street. Implementation of the Artesia Active Transportation Plan[9] will result in the construction of additional bicycle facilities along Pioneer Boulevard, 183rd Street, and 186th Street within the Specific Plan area. Where bicycle-specific facilities are not provided, bicycle access through the remainder of the Specific Plan area will be accommodated by the existing roadway network. Additional discussion of the existing pedestrian

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[8] *Southeast Gateway Line (Previously West Santa Ana Branch Transit Corridor)*. Los Angeles Metropolitan Transportation Authority. https://www.metro.net/projects/southeastgateway. Accessed August 28, 2024.

[9] "Artesia Active Transportation Plan," prepared by KTUA and Kimely-Horn and Associates, Adopted February 1, 2022.

and bicycle network is provided in *Section 3.1*, herein. The proposed project will not result in any changes to the existing pedestrian or bicycle access within the Specific Plan area.

2.6 Project Trip Generation and Distribution

2.6.1 *Existing Trip Generation Forecast*

Traffic trip generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. The traffic volumes expected to be generated by the existing land uses on the parcels selected for redevelopment were forecast for the typical weekday AM and PM peak commute hours as well as over a 24-hour period (i.e., daily). Trip generation rate information provided in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 11th Edition[10] for the following land uses were used to forecast the traffic volumes expected to be generated by the existing uses:

- ITE Land Use 110: General Light Industrial
- ITE Land Use 210: Single-Family Detached Housing
- ITE Land Use 220: Multifamily Housing (Low Rise) (Not Close to Rail Transit)
- ITE Land Use 710: General Office Building
- ITE Land Use 821: Shopping Plaza (40-150K) (No Supermarket)
- ITE Land Use 822: Strip Retail Plaza (<40K)

Trip generation average rates per dwelling unit and per 1,000 square feet of floor area were utilized to prepare the trip generation forecast. The trip generation forecast was prepared based on four (4) transportation analysis subareas. The boundaries of the subareas were determined based on the intersection of the Artesia Downtown Specific Plan area and the Southern California Association of Governments' (SCAG) Activity-Based Model (ABM) Tier 2 Transportation Analysis Zones. The subareas utilized in the analysis are displayed in ***Figure 2-2.***

The trip generation forecast for the existing uses is summarized in ***Table 2-2***. As presented in *Table 2-2*, the existing uses are expected to generate 734 vehicle trips (473 inbound trips and 261 outbound trips) during the weekday AM peak hour. During the weekday PM peak hour, the existing uses are expected to generate 1,990 vehicle trips (953 inbound trips and 1,037 outbound trips). On typical a weekday, the existing uses are expected to generate 24,040 daily trip ends (12,020 inbound trips and 12,020 outbound trips) over a 24-hour period.

2.6.2 *Project Trip Generation Forecast*

The traffic volumes anticipated to be generated by the proposed project were forecast for the typical weekday AM and PM peak commute hours as well as over a 24-hour period (i.e., daily).

[10] Institute of Transportation Engineers *Trip Generation Manual*, 11th Edition, Washington D.C., 2021.

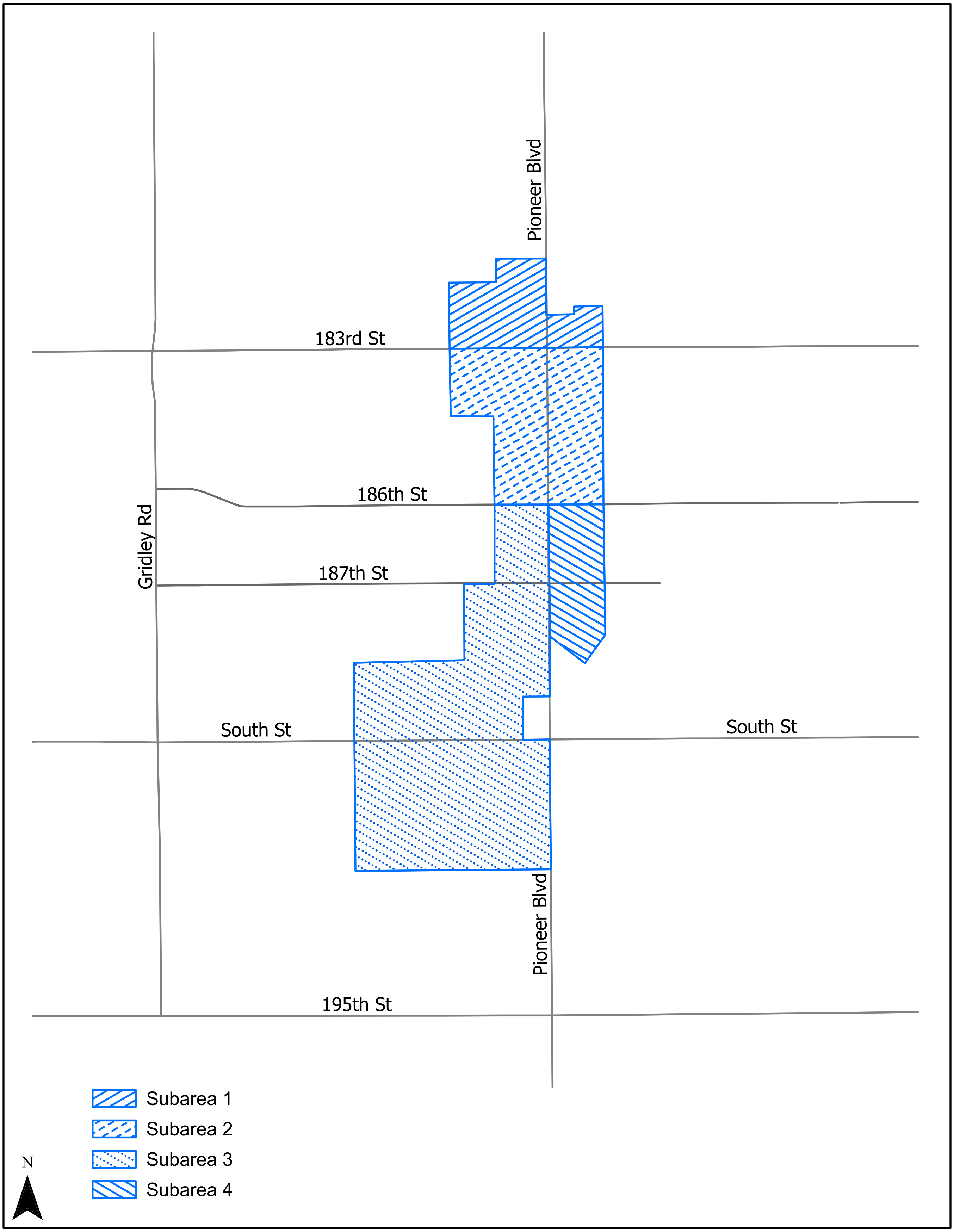

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Figure 2-2
Transportation Analysis Subareas

Artesia Downtown Specific Plan

Table 2-2
EXISTING USE TRIP GENERATION FORECAST [1]
Summary for All Subareas

TRIP GENERATION RATES [1]

ITE LAND USE CATEGORY	ITE LAND USE CODE	VARIABLE	WEEKDAY DAILY	WEEKDAY AM PEAK HOUR IN (%)	OUT (%)	TOTAL	WEEKDAY PM PEAK HOUR IN (%)	OUT (%)	TOTAL
General Light Industrial	110	Per 1,000 SF	4.87	88%	12%	0.74	13%	87%	0.65
Single-Family Detached Housing	210	Per Dwelling Unit	9.43	26%	74%	0.70	63%	37%	0.94
Multifamily Housing (Low Rise) (Not Close to Rail Transit)	220	Per Dwelling Unit	6.74	24%	76%	0.40	63%	37%	0.51
General Office Building	710	Per 1,000 SF	10.84	88%	12%	1.52	17%	83%	1.44
Shopping Plaza (40-150K) (No Supermarket)	821	Per 1,000 SF	67.52	62%	38%	1.73	49%	51%	5.19
Strip Retail Plaza (<40K)	822	Per 1,000 SF	54.45	60%	40%	2.36	50%	50%	6.59

PROJECT TRIP GENERATION FORECAST

LAND USE	ITE LAND USE CODE	SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2] IN	OUT	TOTAL	PM PEAK HOUR VOLUMES [2] IN	OUT	TOTAL
Subarea 1									
Multi-Family Residential	220	6 DU	40	0	2	2	2	1	3
Commercial General	822	38,231 SF	2,082	54	36	90	126	126	252
Service & Professional	710	3,252 SF	35	4	1	5	1	4	5
			2,157	*58*	*39*	*97*	*129*	*131*	*260*
Subarea 2									
Commercial General	821	89,366 SF	6,034	96	59	155	227	237	464
Subarea 3									
Single Family Residential	210	3 DU	28	1	1	2	2	1	3
Multi-Family Residential	220	9 DU	61	1	3	4	3	2	5
South Street Specific Plan [3]	710	40,170 SF	435	54	7	61	10	48	58
South Street Specific Plan [3]	821	40,170 SF	2,712	43	26	69	102	106	208
Commercial Planned Development	821	100,389 SF	6,778	108	66	174	255	266	521
Commercial General	821	79,581 SF	5,373	86	52	138	202	211	413
Light Industrial	110	26,379 SF	128	18	2	20	2	15	17
			15,487	*310*	*156*	*466*	*574*	*648*	*1,222*
Subarea 4									
Single Family Residential	210	1 DU	9	0	1	1	1	0	1
Commercial General	822	6,480 SF	353	9	6	15	22	21	43
			362	*9*	*7*	*16*	*23*	*21*	*44*
Total Existing Uses			***24,040***	***473***	***261***	***734***	***953***	***1,037***	***1,990***

[1] Source: ITE "Trip Generation Manual", 11th Edition, 2021.
[2] Trips are one-way traffic movements, entering or leaving.
[3] The South Street Specific Plan is assumed to consist of 50% service and professional land uses and 50% retail land uses.

Trip generation rate information provided in the *Trip Generation Manual* for the following land uses were used to forecast the traffic volumes expected to be generated by the proposed project:

- ITE Land Use 220: Multifamily Housing (Low-Rise) (Close to Rail Transit)
- ITE Land Use 310: Hotel
- ITE Land Use 710: General Office Building
- ITE Land Use 821: Shopping Plaza (40-150K) (No Supermarket)
- ITE Land Use 822: Strip Retail Plaza (<40K)
- ITE Land Use 931: Fine Dining Restaurant
- ITE Land Use 932: High-Turnover (Sit-Down) Restaurant

Trip generation average rates per dwelling unit and per 1,000 square feet of floor area were utilized to prepare the trip generation forecast.

The trip generation rates utilized for forecasting purposes are based on single-use stand-alone sites in suburban contexts, which generate primarily vehicular traffic. However, in locations which have a variety of complimentary land uses, there is the potential for interaction among those uses, particularly where trips between uses can be made via active transportation modes such as walking or biking. Therefore, the total trip generation is typically less than the trips forecast for each land use as a stand-alone use.

A 25% trip reduction adjustment has been applied to the proposed project trip generation forecast for all proposed land uses in order to reflect the mixed-use nature of the proposed zoning and land use assumptions[11]. The adjustment accounts for the synergy among the proposed land uses which is expected to result in increased activation and walkability in the Downtown Artesia area. The mixed-use nature of the proposed project will allow for shorter trips between various land use components to be completed on foot or by bicycle, resulting in fewer vehicular trips than would be forecast for each land use component on a stand-alone basis.

In addition, a 10% adjustment has been applied to the proposed non-residential land uses in order to reflect the anticipated use of light-rail transit in the specific plan area upon completion of the Metro Southeast Gateway Line[12]. The specific plan area falls within 0.5-miles of the planned Southeast Gateway Line Pioneer Station. Similar to the existing use trip forecast, the proposed

[11] LLG reviewed the methodology provided in NCHRP Report 684 in order to estimate the potential trip reductions which can be expected due to the mixed-use nature of the specific plan. The proposed mix of land uses would be expected to result in up to 50% fewer trips during the PM peak hour. A 25% trip reduction was applied to daily as well as AM and PM peak hour trips in order to provide a conservative trip forecast.

[12] A 10% transit reduction is consistent with typical practice in the Southern California region. Many agencies, including the City of Los Angeles, allow between 10 and 25% transit reductions for projects located within 0.5-miles of major transit facilities such as light rail stations. A 10% trip reduction was applied in order to provide a conservative trip forecast.

project trip forecast was prepared for each of the four (4) transportation analysis subareas shown in *Figure 2-2*.

The trips generated by the existing land uses on the parcels identified for redevelopment are assumed to be removed in order to accommodate full build-out of the proposed project. Therefore, the existing trips presented in *Table 2-2* have been applied as a credit towards the proposed project's trip generation forecast.

The trip generation forecast for the proposed project is summarized in ***Table 2-3***. As presented in *Table 2-3*, the proposed project is expected to generate 1,020 net new vehicle trips (393 net new inbound trips and 627 net new outbound trips) during the weekday AM peak hour. During the weekday PM peak hour, the proposed project is expected to generate 543 net new vehicle trips (476 net new inbound trips and 67 net new outbound trips). On a typical weekday, the proposed project is forecast to generate 1,941 net new trip ends (approximately 971 net new inbound trips and approximately 970 net new outbound trips) over a 24-hour period.

2.6.3 *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 the I-605 Freeway, SR-91 Freeway, and major traffic corridors (i.e., Artesia Boulevard, South Street, Gridley Street, Pioneer Boulevard, etc.);
- Expected localized traffic flow patterns based on adjacent roadway channelization and the presence of traffic signals;
- Existing intersection traffic volumes;
- Existing site parcel access ingress/egress schemes;
- Nearby population and employment centers; and,
- Input from City of Artesia staff.

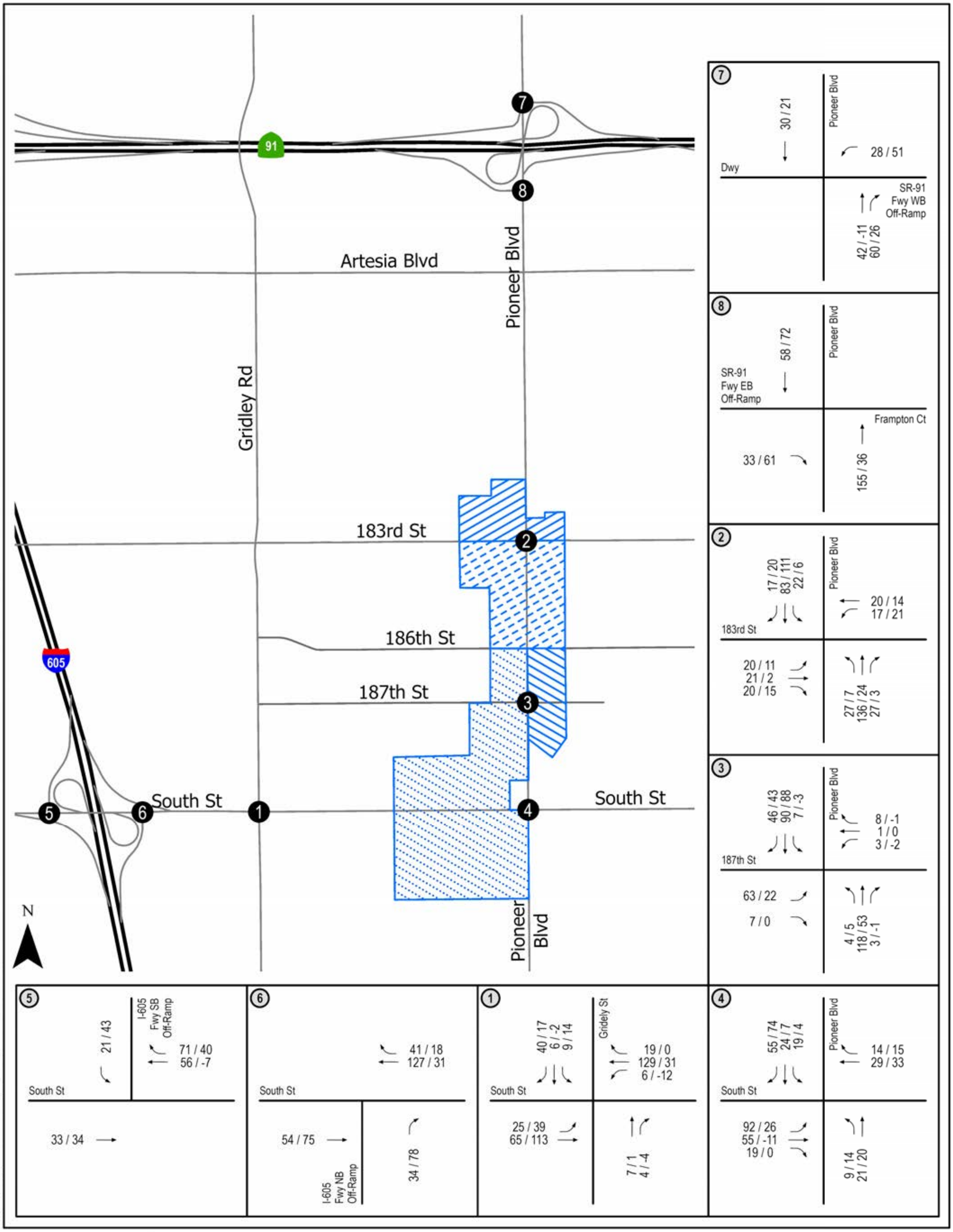
Separate distribution patterns have been prepared for the residential and non-residential (i.e., office and commercial) development within each transportation analysis subarea. The general, directional traffic distribution patterns for the proposed project are presented in ***Appendix Figures B-1*** through ***B-8***. The forecast net new weekday AM and PM peak hour traffic volumes at the study intersections associated with the proposed project are presented in ***Figure 2-3***. The traffic volume assignment presented in *Figure 2-3* reflects the traffic distribution characteristics shown in *Appendix Figures B-1* through *B-8* and the project trip generation forecast presented in *Table 2-3*.

Table 2-3
SPECIFIC PLAN TRIP GENERATION FORECAST [1]
Summary for All Subareas

TRIP GENERATION RATES [1]									
	ITE			WEEKDAY			WEEKDAY		
	LAND USE		WEEKDAY	AM PEAK HOUR			PM PEAK HOUR		
ITE LAND USE CATEGORY	CODE	VARIABLE	DAILY	IN (%)	OUT (%)	TOTAL	IN (%)	OUT (%)	TOTAL
Multifamily Housing (Low Rise) (Close to Rail Transit)	220	Per Dwelling Unit	4.72	29%	71%	0.38	60%	40%	0.61
Hotel	310	Per Room	7.99	56%	44%	0.46	51%	49%	0.59
General Office Building	710	Per 1,000 SF	10.84	88%	12%	1.52	17%	83%	1.44
Shopping Plaza (40-150K) No Supermarket	821	Per 1,000 SF	67.52	62%	38%	1.73	49%	51%	5.19
Strip Retail Plaza (<40K)	822	Per 1,000 SF	54.45	60%	40%	2.36	50%	50%	6.59
Fine Dining Restaurant	931	Per 1,000 SF	83.84	50%	50%	0.73	67%	33%	7.80
High-Turnover (Sit-Down) Restaurant	932	Per 1,000 SF	107.20	55%	45%	9.57	61%	39%	9.05

PROJECT TRIP GENERATION FORECAST									
	ITE		DAILY	AM PEAK HOUR			PM PEAK HOUR		
	LAND USE		TRIP ENDS [2]	VOLUMES [2]			VOLUMES [2]		
LAND USE	CODE	SIZE	VOLUMES	IN	OUT	TOTAL	IN	OUT	TOTAL
Subarea 1									
Multi-Family Residential	220	203 DU	958	22	55	77	74	50	124
General Office	710	14,867 SF	161	20	3	23	4	17	21
Retail [3]	822	22,301 SF	1,214	32	21	53	74	73	147
Fine Dining Restaurant [4]	931	3,345 SF	280	1	1	2	17	9	26
High-Turnover (Sit-Down) Restaurant [4]	932	18,956 SF	2,032	100	81	181	105	67	172
Less 25% Mixed-Use TOD Adjustment [5]			(1,161)	(44)	(40)	(84)	(69)	(54)	(123)
Less 10% Transit Adjustment [6]			(369)	(15)	(11)	(26)	(20)	(17)	(37)
			3,115	*116*	*110*	*226*	*185*	*145*	*330*
Subarea 2									
Multi-Family Residential	220	431 DU	2,034	48	116	164	158	105	263
General Office	710	31,620 SF	343	42	6	48	8	38	46
Retail	821	47,430 SF	3,202	51	31	82	121	125	246
Fine Dining Restaurant [4]	931	7,115 SF	597	3	2	5	37	18	55
High-Turnover (Sit-Down) Restaurant [4]	932	40,315 SF	4,322	212	174	386	223	142	365
Less 25% Mixed-Use TOD Adjustment [5]			(2,625)	(89)	(82)	(171)	(137)	(107)	(244)
Less 10% Transit Adjustment [6]			(846)	(31)	(21)	(52)	(39)	(32)	(71)
			7,027	*236*	*226*	*462*	*371*	*289*	*660*
Subarea 3									
Multi-Family Residential	220	1,322 DU	6,240	146	356	502	484	322	806
Hotel [7]	310	150 Rooms	1,199	39	30	69	45	44	89
General Office	710	57,592 SF	624	77	11	88	14	69	83
Retail	821	86,388 SF	5,833	92	57	149	220	228	448
Fine Dining Restaurant [4]	931	12,958 SF	1,086	5	4	9	68	33	101
High-Turnover (Sit-Down) Restaurant [4]	932	73,430 SF	7,872	387	316	703	406	259	665
Less 25% Mixed-Use TOD Adjustment [5]			(5,714)	(187)	(194)	(381)	(309)	(239)	(548)
Less 10% Transit Adjustment [6]			(1,661)	(60)	(42)	(102)	(75)	(63)	(138)
			15,479	*499*	*538*	*1,037*	*853*	*653*	*1,506*
Subarea 4									
Multi-Family Residential	220	25 DU	118	3	7	10	9	6	15
General Office	710	1,651 SF	18	3	0	3	0	2	2
Retail	822	2,476 SF	135	4	2	6	8	8	16
High-Turnover (Sit-Down) Restaurant [4]	932	2,476 SF	265	13	11	24	13	9	22
Less 25% Mixed-Use TOD Adjustment [5]			(134)	(6)	(5)	(11)	(8)	(6)	(14)
Less 10% Transit Adjustment [6]			(42)	(2)	(1)	(3)	(2)	(2)	(4)
			360	*15*	*14*	*29*	*20*	*17*	*37*
Subtotal Specific Plan Buildout			*25,981*	*866*	*888*	*1,754*	*1,429*	*1,104*	*2,533*
Less Existing Uses (Refer to Table 2-2)			(24,040)	(473)	(261)	(734)	(953)	(1,037)	(1,990)
NET NEW PROJECT TRIPS			***1,941***	***393***	***627***	***1,020***	***476***	***67***	***543***

[1] Source: ITE "Trip Generation Manual", 11th Edition, 2021.
[2] Trips are one-way traffic movements, entering or leaving.
[3] The size of this project component reflects the sum of all proposed square-footage in the subject area. Individual developments are anticipated to be less than 40,000 square feet, therefore the trip rates provided for ITE Land Use 822: Strip Retail Plaza (<40K) have been applied.
[4] The total restaurant space within each subarea was assumed to consist of 15% quality and fine dining restaurant space and 85% high-turnover (sit-down) restaurant space. Total restaurant space under 2,500 square feet was assumed to consist of high-turnover (sit-down) restaurant only.
[5] A 25% mixed-use adjustment has been applied to all specific plan land uses. The adjustment accounts for the synergistic nature of the proposed mixed-use zoning included in the specific plan, which is expected to result in increased walkability in the Downtown Artesia area. The mixed-use nature of the Specific Plan will allow for shorter trips between various land use components to be completed on foot or by bicycle, resulting in fewer vehicular trips compared to the trips which would be generated by the land use components on a stand-alone basis.
[6] A 10% transit adjustment has been applied to all non-residential land uses. The transit adjustment reflects the anticipated use of light-rail transit in the specific plan area upon completion of the Metro Southeast Gateway Light-Rail Line. It is noted that the Specific Plan area falls within 1/2 mile of the planned Artesia Station.
[7] The proposed hotel is assumed to consist of 80,000 square feet of non-residential space in Subarea 3. It should be noted that trip generation rates for ITE Land Use 310: Hotel are based on the number of rooms.



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XX/XX Weekday AM/PM Peak Hour

Specific Plan Area

Figure 2-3
Net New Project Traffic Volumes

Artesia Downtown Specific Plan

3.0 PROJECT SITE CONTEXT

The project site is located within a well-established multi-modal transportation network maintained by the City of Artesia. The following sections provide an overview of the transportation infrastructure in the vicinity of the proposed project, including infrastructure which supports both motorized and non-motorized transportation modes.

3.1 Active Transportation Network

Active transportation generally encompasses walking, biking, and other active transportation modes. Distinct facilities are often provided for these non-vehicular modes. Most prominently, paved sidewalks are typically provided to facilitate pedestrian travel outside of the roadway. In some cases, bicycle facilities such as painted bike lanes or separated bike paths are provided within the roadway in order to separate bike traffic from vehicular traffic. Roadways which are designed to prioritize non-vehicular transportation modes utilize complimentary non-vehicular infrastructure in order to promote comfortable, safe travel for both pedestrians and bicyclists. A review of the pedestrian and bicycle infrastructure provided in the vicinity of the project site is provided below.

3.1.1 *Pedestrian System*

Pedestrian infrastructure consists of facilities such as sidewalks, crosswalks, pedestrian signals, curb access ramps, Americans with Disabilities Act (ADA) compliant tactile warning strips, and curb extensions, among other things. These facilities are generally provided within the study area. Public sidewalks are provided along all roadways within the vicinity of the project site, including along Pioneer Boulevard, 183rd Street, 187th Street, and South Street. Striped crosswalks are provided at all intersections along Pioneer Boulevard and South Street, and pedestrian signals are provided at all signalized intersections. Additionally, ADA curb ramps with tactile warning strips consisting of yellow or grey truncated dome pads are provided at most major intersections in the vicinity of the project site, although truncated dome pads are not provided for all existing curb ramps at the intersections of Pioneer Boulevard/186th Street or Pioneer Boulevard/187th Street.

As described in *Section 2.5.*3, pedestrian-scale lighting, public benches, and public trash receptacles are provided along Pioneer Boulevard between 183rd Street and 188th Street. A signalized mid-block crosswalk and median refuge islands are provided across Pioneer Boulevard between 183rd Street and 186th Street. Curb bulb-outs are provided on all corners of the Pioneer Boulevard/186th Street intersection, and on three corners of the Pioneer Boulevard/187th Street intersection.

3.1.2 *Bicycle System*

Bicycle infrastructure consists of both facilities within the roadway as well as public bicycle parking spaces. The Federal and State transportation systems recognize three primary bikeway facilities: Bicycle Paths (Class I), Bicycle Lanes (Class II), Bicycle Routes (Class III), and Separated Bikeways (Class IV). Bicycle Paths (Class I) are exclusive car free facilities that are typically not located within a roadway area. Bicycle Lanes (Class II) are part of the street design that is dedicated only for bicycles and identified by a striped lane separating vehicle lanes from bicycle lanes. Bicycle Routes (Class III) are preferably located on collector and lower volume arterial streets. Separated Bikeways (Class IV), also referred to as cycle tracks, are bicycle lanes that are provided adjacent to or within the roadway which are physically separated from adjacent traffic by a buffer (e.g., bollards, curb, on-street parking, or grade separation).

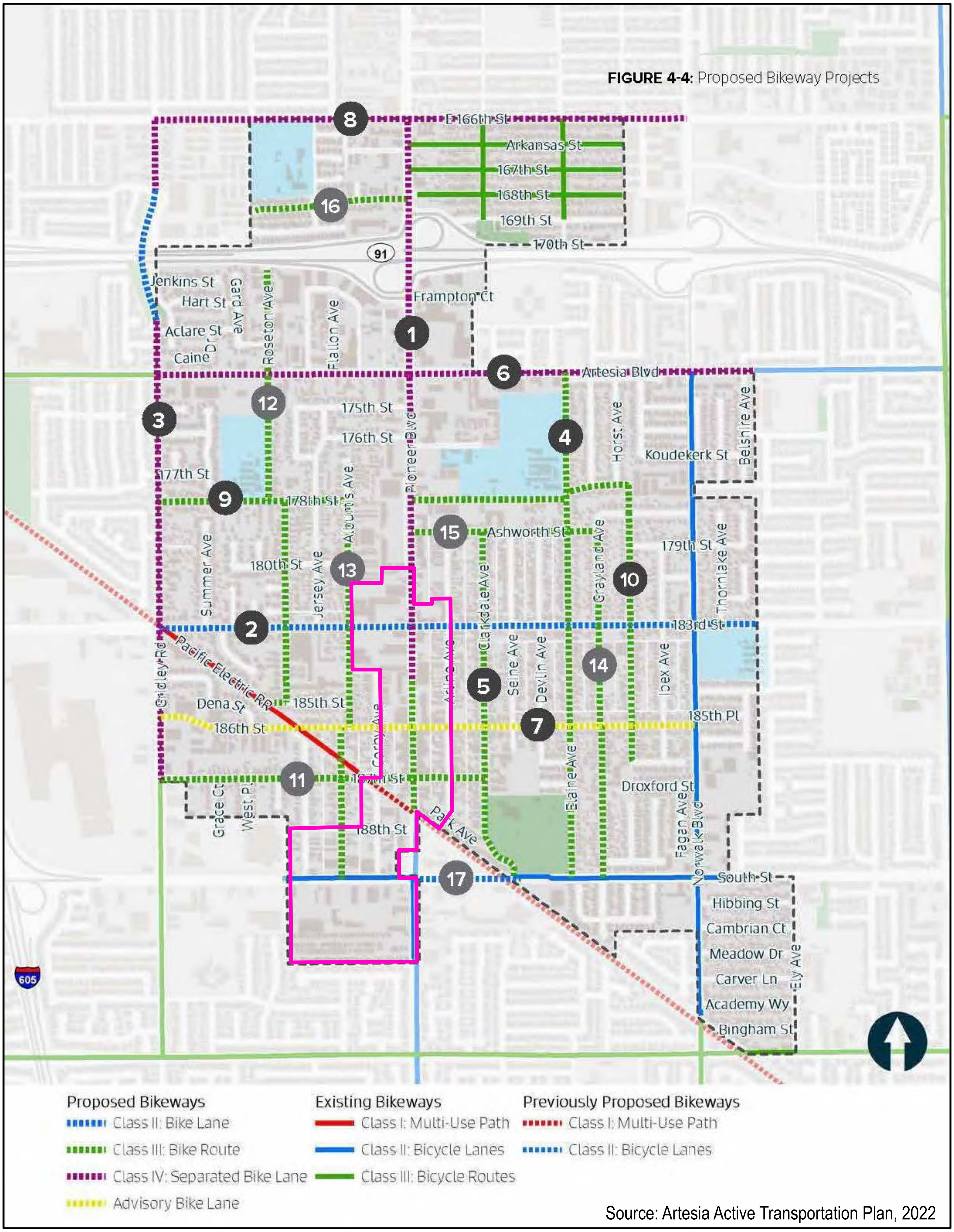
Currently, a Class I bicycle path is provided along the West Santa Ana Branch Transit Corridor right-of-way within the City of Artesia. Within the Specific Plan area, Class II bicycle lanes are provided on both sides of South Street between Park Place Center and Pioneer Boulevard, and along Pioneer Boulevard between 188th Street and the City Limit. The Artesia Active Transportation Plan identifies additional planned facilities within the City of Artesia, including a planned extension of the Class I bicycle path to the eastern City Limit, as well as Class IV separated bikeway along Pioneer Boulevard north of 184th Street. Class II bike lanes are proposed along 183rd Street, while a Class III Bike Route is proposed along 187th Street. The Artesia Active Transportation Plan existing and proposed bicycle network is illustrated in ***Figure 3-1***. Refer to the Active Transportation Plan for further information on the specific numbered projects included in *Figure 3-1*.

3.2 Transit Network

Public transit services are provided within the project study area by Metro, Orange County Transportation Authority (OCTA), Long Beach Transit, the City of Norwalk (Norwalk Transit), the City of Cerritos (Cerritos on Wheels), and the City of Artesia (Artesia Transit). The existing public transit routes in the vicinity of the proposed project site are illustrated in ***Figure 3-2***. A summary of the existing transit service within approximately 0.5-miles of the project site, including the transit line number, corridor(s) served, nearest stop, and typical number of buses per hour is presented in ***Table 3-1***. As summarized in *Table 3-1*, a total of seven (7) public bus transit routes provide service in the vicinity of the project site. Each line provides service approximately every 20-60 minutes during the morning and evening peak commute hours.

Regular public bus transit services are provided along Pioneer Boulevard from north of the project site to 183rd Street, and from South Street to south of the project site. Regular public bus transit services are also provided along South Street from Gridley Road to east of the project site. Additional service is provided along 183rd Street by local transit operators. It is noted that the majority of public bus routes traveling along Pioneer Boulevard and South Street are routed so as to provide service to the Los Cerritos Center Transit Center located west of the project site on Gridley Road between 183rd Street and South Street.

As described in *Section 2.5.2*, Metro plans to construct the new Southeast Gateway Light Rail Line, part of the West Santa Ana Branch Transit Corridor project, which will connect communities in southeast LA County to Downtown Los Angeles. The new line will include 14.8 miles of new light rail transit connecting from the A (previously Blue) Line Slauson Station to the southern



Source: Artesia Active Transportation Plan, 2022

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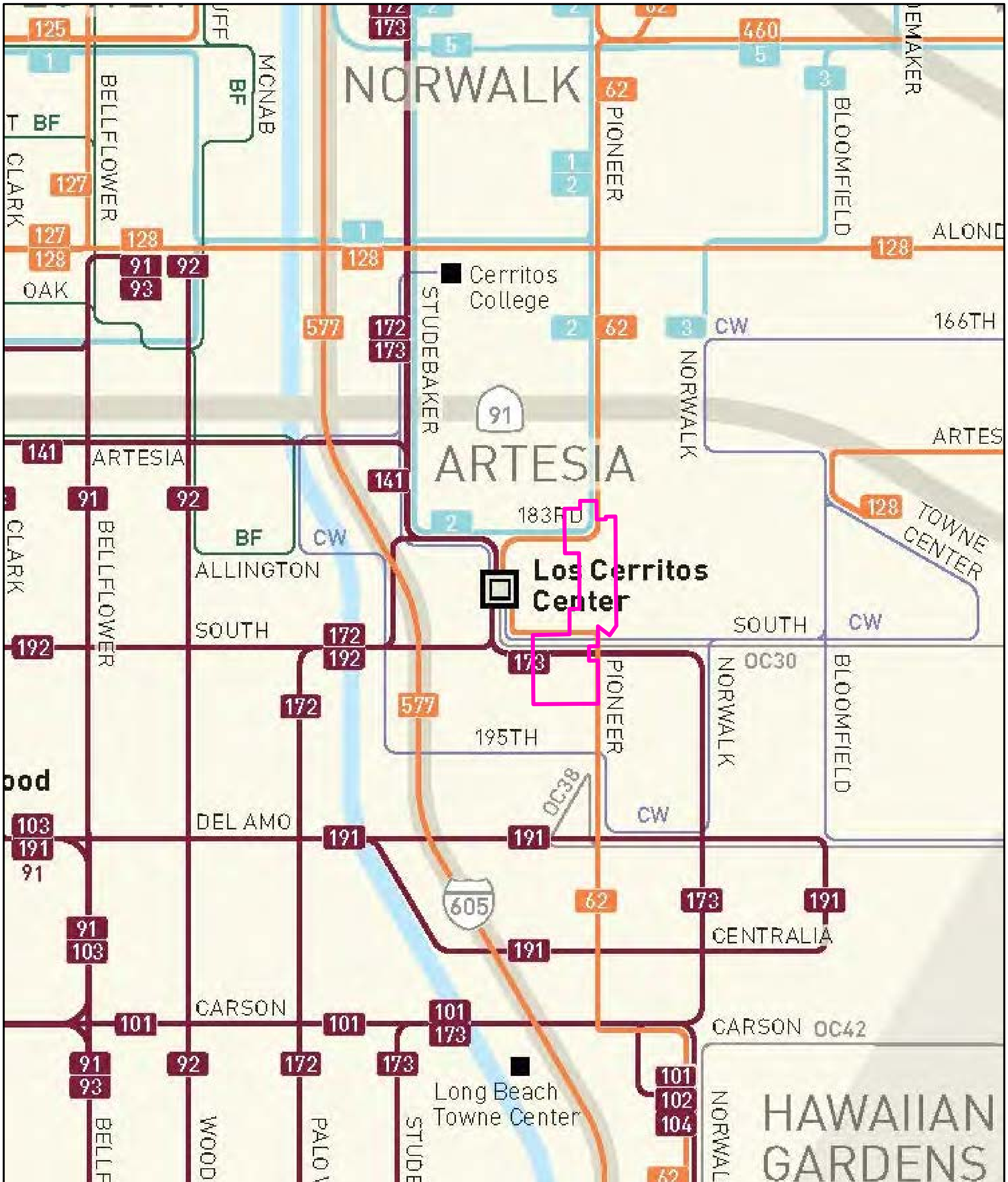
Specific Plan Area

Figure 3-1
Existing and Proposed Bicycle Network

Artesia Downtown Specific Plan



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Source: Metropolitan Transportation Authority, 2024

Specific Plan Area

Figure 3-2
Existing Transit Routes

Artesia Downtown Specific Plan

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Table 3-1
EXISTING TRANSIT ROUTES [1]

ROUTE	DESTINATIONS	TRANSIT CORRIDOR(S) IN VICINITY OF SITE	TRANSIT STOP NEAREST TO SITE	NO. OF BUSES DURING PEAK HOUR		
				DIR	AM	PM
Metro 62	Hawaiian Gardens, Artesia, Cerritos, Norwalk, Pico Rivera, Boyle Heights, Downtown Los Angeles	Gridley Road, South Street, Pioneer Boulevard, 183rd Street	Pioneer Boulevard/183rd Street Pioneer Boulevard/South Street	NB SB	1 3	3 2
OCTA Route 30	Anaheim, Placentia, Fullerton, LA Palma, Artesia, Cerritos	Gridley Road, South Street	Pioneer Boulevard/ South Street	EB WB	2 2	2 2
OCTA Route 38	Anaheim Hills, Anaheim, Buena Park, LA Palma, Artesia, Cerritos, Lakewood	Gridley Road, South Street, Pioneer Boulevard	Pioneer Boulevard/ South Street	EB WB	2 3	3 3
Long Beach Route 173	Norwalk, Bellflower, Artesia, Cerritos, La Palma, Hawaiian Gardens, Los Alamitos, Long Beach	Gridley Road, South Street	Pioneer Boulevard/ South Street	NB SB	2 2	2 2
Norwalk Transit Route 2	Cerritos Mall, Cerritos College Via Artesia	Pioneer Boulevard, 183rd Street	Pioneer Boulevard/ 183rd Street	NB SB	2 2	2 2
Cerritos On Wheels Route 1C/2B	Lakewood, Artesia, Cerritos, Norwalk, La Palma	South Street, Gridley Road	Pioneer Boulevard/ South Street	EB WB	0 0	1 1
Artesia Transit	Artesia	183rd Street, Gridley Road, South Street, Pioneer Boulevard	Alburtis Avenue/183rd Street Alburtis Avenue/South Street	Circular	1	1
TOTAL					**22**	**26**

[1] Sources: Los Angeles County Metropolitan Transportation Authority (LA Metro), Orange County Transportation Authority (OCTA), Long Beach Transit (LBT), Norwalk Transit System (NTS), Cerritos On Wheels (COW), and City of Artesia Transit websites, 2024.

terminus at the Pioneer Station located in the City of Artesia. The project will construct nine (9) new stations along the Southeast Gateway Line and one new infill station on the C (previously Green) Line. Four (4) surface parking lots will be provided, and one parking garage will be constructed at the Pioneer Station in the City of Artesia. The Pioneer Station is planned to be located on the west side of Pioneer Boulevard between 187th Street and 188th Street. Construction of the Southeast Gateway Line and Pioneer Station is expected to result in the closure of 186th Street but will maintain through access along 187th Street. The Southeast Gateway Line is currently expected to open in year 2035.

3.3 Vehicle Network

3.3.1 *Roadway Classifications*

The City of Artesia utilizes the 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.
- *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 four to six travel lanes and their major intersections are signalized. This roadway type is divided into two categories: principal and secondary arterials. Principal arterials are typically four-or-more lane roadways and serve both local and regional through-traffic. Secondary arterials are typically two-to-four lane streets that serve local and commute 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.

3.3.2 *Regional Highway Access*

Regional access to the proposed project site is provided via the I-605 (San Gabriel River) Freeway and the SR-91 (Artesia) Freeway as shown in *Figure 1-1*. Brief descriptions of each freeway are provided in the paragraphs below.

The *I-605 (San Gabriel River) Freeway* is a north-south freeway located west of the project site. The I-605 Freeway connects to the I-210 (Foothill) Freeway at its northern terminus and to the I-405 (San Diego) Freeway at its southern terminus, connecting the East San Gabriel Valley to the Gateway Cities of southeast Los Angeles County. In the project vicinity, four mixed-flow mainline lanes and one High-Occupancy Vehicle (HOV) lane are provided in each direction on the I-605 Freeway. North of South Street, additional auxiliary lanes are provided to accommodate the I-605 Freeway and SR-91 Freeway interchange. Full access freeway ramps (i.e., northbound and southbound on- and off-ramps) are provided at South Street.

The *SR-91 (Artesia) Freeway* is an east-west freeway located north of the project site. The SR-91 Freeway connects to the I-110 (Harbor) Freeway at its western terminus in the City of Gardena and to the SR-60 (Pomona) Freeway at its eastern terminus in the City of Riverside. In the project vicinity, four mixed-flow mainline lanes and one HOV lane are provided in each direction on the SR-91 Freeway. West of Pioneer Boulevard, additional auxiliary lanes are provided to accommodate the I-605 Freeway and SR-91 Freeway interchange. Full access freeway ramps (i.e., eastbound and westbound on- and off-ramps) are provided at Pioneer Boulevard.

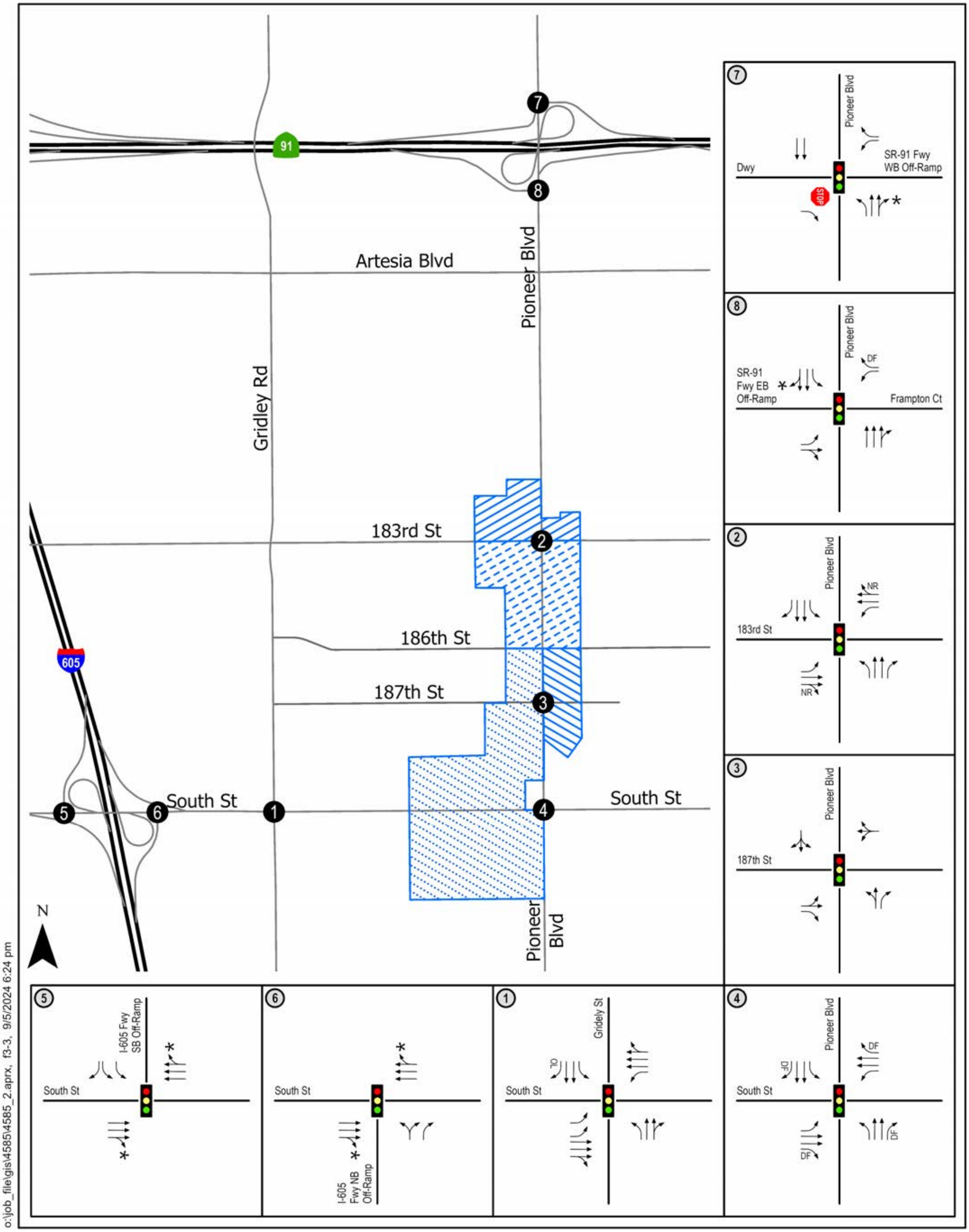
3.3.3 *Roadway Descriptions*

The current lane configurations and traffic control measures at each study intersection are presented in ***Figure 3-3***. Descriptions of the roadways which make up the study area are provided in ***Table 3-2***, including the roadway classification, number of lanes, median types, and speed limits designated by the City of Artesia and other agencies with jurisdiction over the roadways in the study area.

3.4 Vehicle, Pedestrian, and Bicycle Count Data

Manual counts of vehicle, pedestrian, and bicycle volumes were conducted at each of the eight study intersections during the weekday morning (AM) and afternoon (PM) peak periods to determine the peak hour traffic volumes. The manual counts were conducted in April 2024 by an independent traffic count subconsultant (Counts Unlimited, Inc.) at the study intersections on a typical weekday from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM to determine the AM and PM peak commute hours, respectively. It is noted that all traffic counts were conducted when local schools were in regular, in-person session.

In conjunction with the manual turning movement vehicle counts, a count of bicycle and pedestrian volumes were collected during the peak periods at all eight study intersections. Based on the pedestrian and bicycle counts, it is noted that pedestrian activity is moderate in the vicinity of the project site, with between 45 and 60 pedestrians documented at each local intersection during the peak AM period and between 100 and 160 pedestrians documented at each local intersection during the peak PM period. Between 50-100 pedestrians were documented at the SR-91 Freeway ramp intersections during the AM and PM peak periods, while minimal pedestrian activity was observed at the I-605 Freeway ramp intersections.



OL Overlap Phase
NR No Right-Turn On Red
DF De-Facto Right-Turn Lane
* Free-Flow Right-Turn
Specific Plan Area

Figure 3-3
Existing Intersection Configurations

Artesia Downtown Specific Plan

Table 3-2
EXISTING ROADWAY DESCRIPTIONS

ROADWAY	CLASSIFICATION [1]	TRAVEL LANES DIRECTION [2]	TRAVEL LANES NO. LANES [3]	MEDIAN TYPES [4]	SPEED LIMIT
Gridley Road	Secondary Arterial Highway	NB-SB	4 to 6 [5]	RMI-2WLT	35
Pioneer Boulevard	Primary Arterial Highway	NB-SB	2 to 4 [6]	RMI-2WLT-N/A	35-40
183rd Street	Secondary Arterial Highway	EB-WB	4	N/A	35
187th Street	Collector	EB-WB	2	N/A	25
South Street	Primary Arterial Highway	EB-WB	4 to 6 [7]	RMI-2WLT	40

Notes:
[1] Roadway classifications obtained from the *Artesia General Plan* 2030.
[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] Class III Bike Route. In the vicinity of the project site, the bike route is provided from 183rd Street to 195th Street.
[6] Class II Bike Lane. In the vicinity of the project site, bike lanes are provided between 188th Street and Del Amo Boulevard.
[7] Class II Bike Lane. In the vicinity of the project site, bike lanes are provided bewteen Park Place Center and the East City Limit.

The existing weekday AM and PM peak hour intersection vehicle traffic volumes by approach are summarized in ***Table 3-3***. The existing traffic volumes at the study intersections during the weekday AM and PM peak hours are shown in ***Figure 3-4***. Summary data worksheets of the manual traffic counts of the study intersections are contained in ***Appendix C***.

3.5 Future Cumulative Traffic Forecast

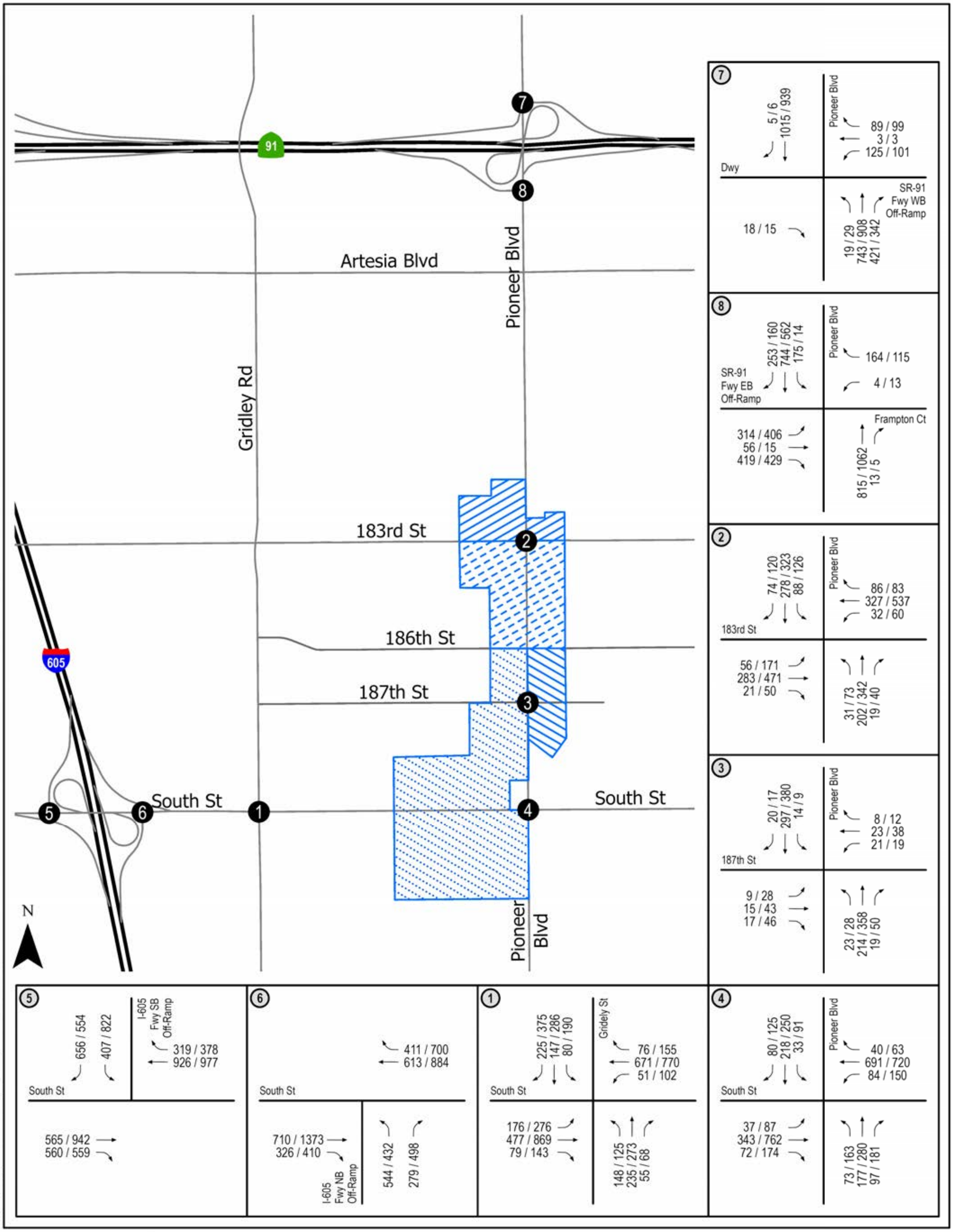
The year 2045 future without project traffic volume forecasts were obtained through utilization of the SCAG ABM travel demand forecasting model. The current SCAG ABM includes a baseline year of 2016 and a future cumulative year of 2045 (assuming full build-out of the 2024 Regional Transportation Plan/Sustainable Communities Strategy). Specifically, AM peak period and PM peak period link traffic volumes along the study intersection roadways were obtained from the SCAG ABM for existing baseline year 2016 and the future cumulative baseline year 2045 conditions. The AM peak period corresponds to a three-hour morning commute period while the PM peak period corresponds to a four-hour afternoon commute period. Using the peak period model runs and appropriate SCAG ABM peak hour factors (i.e. AM = 0.35 and PM = 0.25), the one-hour peak hour link traffic volumes were determined for the existing baseline year 2016 and future cumulative baseline year 2045.

The link volumes were post-processed based on the relationship of the baseline year 2016 link volumes to the existing traffic counts collected in April 2024 (refer to *Section 3.4*, herein). The year 2045 future without project traffic volumes at each of the study intersections were determined by interpolating the total growth between years 2016 and 2045 projected by the model to reflect growth from existing year 2024 to future cumulative year 2045. The projected growth was then added to the existing year 2024 traffic counts. The year 2045 future without project traffic volumes during the weekday AM and PM peak hours are shown in ***Figure 3-5***. It should be noted that each forecast volume was reviewed carefully for reasonableness based on local conditions and professional judgement. Where the future traffic volumes were projected by the model to decrease, no downward adjustments were applied. Therefore, the year 2045 future without project traffic volumes are conservative in that they reflect the assumption that future traffic volumes will only increase.

Table 3-3
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	Gridley Road/ South Street	04/24/2024	NB	7:45 AM	438	5:00 PM	466
			SB		452		851
			EB		732		1,288
			WB		798		1,027
2	Pioneer Boulevard/ 183rd Street	04/24/2024	NB	7:45 AM	252	4:45 PM	455
			SB		440		569
			EB		360		692
			WB		445		680
3	Pioneer Boulevard/ 187th Street	04/24/2024	NB	7:45 AM	256	5:00 PM	436
			SB		331		406
			EB		41		117
			WB		52		69
4	Pioneer Boulevard/ South Street	04/24/2024	NB	7:45 AM	347	5:00 PM	624
			SB		331		466
			EB		452		1,023
			WB		815		933
5	I-605 Freeway SB Off-Ramp/ South Street	04/24/2024	NB	7:45 AM	0	4:15 PM	0
			SB		1,063		1,376
			EB		1,125		1,501
			WB		1,245		1,355
6	I-605 Freeway NB Off-Ramp/ South Street	04/24/2024	NB	8:00 AM	823	4:15 PM	930
			SB		0		0
			EB		1,036		1,783
			WB		1,024		1,584
7	Pioneer Boulevard/ SR-91 Freeway WB Off-Ramp	04/24/2024	NB	7:30 AM	1,183	5:00 PM	1,279
			SB		1,020		945
			EB		18		15
			WB		217		203
8	Pioneer Boulevard/ SR-91 Freeway EB Off-Ramp Frampton Court	04/24/2024	NB	7:30 AM	828	5:00 PM	1,067
			SB		1,172		736
			EB		789		850
			WB		168		128

[1] Counts conducted by Counts Unlimited



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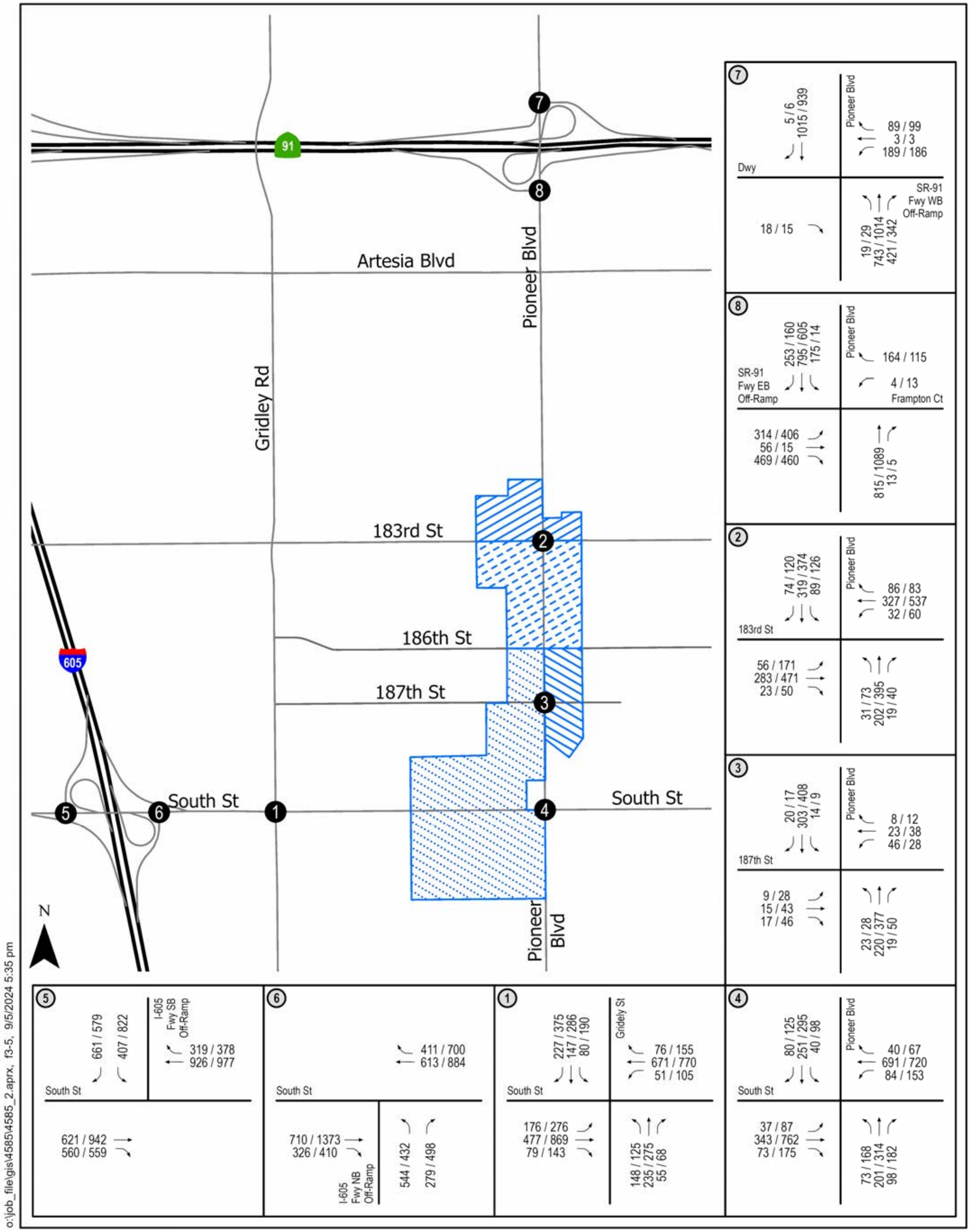
XX/XX Weekday AM/PM Peak Hour
Specific Plan Area

Figure 3-4
Existing Traffic Volumes

Artesia Downtown Specific Plan



XX/XX Weekday AM/PM Peak Hour
Specific Plan Area

Figure 3-5
Future Without Project Traffic Volumes

4.0 INTERSECTION OPERATIONAL ANALYSIS

Pursuant to Public Resources Code Section 21099, "automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment." As a result of SB 743 and the revisions to the CEQA Guidelines, LOS may no longer be used to identify transportation impacts in CEQA. However, the implementation of VMT does not prevent agencies from continuing to analyze delay or LOS outside of CEQA review for other transportation planning or analysis purposes. As part of a project's discretionary review and approval process, the City has the authority to require additional local transportation network analyses and site access studies. Specifically, the County Guidelines require an operational analysis of intersections in the vicinity of a proposed project in order to evaluate site access and circulation constraints that may be caused or worsened by project-generated traffic. The following section presents the operational (i.e., Level of Service) and queuing analyses prepared for the proposed project pursuant to this requirement.

4.1 Methodology

In order to estimate the proposed project's effect on intersection operations, a multi-step process has been utilized. The first step is trip generation, which estimates the total arriving and departing traffic volumes on a peak hour and daily basis. 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 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. The proposed project's forecast trip generation, distribution, and assignment is presented in *Section 2.6*, herein. With the forecasting process complete and project traffic assignments developed, the effect of the proposed project is isolated by comparing operational conditions at each of the selected study intersections using traffic volumes without and with the addition of project-generated traffic. In coordination with City of Artesia staff, a total of eight (8) study intersections were identified for operational and queuing evaluation. The study intersections are summarized in *Table 1-1*.

The study intersection LOS was analyzed using the HCM method of analysis. The HCM methodology determines the average control delay (expressed in seconds per vehicle) at the intersection. Average control delay for any particular movement is a function of the capacity of the approach and the degree of saturation. The overall intersection delay represents the weighted average of delay for each intersection approach. The intersection delay is subsequently assigned a LOS value to describe intersection operations. LOS varies from LOS A (free flow conditions) to LOS F (jammed condition). The average control delay for signalized intersections represents the delay attributed to the traffic control facility as compared to a reference travel time in the absence of traffic control, geometric delay, incidents, and the influence of other vehicles. Average control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. A detailed description of the HCM method and corresponding LOS for signalized intersections is provided in ***Appendix D***.

The HCM methodology was also utilized to analyze vehicular queuing at the study intersections. The HCM methodology determines the 95th percentile queues, which represent the maximum back of vehicle queues with 95th percentile traffic volumes. These queues are assumed to represent the expected maximum vehicle queues, as the probability that these queues will be exceeded is 5% or less. The 95th percentile condition is anticipated to occur at a signalized intersection only during one or two signal cycles within each of the respective analysis peak hours. The HCM method reports delays in vehicles per lane (veh/ln). For the purposes of comparing the calculated vehicle queuing to the existing available storage space, an average length of 25 feet per vehicle (including vehicle separation) was assumed. The corresponding maximum vehicle queue lengths were then compared to the length of available queue storage space in order to determine the potential for queue spill back into adjacent lanes or intersections.

The HCM calculations were prepared using the *Synchro 12* software package which implements the HCM operational methodology. A *Synchro* network was created based on existing conditions field reviews at the eight (8) study intersections which documented lane configurations, available vehicle storage lengths, crosswalk locations, posted speed limits, etc., at each of the study intersections. Current signal timing and phasing data provided by the City of Artesia for intersections under local jurisdiction and by Caltrans for the freeway ramp intersections were coded into the network and utilized in the analysis. The operational analysis utilizes the following additional data previously presented herein:

- Net New Project Peak Hour Traffic Generation: Refer to *Section 2.6*.
- Project Trip Distribution and Assignment: Refer to *Section 2.6*.
- Existing Roadway Network: Refer to *Section 3.3*.
- Existing Weekday AM and PM Peak Hour Traffic Volumes: Refer to *Section 3.4*.
- Future Without Project Weekday AM and PM Peak Hour Traffic Volumes: Refer to *Section 3.5*.

4.2 Analysis Scenarios

The operational and queuing analyses at the study intersections were prepared for the typical weekday AM peak hour and PM peak hour time periods. Pursuant to the County Guidelines and in coordination with City staff, LOS and queuing calculations have been prepared for the following scenarios:

[a] Existing conditions.

[b] Existing with project conditions (i.e., condition [a] with full buildout of the proposed project).

[c] Future without project conditions.

[d] Future with project conditions (i.e., condition [c] with full buildout of the proposed project).

[e] Condition [d] with implementation of recommended improvement measures, if necessary.

The existing traffic volumes at the study intersections during the weekday AM and PM peak hours are displayed in *Figure 3-4*. The existing with project traffic volumes at the study intersections during the weekday AM and PM peak hours are displayed in ***Figure 4-1***. The future without project traffic volumes at the study intersections during the weekday AM and PM peak hours are displayed in *Figure 3-5*. The future with project traffic volumes at the study intersections during the weekday AM and PM peak hours are displayed in ***Figure 4-2***.

4.3 Operational Criteria

As shown in the Artesia General Plan 2030, the acceptable operating LOS for transportation facilities in the City of Artesia is LOS D or better, while LOS E or F is considered deficient.

The County Guidelines indicate that unacceptable or extended queuing is defined as:

- Spill over from turn pockets into through lanes,
- Spill over into intersections.

For purposes of determining unacceptable or extended queuing at intersections and roadways under local jurisdiction, the following criteria were utilized:

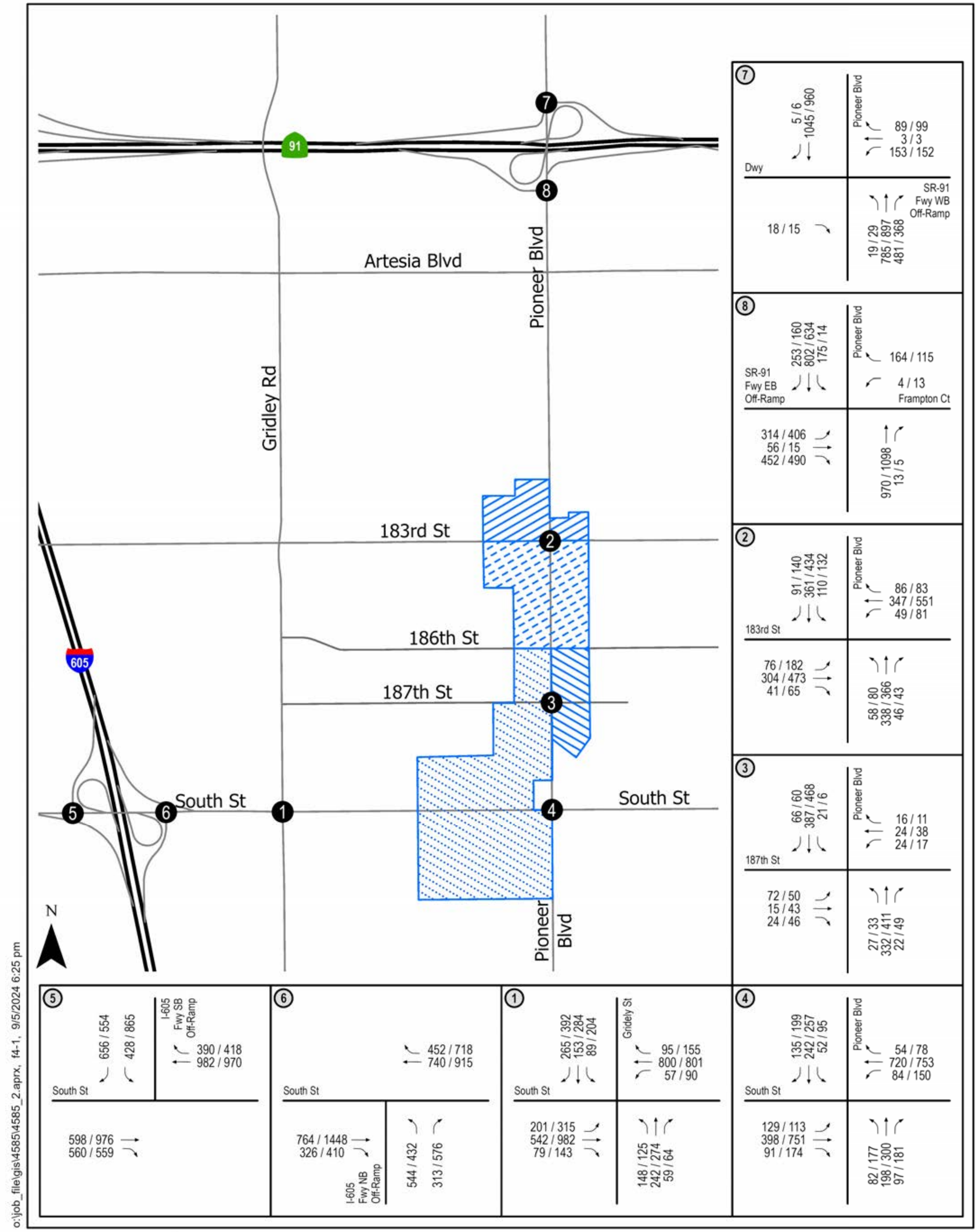
- For queues which are adequately accommodated by the available storage space prior to the addition of project-generated traffic, unacceptable queuing occurs when the addition of project-generated traffic causes the queue to exceed the available storage space; or,
- For queues which exceed the available storage space prior to the addition of project-generated traffic, unacceptable queueing occurs when the addition of project-generated traffic causes the queue to increase by one (1) vehicle (i.e., 25 feet) or more.

4.4 Intersection LOS Analysis

The weekday AM and PM peak hour intersection delay and LOS prepared for the study intersections using the HCM methodology is summarized in ***Table 4-1***. The HCM data worksheets for the analyzed intersections under each analysis scenario are provided in *Appendix D*.

4.4.1 *Existing Conditions*

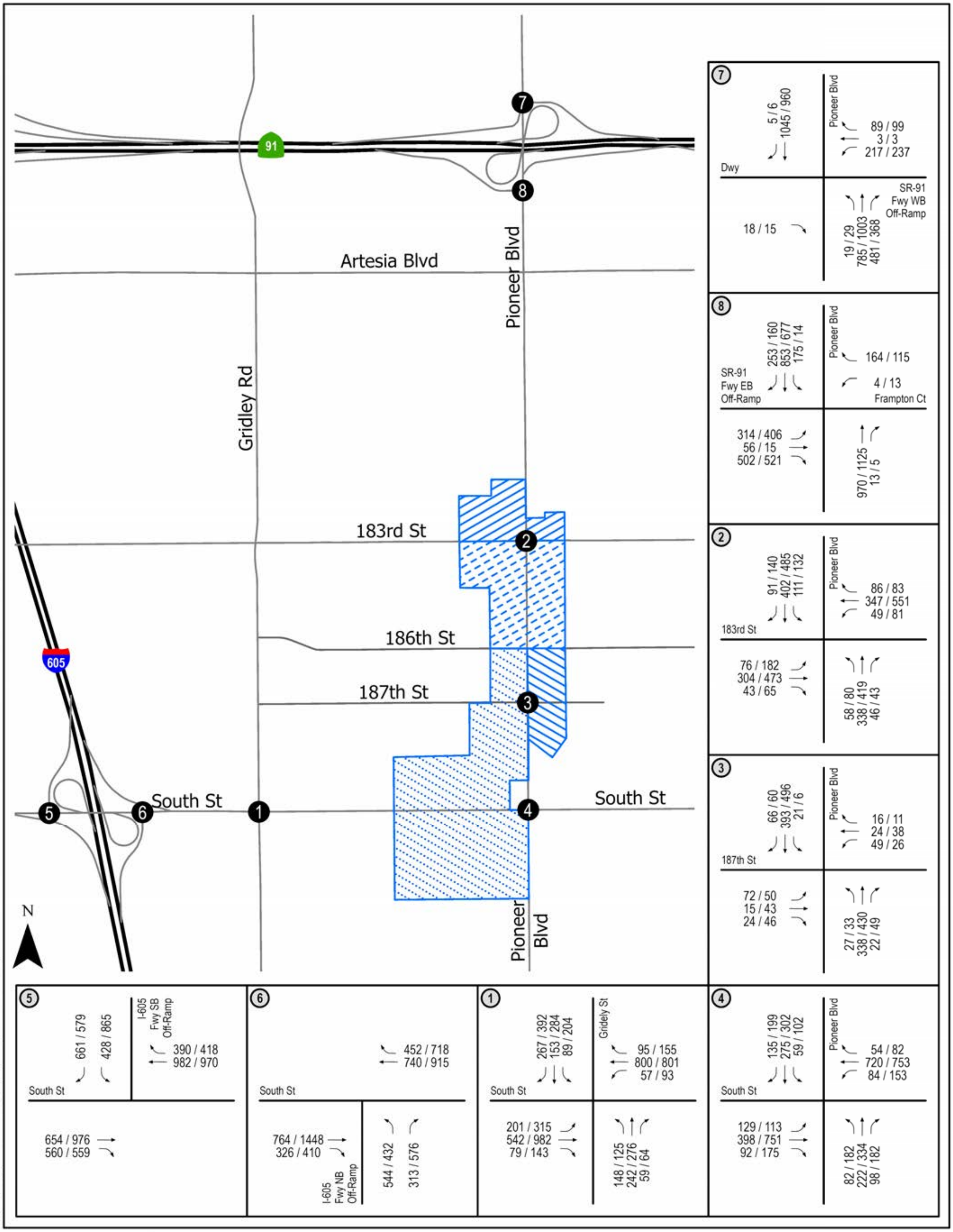
As shown in column [a] of *Table 4-1*, seven (7) of the eight (8) study intersections are currently operating at LOS D or better during the weekday AM and PM peak hours under existing conditions. The following study intersection is operating at LOS E during the peak hour shown below:



XX/XX Weekday AM/PM Peak Hour
Specific Plan Area

Figure 4-1
Existing With Project Traffic Volumes

Artesia Downtown Specific Plan



XX/XX Weekday AM/PM Peak Hour
Specific Plan Area

LLG

Figure 4-2
Future With Project Traffic Volumes

Artesia Downtown Specific Plan

Table 4-1
SUMMARY OF INTERSECTION DELAYS AND LEVELS OF SERVICE [1]

NO.	INTERSECTION	TRAFFIC CONTROL	PEAK HOUR	[a] EXISTING 2024 DELAY [2]	[a] EXISTING 2024 LOS [3]	[b] EXISTING 2024 WITH PROJECT DELAY [2]	[b] EXISTING 2024 WITH PROJECT LOS [3]	CHANGE IN DELAY ([b]-[a])	[c] FUTURE 2045 W/O PROJECT DELAY [2]	[c] FUTURE 2045 W/O PROJECT LOS [3]	[d] FUTURE 2045 WITH PROJECT DELAY [2]	[d] FUTURE 2045 WITH PROJECT LOS [3]	CHANGE IN DELAY ([d]-[c])
1	Gridley Road/ South Street	Signal	AM PM	23.3 32.2	B C	24.1 33.1	B C	0.8 0.9	23.3 32.3	B C	24.1 33.1	B C	0.8 0.8
2	Pioneer Boulevard/ 183rd Street	Signal	AM PM	28.8 31.8	C C	29.9 32.1	C C	1.1 0.3	28.3 31.5	C C	29.6 31.9	C C	1.3 0.4
3	Pioneer Boulevard/ 187th Street	Signal	AM PM	8.4 8.2	A A	13.7 6.9	A A	5.3 -1.3	9.5 8.2	A A	14.6 6.9	A A	5.1 -1.3
4	Pioneer Boulevard/ South Street	Signal	AM PM	27.0 33.1	C C	28.0 35.5	C D	1.0 2.4	26.5 34.4	C C	27.7 37.2	C D	1.2 2.8
5	I-605 Freeway SB Off-Ramp/ South Street	Signal	AM PM	59.7 34.4	E C	30.9 25.9	C C	-28.8 -8.5	31.1 26.5	C C	31.1 26.5	C C	0.0 0.0
6	I-605 Freeway NB Off-Ramp/ South Street	Signal	AM PM	24.3 25.0	B B	23.3 28.3	B C	-1.0 3.3	24.3 25.0	B B	23.3 28.3	B C	-1.0 3.3
7	Pioneer Boulevard/ SR-91 Freeway WB Off-Ramp	Signal	AM PM	9.4 8.4	A A	10.3 10.0	A A	0.9 1.6	11.4 11.1	A A	12.4 13.0	A A	1.0 1.9
8	Pioneer Boulevard/ SR-91 Freeway EB Off-Ramp - Frampton Court	Signal	AM PM	43.6 31.9	D C	48.3 34.9	D C	4.7 3.0	49.2 33.3	D C	54.9 37.6	D D	5.7 4.3

[1] Intersection level of service analysis based on the Highway Capacity Manual, 7th Edition operational analysis methodology for signalized intersections.
[2] Reported control delay values in seconds per vehicle.
[3] Intersection Levels of Service are based on the following criteria:

Control Delay (s/veh)	LOS
<= 10	A
> 10-20	B
> 20-35	C
> 35-55	D
> 55-80	E
> 80	F

- Int. 5 – I-605 Freeway Southbound Off-Ramp/South Street:
  AM Peak Hour: 59.7 seconds, LOS E

  A review of the existing signal timing and phasing data provided by Caltrans for this off-ramp location indicates that the signal time ("phase splits") assigned to the off-ramp traffic movements and the through traffic movements along South Street are not appropriate based on the current weekday AM and PM peak hour traffic volumes on each intersection approach collected in April 2024. The LOS reported for existing conditions reflects the accurate coding of the phase splits as provided by Caltrans. However, for the analysis of the subsequent existing with project conditions (a theoretical condition, as full buildout of the proposed project would not occur in year 2024) and future without and with project conditions, it is assumed that the phase splits would have been reviewed and corrected to reflect a more appropriate assignment of signal time at the intersection. The signal timing utilized in the analysis for all subsequent conditions for this intersection was therefore manually adjusted based on engineering judgement.

4.4.2 *Existing With Project Conditions*

As presented in column [b] of *Table 4-1*, all eight (8) study intersections are calculated to operate at LOS D or better during the weekday AM and PM peak hours under existing with project conditions. The delays at the study intersections are generally expected to incrementally increase with the addition of project-generated traffic. Since all of the study intersections are expected to operate at an acceptable LOS, no project-specific improvements are required or proposed.

4.4.3 *Future Without Project Conditions*

The future without project conditions were derived from the traffic growth forecast by the SCAG ABM. A full discussion of the future without project traffic forecast is provided in *Section 3.5*. As shown in column [c] of *Table 4-1*, all eight (8) study intersections are calculated to operate at LOS D or better during the weekday AM and PM peak hours under future without project conditions.

4.4.4 *Future With Project Conditions*

As presented in column [d] of *Table 4-1*, all eight (8) study intersections are calculated to operate at LOS D or better during the weekday AM and PM peak hours under future with project conditions. The delays at the study intersections are generally expected to incrementally increase with the addition of project-generated traffic. Since all of the study intersections are expected to operate at an acceptable LOS, no project-specific improvements are required or proposed.

4.5 Intersection Queuing Analysis

The weekday AM and PM peak hour vehicle queuing analysis prepared for the study intersections is summarized in ***Table 4-2***. The HCM data worksheets for the analyzed intersections under each analysis scenario are provided in *Appendix D*.

Table 4-2
SUMMARY OF INTERSECTION VEHICLE QUEUEING [1]

					95TH PERCENTILE QUEUE (FT) [3]								95TH PERCENTILE QUEUE (FT) [3]							
					[a]		[b]				CONTRIBUTES TOWARD UNACCEPTABLE QUEUING? (Y/N)		[c]		[d]				CONTRIBUTES TOWARD UNACCEPTABLE QUEUING? (Y/N)	
		TRAFFIC CONTROL [1]	MOVE- MENT	STORAGE LENGTH (FT) [2]	EXISTING 2024 CONDITIONS		EXISTING 2024 WITH PROJECT		CHANGE IN QUEUE				FUTURE 2045 WITHOUT PROJECT		FUTURE 2045 WITH PROJECT		CHANGE IN QUEUE			
NO.	INTERSECTION				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Gridley Road/ South Street	Signal	NBL	180	173	145	173	145	0	0	No	No	173	145	173	145	0	0	No	No
			NBT	500	123	150	125	150	2	0	No	No	123	150	125	150	2	0	No	No
			NBR	500	125	150	128	150	3	0	No	No	125	153	128	153	3	0	No	No
			SBL	135	85	210	95	228	10	18	No	No	85	210	95	228	10	18	No	No
			SBT	275	63	113	65	113	2	0	No	No	63	113	65	113	2	0	No	No
			SBR	275	198	288	223	293	25	5	No	No	200	288	225	293	25	5	No	No
			EBL	195	85	148	103	175	18	27	No	No	85	148	103	175	18	27	No	No
			EBT	330	13	278	25	305	12	27	No	No	15	278	25	308	10	30	No	No
			EBR	330	18	293	30	325	12	32	No	No	18	293	30	325	12	32	No	No
			WBL	105 [4]	58	113	63	93	5	-20	No	No	58	118	63	98	5	-20	No	No
			WBT	450	150	228	198	243	48	15	No	No	150	228	198	243	48	15	No	No
			WBR	450	163	240	210	255	47	15	No	No	165	240	210	255	45	15	No	No
2	Pioneer Boulevard/ 183rd Street	Signal	NBL	105	38	78	70	83	32	5	No	No	38	78	70	83	32	5	No	No
			NBT	400	95	145	153	153	58	8	No	No	95	163	153	170	58	7	No	No
			NBR	105	18	33	40	33	22	0	No	No	18	30	40	33	22	3	No	No
			SBL	160	53	100	75	110	22	10	No	No	53	103	75	110	22	7	No	No
			SBT	500	65	110	100	158	35	48	No	No	78	128	113	180	35	52	No	No
			SBR	125	35	83	50	100	15	17	No	No	35	83	50	100	15	17	No	No
			EBL	115 [4]	68	215	110	230	42	15	No	No	68	215	110	230	42	15	No	No
			EBT	500	138	203	158	213	20	10	No	No	138	203	158	213	20	10	No	No
			EBR	500	143	208	160	215	17	7	No	No	143	208	163	215	20	7	No	No
			WBL	105	40	68	58	88	18	20	No	No	40	68	58	88	18	20	No	No
			WBT	300	205	283	213	290	8	7	No	No	205	283	213	290	8	7	No	No
			WBR	300	203	285	213	290	10	5	No	No	203	285	213	290	10	5	No	No
3	Pioneer Boulevard/ 187th Street	Signal	NBL/T	450	5	10	8	10	3	0	No	No	5	10	8	13	3	3	No	No
			NBR	70	0	0	0	0	0	0	No	No	0	0	0	0	0	0	No	No
			SB All	450	145	75	380	15	235	-60	No	No	158	83	390	15	232	-68	No	No
			EBL/T	300	25	73	93	95	68	22	No	No	25	73	88	95	63	22	No	No
			EBR	50	18	48	25	48	7	0	No	No	18	45	23	45	5	0	No	No
			WB All	300	53	70	70	65	17	-5	No	No	80	80	98	78	18	-2	No	No

Table 4-2
SUMMARY OF INTERSECTION VEHICLE QUEUEING [1]

NO.	INTERSECTION	TRAFFIC CONTROL [1]	MOVE-MENT	STORAGE LENGTH (FT) [2]	95TH PERCENTILE QUEUE (FT) [3] [a] EXISTING 2024 CONDITIONS AM	PM	[b] EXISTING 2024 WITH PROJECT AM	PM	[b] CHANGE IN QUEUE AM	PM	CONTRIBUTES TOWARD UNACCEPTABLE QUEUING? (Y/N) AM	PM	95TH PERCENTILE QUEUE (FT) [3] [c] FUTURE 2045 WITHOUT PROJECT AM	PM	[d] FUTURE 2045 WITH PROJECT AM	PM	[d] CHANGE IN QUEUE AM	PM	CONTRIBUTES TOWARD UNACCEPTABLE QUEUING? (Y/N) AM	PM
4	Pioneer Boulevard/ South Street	Signal	NBL	135	78	225	90	268	12	43	No	Yes	78	240	90	285	12	45	No	Yes
			NBT	500	43	100	58	108	15	8	No	No	50	115	68	123	18	8	No	No
			NBR	50 [5]	50	143	60	143	10	0	No	No	50	145	63	145	13	0	No	No
			SBL	140	40	95	55	103	15	8	No	No	45	110	63	120	18	10	No	No
			SBT	430	13	83	33	100	20	17	No	No	13	133	38	155	25	22	No	No
			SBR	50 [5]	10	88	40	173	30	85	No	Yes	10	115	40	218	30	103	No	Yes
			EBL	95	43	93	155	130	112	37	Yes	Yes	43	93	155	130	112	37	Yes	Yes
			EBT	275	143	328	150	323	7	-5	No	No	143	328	150	323	7	-5	No	No
			EBR	50 [5]	58	143	65	143	7	0	No	No	58	143	65	145	7	2	No	No
			WBL	160	88	195	88	195	0	0	No	No	88	198	88	198	0	0	No	No
			WBT	500	285	280	295	308	10	28	No	No	285	280	295	308	10	28	No	No
			WBR	50 [5]	30	43	40	58	10	15	No	No	30	48	40	60	10	12	No	No
5	I-605 Freeway SB Off-Ramp/ South Street	Signal	SBL	[6]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			SBR	[6]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			EBT	495	93	168	130	205	37	37	No	No	135	203	143	210	8	7	No	No
			WBT	500	280	293	310	300	30	7	No	No	293	303	308	303	15	0	No	No
6	I-605 Freeway NB Off-Ramp/ South Street	Signal	NBL	[6]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			NBR	[6]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			EBT	500	215	388	233	408	18	20	No	No	215	388	233	408	18	20	No	No
			WBT	500	3	5	3	5	0	0	No	No	3	5	3	5	0	0	No	No
7	Pioneer Boulevard/ SR-91 Freeway WB Off-Ramp	Signal	NBL	90	8	10	10	13	2	3	No	No	10	13	10	15	0	2	No	No
			NBT	500	100	108	118	135	18	27	No	No	123	180	140	203	17	23	No	No
			SBT	375	158	118	180	150	22	32	No	No	190	165	208	195	18	30	No	No
			SBR	375	165	123	188	158	23	35	No	No	198	173	215	203	17	30	No	No
			WBL	[6]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			WBR	[6]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 4-2
SUMMARY OF INTERSECTION VEHICLE QUEUEING [1]

NO.	INTERSECTION	TRAFFIC CONTROL [1]	MOVE-MENT	STORAGE LENGTH (FT) [2]	95TH PERCENTILE QUEUE (FT) [3] [a] EXISTING 2024 CONDITIONS		[b] EXISTING 2024 WITH PROJECT		CHANGE IN QUEUE		CONTRIBUTES TOWARD UNACCEPTABLE QUEUING? (Y/N)		95TH PERCENTILE QUEUE (FT) [3] [c] FUTURE 2045 WITHOUT PROJECT		[d] FUTURE 2045 WITH PROJECT		CHANGE IN QUEUE		CONTRIBUTES TOWARD UNACCEPTABLE QUEUING? (Y/N)	
					AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
8	Pioneer Boulevard/ SR-91 Freeway EB Off-Ramp-Frampton Court	Signal	NBT	500	203	258	240	280	37	22	No	No	203	273	240	290	37	17	No	No
			NBR	500	223	290	265	315	42	25	No	No	223	305	265	328	42	23	No	No
			SBL	100	238	15	283	15	45	0	Yes	No	238	15	283	15	45	0	Yes	No
			SBT	500	278	208	303	245	25	37	No	No	300	230	325	263	25	33	No	No
			EBL	[6]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			EBR	[6]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
			WBL	100	5	13	5	13	0	0	No	No	5	13	5	13	0	0	No	No
			WBR	100	373	183	373	183	0	0	No	No	373	183	373	183	0	0	No	No

[1] Intersection vehicle queuing analysis based on the Highway Capacity Manual, 7th Edition operational analysis methodology for signalized intersections. The 95th percentile queue is the maximum back of queue with 95th percentile volumes.
[2] Storage length measured from aerial photographs obtained from Google Earth, 2024, and as verified by field review. Storage length for through and shared through/turn movements represents the distance to the nearest adjacent upstream intersection or 500 feet, whichever is less.
[3] The HCM 7th Edition methodology worksheets report queues in number of vehicles per lane. A length of 25 feet per queued vehicle (including vehicle separation) was assumed for analysis purposes. The reported queues therefore represent the calculated maximum back of queue in feet.
[4] The queue storage space includes the length of the formally striped turn pocket and the inclusion of 10 feet of the provided taper area.
[5] De-facto right-turn lane. No formal storage space is provided. A storage length of 50 feet (corresponding to two queued vehicles) is shown for comparison purposes.
[6] The vehicular queuing associated with the freeway off-ramp at this location is assessed in *Section 5.0, California Department of Transportation Analysis.*

4.5.1 *Existing Conditions*

As shown in column [a] of *Table 4-2*, certain traffic movements at four (4) of the eight (8) study intersections are calculated to exceed the available storage space under existing conditions. The following study intersections are calculated to have extended queuing for the movements and peak hours shown below:

- Int. 1 – Gridley Road/South Street: Southbound Left-Turn – PM Peak Hour
  Southbound Right-Turn – PM Peak Hour
  Westbound Left-Turn – PM Peak Hour

- Int. 2 – Pioneer Boulevard/183rd Street: Eastbound Left-Turn – PM Peak Hour

- Int. 4 – Pioneer Boulevard/South Street:
- Northbound Left-Turn – PM Peak Hour
  Northbound Right-Turn – AM and PM Peak Hour
  Southbound Right-Turn – PM Peak Hour
  Eastbound Right-Turn – AM and PM Peak Hour
  Westbound Left-Turn – PM Peak Hour

  It should be noted that de-facto right-turn lanes are assumed for all approaches at this intersection based on field observations of existing driver behavior at the intersection. No formally striped right-turn storage space is currently provided; however, a storage length of 50 feet (corresponding to two queued vehicles) was assumed for comparison purposes.

- Int. 8 – Pioneer Boulevard/SR-91 Freeway Eastbound Off-Ramp-Frampton Court:
  Southbound Left-Turn – AM Peak Hour
  Westbound Right-Turn – AM and PM Peak Hours

4.5.2 *Existing With Project Conditions*

As presented in column [b] of *Table 4-2*, the proposed project is expected to cause or significantly contribute towards unacceptable or extended queuing at two (2) of the eight (8) study intersections under existing with project conditions. The following study intersections are calculated to have unacceptable or extended project-generated queuing for the movements and peak hours shown below:

- Int. 4 – Gridley Road/South Street: Northbound Left-Turn – PM Peak Hour
  Southbound Right-Turn – PM Peak Hour
  Eastbound Left-Turn – AM and PM Peak Hours

- Int. 8 – Pioneer Boulevard/SR-91 Freeway Eastbound Off-Ramp-Frampton Court:
  Southbound Left-Turn – AM Peak Hour

Increases in queuing for certain traffic movements due to the addition of project-generated traffic are calculated to occur at the remaining six (6) study intersections under existing with project conditions. However, the calculated increases are not expected to cause a queue which was previously adequately accommodated to exceed the available storage space, nor result in the addition of 25 or more feet (i.e., one or more vehicles) to an already extended queue.

It is noted that the existing with project condition is theoretical, as the proposed project buildout would not occur in year 2024. Therefore, no improvements are recommended or proposed to address the calculated existing with project queues.

4.5.3 *Future Without Project Conditions*

The future without project conditions were derived from the traffic growth forecast by the SCAG ABM. A full discussion of the future without project traffic forecast is provided in *Section 3.5*. As shown in column [c] of *Table 4-2*, certain traffic movements at four (4) of the eight (8) study intersections are calculated to exceed the available storage space under future without project conditions. The following study intersections are calculated to have extended queuing for the movements and peak hours shown below:

- Int. 1 – Gridley Road/South Street: Southbound Left-Turn – PM Peak Hour
  Southbound Right-Turn – PM Peak Hour
  Westbound Left-Turn – PM Peak Hour

- Int. 2 – Pioneer Boulevard/183rd Street: Eastbound Left-Turn – PM Peak Hour

- Int. 4 – Gridley Road/South Street: Northbound Left-Turn – PM Peak Hour
  Northbound Right-Turn – AM and PM Peak Hour
  Southbound Right-Turn – PM Peak Hour
  Eastbound Right-Turn – AM and PM Peak Hour
  Westbound Left-Turn – PM Peak Hour

- Int. 8 – Pioneer Boulevard/SR-91 Freeway Eastbound Off-Ramp-Frampton Court:
  Southbound Left-Turn – AM Peak Hour
  Westbound Right-Turn – AM and PM Peak Hours

4.5.4 *Future With Project Conditions*

As presented in column [d] of *Table 4-2*, the proposed project is expected to cause or significantly contribute towards unacceptable or extended queuing at two (2) of the eight (8) study intersections under future with project conditions. The following study intersections are calculated to have unacceptable or extended project-generated queuing for the movements and peak hours shown below:

- Int. 4 – Gridley Road/South Street: Northbound Left-Turn – PM Peak Hour

Southbound Right-Turn – PM Peak Hour
Eastbound Left-Turn – AM and PM Peak Hours

- Int. 8 – Pioneer Boulevard/SR-91 Freeway Eastbound Off-Ramp-Frampton Court:
Southbound Left-Turn – AM Peak Hour

Increases in queuing for certain traffic movements due to the addition of project-generated traffic are generally calculated to occur at the remaining six (6) study intersections under future with project conditions. However, the calculated increases are not expected to cause a queue which was previously adequately accommodated to exceed the available storage space, nor result in the addition of 25 or more feet (i.e., one or more vehicles) to an already extended queue.

The improvements recommended to address the vehicular queuing at each of the study intersections where project-generated traffic is expected to cause or significantly contribute towards unacceptable or extended queuing are discussed in detail below. The intersection LOS and queuing expected to occur as a result of the recommended improvements are presented in ***Table 4-3***.

4.5.5 *Intersection 4 – Pioneer Boulevard/South Street*

Unacceptable or extended queuing due to the addition of project-generated traffic is calculated to occur for the northbound left-turn, southbound right-turn, and eastbound left-turn movements. Protected phases are currently provided for all left-turn movements at the intersection. Storage space for the northbound left-turn movement is constrained by the presence of the existing Los Angeles County Fire Station No. 30 and the associated emergency access signal and "Keep Clear" pavement markings provided on Pioneer Boulevard south of South Street. Storage space for the eastbound left-turn movement is constrained by the presence of an existing raised median island which is currently improved with landscaping. The southbound right-turn lane is a de-facto turn lane, as documented in field observations of existing driver behavior at the intersection. Therefore, no formal storage space is currently provided for the southbound right-turn movement.

In order to reduce the northbound left-turn and eastbound left-turn queues, it is recommended that the traffic signal timing and phasing be modified. The amount of time ("phase splits") provided for the various movements can be optimized to reduce queuing while maintaining LOS D or better during the weekday AM and PM peak hours. The phase sequence can likewise be optimized to provide consistent lagging left-turn phases at the intersection (i.e., a lag left-turn phase will activate towards the end of the portion of the signal cycle provided for the subject roadway instead of activating concurrently with the opposing left-turn phase at the beginning of the cycle). An analysis based on the HCM methodologies indicates that providing a lagging northbound left-turn and eastbound left-turn is expected to result in additional improvements in signal operations. As shown in *Table 4-3*, these signal timing and phasing improvements are expected to reduce the northbound left-turn queue to 153 feet during the PM peak hour. While this still exceeds the formally striped storage area for the northbound left-turn lane, it is not expected to extend into the marked "Keep

Table 4-3
SUMMARY OF INTERSECTION OPERATIONS AFTER IMPROVEMENTS

NO.	INTERSECTION	TRAFFIC CONTROL	DELAYS AND LEVELS OF SERVICE [1] FUTURE 2045 WITH PROJECT AM	PM	FUTURE 2045 WITH PROJECT & IMPROVEMENTS AM	PM	95TH PERCENTILE QUEUE (FT) [2] MOVE-MENT	STORAGE LENGTH (FT) [3]	FUTURE 2045 WITH PROJECT AM	PM	FUTURE 2045 WITH PROJECT & IMPROVEMENTS AM	PM
4	Pioneer Boulevard/ South Street	Signal	27.7 C	37.2 D	33.5 C	36.7 D	NBL	135	90	285	60	153
							NBT	500	68	123	65	118
							NBR	50 [4]	63	145	60	140
							SBL	140	63	120	65	115
							SBT	430	38	155	150	170
							SBR	50 [4]	40	218	165	205
							EBL	95	155	130	130	120
							EBT	275	150	323	153	350
							EBR	50 [4]	65	145	65	140
							WBL	160	88	198	88	198
							WBT	500	295	308	320	350
							WBR	50 [4]	40	60	40	63
8	Pioneer Boulevard/ SR-91 Freeway EB Off-Ramp-Frampton Court	Signal	54.9 D	37.6 D	54.5 D	41.9 D	NBT	500	240	290	323	335
							NBR	500	265	328	378	390
							SBL	100	283	15	140	10
							SBT	500	325	263	318	260
							EBL	[5]	--	--	--	--
							EBR	[5]	--	--	--	--
							WBL	100	5	13	5	13
							WBR	100	373	183	373	183

[1] Intersection level of service analysis based on the Highway Capacity Manual, 7th Edition operational analysis methodology for signalized intersections.
[2] Intersection vehicle queuing analysis based on the Highway Capacity Manual, 7th Edition operational analysis methodology for signalized intersections. The 95th percentile queue is the maximum back of queue with 95th percentile volumes.The HCM 7th Edition methodology worksheets report queues in number of vehicles per lane. A length of 25 feet per queued vehicle (including vehicle separation) was assumed for analysis purposes. The reported queues therefore represent the calculated maximum back of queue in feet.
[3] Storage length measured from aerial photographs obtained from Google Earth, 2024, and as verified by field review. Storage length for through and shared through/turn movements represents the distance to the nearest adjacent upstream intersection or 500 feet, whichever is less.
[4] De-facto right-turn lane. No formal storage space is provided. A storage length of 50 feet (corresponding to two queued vehicles) is shown for comparison purposes.
[5] The vehicular queuing associated with the freeway off-ramp at this location is assessed in *Section 5.0, California Department of Transportation Analysis.*

Clear" zone which begins approximately 210 feet south of the intersection. The excess 18 feet (less than one vehicle) of queuing which cannot be accommodated with the existing turn lane can be accommodated in the striped taper area which transitions into a two-way left-turn lane south of the intersection.

The signal improvements are also expected to reduce the eastbound left-turn queue to 130 feet during the AM peak hour and 120 feet during the PM peak hour, which still exceeds the formally striped turn lane and could impede the flow of traffic in the adjacent travel lane. It is recommended that the raised median island on South Street west of Pioneer Boulevard should be modified to extend the eastbound turn lane by 35 feet in order to provide a total of 130 feet of storage space.

In order to accommodate the southbound right-turn queue, it is recommended that the southbound approach be restriped to provide a dedicated right-turn lane. As a result of the signal timing modifications recommended above, the right-turn lane queue is calculated to decrease to a total of 205 feet during the PM peak hour. Therefore, the dedicated right-turn lane may be striped to provide up to 210 feet of storage space. This improvement is expected to result in the loss of approximately three (3) free on-street parking spaces. However, right-turn queues do not typically interfere with intersection operations, as right-turning vehicles which exceed the storage space and extend into mainline travel lanes are generally permitted into and through the intersection at the same time as the adjacent through traffic movement. The presence of No Right Turn on Red restrictions or substantial pedestrian volumes may restrict the movement capacity for right-turning vehicles, however neither condition is expected at the subject intersection. Therefore, the City of Artesia may consider the length of the dedicated right-turn lane in the context of existing and proposed development as well as other multi-modal infrastructure projects planned for the roadway. A right-turn overlap phase (i.e., a green right-turn arrow is provided to the right-turning movement during a corresponding protected left-turn phase on the conflicting roadway, such as a southbound right-turn overlap phase occurring with a protected eastbound left-turn phase) provided along with the dedicated right-turn lane may further reduce the southbound right-turn queue. However, an analysis based on the HCM methodologies indicates that providing a southbound right-turn overlap is expected to result in only modest improvements to the southbound right-turn queue. The City of Artesia may consider costs, length of the dedicated right-turn lane[13], and other multi-modal infrastructure projects planned for the roadway when considering providing a southbound right-turn overlap phase.

Implementation of signal timing and phasing modifications, modification of the median island to accommodate additional eastbound left-turn storage space, and striping of a dedicated right-turn

[13] Right-turn overlap phases are typically provided in conjunction with substantial dedicated turn-lanes in order to effectively aggregate and serve the right-turn demand. For example, a southbound right-turn overlap phase is provided at Gridley Road/South Street, along with a 275-foot dedicated turn-lane. A right-turn overlap phase paired with a 25-foot turn pocket would not be effective in serving the right-turn demand.

lane as described above are expected to adequately accommodate the calculated queues forecast for project buildout under future with project conditions.

The City of Artesia should ensure that the recommended improvements are constructed at such time as when a focused queuing assessment prepared for a proposed development project indicates that the vehicle queues will exceed the available storage space, specifically for the eastbound left-turn and southbound right-turn movements. The City of Artesia may require developers to provide fair-share contributions towards the improvements or may require an impact fee for all developments in the proposed project area in order to fund the construction of the recommended improvements.

4.5.6 *Intersection 8 – Pioneer Boulevard/SR-91 Freeway Eastbound Off-Ramp-Frampton Court*

Unacceptable or extended queuing due to the addition of project-generated traffic is calculated to occur for the southbound left-turn movement. A permissive left-turn phase is currently provided for the southbound left-turn at the intersection. Storage space for the southbound left-turn lane is constrained by the presence of an existing raised median island which is currently improved with landscaping and decorative concrete.

In order to reduce the southbound left-turn queue, it is recommended that the traffic signal timing and phasing be modified. The amount of time ("phase splits") provided for the various movements can be optimized to reduce queuing while maintaining LOS D or better during the weekday AM and PM peak hours. The phase sequence can likewise be optimized to provide protected-permissive left-turn phasing for the southbound left-turn movement (i.e., a green left-turn arrow is provided at the beginning of the signal cycle, after which a standard green indication is provided, requiring left-turning drivers to yield to oncoming traffic prior to completing the turn). As shown in *Table 4-3*, these signal improvements are expected to reduce the southbound left-turn queue to 140 feet during the AM peak hour. However, the queue would still exceed the formally striped turn lane and could impede the flow of traffic in the adjacent travel lane. It is therefore recommended that the raised median island on Pioneer Boulevard north of the SR-91 Freeway Eastbound Off-Ramp-Frampton Court should be modified to extend the southbound left-turn lane by 40 feet in order to provide a total of 140 feet of storage space.

It is further noted that the proposed signal timing and phasing improvements may affect the operations of the freeway off-ramp. In order to maintain acceptable operations for the off-ramp, it is recommended that the existing off-ramp lanes be reassigned. Currently, the off-ramp is striped to provide one eastbound left-turn lane and one shared through/right-turn lane. Based on a review of the existing and future with project traffic volumes, it is noted that the right-turning volumes exceed left-turning volumes during both the weekday AM and PM peak hours. Through traffic movements in the shared through/right-turn lane likely interfere with the ability of right-turning motorists to conduct a Right-Turn on Red maneuver when at the head of the queue. It is therefore recommended to reassign the off-ramp lanes in order to provide one shared left-turn/through lane and one right-turn lane. This modification is expected to reduce delay and queueing for right-turning motorists without significant detriment to left-turning motorists.

Implementation of signal timing and phasing modifications, modification of the median island to accommodate additional southbound left-turn storage space, and lane reassignment of the freeway off-ramp lanes as described above are expected to adequately accommodate the calculated queues forecast for project buildout under future with project conditions.

Since the intersection is under the joint jurisdiction of the City of Artesia and Caltrans, and as Caltrans operates the signal and retains control of the off-ramp approach, improvements at the study intersection will require approval from Caltrans prior to implementation. Should Caltrans reject the recommended improvements, extended queuing may continue to occur for the southbound left-turn movement.

5.0 California Department of Transportation Analysis

Caltrans has released the TISG and the Interim Safety Review Practitioners Guidance in order to provide guidance on Caltrans' review of land use projects. The Interim Safety Review Guidance provides direction on a simplified safety analysis approach that reduces the risk to all road users and that focuses on multi-modal conflict analysis as well as access management issues. District traffic safety staff are encouraged to consider the proposed project's potential influence on safety on state roadways, including the following factors:

- Degradation of the walking and bicycling environment and experience
- New pedestrian and bicyclist desire lines
- Multimodal conflict points, especially at intersections and project access locations
- Change in traffic composition, such as an increase in bicyclists or pedestrians, where features such as shoulders or sidewalks may not exist or are inconsistent with facility design (sidewalks, bicyclist and multi-user paths, multimodal roadways, etc.)
- Increased vehicular speeds
- Transition between free flow and metered flow

The intent of the Interim Safety Review Guidance is to provide a framework for when queueing should be reviewed for traffic safety impacts, in order to evaluate if a significant safety impact based on speed differential may occur. The Interim Safety Review Guidance acknowledges that freeway exit ramp queuing is fluid in nature, and that it is difficult to establish a nexus to any one project. Therefore, the significance of traffic safety impacts are to be determined on a case-by-case basis.

District traffic safety staff are also encouraged to review site design for access management, such as the following:

- Sight distance constraints cause by placement of a driveway
- Driveway or intersection spacing
- Queuing onto roadways caused by project access design features such as driveway placement near ramp intersections or missing left-turn pockets
- Multi-modal conflict points caused by turning vehicles
- Pedestrian and bicycle connections from the state highway to the entrance(s) of the new land use that are incomplete

The proposed project site does not take direct access from any State facility; therefore, the project has not been reviewed for factors pertaining to site access on or near state highways. However, the proposed project is expected to generate new project trips at the I-605 Freeway ramp interchange at South Street to the west of the project site and at the SR-91 Freeway ramp interchange at Pioneer Boulevard to the north of the project site. Therefore, an analysis of the project's effect on off-ramp queuing was prepared in order to determine if the project would cause, or contribute towards, slowing or stopped traffic on mainline travel lanes resulting in unsafe speed differentials between adjacent lanes. The following four (4) off-ramp locations were analyzed:

- Study Int. 5 – I-605 Freeway Southbound Off-Ramp/South Street
- Study Int. 6 – I-605 Freeway Northbound Off-Ramp/South Street
- Study Int. 7 – Pioneer Boulevard/SR-91 Freeway Westbound Off-Ramp
- Study Int. 8 – Pioneer Boulevard/SR-91 Freeway Eastbound Off-Ramp-Frampton Court

5.1 Off-Ramp Vehicle Queuing Methodology

Pursuant to prior direction from Caltrans staff, and as described in *Section 4.1*, the off-ramp queuing at the selected ramp intersections was analyzed using the HCM method for signalized intersections. The off-ramp queuing calculations were prepared using the *Synchro 12* software package which implements the HCM operational methodology. A *Synchro* network was created based on existing conditions field reviews at the above noted ramp intersections which documented lane configurations, available vehicle storage lengths, crosswalk locations, posted speed limits, etc., at each of the study intersections. Current signal timing and phasing data provided by Caltrans for the freeway ramp intersections were coded into the network and utilized in the analysis. As described in *Section 4.4.1*, the existing signal timing provided by Caltrans for Study Int. 5 – I-605 Freeway Southbound Off-Ramp/South Street was coded accurately for the analysis of existing conditions. For subsequent scenarios (i.e., existing with project, and future without and with project) an adjustment was made to the signal timing at this location based on engineering judgement.

The queuing analysis was prepared for the existing without and with project and future without and with project traffic conditions. The freeway off-ramp approach was reviewed in terms of expected maximum vehicle queues (i.e., 95th percentile queues) which represent the maximum back of vehicle queues with 95th percentile traffic volumes. The corresponding maximum vehicle queue lengths were then compared to the total ramp storage lengths (i.e., the available storage length as measured from the applicable off-ramp lane striping from the point of gore to the respective off-ramp approach limit lines). The total queuing for the off-ramp was determined based on the sum of the maximum vehicle queues for each off-ramp lane. It is noted that the HCM worksheets report vehicle queuing in number of vehicles per lane (veh/ln), therefore an average length of 25 feet per queued vehicle (including vehicle separation) was assumed for analysis purposes. The total ramp storage length was determined based on the sum of the striped storage for all lanes provided at the off-ramp location. The corresponding weekday AM and PM peak hour HCM worksheets for purposes of determining the 95th percentile vehicle queues are contained in *Appendix D*.

5.2 Off-Ramp Vehicle Queuing Analysis

The weekday AM and PM peak hour off-ramp vehicle queuing prepared for the ramp intersections is summarized in ***Table 5-1***. As presented in *Table 5-1*, adequate storage area is provided at the I-605 Freeway southbound and northbound off-ramps at South Street and at the SR-91 Freeway westbound and eastbound off-ramps at Pioneer Boulevard to accommodate the forecast 95th percentile queues under existing and future conditions without and with project-generated traffic. The proposed project is expected to neither cause nor contribute towards vehicle queuing which extends back into the I-605 Freeway or SR-91 Freeway mainline travel lanes resulting in unsafe speed differentials between adjacent lanes. Therefore, the proposed project is not anticipated to negatively influence safety on the State Highway System.

Table 5-1
SUMMARY OF OFF-RAMP VEHICLE QUEUEING [1]

				95TH PERCENTILE QUEUE (FT) [3]													
				EXISTING 2024 CONDITIONS		EXCEEDS STORAGE?	EXISTING 2024 WITH PROJECT		EXCEEDS STORAGE?	FUTURE 2045 WITHOUT PROJECT		EXCEEDS STORAGE?	FUTURE 2045 WITH PROJECT		EXCEEDS STORAGE?
NO.	INTERSECTION	TRAFFIC CONTROL	STORAGE LENGTH (FT) [2]	AM	PM	(YES/NO)	AM	PM	(YES/NO)	AM	PM	(YES/NO)	AM	PM	(YES/NO)
5	I-605 Freeway SB Off-Ramp/ South Street	Signal	2,870	1,508	1,390	No	895	1,100	No	893	1,085	No	908	1,113	No
6	I-605 Freeway NB Off-Ramp/ South Street	Signal	1,490	756	870	No	786	1,020	No	756	870	No	786	1,020	No
7	Pioneer Boulevard/ SR-91 Freeway WB Off-Ramp	Signal	2,150	218	213	No	245	258	No	278	288	No	300	328	No
8	Pioneer Boulevard/ SR-91 Freeway EB Off-Ramp - Frampton Court	Signal	2,280	760	745	No	865	818	No	925	778	No	1,055	896	No

[1] Intersection vehicle queuing analysis based on the Highway Capacity Manual (HCM), 7th Edition operational analysis methodology for signalized intersections. The 95th percentile queue is the maximum back of queue with 95th percentile volumes.
[2] Storage length measured from aerial photographs obtained from Google Earth, 2024. Available storage represents the sum of storage space provided by all off-ramp lanes.
[3] The HCM 7th Edition methodology worksheets report queues in number of vehicles per lane. The queue in vehicles per lane is multiplied by the number of lanes in the lane group, as determined according to the HCM methodology. A length of 25 feet per queued vehicle (including vehicle separation) was assumed for analysis purposes. The reported queues therefore represent the sum of the calculated maximum back of queue in feet for all off-ramp lanes.

6.0 SUMMARY AND CONCLUSIONS

- ***Project Description*** – The Artesia Downtown Specific Plan would implement new land use, zoning, and development standards to guide the scale of future development and growth in Artesia's Downtown district as the city prepares for the planned expansion of the new Metro Southeast Gateway Light Rail Line that would connect southeastern Los Angeles County communities, including Artesia, to Downtown Los Angeles. There are no specific development projects proposed at this time. The Artesia Downtown Specific Plan proposes six (6) new land use zones within the Specific Plan area, which will allow for a range of residential density and Floor Area Ratio (FAR) intensity. The proposed project assumed for analysis purposes is based on the potential redevelopment of certain parcels within the specific plan area, which would result in the development of a total of 1,981 residential units, approximately 105,730 square feet of office space, and approximately 397,190 square feet of commercial space.

- ***Project Trip Generation*** – The proposed project is expected to generate 1,020 net new vehicle trips (393 net new inbound trips and 627 net new outbound trips) during the weekday AM peak hour. During the weekday PM peak hour, the proposed project is expected to generate 543 net new vehicle trips (476 net new inbound trips and 67 net new outbound trips). On a typical weekday, the proposed project is forecast to generate 1,941 net new trip ends (approximately 971 net new inbound trips and approximately 970 net new outbound trips) over a 24-hour period.

- ***Intersection LOS Analysis*** – A total of eight (8) study intersections were reviewed to determine the proposed project's effect on weekday AM and PM peak hour LOS. The intersections were evaluated using the HCM methodology to determine intersection LOS under existing, existing with project, future without project, and future with project traffic conditions. All study intersections are forecast to operate at an acceptable LOS (i.e., LOS D or better) with the addition of project-generated traffic.

- ***Intersection Queuing Analysis*** – The eight (8) study intersections were reviewed to determine if the addition of project-generated traffic would result in unacceptable or extended vehicle queuing. The intersections were evaluated using the HCM methodology to calculate queuing for all traffic movements under existing, existing with project, future without project, and future with project traffic conditions. The proposed project is expected to cause or significantly contribute towards unacceptable or extended queuing at two (2) study intersections: Study Int. 4 – Pioneer Boulevard/South Street; and Study Int. 8 – Pioneer Boulevard/SR-91 Freeway Eastbound Off-Ramp-Frampton Court.

- ***Recommended Queuing Improvements*** – Improvements are recommended for each of the study intersections where project-generated traffic is expected to cause or significantly contribute towards unacceptable or extended queuing. At Study Int. 4 – Pioneer Boulevard/South Street, modifications to the signal timing and phasing to optimize the phase splits and provide lagging left-turn phases for the northbound and eastbound left-turn movements, modification of the existing raised median island to provide an additional 35 feet of queue storage space for the eastbound left-turn, and striping of a dedicated southbound right-turn lane are expected to adequately accommodate the calculated queues forecast for project buildout under future with project conditions. At Study Int. 8 – Pioneer Boulevard/SR-91 Freeway Eastbound Off-Ramp-Frampton Court, modifications to the signal timing and phasing to optimize the phase splits and provide a protected-permissive southbound left-turn phasing, modification of the existing raised median island to provide an additional 40 feet of queue storage space for the southbound left-turn, and reassignment of the off-ramp lanes to provide one shared left-turn/through lane and one right-turn lane are expected to adequately accommodate the calculated queues forecast for project buildout under future with project conditions.

- ***Caltrans Analysis*** – Pursuant to the direction provided in the "Interim LD-IGR Safety Review Practitioners Guidance," an analysis of the project's effect on off-ramp queuing at the I-605 Freeway interchange with South Street and the SR-91 Freeway interchange with Pioneer Boulevard (i.e., Study Ints. 5, 6, 7 and 8) determined that the proposed project is not expected to cause or contribute towards vehicle queuing which extends back into the I-605 Freeway or SR-91 Freeway mainline travel lanes.

APPENDIX A

APPROVED TRANSPORTATION IMPACT STUDY SCOPE OF WORK

600 S. Lake Avenue
Suite 500
Pasadena, CA 91106
626.796.2322 T
www.llgengineers.com

Pasadena
Irvine
San Diego

MEMORANDUM

To:	Karen Lee, Special Projects Manager City of Artesia	Date:	April 5, 2024
From:	Grace Turney, P.E., RSP1 Francesca Bravo LLG Engineers	LLG Ref:	1-23-4585-1
Subject:	Artesia Downtown Specific Plan – Transportation Impact Study Scope of Work		

Linscott, Law and Greenspan, Engineers (LLG) is pleased to submit the following Transportation Impact Study Scope of Work for the Artesia Downtown Specific Plan (DTSP) project ("proposed project") for review and approval.

TRANSPORTATION IMPACT STUDY SCOPE OF WORK

The Transportation Impact Study (TIS) for the Artesia DTSP Environmental Impact Report (EIR) will be prepared according to the analysis and significance criteria outlined in the Los Angeles County Public Works "Transportation Impact Analysis Guidelines" ("Guidelines"), July 2020. In compliance with the Guidelines, the proposed TIS will be prepared using appropriate VMT screening, analysis methodologies, and thresholds of significance. The applicable non-CEQA site access and circulation studies set forth in the Guidelines will also be prepared and provided in a separate Local Transportation Assessment study.

PROJECT DESCRIPTION

A. ***Project Description:*** The TIS will evaluate the preferred CEQA Alternative Project: Redevelopment with Commercial Incentives Utilized (Density Bonus), as identified in the "Artesia Downtown Specific Plan Buildout Memo", dated December 11, 2023, prepared by PlaceWorks. The Artesia DTSP area is located within ½-mile of the future Metro Southeast Gateway Light Rail Line Pioneer Station. The identified Project includes land use and zoning changes that would allow for development of 1,981 new residential units and 502,919 square feet of new commercial and non-residential development. The proposed rezoning and identified potential future redevelopment parcels are displayed in ***Figure 1***. The proposed Project includes estimates for full redevelopment of selected sites. The Project assumes the development of commercial uses (at 20 percent of the land, assuming at least 2 stories) results in increased residential density through density bonus. The proposed buildout by proposed zone is summarized in ***Table 1*** below. The assumed buildout year for the proposed Project is year 2045.

Table 1
PROPOSED PROJECT BUILDOUT BY PROPOSED ZONE [1]

Proposed Zone	Maximum Buildout of Units on Selected Sites[1]
Station Mixed Use	150 DU
South Street Mixed Use	1,094 DU
Pioneer Boulevard Mixed Use	90 DU
183rd Street Mixed Use	634 DU
Downtown Housing (housing only)	13 DU
Mobile Home Park	0 DU
Commercial as Mixed Use[2]	502,936 SF
Total Residential	**1,981 DU**
Total Commercial	**502,919 SF**

1. On sites where commercial uses are identified for 20% of the site, the residential units total the density multiplied by the remaining acreage at 80%.
2. Commercial buildout assumes 20% of land at a minimum of 2 stories on selected sites in the South St. Mixed Use, 183rd St. Mixed Use, and the Pioneer Blvd. Mixed Use zones.

[1] Proposed Project Buildout provided by PlaceWorks, December 2023.

CEQA SCOPE OF WORK

B. Vehicle Miles Traveled (VMT) Screening: LLG has reviewed the screening criteria set forth in the Los Angeles County Guidelines. Projects which satisfy any one of the screening criteria can be determined to have a less than significant transportation impact without providing further VMT analysis. The Guidelines provide screening criteria based on daily trip generation, size of local-serving retail, proximity to high quality transit, and provision of affordable housing.

Based on a review of the screening criteria, the proposed Project is not expected to be screened from further VMT analysis. It is noted that the Artesia DTSP area falls within ½-mile of the future Metro Pioneer Station, and therefore potentially would qualify for the proximity to transit screening criteria. However, the Guidelines include secondary screening questions which require project-specific information (e.g., proposed Floor Area Ratio, proposed parking, consistency with RTP/SCS, and replacement of affordable housing with market-rate dwelling units). Since the answers to these questions cannot be determined at the redevelopment parcel-level during the preparation and adoption of the Artesia DTSP, and further since the proposed Specific Plan consists of rezoning of various parcels, it is conservatively concluded that the proposed Project does not meet the screening criteria, and will be required to provide quantitative VMT analysis in order to determine the significance of transportation impacts.

C. ***VMT Thresholds:*** According to the Los Angeles County Guidelines, a Land Use Plan has a potentially significant impact if it meets the criteria listed below:

- The plan total VMT per service population[1] (residents and employees) would not be 16.8% below the existing VMT per service population for the Baseline Area in which the plan is located.

D. ***VMT Methodology:*** The VMT analysis will be conducted using the Southern California Association of Governments' (SCAG) current Regional Travel Demand Model (RTDM), which includes a baseline year of 2016 and a future year of 2045. The proposed Project development totals will be converted into socio-economic data (SED). The SED for the appropriate Transportation Analysis Zones (TAZs) will be updated to reflect full buildout of the proposed project.

E. ***VMT Mitigation:*** If a significant transportation impact is identified through the above-described analysis, potential VMT mitigation measures will be identified which could reduce the VMT impact to less than significant levels. LLG will review the transportation demand management (TDM) strategies provided in the California Air Pollution Control Officer's Association (CAPCOA) *Handbook for Analyzing Greenhouse Gas Emissions Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (2021)*, which provides substantial evidence for calculating the reduction in VMT associated with each measure.

NON-CEQA SITE ACCESS STUDIES

LLG will prepare an operational analysis of nearby intersections in order to determine the proposed Project's effects on circulation in the vicinity of the Specific Plan area (i.e., vehicular delay and queueing). While not required for CEQA, the local transportation analysis is provided for informational purposes in support of the City of Artesia's discretionary review of the proposed Project.

F. ***Project Study Area:*** The following eight (8) study locations have been identified for intersection operational evaluation, including four (4) intersections in the vicinity of the specific plan area and four (4) freeway ramp intersections which will be analyzed for potential impacts to freeway off-ramp queuing (refer to *Item J* below). The study locations which have been selected are expected to be integral to access and circulation in the specific plan area. The location of the study intersections is presented in ***Figure 2***, and listed below:

1. Gridley Road/South Street (City of Cerritos)
2. Pioneer Boulevard/183rd Street (City of Artesia)

[1] Service population is the sum of the number of residents and the number of employees.

3. Pioneer Boulevard/187th Street (City of Artesia)
4. Pioneer Boulevard/South Street (City of Artesia)
5. I-605 Freeway Southbound Off-Ramp/South Street (City of Cerritos/Caltrans)
6. I-605 Freeway Northbound Off-Ramp/South Street (City of Cerritos/Caltrans)
7. Pioneer Boulevard/SR-91 Freeway Westbound Off-Ramp (City of Artesia/Caltrans)
8. Pioneer Boulevard/SR-91 Freeway Eastbound Off-Ramp (City of Artesia/Caltrans)

G. Traffic Counts

New traffic counts will be collected in April 2024, when local schools are in session. The manual intersection turning movement counts will be conducted during the weekday morning (7:00 to 9:00 AM) and afternoon (4:00 to 6:00 PM) peak commute periods for each of the eight study intersections identified in *Item F*.

H. Project Trip Generation

Traffic volumes to be generated by the proposed project were forecast for the weekday AM and PM peak hours, and over a 24-hour period. Trip generation rates provided in the Institute of Transportation Engineers' (ITE) Trip Generation Manual were utilized to forecast vehicular traffic generation for existing conditions, in order to identify the net change resulting from the proposed project. Specifically, the following land use trip rates were utilized to forecast the traffic volumes generated by the existing land uses present on each of the parcels identified for redevelopment:

- ITE Land Use 110: General Light Industrial
- ITE Land Use 210: Single-Family Detached Housing
- ITE Land Use 220: Multifamily Housing (Low Rise) (Not Close to Rail Transit)
- ITE Land Use 710: General Office Building
- ITE Land Use 821: Shopping Plaza (40-150K) (No Supermarket)
- ITE Land Use 822: Strip Retail Plaza (<40K)

The trip generation forecast for the existing land uses provided on the proposed rezone parcels is summarized in ***Table 2 – Existing Conditions Trip Generation Forecast***. It should be noted that the trip generation forecast was prepared based on four (4) transportation analysis subareas. The boundaries of the subareas were determined based on the intersection of the Artesia DTSP area and the Tier 2 TAZs utilized in the SCAG RTDM. The subareas are displayed in ***Figure 3***.

The following land use trip rates were utilized to forecast the traffic volumes expected to be generated by the proposed specific plan land uses on the redevelopment parcels:

- ITE Land Use 220: Multifamily Housing (Low-Rise) (Close to Rail Transit)

- ITE Land Use 310: Hotel
- ITE Land Use 710: General Office Building
- ITE Land Use 821: Shopping Plaza (40-150K) (No Supermarket)
- ITE Land Use 822: Strip Retail Plaza (<40K)
- ITE Land Use 931: Fine Dining Restaurant
- ITE Land Use 932: High-Turnover (Sit-Down) Restaurant

It should be noted that the trip generation rates utilized for forecasting purposes are based on single-use stand-alone sites in suburban contexts, which generate primarily vehicular traffic. However, in locations which have a variety of complimentary land uses, there is the potential for interaction among those uses, particularly where trips between uses can be made via active transportation modes such as walking or biking. Therefore, the total trip generation is typically less than the trips forecast for each land use as a stand-alone use.

A 25% trip reduction adjustment has been applied to the proposed project trip generation forecast for all proposed land uses in order to reflect the mixed-use nature of the proposed zoning and land use assumptions[2]. The adjustment accounts for the synergy among the specific plan land uses which is expected to result in increased activation and walkability in the Downtown Artesia area. The mixed-use nature of the proposed Specific Plan will allow for shorter trips between various land use components to be completed on foot or by bicycle, resulting in fewer vehicular trips than would be forecast for each land use component on a stand-alone basis.

In addition, a 10% adjustment has been applied to the proposed non-residential land uses in order to reflect the anticipated use of light-rail transit in the specific plan area upon completion of the Metro Southwest Gateway Line[3]. The specific plan area falls within 0.5-miles of the planned Southeast Gateway Line Pioneer Station. Similar to the existing use trip forecast, the proposed project trip forecast was prepared for each of the four (4) transportation analysis subareas.

The trips generated by the existing land uses on the redevelopment parcels are assumed to be removed in order to accommodate full build-out of the Specific Plan. Therefore, the existing trips have been applied as a credit towards the proposed project's trip generation forecast.

[2] LLG reviewed the methodology provided in NCHRP Report 684 in order to estimate the potential trip reductions which can be expected due to the mixed-use nature of the specific plan. The proposed mix of land uses would be expected to result in up to 50% fewer trips during the PM peak hour. A 25% trip reduction was applied to daily as well as AM and PM peak hour trips in order to provide a conservative trip forecast.

[3] A 10% transit reduction is consistent with typical practice in the Southern California region. Many agencies, including the City of Los Angeles, allow between 10 and 25% transit reductions for projects located within 0.5-miles of major transit facilities such as light rail stations. A 10% trip reduction was applied in order to provide a conservative trip forecast.

The trip generation forecast for the proposed project is summarized in ***Table 3 – Specific Plan Trip Generation Forecast***. As presented in *Table 3*, the proposed project is expected to generate 1,235 net new vehicle trips (520 net new inbound trips and 715 net new outbound trips) during the weekday AM peak hour. During the weekday PM peak hour, the proposed project is expected to generate 835 net new vehicle trips (634 net new inbound trips and 201 net new outbound trips). Over a 24-hour period, the proposed project is forecast to generate 5,421 net new trip ends during a typical weekday (approximately 2,711 net new inbound trips and approximately 2,710 net new outbound trips).

The net new vehicle trips will be assigned to the study locations. Distribution patterns will be prepared for residential and non-residential land uses for each transportation analysis subarea. The distribution patterns will be prepared based on the location and intensity of potential re-development sites within each subarea, and will reflect the anticipated turning movements at each location required to access each subarea.

I. Future Traffic Volume Forecasts

Future traffic volumes will be estimated based on the SCAG RTDM for future year 2045. The model data will be post-processed in order to determine future intersection turning movement volumes without the proposed project.

J. Caltrans Facilities Analysis

In compliance with CEQA, Caltrans also now requires VMT-based analysis of land use projects and plans. Caltrans' Vehicle Miles Traveled-Focused Transportation Impact Study Guidelines (dated May 20, 2020) states that Caltrans will review and comment on impact determinations which are consistent with OPR's Technical Advisory and State greenhouse gas (GHG) emissions goals. The VMT analysis prepared for the City of Artesia will be consistent with the Technical Advisory and State GHG goals, and therefore no separate VMT analysis will be prepared for Caltrans. However, Caltrans has also released the Interim Land Development and Intergovernmental Review (LD-IGR) Safety Review Practitioner's Guide (dated July 2020), which requires a detailed safety review for land use projects or plans which are expected to affect the State Highway System. Therefore, based on the specific plan's location and proximity to the I-605 and SR-91 Freeways, existing and future year analyses will be prepared for the I-605 Freeway/South Street and SR-91 Freeway/Pioneer Boulevard ramp intersections (Study Intersection Nos. 5-8 in *Item F* above) in order to address any potential impacts in accordance with the Interim LD-IGR Safety Review Practitioner's Guide.

K. Transportation Impact Study

LLG will prepare a Transportation Impact Study in technical memorandum format which summarizes the above-mentioned CEQA-compliant VMT impact analysis, including our analysis, findings, and conclusions. The Transportation Impact Study will be suitably documented with tables, figures, and appendix materials.

LLG will also prepare a separate Local Transportation Assessment in report format which summarizes the above-mentioned non-CEQA site access studies, including our analysis, findings, and conclusions. The Local Transportation Assessment will be suitably documented with tables, figures, and appendix materials.

Please feel free to call us at 626.796.2322 if you have any questions, comments or suggested revisions regarding the above. Thank you!

Attachments

c: Addie Farrell, PlaceWorks
Jennifer Kelly, PlaceWorks

Table 2
EXISTING USE TRIP GENERATION FORECAST [1]
Summary for All Subareas

TRIP GENERATION RATES [1]

ITE LAND USE CATEGORY	ITE LAND USE CODE	VARIABLE	WEEKDAY DAILY	WEEKDAY AM PEAK HOUR IN (%)	OUT (%)	TOTAL	WEEKDAY PM PEAK HOUR IN (%)	OUT (%)	TOTAL
General Light Industrial	110	Per 1,000 SF	4.87	88%	12%	0.74	13%	87%	0.65
Single-Family Detached Housing	210	Per Dwelling Unit	9.43	26%	74%	0.70	63%	37%	0.94
Multifamily Housing (Low Rise) (Not Close to Rail Transit)	220	Per Dwelling Unit	6.74	24%	76%	0.40	63%	37%	0.51
General Office Building	710	Per 1,000 SF	10.84	88%	12%	1.52	17%	83%	1.44
Shopping Plaza (40-150K) (No Supermarket)	821	Per 1,000 SF	67.52	62%	38%	1.73	49%	51%	5.19
Strip Retail Plaza (<40K)	822	Per 1,000 SF	54.45	60%	40%	2.36	50%	50%	6.59

PROJECT TRIP GENERATION FORECAST

LAND USE	ITE LAND USE CODE	SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2] IN	OUT	TOTAL	PM PEAK HOUR VOLUMES [2] IN	OUT	TOTAL
Subarea 1									
Multi-Family Residential	220	6 DU	40	0	2	2	2	1	3
Commercial General	822	38,231 SF	2,082	54	36	90	126	126	252
Service & Professional	710	3,252 SF	35	4	1	5	1	4	5
			2,157	*58*	*39*	*97*	*129*	*131*	*260*
Subarea 2									
Commercial General	821	89,366 SF	6,034	96	59	155	227	237	464
Subarea 3									
Single Family Residential	210	3 DU	28	1	1	2	2	1	3
Multi-Family Residential	220	9 DU	61	1	3	4	3	2	5
South Street Specific Plan [3]	710	40,170 SF	435	54	7	61	10	48	58
South Street Specific Plan [3]	821	40,170 SF	2,712	43	26	69	102	106	208
Commercial Planned Development	821	100,389 SF	6,778	108	66	174	255	266	521
Commercial General	821	79,581 SF	5,373	86	52	138	202	211	413
Light Industrial	110	26,379 SF	128	18	2	20	2	15	17
			15,487	*310*	*156*	*466*	*574*	*648*	*1,222*
Subarea 4									
Single Family Residential	210	1 DU	9	0	1	1	1	0	1
Commercial General	822	6,480 SF	353	9	6	15	22	21	43
			362	*9*	*7*	*16*	*23*	*21*	*44*
Total Existing Uses			***24,040***	***473***	***261***	***734***	***953***	***1,037***	***1,990***

[1] Source: ITE "Trip Generation Manual", 11th Edition, 2021.
[2] Trips are one-way traffic movements, entering or leaving.
[3] The South Street Specific Plan is assumed to consist of 50% service and professional land uses and 50% retail land uses.

Table 3
SPECIFIC PLAN TRIP GENERATION FORECAST [1]
Summary for All Subareas

TRIP GENERATION RATES [1]									
ITE LAND USE CATEGORY	ITE LAND USE CODE	VARIABLE	WEEKDAY DAILY	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
				IN (%)	OUT (%)	TOTAL	IN (%)	OUT (%)	TOTAL
Multifamily Housing (Low Rise) (Close to Rail Transit)	220	Per Dwelling Unit	4.72	29%	71%	0.38	60%	40%	0.61
Hotel	310	Per Room	7.99	56%	44%	0.46	51%	49%	0.59
General Office Building	710	Per 1,000 SF	10.84	88%	12%	1.52	17%	83%	1.44
Shopping Plaza (40-150K) No Supermarket	821	Per 1,000 SF	67.52	62%	38%	1.73	49%	51%	5.19
Strip Retail Plaza (<40K)	822	Per 1,000 SF	54.45	60%	40%	2.36	50%	50%	6.59
Fine Dining Restaurant	931	Per 1,000 SF	83.84	50%	50%	0.73	67%	33%	7.80
High-Turnover (Sit-Down) Restaurant	932	Per 1,000 SF	107.20	55%	45%	9.57	61%	39%	9.05

PROJECT TRIP GENERATION FORECAST									
LAND USE	ITE LAND USE CODE	SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2]			PM PEAK HOUR VOLUMES [2]		
				IN	OUT	TOTAL	IN	OUT	TOTAL
Subarea 1									
Multi-Family Residential	220	203 DU	958	22	55	77	74	50	124
General Office	710	14,867 SF	161	20	3	23	4	17	21
Retail [3]	822	22,301 SF	1,214	32	21	53	74	73	147
Fine Dining Restaurant [4]	931	3,345 SF	280	1	1	2	17	9	26
High-Turnover (Sit-Down) Restaurant [4]	932	18,956 SF	2,032	100	81	181	105	67	172
Less 25% Mixed-Use TOD Adjustment [5]			(1,161)	(44)	(40)	(84)	(69)	(54)	(123)
Less 10% Transit Adjustment [6]			(369)	(15)	(11)	(26)	(20)	(17)	(37)
			3,115	*116*	*110*	*226*	*185*	*145*	*330*
Subarea 2									
Multi-Family Residential	220	431 DU	2,034	48	116	164	158	105	263
General Office	710	31,620 SF	343	42	6	48	8	38	46
Retail	821	47,430 SF	3,202	51	31	82	121	125	246
Fine Dining Restaurant [4]	931	7,115 SF	597	3	2	5	37	18	55
High-Turnover (Sit-Down) Restaurant [4]	932	40,315 SF	4,322	212	174	386	223	142	365
Less 25% Mixed-Use TOD Adjustment [5]			(2,625)	(89)	(82)	(171)	(137)	(107)	(244)
Less 10% Transit Adjustment [6]			(846)	(31)	(21)	(52)	(39)	(32)	(71)
			7,027	*236*	*226*	*462*	*371*	*289*	*660*
Subarea 3									
Multi-Family Residential	220	1,322 DU	6,240	146	356	502	484	322	806
Hotel	310	150 Rooms	1,199	39	30	69	45	44	89
General Office	710	77,592 SF	841	104	14	118	19	93	112
Retail	821	116,388 SF	7,859	125	76	201	296	308	604
Fine Dining Restaurant [4]	931	17,458 SF	1,464	7	6	13	91	45	136
High-Turnover (Sit-Down) Restaurant [4]	932	98,930 SF	10,605	521	426	947	546	349	895
Less 25% Mixed-Use TOD Adjustment [5]			(7,052)	(236)	(227)	(463)	(370)	(290)	(660)
Less 10% Transit Adjustment [6]			(2,197)	(80)	(55)	(135)	(100)	(84)	(184)
			18,959	*626*	*626*	*1,252*	*1,011*	*787*	*1,798*
Subarea 4									
Multi-Family Residential	220	25 DU	118	3	7	10	9	6	15
General Office	710	1,651 SF	18	3	0	3	0	2	2
Retail	822	2,476 SF	135	4	2	6	8	8	16
High-Turnover (Sit-Down) Restaurant [4]	932	2,476 SF	265	13	11	24	13	9	22
Less 25% Mixed-Use TOD Adjustment [5]			(134)	(6)	(5)	(11)	(8)	(6)	(14)
Less 10% Transit Adjustment [6]			(42)	(2)	(1)	(3)	(2)	(2)	(4)
			360	*15*	*14*	*29*	*20*	*17*	*37*
Subtotal Specific Plan Buildout			*29,461*	*993*	*976*	*1,969*	*1,587*	*1,238*	*2,825*
Less Existing Uses (Refer to Table 2)			(24,040)	(473)	(261)	(734)	(953)	(1,037)	(1,990)
NET NEW PROJECT TRIPS			***5,421***	***520***	***715***	***1,235***	***634***	***201***	***835***

[1] Source: ITE "Trip Generation Manual", 11th Edition, 2021.
[2] Trips are one-way traffic movements, entering or leaving.
[3] The size of this project component reflects the sum of all proposed square-footage in the subject area. Individual developments are anticipated to be less than 40,000 square feet, therefore the trip rates provided for ITE Land Use 822: Strip Retail Plaza (<40K) have been applied.
[4] The total restaurant space within each subarea was assumed to consist of 15% quality and fine dining restaurant space and 85% high-turnover (sit-down) restaurant space. Total restaurant space under 2,500 square feet was assumed to consist of high-turnover (sit-down) restaurant only.
[5] A 25% mixed-use adjustment has been applied to all specific plan land uses. The adjustment accounts for the synergistic nature of the proposed mixed-use zoning included in the specific plan, which is expected to result in increased walkability in the Downtown Artesia area. The mixed-use nature of the Specific Plan will allow for shorter trips between various land use components to be completed on foot or by bicycle, resulting in fewer vehicular trips compared to the trips which would be generated by the land use components on a stand-alone basis.
[6] A 10% transit adjustment has been applied to all non-residential land uses. The transit adjustment reflects the anticipated use of light-rail transit in the specific plan area upon completion of the Metro Southeast Gateway Light-Rail Line. It is noted that the Specific Plan area falls within 1/2 mile of the planned Artesia Station.

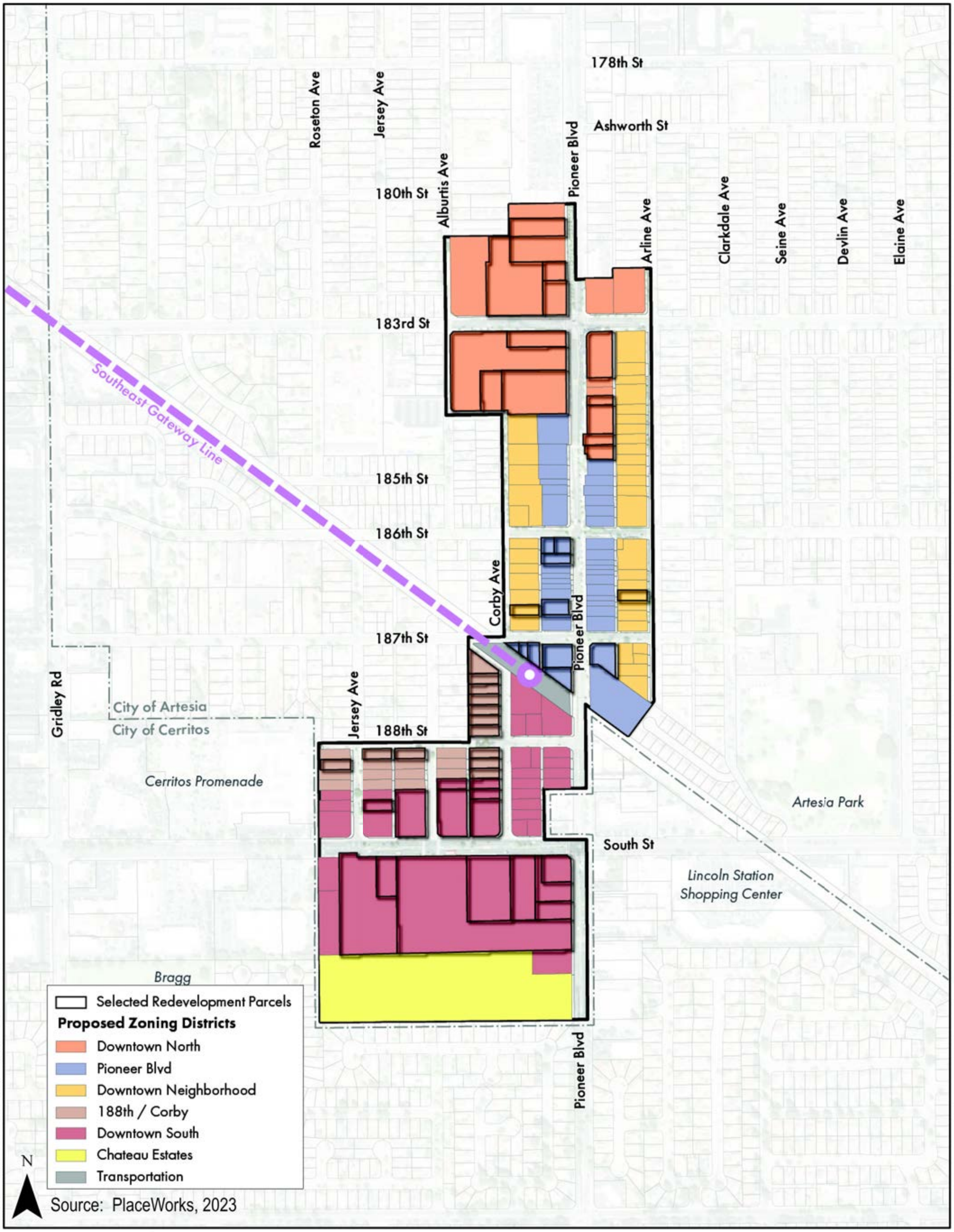


Figure 1
Proposed Zoning and Selected Redevelopment Parcels

Artesia Downtown Specific Plan

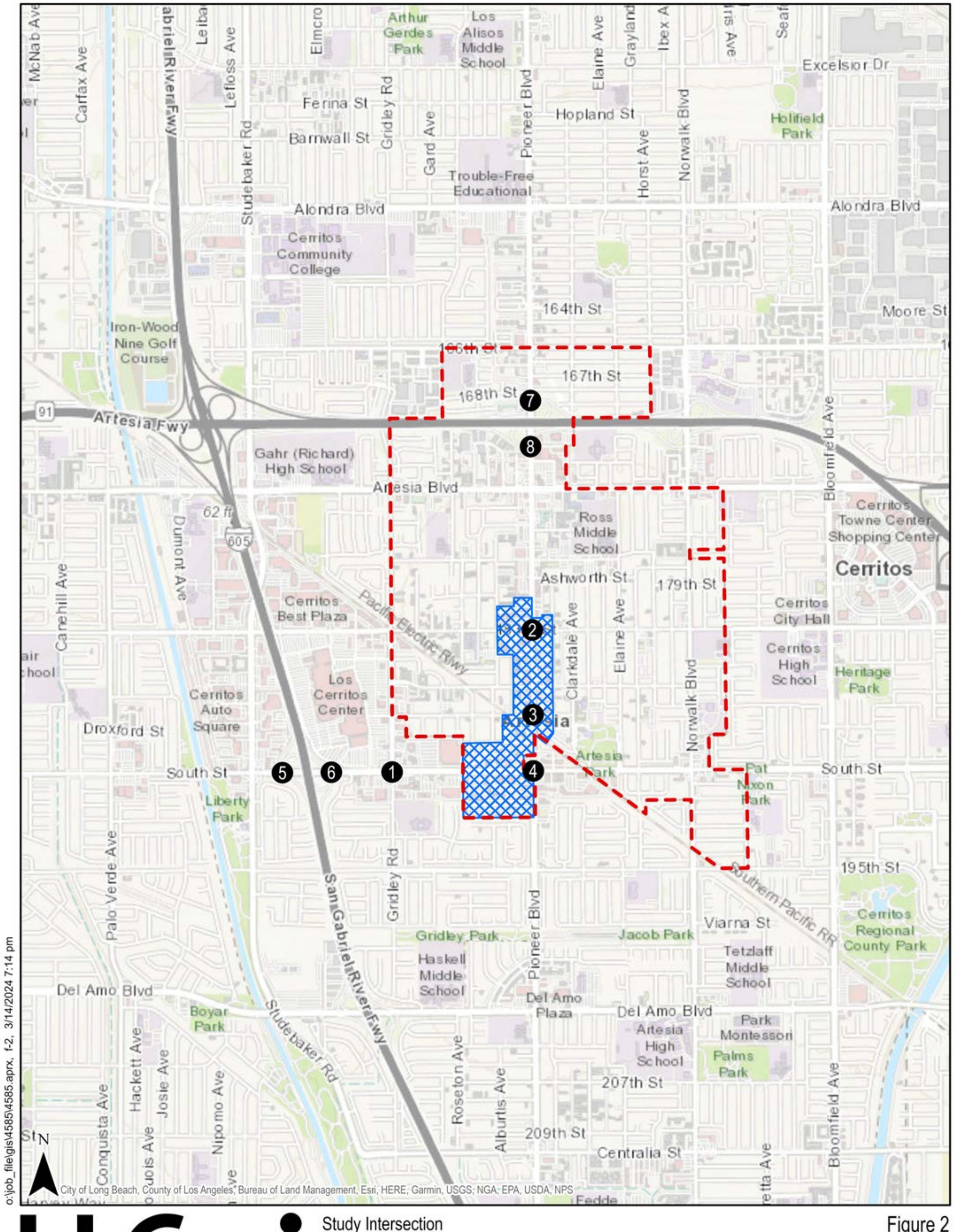


Figure 2
Vicinity Map

Artesia Downtown Specific Plan

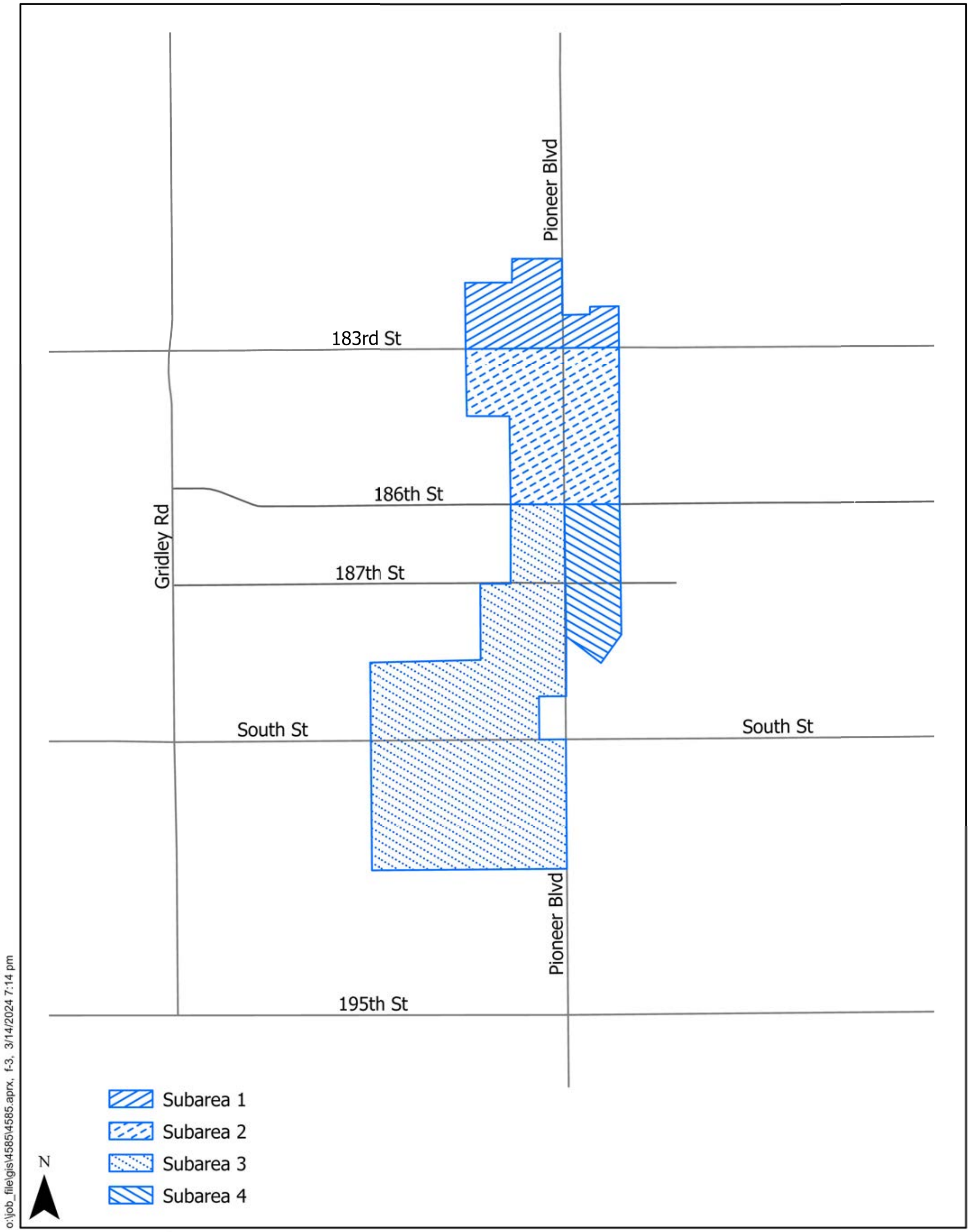
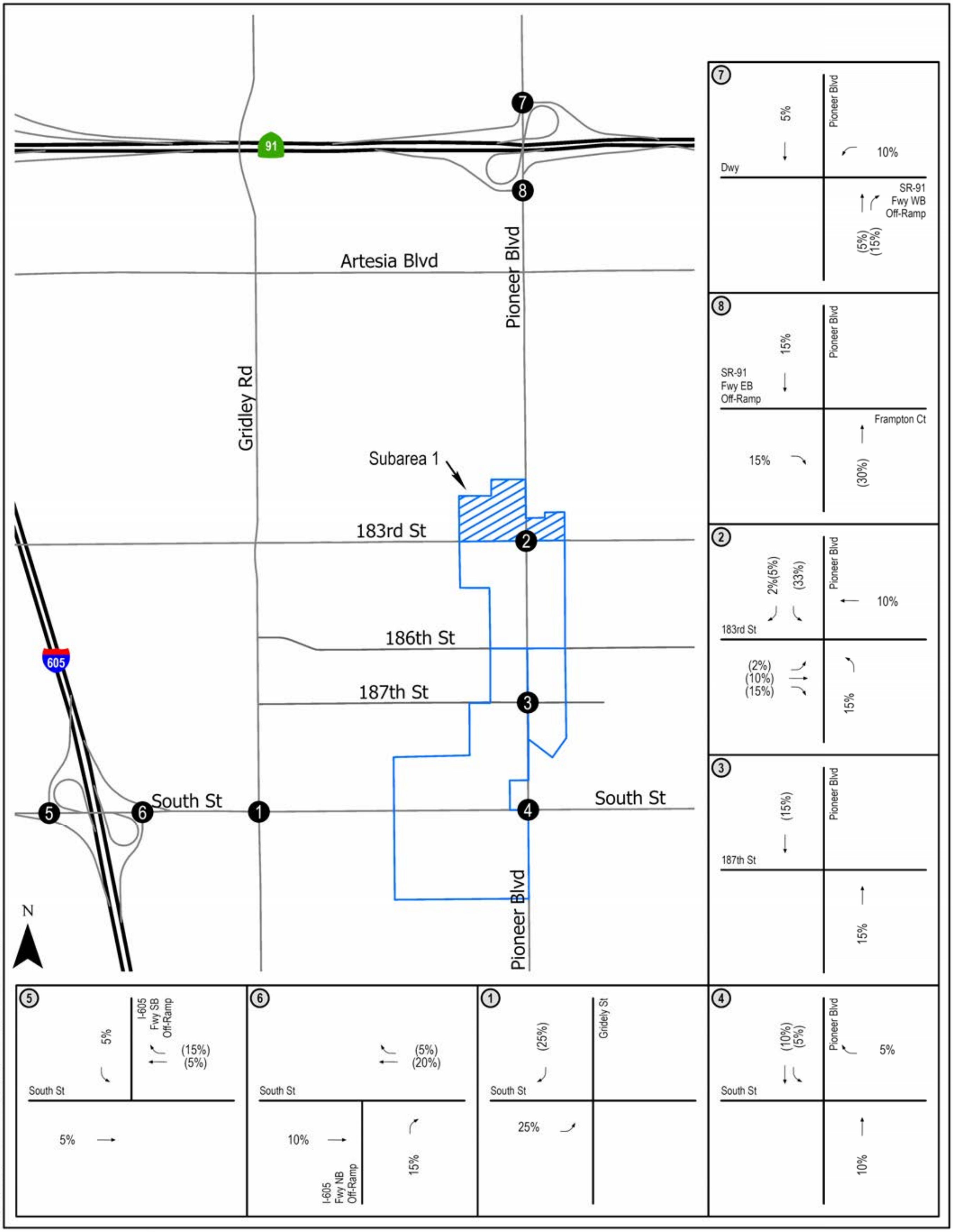


Figure 3
Transportation Analysis Subareas

Artesia Downtown Specific Plan

APPENDIX B

PROJECT TRIP DISTRIBUTION PATTERNS



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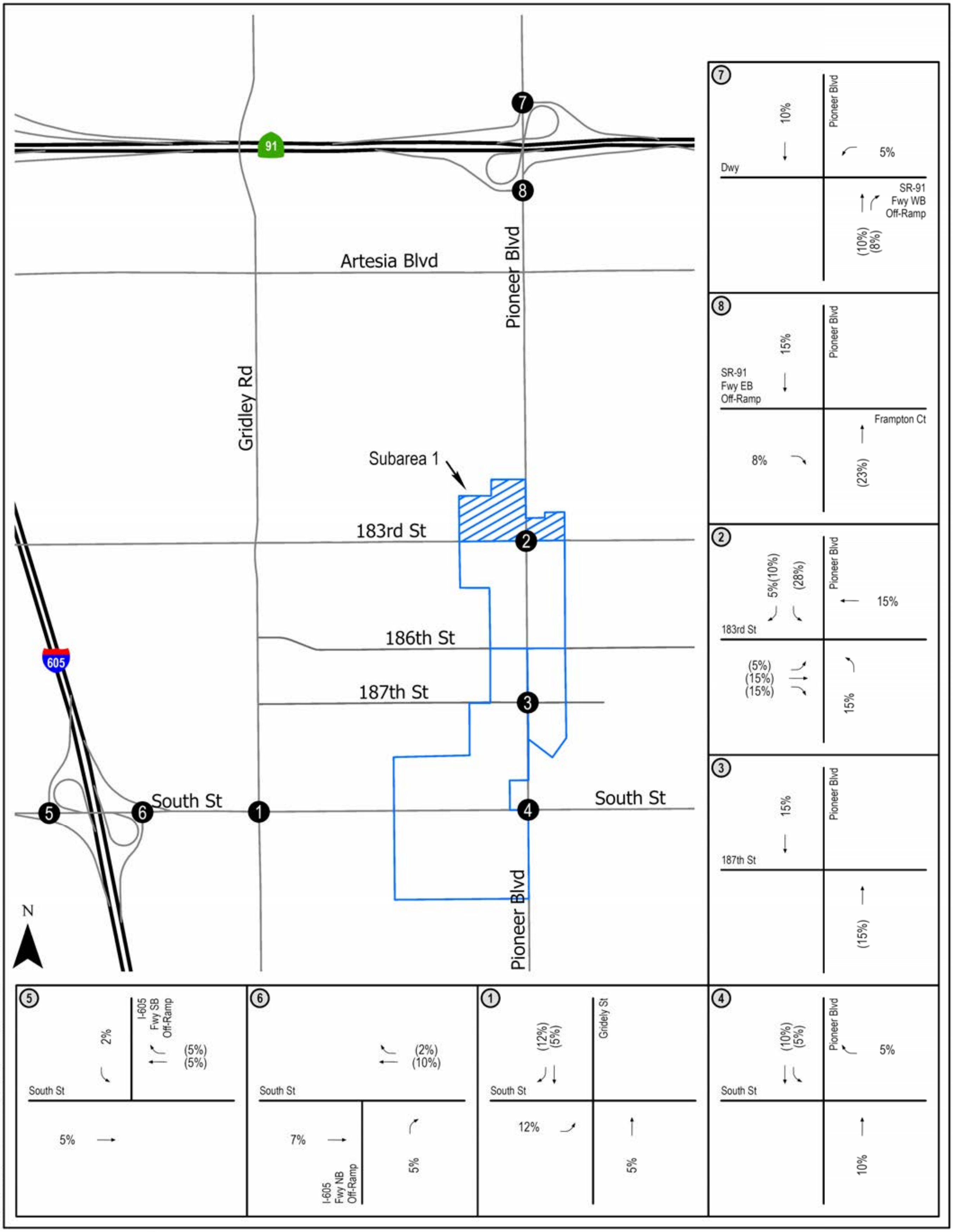
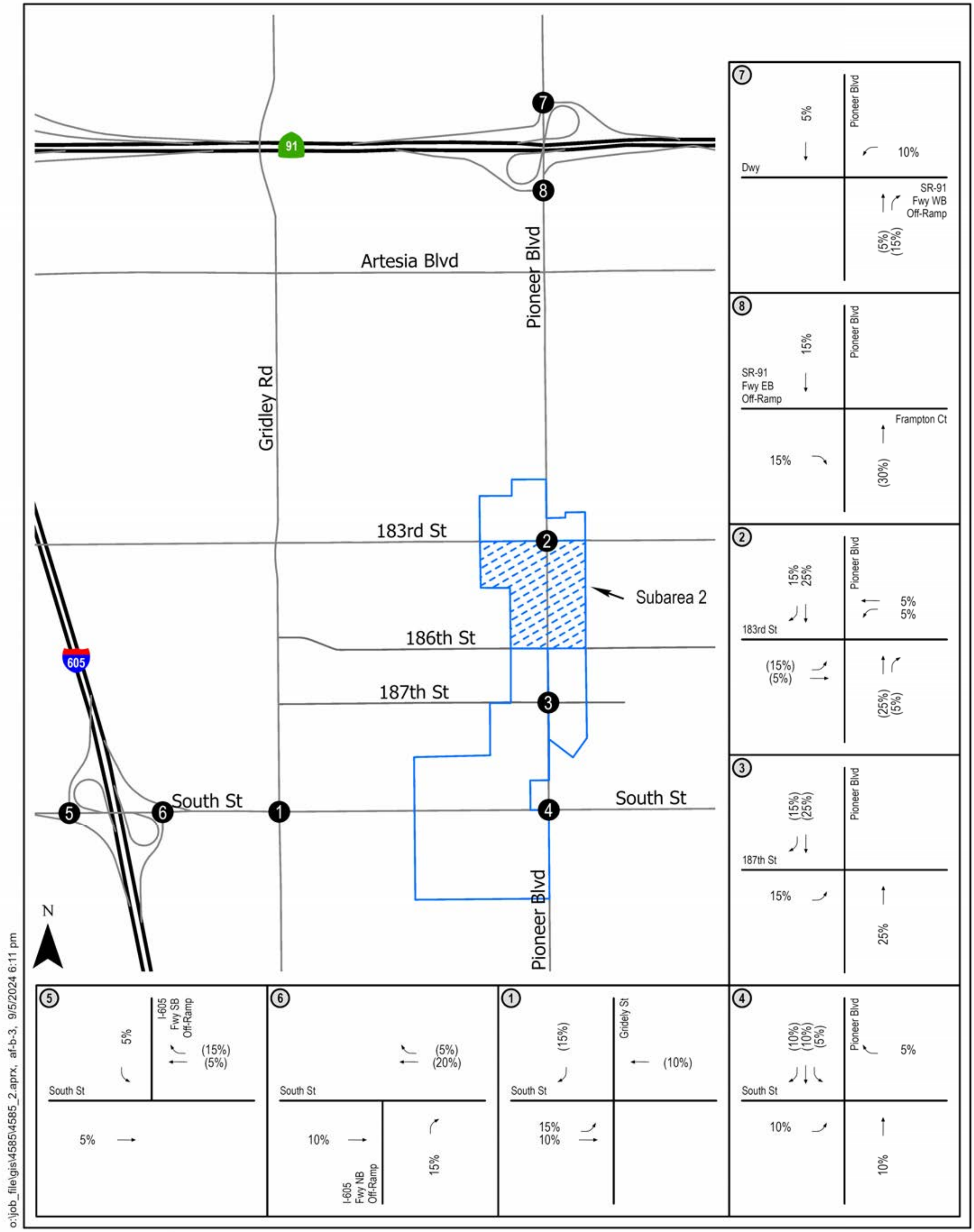
XX% Inbound Trip Distribution
(XX%) Outbound Trip Distribution

Appendix Figure B-1
Project Trip Distribution
Subarea 1 Residential Component
Artesia Downtown Specific Plan



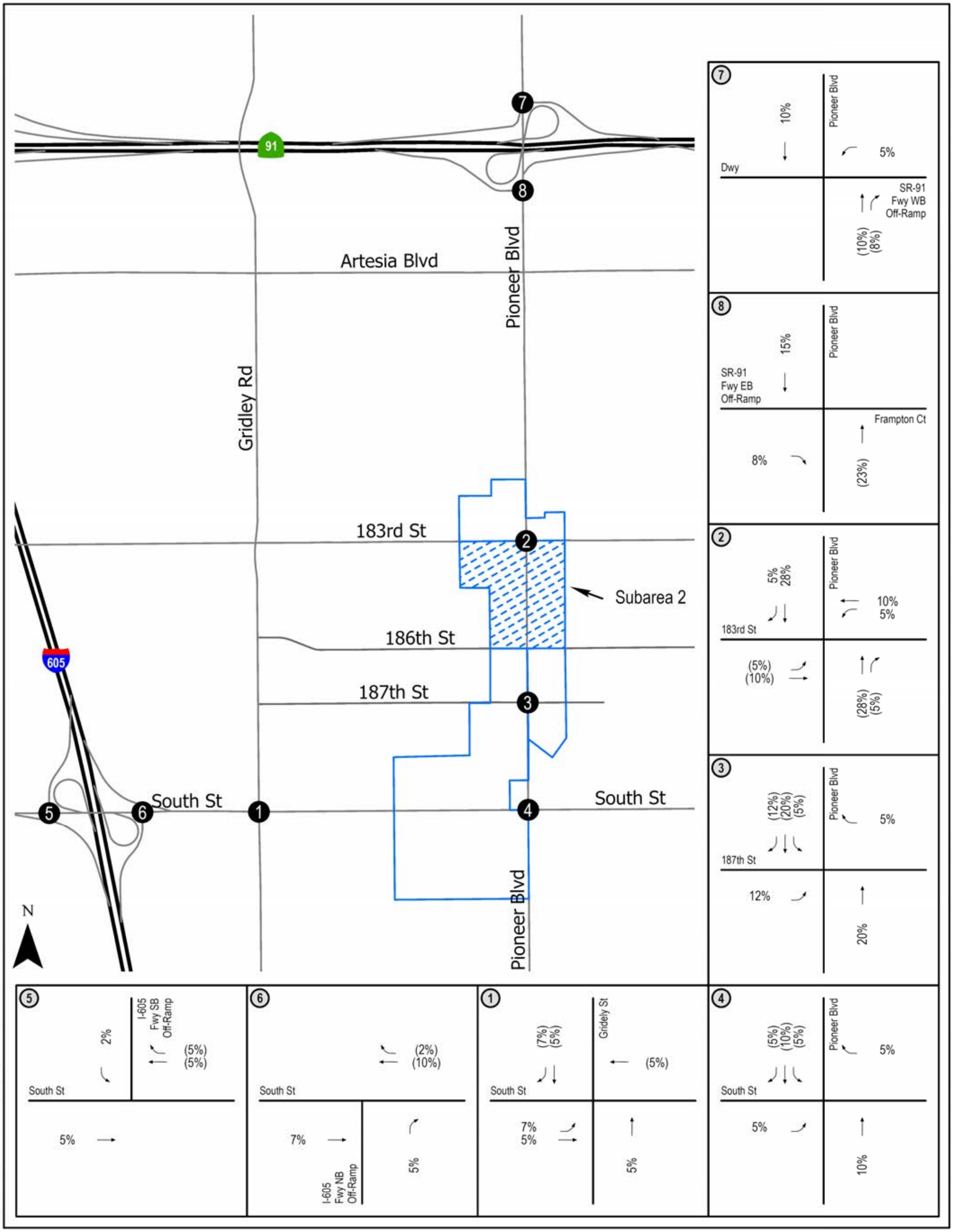
XX% Inbound Trip Distribution
(XX%) Outbound Trip Distribution

Appendix Figure B-2
Project Trip Distribution
Subarea 1 Non-Residential Component
Artesia Downtown Specific Plan



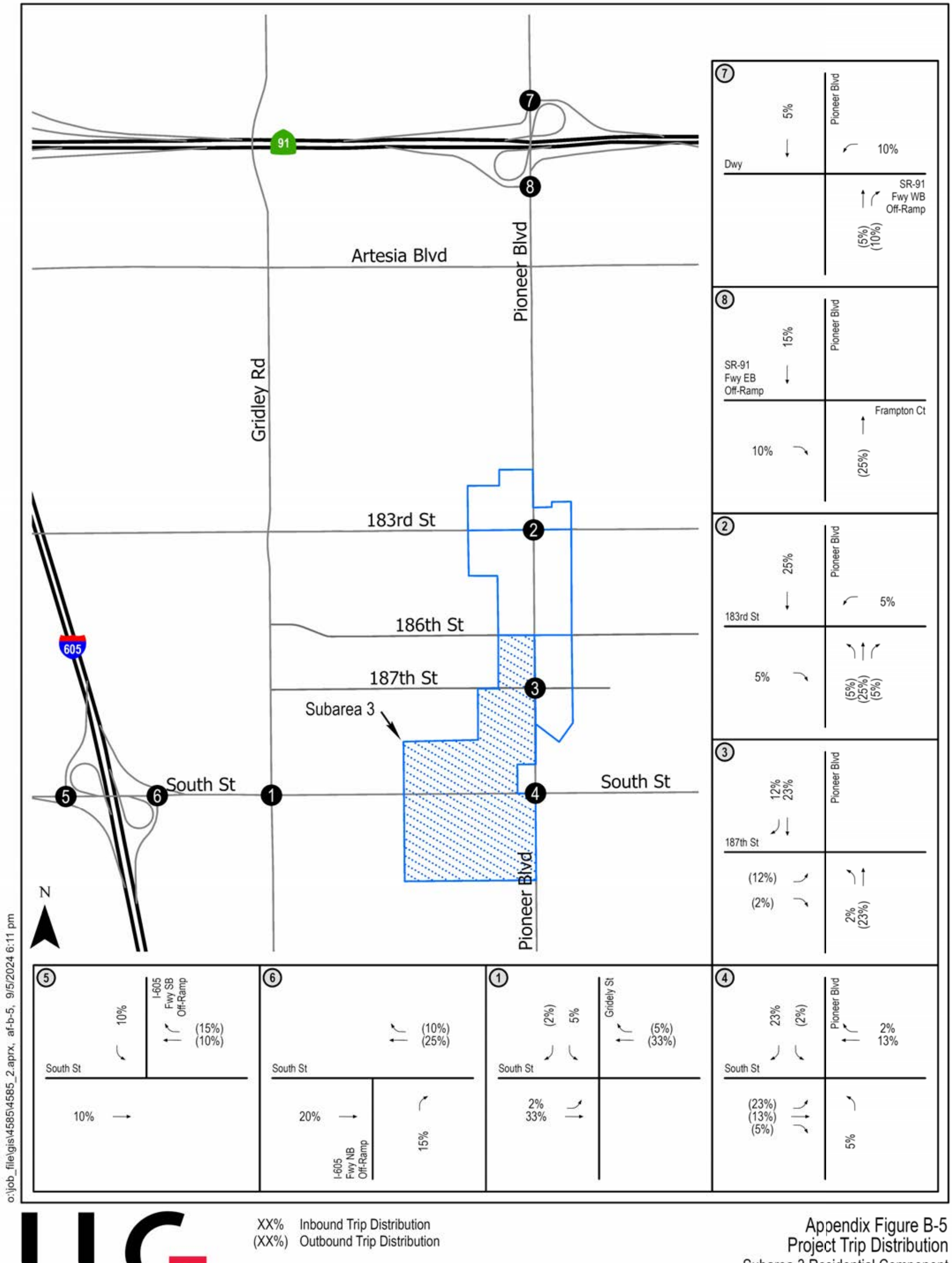
XX% Inbound Trip Distribution
(XX%) Outbound Trip Distribution

Appendix Figure B-3
Project Trip Distribution
Subarea 2 Residential Component
Artesia Downtown Specific Plan



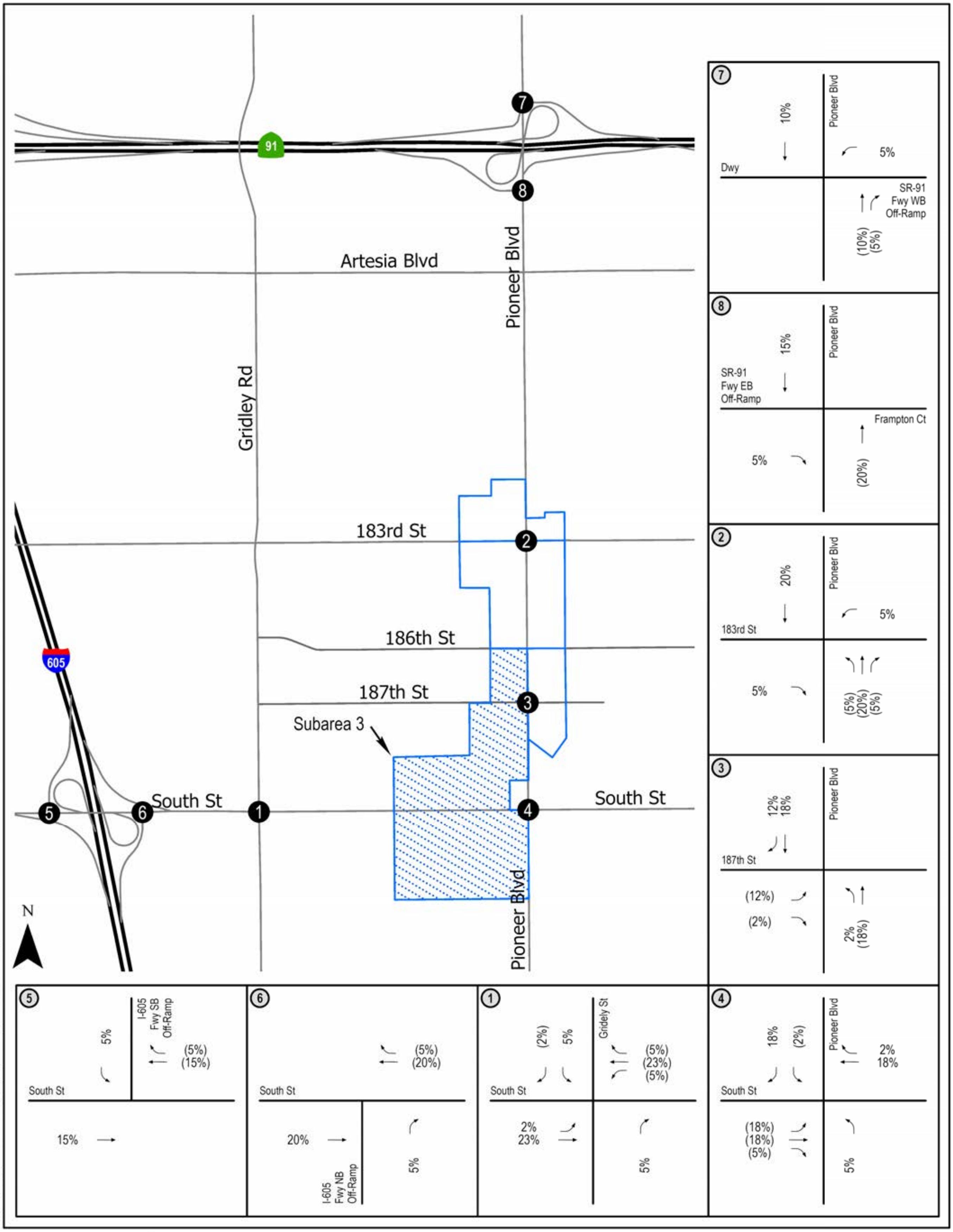
XX% Inbound Trip Distribution
(XX%) Outbound Trip Distribution

Appendix Figure B-4
Project Trip Distribution
Subarea 2 Non-Residential Component
Artesia Downtown Specific Plan



XX% Inbound Trip Distribution
(XX%) Outbound Trip Distribution

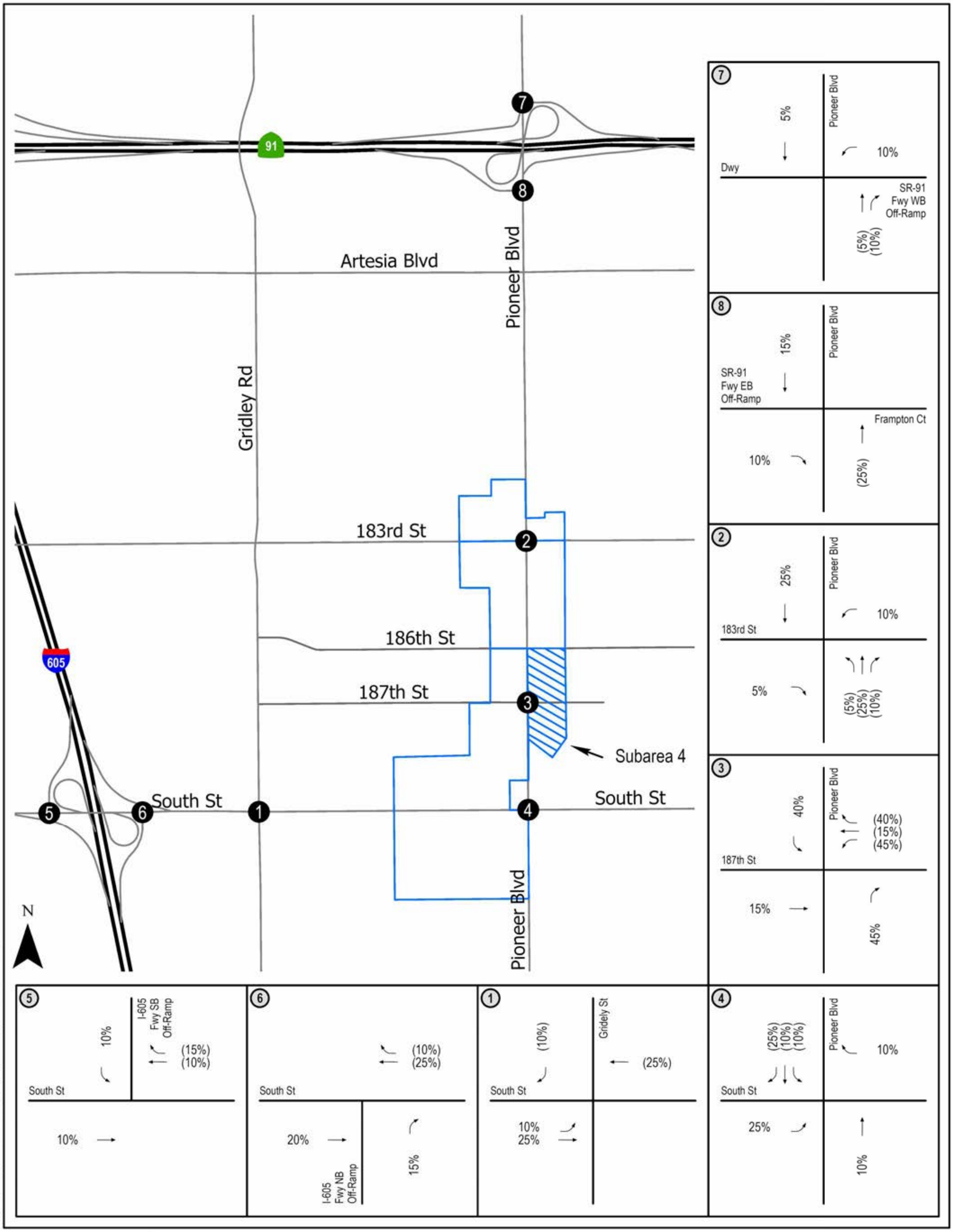
Appendix Figure B-5
Project Trip Distribution
Subarea 3 Residential Component
Artesia Downtown Specific Plan



XX% Inbound Trip Distribution
(XX%) Outbound Trip Distribution

LLG

Appendix Figure B-6
Project Trip Distribution
Subarea 3 Non-Residential Component
Artesia Downtown Specific Plan



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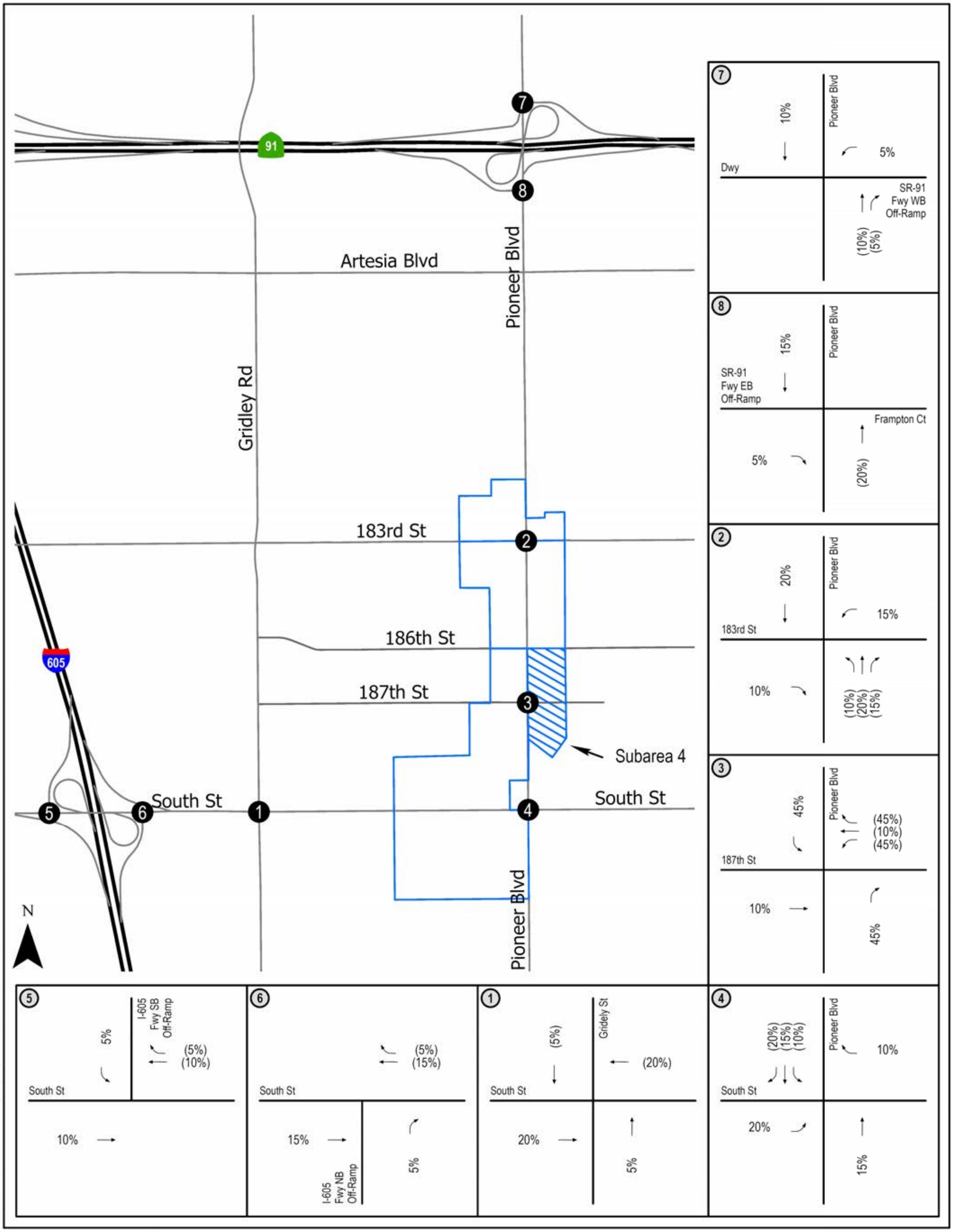
XX% Inbound Trip Distribution
(XX%) Outbound Trip Distribution

Appendix Figure B-7
Project Trip Distribution
Subarea 4 Residential Component
Artesia Downtown Specific Plan



LLG

XX% Inbound Trip Distribution
(XX%) Outbound Trip Distribution

Appendix Figure B-8
Project Trip Distribution
Subarea 4 Non-Residential Component
Artesia Downtown Specific Plan

APPENDIX C

PEDESTRIAN, BICYCLE, AND VEHICLE TRAFFIC COUNT DATA

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Artesia
N/S: Gridley Road
E/W: South Street
Weather: Clear

File Name : 01_ATS_Grid_South AM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 1

Groups Printed- Total Volume

	Gridley Road Southbound				South Street Westbound				Gridley Road Northbound				South 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
07:00 AM	2	15	42	59	8	97	3	108	32	12	5	49	24	55	21	100	316
07:15 AM	10	26	53	89	11	113	4	128	54	25	12	91	34	97	35	166	474
07:30 AM	7	35	52	94	13	143	13	169	64	45	19	128	32	108	61	201	592
07:45 AM	14	26	58	98	10	151	14	175	53	76	23	152	35	109	30	174	599
Total	33	102	205	340	42	504	34	580	203	158	59	420	125	369	147	641	1981
08:00 AM	20	30	55	105	11	172	19	202	29	59	14	102	43	124	20	187	596
08:15 AM	18	41	60	119	14	174	19	207	44	70	10	124	50	117	9	176	626
08:30 AM	28	50	52	130	16	174	24	214	22	30	8	60	48	127	20	195	599
08:45 AM	16	32	37	85	17	128	18	163	27	26	14	67	53	164	24	241	556
Total	82	153	204	439	58	648	80	786	122	185	46	353	194	532	73	799	2377
Grand Total	115	255	409	779	100	1152	114	1366	325	343	105	773	319	901	220	1440	4358
Apprch %	14.8	32.7	52.5		7.3	84.3	8.3		42	44.4	13.6		22.2	62.6	15.3		
Total %	2.6	5.9	9.4	17.9	2.3	26.4	2.6	31.3	7.5	7.9	2.4	17.7	7.3	20.7	5	33	

	Gridley Road Southbound				South Street Westbound				Gridley Road Northbound				South 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 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	14	26	58	98	10	151	14	175	**53**	**76**	**23**	**152**	35	109	**30**	174	599
08:00 AM	20	30	55	105	11	172	19	202	29	59	14	102	43	124	20	187	596
08:15 AM	18	41	**60**	119	14	**174**	19	207	44	70	10	124	**50**	117	9	176	**626**
08:30 AM	**28**	**50**	52	**130**	**16**	174	**24**	**214**	22	30	8	60	48	**127**	20	**195**	599
Total Volume	80	147	225	452	51	671	76	798	148	235	55	438	176	477	79	732	2420
% App. Total	17.7	32.5	49.8		6.4	84.1	9.5		33.8	53.7	12.6		24	65.2	10.8		
PHF	.714	.735	.938	.869	.797	.964	.792	.932	.698	.773	.598	.720	.880	.939	.658	.938	.966

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City of Artesia
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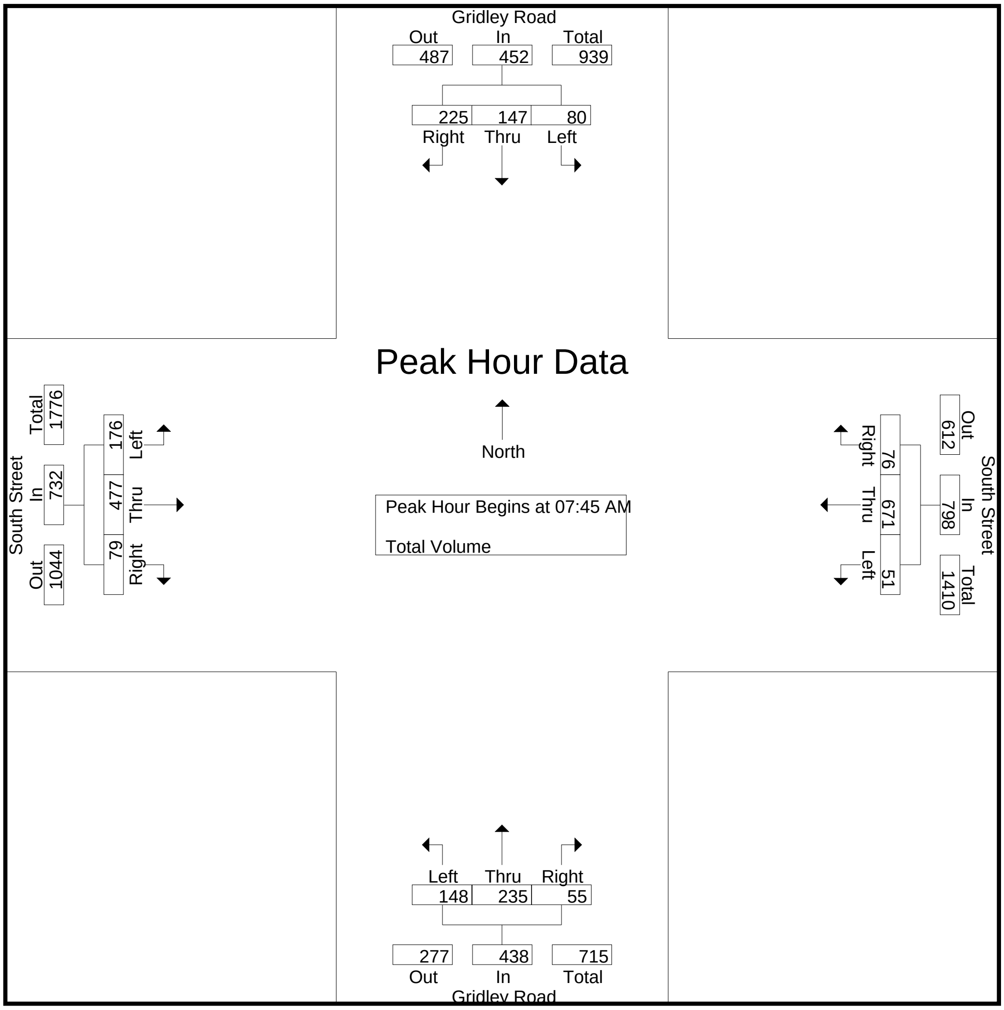
Weather: Clear

File Name : 01_ATS_Grid_South AM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:45 AM				07:30 AM				08:00 AM			
+0 mins.	14	26	58	98	10	151	14	175	**64**	45	19	128	43	124	20	187
+15 mins.	20	30	55	105	11	172	19	202	53	**76**	**23**	**152**	50	117	9	176
+30 mins.	18	41	**60**	119	14	**174**	19	207	29	59	14	102	48	127	20	195
+45 mins.	**28**	**50**	52	**130**	**16**	174	**24**	**214**	44	70	10	124	**53**	**164**	**24**	**241**
Total Volume	80	147	225	452	51	671	76	798	190	250	66	506	194	532	73	799
% App. Total	17.7	32.5	49.8		6.4	84.1	9.5		37.5	49.4	13		24.3	66.6	9.1	
PHF	.714	.735	.938	.869	.797	.964	.792	.932	.742	.822	.717	.832	.915	.811	.760	.829

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City of Artesia
N/S: Gridley Road
E/W: South Street
Weather: Clear

File Name : 01_ATS_Grid_South PM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 1

Groups Printed- Total Volume

	Gridley Road Southbound				South Street Westbound				Gridley Road Northbound				South 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
04:00 PM	33	69	105	207	23	202	50	275	24	67	18	109	86	205	26	317	908
04:15 PM	49	68	92	209	26	179	42	247	36	53	21	110	87	193	35	315	881
04:30 PM	41	59	103	203	26	186	40	252	31	77	17	125	86	185	34	305	885
04:45 PM	38	71	71	180	23	179	38	240	31	71	13	115	71	218	40	329	864
Total	161	267	371	799	98	746	170	1014	122	268	69	459	330	801	135	1266	3538
05:00 PM	52	75	110	237	25	197	40	262	28	67	22	117	68	195	30	293	909
05:15 PM	51	80	93	224	19	202	38	259	28	67	14	109	74	234	26	334	926
05:30 PM	44	70	90	204	23	194	44	261	32	64	21	117	77	219	37	333	915
05:45 PM	43	61	82	186	35	177	33	245	37	75	11	123	57	221	50	328	882
Total	190	286	375	851	102	770	155	1027	125	273	68	466	276	869	143	1288	3632
Grand Total	351	553	746	1650	200	1516	325	2041	247	541	137	925	606	1670	278	2554	7170
Apprch %	21.3	33.5	45.2		9.8	74.3	15.9		26.7	58.5	14.8		23.7	65.4	10.9		
Total %	4.9	7.7	10.4	23	2.8	21.1	4.5	28.5	3.4	7.5	1.9	12.9	8.5	23.3	3.9	35.6	

	Gridley Road Southbound				South Street Westbound				Gridley Road Northbound				South 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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**52**	75	**110**	**237**	25	197	40	**262**	28	67	**22**	117	68	195	30	293	909
05:15 PM	51	**80**	93	224	19	**202**	38	259	28	67	14	109	74	**234**	26	**334**	**926**
05:30 PM	44	70	90	204	23	194	**44**	261	32	64	21	117	**77**	219	37	333	915
05:45 PM	43	61	82	186	**35**	177	33	245	**37**	**75**	11	**123**	57	221	**50**	328	882
Total Volume	190	286	375	851	102	770	155	1027	125	273	68	466	276	869	143	1288	3632
% App. Total	22.3	33.6	44.1		9.9	75	15.1		26.8	58.6	14.6		21.4	67.5	11.1		
PHF	.913	.894	.852	.898	.729	.953	.881	.980	.845	.910	.773	.947	.896	.928	.715	.964	.981

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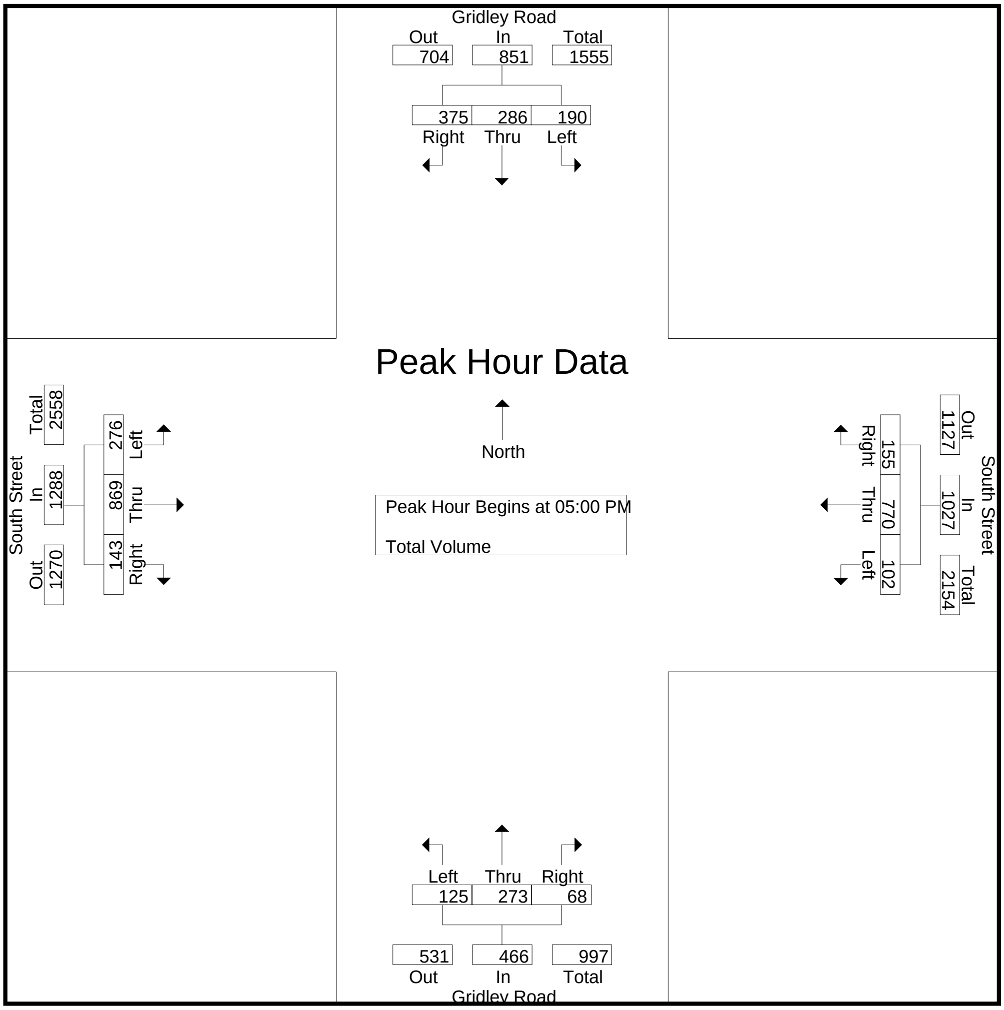
City of Artesia
N/S: Gridley Road
E/W: South Street
Weather: Clear

File Name : 01_ATS_Grid_South PM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				04:15 PM				04:45 PM			
+0 mins.	**52**	75	**110**	**237**	25	197	40	**262**	**36**	53	21	110	71	218	**40**	329
+15 mins.	51	**80**	93	224	19	**202**	38	259	31	**77**	17	**125**	68	195	30	293
+30 mins.	44	70	90	204	23	194	**44**	261	31	71	13	115	74	**234**	26	**334**
+45 mins.	43	61	82	186	**35**	177	33	245	28	67	**22**	117	**77**	219	37	333
Total Volume	190	286	375	851	102	770	155	1027	126	268	73	467	290	866	133	1289
% App. Total	22.3	33.6	44.1		9.9	75	15.1		27	57.4	15.6		22.5	67.2	10.3	
PHF	.913	.894	.852	.898	.729	.953	.881	.980	.875	.870	.830	.934	.942	.925	.831	.965

Location: Artesia
N/S: Gridley Road
E/W: South Street

Date: 4/24/2024
Day: Wednesday

PEDESTRIANS

	North Leg Gridley Road	East Leg South Street	South Leg Gridley Road	West Leg South Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	4	4	0	0	8
7:15 AM	1	1	1	1	4
7:30 AM	0	2	0	3	5
7:45 AM	0	1	2	1	4
8:00 AM	2	1	2	0	5
8:15 AM	1	1	0	1	3
8:30 AM	1	3	1	3	8
8:45 AM	1	4	4	3	12
TOTAL VOLUMES:	10	17	10	12	49

	North Leg Gridley Road	East Leg South Street	South Leg Gridley Road	West Leg South Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	2	9	5	2	18
4:15 PM	5	7	1	1	14
4:30 PM	0	2	0	3	5
4:45 PM	6	7	4	4	21
5:00 PM	3	2	4	0	9
5:15 PM	3	3	0	2	8
5:30 PM	3	7	2	3	15
5:45 PM	2	2	5	6	15
TOTAL VOLUMES:	24	39	21	21	105

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PO Box 1178
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951-268-6268

Location: Artesia
N/S: Gridley Road
E/W: South Street

Date: 4/24/2024
Day: Wednesday

BICYCLES

	Southbound Gridley Road			Westbound South Street			Northbound Gridley Road			Eastbound South Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound Gridley Road			Westbound South Street			Northbound Gridley Road			Eastbound South Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	1	0	1	0	1	0	1	0	0	0	0	4

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City of Artesia
N/S: Pioneer Boulevard
E/W: 183rd Street
Weather: Clear

File Name : 02_ATS_Pion_183rd AM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 1

Groups Printed- Total Volume

	Pioneer Boulevard Southbound				183rd Street Westbound				Pioneer Boulevard Northbound				183rd 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
07:00 AM	8	18	16	42	0	18	7	25	9	24	2	35	10	31	2	43	145
07:15 AM	9	30	13	52	3	46	11	60	3	19	6	28	10	37	8	55	195
07:30 AM	15	53	27	95	9	66	16	91	14	25	4	43	11	60	6	77	306
07:45 AM	21	73	24	118	4	82	22	108	7	56	3	66	6	58	7	71	363
Total	53	174	80	307	16	212	56	284	33	124	15	172	37	186	23	246	1009
08:00 AM	22	55	14	91	6	81	17	104	6	40	7	53	18	89	5	112	360
08:15 AM	28	78	16	122	14	85	19	118	12	49	4	65	17	77	7	101	406
08:30 AM	17	72	20	109	8	79	28	115	6	57	5	68	15	59	2	76	368
08:45 AM	16	69	19	104	5	72	22	99	9	38	4	51	18	34	3	55	309
Total	83	274	69	426	33	317	86	436	33	184	20	237	68	259	17	344	1443
Grand Total	136	448	149	733	49	529	142	720	66	308	35	409	105	445	40	590	2452
Apprch %	18.6	61.1	20.3		6.8	73.5	19.7		16.1	75.3	8.6		17.8	75.4	6.8		
Total %	5.5	18.3	6.1	29.9	2	21.6	5.8	29.4	2.7	12.6	1.4	16.7	4.3	18.1	1.6	24.1	

	Pioneer Boulevard Southbound				183rd Street Westbound				Pioneer Boulevard Northbound				183rd 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 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	21	73	**24**	118	4	82	22	108	7	56	3	66	6	58	**7**	71	363
08:00 AM	22	55	14	91	6	81	17	104	6	40	**7**	53	**18**	**89**	5	**112**	360
08:15 AM	**28**	**78**	16	**122**	**14**	**85**	19	**118**	**12**	49	4	65	17	77	7	101	**406**
08:30 AM	17	72	20	109	8	79	**28**	115	6	**57**	5	**68**	15	59	2	76	368
Total Volume	88	278	74	440	32	327	86	445	31	202	19	252	56	283	21	360	1497
% App. Total	20	63.2	16.8		7.2	73.5	19.3		12.3	80.2	7.5		15.6	78.6	5.8		
PHF	.786	.891	.771	.902	.571	.962	.768	.943	.646	.886	.679	.926	.778	.795	.750	.804	.922

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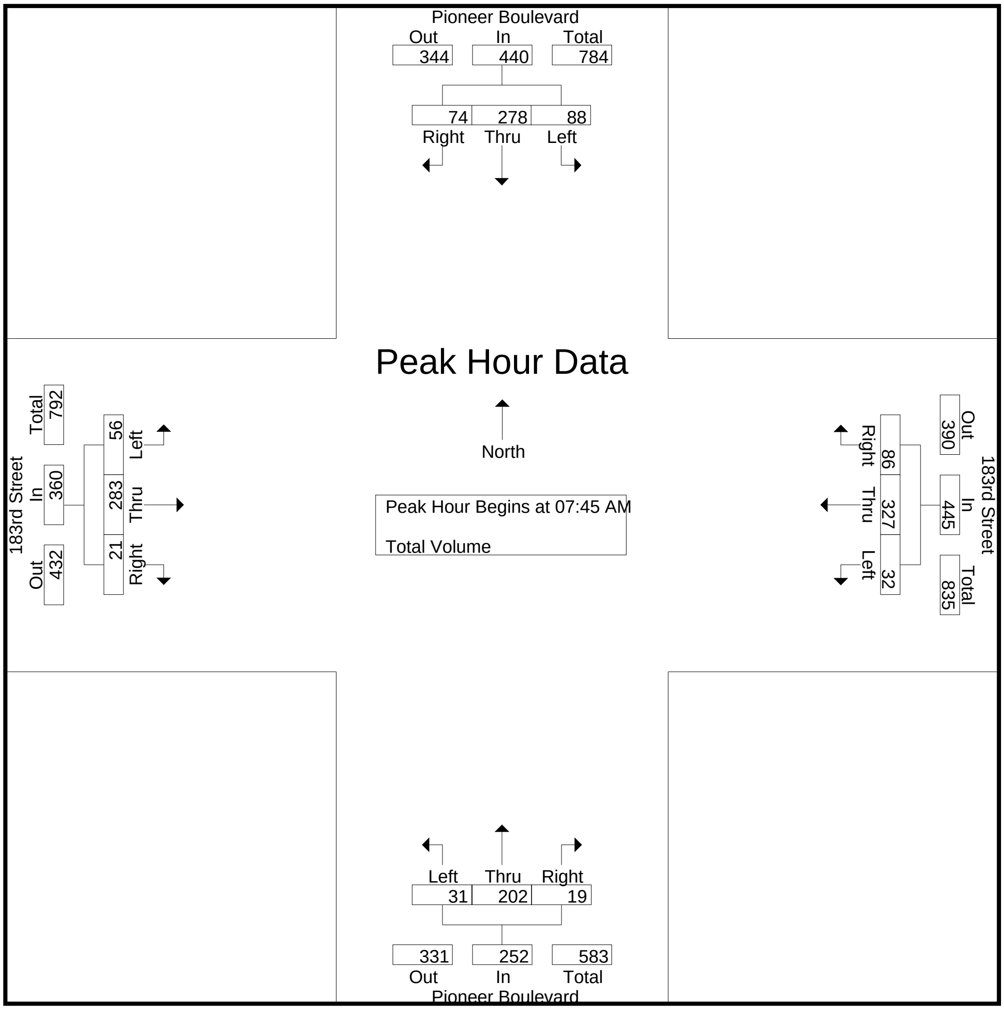
City of Artesia
N/S: Pioneer Boulevard
E/W: 183rd Street
Weather: Clear

File Name : 02_ATS_Pion_183rd AM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:45 AM				07:45 AM				07:30 AM			
+0 mins.	21	73	**24**	118	4	82	22	108	7	56	3	66	11	60	6	77
+15 mins.	22	55	14	91	6	81	17	104	6	40	**7**	53	6	58	**7**	71
+30 mins.	**28**	**78**	16	**122**	**14**	**85**	19	**118**	**12**	49	4	65	**18**	**89**	5	**112**
+45 mins.	17	72	20	109	8	79	**28**	115	6	**57**	5	**68**	17	77	7	101
Total Volume	88	278	74	440	32	327	86	445	31	202	19	252	52	284	25	361
% App. Total	20	63.2	16.8		7.2	73.5	19.3		12.3	80.2	7.5		14.4	78.7	6.9	
PHF	.786	.891	.771	.902	.571	.962	.768	.943	.646	.886	.679	.926	.722	.798	.893	.806

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City of Artesia
N/S: Pioneer Boulevard
E/W: 183rd Street
Weather: Clear

File Name : 02_ATS_Pion_183rd PM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 1

Groups Printed- Total Volume

	Pioneer Boulevard Southbound				183rd Street Westbound				Pioneer Boulevard Northbound				183rd 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
04:00 PM	33	107	24	164	13	127	21	161	13	51	13	77	43	86	10	139	541
04:15 PM	29	92	44	165	4	90	24	118	18	81	8	107	38	89	7	134	524
04:30 PM	24	70	39	133	18	129	25	172	20	76	8	104	32	115	12	159	568
04:45 PM	29	70	31	130	17	133	18	168	25	89	11	125	49	112	10	171	594
Total	115	339	138	592	52	479	88	619	76	297	40	413	162	402	39	603	2227
05:00 PM	41	79	28	148	11	137	24	172	14	85	8	107	37	126	14	177	604
05:15 PM	30	76	28	134	15	132	26	173	14	80	9	103	43	100	12	155	565
05:30 PM	26	98	33	157	17	135	15	167	20	88	12	120	42	133	14	189	633
05:45 PM	44	96	29	169	21	108	27	156	13	68	7	88	39	67	9	115	528
Total	141	349	118	608	64	512	92	668	61	321	36	418	161	426	49	636	2330
Grand Total	256	688	256	1200	116	991	180	1287	137	618	76	831	323	828	88	1239	4557
Apprch %	21.3	57.3	21.3		9	77	14		16.5	74.4	9.1		26.1	66.8	7.1		
Total %	5.6	15.1	5.6	26.3	2.5	21.7	3.9	28.2	3	13.6	1.7	18.2	7.1	18.2	1.9	27.2	

	Pioneer Boulevard Southbound				183rd Street Westbound				Pioneer Boulevard Northbound				183rd 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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	29	70	31	130	**17**	133	18	168	**25**	**89**	11	**125**	**49**	112	10	171	594
05:00 PM	**41**	79	28	148	11	**137**	24	172	14	85	8	107	37	126	**14**	177	604
05:15 PM	30	76	28	134	15	132	**26**	**173**	14	80	9	103	43	100	12	155	565
05:30 PM	26	**98**	**33**	**157**	17	135	15	167	20	88	**12**	120	42	**133**	14	**189**	**633**
Total Volume	126	323	120	569	60	537	83	680	73	342	40	455	171	471	50	692	2396
% App. Total	22.1	56.8	21.1		8.8	79	12.2		16	75.2	8.8		24.7	68.1	7.2		
PHF	.768	.824	.909	.906	.882	.980	.798	.983	.730	.961	.833	.910	.872	.885	.893	.915	.946

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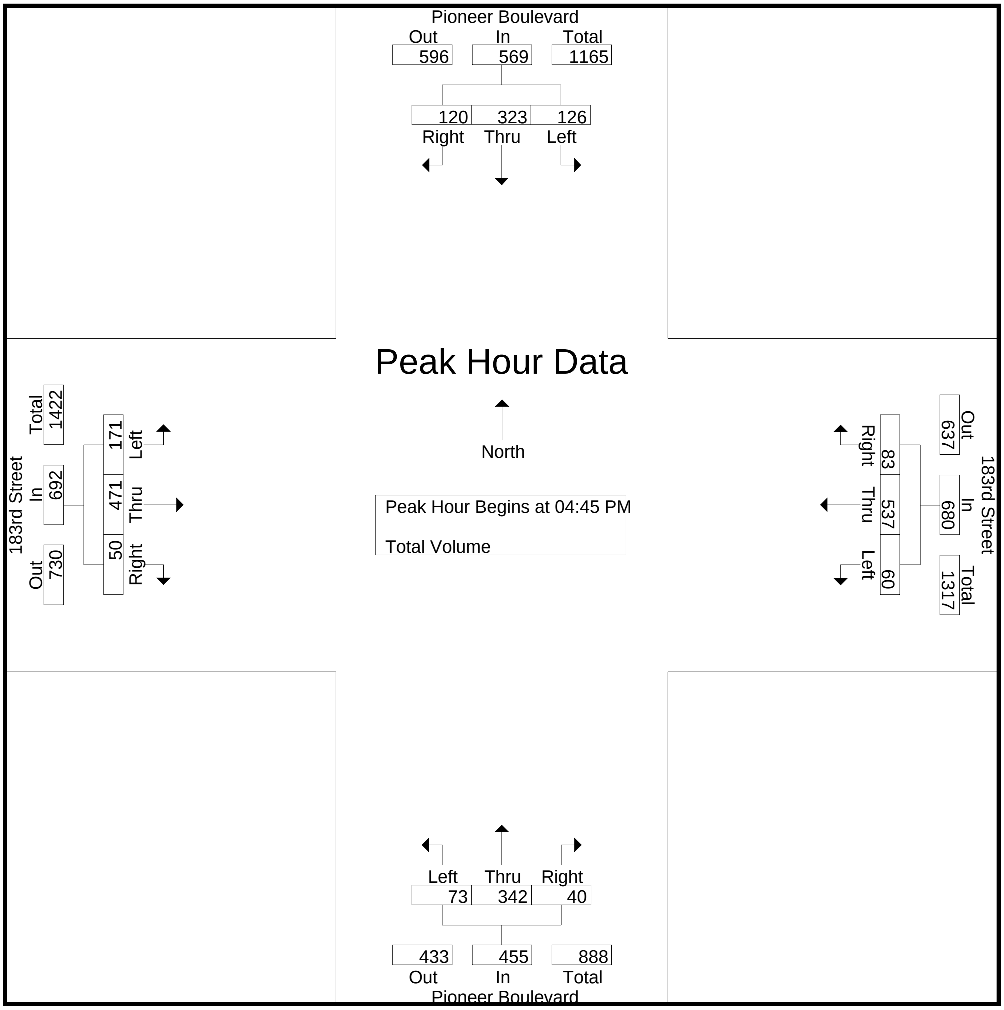
City of Artesia
N/S: Pioneer Boulevard
E/W: 183rd Street
Weather: Clear

File Name : 02_ATS_Pion_183rd PM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:30 PM				04:45 PM				04:45 PM			
+0 mins.	41	79	28	148	**18**	129	25	172	**25**	**89**	11	**125**	**49**	112	10	171
+15 mins.	30	76	28	134	17	133	18	168	14	85	8	107	37	126	**14**	177
+30 mins.	26	**98**	**33**	157	11	**137**	24	172	14	80	9	103	43	100	12	155
+45 mins.	**44**	96	29	**169**	15	132	**26**	**173**	20	88	**12**	120	42	**133**	14	**189**
Total Volume	141	349	118	608	61	531	93	685	73	342	40	455	171	471	50	692
% App. Total	23.2	57.4	19.4		8.9	77.5	13.6		16	75.2	8.8		24.7	68.1	7.2	
PHF	.801	.890	.894	.899	.847	.969	.894	.990	.730	.961	.833	.910	.872	.885	.893	.915

Location:	Artesia
N/S:	Pioneer Boulevard
E/W:	183rd Street

Date: 4/24/2024
Day: Wednesday

PEDESTRIANS

	North Leg Pioneer Boulevard	East Leg 183rd Street	South Leg Pioneer Boulevard	West Leg 183rd Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	2	0	0	1	3
7:15 AM	0	4	3	3	10
7:30 AM	1	1	0	2	4
7:45 AM	1	2	1	1	5
8:00 AM	1	0	1	2	4
8:15 AM	1	7	4	2	14
8:30 AM	2	1	5	3	11
8:45 AM	1	3	2	0	6
TOTAL VOLUMES:	9	18	16	14	57

	North Leg Pioneer Boulevard	East Leg 183rd Street	South Leg Pioneer Boulevard	West Leg 183rd Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	1	4	4	8	17
4:15 PM	0	6	0	2	8
4:30 PM	1	5	2	6	14
4:45 PM	2	7	3	5	17
5:00 PM	5	6	5	3	19
5:15 PM	3	2	4	6	15
5:30 PM	2	3	0	3	8
5:45 PM	2	1	3	5	11
TOTAL VOLUMES:	16	34	21	38	109

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951-268-6268

Location: Artesia
N/S: Pioneer Boulevard
E/W: 183rd Street

Date: 4/24/2024
Day: Wednesday

BICYCLES

	Southbound Pioneer Boulevard			Westbound 183rd Street			Northbound Pioneer Boulevard			Eastbound 183rd Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	0	0	0	2	0	0	0	0	3
7:45 AM	0	0	0	0	0	1	0	2	0	0	0	0	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
8:45 AM	0	0	0	0	0	1	0	1	0	0	1	0	3
TOTAL VOLUMES:	0	1	0	0	0	2	0	7	0	0	1	0	11

	Southbound Pioneer Boulevard			Westbound 183rd Street			Northbound Pioneer Boulevard			Eastbound 183rd Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	2
4:15 PM	0	1	0	0	0	0	0	1	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:15 PM	0	2	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	1	0	0	0	0	0	0	0	0	1	0	2
TOTAL VOLUMES:	0	5	0	0	0	0	0	3	0	0	3	0	11

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City of Artesia
N/S: Pioneer Boulevard
E/W: 187th Street
Weather: Clear

File Name : 03_ATS_Pion_187th AM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 1

Groups Printed- Total Volume

	Pioneer Boulevard Southbound				187th Street Westbound				Pioneer Boulevard Northbound				187th 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
07:00 AM	0	24	2	26	5	3	0	8	1	22	0	23	3	0	1	4	61
07:15 AM	4	42	1	47	7	1	1	9	3	25	5	33	1	6	5	12	101
07:30 AM	2	48	4	54	5	12	2	19	4	38	1	43	3	8	7	18	134
07:45 AM	6	77	6	89	7	4	2	13	5	57	5	67	1	5	6	12	181
Total	12	191	13	216	24	20	5	49	13	142	11	166	8	19	19	46	477
08:00 AM	5	63	3	71	4	6	1	11	6	45	9	60	5	3	4	12	154
08:15 AM	3	78	8	89	1	7	1	9	9	57	2	68	2	5	3	10	176
08:30 AM	0	79	3	82	9	6	4	19	3	55	3	61	1	2	4	7	169
08:45 AM	1	77	3	81	6	6	0	12	4	43	2	49	2	4	4	10	152
Total	9	297	17	323	20	25	6	51	22	200	16	238	10	14	15	39	651
Grand Total	21	488	30	539	44	45	11	100	35	342	27	404	18	33	34	85	1128
Apprch %	3.9	90.5	5.6		44	45	11		8.7	84.7	6.7		21.2	38.8	40		
Total %	1.9	43.3	2.7	47.8	3.9	4	1	8.9	3.1	30.3	2.4	35.8	1.6	2.9	3	7.5	

	Pioneer Boulevard Southbound				187th Street Westbound				Pioneer Boulevard Northbound				187th 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 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	**6**	77	6	**89**	7	4	2	13	5	**57**	5	67	1	**5**	**6**	**12**	**181**
08:00 AM	5	63	3	71	4	6	1	11	6	45	**9**	60	**5**	3	4	12	154
08:15 AM	3	78	**8**	89	1	**7**	1	9	**9**	57	2	**68**	2	5	3	10	176
08:30 AM	0	**79**	3	82	**9**	6	**4**	**19**	3	55	3	61	1	2	4	7	169
Total Volume	14	297	20	331	21	23	8	52	23	214	19	256	9	15	17	41	680
% App. Total	4.2	89.7	6		40.4	44.2	15.4		9	83.6	7.4		22	36.6	41.5		
PHF	.583	.940	.625	.930	.583	.821	.500	.684	.639	.939	.528	.941	.450	.750	.708	.854	.939

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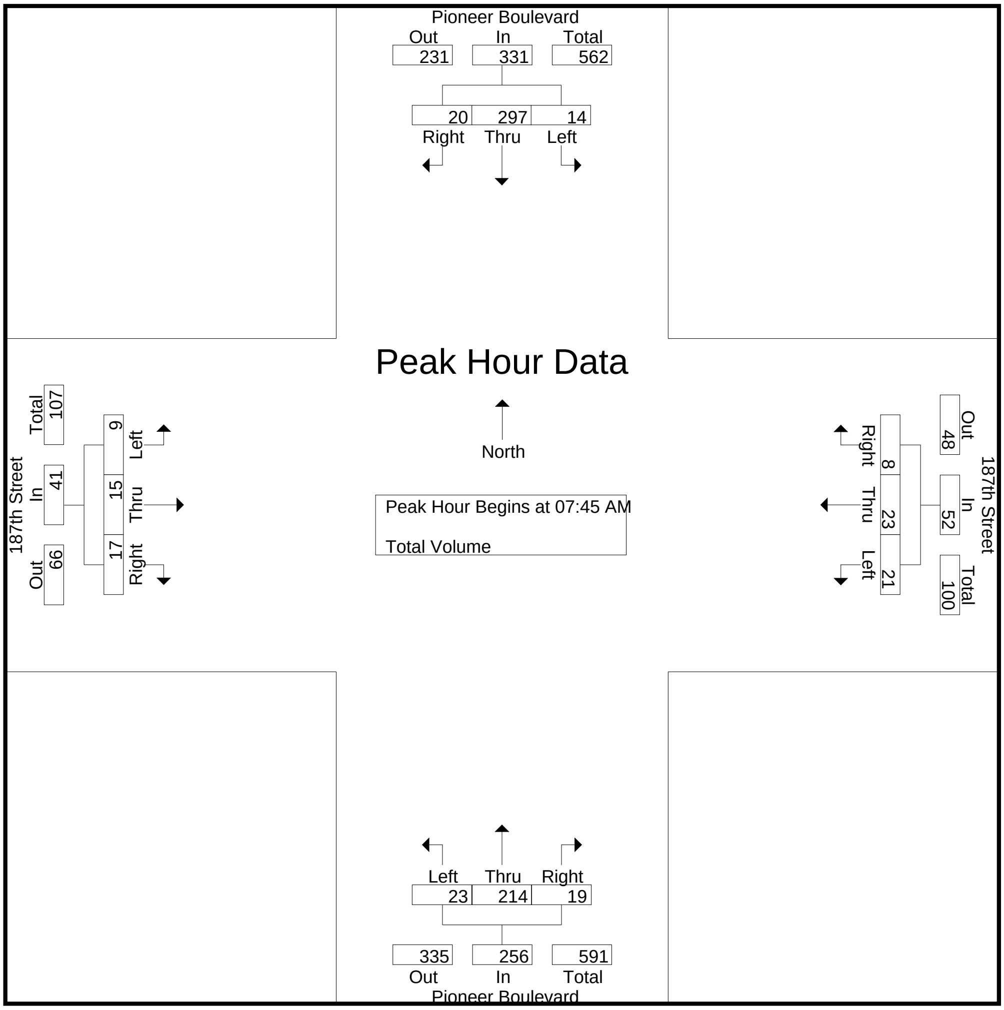
City of Artesia
N/S: Pioneer Boulevard
E/W: 187th Street
Weather: Clear

File Name : 03_ATS_Pion_187th AM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:15 AM				07:45 AM				07:15 AM			
+0 mins.	**6**	77	6	**89**	**7**	1	1	9	5	**57**	5	67	1	6	5	12
+15 mins.	5	63	3	71	5	**12**	**2**	**19**	6	45	**9**	60	3	**8**	**7**	**18**
+30 mins.	3	78	**8**	89	7	4	2	13	**9**	57	2	**68**	1	5	6	12
+45 mins.	0	**79**	3	82	4	6	1	11	3	55	3	61	**5**	3	4	12
Total Volume	14	297	20	331	23	23	6	52	23	214	19	256	10	22	22	54
% App. Total	4.2	89.7	6		44.2	44.2	11.5		9	83.6	7.4		18.5	40.7	40.7	
PHF	.583	.940	.625	.930	.821	.479	.750	.684	.639	.939	.528	.941	.500	.688	.786	.750

Counts Unlimited, Inc.
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City of Artesia
N/S: Pioneer Boulevard
E/W: 187th Street
Weather: Clear

File Name : 03_ATS_Pion_187th PM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 1

Groups Printed- Total Volume

	Pioneer Boulevard Southbound				187th Street Westbound				Pioneer Boulevard Northbound				187th 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
04:00 PM	3	104	12	119	6	4	1	11	5	77	10	92	13	5	16	34	256
04:15 PM	3	73	1	77	7	14	1	22	7	80	9	96	4	10	12	26	221
04:30 PM	7	97	2	106	11	12	5	28	5	98	10	113	7	11	13	31	278
04:45 PM	2	77	4	83	7	8	4	19	6	104	8	118	5	5	17	27	247
Total	15	351	19	385	31	38	11	80	23	359	37	419	29	31	58	118	1002
05:00 PM	2	84	3	89	3	10	3	16	9	90	13	112	5	11	10	26	243
05:15 PM	3	92	1	96	5	8	3	16	10	92	17	119	7	10	10	27	258
05:30 PM	3	108	5	116	4	11	0	15	5	86	7	98	8	8	9	25	254
05:45 PM	1	96	8	105	7	9	6	22	4	90	13	107	8	14	17	39	273
Total	9	380	17	406	19	38	12	69	28	358	50	436	28	43	46	117	1028
Grand Total	24	731	36	791	50	76	23	149	51	717	87	855	57	74	104	235	2030
Apprch %	3	92.4	4.6		33.6	51	15.4		6	83.9	10.2		24.3	31.5	44.3		
Total %	1.2	36	1.8	39	2.5	3.7	1.1	7.3	2.5	35.3	4.3	42.1	2.8	3.6	5.1	11.6	

	Pioneer Boulevard Southbound				187th Street Westbound				Pioneer Boulevard Northbound				187th 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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	2	84	3	89	3	10	3	16	9	90	13	112	5	11	10	26	243
05:15 PM	**3**	92	1	96	5	8	3	16	**10**	**92**	**17**	**119**	7	10	10	27	258
05:30 PM	3	**108**	5	**116**	4	**11**	0	15	5	86	7	98	**8**	8	9	25	254
05:45 PM	1	96	**8**	105	**7**	9	**6**	**22**	4	90	13	107	8	**14**	**17**	**39**	**273**
Total Volume	9	380	17	406	19	38	12	69	28	358	50	436	28	43	46	117	1028
% App. Total	2.2	93.6	4.2		27.5	55.1	17.4		6.4	82.1	11.5		23.9	36.8	39.3		
PHF	.750	.880	.531	.875	.679	.864	.500	.784	.700	.973	.735	.916	.875	.768	.676	.750	.941

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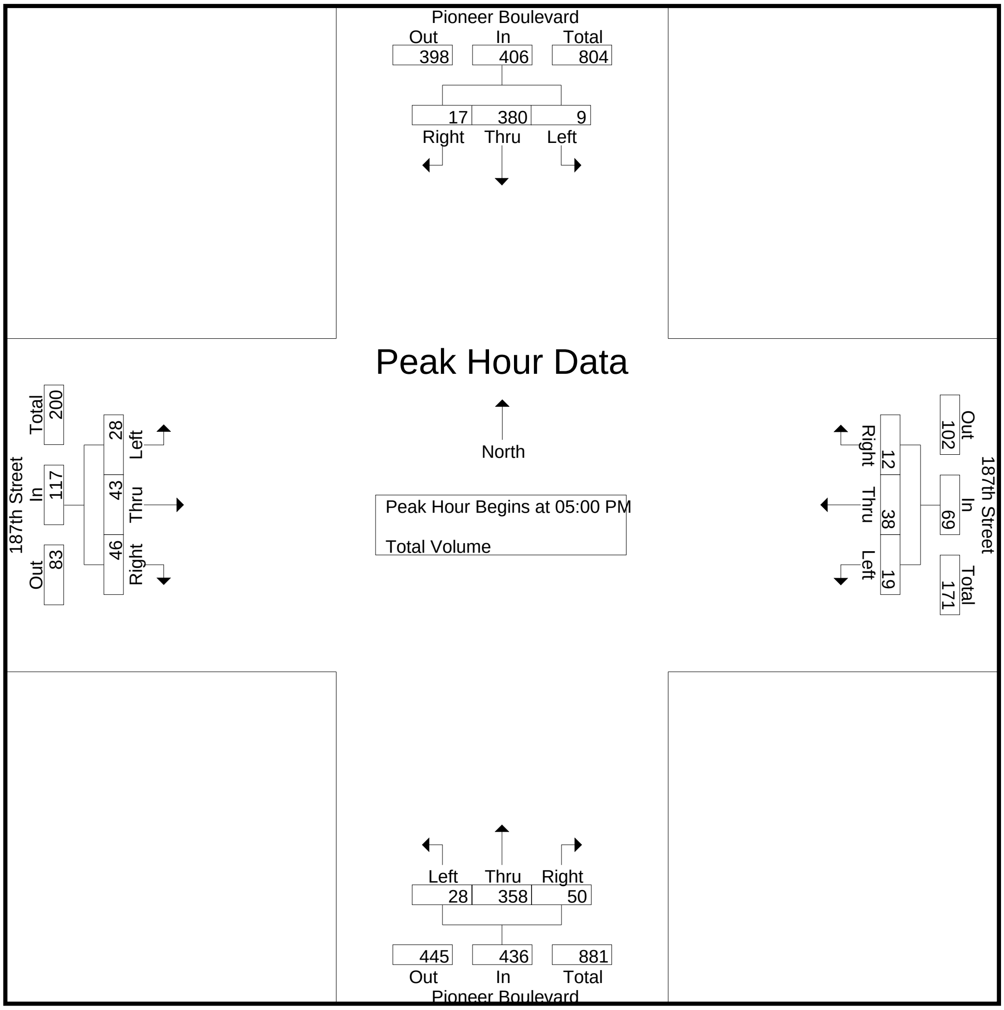
City of Artesia
N/S: Pioneer Boulevard
E/W: 187th Street
Weather: Clear

File Name : 03_ATS_Pion_187th PM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:15 PM				04:30 PM				04:00 PM			
+0 mins.	2	84	3	89	7	**14**	1	22	5	98	10	113	**13**	5	16	**34**
+15 mins.	**3**	92	1	96	**11**	12	**5**	**28**	6	**104**	8	118	4	10	12	26
+30 mins.	3	**108**	5	**116**	7	8	4	19	9	90	13	112	7	**11**	13	31
+45 mins.	1	96	**8**	105	3	10	3	16	**10**	92	**17**	**119**	5	5	**17**	27
Total Volume	9	380	17	406	28	44	13	85	30	384	48	462	29	31	58	118
% App. Total	2.2	93.6	4.2		32.9	51.8	15.3		6.5	83.1	10.4		24.6	26.3	49.2	
PHF	.750	.880	.531	.875	.636	.786	.650	.759	.750	.923	.706	.971	.558	.705	.853	.868

Location: Artesia
N/S: Pioneer Boulevard
E/W: 187th Street

Date: 4/24/2024
Day: Wednesday

PEDESTRIANS

	North Leg Pioneer Boulevard	East Leg 187th Street	South Leg Pioneer Boulevard	West Leg 187th Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	1	1	0	0	2
7:15 AM	0	0	1	3	4
7:30 AM	0	2	0	0	2
7:45 AM	1	0	1	3	5
8:00 AM	3	4	1	2	10
8:15 AM	2	0	0	0	2
8:30 AM	4	0	0	3	7
8:45 AM	3	6	1	2	12
TOTAL VOLUMES:	14	13	4	13	44

	North Leg Pioneer Boulevard	East Leg 187th Street	South Leg Pioneer Boulevard	West Leg 187th Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	3	4	1	13	21
4:15 PM	9	2	1	15	27
4:30 PM	0	2	5	9	16
4:45 PM	4	2	2	2	10
5:00 PM	15	7	4	6	32
5:15 PM	5	5	4	12	26
5:30 PM	2	4	1	4	11
5:45 PM	3	1	4	6	14
TOTAL VOLUMES:	41	27	22	67	157

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Location: Artesia
N/S: Pioneer Boulevard
E/W: 187th Street

Date: 4/24/2024
Day: Wednesday

BICYCLES

	Southbound Pioneer Boulevard			Westbound 187th Street			Northbound Pioneer Boulevard			Eastbound 187th Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	1
7:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
7:45 AM	0	1	0	0	0	0	1	1	0	0	0	0	3
8:00 AM	0	0	0	0	2	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	1	0	0	2	0	2	4	0	0	0	1	10

	Southbound Pioneer Boulevard			Westbound 187th Street			Northbound Pioneer Boulevard			Eastbound 187th Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	1	0	0	0	2	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:15 PM	0	1	0	0	0	0	1	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	1	0	1	0	0	1	2	0	0	0	2	7

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City of Artesia
N/S: Pioneer Boulevard
E/W: South Street
Weather: Clear

File Name : 04_ATS_Pion_South AM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 1

Groups Printed- Total Volume

	Pioneer Boulevard Southbound				South Street Westbound				Pioneer Boulevard Northbound				South 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
07:00 AM	4	18	5	27	3	92	6	101	4	19	15	38	3	47	7	57	223
07:15 AM	6	38	12	56	22	97	3	122	4	24	12	40	5	84	9	98	316
07:30 AM	4	41	17	62	22	137	5	164	16	32	22	70	7	85	20	112	408
07:45 AM	9	74	16	99	20	149	10	179	17	54	24	95	10	95	12	117	490
Total	23	171	50	244	67	475	24	566	41	129	73	243	25	311	48	384	1437
08:00 AM	9	37	20	66	21	178	7	206	15	31	23	69	13	92	17	122	463
08:15 AM	7	55	20	82	19	179	7	205	20	52	28	100	10	84	14	108	495
08:30 AM	8	52	24	84	24	185	16	225	21	40	22	83	4	72	29	105	497
08:45 AM	13	38	27	78	23	141	15	179	31	36	24	91	10	103	26	139	487
Total	37	182	91	310	87	683	45	815	87	159	97	343	37	351	86	474	1942
Grand Total	60	353	141	554	154	1158	69	1381	128	288	170	586	62	662	134	858	3379
Apprch %	10.8	63.7	25.5		11.2	83.9	5		21.8	49.1	29		7.2	77.2	15.6		
Total %	1.8	10.4	4.2	16.4	4.6	34.3	2	40.9	3.8	8.5	5	17.3	1.8	19.6	4	25.4	

	Pioneer Boulevard Southbound				South Street Westbound				Pioneer Boulevard Northbound				South 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 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	**9**	**74**	16	**99**	20	149	10	179	17	**54**	24	95	10	**95**	12	117	490
08:00 AM	9	37	20	66	21	178	7	206	15	31	23	69	**13**	92	17	**122**	463
08:15 AM	7	55	20	82	19	179	7	205	20	52	**28**	**100**	10	84	14	108	495
08:30 AM	8	52	**24**	84	**24**	**185**	**16**	**225**	**21**	40	22	83	4	72	**29**	105	**497**
Total Volume	33	218	80	331	84	691	40	815	73	177	97	347	37	343	72	452	1945
% App. Total	10	65.9	24.2		10.3	84.8	4.9		21	51	28		8.2	75.9	15.9		
PHF	.917	.736	.833	.836	.875	.934	.625	.906	.869	.819	.866	.868	.712	.903	.621	.926	.978

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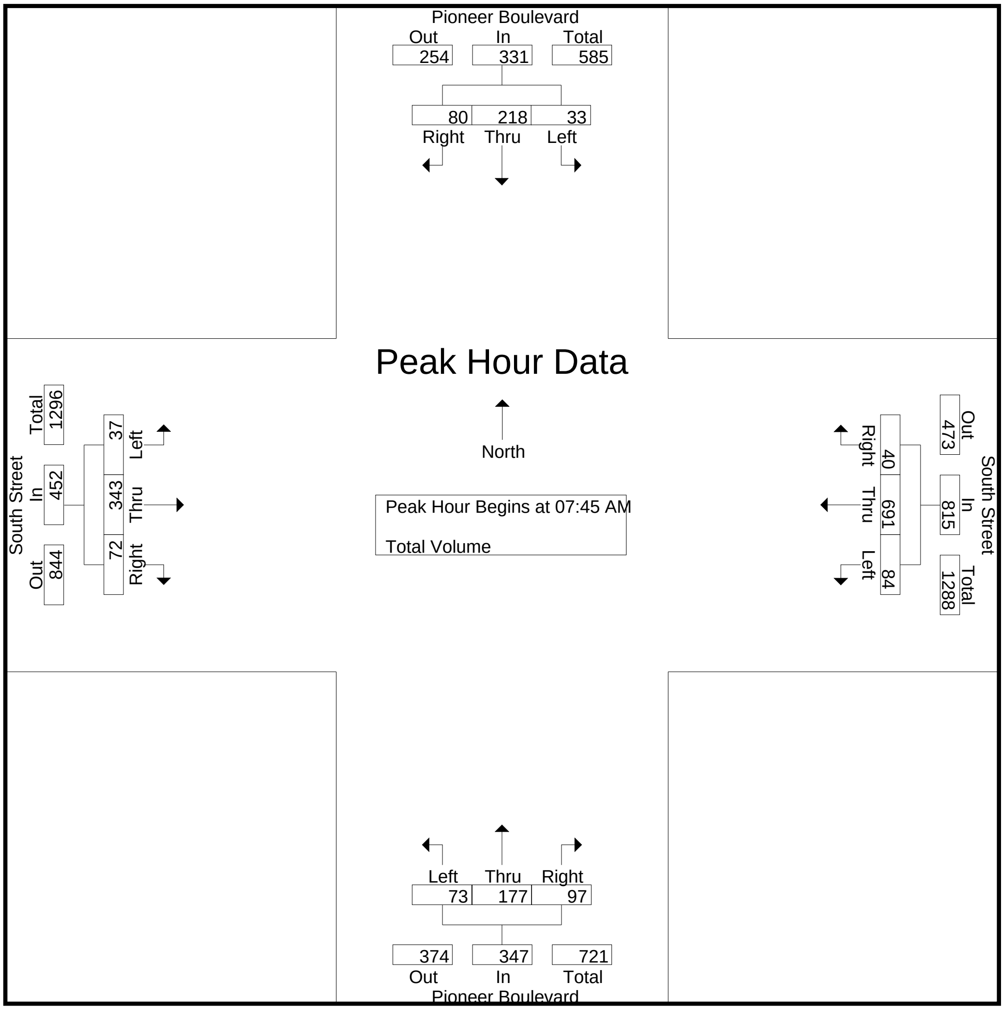
City of Artesia
N/S: Pioneer Boulevard
E/W: South Street
Weather: Clear

File Name : 04_ATS_Pion_South AM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:45 AM				07:45 AM				08:00 AM			
+0 mins.	**9**	**74**	16	**99**	20	149	10	179	17	**54**	24	95	**13**	92	17	122
+15 mins.	9	37	20	66	21	178	7	206	15	31	23	69	10	84	14	108
+30 mins.	7	55	20	82	19	179	7	205	20	52	**28**	**100**	4	72	**29**	105
+45 mins.	8	52	**24**	84	**24**	**185**	**16**	**225**	**21**	40	22	83	10	**103**	26	**139**
Total Volume	33	218	80	331	84	691	40	815	73	177	97	347	37	351	86	474
% App. Total	10	65.9	24.2		10.3	84.8	4.9		21	51	28		7.8	74.1	18.1	
PHF	.917	.736	.833	.836	.875	.934	.625	.906	.869	.819	.866	.868	.712	.852	.741	.853

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City of Artesia
N/S: Pioneer Boulevard
E/W: South Street
Weather: Clear

File Name : 04_ATS_Pion_South PM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 1

Groups Printed- Total Volume

	Pioneer Boulevard Southbound				South Street Westbound				Pioneer Boulevard Northbound				South 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
04:00 PM	32	70	36	138	20	150	18	188	42	58	33	133	33	165	36	234	693
04:15 PM	14	60	25	99	27	176	12	215	40	58	25	123	31	173	28	232	669
04:30 PM	23	65	33	121	26	178	18	222	41	70	27	138	28	177	43	248	729
04:45 PM	23	49	23	95	29	172	25	226	32	55	27	114	31	196	40	267	702
Total	92	244	117	453	102	676	73	851	155	241	112	508	123	711	147	981	2793
05:00 PM	22	49	33	104	43	175	13	231	33	64	53	150	23	179	38	240	725
05:15 PM	29	50	30	109	37	190	20	247	45	81	41	167	22	212	45	279	802
05:30 PM	17	70	25	112	32	184	15	231	48	64	43	155	24	172	44	240	738
05:45 PM	23	81	37	141	38	171	15	224	37	71	44	152	18	199	47	264	781
Total	91	250	125	466	150	720	63	933	163	280	181	624	87	762	174	1023	3046
Grand Total	183	494	242	919	252	1396	136	1784	318	521	293	1132	210	1473	321	2004	5839
Apprch %	19.9	53.8	26.3		14.1	78.3	7.6		28.1	46	25.9		10.5	73.5	16		
Total %	3.1	8.5	4.1	15.7	4.3	23.9	2.3	30.6	5.4	8.9	5	19.4	3.6	25.2	5.5	34.3	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Entire Intersection Begins at 05:00 PM

	Pioneer Boulevard Southbound				South Street Westbound				Pioneer Boulevard Northbound				South 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
05:00 PM	22	49	33	104	**43**	175	13	231	33	64	**53**	150	23	179	38	240	725
05:15 PM	**29**	50	30	109	37	**190**	**20**	**247**	45	**81**	41	**167**	22	**212**	45	**279**	**802**
05:30 PM	17	70	25	112	32	184	15	231	**48**	64	43	155	**24**	172	44	240	738
05:45 PM	23	**81**	**37**	**141**	38	171	15	224	37	71	44	152	18	199	**47**	264	781
Total Volume	91	250	125	466	150	720	63	933	163	280	181	624	87	762	174	1023	3046
% App. Total	19.5	53.6	26.8		16.1	77.2	6.8		26.1	44.9	29		8.5	74.5	17		
PHF	.784	.772	.845	.826	.872	.947	.788	.944	.849	.864	.854	.934	.906	.899	.926	.917	.950

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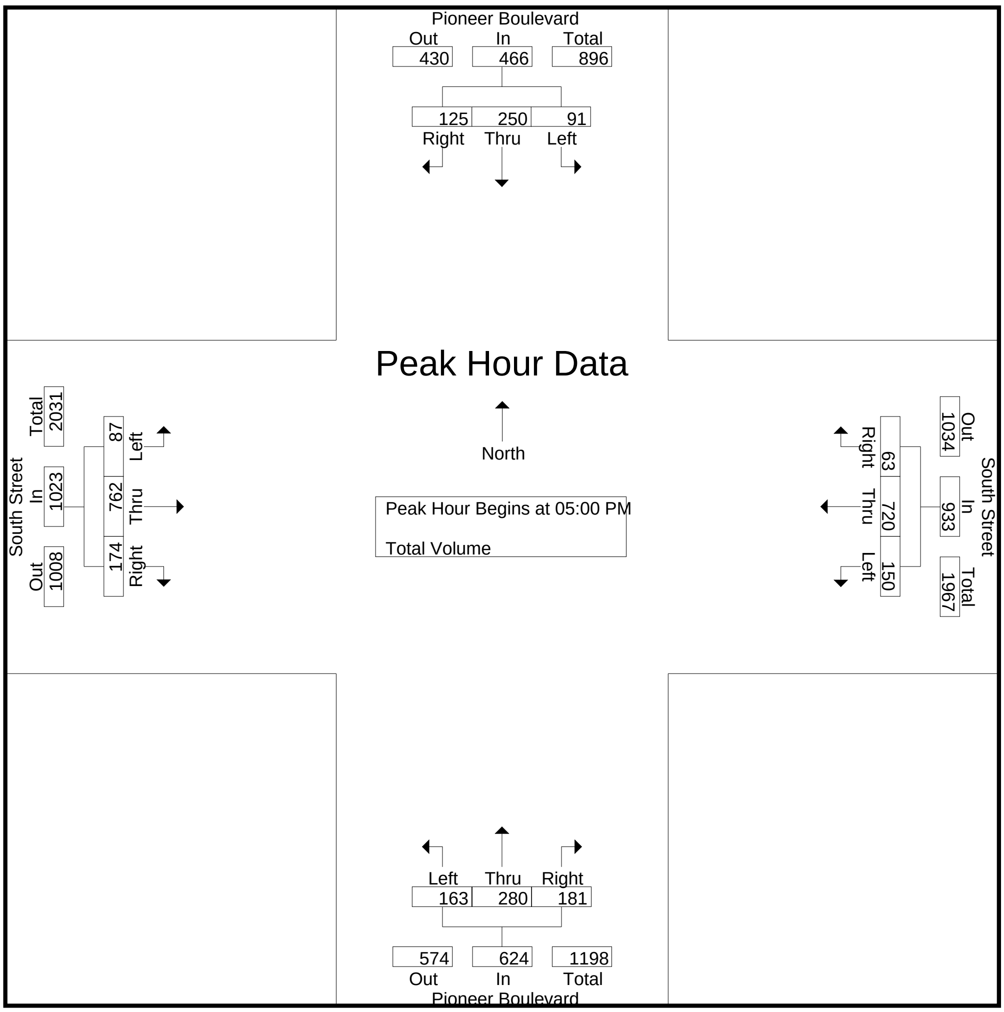
City of Artesia
N/S: Pioneer Boulevard
E/W: South Street
Weather: Clear

File Name : 04_ATS_Pion_South PM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:45 PM				05:00 PM				04:30 PM			
+0 mins.	22	49	33	104	29	172	**25**	226	33	64	**53**	150	28	177	43	248
+15 mins.	**29**	50	30	109	**43**	175	13	231	45	**81**	41	**167**	**31**	196	40	267
+30 mins.	17	70	25	112	37	**190**	20	**247**	**48**	64	43	155	23	179	38	240
+45 mins.	23	**81**	**37**	**141**	32	184	15	231	37	71	44	152	22	**212**	**45**	**279**
Total Volume	91	250	125	466	141	721	73	935	163	280	181	624	104	764	166	1034
% App. Total	19.5	53.6	26.8		15.1	77.1	7.8		26.1	44.9	29		10.1	73.9	16.1	
PHF	.784	.772	.845	.826	.820	.949	.730	.946	.849	.864	.854	.934	.839	.901	.922	.927

Location: Artesia
N/S: Pioneer Boulevard
E/W: South Street

Date: 4/24/2024
Day: Wednesday

PEDESTRIANS

	North Leg Pioneer Boulevard	East Leg South Street	South Leg Pioneer Boulevard	West Leg South Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	2	0	0	0	2
7:15 AM	0	1	0	2	3
7:30 AM	1	3	4	2	10
7:45 AM	4	5	1	4	14
8:00 AM	3	2	3	3	11
8:15 AM	1	0	1	1	3
8:30 AM	0	1	1	2	4
8:45 AM	1	3	3	3	10
TOTAL VOLUMES:	12	15	13	17	57

	North Leg Pioneer Boulevard	East Leg South Street	South Leg Pioneer Boulevard	West Leg South Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	11	9	9	9	38
4:15 PM	3	7	5	0	15
4:30 PM	2	4	5	9	20
4:45 PM	2	1	2	2	7
5:00 PM	4	6	8	5	23
5:15 PM	0	0	0	5	5
5:30 PM	3	1	0	4	8
5:45 PM	0	1	2	3	6
TOTAL VOLUMES:	25	29	31	37	122

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Location: Artesia
N/S: Pioneer Boulevard
E/W: South Street

Date: 4/24/2024
Day: Wednesday

BICYCLES

	Southbound Pioneer Boulevard			Westbound South Street			Northbound Pioneer Boulevard			Eastbound South Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	1	1	0	0	0	0	0	0	2
7:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	1	0	0	2	0	0	0	0	3
7:45 AM	0	2	0	0	0	2	0	2	1	0	0	0	7
8:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	1	1	0	0	1	0	0	0	0	3
TOTAL VOLUMES:	1	3	0	1	3	3	0	5	1	0	0	0	17

	Southbound Pioneer Boulevard			Westbound South Street			Northbound Pioneer Boulevard			Eastbound South Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	1	2	0	1	0	1	0	0	0	0	1	0	6
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	2
4:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	1	0	0	0	0	0	1	0	2
5:00 PM	0	1	0	0	0	0	0	2	0	0	0	0	3
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	1	3	0	2	1	2	0	3	0	0	3	1	16

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City of Artesia
N/S: I-605 Southbound Ramps
E/W: South Street
Weather: Clear

File Name : 05_ATS_605S_South AM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 1

Groups Printed- Total Volume

	I-605 Southbound Off Ramp Southbound				South Street Westbound				I-605 Southbound On Ramp Northbound				South 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
07:00 AM	67	0	110	177	0	133	60	193	0	0	0	0	0	100	101	201	571
07:15 AM	81	0	113	194	0	135	69	204	0	0	0	0	0	118	93	211	609
07:30 AM	106	0	143	249	0	174	77	251	0	0	0	0	0	108	143	251	751
07:45 AM	105	0	158	263	0	258	75	333	0	0	0	0	0	133	139	272	868
Total	359	0	524	883	0	700	281	981	0	0	0	0	0	459	476	935	2799
08:00 AM	87	0	181	268	0	237	81	318	0	0	0	0	0	168	151	319	905
08:15 AM	90	0	161	251	0	223	89	312	0	0	0	0	0	131	148	279	842
08:30 AM	125	0	156	281	0	208	74	282	0	0	0	0	0	133	122	255	818
08:45 AM	155	0	171	326	0	202	58	260	0	0	0	0	0	136	111	247	833
Total	457	0	669	1126	0	870	302	1172	0	0	0	0	0	568	532	1100	3398
Grand Total	816	0	1193	2009	0	1570	583	2153	0	0	0	0	0	1027	1008	2035	6197
Apprch %	40.6	0	59.4		0	72.9	27.1		0	0	0		0	50.5	49.5		
Total %	13.2	0	19.3	32.4	0	25.3	9.4	34.7	0	0	0	0	0	16.6	16.3	32.8	

	I-605 Southbound Off Ramp Southbound				South Street Westbound				I-605 Southbound On Ramp Northbound				South 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 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	105	0	158	263	0	**258**	75	**333**	0	0	0	0	0	133	139	272	868
08:00 AM	87	0	**181**	268	0	237	81	318	0	0	0	0	0	**168**	**151**	**319**	**905**
08:15 AM	90	0	161	251	0	223	**89**	312	0	0	0	0	0	131	148	279	842
08:30 AM	**125**	0	156	**281**	0	208	74	282	0	0	0	0	0	133	122	255	818
Total Volume	407	0	656	1063	0	926	319	1245	0	0	0	0	0	565	560	1125	3433
% App. Total	38.3	0	61.7		0	74.4	25.6		0	0	0		0	50.2	49.8		
PHF	.814	.000	.906	.946	.000	.897	.896	.935	.000	.000	.000	.000	.000	.841	.927	.882	.948

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City of Artesia
N/S: I-605 Southbound Ramps
E/W: South Street
Weather: Clear

File Name : 05_ATS_605S_South AM
Site Code : 05724372
Start Date : 4/24/2024
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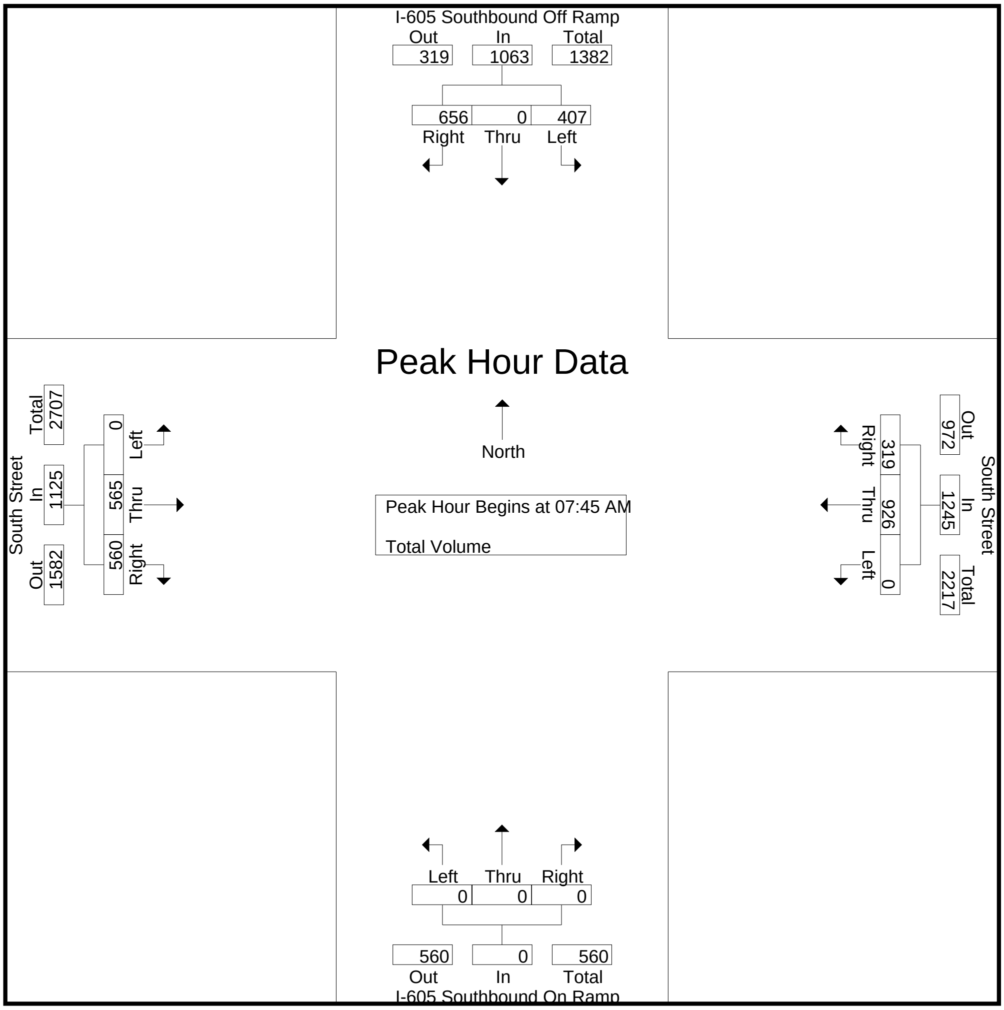

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:45 AM				07:00 AM				07:45 AM			
+0 mins.	87	0	**181**	268	0	**258**	75	**333**	0	0	0	0	0	133	139	272
+15 mins.	90	0	161	251	0	237	81	318	0	0	0	0	0	**168**	**151**	**319**
+30 mins.	125	0	156	281	0	223	**89**	312	0	0	0	0	0	131	148	279
+45 mins.	**155**	0	171	**326**	0	208	74	282	0	0	0	0	0	133	122	255
Total Volume	457	0	669	1126	0	926	319	1245	0	0	0	0	0	565	560	1125
% App. Total	40.6	0	59.4		0	74.4	25.6		0	0	0		0	50.2	49.8	
PHF	.737	.000	.924	.863	.000	.897	.896	.935	.000	.000	.000	.000	.000	.841	.927	.882

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City of Artesia
N/S: I-605 Southbound Ramps
E/W: South Street
Weather: Clear

File Name : 05_ATS_605S_South PM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 1

Groups Printed- Total Volume

	I-605 Southbound Off Ramp Southbound				South Street Westbound				I-605 Southbound On Ramp Northbound				South 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
04:00 PM	195	0	121	316	0	207	98	305	0	0	0	0	0	194	129	323	944
04:15 PM	187	0	126	313	0	261	89	350	0	0	0	0	0	214	151	365	1028
04:30 PM	227	0	140	367	0	218	96	314	0	0	0	0	0	233	134	367	1048
04:45 PM	211	0	155	366	0	232	92	324	0	0	0	0	0	229	128	357	1047
Total	820	0	542	1362	0	918	375	1293	0	0	0	0	0	870	542	1412	4067
05:00 PM	197	0	133	330	0	266	101	367	0	0	0	0	0	266	146	412	1109
05:15 PM	185	0	138	323	0	233	103	336	0	0	0	0	0	236	112	348	1007
05:30 PM	216	0	113	329	0	219	83	302	0	0	0	0	0	237	147	384	1015
05:45 PM	206	0	120	326	0	245	101	346	0	0	0	0	0	224	124	348	1020
Total	804	0	504	1308	0	963	388	1351	0	0	0	0	0	963	529	1492	4151
Grand Total	1624	0	1046	2670	0	1881	763	2644	0	0	0	0	0	1833	1071	2904	8218
Apprch %	60.8	0	39.2		0	71.1	28.9		0	0	0		0	63.1	36.9		
Total %	19.8	0	12.7	32.5	0	22.9	9.3	32.2	0	0	0	0	0	22.3	13	35.3	

	I-605 Southbound Off Ramp Southbound				South Street Westbound				I-605 Southbound On Ramp Northbound				South 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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	187	0	126	313	0	261	89	350	0	0	0	0	0	214	**151**	365	1028
04:30 PM	**227**	0	140	**367**	0	218	96	314	0	0	0	0	0	233	134	367	1048
04:45 PM	211	0	**155**	366	0	232	92	324	0	0	0	0	0	229	128	357	1047
05:00 PM	197	0	133	330	0	**266**	**101**	**367**	0	0	0	0	0	**266**	146	**412**	**1109**
Total Volume	822	0	554	1376	0	977	378	1355	0	0	0	0	0	942	559	1501	4232
% App. Total	59.7	0	40.3		0	72.1	27.9		0	0	0		0	62.8	37.2		
PHF	.905	.000	.894	.937	.000	.918	.936	.923	.000	.000	.000	.000	.000	.885	.925	.911	.954

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City of Artesia
N/S: I-605 Southbound Ramps
E/W: South Street
Weather: Clear

File Name : 05_ATS_605S_South PM
Site Code : 05724372
Start Date : 4/24/2024
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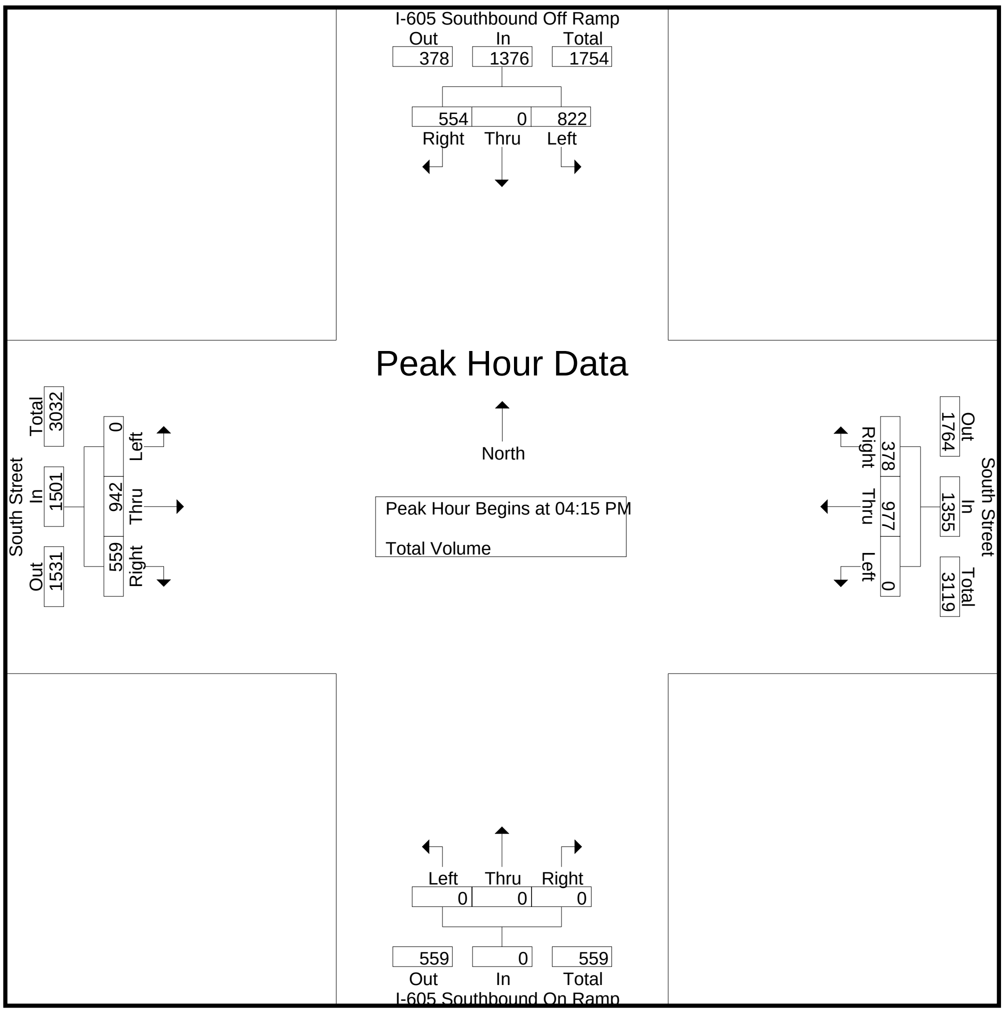

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:15 PM				04:00 PM				04:15 PM			
+0 mins.	**227**	0	140	**367**	0	261	89	350	0	0	0	0	0	214	**151**	365
+15 mins.	211	0	**155**	366	0	218	96	314	0	0	0	0	0	233	134	367
+30 mins.	197	0	133	330	0	232	92	324	0	0	0	0	0	229	128	357
+45 mins.	185	0	138	323	0	**266**	**101**	**367**	0	0	0	0	0	**266**	146	**412**
Total Volume	820	0	566	1386	0	977	378	1355	0	0	0	0	0	942	559	1501
% App. Total	59.2	0	40.8		0	72.1	27.9		0	0	0		0	62.8	37.2	
PHF	.903	.000	.913	.944	.000	.918	.936	.923	.000	.000	.000	.000	.000	.885	.925	.911

Location: Artesia
N/S: I-605 SB Ramps
E/W: South Street

Date: 4/24/2024
Day: Wednesday

PEDESTRIANS

	North Leg I-605 SB Ramps	East Leg South Street	South Leg I-605 SB Ramps	West Leg South Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	2	0	1	0	3
7:30 AM	1	0	1	0	2
7:45 AM	0	0	0	0	0
8:00 AM	1	0	0	0	1
8:15 AM	0	0	0	0	0
8:30 AM	2	0	2	0	4
8:45 AM	3	0	1	0	4
TOTAL VOLUMES:	9	0	5	0	14

	North Leg I-605 SB Ramps	East Leg South Street	South Leg I-605 SB Ramps	West Leg South Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	2	0	0	0	2
4:45 PM	1	0	0	0	1
5:00 PM	0	0	0	0	0
5:15 PM	0	0	1	0	1
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	3	0	1	0	4

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Location: Artesia
N/S: I-605 SB Ramps
E/W: South Street

Date: 4/24/2024
Day: Wednesday

BICYCLES

	Southbound I-605 SB Ramps			Westbound South Street			Northbound I-605 SB Ramps			Eastbound South Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound I-605 SB Ramps			Westbound South Street			Northbound I-605 SB Ramps			Eastbound South Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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City of Artesia
N/S: I-605 Northbound Ramps
E/W: South Street
Weather: Clear

File Name : 06_ATS_605N_South AM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 1

Groups Printed- Total Volume

	I-605 Northbound On Ramp Southbound				South Street Westbound				I-605 Northbound Ramps Northbound				South 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
07:00 AM	0	0	0	0	0	109	77	186	82	0	37	119	0	101	62	163	468
07:15 AM	0	0	0	0	0	117	111	228	82	0	59	141	0	121	86	207	576
07:30 AM	0	0	0	0	0	136	122	258	117	0	49	166	0	164	51	215	639
07:45 AM	0	0	0	0	0	175	105	280	154	0	68	222	0	150	82	232	734
Total	0	0	0	0	0	537	415	952	435	0	213	648	0	536	281	817	2417
08:00 AM	0	0	0	0	0	154	112	266	152	0	61	213	0	163	101	264	743
08:15 AM	0	0	0	0	0	179	105	284	128	0	61	189	0	150	73	223	696
08:30 AM	0	0	0	0	0	165	101	266	121	0	79	200	0	169	74	243	709
08:45 AM	0	0	0	0	0	115	93	208	143	0	78	221	0	228	78	306	735
Total	0	0	0	0	0	613	411	1024	544	0	279	823	0	710	326	1036	2883
Grand Total	0	0	0	0	0	1150	826	1976	979	0	492	1471	0	1246	607	1853	5300
Apprch %	0	0	0		0	58.2	41.8		66.6	0	33.4		0	67.2	32.8		
Total %	0	0	0	0	0	21.7	15.6	37.3	18.5	0	9.3	27.8	0	23.5	11.5	35	

	I-605 Northbound On Ramp Southbound				South Street Westbound				I-605 Northbound Ramps Northbound				South 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 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	0	154	**112**	266	**152**	0	61	213	0	163	**101**	264	**743**
08:15 AM	0	0	0	0	0	**179**	105	**284**	128	0	61	189	0	150	73	223	696
08:30 AM	0	0	0	0	0	165	101	266	121	0	**79**	200	0	169	74	243	709
08:45 AM	0	0	0	0	0	115	93	208	143	0	78	**221**	0	**228**	78	**306**	735
Total Volume	0	0	0	0	0	613	411	1024	544	0	279	823	0	710	326	1036	2883
% App. Total	0	0	0		0	59.9	40.1		66.1	0	33.9		0	68.5	31.5		
PHF	.000	.000	.000	.000	.000	.856	.917	.901	.895	.000	.883	.931	.000	.779	.807	.846	.970

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File Name : 06_ATS_605N_South AM
Site Code : 05724372
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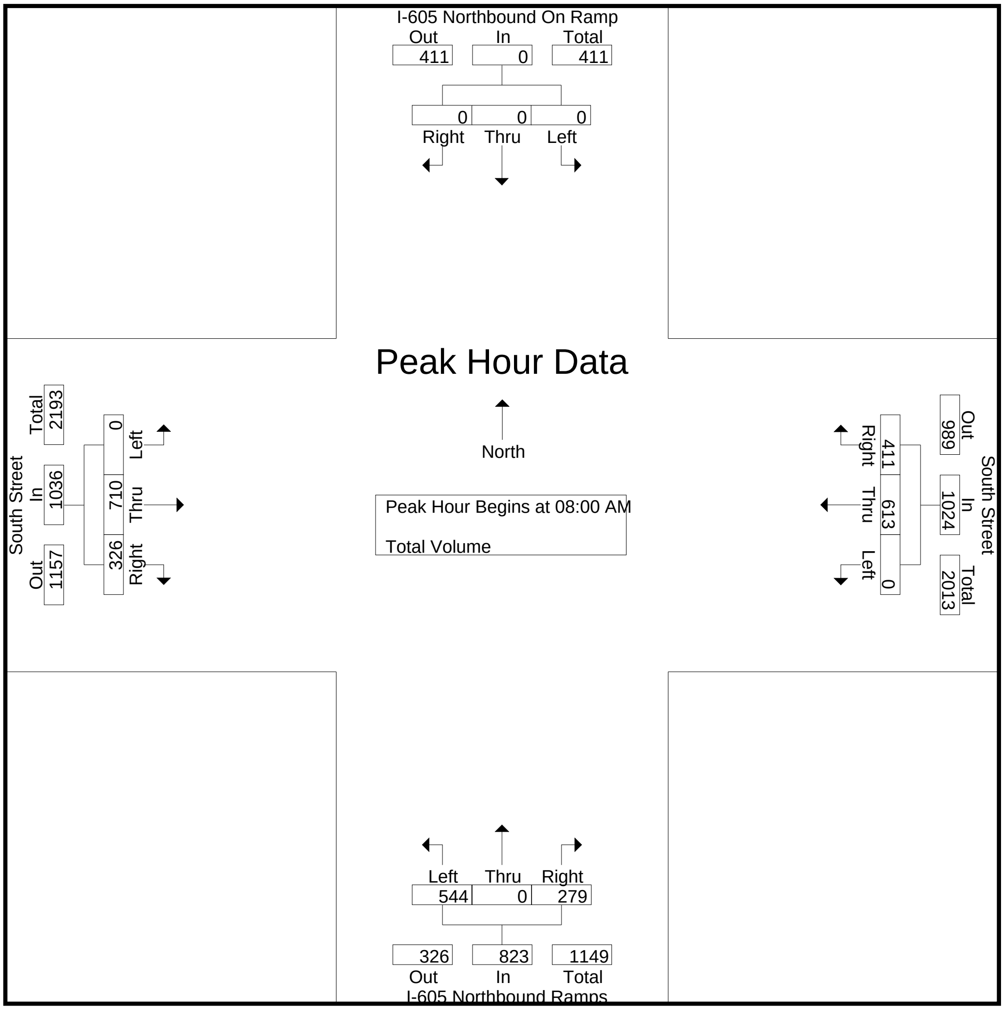
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:45 AM				07:45 AM				08:00 AM			
+0 mins.	0	0	0	0	0	175	105	280	**154**	0	68	**222**	0	163	**101**	264
+15 mins.	0	0	0	0	0	154	**112**	266	152	0	61	213	0	150	73	223
+30 mins.	0	0	0	0	0	**179**	105	**284**	128	0	61	189	0	169	74	243
+45 mins.	0	0	0	0	0	165	101	266	121	0	**79**	200	0	**228**	78	**306**
Total Volume	0	0	0	0	0	673	423	1096	555	0	269	824	0	710	326	1036
% App. Total	0	0	0		0	61.4	38.6		67.4	0	32.6		0	68.5	31.5	
PHF	.000	.000	.000	.000	.000	.940	.944	.965	.901	.000	.851	.928	.000	.779	.807	.846

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City of Artesia
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File Name : 06_ATS_605N_South PM
Site Code : 05724372
Start Date : 4/24/2024
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Groups Printed- Total Volume

	I-605 Northbound On Ramp Southbound				South Street Westbound				I-605 Northbound Ramps Northbound				South 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
04:00 PM	0	0	0	0	0	218	188	406	82	0	128	210	0	311	86	397	1013
04:15 PM	0	0	0	0	0	207	196	403	128	0	137	265	0	306	97	403	1071
04:30 PM	0	0	0	0	0	212	166	378	96	0	124	220	0	362	109	471	1069
04:45 PM	0	0	0	0	0	216	169	385	105	0	129	234	0	351	87	438	1057
Total	0	0	0	0	0	853	719	1572	411	0	518	929	0	1330	379	1709	4210
05:00 PM	0	0	0	0	0	249	169	418	103	0	108	211	0	354	117	471	1100
05:15 PM	0	0	0	0	0	227	192	419	100	0	119	219	0	319	101	420	1058
05:30 PM	0	0	0	0	0	212	181	393	80	0	109	189	0	360	91	451	1033
05:45 PM	0	0	0	0	0	241	143	384	92	0	130	222	0	352	93	445	1051
Total	0	0	0	0	0	929	685	1614	375	0	466	841	0	1385	402	1787	4242
Grand Total	0	0	0	0	0	1782	1404	3186	786	0	984	1770	0	2715	781	3496	8452
Apprch %	0	0	0		0	55.9	44.1		44.4	0	55.6		0	77.7	22.3		
Total %	0	0	0	0	0	21.1	16.6	37.7	9.3	0	11.6	20.9	0	32.1	9.2	41.4	

	I-605 Northbound On Ramp Southbound				South Street Westbound				I-605 Northbound Ramps Northbound				South 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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	207	**196**	403	**128**	0	**137**	**265**	0	306	97	403	1071
04:30 PM	0	0	0	0	0	212	166	378	96	0	124	220	0	**362**	109	**471**	1069
04:45 PM	0	0	0	0	0	216	169	385	105	0	129	234	0	351	87	438	1057
05:00 PM	0	0	0	0	0	**249**	169	**418**	103	0	108	211	0	354	**117**	471	**1100**
Total Volume	0	0	0	0	0	884	700	1584	432	0	498	930	0	1373	410	1783	4297
% App. Total	0	0	0		0	55.8	44.2		46.5	0	53.5		0	77	23		
PHF	.000	.000	.000	.000	.000	.888	.893	.947	.844	.000	.909	.877	.000	.948	.876	.946	.977

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City of Artesia
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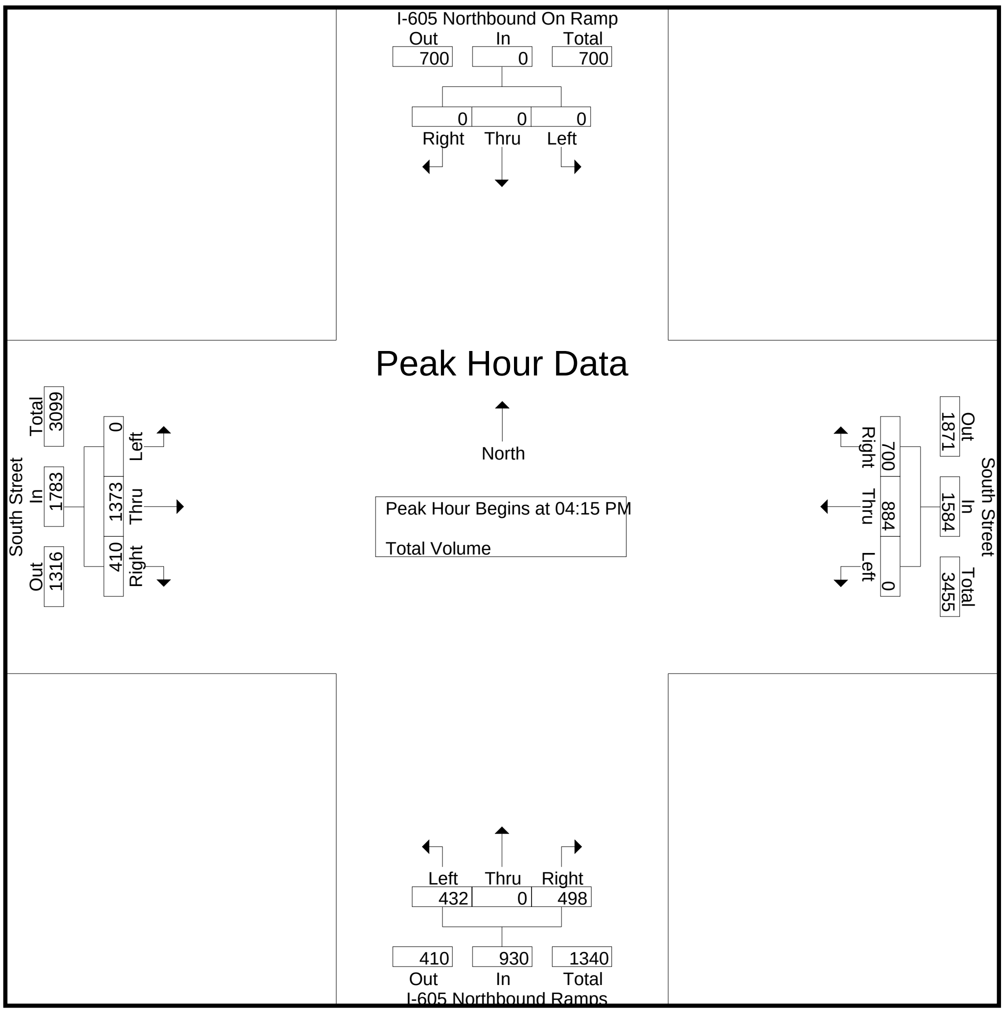
File Name : 06_ATS_605N_South PM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				04:15 PM				04:30 PM			
+0 mins.	0	0	0	0	0	216	169	385	**128**	0	**137**	**265**	0	**362**	109	**471**
+15 mins.	0	0	0	0	0	**249**	169	418	96	0	124	220	0	351	87	438
+30 mins.	0	0	0	0	0	227	**192**	**419**	105	0	129	234	0	354	**117**	471
+45 mins.	0	0	0	0	0	212	181	393	103	0	108	211	0	319	101	420
Total Volume	0	0	0	0	0	904	711	1615	432	0	498	930	0	1386	414	1800
% App. Total	0	0	0		0	56	44		46.5	0	53.5		0	77	23	
PHF	.000	.000	.000	.000	.000	.908	.926	.964	.844	.000	.909	.877	.000	.957	.885	.955

Location: Artesia
N/S: I-605 NB Ramps
E/W: South Street

Date: 4/24/2024
Day: Wednesday

PEDESTRIANS

	North Leg I-605 NB Ramps	East Leg South Street	South Leg I-605 NB Ramps	West Leg South Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	1	0	1	0	2
7:30 AM	1	0	1	0	2
7:45 AM	0	0	0	0	0
8:00 AM	1	0	0	0	1
8:15 AM	0	0	0	0	0
8:30 AM	1	0	2	0	3
8:45 AM	0	0	1	0	1
TOTAL VOLUMES:	4	0	5	0	9

	North Leg I-605 NB Ramps	East Leg South Street	South Leg I-605 NB Ramps	West Leg South Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	2	0	0	0	2
4:45 PM	1	0	0	0	1
5:00 PM	0	0	0	0	0
5:15 PM	0	0	1	0	1
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	3	0	1	0	4

Location: Artesia
N/S: I-605 NB Ramps
E/W: South Street

Date: 4/24/2024
Day: Wednesday

BICYCLES

	Southbound I-605 NB Ramps			Westbound South Street			Northbound I-605 NB Ramps			Eastbound South Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound I-605 NB Ramps			Westbound South Street			Northbound I-605 NB Ramps			Eastbound South Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

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City of Artesia
N/S: Pioneer Boulevard
E/W: SR-91 Westbound Ramps
Weather: Clear

File Name : 07_ATS_Pion_91W AM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 1

Groups Printed- Total Volume

	Pioneer Boulevard Southbound				SR-91 Westbound Ramps Westbound				Pioneer Boulevard Northbound				Motel-6 Driveway 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
07:00 AM	0	199	0	199	27	0	17	44	3	77	61	141	0	0	2	2	386
07:15 AM	0	225	2	227	36	1	17	54	3	92	69	164	0	0	3	3	448
07:30 AM	0	292	1	293	27	1	26	54	0	127	115	242	1	0	5	6	595
07:45 AM	0	236	1	237	32	1	20	53	8	237	110	355	0	0	3	3	648
Total	0	952	4	956	122	3	80	205	14	533	355	902	1	0	13	14	2077
08:00 AM	0	228	3	231	34	0	19	53	3	200	93	296	0	0	5	5	585
08:15 AM	0	259	0	259	32	1	24	57	8	179	103	290	0	0	4	4	610
08:30 AM	0	226	2	228	33	0	19	52	7	153	103	263	0	0	3	3	546
08:45 AM	0	170	2	172	23	0	18	41	10	108	95	213	0	0	7	7	433
Total	0	883	7	890	122	1	80	203	28	640	394	1062	0	0	19	19	2174
Grand Total	0	1835	11	1846	244	4	160	408	42	1173	749	1964	1	0	32	33	4251
Apprch %	0	99.4	0.6		59.8	1	39.2		2.1	59.7	38.1		3	0	97		
Total %	0	43.2	0.3	43.4	5.7	0.1	3.8	9.6	1	27.6	17.6	46.2	0	0	0.8	0.8	

	Pioneer Boulevard Southbound				SR-91 Westbound Ramps Westbound				Pioneer Boulevard Northbound				Motel-6 Driveway 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 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	**292**	1	**293**	27	**1**	**26**	54	0	127	**115**	242	**1**	0	**5**	**6**	595
07:45 AM	0	236	1	237	32	1	20	53	**8**	**237**	110	**355**	0	0	3	3	**648**
08:00 AM	0	228	**3**	231	**34**	0	19	53	3	200	93	296	0	0	5	5	585
08:15 AM	0	259	0	259	32	1	24	**57**	8	179	103	290	0	0	4	4	610
Total Volume	0	1015	5	1020	125	3	89	217	19	743	421	1183	1	0	17	18	2438
% App. Total	0	99.5	0.5		57.6	1.4	41		1.6	62.8	35.6		5.6	0	94.4		
PHF	.000	.869	.417	.870	.919	.750	.856	.952	.594	.784	.915	.833	.250	.000	.850	.750	.941

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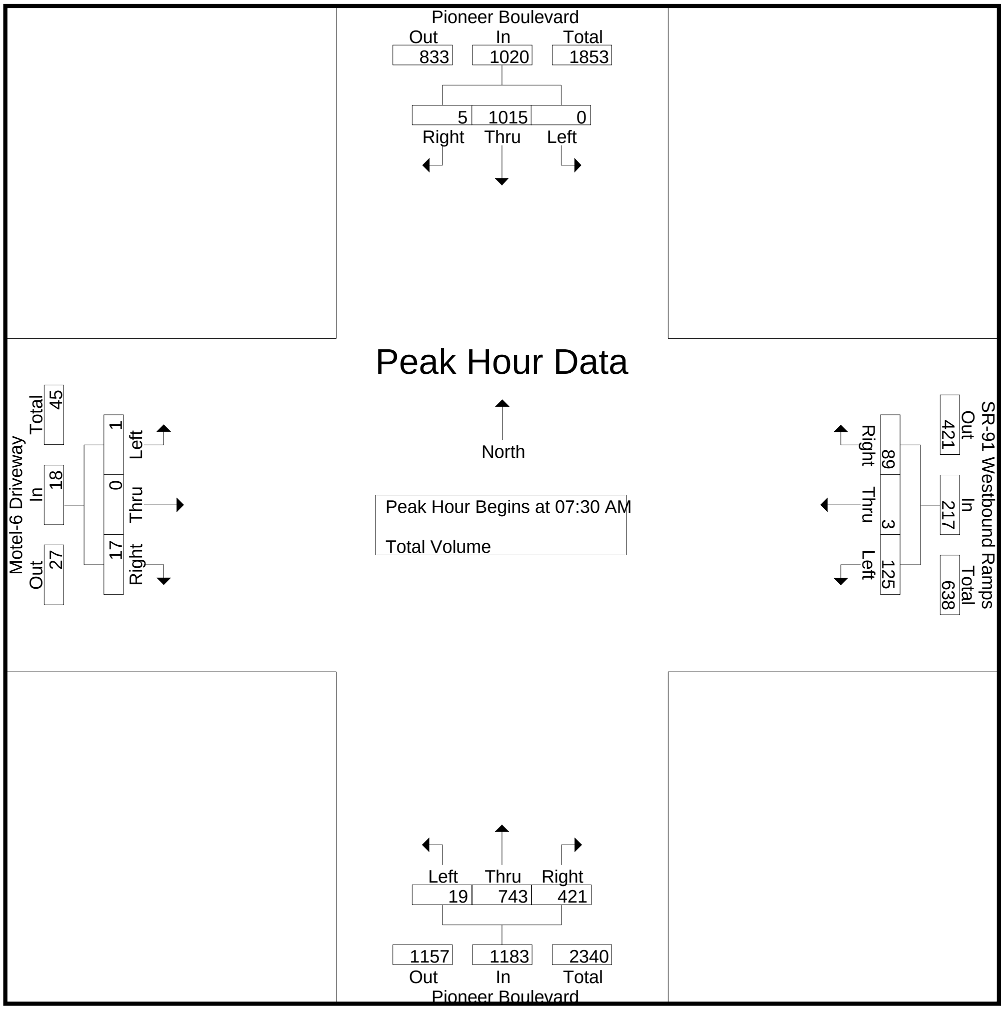
City of Artesia
N/S: Pioneer Boulevard
E/W: SR-91 Westbound Ramps
Weather: Clear

File Name : 07_ATS_Pion_91W AM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:45 AM				08:00 AM			
+0 mins.	0	**292**	1	**293**	27	**1**	**26**	54	**8**	**237**	**110**	**355**	0	0	5	5
+15 mins.	0	236	1	237	32	1	20	53	3	200	93	296	0	0	4	4
+30 mins.	0	228	**3**	231	**34**	0	19	53	8	179	103	290	0	0	3	3
+45 mins.	0	259	0	259	32	1	24	**57**	7	153	103	263	0	0	**7**	**7**
Total Volume	0	1015	5	1020	125	3	89	217	26	769	409	1204	0	0	19	19
% App. Total	0	99.5	0.5		57.6	1.4	41		2.2	63.9	34		0	0	100	
PHF	.000	.869	.417	.870	.919	.750	.856	.952	.813	.811	.930	.848	.000	.000	.679	.679

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City of Artesia
N/S: Pioneer Boulevard
E/W: SR-91 Westbound Ramps
Weather: Clear

File Name : 07_ATS_Pion_91W PM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 1

Groups Printed- Total Volume

	Pioneer Boulevard Southbound				SR-91 Westbound Ramps Westbound				Pioneer Boulevard Northbound				Motel-6 Driveway 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
04:00 PM	0	239	0	239	28	0	30	58	5	217	79	301	0	0	6	6	604
04:15 PM	0	220	2	222	23	2	27	52	5	198	85	288	0	0	5	5	567
04:30 PM	0	191	0	191	23	0	28	51	10	222	78	310	1	0	8	9	561
04:45 PM	0	178	0	178	18	0	35	53	5	206	89	300	0	0	0	0	531
Total	0	828	2	830	92	2	120	214	25	843	331	1199	1	0	19	20	2263
05:00 PM	0	228	2	230	23	1	19	43	8	221	94	323	0	0	3	3	599
05:15 PM	0	260	1	261	15	0	27	42	8	251	88	347	0	0	2	2	652
05:30 PM	0	209	1	210	32	1	30	63	9	222	83	314	0	0	6	6	593
05:45 PM	0	242	2	244	31	1	23	55	4	214	77	295	0	0	4	4	598
Total	0	939	6	945	101	3	99	203	29	908	342	1279	0	0	15	15	2442
Grand Total	0	1767	8	1775	193	5	219	417	54	1751	673	2478	1	0	34	35	4705
Apprch %	0	99.5	0.5		46.3	1.2	52.5		2.2	70.7	27.2		2.9	0	97.1		
Total %	0	37.6	0.2	37.7	4.1	0.1	4.7	8.9	1.1	37.2	14.3	52.7	0	0	0.7	0.7	

	Pioneer Boulevard Southbound				SR-91 Westbound Ramps Westbound				Pioneer Boulevard Northbound				Motel-6 Driveway 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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	228	**2**	230	23	**1**	19	43	8	221	**94**	323	0	0	3	3	599
05:15 PM	0	**260**	1	**261**	15	0	27	42	8	**251**	88	**347**	0	0	2	2	**652**
05:30 PM	0	209	1	210	**32**	1	**30**	**63**	**9**	222	83	314	0	0	**6**	**6**	593
05:45 PM	0	242	2	244	31	1	23	55	4	214	77	295	0	0	4	4	598
Total Volume	0	939	6	945	101	3	99	203	29	908	342	1279	0	0	15	15	2442
% App. Total	0	99.4	0.6		49.8	1.5	48.8		2.3	71	26.7		0	0	100		
PHF	.000	.903	.750	.905	.789	.750	.825	.806	.806	.904	.910	.921	.000	.000	.625	.625	.936

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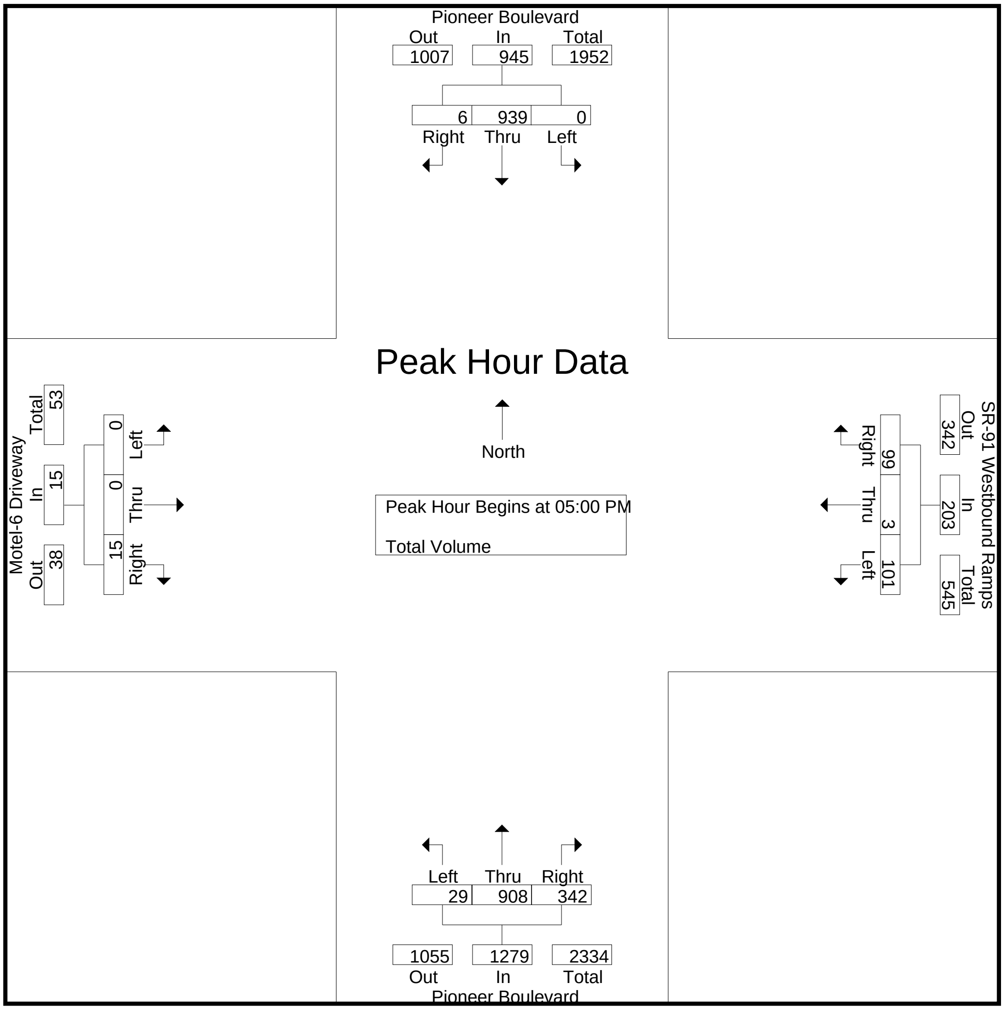
City of Artesia
N/S: Pioneer Boulevard
E/W: SR-91 Westbound Ramps
Weather: Clear

File Name : 07_ATS_Pion_91W PM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				04:45 PM				04:00 PM			
+0 mins.	0	228	**2**	230	**28**	0	30	**58**	5	206	89	300	0	0	6	6
+15 mins.	0	**260**	1	**261**	23	**2**	27	52	8	221	**94**	323	0	0	5	5
+30 mins.	0	209	1	210	23	0	28	51	8	**251**	88	**347**	**1**	0	**8**	**9**
+45 mins.	0	242	2	244	18	0	**35**	53	**9**	222	83	314	0	0	0	0
Total Volume	0	939	6	945	92	2	120	214	30	900	354	1284	1	0	19	20
% App. Total	0	99.4	0.6		43	0.9	56.1		2.3	70.1	27.6		5	0	95	
PHF	.000	.903	.750	.905	.821	.250	.857	.922	.833	.896	.941	.925	.250	.000	.594	.556

Location: Artesia
N/S: Pioneer Boulevard
E/W: SR-91 WB Ramps

Date: 4/24/2024
Day: Wednesday

PEDESTRIANS

	North Leg Pioneer Boulevard	East Leg SR-91 WB Ramps	South Leg Pioneer Boulevard	West Leg Motel-6 DW	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	2	3	0	4	9
7:15 AM	1	4	0	3	8
7:30 AM	2	5	0	5	12
7:45 AM	8	6	0	0	14
8:00 AM	0	3	0	0	3
8:15 AM	8	4	0	2	14
8:30 AM	3	4	0	6	13
8:45 AM	3	12	0	6	21
TOTAL VOLUMES:	27	41	0	26	94

	North Leg Pioneer Boulevard	East Leg SR-91 WB Ramps	South Leg Pioneer Boulevard	West Leg Motel-6 DW	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	1	8	0	2	11
4:15 PM	2	10	0	6	18
4:30 PM	2	3	0	2	7
4:45 PM	0	3	0	2	5
5:00 PM	0	9	0	3	12
5:15 PM	2	8	0	4	14
5:30 PM	2	5	0	1	8
5:45 PM	0	4	0	1	5
TOTAL VOLUMES:	9	50	0	21	80

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Location: Artesia
N/S: Pioneer Boulevard
E/W: SR-91 WB Ramps

Date: 4/24/2024
Day: Wednesday

BICYCLES

	Southbound Pioneer Boulevard			Westbound SR-91 WB Ramps			Northbound Pioneer Boulevard			Eastbound Motel-6 DW			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
7:45 AM	0	1	0	0	0	0	0	0	0	0	0	1	2
8:00 AM	0	1	0	0	0	0	0	1	0	0	0	0	2
8:15 AM	0	3	0	0	0	0	0	0	0	0	0	0	3
8:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	7	0	0	0	0	0	2	0	0	0	1	10

	Southbound Pioneer Boulevard			Westbound SR-91 WB Ramps			Northbound Pioneer Boulevard			Eastbound Motel-6 DW			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	2	0	0	0	0	0	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	2	0	0	0	0	0	1	0	0	0	0	3

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City of Artesia
N/S: Pioneer Boulevard
E/W: SR-91 EB Ramps/Frampton Court
Weather: Clear

File Name : 08_ATS_Pion_91E AM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 1

Groups Printed- Total Volume

	Pioneer Boulevard Southbound				Frampton Court Westbound				Pioneer Boulevard Northbound				SR-91 Eastbound Ramps 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
07:00 AM	2	79	54	135	2	0	8	10	0	134	1	135	31	10	72	113	393
07:15 AM	4	91	59	154	2	0	9	11	0	153	2	155	56	7	77	140	460
07:30 AM	43	210	70	323	1	0	21	22	0	188	3	191	57	12	125	194	730
07:45 AM	46	175	59	280	0	0	52	52	0	237	2	239	77	15	112	204	775
Total	95	555	242	892	5	0	90	95	0	712	8	720	221	44	386	651	2358
08:00 AM	35	168	63	266	0	0	40	40	0	200	4	204	97	18	104	219	729
08:15 AM	51	191	61	303	3	0	51	54	0	190	4	194	83	11	78	172	723
08:30 AM	43	167	49	259	2	0	37	39	0	196	4	200	52	10	75	137	635
08:45 AM	40	128	47	215	1	0	29	30	0	147	4	151	61	10	72	143	539
Total	169	654	220	1043	6	0	157	163	0	733	16	749	293	49	329	671	2626
Grand Total	264	1209	462	1935	11	0	247	258	0	1445	24	1469	514	93	715	1322	4984
Apprch %	13.6	62.5	23.9		4.3	0	95.7		0	98.4	1.6		38.9	7	54.1		
Total %	5.3	24.3	9.3	38.8	0.2	0	5	5.2	0	29	0.5	29.5	10.3	1.9	14.3	26.5	

	Pioneer Boulevard Southbound				Frampton Court Westbound				Pioneer Boulevard Northbound				SR-91 Eastbound Ramps 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 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	43	**210**	**70**	**323**	1	0	21	22	0	188	3	191	57	12	**125**	194	730
07:45 AM	46	175	59	280	0	0	**52**	52	0	**237**	2	**239**	77	15	112	204	**775**
08:00 AM	35	168	63	266	0	0	40	40	0	200	**4**	204	**97**	**18**	104	**219**	729
08:15 AM	**51**	191	61	303	**3**	0	51	**54**	0	190	4	194	83	11	78	172	723
Total Volume	175	744	253	1172	4	0	164	168	0	815	13	828	314	56	419	789	2957
% App. Total	14.9	63.5	21.6		2.4	0	97.6		0	98.4	1.6		39.8	7.1	53.1		
PHF	.858	.886	.904	.907	.333	.000	.788	.778	.000	.860	.813	.866	.809	.778	.838	.901	.954

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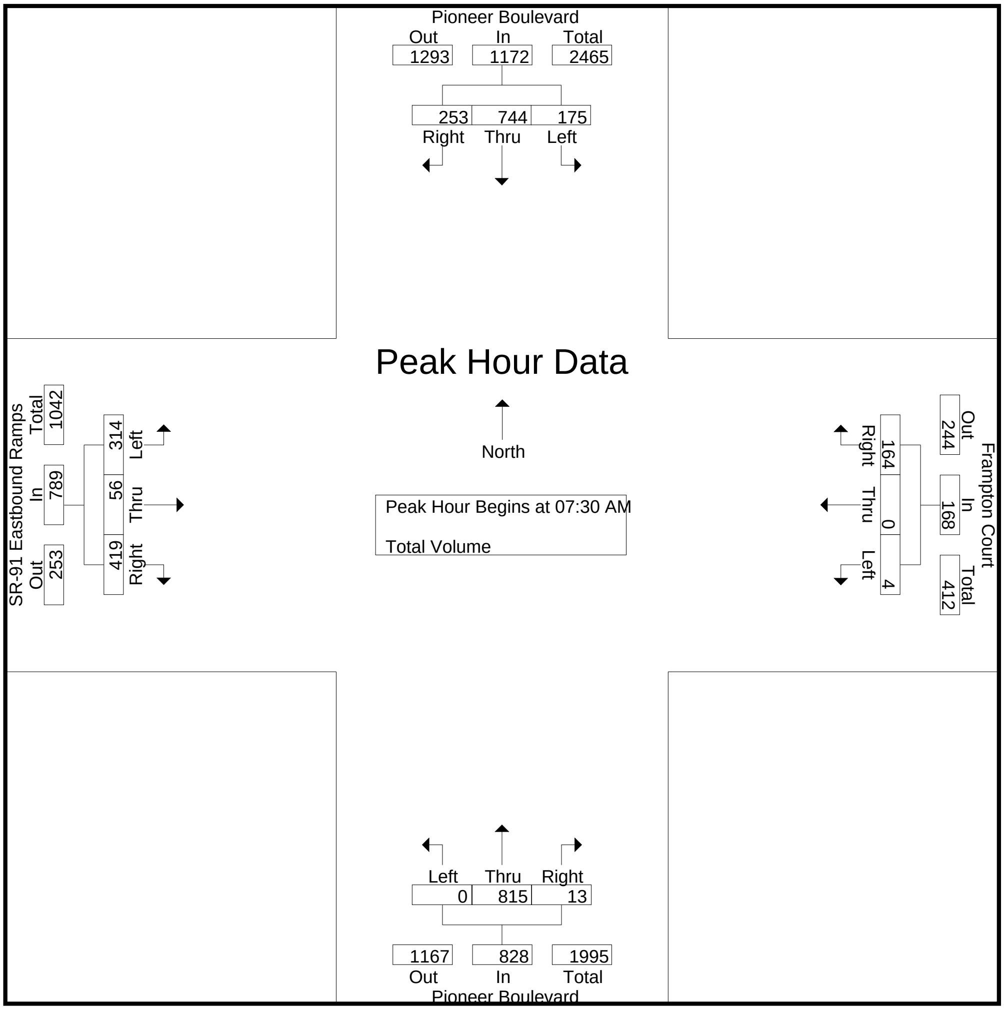
City of Artesia
N/S: Pioneer Boulevard
E/W: SR-91 EB Ramps/Frampton Court
Weather: Clear

File Name : 08_ATS_Pion_91E AM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:45 AM				07:45 AM				07:30 AM			
+0 mins.	43	**210**	**70**	**323**	0	0	**52**	52	0	**237**	2	**239**	57	12	**125**	194
+15 mins.	46	175	59	280	0	0	40	40	0	200	**4**	204	77	15	112	204
+30 mins.	35	168	63	266	**3**	0	51	**54**	0	190	4	194	**97**	**18**	104	**219**
+45 mins.	**51**	191	61	303	2	0	37	39	0	196	4	200	83	11	78	172
Total Volume	175	744	253	1172	5	0	180	185	0	823	14	837	314	56	419	789
% App. Total	14.9	63.5	21.6		2.7	0	97.3		0	98.3	1.7		39.8	7.1	53.1	
PHF	.858	.886	.904	.907	.417	.000	.865	.856	.000	.868	.875	.876	.809	.778	.838	.901

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Artesia
N/S: Pioneer Boulevard
E/W: SR-91 EB Ramps/Frampton Court
Weather: Clear

File Name : 08_ATS_Pion_91E PM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 1

Groups Printed- Total Volume

	Pioneer Boulevard Southbound				Frampton Court Westbound				Pioneer Boulevard Northbound				SR-91 Eastbound Ramps 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
04:00 PM	2	150	37	189	5	0	25	30	1	254	1	256	90	7	111	208	683
04:15 PM	4	140	35	179	1	0	27	28	0	255	0	255	74	8	114	196	658
04:30 PM	2	124	37	163	4	0	22	26	0	245	2	247	98	6	98	202	638
04:45 PM	5	89	36	130	0	0	22	22	0	246	0	246	92	3	116	211	609
Total	13	503	145	661	10	0	96	106	1	1000	3	1004	354	24	439	817	2588
05:00 PM	3	110	45	158	6	0	33	39	0	264	1	265	98	5	91	194	656
05:15 PM	1	143	43	187	1	0	34	35	0	285	0	285	106	6	107	219	726
05:30 PM	6	143	33	182	5	0	31	36	0	252	3	255	111	1	113	225	698
05:45 PM	4	166	39	209	1	0	17	18	0	261	1	262	91	3	118	212	701
Total	14	562	160	736	13	0	115	128	0	1062	5	1067	406	15	429	850	2781
Grand Total	27	1065	305	1397	23	0	211	234	1	2062	8	2071	760	39	868	1667	5369
Apprch %	1.9	76.2	21.8		9.8	0	90.2		0	99.6	0.4		45.6	2.3	52.1		
Total %	0.5	19.8	5.7	26	0.4	0	3.9	4.4	0	38.4	0.1	38.6	14.2	0.7	16.2	31	

	Pioneer Boulevard Southbound				Frampton Court Westbound				Pioneer Boulevard Northbound				SR-91 Eastbound Ramps 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 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	3	110	**45**	158	**6**	0	33	**39**	0	264	1	265	98	5	91	194	656
05:15 PM	1	143	43	187	1	0	**34**	35	0	**285**	0	**285**	106	**6**	107	219	**726**
05:30 PM	**6**	143	33	182	5	0	31	36	0	252	**3**	255	**111**	1	113	**225**	698
05:45 PM	4	**166**	39	**209**	1	0	17	18	0	261	1	262	91	3	**118**	212	701
Total Volume	14	562	160	736	13	0	115	128	0	1062	5	1067	406	15	429	850	2781
% App. Total	1.9	76.4	21.7		10.2	0	89.8		0	99.5	0.5		47.8	1.8	50.5		
PHF	.583	.846	.889	.880	.542	.000	.846	.821	.000	.932	.417	.936	.914	.625	.909	.944	.958

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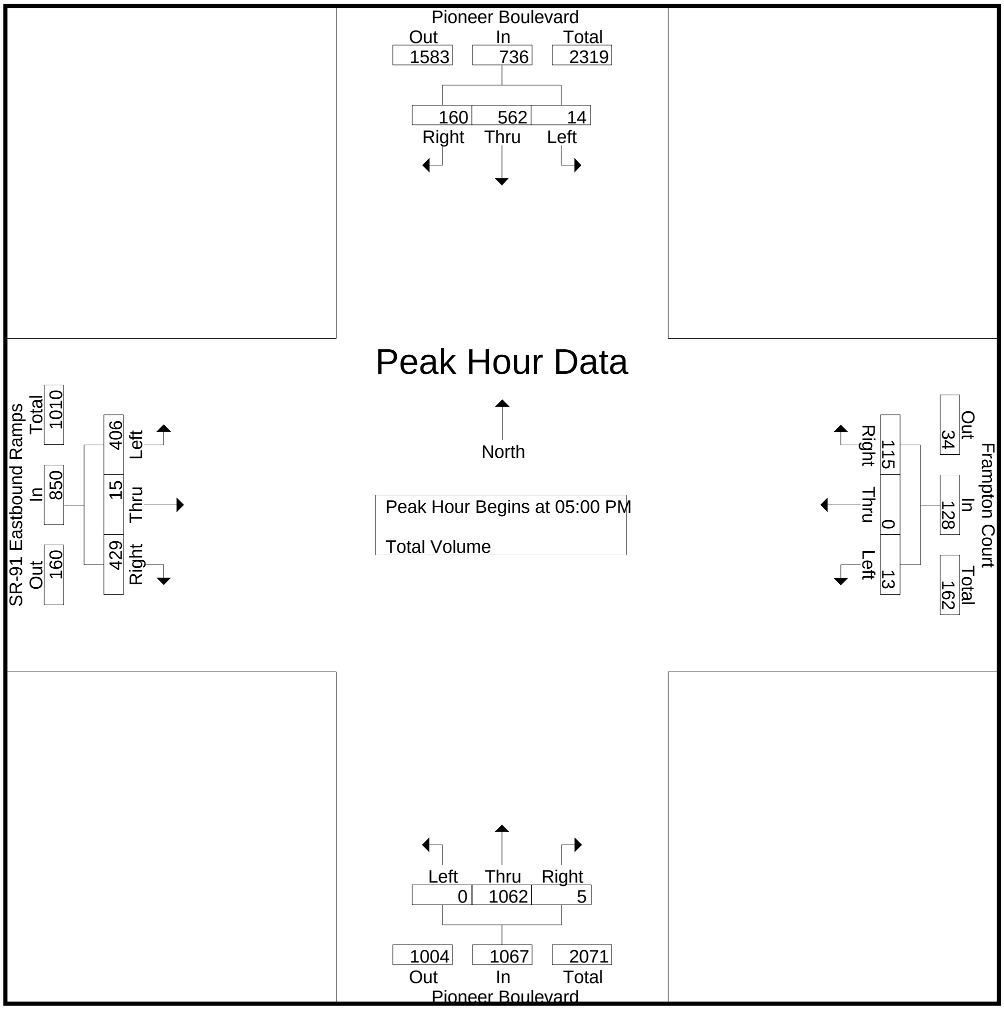
Weather: Clear

File Name : 08_ATS_Pion_91E PM
Site Code : 05724372
Start Date : 4/24/2024
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:45 PM				05:00 PM				05:00 PM			
+0 mins.	3	110	**45**	158	0	0	22	22	0	264	1	265	98	5	91	194
+15 mins.	1	143	43	187	**6**	0	33	**39**	0	**285**	0	**285**	106	**6**	107	219
+30 mins.	**6**	143	33	182	1	0	**34**	35	0	252	**3**	255	**111**	1	113	**225**
+45 mins.	4	**166**	39	**209**	5	0	31	36	0	261	1	262	91	3	**118**	212
Total Volume	14	562	160	736	12	0	120	132	0	1062	5	1067	406	15	429	850
% App. Total	1.9	76.4	21.7		9.1	0	90.9		0	99.5	0.5		47.8	1.8	50.5	
PHF	.583	.846	.889	.880	.500	.000	.882	.846	.000	.932	.417	.936	.914	.625	.909	.944

Location: Artesia
N/S: Pioneer Boulevard
E/W: SR-91 EB Ramps

Date: 4/24/2024
Day: Wednesday

PEDESTRIANS

	North Leg Pioneer Boulevard	East Leg Frampton Court	South Leg Pioneer Boulevard	West Leg SR-91 EB Ramps	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	2	0	1	3
7:15 AM	0	1	0	1	2
7:30 AM	0	6	0	4	10
7:45 AM	0	6	1	2	9
8:00 AM	0	2	0	1	3
8:15 AM	0	6	0	3	9
8:30 AM	0	4	1	1	6
8:45 AM	0	9	3	1	13
TOTAL VOLUMES:	0	36	5	14	55

	North Leg Pioneer Boulevard	East Leg Frampton Court	South Leg Pioneer Boulevard	West Leg SR-91 EB Ramps	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	7	1	2	10
4:15 PM	0	11	1	2	14
4:30 PM	0	5	3	5	13
4:45 PM	0	5	0	0	5
5:00 PM	0	8	1	3	12
5:15 PM	0	8	1	6	15
5:30 PM	0	4	1	2	7
5:45 PM	0	5	1	1	7
TOTAL VOLUMES:	0	53	9	21	83

Location: Artesia
N/S: Pioneer Boulevard
E/W: SR-91 EB Ramps

Date: 4/24/2024
Day: Wednesday

BICYCLES

	Southbound Pioneer Boulevard			Westbound Frampton Court			Northbound Pioneer Boulevard			Eastbound SR-91 EB Ramps			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	0	0	1	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	2	0	0	0	0	0	3	0	0	0	0	5

	Southbound Pioneer Boulevard			Westbound Frampton Court			Northbound Pioneer Boulevard			Eastbound SR-91 EB Ramps			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	1
TOTAL VOLUMES:	0	1	0	0	0	0	0	2	0	1	0	0	4

APPENDIX D

HCM LEVELS OF SERVICE EXPLANATION
HCM DATA WORKSHEETS – WEEKDAY AM AND PM PEAK HOUR

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

In the *Highway Capacity Manual (HCM) 7th Edition*, published by the Transportation Research Board, 2022, level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased 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 traffic control, in the absence of geometric delay, in the absence of incidents, and when there are no other vehicles on the road. Only the portion of total delay attributed to the control facility 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 traffic signals are stated in terms of the average control delay per vehicle. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the *v/c* ratio for the lane group in question.

Level of Service Criteria for Signalized Intersections

Level of Service	Control Delay (Sec/Veh)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

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. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay values.

LOS B describes operations with control delay greater than 10 and up to 20 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.

LOS C describes operations with control delay greater than 20 and up to 35 seconds per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

LOS D describes operations with control delay greater than 35 and up to 55 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high *v/c* ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LOS E describes operations with control delay greater than 55 and up to 80 seconds per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with control delay in excess of 80 seconds per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the lane groups. It may also occur at high *v/c* ratios with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	176	477	79	51	671	76	148	235	55	80	147	225
Future Volume (veh/h)	176	477	79	51	671	76	148	235	55	80	147	225
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	181	492	81	53	692	78	153	242	57	82	152	232
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	248	2076	335	68	2026	226	186	638	147	105	631	393
Arrive On Green	0.14	0.94	0.94	0.04	0.43	0.43	0.10	0.22	0.22	0.06	0.18	0.18
Sat Flow, veh/h	3456	4429	715	1781	4658	521	1781	2861	661	1781	3554	1572
Grp Volume(v), veh/h	181	376	197	53	504	266	153	148	151	82	152	232
Grp Sat Flow(s),veh/h/ln	1728	1702	1739	1781	1702	1775	1781	1777	1745	1781	1777	1572
Q Serve(g_s), s	4.5	0.8	0.8	2.7	8.8	9.0	7.6	6.4	6.6	4.1	3.3	11.7
Cycle Q Clear(g_c), s	4.5	0.8	0.8	2.7	8.8	9.0	7.6	6.4	6.6	4.1	3.3	11.7
Prop In Lane	1.00		0.41	1.00		0.29	1.00		0.38	1.00		1.00
Lane Grp Cap(c), veh/h	248	1596	815	68	1481	772	186	396	389	105	631	393
V/C Ratio(X)	0.73	0.24	0.24	0.78	0.34	0.34	0.82	0.37	0.39	0.78	0.24	0.59
Avail Cap(c_a), veh/h	307	1596	815	139	1481	772	247	533	524	188	948	533
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.7	1.5	1.5	42.9	16.9	16.9	39.5	29.6	29.7	41.8	31.8	29.7
Incr Delay (d2), s/veh	4.6	0.3	0.7	7.1	0.6	1.2	11.7	0.8	0.9	4.6	0.3	2.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.4	0.5	0.7	2.3	6.0	6.5	6.9	4.9	5.0	3.4	2.5	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.3	1.9	2.2	50.1	17.5	18.1	51.1	30.5	30.6	46.4	32.1	31.7
LnGrp LOS	D	A	A	D	B	B	D	C	C	D	C	C
Approach Vol, veh/h		754			823			452			466	
Approach Delay, s/veh		11.7			19.8			37.5			34.4	
Approach LOS		B			B			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	47.2	13.9	21.0	11.0	44.1	9.8	25.1
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	7.0	27.5	12.5	24.0	8.0	26.5	9.5	27.0
Max Q Clear Time (g_c+I1), s	4.7	2.8	9.6	13.7	6.5	11.0	6.1	8.6
Green Ext Time (p_c), s	0.0	5.0	0.0	1.8	0.0	5.7	0.0	2.1

Intersection Summary	
HCM 7th Control Delay, s/veh	23.3
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	276	869	143	102	770	155	125	273	68	190	286	375
Future Volume (veh/h)	276	869	143	102	770	155	125	273	68	190	286	375
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	282	887	146	104	786	158	128	279	69	194	292	383
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	359	1648	270	132	1461	291	159	600	145	229	897	559
Arrive On Green	0.07	0.25	0.25	0.07	0.34	0.34	0.09	0.21	0.21	0.13	0.25	0.25
Sat Flow, veh/h	3456	4414	723	1781	4253	847	1781	2816	682	1781	3554	1564
Grp Volume(v), veh/h	282	683	350	104	628	316	128	174	174	194	292	383
Grp Sat Flow(s),veh/h/ln	1728	1702	1733	1781	1702	1695	1781	1777	1721	1781	1777	1564
Q Serve(g_s), s	7.2	15.6	15.8	5.2	13.4	13.6	6.3	7.7	8.0	9.6	6.0	18.8
Cycle Q Clear(g_c), s	7.2	15.6	15.8	5.2	13.4	13.6	6.3	7.7	8.0	9.6	6.0	18.8
Prop In Lane	1.00		0.42	1.00		0.50	1.00		0.40	1.00		1.00
Lane Grp Cap(c), veh/h	359	1271	647	132	1169	582	159	379	367	229	897	559
V/C Ratio(X)	0.79	0.54	0.54	0.79	0.54	0.54	0.81	0.46	0.47	0.85	0.33	0.68
Avail Cap(c_a), veh/h	480	1271	647	188	1169	582	208	395	382	307	987	599
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.9	27.0	27.0	41.0	23.8	23.8	40.2	30.9	31.0	38.4	27.4	24.7
Incr Delay (d2), s/veh	4.3	1.6	3.2	8.4	1.8	3.6	12.1	1.2	1.4	12.1	0.3	3.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.9	11.1	11.7	4.5	9.1	9.6	5.8	6.0	6.0	8.4	4.5	11.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.1	28.6	30.3	49.4	25.6	27.5	52.3	32.1	32.4	50.4	27.7	28.1
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1315			1048			476			869	
Approach Delay, s/veh		32.6			28.5			37.6			33.0	
Approach LOS		C			C			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.1	38.6	12.5	27.7	13.8	35.9	16.1	24.2				
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0				
Max Green Setting (Gmax), s	9.5	26.0	10.5	25.0	12.5	23.0	15.5	20.0				
Max Q Clear Time (g_c+I1), s	7.2	17.8	8.3	20.8	9.2	15.6	11.6	10.0				
Green Ext Time (p_c), s	0.0	4.9	0.0	1.7	0.1	4.2	0.1	1.8				
Intersection Summary												
HCM 7th Control Delay, s/veh			32.2									
HCM 7th LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	201	542	79	57	800	95	148	242	59	89	153	265
Future Volume (veh/h)	201	542	79	57	800	95	148	242	59	89	153	265
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	559	81	59	825	98	153	249	61	92	158	273
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	274	2004	286	76	1885	223	186	671	161	117	703	437
Arrive On Green	0.16	0.89	0.89	0.04	0.41	0.41	0.10	0.24	0.24	0.07	0.20	0.20
Sat Flow, veh/h	3456	4512	644	1781	4627	547	1781	2837	681	1781	3554	1573
Grp Volume(v), veh/h	207	420	220	59	606	317	153	154	156	92	158	273
Grp Sat Flow(s),veh/h/ln	1728	1702	1752	1781	1702	1770	1781	1777	1742	1781	1777	1573
Q Serve(g_s), s	5.2	1.6	1.7	3.0	11.5	11.7	7.6	6.5	6.8	4.6	3.4	13.7
Cycle Q Clear(g_c), s	5.2	1.6	1.7	3.0	11.5	11.7	7.6	6.5	6.8	4.6	3.4	13.7
Prop In Lane	1.00		0.37	1.00		0.31	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	274	1512	778	76	1386	721	186	420	412	117	703	437
V/C Ratio(X)	0.76	0.28	0.28	0.78	0.44	0.44	0.82	0.37	0.38	0.78	0.22	0.62
Avail Cap(c_a), veh/h	307	1512	778	139	1386	721	247	533	522	188	948	545
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.0	2.9	2.9	42.7	19.2	19.3	39.5	28.7	28.8	41.4	30.3	28.4
Incr Delay (d2), s/veh	7.6	0.5	0.9	6.3	1.0	1.9	11.7	0.8	0.8	4.3	0.2	2.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.1	1.0	1.2	2.5	7.9	8.4	6.9	5.0	5.1	3.8	2.6	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.6	3.3	3.8	49.0	20.2	21.2	51.1	29.5	29.6	45.7	30.5	30.5
LnGrp LOS	D	A	A	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		847			982			463			523	
Approach Delay, s/veh		13.6			22.3			36.7			33.2	
Approach LOS		B			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	45.0	13.9	22.8	11.6	41.7	10.4	26.3
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	7.0	27.5	12.5	24.0	8.0	26.5	9.5	27.0
Max Q Clear Time (g_c+I1), s	5.0	3.7	9.6	15.7	7.2	13.7	6.6	8.8
Green Ext Time (p_c), s	0.0	5.6	0.0	1.7	0.0	6.1	0.0	2.2

Intersection Summary	
HCM 7th Control Delay, s/veh	24.1
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	982	143	90	801	155	125	274	64	204	284	392
Future Volume (veh/h)	315	982	143	90	801	155	125	274	64	204	284	392
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	321	1002	146	92	817	158	128	280	65	208	290	400
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	397	1696	246	117	1405	270	159	598	136	243	912	584
Arrive On Green	0.08	0.25	0.25	0.07	0.33	0.33	0.09	0.21	0.21	0.14	0.26	0.26
Sat Flow, veh/h	3456	4496	654	1781	4283	822	1781	2855	650	1781	3554	1565
Grp Volume(v), veh/h	321	758	390	92	648	327	128	172	173	208	290	400
Grp Sat Flow(s),veh/h/ln	1728	1702	1746	1781	1702	1700	1781	1777	1728	1781	1777	1565
Q Serve(g_s), s	8.2	17.6	17.7	4.6	14.2	14.4	6.3	7.6	7.9	10.3	5.9	19.4
Cycle Q Clear(g_c), s	8.2	17.6	17.7	4.6	14.2	14.4	6.3	7.6	7.9	10.3	5.9	19.4
Prop In Lane	1.00		0.37	1.00		0.48	1.00		0.38	1.00		1.00
Lane Grp Cap(c), veh/h	397	1284	658	117	1117	558	159	372	362	243	912	584
V/C Ratio(X)	0.81	0.59	0.59	0.78	0.58	0.59	0.81	0.46	0.48	0.86	0.32	0.69
Avail Cap(c_a), veh/h	480	1284	658	188	1117	558	208	395	384	307	987	617
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.6	27.5	27.6	41.4	25.1	25.1	40.2	31.1	31.2	38.0	27.1	23.9
Incr Delay (d2), s/veh	6.9	2.0	3.9	4.3	2.2	4.5	12.1	1.3	1.4	14.7	0.3	3.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.0	12.2	13.0	3.7	9.7	10.2	5.8	6.0	6.0	9.1	4.5	11.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.5	29.5	31.4	45.7	27.3	29.6	52.3	32.4	32.6	52.7	27.4	27.2
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1469			1067			473			898	
Approach Delay, s/veh		34.0			29.6			37.9			33.2	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	38.9	12.5	28.1	14.8	34.5	16.8	23.9
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	9.5	26.0	10.5	25.0	12.5	23.0	15.5	20.0
Max Q Clear Time (g_c+I1), s	6.6	19.7	8.3	21.4	10.2	16.4	12.3	9.9
Green Ext Time (p_c), s	0.0	4.3	0.0	1.5	0.1	3.9	0.1	1.8

Intersection Summary	
HCM 7th Control Delay, s/veh	33.1
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	176	477	79	51	671	76	148	235	55	80	147	227
Future Volume (veh/h)	176	477	79	51	671	76	148	235	55	80	147	227
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	181	492	81	53	692	78	153	242	57	82	152	234
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	248	2072	334	68	2021	226	186	641	148	105	635	395
Arrive On Green	0.14	0.94	0.94	0.04	0.43	0.43	0.10	0.22	0.22	0.06	0.18	0.18
Sat Flow, veh/h	3456	4429	715	1781	4658	521	1781	2861	661	1781	3554	1572
Grp Volume(v), veh/h	181	376	197	53	504	266	153	148	151	82	152	234
Grp Sat Flow(s),veh/h/ln	1728	1702	1739	1781	1702	1775	1781	1777	1745	1781	1777	1572
Q Serve(g_s), s	4.5	0.8	0.8	2.7	8.9	9.0	7.6	6.4	6.6	4.1	3.3	11.8
Cycle Q Clear(g_c), s	4.5	0.8	0.8	2.7	8.9	9.0	7.6	6.4	6.6	4.1	3.3	11.8
Prop In Lane	1.00		0.41	1.00		0.29	1.00		0.38	1.00		1.00
Lane Grp Cap(c), veh/h	248	1592	814	68	1477	770	186	398	391	105	635	395
V/C Ratio(X)	0.73	0.24	0.24	0.78	0.34	0.35	0.82	0.37	0.39	0.78	0.24	0.59
Avail Cap(c_a), veh/h	307	1592	814	139	1477	770	247	533	524	188	948	533
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.7	1.6	1.6	42.9	16.9	17.0	39.5	29.6	29.7	41.8	31.7	29.7
Incr Delay (d2), s/veh	4.6	0.3	0.7	7.1	0.6	1.2	11.7	0.8	0.9	4.6	0.3	2.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.4	0.6	0.7	2.3	6.0	6.6	6.9	4.9	5.0	3.4	2.5	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.3	1.9	2.3	50.1	17.6	18.2	51.1	30.4	30.5	46.4	32.0	31.7
LnGrp LOS	D	A	A	D	B	B	D	C	C	D	C	C
Approach Vol, veh/h		754			823			452			468	
Approach Delay, s/veh		11.7			19.9			37.5			34.4	
Approach LOS		B			B			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	47.1	13.9	21.1	11.0	44.1	9.8	25.2
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	7.0	27.5	12.5	24.0	8.0	26.5	9.5	27.0
Max Q Clear Time (g_c+I1), s	4.7	2.8	9.6	13.8	6.5	11.0	6.1	8.6
Green Ext Time (p_c), s	0.0	5.0	0.0	1.8	0.0	5.7	0.0	2.1

Intersection Summary	
HCM 7th Control Delay, s/veh	23.3
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	276	869	143	105	770	155	125	275	68	190	286	375
Future Volume (veh/h)	276	869	143	105	770	155	125	275	68	190	286	375
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	282	887	146	107	786	158	128	281	69	194	292	383
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	359	1640	269	135	1461	291	159	601	145	229	897	559
Arrive On Green	0.07	0.25	0.25	0.08	0.34	0.34	0.09	0.21	0.21	0.13	0.25	0.25
Sat Flow, veh/h	3456	4414	723	1781	4253	847	1781	2820	678	1781	3554	1564
Grp Volume(v), veh/h	282	683	350	107	628	316	128	175	175	194	292	383
Grp Sat Flow(s),veh/h/ln	1728	1702	1733	1781	1702	1695	1781	1777	1722	1781	1777	1564
Q Serve(g_s), s	7.2	15.7	15.8	5.3	13.4	13.6	6.3	7.7	8.0	9.6	6.0	18.8
Cycle Q Clear(g_c), s	7.2	15.7	15.8	5.3	13.4	13.6	6.3	7.7	8.0	9.6	6.0	18.8
Prop In Lane	1.00		0.42	1.00		0.50	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	359	1265	644	135	1169	582	159	379	367	229	897	559
V/C Ratio(X)	0.79	0.54	0.54	0.79	0.54	0.54	0.81	0.46	0.48	0.85	0.33	0.68
Avail Cap(c_a), veh/h	480	1265	644	188	1169	582	208	395	383	307	987	599
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.9	27.1	27.2	40.9	23.8	23.8	40.2	30.9	31.0	38.4	27.4	24.7
Incr Delay (d2), s/veh	4.3	1.7	3.3	9.5	1.8	3.6	12.1	1.2	1.4	12.1	0.3	3.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.9	11.1	11.7	4.7	9.1	9.6	5.8	6.0	6.1	8.4	4.5	11.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.1	28.8	30.5	50.4	25.6	27.5	52.3	32.2	32.4	50.4	27.7	28.1
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1315			1051			478			869	
Approach Delay, s/veh		32.7			28.7			37.6			33.0	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.3	38.4	12.5	27.7	13.8	35.9	16.1	24.2
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	9.5	26.0	10.5	25.0	12.5	23.0	15.5	20.0
Max Q Clear Time (g_c+I1), s	7.3	17.8	8.3	20.8	9.2	15.6	11.6	10.0
Green Ext Time (p_c), s	0.0	4.9	0.0	1.7	0.1	4.2	0.1	1.8

Intersection Summary	
HCM 7th Control Delay, s/veh	32.3
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	201	542	79	57	800	95	148	242	59	89	153	267
Future Volume (veh/h)	201	542	79	57	800	95	148	242	59	89	153	267
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	559	81	59	825	98	153	249	61	92	158	275
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	274	1999	285	76	1880	222	186	674	162	117	707	439
Arrive On Green	0.16	0.89	0.89	0.04	0.41	0.41	0.10	0.24	0.24	0.07	0.20	0.20
Sat Flow, veh/h	3456	4512	644	1781	4627	547	1781	2837	681	1781	3554	1573
Grp Volume(v), veh/h	207	420	220	59	606	317	153	154	156	92	158	275
Grp Sat Flow(s),veh/h/ln	1728	1702	1752	1781	1702	1770	1781	1777	1742	1781	1777	1573
Q Serve(g_s), s	5.2	1.7	1.7	3.0	11.6	11.7	7.6	6.5	6.8	4.6	3.4	13.8
Cycle Q Clear(g_c), s	5.2	1.7	1.7	3.0	11.6	11.7	7.6	6.5	6.8	4.6	3.4	13.8
Prop In Lane	1.00		0.37	1.00		0.31	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	274	1508	776	76	1383	719	186	422	413	117	707	439
V/C Ratio(X)	0.76	0.28	0.28	0.78	0.44	0.44	0.82	0.37	0.38	0.78	0.22	0.63
Avail Cap(c_a), veh/h	307	1508	776	139	1383	719	247	533	522	188	948	545
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.0	2.9	3.0	42.7	19.3	19.3	39.5	28.7	28.7	41.4	30.2	28.4
Incr Delay (d2), s/veh	7.6	0.5	0.9	6.3	1.0	2.0	11.7	0.8	0.8	4.3	0.2	2.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.1	1.0	1.2	2.5	7.9	8.4	6.9	5.0	5.1	3.8	2.6	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.6	3.4	3.9	49.0	20.3	21.3	51.1	29.4	29.6	45.7	30.4	30.6
LnGrp LOS	D	A	A	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		847			982			463			525	
Approach Delay, s/veh		13.6			22.3			36.6			33.2	
Approach LOS		B			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	44.9	13.9	22.9	11.6	41.6	10.4	26.4
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	7.0	27.5	12.5	24.0	8.0	26.5	9.5	27.0
Max Q Clear Time (g_c+I1), s	5.0	3.7	9.6	15.8	7.2	13.7	6.6	8.8
Green Ext Time (p_c), s	0.0	5.6	0.0	1.7	0.0	6.1	0.0	2.2

Intersection Summary	
HCM 7th Control Delay, s/veh	24.1
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	982	143	93	801	155	125	276	64	204	284	392
Future Volume (veh/h)	315	982	143	93	801	155	125	276	64	204	284	392
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	321	1002	146	95	817	158	128	282	65	208	290	400
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	397	1686	245	121	1405	270	159	599	135	243	912	584
Arrive On Green	0.08	0.25	0.25	0.07	0.33	0.33	0.09	0.21	0.21	0.14	0.26	0.26
Sat Flow, veh/h	3456	4496	654	1781	4283	822	1781	2859	646	1781	3554	1565
Grp Volume(v), veh/h	321	758	390	95	648	327	128	173	174	208	290	400
Grp Sat Flow(s),veh/h/ln	1728	1702	1746	1781	1702	1700	1781	1777	1728	1781	1777	1565
Q Serve(g_s), s	8.2	17.6	17.7	4.7	14.2	14.4	6.3	7.7	8.0	10.3	5.9	19.4
Cycle Q Clear(g_c), s	8.2	17.6	17.7	4.7	14.2	14.4	6.3	7.7	8.0	10.3	5.9	19.4
Prop In Lane	1.00		0.37	1.00		0.48	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	397	1277	655	121	1117	558	159	372	362	243	912	584
V/C Ratio(X)	0.81	0.59	0.60	0.79	0.58	0.59	0.81	0.46	0.48	0.86	0.32	0.69
Avail Cap(c_a), veh/h	480	1277	655	188	1117	558	208	395	384	307	987	617
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.6	27.7	27.7	41.3	25.1	25.1	40.2	31.2	31.3	38.0	27.1	23.9
Incr Delay (d2), s/veh	6.9	2.0	4.0	4.6	2.2	4.5	12.1	1.3	1.4	14.7	0.3	3.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.0	12.3	13.0	3.9	9.7	10.2	5.8	6.0	6.1	9.1	4.5	11.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	47.5	29.7	31.6	45.9	27.3	29.6	52.3	32.4	32.7	52.7	27.4	27.2
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1469			1070			475			898	
Approach Delay, s/veh		34.1			29.7			37.9			33.2	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	38.8	12.5	28.1	14.8	34.5	16.8	23.9
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	9.5	26.0	10.5	25.0	12.5	23.0	15.5	20.0
Max Q Clear Time (g_c+I1), s	6.7	19.7	8.3	21.4	10.2	16.4	12.3	10.0
Green Ext Time (p_c), s	0.0	4.3	0.0	1.5	0.1	3.9	0.1	1.8

Intersection Summary	
HCM 7th Control Delay, s/veh	33.1
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	283	21	32	327	86	31	202	19	88	278	74
Future Volume (veh/h)	56	283	21	32	327	86	31	202	19	88	278	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	61	308	23	35	355	93	34	220	21	96	302	80
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	78	726	54	46	553	143	45	466	199	739	1890	839
Arrive On Green	0.04	0.22	0.22	0.03	0.20	0.20	0.05	0.26	0.26	0.42	0.53	0.53
Sat Flow, veh/h	1781	3349	249	1781	2782	718	1781	3554	1520	1781	3554	1578
Grp Volume(v), veh/h	61	163	168	35	225	223	34	220	21	96	302	80
Grp Sat Flow(s),veh/h/ln	1781	1777	1821	1781	1777	1723	1781	1777	1520	1781	1777	1578
Q Serve(g_s), s	3.1	7.1	7.2	1.8	10.4	10.7	1.7	4.7	0.8	3.0	3.9	2.3
Cycle Q Clear(g_c), s	3.1	7.1	7.2	1.8	10.4	10.7	1.7	4.7	0.8	3.0	3.9	2.3
Prop In Lane	1.00		0.14	1.00		0.42	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	78	385	395	46	353	342	45	466	199	739	1890	839
V/C Ratio(X)	0.78	0.42	0.43	0.76	0.64	0.65	0.75	0.47	0.11	0.13	0.16	0.10
Avail Cap(c_a), veh/h	119	592	607	119	592	574	119	987	422	739	1890	839
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.6	30.4	30.4	43.6	33.1	33.2	42.4	30.6	21.4	16.3	10.8	10.4
Incr Delay (d2), s/veh	7.9	1.0	1.0	9.1	2.7	3.0	8.9	3.4	1.1	0.0	0.2	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.7	5.5	5.7	1.6	8.2	8.1	1.5	3.8	0.7	2.1	2.6	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.5	31.4	31.5	52.6	35.8	36.2	51.3	34.0	22.4	16.3	11.0	10.6
LnGrp LOS	D	C	C	D	D	D	D	C	C	B	B	B
Approach Vol, veh/h		392			483			275			478	
Approach Delay, s/veh		34.4			37.2			35.2			12.0	
Approach LOS		C			D			D			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	42.4	16.8	6.3	24.5	6.3	52.9	8.0	22.9
Change Period (Y+Rc), s	5.0	* 5	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	11.0	* 25	6.0	30.0	6.0	30.0	6.0	30.0
Max Q Clear Time (g_c+I1), s	5.0	6.7	3.8	9.2	3.7	5.9	5.1	12.7
Green Ext Time (p_c), s	0.0	1.9	0.0	2.5	0.0	3.1	0.0	3.3

Intersection Summary	
HCM 7th Control Delay, s/veh	28.8
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	471	50	60	537	83	73	342	40	126	323	120
Future Volume (veh/h)	171	471	50	60	537	83	73	342	40	126	323	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.95	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	180	496	53	63	565	87	77	360	42	133	340	126
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	1034	110	81	755	116	98	599	255	454	1349	586
Arrive On Green	0.12	0.32	0.32	0.05	0.25	0.25	0.11	0.34	0.34	0.26	0.38	0.38
Sat Flow, veh/h	1781	3236	345	1781	3081	473	1781	3554	1512	1781	3554	1542
Grp Volume(v), veh/h	180	272	277	63	325	327	77	360	42	133	340	126
Grp Sat Flow(s),veh/h/ln	1781	1777	1804	1781	1777	1777	1781	1777	1512	1781	1777	1542
Q Serve(g_s), s	8.9	11.0	11.1	3.1	15.2	15.3	3.8	7.6	1.4	5.4	5.9	5.0
Cycle Q Clear(g_c), s	8.9	11.0	11.1	3.1	15.2	15.3	3.8	7.6	1.4	5.4	5.9	5.0
Prop In Lane	1.00		0.19	1.00		0.27	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	214	568	577	81	436	436	98	599	255	454	1349	586
V/C Ratio(X)	0.84	0.48	0.48	0.78	0.75	0.75	0.78	0.60	0.16	0.29	0.25	0.22
Avail Cap(c_a), veh/h	238	568	577	238	513	513	178	987	420	454	1349	586
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.8	24.6	24.6	42.5	31.4	31.4	39.5	27.3	17.3	27.0	19.2	18.9
Incr Delay (d2), s/veh	19.5	0.9	0.9	5.8	5.7	5.9	5.1	4.4	1.4	0.1	0.4	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.6	8.1	8.3	2.7	11.3	11.4	3.1	5.8	1.3	4.0	4.4	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.2	25.5	25.5	48.3	37.1	37.3	44.6	31.7	18.7	27.1	19.6	19.7
LnGrp LOS	E	C	C	D	D	D	D	C	B	C	B	B
Approach Vol, veh/h		729			715			479			599	
Approach Delay, s/veh		33.6			38.2			32.7			21.3	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.0	20.2	8.1	33.8	9.0	39.2	14.8	27.1
Change Period (Y+Rc), s	5.0	* 5	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	9.0	* 25	12.0	26.0	9.0	25.0	12.0	26.0
Max Q Clear Time (g_c+I1), s	7.4	9.6	5.1	13.1	5.8	7.9	10.9	17.3
Green Ext Time (p_c), s	0.0	3.0	0.0	3.6	0.0	3.3	0.0	3.3

Intersection Summary	
HCM 7th Control Delay, s/veh	31.8
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	304	41	49	347	86	58	338	46	110	361	91
Future Volume (veh/h)	76	304	41	49	347	86	58	338	46	110	361	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	83	330	45	53	377	93	63	367	50	120	392	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	709	96	68	576	140	80	572	246	648	1744	774
Arrive On Green	0.06	0.23	0.23	0.04	0.20	0.20	0.09	0.32	0.32	0.36	0.49	0.49
Sat Flow, veh/h	1781	3139	424	1781	2820	687	1781	3554	1529	1781	3554	1577
Grp Volume(v), veh/h	83	185	190	53	236	234	63	367	50	120	392	99
Grp Sat Flow(s),veh/h/ln	1781	1777	1787	1781	1777	1730	1781	1777	1529	1781	1777	1577
Q Serve(g_s), s	4.1	8.1	8.3	2.7	11.0	11.2	3.1	7.9	1.8	4.1	5.7	3.1
Cycle Q Clear(g_c), s	4.1	8.1	8.3	2.7	11.0	11.2	3.1	7.9	1.8	4.1	5.7	3.1
Prop In Lane	1.00		0.24	1.00		0.40	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	106	402	404	68	363	354	80	572	246	648	1744	774
V/C Ratio(X)	0.78	0.46	0.47	0.78	0.65	0.66	0.78	0.64	0.20	0.19	0.22	0.13
Avail Cap(c_a), veh/h	119	592	596	119	592	577	119	987	425	648	1744	774
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.7	30.1	30.2	42.9	32.8	32.9	40.5	28.3	18.4	19.5	13.1	12.4
Incr Delay (d2), s/veh	22.1	1.2	1.2	7.2	2.8	3.0	10.0	5.5	1.9	0.1	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.4	6.3	6.4	2.3	8.5	8.5	2.8	6.1	1.6	3.0	4.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	63.8	31.3	31.4	50.1	35.6	36.0	50.6	33.7	20.2	19.6	13.4	12.8
LnGrp LOS	E	C	C	D	D	D	D	C	C	B	B	B
Approach Vol, veh/h		458			523			480			611	
Approach Delay, s/veh		37.2			37.2			34.5			14.5	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	37.8	19.5	7.4	25.3	8.1	49.2	9.4	23.4
Change Period (Y+Rc), s	5.0	* 5	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	11.0	* 25	6.0	30.0	6.0	30.0	6.0	30.0
Max Q Clear Time (g_c+I1), s	6.1	9.9	4.7	10.3	5.1	7.7	6.1	13.2
Green Ext Time (p_c), s	0.1	3.1	0.0	2.8	0.0	4.0	0.0	3.5

Intersection Summary	
HCM 7th Control Delay, s/veh	29.9
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	182	473	65	81	551	83	80	366	43	132	434	140
Future Volume (veh/h)	182	473	65	81	551	83	80	366	43	132	434	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	192	498	68	85	580	87	84	385	45	139	457	147
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	983	134	109	767	115	107	621	264	427	1298	563
Arrive On Green	0.13	0.31	0.31	0.06	0.25	0.25	0.12	0.35	0.35	0.24	0.37	0.37
Sat Flow, veh/h	1781	3138	427	1781	3093	463	1781	3554	1514	1781	3554	1542
Grp Volume(v), veh/h	192	281	285	85	332	335	84	385	45	139	457	147
Grp Sat Flow(s),veh/h/ln	1781	1777	1788	1781	1777	1779	1781	1777	1514	1781	1777	1542
Q Serve(g_s), s	9.5	11.6	11.7	4.2	15.6	15.7	4.1	8.1	1.5	5.8	8.4	6.0
Cycle Q Clear(g_c), s	9.5	11.6	11.7	4.2	15.6	15.7	4.1	8.1	1.5	5.8	8.4	6.0
Prop In Lane	1.00		0.24	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	557	560	109	440	441	107	621	264	427	1298	563
V/C Ratio(X)	0.85	0.50	0.51	0.78	0.75	0.76	0.79	0.62	0.17	0.33	0.35	0.26
Avail Cap(c_a), veh/h	238	557	560	238	513	514	178	987	421	427	1298	563
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	25.2	25.2	41.6	31.3	31.3	39.0	26.8	16.0	28.2	20.8	20.0
Incr Delay (d2), s/veh	22.0	1.0	1.1	4.4	6.1	6.3	4.8	4.6	1.4	0.2	0.8	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.2	8.5	8.6	3.5	11.6	11.6	3.3	6.1	1.3	4.4	6.3	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.5	26.2	26.3	46.1	37.4	37.6	43.8	31.4	17.4	28.4	21.6	21.2
LnGrp LOS	E	C	C	D	D	D	D	C	B	C	C	C
Approach Vol, veh/h		758			752			514			743	
Approach Delay, s/veh		34.9			38.5			32.2			22.8	
Approach LOS		C			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	26.6	20.7	9.5	33.2	9.4	37.9	15.4	27.3				
Change Period (Y+Rc), s	5.0	* 5	4.0	5.0	4.0	5.0	4.0	5.0				
Max Green Setting (Gmax), s	9.0	* 25	12.0	26.0	9.0	25.0	12.0	26.0				
Max Q Clear Time (g_c+I1), s	7.8	10.1	6.2	13.7	6.1	10.4	11.5	17.7				
Green Ext Time (p_c), s	0.0	3.2	0.0	3.6	0.0	4.1	0.0	3.3				
Intersection Summary												
HCM 7th Control Delay, s/veh			32.1									
HCM 7th LOS			C									

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	283	23	32	327	86	31	202	19	89	319	74
Future Volume (veh/h)	56	283	23	32	327	86	31	202	19	89	319	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	61	308	25	35	355	93	34	220	21	97	347	80
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	78	721	58	46	553	143	45	466	199	739	1890	839
Arrive On Green	0.04	0.22	0.22	0.03	0.20	0.20	0.05	0.26	0.26	0.42	0.53	0.53
Sat Flow, veh/h	1781	3326	268	1781	2782	718	1781	3554	1520	1781	3554	1578
Grp Volume(v), veh/h	61	164	169	35	225	223	34	220	21	97	347	80
Grp Sat Flow(s),veh/h/ln	1781	1777	1817	1781	1777	1723	1781	1777	1520	1781	1777	1578
Q Serve(g_s), s	3.1	7.1	7.2	1.8	10.4	10.7	1.7	4.7	0.8	3.0	4.6	2.3
Cycle Q Clear(g_c), s	3.1	7.1	7.2	1.8	10.4	10.7	1.7	4.7	0.8	3.0	4.6	2.3
Prop In Lane	1.00		0.15	1.00		0.42	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	78	385	394	46	353	342	45	466	199	739	1890	839
V/C Ratio(X)	0.78	0.42	0.43	0.76	0.64	0.65	0.75	0.47	0.11	0.13	0.18	0.10
Avail Cap(c_a), veh/h	119	592	606	119	592	574	119	987	422	739	1890	839
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.6	30.4	30.4	43.6	33.1	33.2	42.4	30.6	21.4	16.3	10.9	10.4
Incr Delay (d2), s/veh	7.9	1.1	1.1	9.1	2.7	3.0	8.9	3.4	1.1	0.0	0.2	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.7	5.5	5.7	1.6	8.2	8.1	1.5	3.8	0.7	2.1	3.1	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	50.5	31.5	31.5	52.6	35.8	36.2	51.3	34.0	22.4	16.3	11.1	10.6
LnGrp LOS	D	C	C	D	D	D	D	C	C	B	B	B
Approach Vol, veh/h		394			483			275			524	
Approach Delay, s/veh		34.4			37.2			35.2			12.0	
Approach LOS		C			D			D			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	42.4	16.8	6.3	24.5	6.3	52.9	8.0	22.9
Change Period (Y+Rc), s	5.0	* 5	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	11.0	* 25	6.0	30.0	6.0	30.0	6.0	30.0
Max Q Clear Time (g_c+I1), s	5.0	6.7	3.8	9.2	3.7	6.6	5.1	12.7
Green Ext Time (p_c), s	0.0	1.9	0.0	2.5	0.0	3.5	0.0	3.3

Intersection Summary	
HCM 7th Control Delay, s/veh	28.3
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	471	50	60	537	83	73	395	40	126	374	120
Future Volume (veh/h)	171	471	50	60	537	83	73	395	40	126	374	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	180	496	53	63	565	87	77	416	42	133	394	126
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	1034	110	81	755	116	98	647	276	431	1349	586
Arrive On Green	0.12	0.32	0.32	0.05	0.25	0.25	0.11	0.36	0.36	0.24	0.38	0.38
Sat Flow, veh/h	1781	3236	345	1781	3081	473	1781	3554	1516	1781	3554	1542
Grp Volume(v), veh/h	180	272	277	63	325	327	77	416	42	133	394	126
Grp Sat Flow(s),veh/h/ln	1781	1777	1804	1781	1777	1777	1781	1777	1516	1781	1777	1542
Q Serve(g_s), s	8.9	11.0	11.1	3.1	15.2	15.3	3.8	8.8	1.4	5.5	7.0	5.0
Cycle Q Clear(g_c), s	8.9	11.0	11.1	3.1	15.2	15.3	3.8	8.8	1.4	5.5	7.0	5.0
Prop In Lane	1.00		0.19	1.00		0.27	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	214	568	577	81	436	436	98	647	276	431	1349	586
V/C Ratio(X)	0.84	0.48	0.48	0.78	0.75	0.75	0.78	0.64	0.15	0.31	0.29	0.22
Avail Cap(c_a), veh/h	238	568	577	238	513	513	178	987	421	431	1349	586
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.8	24.6	24.6	42.5	31.4	31.4	39.5	26.2	16.2	28.0	19.5	18.9
Incr Delay (d2), s/veh	19.5	0.9	0.9	5.8	5.7	5.9	5.1	4.9	1.2	0.1	0.5	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.6	8.1	8.3	2.7	11.3	11.4	3.1	6.5	1.2	4.1	5.1	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	58.2	25.5	25.5	48.3	37.1	37.3	44.6	31.1	17.4	28.1	20.0	19.7
LnGrp LOS	E	C	C	D	D	D	D	C	B	C	C	B
Approach Vol, veh/h		729			715			535			653	
Approach Delay, s/veh		33.6			38.2			31.9			21.6	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.8	21.4	8.1	33.8	9.0	39.2	14.8	27.1
Change Period (Y+Rc), s	5.0	* 5	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	9.0	* 25	12.0	26.0	9.0	25.0	12.0	26.0
Max Q Clear Time (g_c+I1), s	7.5	10.8	5.1	13.1	5.8	9.0	10.9	17.3
Green Ext Time (p_c), s	0.0	3.4	0.0	3.6	0.0	3.6	0.0	3.3

Intersection Summary	
HCM 7th Control Delay, s/veh	31.5
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	304	43	49	347	86	58	338	46	111	402	91
Future Volume (veh/h)	76	304	43	49	347	86	58	338	46	111	402	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	83	330	47	53	377	93	63	367	50	121	437	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	705	99	68	576	140	80	572	246	648	1744	774
Arrive On Green	0.06	0.23	0.23	0.04	0.20	0.20	0.09	0.32	0.32	0.36	0.49	0.49
Sat Flow, veh/h	1781	3120	440	1781	2820	687	1781	3554	1529	1781	3554	1577
Grp Volume(v), veh/h	83	186	191	53	236	234	63	367	50	121	437	99
Grp Sat Flow(s),veh/h/ln	1781	1777	1783	1781	1777	1730	1781	1777	1529	1781	1777	1577
Q Serve(g_s), s	4.1	8.2	8.3	2.7	11.0	11.2	3.1	7.9	1.8	4.2	6.4	3.1
Cycle Q Clear(g_c), s	4.1	8.2	8.3	2.7	11.0	11.2	3.1	7.9	1.8	4.2	6.4	3.1
Prop In Lane	1.00		0.25	1.00		0.40	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	106	402	403	68	363	354	80	572	246	648	1744	774
V/C Ratio(X)	0.78	0.46	0.47	0.78	0.65	0.66	0.78	0.64	0.20	0.19	0.25	0.13
Avail Cap(c_a), veh/h	119	592	594	119	592	577	119	987	425	648	1744	774
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.7	30.1	30.2	42.9	32.8	32.9	40.5	28.3	18.4	19.5	13.3	12.4
Incr Delay (d2), s/veh	22.1	1.2	1.2	7.2	2.8	3.0	10.0	5.5	1.9	0.1	0.3	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.4	6.3	6.5	2.3	8.5	8.5	2.8	6.1	1.6	3.0	4.5	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	63.8	31.3	31.4	50.1	35.6	36.0	50.6	33.7	20.2	19.6	13.6	12.8
LnGrp LOS	E	C	C	D	D	D	D	C	C	B	B	B
Approach Vol, veh/h		460			523			480			657	
Approach Delay, s/veh		37.2			37.2			34.5			14.6	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	37.8	19.5	7.4	25.3	8.1	49.2	9.4	23.4
Change Period (Y+Rc), s	5.0	* 5	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	11.0	* 25	6.0	30.0	6.0	30.0	6.0	30.0
Max Q Clear Time (g_c+I1), s	6.2	9.9	4.7	10.3	5.1	8.4	6.1	13.2
Green Ext Time (p_c), s	0.1	3.1	0.0	2.9	0.0	4.4	0.0	3.5

Intersection Summary	
HCM 7th Control Delay, s/veh	29.6
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	182	473	65	81	551	83	80	419	43	132	485	140
Future Volume (veh/h)	182	473	65	81	551	83	80	419	43	132	485	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	192	498	68	85	580	87	84	441	45	139	511	147
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	983	134	109	767	115	107	668	285	403	1298	563
Arrive On Green	0.13	0.31	0.31	0.06	0.25	0.25	0.12	0.38	0.38	0.23	0.37	0.37
Sat Flow, veh/h	1781	3138	427	1781	3093	463	1781	3554	1518	1781	3554	1542
Grp Volume(v), veh/h	192	281	285	85	332	335	84	441	45	139	511	147
Grp Sat Flow(s),veh/h/ln	1781	1777	1788	1781	1777	1779	1781	1777	1518	1781	1777	1542
Q Serve(g_s), s	9.5	11.6	11.7	4.2	15.6	15.7	4.1	9.3	1.4	5.9	9.6	6.0
Cycle Q Clear(g_c), s	9.5	11.6	11.7	4.2	15.6	15.7	4.1	9.3	1.4	5.9	9.6	6.0
Prop In Lane	1.00		0.24	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	557	560	109	440	441	107	668	285	403	1298	563
V/C Ratio(X)	0.85	0.50	0.51	0.78	0.75	0.76	0.79	0.66	0.16	0.34	0.39	0.26
Avail Cap(c_a), veh/h	238	557	560	238	513	514	178	987	422	403	1298	563
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	25.2	25.2	41.6	31.3	31.3	39.0	25.7	15.0	29.2	21.2	20.0
Incr Delay (d2), s/veh	22.0	1.0	1.1	4.4	6.1	6.3	4.8	5.1	1.2	0.2	0.9	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.2	8.5	8.6	3.5	11.6	11.6	3.3	6.8	1.3	4.4	7.2	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	60.5	26.2	26.3	46.1	37.4	37.6	43.8	30.8	16.2	29.4	22.1	21.2
LnGrp LOS	E	C	C	D	D	D	D	C	B	C	C	C
Approach Vol, veh/h		758			752			570			797	
Approach Delay, s/veh		34.9			38.5			31.5			23.2	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.4	21.9	9.5	33.2	9.4	37.9	15.4	27.3
Change Period (Y+Rc), s	5.0	* 5	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	9.0	* 25	12.0	26.0	9.0	25.0	12.0	26.0
Max Q Clear Time (g_c+I1), s	7.9	11.3	6.2	13.7	6.1	11.6	11.5	17.7
Green Ext Time (p_c), s	0.0	3.6	0.0	3.6	0.0	4.3	0.0	3.3

Intersection Summary	
HCM 7th Control Delay, s/veh	31.9
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	15	17	21	23	8	23	214	19	14	297	20
Future Volume (veh/h)	9	15	17	21	23	8	23	214	19	14	297	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.95		0.99	0.99		0.92	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	16	18	22	24	9	24	228	20	15	316	21
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	89	111	133	94	78	23	146	1352	1270	74	1373	89
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	1.00	1.00	1.00	0.55	0.55	0.55
Sat Flow, veh/h	400	1300	1567	442	920	266	124	1648	1548	39	1674	109
Grp Volume(v), veh/h	26	0	18	55	0	0	252	0	20	352	0	0
Grp Sat Flow(s),veh/h/ln	1700	0	1567	1628	0	0	1772	0	1548	1822	0	0
Q Serve(g_s), s	0.0	0.0	1.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.2	0.0	1.0	2.7	0.0	0.0	0.0	0.0	0.0	8.9	0.0	0.0
Prop In Lane	0.38		1.00	0.40		0.16	0.10		1.00	0.04		0.06
Lane Grp Cap(c), veh/h	200	0	133	195	0	0	1497	0	1270	1536	0	0
V/C Ratio(X)	0.13	0.00	0.14	0.28	0.00	0.00	0.17	0.00	0.02	0.23	0.00	0.00
Avail Cap(c_a), veh/h	599	0	522	582	0	0	1497	0	1270	1536	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	38.2	0.0	38.1	38.9	0.0	0.0	0.0	0.0	0.0	5.6	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.5	0.8	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	0.0	0.7	2.1	0.0	0.0	0.2	0.0	0.0	5.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	38.5	0.0	38.6	39.7	0.0	0.0	0.2	0.0	0.0	6.0	0.0	0.0
LnGrp LOS	D		D	D			A		A	A		
Approach Vol, veh/h		44			55			272			352	
Approach Delay, s/veh		38.5			39.7			0.2			6.0	
Approach LOS		D			D			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		78.3		11.7		78.3		11.7				
Change Period (Y+Rc), s		4.5		4.0		4.5		4.0				
Max Green Setting (Gmax), s		51.5		30.0		51.5		30.0				
Max Q Clear Time (g_c+I1), s		2.0		3.2		10.9		4.7				
Green Ext Time (p_c), s		2.7		0.1		2.6		0.2				
Intersection Summary												
HCM 7th Control Delay, s/veh			8.4									
HCM 7th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	43	46	19	38	12	28	358	50	9	380	17
Future Volume (veh/h)	28	43	46	19	38	12	28	358	50	9	380	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.92		0.94	0.96		0.89	0.99		0.97	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	46	49	20	40	13	30	381	53	10	404	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	108	138	172	82	125	34	110	1347	1214	52	1383	61
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	1.00	1.00	1.00	0.79	0.79	0.79
Sat Flow, veh/h	450	1204	1495	266	1084	293	85	1704	1535	14	1749	77
Grp Volume(v), veh/h	76	0	49	73	0	0	411	0	53	432	0	0
Grp Sat Flow(s),veh/h/ln	1654	0	1495	1643	0	0	1789	0	1535	1840	0	0
Q Serve(g_s), s	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.4	0.0	2.7	3.4	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0
Prop In Lane	0.39		1.00	0.27		0.18	0.07		1.00	0.02		0.04
Lane Grp Cap(c), veh/h	246	0	172	240	0	0	1458	0	1214	1495	0	0
V/C Ratio(X)	0.31	0.00	0.29	0.30	0.00	0.00	0.28	0.00	0.04	0.29	0.00	0.00
Avail Cap(c_a), veh/h	499	0	415	495	0	0	1458	0	1214	1495	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.8	0.0	36.5	36.8	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.9	0.7	0.0	0.0	0.5	0.0	0.1	0.5	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.9	0.0	1.9	2.8	0.0	0.0	0.4	0.0	0.0	3.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	37.5	0.0	37.4	37.5	0.0	0.0	0.5	0.0	0.1	3.1	0.0	0.0
LnGrp LOS	D		D	D			A		A	A		
Approach Vol, veh/h		125			73			464			432	
Approach Delay, s/veh		37.4			37.5			0.4			3.1	
Approach LOS		D			D			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		75.7		14.3		75.7		14.3				
Change Period (Y+Rc), s		4.5		4.0		4.5		4.0				
Max Green Setting (Gmax), s		56.5		25.0		56.5		25.0				
Max Q Clear Time (g_c+I1), s		2.0		5.4		7.7		5.4				
Green Ext Time (p_c), s		5.0		0.5		3.3		0.3				
Intersection Summary												
HCM 7th Control Delay, s/veh			8.2									
HCM 7th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	15	24	24	24	16	27	332	22	21	387	66
Future Volume (veh/h)	72	15	24	24	24	16	27	332	22	21	387	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.97		0.99	0.99		0.93	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	77	16	26	26	26	17	29	353	23	22	412	70
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	27	162	73	59	25	115	1353	1242	73	1201	199
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	1.00	1.00	1.00	0.26	0.26	0.26
Sat Flow, veh/h	1017	264	1570	176	576	246	90	1686	1548	39	1497	248
Grp Volume(v), veh/h	93	0	26	69	0	0	382	0	23	504	0	0
Grp Sat Flow(s),veh/h/ln	1282	0	1570	997	0	0	1776	0	1548	1784	0	0
Q Serve(g_s), s	0.0	0.0	1.4	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.5	0.0	1.4	7.2	0.0	0.0	0.0	0.0	0.0	20.2	0.0	0.0
Prop In Lane	0.83		1.00	0.38		0.25	0.08		1.00	0.04		0.14
Lane Grp Cap(c), veh/h	205	0	162	158	0	0	1468	0	1242	1474	0	0
V/C Ratio(X)	0.45	0.00	0.16	0.44	0.00	0.00	0.26	0.00	0.02	0.34	0.00	0.00
Avail Cap(c_a), veh/h	527	0	523	514	0	0	1468	0	1242	1474	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	39.0	0.0	36.8	38.3	0.0	0.0	0.0	0.0	0.0	14.0	0.0	0.0
Incr Delay (d2), s/veh	1.6	0.0	0.5	1.9	0.0	0.0	0.4	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.7	0.0	1.0	2.8	0.0	0.0	0.3	0.0	0.0	15.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.6	0.0	37.3	40.2	0.0	0.0	0.4	0.0	0.0	14.6	0.0	0.0
LnGrp LOS	D		D	D			A		A	B		
Approach Vol, veh/h		119			69			405			504	
Approach Delay, s/veh		39.9			40.2			0.4			14.6	
Approach LOS		D			D			A			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		76.7		13.3		76.7		13.3				
Change Period (Y+Rc), s		4.5		4.0		4.5		4.0				
Max Green Setting (Gmax), s		51.5		30.0		51.5		30.0				
Max Q Clear Time (g_c+I1), s		2.0		8.5		22.2		9.2				
Green Ext Time (p_c), s		4.4		0.5		3.9		0.3				

Intersection Summary		
HCM 7th Control Delay, s/veh		13.7
HCM 7th LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	43	46	17	38	11	33	411	49	6	468	60
Future Volume (veh/h)	50	43	46	17	38	11	33	411	49	6	468	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.92		0.94	0.96		0.89	0.99		0.97	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	53	46	49	18	40	12	35	437	52	6	498	64
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	144	102	170	75	123	31	111	1330	1215	44	1273	162
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	720	896	1495	221	1077	268	85	1680	1535	5	1609	205
Grp Volume(v), veh/h	99	0	49	70	0	0	472	0	52	568	0	0
Grp Sat Flow(s),veh/h/ln	1616	0	1495	1566	0	0	1766	0	1535	1819	0	0
Q Serve(g_s), s	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.7	0.0	2.7	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.54		1.00	0.26		0.17	0.07		1.00	0.01		0.11
Lane Grp Cap(c), veh/h	246	0	170	229	0	0	1441	0	1215	1480	0	0
V/C Ratio(X)	0.40	0.00	0.29	0.31	0.00	0.00	0.33	0.00	0.04	0.38	0.00	0.00
Avail Cap(c_a), veh/h	487	0	415	488	0	0	1441	0	1215	1480	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	37.4	0.0	36.5	36.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.9	0.7	0.0	0.0	0.6	0.0	0.1	0.8	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.8	0.0	1.9	2.6	0.0	0.0	0.4	0.0	0.0	0.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	38.4	0.0	37.4	37.5	0.0	0.0	0.6	0.0	0.1	0.8	0.0	0.0
LnGrp LOS	D		D	D			A		A	A		
Approach Vol, veh/h		148			70			524			568	
Approach Delay, s/veh		38.1			37.5			0.6			0.8	
Approach LOS		D			D			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		75.7		14.3		75.7		14.3				
Change Period (Y+Rc), s		4.5		4.0		4.5		4.0				
Max Green Setting (Gmax), s		56.5		25.0		56.5		25.0				
Max Q Clear Time (g_c+I1), s		2.0		6.7		2.0		6.7				
Green Ext Time (p_c), s		6.0		0.6		4.8		0.3				
Intersection Summary												
HCM 7th Control Delay, s/veh			6.9									
HCM 7th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	15	17	46	23	8	23	220	19	14	303	20
Future Volume (veh/h)	9	15	17	46	23	8	23	220	19	14	303	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.96		0.99	0.99		0.92	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	16	18	49	24	9	24	234	20	15	322	21
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	124	149	136	57	16	141	1341	1255	73	1360	87
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	1.00	1.00	1.00	0.54	0.54	0.54
Sat Flow, veh/h	432	1304	1568	765	604	169	120	1654	1548	38	1678	107
Grp Volume(v), veh/h	26	0	18	82	0	0	258	0	20	358	0	0
Grp Sat Flow(s),veh/h/ln	1736	0	1568	1537	0	0	1774	0	1548	1823	0	0
Q Serve(g_s), s	0.0	0.0	0.9	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.1	0.0	0.9	4.5	0.0	0.0	0.0	0.0	0.0	9.2	0.0	0.0
Prop In Lane	0.38		1.00	0.60		0.11	0.09		1.00	0.04		0.06
Lane Grp Cap(c), veh/h	220	0	149	210	0	0	1482	0	1255	1519	0	0
V/C Ratio(X)	0.12	0.00	0.12	0.39	0.00	0.00	0.17	0.00	0.02	0.24	0.00	0.00
Avail Cap(c_a), veh/h	605	0	523	565	0	0	1482	0	1255	1519	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	37.4	0.0	37.3	38.8	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.4	1.2	0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	0.0	0.7	3.2	0.0	0.0	0.2	0.0	0.0	6.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	37.6	0.0	37.7	40.0	0.0	0.0	0.3	0.0	0.0	6.3	0.0	0.0
LnGrp LOS	D		D	D			A		A	A		
Approach Vol, veh/h		44			82			278			358	
Approach Delay, s/veh		37.6			40.0			0.2			6.3	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	77.5	12.5	77.5	12.5
Change Period (Y+Rc), s	4.5	4.0	4.5	4.0
Max Green Setting (Gmax), s	51.5	30.0	51.5	30.0
Max Q Clear Time (g_c+I1), s	2.0	3.1	11.2	6.5
Green Ext Time (p_c), s	2.8	0.1	2.6	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	9.5
HCM 7th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	43	46	28	38	12	28	377	50	9	408	17
Future Volume (veh/h)	28	43	46	28	38	12	28	377	50	9	408	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.92		0.94	0.96		0.89	0.99		0.97	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	46	49	30	40	13	30	401	53	10	434	18
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	110	142	175	98	111	29	105	1349	1210	51	1385	57
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	1.00	1.00	1.00	0.79	0.79	0.79
Sat Flow, veh/h	461	1212	1497	372	945	245	79	1711	1535	13	1756	72
Grp Volume(v), veh/h	76	0	49	83	0	0	431	0	53	462	0	0
Grp Sat Flow(s),veh/h/ln	1673	0	1497	1562	0	0	1791	0	1535	1841	0	0
Q Serve(g_s), s	0.0	0.0	2.7	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.4	0.0	2.7	4.3	0.0	0.0	0.0	0.0	0.0	6.3	0.0	0.0
Prop In Lane	0.39		1.00	0.36		0.16	0.07		1.00	0.02		0.04
Lane Grp Cap(c), veh/h	252	0	175	237	0	0	1454	0	1210	1492	0	0
V/C Ratio(X)	0.30	0.00	0.28	0.35	0.00	0.00	0.30	0.00	0.04	0.31	0.00	0.00
Avail Cap(c_a), veh/h	502	0	416	482	0	0	1454	0	1210	1492	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.6	0.0	36.3	36.8	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.9	0.9	0.0	0.0	0.5	0.0	0.1	0.5	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.9	0.0	1.8	3.2	0.0	0.0	0.4	0.0	0.0	3.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	37.2	0.0	37.1	37.7	0.0	0.0	0.5	0.0	0.1	3.2	0.0	0.0
LnGrp LOS	D		D	D			A		A	A		
Approach Vol, veh/h		125			83			484			462	
Approach Delay, s/veh		37.2			37.7			0.5			3.2	
Approach LOS		D			D			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		75.5		14.5		75.5		14.5				
Change Period (Y+Rc), s		4.5		4.0		4.5		4.0				
Max Green Setting (Gmax), s		56.5		25.0		56.5		25.0				
Max Q Clear Time (g_c+I1), s		2.0		5.4		8.3		6.3				
Green Ext Time (p_c), s		5.3		0.5		3.6		0.4				
Intersection Summary												
HCM 7th Control Delay, s/veh			8.2									
HCM 7th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	15	24	49	24	16	27	338	22	21	393	66
Future Volume (veh/h)	72	15	24	49	24	16	27	338	22	21	393	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.98		0.99	0.99		0.94	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	77	16	26	52	26	17	29	360	23	22	418	70
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	209	37	212	116	54	24	109	1305	1193	71	1159	189
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	1.00	1.00	1.00	0.25	0.25	0.25
Sat Flow, veh/h	1012	275	1573	403	401	175	86	1693	1548	38	1503	245
Grp Volume(v), veh/h	93	0	26	95	0	0	389	0	23	510	0	0
Grp Sat Flow(s),veh/h/ln	1287	0	1573	979	0	0	1779	0	1548	1786	0	0
Q Serve(g_s), s	0.0	0.0	1.3	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.1	0.0	1.3	9.7	0.0	0.0	0.0	0.0	0.0	20.7	0.0	0.0
Prop In Lane	0.83		1.00	0.55		0.18	0.07		1.00	0.04		0.14
Lane Grp Cap(c), veh/h	246	0	212	194	0	0	1415	0	1193	1419	0	0
V/C Ratio(X)	0.38	0.00	0.12	0.49	0.00	0.00	0.27	0.00	0.02	0.36	0.00	0.00
Avail Cap(c_a), veh/h	525	0	524	490	0	0	1415	0	1193	1419	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.3	0.0	34.3	38.5	0.0	0.0	0.0	0.0	0.0	15.4	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.3	1.9	0.0	0.0	0.5	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.5	0.0	0.9	3.9	0.0	0.0	0.3	0.0	0.0	15.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	37.2	0.0	34.5	40.4	0.0	0.0	0.5	0.0	0.0	16.1	0.0	0.0
LnGrp LOS	D		C	D			A		A	B		
Approach Vol, veh/h		119			95			412			510	
Approach Delay, s/veh		36.6			40.4			0.5			16.1	
Approach LOS		D			D			A			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		73.9		16.1		73.9		16.1				
Change Period (Y+Rc), s		4.5		4.0		4.5		4.0				
Max Green Setting (Gmax), s		51.5		30.0		51.5		30.0				
Max Q Clear Time (g_c+I1), s		2.0		8.1		22.7		11.7				
Green Ext Time (p_c), s		4.5		0.5		3.9		0.4				
Intersection Summary												
HCM 7th Control Delay, s/veh			14.6									
HCM 7th LOS			B									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	43	46	26	38	11	33	430	49	6	496	60
Future Volume (veh/h)	50	43	46	26	38	11	33	430	49	6	496	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	0.93		0.94	0.96		0.89	0.99		0.97	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	53	46	49	28	40	12	35	457	52	6	528	64
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	146	106	174	89	105	25	106	1331	1211	44	1279	154
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	724	907	1497	298	899	211	80	1687	1535	5	1621	195
Grp Volume(v), veh/h	99	0	49	80	0	0	492	0	52	598	0	0
Grp Sat Flow(s),veh/h/ln	1631	0	1497	1408	0	0	1767	0	1535	1821	0	0
Q Serve(g_s), s	0.0	0.0	2.7	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.7	0.0	2.7	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.54		1.00	0.35		0.15	0.07		1.00	0.01		0.11
Lane Grp Cap(c), veh/h	252	0	174	218	0	0	1437	0	1211	1477	0	0
V/C Ratio(X)	0.39	0.00	0.28	0.37	0.00	0.00	0.34	0.00	0.04	0.40	0.00	0.00
Avail Cap(c_a), veh/h	490	0	416	465	0	0	1437	0	1211	1477	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	37.1	0.0	36.3	36.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.9	1.0	0.0	0.0	0.7	0.0	0.1	0.8	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.8	0.0	1.8	3.1	0.0	0.0	0.5	0.0	0.0	0.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	38.1	0.0	37.2	38.0	0.0	0.0	0.7	0.0	0.1	0.8	0.0	0.0
LnGrp LOS	D		D	D			A		A	A		
Approach Vol, veh/h		148			80			544			598	
Approach Delay, s/veh		37.8			38.0			0.6			0.8	
Approach LOS		D			D			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		75.5		14.5		75.5		14.5				
Change Period (Y+Rc), s		4.5		4.0		4.5		4.0				
Max Green Setting (Gmax), s		56.5		25.0		56.5		25.0				
Max Q Clear Time (g_c+I1), s		2.0		6.7		2.0		7.3				
Green Ext Time (p_c), s		6.3		0.6		5.2		0.3				

Intersection Summary	
HCM 7th Control Delay, s/veh	6.9
HCM 7th LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	343	72	84	691	40	73	177	97	33	218	80
Future Volume (veh/h)	37	343	72	84	691	40	73	177	97	33	218	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	38	350	73	86	705	41	74	181	99	34	222	82
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	48	791	350	110	916	399	95	1709	748	42	1603	701
Arrive On Green	0.03	0.22	0.22	0.06	0.26	0.26	0.05	0.48	0.48	0.05	0.90	0.90
Sat Flow, veh/h	1781	3554	1572	1781	3554	1549	1781	3554	1556	1781	3554	1553
Grp Volume(v), veh/h	38	350	73	86	705	41	74	181	99	34	222	82
Grp Sat Flow(s),veh/h/ln	1781	1777	1572	1781	1777	1549	1781	1777	1556	1781	1777	1553
Q Serve(g_s), s	1.9	7.6	3.4	4.3	16.5	1.8	3.7	2.5	3.2	1.7	0.6	0.5
Cycle Q Clear(g_c), s	1.9	7.6	3.4	4.3	16.5	1.8	3.7	2.5	3.2	1.7	0.6	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	48	791	350	110	916	399	95	1709	748	42	1603	701
V/C Ratio(X)	0.80	0.44	0.21	0.78	0.77	0.10	0.78	0.11	0.13	0.81	0.14	0.12
Avail Cap(c_a), veh/h	198	1185	524	198	1185	516	158	1709	748	158	1603	701
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.6	30.2	28.5	41.6	30.9	25.5	42.1	12.8	13.0	42.7	2.4	2.4
Incr Delay (d2), s/veh	10.8	0.6	0.4	4.5	2.8	0.2	5.1	0.1	0.4	12.7	0.2	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	5.7	2.3	3.5	11.4	1.2	3.1	1.7	2.0	1.6	0.5	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.3	30.7	28.9	46.1	33.7	25.6	47.1	12.9	13.3	55.4	2.6	2.8
LnGrp LOS	D	C	C	D	C	C	D	B	B	E	A	A
Approach Vol, veh/h		461			832			354			338	
Approach Delay, s/veh		32.4			34.6			20.2			8.0	
Approach LOS		C			C			C			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.1	48.3	10.1	25.5	8.8	45.6	6.9	28.7
Change Period (Y+Rc), s	4.0	5.0	4.5	5.5	4.0	5.0	4.5	5.5
Max Green Setting (Gmax), s	8.0	23.0	10.0	30.0	8.0	23.0	10.0	30.0
Max Q Clear Time (g_c+I1), s	3.7	5.2	6.3	9.6	5.7	2.6	3.9	18.5
Green Ext Time (p_c), s	0.0	1.8	0.0	3.2	0.0	2.2	0.0	4.7

Intersection Summary	
HCM 7th Control Delay, s/veh	27.0
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	762	174	150	720	63	163	280	181	91	250	125
Future Volume (veh/h)	87	762	174	150	720	63	163	280	181	91	250	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	92	802	183	158	758	66	172	295	191	96	263	132
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	117	979	432	191	1125	492	198	1201	524	122	1049	454
Arrive On Green	0.07	0.28	0.28	0.11	0.32	0.32	0.11	0.34	0.34	0.09	0.39	0.39
Sat Flow, veh/h	1781	3554	1568	1781	3554	1555	1781	3554	1552	1781	3554	1538
Grp Volume(v), veh/h	92	802	183	158	758	66	172	295	191	96	263	132
Grp Sat Flow(s),veh/h/ln	1781	1777	1568	1781	1777	1555	1781	1777	1552	1781	1777	1538
Q Serve(g_s), s	4.6	19.0	8.6	7.8	16.7	2.7	8.6	5.4	8.4	4.7	4.5	5.3
Cycle Q Clear(g_c), s	4.6	19.0	8.6	7.8	16.7	2.7	8.6	5.4	8.4	4.7	4.5	5.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	117	979	432	191	1125	492	198	1201	524	122	1049	454
V/C Ratio(X)	0.78	0.82	0.42	0.83	0.67	0.13	0.87	0.25	0.36	0.79	0.25	0.29
Avail Cap(c_a), veh/h	208	1086	479	208	1125	492	198	1201	524	198	1049	454
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.4	30.5	26.7	39.4	26.7	21.9	39.4	21.5	22.5	40.3	20.6	20.9
Incr Delay (d2), s/veh	4.2	5.0	0.9	20.1	1.8	0.2	30.3	0.5	2.0	4.2	0.6	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.7	13.1	5.7	7.8	11.2	1.7	9.0	4.0	5.7	3.8	3.3	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.6	35.5	27.7	59.5	28.5	22.1	69.6	22.0	24.4	44.5	21.2	22.5
LnGrp LOS	D	D	C	E	C	C	E	C	C	D	C	C
Approach Vol, veh/h		1077			982			658			491	
Approach Delay, s/veh		35.1			33.1			35.2			26.1	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	35.4	14.1	30.3	14.0	31.6	10.4	34.0
Change Period (Y+Rc), s	4.0	5.0	4.5	5.5	4.0	5.0	4.5	5.5
Max Green Setting (Gmax), s	10.0	23.0	10.5	27.5	10.0	23.0	10.5	27.5
Max Q Clear Time (g_c+I1), s	6.7	10.4	9.8	21.0	10.6	7.3	6.6	18.7
Green Ext Time (p_c), s	0.0	2.7	0.0	3.8	0.0	2.5	0.0	4.3

Intersection Summary	
HCM 7th Control Delay, s/veh	33.1
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	398	91	84	720	54	82	198	97	52	242	135
Future Volume (veh/h)	129	398	91	84	720	54	82	198	97	52	242	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	132	406	93	86	735	55	84	202	99	53	247	138
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	163	1051	466	110	945	412	108	1398	611	67	1318	575
Arrive On Green	0.09	0.30	0.30	0.06	0.27	0.27	0.06	0.39	0.39	0.08	0.74	0.74
Sat Flow, veh/h	1781	3554	1575	1781	3554	1549	1781	3554	1554	1781	3554	1551
Grp Volume(v), veh/h	132	406	93	86	735	55	84	202	99	53	247	138
Grp Sat Flow(s),veh/h/ln	1781	1777	1575	1781	1777	1549	1781	1777	1554	1781	1777	1551
Q Serve(g_s), s	6.5	8.2	4.0	4.3	17.2	2.4	4.2	3.3	3.7	2.6	1.9	2.5
Cycle Q Clear(g_c), s	6.5	8.2	4.0	4.3	17.2	2.4	4.2	3.3	3.7	2.6	1.9	2.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	163	1051	466	110	945	412	108	1398	611	67	1318	575
V/C Ratio(X)	0.81	0.39	0.20	0.78	0.78	0.13	0.78	0.14	0.16	0.79	0.19	0.24
Avail Cap(c_a), veh/h	198	1185	525	198	1185	516	158	1398	611	158	1318	575
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	25.2	23.7	41.6	30.6	25.1	41.7	17.6	17.7	41.2	7.6	7.6
Incr Delay (d2), s/veh	15.4	0.3	0.3	4.5	3.1	0.2	7.5	0.2	0.6	7.3	0.3	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.2	6.0	2.6	3.5	11.8	1.6	3.6	2.3	2.4	2.2	1.3	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	55.5	25.5	24.0	46.1	33.6	25.3	49.2	17.8	18.2	48.5	7.9	8.6
LnGrp LOS	E	C	C	D	C	C	D	B	B	D	A	A
Approach Vol, veh/h		631			876			385			438	
Approach Delay, s/veh		31.6			34.3			24.8			13.0	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	40.4	10.1	32.1	9.4	38.4	12.7	29.4
Change Period (Y+Rc), s	4.0	5.0	4.5	5.5	4.0	5.0	4.5	5.5
Max Green Setting (Gmax), s	8.0	23.0	10.0	30.0	8.0	23.0	10.0	30.0
Max Q Clear Time (g_c+I1), s	4.6	5.7	6.3	10.2	6.2	4.5	8.5	19.2
Green Ext Time (p_c), s	0.0	1.9	0.0	3.8	0.0	2.6	0.0	4.7

Intersection Summary	
HCM 7th Control Delay, s/veh	28.0
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	751	174	150	753	78	177	300	181	95	257	199
Future Volume (veh/h)	113	751	174	150	753	78	177	300	181	95	257	199
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	119	791	183	158	793	82	186	316	191	100	271	209
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	149	971	429	191	1055	461	198	1198	523	127	1056	457
Arrive On Green	0.08	0.27	0.27	0.11	0.30	0.30	0.11	0.34	0.34	0.07	0.30	0.30
Sat Flow, veh/h	1781	3554	1568	1781	3554	1554	1781	3554	1552	1781	3554	1538
Grp Volume(v), veh/h	119	791	183	158	793	82	186	316	191	100	271	209
Grp Sat Flow(s),veh/h/ln	1781	1777	1568	1781	1777	1554	1781	1777	1552	1781	1777	1538
Q Serve(g_s), s	5.9	18.7	8.6	7.8	18.2	3.5	9.3	5.8	8.4	5.0	5.2	9.9
Cycle Q Clear(g_c), s	5.9	18.7	8.6	7.8	18.2	3.5	9.3	5.8	8.4	5.0	5.2	9.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	149	971	429	191	1055	461	198	1198	523	127	1056	457
V/C Ratio(X)	0.80	0.81	0.43	0.83	0.75	0.18	0.94	0.26	0.37	0.79	0.26	0.46
Avail Cap(c_a), veh/h	208	1086	479	208	1086	475	198	1198	523	198	1056	457
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.5	30.6	26.9	39.4	28.6	23.5	39.7	21.7	22.5	41.1	24.1	25.7
Incr Delay (d2), s/veh	9.3	4.8	1.0	20.1	3.1	0.3	46.5	0.5	2.0	4.5	0.6	3.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.2	12.9	5.7	7.8	12.3	2.3	10.7	4.3	5.7	4.1	4.0	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.8	35.4	27.9	59.5	31.8	23.7	86.2	22.2	24.5	45.6	24.6	29.0
LnGrp LOS	D	D	C	E	C	C	F	C	C	D	C	C
Approach Vol, veh/h		1093			1033			693			580	
Approach Delay, s/veh		35.7			35.4			40.0			29.8	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	35.3	14.1	30.1	14.0	31.8	12.0	32.2
Change Period (Y+Rc), s	4.0	5.0	4.5	5.5	4.0	5.0	4.5	5.5
Max Green Setting (Gmax), s	10.0	23.0	10.5	27.5	10.0	23.0	10.5	27.5
Max Q Clear Time (g_c+I1), s	7.0	10.4	9.8	20.7	11.3	11.9	7.9	20.2
Green Ext Time (p_c), s	0.0	2.9	0.0	3.9	0.0	2.5	0.0	3.9

Intersection Summary	
HCM 7th Control Delay, s/veh	35.5
HCM 7th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	343	73	84	691	40	73	201	98	40	251	80
Future Volume (veh/h)	37	343	73	84	691	40	73	201	98	40	251	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	38	350	74	86	705	41	74	205	100	41	256	82
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	48	791	350	110	916	399	95	1690	740	51	1603	701
Arrive On Green	0.03	0.22	0.22	0.06	0.26	0.26	0.05	0.48	0.48	0.06	0.90	0.90
Sat Flow, veh/h	1781	3554	1572	1781	3554	1549	1781	3554	1556	1781	3554	1553
Grp Volume(v), veh/h	38	350	74	86	705	41	74	205	100	41	256	82
Grp Sat Flow(s),veh/h/ln	1781	1777	1572	1781	1777	1549	1781	1777	1556	1781	1777	1553
Q Serve(g_s), s	1.9	7.6	3.5	4.3	16.5	1.8	3.7	2.9	3.2	2.0	0.7	0.5
Cycle Q Clear(g_c), s	1.9	7.6	3.5	4.3	16.5	1.8	3.7	2.9	3.2	2.0	0.7	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	48	791	350	110	916	399	95	1690	740	51	1603	701
V/C Ratio(X)	0.80	0.44	0.21	0.78	0.77	0.10	0.78	0.12	0.14	0.80	0.16	0.12
Avail Cap(c_a), veh/h	198	1185	524	198	1185	516	158	1690	740	158	1603	701
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.6	30.2	28.5	41.6	30.9	25.5	42.1	13.1	13.2	42.1	2.5	2.4
Incr Delay (d2), s/veh	10.8	0.6	0.4	4.5	2.8	0.2	5.1	0.1	0.4	9.9	0.2	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	5.7	2.3	3.5	11.4	1.2	3.1	2.0	2.0	1.8	0.5	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.3	30.7	29.0	46.1	33.7	25.6	47.1	13.3	13.6	52.1	2.7	2.8
LnGrp LOS	D	C	C	D	C	C	D	B	B	D	A	A
Approach Vol, veh/h		462			832			379			379	
Approach Delay, s/veh		32.4			34.6			20.0			8.0	
Approach LOS		C			C			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	47.8	10.1	25.5	8.8	45.6	6.9	28.7
Change Period (Y+Rc), s	4.0	5.0	4.5	5.5	4.0	5.0	4.5	5.5
Max Green Setting (Gmax), s	8.0	23.0	10.0	30.0	8.0	23.0	10.0	30.0
Max Q Clear Time (g_c+I1), s	4.0	5.2	6.3	9.6	5.7	2.7	3.9	18.5
Green Ext Time (p_c), s	0.0	2.0	0.0	3.2	0.0	2.5	0.0	4.7

Intersection Summary	
HCM 7th Control Delay, s/veh	26.5
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	762	175	153	720	67	168	314	182	98	295	125
Future Volume (veh/h)	87	762	175	153	720	67	168	314	182	98	295	125
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	92	802	184	161	758	71	177	331	192	103	311	132
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	117	979	432	194	1131	495	198	1176	514	131	1043	451
Arrive On Green	0.07	0.28	0.28	0.11	0.32	0.32	0.11	0.33	0.33	0.05	0.20	0.20
Sat Flow, veh/h	1781	3554	1568	1781	3554	1555	1781	3554	1552	1781	3554	1538
Grp Volume(v), veh/h	92	802	184	161	758	71	177	331	192	103	311	132
Grp Sat Flow(s),veh/h/ln	1781	1777	1568	1781	1777	1555	1781	1777	1552	1781	1777	1538
Q Serve(g_s), s	4.6	19.0	8.7	8.0	16.6	2.9	8.8	6.2	8.5	5.1	6.7	6.6
Cycle Q Clear(g_c), s	4.6	19.0	8.7	8.0	16.6	2.9	8.8	6.2	8.5	5.1	6.7	6.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	117	979	432	194	1131	495	198	1176	514	131	1043	451
V/C Ratio(X)	0.78	0.82	0.43	0.83	0.67	0.14	0.89	0.28	0.37	0.79	0.30	0.29
Avail Cap(c_a), veh/h	208	1086	479	208	1131	495	198	1176	514	198	1043	451
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.4	30.5	26.8	39.3	26.6	21.9	39.5	22.2	23.0	42.1	28.2	28.2
Incr Delay (d2), s/veh	4.2	5.0	0.9	20.9	1.7	0.2	35.5	0.6	2.1	5.6	0.7	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.7	13.1	5.7	7.9	11.2	1.9	9.6	4.6	5.8	4.4	5.3	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.6	35.5	27.7	60.2	28.3	22.1	75.0	22.8	25.1	47.7	29.0	29.8
LnGrp LOS	D	D	C	E	C	C	E	C	C	D	C	C
Approach Vol, veh/h		1078			990			700			546	
Approach Delay, s/veh		35.0			33.0			36.6			32.7	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	34.8	14.3	30.3	14.0	31.4	10.4	34.2
Change Period (Y+Rc), s	4.0	5.0	4.5	5.5	4.0	5.0	4.5	5.5
Max Green Setting (Gmax), s	10.0	23.0	10.5	27.5	10.0	23.0	10.5	27.5
Max Q Clear Time (g_c+I1), s	7.1	10.5	10.0	21.0	10.8	8.7	6.6	18.6
Green Ext Time (p_c), s	0.0	3.0	0.0	3.8	0.0	2.8	0.0	4.3

Intersection Summary	
HCM 7th Control Delay, s/veh	34.4
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	398	92	84	720	54	82	222	98	59	275	135
Future Volume (veh/h)	129	398	92	84	720	54	82	222	98	59	275	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	132	406	94	86	735	55	84	227	100	60	281	138
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	163	1051	466	110	945	412	108	1380	603	77	1318	575
Arrive On Green	0.09	0.30	0.30	0.06	0.27	0.27	0.06	0.39	0.39	0.09	0.74	0.74
Sat Flow, veh/h	1781	3554	1575	1781	3554	1549	1781	3554	1554	1781	3554	1551
Grp Volume(v), veh/h	132	406	94	86	735	55	84	227	100	60	281	138
Grp Sat Flow(s),veh/h/ln	1781	1777	1575	1781	1777	1549	1781	1777	1554	1781	1777	1551
Q Serve(g_s), s	6.5	8.2	4.0	4.3	17.2	2.4	4.2	3.8	3.8	3.0	2.2	2.5
Cycle Q Clear(g_c), s	6.5	8.2	4.0	4.3	17.2	2.4	4.2	3.8	3.8	3.0	2.2	2.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	163	1051	466	110	945	412	108	1380	603	77	1318	575
V/C Ratio(X)	0.81	0.39	0.20	0.78	0.78	0.13	0.78	0.16	0.17	0.78	0.21	0.24
Avail Cap(c_a), veh/h	198	1185	525	198	1185	516	158	1380	603	158	1318	575
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	25.2	23.7	41.6	30.6	25.1	41.7	18.0	18.0	40.7	7.6	7.6
Incr Delay (d2), s/veh	15.4	0.3	0.3	4.5	3.1	0.2	7.5	0.3	0.6	6.4	0.4	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.2	6.0	2.6	3.5	11.8	1.6	3.6	2.7	2.5	2.5	1.5	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	55.5	25.5	24.0	46.1	33.6	25.3	49.2	18.2	18.6	47.1	8.0	8.6
LnGrp LOS	E	C	C	D	C	C	D	B	B	D	A	A
Approach Vol, veh/h		632			876			411			479	
Approach Delay, s/veh		31.6			34.3			24.7			13.1	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	39.9	10.1	32.1	9.4	38.4	12.7	29.4
Change Period (Y+Rc), s	4.0	5.0	4.5	5.5	4.0	5.0	4.5	5.5
Max Green Setting (Gmax), s	8.0	23.0	10.0	30.0	8.0	23.0	10.0	30.0
Max Q Clear Time (g_c+I1), s	5.0	5.8	6.3	10.2	6.2	4.5	8.5	19.2
Green Ext Time (p_c), s	0.0	2.1	0.0	3.8	0.0	2.9	0.0	4.7

Intersection Summary	
HCM 7th Control Delay, s/veh	27.7
HCM 7th LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	751	175	153	753	82	182	334	182	102	302	199
Future Volume (veh/h)	113	751	175	153	753	82	182	334	182	102	302	199
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	119	791	184	161	793	86	192	352	192	107	318	209
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	149	972	429	194	1061	464	198	1173	512	136	1050	455
Arrive On Green	0.08	0.27	0.27	0.11	0.30	0.30	0.11	0.33	0.33	0.03	0.10	0.10
Sat Flow, veh/h	1781	3554	1568	1781	3554	1554	1781	3554	1552	1781	3554	1538
Grp Volume(v), veh/h	119	791	184	161	793	86	192	352	192	107	318	209
Grp Sat Flow(s),veh/h/ln	1781	1777	1568	1781	1777	1554	1781	1777	1552	1781	1777	1538
Q Serve(g_s), s	5.9	18.7	8.7	8.0	18.1	3.7	9.7	6.6	8.5	5.4	7.5	11.6
Cycle Q Clear(g_c), s	5.9	18.7	8.7	8.0	18.1	3.7	9.7	6.6	8.5	5.4	7.5	11.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	149	972	429	194	1061	464	198	1173	512	136	1050	455
V/C Ratio(X)	0.80	0.81	0.43	0.83	0.75	0.19	0.97	0.30	0.37	0.79	0.30	0.46
Avail Cap(c_a), veh/h	208	1086	479	208	1086	475	198	1173	512	198	1050	455
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.5	30.6	26.9	39.3	28.5	23.4	39.9	22.4	23.0	43.1	32.0	33.8
Incr Delay (d2), s/veh	9.3	4.8	1.0	20.9	3.1	0.3	54.9	0.7	2.1	7.0	0.7	3.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.2	12.9	5.8	7.9	12.3	2.4	11.4	4.9	5.8	4.8	6.2	8.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	49.8	35.4	27.9	60.2	31.5	23.7	94.7	23.1	25.1	50.1	32.7	37.1
LnGrp LOS	D	D	C	E	C	C	F	C	C	D	C	D
Approach Vol, veh/h		1094			1040			736			634	
Approach Delay, s/veh		35.7			35.3			42.3			37.1	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.9	34.7	14.3	30.1	14.0	31.6	12.0	32.4
Change Period (Y+Rc), s	4.0	5.0	4.5	5.5	4.0	5.0	4.5	5.5
Max Green Setting (Gmax), s	10.0	23.0	10.5	27.5	10.0	23.0	10.5	27.5
Max Q Clear Time (g_c+I1), s	7.4	10.5	10.0	20.7	11.7	13.6	7.9	20.1
Green Ext Time (p_c), s	0.0	3.1	0.0	3.9	0.0	2.6	0.0	3.9

Intersection Summary	
HCM 7th Control Delay, s/veh	37.2
HCM 7th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	398	92	84	720	54	82	222	98	59	275	135
Future Volume (veh/h)	129	398	92	84	720	54	82	222	98	59	275	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	132	406	94	86	735	55	84	227	100	60	281	138
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	164	1015	450	110	868	378	478	1415	619	77	576	248
Arrive On Green	0.09	0.29	0.29	0.06	0.24	0.24	0.27	0.40	0.40	0.01	0.05	0.05
Sat Flow, veh/h	1781	3554	1575	1781	3554	1548	1781	3554	1554	1781	3554	1531
Grp Volume(v), veh/h	132	406	94	86	735	55	84	227	100	60	281	138
Grp Sat Flow(s),veh/h/ln	1781	1777	1575	1781	1777	1548	1781	1777	1554	1781	1777	1531
Q Serve(g_s), s	6.5	8.3	1.9	4.3	17.7	2.0	3.3	3.7	3.7	3.0	6.9	7.9
Cycle Q Clear(g_c), s	6.5	8.3	1.9	4.3	17.7	2.0	3.3	3.7	3.7	3.0	6.9	7.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	164	1015	450	110	868	378	478	1415	619	77	576	248
V/C Ratio(X)	0.81	0.40	0.21	0.78	0.85	0.15	0.18	0.16	0.16	0.78	0.49	0.56
Avail Cap(c_a), veh/h	327	1165	516	208	928	404	478	1415	619	158	908	391
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	25.9	5.2	41.6	32.4	17.2	25.3	17.4	17.4	43.9	39.0	39.4
Incr Delay (d2), s/veh	3.5	0.4	0.3	4.4	7.4	0.2	0.1	0.2	0.6	6.1	2.9	8.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.2	6.1	2.6	3.5	12.8	1.6	2.4	2.6	2.4	2.6	6.0	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.6	26.3	5.5	46.1	39.8	17.4	25.3	17.7	18.0	50.0	41.9	48.2
LnGrp LOS	D	C	A	D	D	B	C	B	B	D	D	D
Approach Vol, veh/h		632			876			411			479	
Approach Delay, s/veh		26.8			39.0			19.3			44.7	
Approach LOS		C			D			B			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	40.8	10.1	31.2	29.2	19.6	13.8	27.5
Change Period (Y+Rc), s	4.0	5.0	4.5	5.5	5.0	* 5	5.5	* 5.5
Max Green Setting (Gmax), s	8.0	23.0	10.5	29.5	8.0	* 23	16.5	* 24
Max Q Clear Time (g_c+I1), s	5.0	5.7	6.3	10.3	5.3	9.9	8.5	19.7
Green Ext Time (p_c), s	0.0	2.1	0.0	3.7	0.0	2.5	0.1	2.1

Intersection Summary	
HCM 7th Control Delay, s/veh	33.5
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	751	175	153	753	82	182	334	182	102	302	199
Future Volume (veh/h)	113	751	175	153	753	82	182	334	182	102	302	199
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.98	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	119	791	184	161	793	86	192	352	192	107	318	209
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	175	899	396	194	898	392	430	1245	544	137	620	421
Arrive On Green	0.10	0.25	0.25	0.11	0.25	0.25	0.24	0.35	0.35	0.03	0.06	0.06
Sat Flow, veh/h	1781	3554	1566	1781	3554	1552	1781	3554	1552	1781	3554	1519
Grp Volume(v), veh/h	119	791	184	161	793	86	192	352	192	107	318	209
Grp Sat Flow(s),veh/h/ln	1781	1777	1566	1781	1777	1552	1781	1777	1552	1781	1777	1519
Q Serve(g_s), s	5.8	19.2	4.7	8.0	19.3	3.0	8.2	6.4	8.3	5.4	7.8	2.6
Cycle Q Clear(g_c), s	5.8	19.2	4.7	8.0	19.3	3.0	8.2	6.4	8.3	5.4	7.8	2.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	175	899	396	194	898	392	430	1245	544	137	620	421
V/C Ratio(X)	0.68	0.88	0.46	0.83	0.88	0.22	0.45	0.28	0.35	0.78	0.51	0.50
Avail Cap(c_a), veh/h	208	928	409	208	928	405	430	1245	544	277	908	544
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	32.3	7.7	39.3	32.4	15.2	29.0	21.1	21.7	43.1	38.7	32.0
Incr Delay (d2), s/veh	4.5	9.8	1.2	20.9	10.1	0.4	0.3	0.6	1.8	3.7	3.0	4.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.8	14.0	5.6	7.9	14.0	2.5	6.1	4.7	5.6	4.6	6.8	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.8	42.1	8.9	60.2	42.5	15.6	29.3	21.7	23.5	46.8	41.7	36.1
LnGrp LOS	D	D	A	E	D	B	C	C	C	D	D	D
Approach Vol, veh/h		1094			1040			736			634	
Approach Delay, s/veh		36.7			43.0			24.1			40.7	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.9	36.5	14.3	28.3	26.7	20.7	14.3	28.2
Change Period (Y+Rc), s	4.0	5.0	4.5	5.5	5.0	* 5	5.5	* 5.5
Max Green Setting (Gmax), s	14.0	23.0	10.5	23.5	14.0	* 23	10.5	* 24
Max Q Clear Time (g_c+I1), s	7.4	10.3	10.0	21.2	10.2	9.8	7.8	21.3
Green Ext Time (p_c), s	0.0	3.2	0.0	1.5	0.1	3.2	0.0	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	36.7
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	565	560	0	926	319	0	0	0	407	0	656
Future Volume (veh/h)	0	565	560	0	926	319	0	0	0	407	0	656
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	0	1870
Adj Flow Rate, veh/h	0	595	0	0	975	0				428	0	691
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2610		0	2610					1171	0	537
Arrive On Green	0.00	0.51	0.00	0.00	0.17	0.00				0.34	0.00	0.34
Sat Flow, veh/h	0	5443	0	0	5443	0				3456	0	1585
Grp Volume(v), veh/h	0	595	0	0	975	0				428	0	691
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1702	0				1728	0	1585
Q Serve(g_s), s	0.0	5.8	0.0	0.0	15.2	0.0				8.4	0.0	30.5
Cycle Q Clear(g_c), s	0.0	5.8	0.0	0.0	15.2	0.0				8.4	0.0	30.5
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2610		0	2610					1171	0	537
V/C Ratio(X)	0.00	0.23		0.00	0.37					0.37	0.00	1.29
Avail Cap(c_a), veh/h	0	2610		0	2610					1171	0	537
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	12.2	0.0	0.0	24.6	0.0				22.4	0.0	29.7
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.4	0.0				0.1	0.0	142.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	3.7	0.0	0.0	11.2	0.0				6.0	0.0	48.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	12.4	0.0	0.0	25.0	0.0				22.6	0.0	172.2
LnGrp LOS		B			C					C		F
Approach Vol, veh/h		595			975						1119	
Approach Delay, s/veh		12.4			25.0						115.0	
Approach LOS		B			C						F	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	52.5	37.5	52.5
Change Period (Y+Rc), s	6.5	7.0	6.5
Max Green Setting (Gmax), s	46.0	30.5	46.0
Max Q Clear Time (g_c+I1), s	7.8	32.5	17.2
Green Ext Time (p_c), s	6.1	0.0	10.2

Intersection Summary	
HCM 7th Control Delay, s/veh	59.7
HCM 7th LOS	E

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	942	559	0	977	378	0	0	0	822	0	554
Future Volume (veh/h)	0	942	559	0	977	378	0	0	0	822	0	554
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	0	1870
Adj Flow Rate, veh/h	0	992	0	0	1028	0				865	0	583
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2610		0	2610					1171	0	537
Arrive On Green	0.00	0.51	0.00	0.00	0.17	0.00				0.34	0.00	0.34
Sat Flow, veh/h	0	5443	0	0	5443	0				3456	0	1585
Grp Volume(v), veh/h	0	992	0	0	1028	0				865	0	583
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1702	0				1728	0	1585
Q Serve(g_s), s	0.0	10.6	0.0	0.0	16.1	0.0				19.9	0.0	30.5
Cycle Q Clear(g_c), s	0.0	10.6	0.0	0.0	16.1	0.0				19.9	0.0	30.5
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2610		0	2610					1171	0	537
V/C Ratio(X)	0.00	0.38		0.00	0.39					0.74	0.00	1.09
Avail Cap(c_a), veh/h	0	2610		0	2610					1171	0	537
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.3	0.0	0.0	25.0	0.0				26.2	0.0	29.7
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.4	0.0				2.4	0.0	64.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	6.7	0.0	0.0	11.7	0.0				13.0	0.0	29.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	13.8	0.0	0.0	25.4	0.0				28.6	0.0	93.7
LnGrp LOS		B			C					C		F
Approach Vol, veh/h		992			1028						1448	
Approach Delay, s/veh		13.8			25.4						54.8	
Approach LOS		B			C						D	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		52.5		37.5		52.5						
Change Period (Y+Rc), s		6.5		7.0		6.5						
Max Green Setting (Gmax), s		46.0		30.5		46.0						
Max Q Clear Time (g_c+I1), s		12.6		32.5		18.1						
Green Ext Time (p_c), s		11.0		0.0		10.7						

Intersection Summary	
HCM 7th Control Delay, s/veh	34.4
HCM 7th LOS	C

Notes
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	598	560	0	982	390	0	0	0	428	0	656
Future Volume (veh/h)	0	598	560	0	982	390	0	0	0	428	0	656
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	0	1870
Adj Flow Rate, veh/h	0	629	0	0	1034	0				451	0	691
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2047		0	2047					1552	0	712
Arrive On Green	0.00	0.40	0.00	0.00	0.13	0.00				0.45	0.00	0.45
Sat Flow, veh/h	0	5443	0	0	5443	0				3456	0	1585
Grp Volume(v), veh/h	0	629	0	0	1034	0				451	0	691
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1702	0				1728	0	1585
Q Serve(g_s), s	0.0	7.6	0.0	0.0	16.9	0.0				7.4	0.0	38.3
Cycle Q Clear(g_c), s	0.0	7.6	0.0	0.0	16.9	0.0				7.4	0.0	38.3
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2047		0	2047					1552	0	712
V/C Ratio(X)	0.00	0.31		0.00	0.51					0.29	0.00	0.97
Avail Cap(c_a), veh/h	0	2047		0	2047					1555	0	713
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.4	0.0	0.0	30.7	0.0				15.7	0.0	24.2
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.9	0.0				0.1	0.0	26.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	5.2	0.0	0.0	12.4	0.0				5.1	0.0	25.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	18.8	0.0	0.0	31.6	0.0				15.8	0.0	50.7
LnGrp LOS		B			C					B		D
Approach Vol, veh/h		629			1034						1142	
Approach Delay, s/veh		18.8			31.6						36.9	
Approach LOS		B			C						D	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		42.6		47.4		42.6
Change Period (Y+Rc), s		6.5		7.0		6.5
Max Green Setting (Gmax), s		36.0		40.5		36.0
Max Q Clear Time (g_c+I1), s		9.6		40.3		18.9
Green Ext Time (p_c), s		6.0		0.1		8.4

Intersection Summary	
HCM 7th Control Delay, s/veh	30.9
HCM 7th LOS	C

Notes
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	976	559	0	970	418	0	0	0	865	0	554
Future Volume (veh/h)	0	976	559	0	970	418	0	0	0	865	0	554
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	0	1870
Adj Flow Rate, veh/h	0	1027	0	0	1021	0				911	0	583
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2281		0	2281					1393	0	639
Arrive On Green	0.00	0.45	0.00	0.00	0.15	0.00				0.40	0.00	0.40
Sat Flow, veh/h	0	5443	0	0	5443	0				3456	0	1585
Grp Volume(v), veh/h	0	1027	0	0	1021	0				911	0	583
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1702	0				1728	0	1585
Q Serve(g_s), s	0.0	12.5	0.0	0.0	16.4	0.0				19.2	0.0	31.2
Cycle Q Clear(g_c), s	0.0	12.5	0.0	0.0	16.4	0.0				19.2	0.0	31.2
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2281		0	2281					1393	0	639
V/C Ratio(X)	0.00	0.45		0.00	0.45					0.65	0.00	0.91
Avail Cap(c_a), veh/h	0	2281		0	2281					1555	0	713
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	17.2	0.0	0.0	28.2	0.0				21.8	0.0	25.4
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.6	0.0				0.7	0.0	14.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	8.2	0.0	0.0	12.0	0.0				12.1	0.0	19.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	17.9	0.0	0.0	28.9	0.0				22.5	0.0	40.1
LnGrp LOS		B			C					C		D
Approach Vol, veh/h		1027			1021						1494	
Approach Delay, s/veh		17.9			28.9						29.4	
Approach LOS		B			C						C	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		46.7		43.3		46.7
Change Period (Y+Rc), s		6.5		7.0		6.5
Max Green Setting (Gmax), s		36.0		40.5		36.0
Max Q Clear Time (g_c+I1), s		14.5		33.2		18.4
Green Ext Time (p_c), s		9.5		3.0		8.4

Intersection Summary	
HCM 7th Control Delay, s/veh	25.9
HCM 7th LOS	C

Notes
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	621	560	0	926	319	0	0	0	407	0	661
Future Volume (veh/h)	0	621	560	0	926	319	0	0	0	407	0	661
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	0	1870
Adj Flow Rate, veh/h	0	654	0	0	975	0				428	0	696
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2042		0	2042					1555	0	713
Arrive On Green	0.00	0.40	0.00	0.00	0.13	0.00				0.45	0.00	0.45
Sat Flow, veh/h	0	5443	0	0	5443	0				3456	0	1585
Grp Volume(v), veh/h	0	654	0	0	975	0				428	0	696
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1702	0				1728	0	1585
Q Serve(g_s), s	0.0	7.9	0.0	0.0	15.9	0.0				7.0	0.0	38.8
Cycle Q Clear(g_c), s	0.0	7.9	0.0	0.0	15.9	0.0				7.0	0.0	38.8
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2042		0	2042					1555	0	713
V/C Ratio(X)	0.00	0.32		0.00	0.48					0.28	0.00	0.98
Avail Cap(c_a), veh/h	0	2042		0	2042					1555	0	713
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.6	0.0	0.0	30.3	0.0				15.5	0.0	24.3
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.8	0.0				0.1	0.0	27.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	5.4	0.0	0.0	11.7	0.0				4.8	0.0	26.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	19.0	0.0	0.0	31.1	0.0				15.6	0.0	51.9
LnGrp LOS		B			C					B		D
Approach Vol, veh/h		654			975						1124	
Approach Delay, s/veh		19.0			31.1						38.1	
Approach LOS		B			C						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	42.5	47.5	42.5
Change Period (Y+Rc), s	6.5	7.0	6.5
Max Green Setting (Gmax), s	36.0	40.5	36.0
Max Q Clear Time (g_c+I1), s	9.9	40.8	17.9
Green Ext Time (p_c), s	6.2	0.0	8.2

Intersection Summary	
HCM 7th Control Delay, s/veh	31.1
HCM 7th LOS	C

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	942	559	0	977	378	0	0	0	822	0	579
Future Volume (veh/h)	0	942	559	0	977	378	0	0	0	822	0	579
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	0	1870
Adj Flow Rate, veh/h	0	992	0	0	1028	0				865	0	609
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2219		0	2219					1436	0	658
Arrive On Green	0.00	0.43	0.00	0.00	0.14	0.00				0.42	0.00	0.42
Sat Flow, veh/h	0	5443	0	0	5443	0				3456	0	1585
Grp Volume(v), veh/h	0	992	0	0	1028	0				865	0	609
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1702	0				1728	0	1585
Q Serve(g_s), s	0.0	12.3	0.0	0.0	16.6	0.0				17.6	0.0	32.8
Cycle Q Clear(g_c), s	0.0	12.3	0.0	0.0	16.6	0.0				17.6	0.0	32.8
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2219		0	2219					1436	0	658
V/C Ratio(X)	0.00	0.45		0.00	0.46					0.60	0.00	0.92
Avail Cap(c_a), veh/h	0	2219		0	2219					1555	0	713
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	17.9	0.0	0.0	28.9	0.0				20.5	0.0	25.0
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	0.7	0.0				0.5	0.0	16.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	8.1	0.0	0.0	12.1	0.0				11.2	0.0	21.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	18.5	0.0	0.0	29.6	0.0				21.0	0.0	41.9
LnGrp LOS		B			C					C		D
Approach Vol, veh/h		992			1028						1474	
Approach Delay, s/veh		18.5			29.6						29.6	
Approach LOS		B			C						C	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	45.6	44.4	45.6
Change Period (Y+Rc), s	6.5	7.0	6.5
Max Green Setting (Gmax), s	36.0	40.5	36.0
Max Q Clear Time (g_c+I1), s	14.3	34.8	18.6
Green Ext Time (p_c), s	9.2	2.6	8.4

Intersection Summary	
HCM 7th Control Delay, s/veh	26.5
HCM 7th LOS	C

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	654	560	0	982	390	0	0	0	428	0	661
Future Volume (veh/h)	0	654	560	0	982	390	0	0	0	428	0	661
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	0	1870
Adj Flow Rate, veh/h	0	688	0	0	1034	0				451	0	696
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2042		0	2042					1555	0	713
Arrive On Green	0.00	0.40	0.00	0.00	0.13	0.00				0.45	0.00	0.45
Sat Flow, veh/h	0	5443	0	0	5443	0				3456	0	1585
Grp Volume(v), veh/h	0	688	0	0	1034	0				451	0	696
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1702	0				1728	0	1585
Q Serve(g_s), s	0.0	8.4	0.0	0.0	17.0	0.0				7.4	0.0	38.8
Cycle Q Clear(g_c), s	0.0	8.4	0.0	0.0	17.0	0.0				7.4	0.0	38.8
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2042		0	2042					1555	0	713
V/C Ratio(X)	0.00	0.34		0.00	0.51					0.29	0.00	0.98
Avail Cap(c_a), veh/h	0	2042		0	2042					1555	0	713
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.7	0.0	0.0	30.8	0.0				15.7	0.0	24.3
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.9	0.0				0.1	0.0	27.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	5.7	0.0	0.0	12.3	0.0				5.1	0.0	26.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	19.2	0.0	0.0	31.7	0.0				15.7	0.0	51.9
LnGrp LOS		B			C					B		D
Approach Vol, veh/h		688			1034						1147	
Approach Delay, s/veh		19.2			31.7						37.7	
Approach LOS		B			C						D	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		42.5		47.5		42.5						
Change Period (Y+Rc), s		6.5		7.0		6.5						
Max Green Setting (Gmax), s		36.0		40.5		36.0						
Max Q Clear Time (g_c+I1), s		10.4		40.8		19.0						
Green Ext Time (p_c), s		6.6		0.0		8.4						

Intersection Summary	
HCM 7th Control Delay, s/veh	31.1
HCM 7th LOS	C

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	976	559	0	970	418	0	0	0	865	0	579
Future Volume (veh/h)	0	976	559	0	970	418	0	0	0	865	0	579
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	0	1870
Adj Flow Rate, veh/h	0	1027	0	0	1021	0				911	0	609
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2				2	0	2
Cap, veh/h	0	2216		0	2216					1438	0	659
Arrive On Green	0.00	0.43	0.00	0.00	0.14	0.00				0.42	0.00	0.42
Sat Flow, veh/h	0	5443	0	0	5443	0				3456	0	1585
Grp Volume(v), veh/h	0	1027	0	0	1021	0				911	0	609
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1702	0				1728	0	1585
Q Serve(g_s), s	0.0	12.8	0.0	0.0	16.5	0.0				18.8	0.0	32.8
Cycle Q Clear(g_c), s	0.0	12.8	0.0	0.0	16.5	0.0				18.8	0.0	32.8
Prop In Lane	0.00		0.00	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2216		0	2216					1438	0	659
V/C Ratio(X)	0.00	0.46		0.00	0.46					0.63	0.00	0.92
Avail Cap(c_a), veh/h	0	2216		0	2216					1555	0	713
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	18.0	0.0	0.0	28.9	0.0				20.8	0.0	24.9
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	0.7	0.0				0.7	0.0	16.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	8.4	0.0	0.0	12.1	0.0				11.8	0.0	20.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	18.7	0.0	0.0	29.6	0.0				21.5	0.0	41.7
LnGrp LOS		B			C					C		D
Approach Vol, veh/h		1027			1021						1520	
Approach Delay, s/veh		18.7			29.6						29.6	
Approach LOS		B			C						C	
Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		45.6		44.4		45.6						
Change Period (Y+Rc), s		6.5		7.0		6.5						
Max Green Setting (Gmax), s		36.0		40.5		36.0						
Max Q Clear Time (g_c+I1), s		14.8		34.8		18.5						
Green Ext Time (p_c), s		9.4		2.6		8.4						
Intersection Summary												
HCM 7th Control Delay, s/veh			26.5									
HCM 7th LOS			C									

Notes

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	710	326	0	613	411	544	0	279	0	0	0
Future Volume (veh/h)	0	710	326	0	613	411	544	0	279	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	732	0	0	632	0	561	0	288			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	2633		0	2633		596	0	530			
Arrive On Green	0.00	0.17	0.00	0.00	1.00	0.00	0.33	0.00	0.33			
Sat Flow, veh/h	0	5443	0	0	5443	0	1781	0	1585			
Grp Volume(v), veh/h	0	732	0	0	632	0	561	0	288			
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1702	0	1781	0	1585			
Q Serve(g_s), s	0.0	11.2	0.0	0.0	0.0	0.0	27.5	0.0	13.3			
Cycle Q Clear(g_c), s	0.0	11.2	0.0	0.0	0.0	0.0	27.5	0.0	13.3			
Prop In Lane	0.00		0.00	0.00		0.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2633		0	2633		596	0	530			
V/C Ratio(X)	0.00	0.28		0.00	0.24		0.94	0.00	0.54			
Avail Cap(c_a), veh/h	0	2633		0	2633		604	0	537			
HCM Platoon Ratio	1.00	0.33	0.33	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	22.7	0.0	0.0	0.0	0.0	29.1	0.0	24.4			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.2	0.0	23.2	0.0	1.3			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	8.6	0.0	0.0	0.1	0.0	21.5	0.0	8.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	23.0	0.0	0.0	0.2	0.0	52.4	0.0	25.6			
LnGrp LOS		C			A		D		C			
Approach Vol, veh/h		732			632			849				
Approach Delay, s/veh		23.0			0.2			43.3				
Approach LOS		C			A			D				

Timer - Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		52.9				52.9		37.1
Change Period (Y+Rc), s		6.5				6.5		7.0
Max Green Setting (Gmax), s		46.0				46.0		30.5
Max Q Clear Time (g_c+I1), s		13.2				2.0		29.5
Green Ext Time (p_c), s		7.6				6.7		0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	24.3
HCM 7th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Note: Northbound shared left/right-turn lane entered as shared left/through/right-turn lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1373	410	0	884	700	432	0	498	0	0	0
Future Volume (veh/h)	0	1373	410	0	884	700	432	0	498	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	1401	0	0	902	0	441	50	475			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	2672		0	2672		525	60	518			
Arrive On Green	0.00	0.17	0.00	0.00	1.00	0.00	0.33	0.33	0.33			
Sat Flow, veh/h	0	5443	0	0	5443	0	1608	182	1585			
Grp Volume(v), veh/h	0	1401	0	0	902	0	491	0	475			
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1702	0	1790	0	1585			
Q Serve(g_s), s	0.0	22.5	0.0	0.0	0.0	0.0	22.9	0.0	25.9			
Cycle Q Clear(g_c), s	0.0	22.5	0.0	0.0	0.0	0.0	22.9	0.0	25.9			
Prop In Lane	0.00		0.00	0.00		0.00	0.90		1.00			
Lane Grp Cap(c), veh/h	0	2672		0	2672		585	0	518			
V/C Ratio(X)	0.00	0.52		0.00	0.34		0.84	0.00	0.92			
Avail Cap(c_a), veh/h	0	2672		0	2672		607	0	537			
HCM Platoon Ratio	1.00	0.33	0.33	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	27.0	0.0	0.0	0.0	0.0	28.1	0.0	29.1			
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	0.3	0.0	10.2	0.0	20.6			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	15.5	0.0	0.0	0.2	0.0	16.6	0.0	18.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	27.8	0.0	0.0	0.3	0.0	38.3	0.0	49.7			
LnGrp LOS		C			A		D		D			
Approach Vol, veh/h		1401			902			966				
Approach Delay, s/veh		27.8			0.3			43.9				
Approach LOS		C			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		53.6				53.6		36.4				
Change Period (Y+Rc), s		6.5				6.5		7.0				
Max Green Setting (Gmax), s		46.0				46.0		30.5				
Max Q Clear Time (g_c+I1), s		24.5				2.0		27.9				
Green Ext Time (p_c), s		13.1				10.5		1.5				

Intersection Summary		
HCM 7th Control Delay, s/veh		25.0
HCM 7th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Note: Northbound shared left/right-turn lane entered as shared left/through/right-turn lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	764	326	0	740	452	544	0	313	0	0	0
Future Volume (veh/h)	0	764	326	0	740	452	544	0	313	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	788	0	0	763	0	561	0	323			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	2632		0	2632		596	0	530			
Arrive On Green	0.00	0.17	0.00	0.00	1.00	0.00	0.33	0.00	0.33			
Sat Flow, veh/h	0	5443	0	0	5443	0	1781	0	1585			
Grp Volume(v), veh/h	0	788	0	0	763	0	561	0	323			
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1702	0	1781	0	1585			
Q Serve(g_s), s	0.0	12.1	0.0	0.0	0.0	0.0	27.5	0.0	15.3			
Cycle Q Clear(g_c), s	0.0	12.1	0.0	0.0	0.0	0.0	27.5	0.0	15.3			
Prop In Lane	0.00		0.00	0.00		0.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2632		0	2632		596	0	530			
V/C Ratio(X)	0.00	0.30		0.00	0.29		0.94	0.00	0.61			
Avail Cap(c_a), veh/h	0	2632		0	2632		604	0	537			
HCM Platoon Ratio	1.00	0.33	0.33	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	23.1	0.0	0.0	0.0	0.0	29.1	0.0	25.0			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.3	0.0	23.2	0.0	2.1			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	9.3	0.0	0.0	0.1	0.0	21.5	0.0	9.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	23.4	0.0	0.0	0.3	0.0	52.3	0.0	27.2			
LnGrp LOS		C			A		D		C			
Approach Vol, veh/h		788			763			884				
Approach Delay, s/veh		23.4			0.3			43.1				
Approach LOS		C			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		52.9				52.9		37.1				
Change Period (Y+Rc), s		6.5				6.5		7.0				
Max Green Setting (Gmax), s		46.0				46.0		30.5				
Max Q Clear Time (g_c+I1), s		14.1				2.0		29.5				
Green Ext Time (p_c), s		8.2				8.5		0.6				

Intersection Summary		
HCM 7th Control Delay, s/veh		23.3
HCM 7th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Note: Northbound shared left/right-turn lane entered as shared left/through/right-turn lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1448	410	0	915	718	432	0	576	0	0	0
Future Volume (veh/h)	0	1448	410	0	915	718	432	0	576	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	1478	0	0	934	0	441	110	515			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	2610		0	2610		488	122	537			
Arrive On Green	0.00	0.17	0.00	0.00	1.00	0.00	0.34	0.34	0.34			
Sat Flow, veh/h	0	5443	0	0	5443	0	1439	359	1585			
Grp Volume(v), veh/h	0	1478	0	0	934	0	551	0	515			
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1702	0	1798	0	1585			
Q Serve(g_s), s	0.0	23.9	0.0	0.0	0.0	0.0	26.3	0.0	28.6			
Cycle Q Clear(g_c), s	0.0	23.9	0.0	0.0	0.0	0.0	26.3	0.0	28.6			
Prop In Lane	0.00		0.00	0.00		0.00	0.80		1.00			
Lane Grp Cap(c), veh/h	0	2610		0	2610		609	0	537			
V/C Ratio(X)	0.00	0.57		0.00	0.36		0.90	0.00	0.96			
Avail Cap(c_a), veh/h	0	2610		0	2610		609	0	537			
HCM Platoon Ratio	1.00	0.33	0.33	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	28.2	0.0	0.0	0.0	0.0	28.4	0.0	29.1			
Incr Delay (d2), s/veh	0.0	0.9	0.0	0.0	0.4	0.0	17.1	0.0	28.7			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	16.3	0.0	0.0	0.2	0.0	19.8	0.0	21.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	29.1	0.0	0.0	0.4	0.0	45.5	0.0	57.8			
LnGrp LOS		C			A		D		E			
Approach Vol, veh/h		1478			934			1066				
Approach Delay, s/veh		29.1			0.4			51.4				
Approach LOS		C			A			D				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		52.5				52.5		37.5				
Change Period (Y+Rc), s		6.5				6.5		7.0				
Max Green Setting (Gmax), s		46.0				46.0		30.5				
Max Q Clear Time (g_c+I1), s		25.9				2.0		30.6				
Green Ext Time (p_c), s		13.1				11.0		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			28.3									
HCM 7th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Note: Northbound shared left/right-turn lane entered as shared left/through/right-turn lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	710	326	0	613	411	544	0	279	0	0	0
Future Volume (veh/h)	0	710	326	0	613	411	544	0	279	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	732	0	0	632	0	561	0	288			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	2633		0	2633		596	0	530			
Arrive On Green	0.00	0.17	0.00	0.00	1.00	0.00	0.33	0.00	0.33			
Sat Flow, veh/h	0	5443	0	0	5443	0	1781	0	1585			
Grp Volume(v), veh/h	0	732	0	0	632	0	561	0	288			
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1702	0	1781	0	1585			
Q Serve(g_s), s	0.0	11.2	0.0	0.0	0.0	0.0	27.5	0.0	13.3			
Cycle Q Clear(g_c), s	0.0	11.2	0.0	0.0	0.0	0.0	27.5	0.0	13.3			
Prop In Lane	0.00		0.00	0.00		0.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2633		0	2633		596	0	530			
V/C Ratio(X)	0.00	0.28		0.00	0.24		0.94	0.00	0.54			
Avail Cap(c_a), veh/h	0	2633		0	2633		604	0	537			
HCM Platoon Ratio	1.00	0.33	0.33	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	22.7	0.0	0.0	0.0	0.0	29.1	0.0	24.4			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.2	0.0	23.2	0.0	1.3			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	8.6	0.0	0.0	0.1	0.0	21.5	0.0	8.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	23.0	0.0	0.0	0.2	0.0	52.4	0.0	25.6			
LnGrp LOS		C			A		D		C			
Approach Vol, veh/h		732			632			849				
Approach Delay, s/veh		23.0			0.2			43.3				
Approach LOS		C			A			D				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		52.9				52.9		37.1				
Change Period (Y+Rc), s		6.5				6.5		7.0				
Max Green Setting (Gmax), s		46.0				46.0		30.5				
Max Q Clear Time (g_c+I1), s		13.2				2.0		29.5				
Green Ext Time (p_c), s		7.6				6.7		0.5				
Intersection Summary												
HCM 7th Control Delay, s/veh			24.3									
HCM 7th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Note: Northbound shared left/right-turn lane entered as shared left/through/right-turn lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1373	410	0	884	700	432	0	498	0	0	0
Future Volume (veh/h)	0	1373	410	0	884	700	432	0	498	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	1401	0	0	902	0	441	50	475			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	2672		0	2672		525	60	518			
Arrive On Green	0.00	0.17	0.00	0.00	1.00	0.00	0.33	0.33	0.33			
Sat Flow, veh/h	0	5443	0	0	5443	0	1608	182	1585			
Grp Volume(v), veh/h	0	1401	0	0	902	0	491	0	475			
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1702	0	1790	0	1585			
Q Serve(g_s), s	0.0	22.5	0.0	0.0	0.0	0.0	22.9	0.0	25.9			
Cycle Q Clear(g_c), s	0.0	22.5	0.0	0.0	0.0	0.0	22.9	0.0	25.9			
Prop In Lane	0.00		0.00	0.00		0.00	0.90		1.00			
Lane Grp Cap(c), veh/h	0	2672		0	2672		585	0	518			
V/C Ratio(X)	0.00	0.52		0.00	0.34		0.84	0.00	0.92			
Avail Cap(c_a), veh/h	0	2672		0	2672		607	0	537			
HCM Platoon Ratio	1.00	0.33	0.33	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	27.0	0.0	0.0	0.0	0.0	28.1	0.0	29.1			
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	0.3	0.0	10.2	0.0	20.6			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	15.5	0.0	0.0	0.2	0.0	16.6	0.0	18.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	27.8	0.0	0.0	0.3	0.0	38.3	0.0	49.7			
LnGrp LOS		C			A		D		D			
Approach Vol, veh/h		1401			902			966				
Approach Delay, s/veh		27.8			0.3			43.9				
Approach LOS		C			A			D				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		53.6				53.6		36.4				
Change Period (Y+Rc), s		6.5				6.5		7.0				
Max Green Setting (Gmax), s		46.0				46.0		30.5				
Max Q Clear Time (g_c+I1), s		24.5				2.0		27.9				
Green Ext Time (p_c), s		13.1				10.5		1.5				
Intersection Summary												
HCM 7th Control Delay, s/veh			25.0									
HCM 7th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Note: Northbound shared left/right-turn lane entered as shared left/through/right-turn lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	764	326	0	740	452	544	0	313	0	0	0
Future Volume (veh/h)	0	764	326	0	740	452	544	0	313	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	788	0	0	763	0	561	0	323			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	2632		0	2632		596	0	530			
Arrive On Green	0.00	0.17	0.00	0.00	1.00	0.00	0.33	0.00	0.33			
Sat Flow, veh/h	0	5443	0	0	5443	0	1781	0	1585			
Grp Volume(v), veh/h	0	788	0	0	763	0	561	0	323			
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1702	0	1781	0	1585			
Q Serve(g_s), s	0.0	12.1	0.0	0.0	0.0	0.0	27.5	0.0	15.3			
Cycle Q Clear(g_c), s	0.0	12.1	0.0	0.0	0.0	0.0	27.5	0.0	15.3			
Prop In Lane	0.00		0.00	0.00		0.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2632		0	2632		596	0	530			
V/C Ratio(X)	0.00	0.30		0.00	0.29		0.94	0.00	0.61			
Avail Cap(c_a), veh/h	0	2632		0	2632		604	0	537			
HCM Platoon Ratio	1.00	0.33	0.33	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	23.1	0.0	0.0	0.0	0.0	29.1	0.0	25.0			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.3	0.0	23.2	0.0	2.1			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	9.3	0.0	0.0	0.1	0.0	21.5	0.0	9.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	23.4	0.0	0.0	0.3	0.0	52.3	0.0	27.2			
LnGrp LOS		C			A		D		C			
Approach Vol, veh/h		788			763			884				
Approach Delay, s/veh		23.4			0.3			43.1				
Approach LOS		C			A			D				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		52.9				52.9		37.1				
Change Period (Y+Rc), s		6.5				6.5		7.0				
Max Green Setting (Gmax), s		46.0				46.0		30.5				
Max Q Clear Time (g_c+I1), s		14.1				2.0		29.5				
Green Ext Time (p_c), s		8.2				8.5		0.6				

Intersection Summary	
HCM 7th Control Delay, s/veh	23.3
HCM 7th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Note: Northbound shared left/right-turn lane entered as shared left/through/right-turn lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1448	410	0	915	718	432	0	576	0	0	0
Future Volume (veh/h)	0	1448	410	0	915	718	432	0	576	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	1478	0	0	934	0	441	110	515			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	2610		0	2610		488	122	537			
Arrive On Green	0.00	0.17	0.00	0.00	1.00	0.00	0.34	0.34	0.34			
Sat Flow, veh/h	0	5443	0	0	5443	0	1439	359	1585			
Grp Volume(v), veh/h	0	1478	0	0	934	0	551	0	515			
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1702	0	1798	0	1585			
Q Serve(g_s), s	0.0	23.9	0.0	0.0	0.0	0.0	26.3	0.0	28.6			
Cycle Q Clear(g_c), s	0.0	23.9	0.0	0.0	0.0	0.0	26.3	0.0	28.6			
Prop In Lane	0.00		0.00	0.00		0.00	0.80		1.00			
Lane Grp Cap(c), veh/h	0	2610		0	2610		609	0	537			
V/C Ratio(X)	0.00	0.57		0.00	0.36		0.90	0.00	0.96			
Avail Cap(c_a), veh/h	0	2610		0	2610		609	0	537			
HCM Platoon Ratio	1.00	0.33	0.33	1.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	28.2	0.0	0.0	0.0	0.0	28.4	0.0	29.1			
Incr Delay (d2), s/veh	0.0	0.9	0.0	0.0	0.4	0.0	17.1	0.0	28.7			
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.0	16.3	0.0	0.0	0.2	0.0	19.8	0.0	21.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	29.1	0.0	0.0	0.4	0.0	45.5	0.0	57.8			
LnGrp LOS		C			A		D		E			
Approach Vol, veh/h		1478			934			1066				
Approach Delay, s/veh		29.1			0.4			51.4				
Approach LOS		C			A			D				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	52.5	52.5	37.5
Change Period (Y+Rc), s	6.5	6.5	7.0
Max Green Setting (Gmax), s	46.0	46.0	30.5
Max Q Clear Time (g_c+I1), s	25.9	2.0	30.6
Green Ext Time (p_c), s	13.1	11.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	28.3
HCM 7th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Note: Northbound shared left/right-turn lane entered as shared left/through/right-turn lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	18	125	3	89	19	743	421	0	1015	5
Future Volume (veh/h)	0	0	18	125	3	89	19	743	421	0	1015	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	0	0	0	133	3	95	20	790	0	0	1080	5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	0	2	2
Cap, veh/h	0	263		275	4	214	385	2522		0	2574	12
Arrive On Green	0.00	0.00	0.00	0.14	0.14	0.14	0.71	0.71	0.00	0.00	0.71	0.71
Sat Flow, veh/h	0	1870	0	1394	31	1524	520	3647	0	0	3720	17
Grp Volume(v), veh/h	0	0	0	136	0	95	20	790	0	0	529	556
Grp Sat Flow(s),veh/h/ln	0	1870	0	1425	0	1524	520	1777	0	0	1777	1867
Q Serve(g_s), s	0.0	0.0	0.0	8.2	0.0	5.1	1.5	7.5	0.0	0.0	11.1	11.1
Cycle Q Clear(g_c), s	0.0	0.0	0.0	8.2	0.0	5.1	12.6	7.5	0.0	0.0	11.1	11.1
Prop In Lane	0.00		0.00	0.98		1.00	1.00		0.00	0.00		0.01
Lane Grp Cap(c), veh/h	0	263		279	0	214	385	2522		0	1261	1325
V/C Ratio(X)	0.00	0.00		0.49	0.00	0.44	0.05	0.31		0.00	0.42	0.42
Avail Cap(c_a), veh/h	0	436		412	0	356	385	2522		0	1261	1325
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	36.8	0.0	35.5	8.0	4.9	0.0	0.0	5.4	5.4
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.6	0.0	1.7	0.3	0.3	0.0	0.0	1.0	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.0	5.2	0.0	3.5	0.3	4.0	0.0	0.0	6.3	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	38.3	0.0	37.2	8.3	5.2	0.0	0.0	6.4	6.4
LnGrp LOS				D		D	A	A			A	A
Approach Vol, veh/h		0			231			810			1085	
Approach Delay, s/veh		0.0			37.9			5.3			6.4	
Approach LOS					D			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	70.4	19.6	70.4	19.6
Change Period (Y+Rc), s	6.5	7.0	6.5	7.0
Max Green Setting (Gmax), s	55.5	21.0	55.5	21.0
Max Q Clear Time (g_c+I1), s	14.6	0.0	13.1	10.2
Green Ext Time (p_c), s	9.6	0.0	13.2	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	9.4
HCM 7th LOS	A

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Note: Westbound left-turn lane entered as shared left-turn/through lane and eastbound right-turn only lane entered as shared left/through/right-turn lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	15	101	3	99	29	908	342	0	939	6
Future Volume (veh/h)	0	0	15	101	3	99	29	908	342	0	939	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	1870	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	0	0	0	107	3	105	31	966	0	0	999	6
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	2	2	2	2	0	2	2
Cap, veh/h	0	206		232	4	173	439	2628		0	2678	16
Arrive On Green	0.00	0.00	0.00	0.11	0.11	0.11	0.74	0.74	0.00	0.00	0.74	0.74
Sat Flow, veh/h	0	1870	0	1388	39	1568	560	3647	0	0	3714	22
Grp Volume(v), veh/h	0	0	0	110	0	105	31	966	0	0	490	515
Grp Sat Flow(s),veh/h/ln	0	1870	0	1427	0	1568	560	1777	0	0	1777	1866
Q Serve(g_s), s	0.0	0.0	0.0	6.7	0.0	5.7	1.9	8.7	0.0	0.0	8.9	8.9
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.7	0.0	5.7	10.8	8.7	0.0	0.0	8.9	8.9
Prop In Lane	0.00		0.00	0.97		1.00	1.00		0.00	0.00		0.01
Lane Grp Cap(c), veh/h	0	206		236	0	173	439	2628		0	1314	1380
V/C Ratio(X)	0.00	0.00		0.47	0.00	0.61	0.07	0.37		0.00	0.37	0.37
Avail Cap(c_a), veh/h	0	488		412	0	366	439	2628		0	1314	1380
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	38.6	0.0	38.2	6.2	4.2	0.0	0.0	4.2	4.2
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.7	0.0	4.1	0.3	0.4	0.0	0.0	0.8	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.0	4.3	0.0	4.2	0.4	4.3	0.0	0.0	4.7	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	40.3	0.0	42.3	6.5	4.6	0.0	0.0	5.0	5.0
LnGrp LOS				D		D	A	A			A	A
Approach Vol, veh/h		0			215			997			1005	
Approach Delay, s/veh		0.0			41.3			4.6			5.0	
Approach LOS					D			A			A	

Timer - Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		73.1		16.9		73.1		16.9
Change Period (Y+Rc), s		6.5		* 7		6.5		7.0
Max Green Setting (Gmax), s		55.5		* 24		55.5		21.0
Max Q Clear Time (g_c+I1), s		12.8		0.0		10.9		8.7
Green Ext Time (p_c), s		12.9		0.0		11.9		0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	8.4
HCM 7th LOS	A

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Note: Westbound left-turn lane entered as shared left-turn/through lane and eastbound right-turn only lane entered as shared left/through/right-turn lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	18	153	3	89	19	785	481	0	1045	5
Future Volume (veh/h)	0	0	18	153	3	89	19	785	481	0	1045	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	0	0	0	163	3	95	20	835	0	0	1112	5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	0	2	2
Cap, veh/h	0	294		299	4	241	361	2462		0	2513	11
Arrive On Green	0.00	0.00	0.00	0.16	0.16	0.16	0.69	0.69	0.00	0.00	0.69	0.69
Sat Flow, veh/h	0	1870	0	1398	26	1531	504	3647	0	0	3721	16
Grp Volume(v), veh/h	0	0	0	166	0	95	20	835	0	0	545	572
Grp Sat Flow(s),veh/h/ln	0	1870	0	1424	0	1531	504	1777	0	0	1777	1867
Q Serve(g_s), s	0.0	0.0	0.0	10.0	0.0	5.0	1.6	8.5	0.0	0.0	12.2	12.2
Cycle Q Clear(g_c), s	0.0	0.0	0.0	10.0	0.0	5.0	13.9	8.5	0.0	0.0	12.2	12.2
Prop In Lane	0.00		0.00	0.98		1.00	1.00		0.00	0.00		0.01
Lane Grp Cap(c), veh/h	0	294		303	0	241	361	2462		0	1231	1293
V/C Ratio(X)	0.00	0.00		0.55	0.00	0.39	0.06	0.34		0.00	0.44	0.44
Avail Cap(c_a), veh/h	0	436		411	0	357	361	2462		0	1231	1293
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	36.2	0.0	34.1	9.2	5.6	0.0	0.0	6.1	6.1
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.9	0.0	1.3	0.3	0.4	0.0	0.0	1.2	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.0	6.4	0.0	3.4	0.4	4.7	0.0	0.0	7.2	7.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	38.0	0.0	35.3	9.5	5.9	0.0	0.0	7.3	7.2
LnGrp LOS				D		D	A	A			A	A
Approach Vol, veh/h		0			261			855			1117	
Approach Delay, s/veh		0.0			37.1			6.0			7.3	
Approach LOS					D			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	68.8	21.2	68.8	21.2
Change Period (Y+Rc), s	6.5	7.0	6.5	7.0
Max Green Setting (Gmax), s	55.5	21.0	55.5	21.0
Max Q Clear Time (g_c+I1), s	15.9	0.0	14.2	12.0
Green Ext Time (p_c), s	10.3	0.0	13.7	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	10.3
HCM 7th LOS	B

Notes
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Note: Westbound left-turn lane entered as shared left-turn/through lane and eastbound right-turn only lane entered as shared left/through/right-turn lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	15	152	3	99	29	897	368	0	960	6
Future Volume (veh/h)	0	0	15	152	3	99	29	897	368	0	960	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	1870	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	0	0	0	162	3	105	31	954	0	0	1021	6
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	2	2	2	2	0	2	2
Cap, veh/h	0	276		285	4	232	401	2497		0	2544	15
Arrive On Green	0.00	0.00	0.00	0.15	0.15	0.15	0.70	0.70	0.00	0.00	0.70	0.70
Sat Flow, veh/h	0	1870	0	1398	26	1572	549	3647	0	0	3715	21
Grp Volume(v), veh/h	0	0	0	165	0	105	31	954	0	0	501	526
Grp Sat Flow(s),veh/h/ln	0	1870	0	1424	0	1572	549	1777	0	0	1777	1866
Q Serve(g_s), s	0.0	0.0	0.0	10.1	0.0	5.5	2.2	9.8	0.0	0.0	10.5	10.5
Cycle Q Clear(g_c), s	0.0	0.0	0.0	10.1	0.0	5.5	12.7	9.8	0.0	0.0	10.5	10.5
Prop In Lane	0.00		0.00	0.98		1.00	1.00		0.00	0.00		0.01
Lane Grp Cap(c), veh/h	0	276		289	0	232	401	2497		0	1248	1311
V/C Ratio(X)	0.00	0.00		0.57	0.00	0.45	0.08	0.38		0.00	0.40	0.40
Avail Cap(c_a), veh/h	0	488		411	0	367	401	2497		0	1248	1311
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	37.0	0.0	35.0	8.2	5.4	0.0	0.0	5.5	5.5
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.1	0.0	1.7	0.4	0.4	0.0	0.0	1.0	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.0	6.4	0.0	3.9	0.5	5.4	0.0	0.0	6.0	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	39.1	0.0	36.7	8.6	5.9	0.0	0.0	6.5	6.5
LnGrp LOS				D		D	A	A			A	A
Approach Vol, veh/h		0			270			985			1027	
Approach Delay, s/veh		0.0			38.2			6.0			6.5	
Approach LOS					D			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		69.7		20.3		69.7		20.3				
Change Period (Y+Rc), s		6.5		* 7		6.5		7.0				
Max Green Setting (Gmax), s		55.5		* 24		55.5		21.0				
Max Q Clear Time (g_c+I1), s		14.7		0.0		12.5		12.1				
Green Ext Time (p_c), s		12.5		0.0		12.2		0.9				

Intersection Summary	
HCM 7th Control Delay, s/veh	10.0
HCM 7th LOS	B

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Note: Westbound left-turn lane entered as shared left-turn/through lane and eastbound right-turn only lane entered as shared left/through/right-turn lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	18	189	3	89	19	743	421	0	1015	5
Future Volume (veh/h)	0	0	18	189	3	89	19	743	421	0	1015	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	0	0	0	201	3	95	20	790	0	0	1080	5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	0	2	2
Cap, veh/h	0	333		329	4	274	357	2388		0	2437	11
Arrive On Green	0.00	0.00	0.00	0.18	0.18	0.18	0.67	0.67	0.00	0.00	0.67	0.67
Sat Flow, veh/h	0	1870	0	1402	21	1537	520	3647	0	0	3720	17
Grp Volume(v), veh/h	0	0	0	204	0	95	20	790	0	0	529	556
Grp Sat Flow(s),veh/h/ln	0	1870	0	1423	0	1537	520	1777	0	0	1777	1867
Q Serve(g_s), s	0.0	0.0	0.0	12.4	0.0	4.9	1.7	8.4	0.0	0.0	12.5	12.5
Cycle Q Clear(g_c), s	0.0	0.0	0.0	12.4	0.0	4.9	14.2	8.4	0.0	0.0	12.5	12.5
Prop In Lane	0.00		0.00	0.99		1.00	1.00		0.00	0.00		0.01
Lane Grp Cap(c), veh/h	0	333		333	0	274	357	2388		0	1194	1254
V/C Ratio(X)	0.00	0.00		0.61	0.00	0.35	0.06	0.33		0.00	0.44	0.44
Avail Cap(c_a), veh/h	0	436		411	0	359	357	2388		0	1194	1254
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	35.5	0.0	32.4	10.2	6.2	0.0	0.0	6.9	6.9
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.2	0.0	0.9	0.3	0.4	0.0	0.0	1.2	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.0	7.8	0.0	3.3	0.4	4.9	0.0	0.0	7.6	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	37.7	0.0	33.3	10.5	6.6	0.0	0.0	8.1	8.0
LnGrp LOS				D		C	B	A			A	A
Approach Vol, veh/h		0			299			810			1085	
Approach Delay, s/veh		0.0			36.3			6.7			8.1	
Approach LOS					D			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		67.0		23.0		67.0		23.0				
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0				
Max Green Setting (Gmax), s		55.5		21.0		55.5		21.0				
Max Q Clear Time (g_c+I1), s		16.2		0.0		14.5		14.4				
Green Ext Time (p_c), s		9.6		0.0		13.1		0.9				
Intersection Summary												
HCM 7th Control Delay, s/veh			11.4									
HCM 7th LOS			B									

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Note: Westbound left-turn lane entered as shared left-turn/through lane and eastbound right-turn only lane entered as shared left/through/right-turn lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	15	186	3	99	29	1014	342	0	939	6
Future Volume (veh/h)	0	0	15	186	3	99	29	1014	342	0	939	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	1870	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	0	0	0	198	3	105	31	1079	0	0	999	6
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	2	2	2	2	0	2	2
Cap, veh/h	0	319		319	4	269	392	2414		0	2459	15
Arrive On Green	0.00	0.00	0.00	0.17	0.17	0.17	0.68	0.68	0.00	0.00	0.68	0.68
Sat Flow, veh/h	0	1870	0	1401	21	1574	560	3647	0	0	3714	22
Grp Volume(v), veh/h	0	0	0	201	0	105	31	1079	0	0	490	515
Grp Sat Flow(s),veh/h/ln	0	1870	0	1423	0	1574	560	1777	0	0	1777	1866
Q Serve(g_s), s	0.0	0.0	0.0	12.3	0.0	5.3	2.3	12.6	0.0	0.0	11.0	11.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	12.3	0.0	5.3	13.3	12.6	0.0	0.0	11.0	11.0
Prop In Lane	0.00		0.00	0.99		1.00	1.00		0.00	0.00		0.01
Lane Grp Cap(c), veh/h	0	319		322	0	269	392	2414		0	1207	1267
V/C Ratio(X)	0.00	0.00		0.62	0.00	0.39	0.08	0.45		0.00	0.41	0.41
Avail Cap(c_a), veh/h	0	488		411	0	367	392	2414		0	1207	1267
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	36.0	0.0	33.2	9.4	6.7	0.0	0.0	6.4	6.4
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.4	0.0	1.1	0.4	0.6	0.0	0.0	1.0	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.0	7.8	0.0	3.7	0.5	7.2	0.0	0.0	6.6	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	38.4	0.0	34.3	9.7	7.3	0.0	0.0	7.4	7.4
LnGrp LOS				D		C	A	A			A	A
Approach Vol, veh/h		0			306			1110			1005	
Approach Delay, s/veh		0.0			37.0			7.3			7.4	
Approach LOS					D			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	67.6	22.4	67.6	22.4
Change Period (Y+Rc), s	6.5	* 7	6.5	7.0
Max Green Setting (Gmax), s	55.5	* 24	55.5	21.0
Max Q Clear Time (g_c+I1), s	15.3	0.0	13.0	14.3
Green Ext Time (p_c), s	14.7	0.0	11.8	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	11.1
HCM 7th LOS	B

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Note: Westbound left-turn lane entered as shared left-turn/through lane and eastbound right-turn only lane entered as shared left/through/right-turn lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	18	217	3	89	19	785	481	0	1045	5
Future Volume (veh/h)	0	0	18	217	3	89	19	785	481	0	1045	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	0	0	0	231	3	95	20	835	0	0	1112	5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	0	2	2
Cap, veh/h	0	363		352	4	299	334	2331		0	2379	11
Arrive On Green	0.00	0.00	0.00	0.19	0.19	0.19	0.66	0.66	0.00	0.00	0.66	0.66
Sat Flow, veh/h	0	1870	0	1404	18	1541	504	3647	0	0	3721	16
Grp Volume(v), veh/h	0	0	0	234	0	95	20	835	0	0	545	572
Grp Sat Flow(s),veh/h/ln	0	1870	0	1422	0	1541	504	1777	0	0	1777	1867
Q Serve(g_s), s	0.0	0.0	0.0	14.3	0.0	4.8	1.8	9.5	0.0	0.0	13.7	13.7
Cycle Q Clear(g_c), s	0.0	0.0	0.0	14.3	0.0	4.8	15.5	9.5	0.0	0.0	13.7	13.7
Prop In Lane	0.00		0.00	0.99		1.00	1.00		0.00	0.00		0.01
Lane Grp Cap(c), veh/h	0	363		355	0	299	334	2331		0	1166	1225
V/C Ratio(X)	0.00	0.00		0.66	0.00	0.32	0.06	0.36		0.00	0.47	0.47
Avail Cap(c_a), veh/h	0	436		411	0	360	334	2331		0	1166	1225
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	35.0	0.0	31.2	11.5	7.0	0.0	0.0	7.7	7.7
Incr Delay (d2), s/veh	0.0	0.0	0.0	3.5	0.0	0.7	0.3	0.4	0.0	0.0	1.3	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.0	8.8	0.0	3.2	0.4	5.6	0.0	0.0	8.3	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	38.5	0.0	31.9	11.9	7.4	0.0	0.0	9.0	9.0
LnGrp LOS				D		C	B	A			A	A
Approach Vol, veh/h		0			329			855			1117	
Approach Delay, s/veh		0.0			36.6			7.5			9.0	
Approach LOS					D			A			A	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	65.5	24.5	65.5	24.5
Change Period (Y+Rc), s	6.5	7.0	6.5	7.0
Max Green Setting (Gmax), s	55.5	21.0	55.5	21.0
Max Q Clear Time (g_c+I1), s	17.5	0.0	15.7	16.3
Green Ext Time (p_c), s	10.2	0.0	13.5	0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	12.4
HCM 7th LOS	B

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Note: Westbound left-turn lane entered as shared left-turn/through lane and eastbound right-turn only lane entered as shared left/through/right-turn lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	15	237	3	99	29	1003	368	0	960	6
Future Volume (veh/h)	0	0	15	237	3	99	29	1003	368	0	960	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	1870	1870	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	0	0	0	252	3	105	31	1067	0	0	1021	6
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	2	2	2	2	0	2	2
Cap, veh/h	0	381		366	3	321	358	2296		0	2340	14
Arrive On Green	0.00	0.00	0.00	0.20	0.20	0.20	0.65	0.65	0.00	0.00	0.65	0.65
Sat Flow, veh/h	0	1870	0	1405	17	1576	549	3647	0	0	3715	21
Grp Volume(v), veh/h	0	0	0	255	0	105	31	1067	0	0	501	526
Grp Sat Flow(s),veh/h/ln	0	1870	0	1422	0	1576	549	1777	0	0	1777	1866
Q Serve(g_s), s	0.0	0.0	0.0	15.7	0.0	5.1	2.7	13.7	0.0	0.0	12.5	12.5
Cycle Q Clear(g_c), s	0.0	0.0	0.0	15.7	0.0	5.1	15.2	13.7	0.0	0.0	12.5	12.5
Prop In Lane	0.00		0.00	0.99		1.00	1.00		0.00	0.00		0.01
Lane Grp Cap(c), veh/h	0	381		369	0	321	358	2296		0	1148	1206
V/C Ratio(X)	0.00	0.00		0.69	0.00	0.33	0.09	0.46		0.00	0.44	0.44
Avail Cap(c_a), veh/h	0	488		411	0	368	358	2296		0	1148	1206
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	34.8	0.0	30.6	11.6	8.1	0.0	0.0	7.8	7.8
Incr Delay (d2), s/veh	0.0	0.0	0.0	4.6	0.0	0.7	0.5	0.7	0.0	0.0	1.2	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.0	9.6	0.0	3.5	0.6	8.1	0.0	0.0	7.8	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	39.4	0.0	31.3	12.1	8.7	0.0	0.0	9.1	9.0
LnGrp LOS				D		C	B	A			A	A
Approach Vol, veh/h		0			360			1098			1027	
Approach Delay, s/veh		0.0			37.0			8.8			9.0	
Approach LOS					D			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		64.6		25.4		64.6		25.4				
Change Period (Y+Rc), s		6.5		* 7		6.5		7.0				
Max Green Setting (Gmax), s		55.5		* 24		55.5		21.0				
Max Q Clear Time (g_c+I1), s		17.2		0.0		14.5		17.7				
Green Ext Time (p_c), s		14.3		0.0		12.0		0.7				
Intersection Summary												
HCM 7th Control Delay, s/veh			13.0									
HCM 7th LOS			B									

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Note: Westbound left-turn lane entered as shared left-turn/through lane and eastbound right-turn only lane entered as shared left/through/right-turn lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	314	56	419	4	0	164	0	815	13	175	744	253
Future Volume (veh/h)	314	56	419	4	0	164	0	815	13	175	744	253
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	331	59	441	4	0	173	0	858	14	184	783	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	574	61	458	158	0	141	0	1868	30	228	1283	
Arrive On Green	0.32	0.32	0.32	0.09	0.00	0.09	0.00	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	1781	190	1422	1781	0	1585	0	5340	84	634	3647	0
Grp Volume(v), veh/h	331	0	500	4	0	173	0	564	308	184	783	0
Grp Sat Flow(s),veh/h/ln	1781	0	1613	1781	0	1585	0	1702	1852	634	1777	0
Q Serve(g_s), s	13.9	0.0	27.4	0.2	0.0	8.0	0.0	11.4	11.5	21.0	16.2	0.0
Cycle Q Clear(g_c), s	13.9	0.0	27.4	0.2	0.0	8.0	0.0	11.4	11.5	32.5	16.2	0.0
Prop In Lane	1.00		0.88	1.00		1.00	0.00		0.05	1.00		0.00
Lane Grp Cap(c), veh/h	574	0	520	158	0	141	0	1229	669	228	1283	
V/C Ratio(X)	0.58	0.00	0.96	0.03	0.00	1.23	0.00	0.46	0.46	0.81	0.61	
Avail Cap(c_a), veh/h	574	0	520	158	0	141	0	1229	669	228	1283	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.4	0.0	30.0	37.4	0.0	41.0	0.0	22.0	22.0	36.5	23.6	0.0
Incr Delay (d2), s/veh	1.6	0.0	30.1	0.1	0.0	149.7	0.0	1.2	2.3	25.4	2.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.8	0.0	20.6	0.2	0.0	14.9	0.0	8.1	8.9	9.5	11.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.0	0.0	60.0	37.5	0.0	190.7	0.0	23.3	24.3	61.9	25.7	0.0
LnGrp LOS	C		E	D		F		C	C	E	C	
Approach Vol, veh/h		831			177			872			967	
Approach Delay, s/veh		46.9			187.2			23.6			32.6	
Approach LOS		D			F			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.0		36.0		39.0		15.0				
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0				
Max Green Setting (Gmax), s		32.5		29.0		32.5		8.0				
Max Q Clear Time (g_c+I1), s		13.5		29.4		34.5		10.0				
Green Ext Time (p_c), s		7.3		0.0		0.0		0.0				

Intersection Summary		
HCM 7th Control Delay, s/veh		43.6
HCM 7th LOS		D

Notes
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Note: Westbound left-turn lane entered as shared left-turn/through lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	406	15	429	13	0	115	0	1062	5	14	562	160
Future Volume (veh/h)	406	15	429	13	0	115	0	1062	5	14	562	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	423	16	447	14	0	120	0	1106	5	15	585	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	581	18	500	158	0	141	0	1874	8	174	1270	
Arrive On Green	0.33	0.33	0.33	0.09	0.00	0.09	0.00	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	1781	55	1533	1781	0	1585	0	5414	24	507	3647	0
Grp Volume(v), veh/h	423	0	463	14	0	120	0	718	393	15	585	0
Grp Sat Flow(s),veh/h/ln	1781	0	1588	1781	0	1585	0	1702	1865	507	1777	0
Q Serve(g_s), s	18.9	0.0	25.0	0.6	0.0	6.7	0.0	15.5	15.5	2.2	11.4	0.0
Cycle Q Clear(g_c), s	18.9	0.0	25.0	0.6	0.0	6.7	0.0	15.5	15.5	17.7	11.4	0.0
Prop In Lane	1.00		0.97	1.00		1.00	0.00		0.01	1.00		0.00
Lane Grp Cap(c), veh/h	581	0	518	158	0	141	0	1216	666	174	1270	
V/C Ratio(X)	0.73	0.00	0.89	0.09	0.00	0.85	0.00	0.59	0.59	0.09	0.46	
Avail Cap(c_a), veh/h	633	0	565	158	0	141	0	1216	666	174	1270	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.8	0.0	28.9	37.7	0.0	40.4	0.0	23.6	23.6	30.8	22.3	0.0
Incr Delay (d2), s/veh	4.1	0.0	16.1	0.3	0.0	36.9	0.0	2.1	3.8	1.0	1.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	13.0	0.0	16.8	0.5	0.0	7.3	0.0	10.3	11.6	0.6	8.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	30.9	0.0	45.0	37.9	0.0	77.3	0.0	25.7	27.4	31.7	23.5	0.0
LnGrp LOS	C		D	D		E		C	C	C	C	
Approach Vol, veh/h		886			134			1111			600	
Approach Delay, s/veh		38.3			73.2			26.3			23.7	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	38.7	36.3	38.7	15.0
Change Period (Y+Rc), s	6.5	7.0	6.5	7.0
Max Green Setting (Gmax), s	29.5	32.0	29.5	8.0
Max Q Clear Time (g_c+I1), s	17.5	27.0	19.7	8.7
Green Ext Time (p_c), s	7.0	2.4	3.6	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	31.9
HCM 7th LOS	C

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Note: Westbound left-turn lane entered as shared left-turn/through lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	314	56	452	4	0	164	0	970	13	175	802	253
Future Volume (veh/h)	314	56	452	4	0	164	0	970	13	175	802	253
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	331	59	476	4	0	173	0	1021	14	184	844	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	574	57	462	158	0	141	0	1873	26	191	1283	
Arrive On Green	0.32	0.32	0.32	0.09	0.00	0.09	0.00	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	1781	178	1433	1781	0	1585	0	5356	71	544	3647	0
Grp Volume(v), veh/h	331	0	535	4	0	173	0	670	365	184	844	0
Grp Sat Flow(s),veh/h/ln	1781	0	1611	1781	0	1585	0	1702	1855	544	1777	0
Q Serve(g_s), s	13.9	0.0	29.0	0.2	0.0	8.0	0.0	14.1	14.1	18.4	17.9	0.0
Cycle Q Clear(g_c), s	13.9	0.0	29.0	0.2	0.0	8.0	0.0	14.1	14.1	32.5	17.9	0.0
Prop In Lane	1.00		0.89	1.00		1.00	0.00		0.04	1.00		0.00
Lane Grp Cap(c), veh/h	574	0	519	158	0	141	0	1229	670	191	1283	
V/C Ratio(X)	0.58	0.00	1.03	0.03	0.00	1.23	0.00	0.54	0.55	0.96	0.66	
Avail Cap(c_a), veh/h	574	0	519	158	0	141	0	1229	670	191	1283	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.4	0.0	30.5	37.4	0.0	41.0	0.0	22.9	22.9	39.4	24.1	0.0
Incr Delay (d2), s/veh	1.6	0.0	47.6	0.1	0.0	149.7	0.0	1.7	3.2	55.8	2.6	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.8	0.0	24.8	0.2	0.0	14.9	0.0	9.6	10.6	11.3	12.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.0	0.0	78.1	37.5	0.0	190.7	0.0	24.6	26.0	95.2	26.7	0.0
LnGrp LOS	C		F	D		F		C	C	F	C	
Approach Vol, veh/h		866			177			1035			1028	
Approach Delay, s/veh		58.6			187.2			25.1			39.0	
Approach LOS		E			F			C			D	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.0		36.0		39.0		15.0				
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0				
Max Green Setting (Gmax), s		32.5		29.0		32.5		8.0				
Max Q Clear Time (g_c+I1), s		16.1		31.0		34.5		10.0				
Green Ext Time (p_c), s		8.1		0.0		0.0		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			48.3									
HCM 7th LOS			D									
Notes												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

Note: Westbound left-turn lane entered as shared left-turn/through lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	406	15	490	13	0	115	0	1098	5	14	634	160
Future Volume (veh/h)	406	15	490	13	0	115	0	1098	5	14	634	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	423	16	510	14	0	120	0	1144	5	15	660	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	625	17	540	158	0	141	0	1744	8	152	1181	
Arrive On Green	0.35	0.35	0.35	0.09	0.00	0.09	0.00	0.33	0.33	0.33	0.33	0.00
Sat Flow, veh/h	1781	48	1539	1781	0	1585	0	5415	23	489	3647	0
Grp Volume(v), veh/h	423	0	526	14	0	120	0	742	407	15	660	0
Grp Sat Flow(s),veh/h/ln	1781	0	1587	1781	0	1585	0	1702	1866	489	1777	0
Q Serve(g_s), s	18.2	0.0	29.0	0.6	0.0	6.7	0.0	16.8	16.8	2.4	13.7	0.0
Cycle Q Clear(g_c), s	18.2	0.0	29.0	0.6	0.0	6.7	0.0	16.8	16.8	19.2	13.7	0.0
Prop In Lane	1.00		0.97	1.00		1.00	0.00		0.01	1.00		0.00
Lane Grp Cap(c), veh/h	625	0	557	158	0	141	0	1132	620	152	1181	
V/C Ratio(X)	0.68	0.00	0.94	0.09	0.00	0.85	0.00	0.66	0.66	0.10	0.56	
Avail Cap(c_a), veh/h	633	0	564	158	0	141	0	1132	620	152	1181	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.9	0.0	28.4	37.7	0.0	40.4	0.0	25.6	25.6	33.8	24.6	0.0
Incr Delay (d2), s/veh	3.0	0.0	24.8	0.3	0.0	36.9	0.0	3.0	5.3	1.3	1.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	12.4	0.0	20.3	0.5	0.0	7.3	0.0	11.2	12.6	0.6	9.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.9	0.0	53.2	37.9	0.0	77.3	0.0	28.6	31.0	35.1	26.5	0.0
LnGrp LOS	C		D	D		E		C	C	D	C	
Approach Vol, veh/h		949			134			1149			675	
Approach Delay, s/veh		41.9			73.2			29.5			26.7	
Approach LOS		D			E			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		36.4		38.6		36.4		15.0				
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0				
Max Green Setting (Gmax), s		29.5		32.0		29.5		8.0				
Max Q Clear Time (g_c+I1), s		18.8		31.0		21.2		8.7				
Green Ext Time (p_c), s		6.6		0.6		3.6		0.0				

Intersection Summary			
HCM 7th Control Delay, s/veh			34.9
HCM 7th LOS			C

Notes
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Note: Westbound left-turn lane entered as shared left-turn/through lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	314	56	469	4	0	164	0	815	13	175	795	253
Future Volume (veh/h)	314	56	469	4	0	164	0	815	13	175	795	253
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	331	59	494	4	0	173	0	858	14	184	837	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	574	55	463	158	0	141	0	1868	30	228	1283	
Arrive On Green	0.32	0.32	0.32	0.09	0.00	0.09	0.00	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	1781	172	1438	1781	0	1585	0	5340	84	634	3647	0
Grp Volume(v), veh/h	331	0	553	4	0	173	0	564	308	184	837	0
Grp Sat Flow(s),veh/h/ln	1781	0	1610	1781	0	1585	0	1702	1852	634	1777	0
Q Serve(g_s), s	13.9	0.0	29.0	0.2	0.0	8.0	0.0	11.4	11.5	21.0	17.7	0.0
Cycle Q Clear(g_c), s	13.9	0.0	29.0	0.2	0.0	8.0	0.0	11.4	11.5	32.5	17.7	0.0
Prop In Lane	1.00		0.89	1.00		1.00	0.00		0.05	1.00		0.00
Lane Grp Cap(c), veh/h	574	0	519	158	0	141	0	1229	669	228	1283	
V/C Ratio(X)	0.58	0.00	1.07	0.03	0.00	1.23	0.00	0.46	0.46	0.81	0.65	
Avail Cap(c_a), veh/h	574	0	519	158	0	141	0	1229	669	228	1283	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.4	0.0	30.5	37.4	0.0	41.0	0.0	22.0	22.0	36.5	24.0	0.0
Incr Delay (d2), s/veh	1.6	0.0	58.3	0.1	0.0	149.7	0.0	1.2	2.3	25.4	2.6	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.8	0.0	27.2	0.2	0.0	14.9	0.0	8.1	8.9	9.5	12.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.0	0.0	88.8	37.5	0.0	190.7	0.0	23.3	24.3	61.9	26.6	0.0
LnGrp LOS	C		F	D		F		C	C	E	C	
Approach Vol, veh/h		884			177			872			1021	
Approach Delay, s/veh		65.6			187.2			23.6			33.0	
Approach LOS		E			F			C			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	39.0	36.0	39.0	15.0
Change Period (Y+Rc), s	6.5	7.0	6.5	7.0
Max Green Setting (Gmax), s	32.5	29.0	32.5	8.0
Max Q Clear Time (g_c+I1), s	13.5	31.0	34.5	10.0
Green Ext Time (p_c), s	7.3	0.0	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	49.2
HCM 7th LOS	D

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Note: Westbound left-turn lane entered as shared left-turn/through lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	406	15	460	13	0	115	0	1089	5	14	605	160
Future Volume (veh/h)	406	15	460	13	0	115	0	1089	5	14	605	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	423	16	479	14	0	120	0	1134	5	15	630	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	605	17	522	158	0	141	0	1803	8	160	1221	
Arrive On Green	0.34	0.34	0.34	0.09	0.00	0.09	0.00	0.34	0.34	0.34	0.34	0.00
Sat Flow, veh/h	1781	51	1536	1781	0	1585	0	5415	23	494	3647	0
Grp Volume(v), veh/h	423	0	495	14	0	120	0	736	403	15	630	0
Grp Sat Flow(s),veh/h/ln	1781	0	1587	1781	0	1585	0	1702	1866	494	1777	0
Q Serve(g_s), s	18.5	0.0	26.9	0.6	0.0	6.7	0.0	16.3	16.3	2.4	12.7	0.0
Cycle Q Clear(g_c), s	18.5	0.0	26.9	0.6	0.0	6.7	0.0	16.3	16.3	18.7	12.7	0.0
Prop In Lane	1.00		0.97	1.00		1.00	0.00		0.01	1.00		0.00
Lane Grp Cap(c), veh/h	605	0	539	158	0	141	0	1170	641	160	1221	
V/C Ratio(X)	0.70	0.00	0.92	0.09	0.00	0.85	0.00	0.63	0.63	0.09	0.52	
Avail Cap(c_a), veh/h	633	0	564	158	0	141	0	1170	641	160	1221	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.7	0.0	28.5	37.7	0.0	40.4	0.0	24.7	24.7	32.5	23.6	0.0
Incr Delay (d2), s/veh	3.4	0.0	19.9	0.3	0.0	36.9	0.0	2.6	4.6	1.2	1.6	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	12.7	0.0	18.4	0.5	0.0	7.3	0.0	10.9	12.2	0.6	9.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	29.2	0.0	48.4	37.9	0.0	77.3	0.0	27.3	29.4	33.7	25.1	0.0
LnGrp LOS	C		D	D		E		C	C	C	C	
Approach Vol, veh/h		918			134			1139			645	
Approach Delay, s/veh		39.5			73.2			28.0			25.3	
Approach LOS		D			E			C			C	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		37.4		37.6		37.4		15.0				
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0				
Max Green Setting (Gmax), s		29.5		32.0		29.5		8.0				
Max Q Clear Time (g_c+I1), s		18.3		28.9		20.7		8.7				
Green Ext Time (p_c), s		6.8		1.6		3.6		0.0				
Intersection Summary												
HCM 7th Control Delay, s/veh			33.3									
HCM 7th LOS			C									
Notes												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

Note: Westbound left-turn lane entered as shared left-turn/through lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	314	56	502	4	0	164	0	970	13	175	853	253
Future Volume (veh/h)	314	56	502	4	0	164	0	970	13	175	853	253
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	331	59	528	4	0	173	0	1021	14	184	898	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	574	52	466	158	0	141	0	1873	26	191	1283	
Arrive On Green	0.32	0.32	0.32	0.09	0.00	0.09	0.00	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	1781	162	1447	1781	0	1585	0	5356	71	544	3647	0
Grp Volume(v), veh/h	331	0	587	4	0	173	0	670	365	184	898	0
Grp Sat Flow(s),veh/h/ln	1781	0	1608	1781	0	1585	0	1702	1855	544	1777	0
Q Serve(g_s), s	13.9	0.0	29.0	0.2	0.0	8.0	0.0	14.1	14.1	18.4	19.4	0.0
Cycle Q Clear(g_c), s	13.9	0.0	29.0	0.2	0.0	8.0	0.0	14.1	14.1	32.5	19.4	0.0
Prop In Lane	1.00		0.90	1.00		1.00	0.00		0.04	1.00		0.00
Lane Grp Cap(c), veh/h	574	0	518	158	0	141	0	1229	670	191	1283	
V/C Ratio(X)	0.58	0.00	1.13	0.03	0.00	1.23	0.00	0.54	0.55	0.96	0.70	
Avail Cap(c_a), veh/h	574	0	518	158	0	141	0	1229	670	191	1283	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.4	0.0	30.5	37.4	0.0	41.0	0.0	22.9	22.9	39.4	24.6	0.0
Incr Delay (d2), s/veh	1.6	0.0	81.4	0.1	0.0	149.7	0.0	1.7	3.2	55.8	3.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.8	0.0	32.4	0.2	0.0	14.9	0.0	9.6	10.6	11.3	13.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.0	0.0	111.9	37.5	0.0	190.7	0.0	24.6	26.0	95.2	27.8	0.0
LnGrp LOS	C		F	D		F		C	C	F	C	
Approach Vol, veh/h		918			177			1035			1082	
Approach Delay, s/veh		81.3			187.2			25.1			39.2	
Approach LOS		F			F			C			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.0		36.0		39.0		15.0				
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0				
Max Green Setting (Gmax), s		32.5		29.0		32.5		8.0				
Max Q Clear Time (g_c+I1), s		16.1		31.0		34.5		10.0				
Green Ext Time (p_c), s		8.1		0.0		0.0		0.0				

Intersection Summary		
HCM 7th Control Delay, s/veh		54.9
HCM 7th LOS		D

Notes
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Note: Westbound left-turn lane entered as shared left-turn/through lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	406	15	521	13	0	115	0	1125	5	14	677	160
Future Volume (veh/h)	406	15	521	13	0	115	0	1125	5	14	677	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	423	16	543	14	0	120	0	1172	5	15	705	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	633	16	548	158	0	141	0	1720	7	144	1165	
Arrive On Green	0.36	0.36	0.36	0.09	0.00	0.09	0.00	0.33	0.33	0.33	0.33	0.00
Sat Flow, veh/h	1781	45	1541	1781	0	1585	0	5416	22	476	3647	0
Grp Volume(v), veh/h	423	0	559	14	0	120	0	760	417	15	705	0
Grp Sat Flow(s),veh/h/ln	1781	0	1587	1781	0	1585	0	1702	1866	476	1777	0
Q Serve(g_s), s	18.1	0.0	31.5	0.6	0.0	6.7	0.0	17.4	17.4	2.5	15.0	0.0
Cycle Q Clear(g_c), s	18.1	0.0	31.5	0.6	0.0	6.7	0.0	17.4	17.4	19.9	15.0	0.0
Prop In Lane	1.00		0.97	1.00		1.00	0.00		0.01	1.00		0.00
Lane Grp Cap(c), veh/h	633	0	564	158	0	141	0	1116	612	144	1165	
V/C Ratio(X)	0.67	0.00	0.99	0.09	0.00	0.85	0.00	0.68	0.68	0.10	0.61	
Avail Cap(c_a), veh/h	633	0	564	158	0	141	0	1116	612	144	1165	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.5	0.0	28.9	37.7	0.0	40.4	0.0	26.2	26.2	34.8	25.4	0.0
Incr Delay (d2), s/veh	2.9	0.0	35.5	0.3	0.0	36.9	0.0	3.4	6.0	1.4	2.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	12.3	0.0	23.5	0.5	0.0	7.3	0.0	11.6	13.1	0.6	10.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.4	0.0	64.3	37.9	0.0	77.3	0.0	29.6	32.2	36.3	27.7	0.0
LnGrp LOS	C		E	D		E		C	C	D	C	
Approach Vol, veh/h		982			134			1177			720	
Approach Delay, s/veh		48.4			73.2			30.5			27.9	
Approach LOS		D			E			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		36.0		39.0		36.0		15.0				
Change Period (Y+Rc), s		6.5		7.0		6.5		7.0				
Max Green Setting (Gmax), s		29.5		32.0		29.5		8.0				
Max Q Clear Time (g_c+I1), s		19.4		33.5		21.9		8.7				
Green Ext Time (p_c), s		6.4		0.0		3.5		0.0				

Intersection Summary		
HCM 7th Control Delay, s/veh		37.6
HCM 7th LOS		D

Notes
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Note: Westbound left-turn lane entered as shared left-turn/through lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	314	56	502	4	0	164	0	970	13	175	853	253
Future Volume (veh/h)	314	56	502	4	0	164	0	970	13	175	853	253
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	331	59	528	4	0	173	0	1021	14	184	898	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	474	84	493	158	0	141	0	1166	16	272	1323	
Arrive On Green	0.31	0.31	0.31	0.09	0.00	0.09	0.00	0.22	0.22	0.10	0.37	0.00
Sat Flow, veh/h	1523	271	1584	1781	0	1585	0	5355	71	1781	3647	0
Grp Volume(v), veh/h	390	0	528	4	0	173	0	670	365	184	898	0
Grp Sat Flow(s),veh/h/ln	1794	0	1584	1781	0	1585	0	1702	1854	1781	1777	0
Q Serve(g_s), s	17.2	0.0	28.0	0.2	0.0	8.0	0.0	17.1	17.1	6.8	19.1	0.0
Cycle Q Clear(g_c), s	17.2	0.0	28.0	0.2	0.0	8.0	0.0	17.1	17.1	6.8	19.1	0.0
Prop In Lane	0.85		1.00	1.00		1.00	0.00		0.04	1.00		0.00
Lane Grp Cap(c), veh/h	558	0	493	158	0	141	0	765	417	272	1323	
V/C Ratio(X)	0.70	0.00	1.07	0.03	0.00	1.23	0.00	0.88	0.88	0.68	0.68	
Avail Cap(c_a), veh/h	558	0	493	158	0	141	0	765	417	297	1323	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.3	0.0	31.0	37.4	0.0	41.0	0.0	33.7	33.7	24.2	23.7	0.0
Incr Delay (d2), s/veh	4.0	0.0	61.1	0.1	0.0	149.7	0.0	13.3	21.9	5.4	2.8	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	12.2	0.0	26.6	0.2	0.0	14.9	0.0	12.9	15.1	5.6	12.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.3	0.0	92.1	37.5	0.0	190.7	0.0	47.0	55.6	29.5	26.6	0.0
LnGrp LOS	C		F	D		F		D	E	C	C	
Approach Vol, veh/h		918			177			1035			1082	
Approach Delay, s/veh		66.3			187.2			50.0			27.1	
Approach LOS		E			F			D			C	

Timer - Assigned Phs	1	2		4		6		8
Phs Duration (G+Y+Rc), s	13.3	26.7		35.0		40.0		15.0
Change Period (Y+Rc), s	4.5	6.5		7.0		6.5		7.0
Max Green Setting (Gmax), s	10.0	19.0		28.0		33.5		8.0
Max Q Clear Time (g_c+I1), s	8.8	19.1		30.0		21.1		10.0
Green Ext Time (p_c), s	0.1	0.0		0.0		6.2		0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	54.5
HCM 7th LOS	D

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Note: Westbound left-turn lane entered as shared left-turn/through lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	406	15	521	13	0	115	0	1125	5	14	677	160
Future Volume (veh/h)	406	15	521	13	0	115	0	1125	5	14	677	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	423	16	543	14	0	120	0	1172	5	15	705	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	602	23	553	158	0	141	0	1396	6	137	1185	
Arrive On Green	0.35	0.35	0.35	0.09	0.00	0.09	0.00	0.27	0.27	0.02	0.33	0.00
Sat Flow, veh/h	1719	65	1580	1781	0	1585	0	5416	22	1781	3647	0
Grp Volume(v), veh/h	439	0	543	14	0	120	0	760	417	15	705	0
Grp Sat Flow(s),veh/h/ln	1784	0	1580	1781	0	1585	0	1702	1866	1781	1777	0
Q Serve(g_s), s	19.1	0.0	30.6	0.6	0.0	6.7	0.0	19.0	19.0	0.5	14.8	0.0
Cycle Q Clear(g_c), s	19.1	0.0	30.6	0.6	0.0	6.7	0.0	19.0	19.0	0.5	14.8	0.0
Prop In Lane	0.96		1.00	1.00		1.00	0.00		0.01	1.00		0.00
Lane Grp Cap(c), veh/h	625	0	553	158	0	141	0	905	496	137	1185	
V/C Ratio(X)	0.70	0.00	0.98	0.09	0.00	0.85	0.00	0.84	0.84	0.11	0.60	
Avail Cap(c_a), veh/h	625	0	553	158	0	141	0	905	496	205	1185	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.2	0.0	29.0	37.7	0.0	40.4	0.0	31.2	31.2	24.4	24.9	0.0
Incr Delay (d2), s/veh	3.7	0.0	33.6	0.3	0.0	36.9	0.0	9.2	15.6	0.3	2.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	13.0	0.0	22.6	0.5	0.0	7.3	0.0	13.4	15.6	0.4	10.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.9	0.0	62.6	37.9	0.0	77.3	0.0	40.5	46.9	24.8	27.2	0.0
LnGrp LOS	C		E	D		E		D	D	C	C	
Approach Vol, veh/h		982			134			1177			720	
Approach Delay, s/veh		47.6			73.2			42.7			27.1	
Approach LOS		D			E			D			C	

Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	6.1	30.4		38.5		36.5		15.0				
Change Period (Y+Rc), s	4.5	6.5		7.0		6.5		7.0				
Max Green Setting (Gmax), s	5.0	20.5		31.5		30.0		8.0				
Max Q Clear Time (g_c+I1), s	2.5	21.0		32.6		16.8		8.7				
Green Ext Time (p_c), s	0.0	0.0		0.0		5.0		0.0				

Intersection Summary	
HCM 7th Control Delay, s/veh	41.9
HCM 7th LOS	D

Notes
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Note: Westbound left-turn lane entered as shared left-turn/through lane in order to satisfy standard NEMA phasing conventions. Required to correctly calculate delays and queues using HCM 7th Ed. methodology.

Appendix H Transportation Impact Study

Appendices

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600 S. Lake Avenue
Suite 500
Pasadena, CA 91106
626.796.2322 T
www.llgengineers.com

Pasadena
Irvine
San Diego

TRANSPORTATION IMPACT STUDY

ARTESIA DOWNTOWN SPECIFIC PLAN

City of Artesia, California
February 5, 2025

Prepared for:

PlaceWorks
3 MacArthur Place, Suite 1100
Santa Ana, California 92707

LLG Ref: 1-23-4585-1

Prepared by:

Grace Turney, P.E., RSP1
Transportation Engineer III

Under the Supervision of:

David S. Shender, P.E.
Principal

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LIST OF ABBREVIATIONS

ABBREVIATION	MEANING
AB	Assembly Bill
ABM	Activity-Based Model
CAPCOA	California Air Pollution Control Officer's Association
CEQA	California Environmental Quality Act
FAR	Floor Area Ratio
GHG	Greenhouse Gas
ITE	Institute of Transportation Engineers
OCTA	Orange County Transportation Authority
OD	Origin-Destination
OPR	California Governor's Office of Planning and Research
PRC	Public Resources Code
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SB	Senate Bill
SCAG	Southern California Association of Governments
SED	Socio-Economic Data
SR	State Route
TAZ	Transportation Analysis Zone
TDM	Transportation Demand Management
TISG	Transportation Impact Study Guide
VMT	Vehicle Miles Traveled

ARTESIA DOWNTOWN SPECIFIC PLAN

City of Artesia, California
February 5, 2025

1.0 INTRODUCTION

This transportation impact study has been conducted to identify and evaluate the potential transportation impacts of the Artesia Downtown Specific Plan project ("proposed project" herein). The proposed Artesia Downtown Specific Plan area is located within the City of Artesia, California. The City of Artesia is located in southeast Los Angeles County and is situated adjacent to the City of Cerritos to the west, south, and east, and to the City of Norwalk to the north. The City of Artesia and the Artesia Downtown Specific Plan area and general vicinity are shown in ***Figure 1-1***.

The transportation impact analysis follows the analysis criteria set forth by Los Angeles County in the Los Angeles County Public Works *Transportation Impact Analysis Guidelines*[1] ("County Guidelines" herein). In compliance with California Environmental Quality Act (CEQA) Sections 15064.3 and 15064.7, the County Guidelines utilize Vehicle Miles Traveled (VMT) for the purpose of analyzing transportation impacts under CEQA. This transportation analysis therefore evaluates project-generated VMT in order to determine the significance of potential transportation impacts in CEQA.

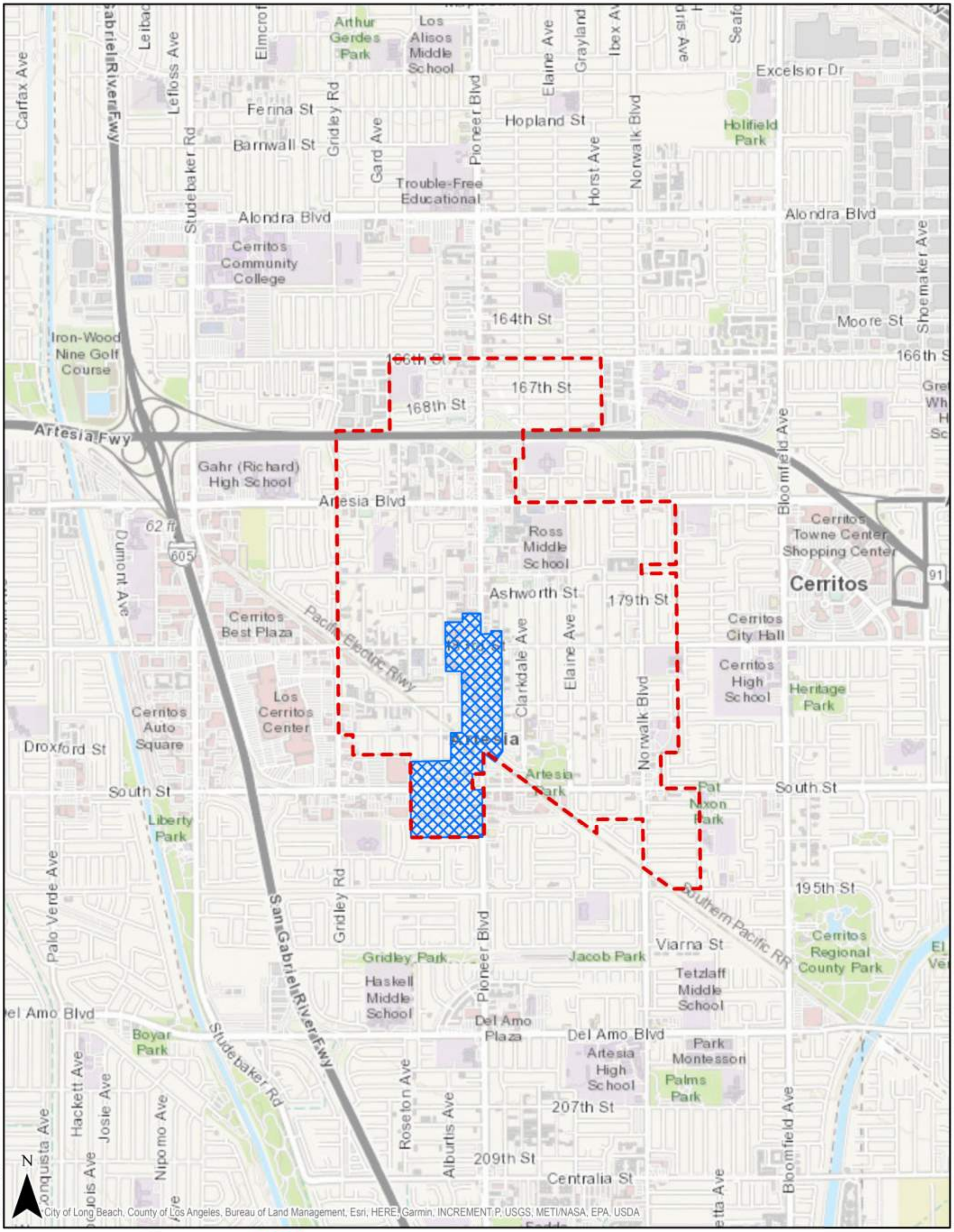
Additional site access studies have been prepared in order to determine the proposed project's effect on local transportation infrastructure. Since the additional studies do not constitute transportation impacts for purposes of CEQA, they are presented under separate cover in the "Artesia Downtown Specific Plan Local Transportation Assessment," prepared by Linscott, Law & Greenspan, Engineers, September 9, 2024.

In summary, this report presents (i) a description of the proposed project, (ii) assesses the potential for project-related transportation impacts, and (iii) recommends transportation mitigation measures, where necessary.

1.1 Study Methodology

The CEQA analysis criteria for this transportation impact study were identified in consultation with City of Artesia staff. The analysis criteria were determined based on the County Guidelines, the proposed project description and location, and the characteristics of the surrounding transportation system. The City of Artesia confirmed the appropriateness of the analysis criteria

[1] Los Angeles County Public Works "Transportation Impact Analysis Guidelines", prepared by Public Works, July 23, 2020.



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City of Artesia

Specific Plan Area

Figure 1-1
Vicinity Map

Artesia Downtown Specific Plan

when it approved the Transportation Impact Study Scope of Work. The approved Scope of Work is attached to this report in ***Appendix A***.

On September 27, 2013, Governor Brown signed Senate Bill (SB) 743 (Steinberg, 2013). Among other things, SB 743 initiated a change in the methodology to analyze transportation impacts under CEQA (Public Resources Code Section [PRC] 21000 and following). Through PRC Section 21099, which states in part that "automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment," SB 743 directed the Governor's Office of Planning and Research (OPR) to identify a new metric for evaluating transportation impacts. OPR identified VMT as the most appropriate metric, and developed the *Technical Advisory on Evaluating Transportation Impacts in CEQA* ("*Technical Advisory*" herein), which provides non-binding recommendations on the implementation of VMT analysis methodology that has significantly informed the way VMT analyses are conducted in the State. State-wide implementation of the new metric was required by July 1, 2020.

Pursuant to current statutes, the City of Artesia utilizes VMT as the metric for determining environmental impacts in compliance with SB 743. It is noted that the City of Artesia has not yet adopted transportation assessment guidelines for VMT analyses, therefore, the VMT assessment has been prepared in compliance with the methodology set forth in the Los Angeles County Public Works *Transportation Impact Analysis Guidelines*.

As required by State law, the California Department of Transportation (Caltrans) has also formally adopted VMT as the metric for evaluating the transportation impacts of local development projects on the State Highway System. Caltrans' *Transportation Impact Study Guide*[2] (TISG) relies on the *Technical Advisory* prepared by OPR as the basis for its guidance on VMT assessment. For the purpose of this transportation impact analysis, it is understood that Los Angeles County's adopted VMT methodology and criteria are consistent with the recommendations provided by OPR in the *Technical Advisory* and thus satisfy Caltrans' VMT analysis requirements as well. Therefore, no separate VMT analysis has been prepared for Caltrans' review of the proposed project.

[2] "Vehicle Miles-Traveled Focused Transportation Impact Study Guide," Caltrans, May 20, 2020.

2.0 ARTESIA DOWNTOWN SPECIFIC PLAN DESCRIPTION

2.1 Project Location

The proposed Artesia Downtown Specific Plan area is located within the City of Artesia, California. The City of Artesia is located in southeast Los Angeles County and is situated adjacent to the City of Cerritos to the west, south, and east, and to the City of Norwalk to the north. The City of Artesia and the Specific Plan area and general vicinity are shown in *Figure 1-1*.

The project site encompasses the blocks adjoining Pioneer Boulevard to the southeast and ending at 180th Street to the north. The northern portion of the project site is bounded by Alburtis Avenue and Corby Avenues to the west, 180th Street to the north, Arline Avenue to the east, and 188th Street to the south. The southern portion of the site is bounded by 188th Street to the north, the La Belle Chateau Estates Mobile Home Park to the south, Pioneer Boulevard to the east, and Jersey Avenue to the west.

2.2 Existing Land Use[3]

The project site is fully built up and consists primarily of one- and two- story commercial uses and multifamily residential properties. The southern portion of the project site is anchored by a shopping center and La Belle Chateau Estates Mobile Home Park, which is bordered by South Street to the north, the City of Cerritos to the west and south, and Pioneer Boulevard to the east. The northern portion of the project site is anchored by a shopping center to the north and south of 183rd Street and to the east and west of Arline Avenue and Alburtis Avenue, respectively. The north and south ends of the project site are connected by the Pioneer Boulevard corridor which includes one- and two-story retail, restaurant and office uses. Multi-family residential, mixed-use residential, commercial, general office and industrial uses are located on various parcels throughout the entire project site to the east and west of Pioneer Boulevard. Limited vacant parcels exist within the project area south of 188th Street.

2.3 Specific Plan Description[3]

The Artesia Downtown Specific Plan would implement new land use, zoning, and development standards to guide the scale of future development and growth in Artesia's Downtown district as the city prepares for the planned expansion of a new Metro light rail line (referred to as the Southeast Gateway Line, discussed further in *Section 2.5.2*) that would connect southeastern Los Angeles County communities, including Artesia, to Downtown Los Angeles. The new Metro light rail line extension is anticipated to connect to Pioneer Boulevard in 2035.

While there are no specific development projects proposed at this time, the Artesia Downtown Specific Plan will establish goals and objectives, development standards, and implementation actions associated with land use, mobility, and infrastructure, and establishes a transit-oriented

[3] "Artesia Downtown Specific Plan Initial Study," PlaceWorks, February 2024.

plan that would provide new opportunities for housing, retail/commercial, and entertainment uses. The proposed project would establish the necessary plans, development standards, regulations, infrastructure requirements, and implementation programs on which subsequent project-related development activities in the Specific Plan area would be based.

The land use plan divides the Specific Plan area into six zoning districts. These distinct zoning districts would allow for a range of land uses and density within a defined building envelope. The zones would also implement the City's urban design objectives for each part of the project site to establish and maintain attractive distinctions between each zone. The six zoning districts include:

- **Downtown North.** The Downtown North District would become the northern gateway and anchor to downtown Artesia. This district would allow for higher density mixed-use development at 65 dwelling units per acre (du/ac) or 75 du/ac with a density bonus. The southwest corner of this district would encompass approximately 5.5 acres and would allow 4- to 5-story mixed-use development and 2- and 3-story townhomes. Where the City owns property at the northwest corner of 183rd Street and Pioneer Boulevard, a public private partnership is encouraged to develop a parking structure with ground-floor retail uses as well as potentially civic and/or community uses. The parking structure would serve visitors, residents, and employees as they travel to and from downtown Artesia and the Artesia Freeway (SR-91) to the north.
- **Pioneer Boulevard.** The Pioneer Boulevard District would front Pioneer Boulevard north of the future Metro transit station and is in the center of downtown Artesia. This area is currently known as "Little India" and is composed of narrow parcels with a continuous street frontage of 1-story commercial establishments such as restaurants, markets, and jewelry shops. Although significant new development is not expected in this district, the district would allow for 3-story buildings at 50 du/ac or 60 du/ac with a density bonus.
- **Downtown Neighborhood.** The Downtown Neighborhood District would be in the residential west and east edges of the Downtown area along Corby Avenue and Arline Avenue. The downtown neighborhood would retain its residential character at 40 du/ac.
- **188th Street / Corby Avenue.** The 188th/Corby District would be south of the future Metro station and presently includes residential and light industrial uses. This district would allow for residential uses such as duplex, triplex, and townhomes at 65 du/ac as well as limited commercial office and retail uses.
- **Downtown South.** The Downtown South District would become the southern gateway to downtown Artesia and the city. The district would allow 4- to 6-story mixed-use development at 75 du/ac or 85 du/ac with a density bonus and incorporate land uses such as ground-floor retail, a hotel, townhomes, and neighborhood parks for residents and visitors. A Metro parking structure is planned in the South Street Mixed District just south of the transit station.

- **Chateau Estates.** The Le Belle Chateau Estates Mobile Home Park District sits at the southern edge of the project site. The mobile home park use would be maintained.

The location of each of the proposed zoning districts within the Specific Plan area is illustrated in ***Figure 2-1***.

2.4 Proposed Project Buildout Scenario

The Artesia Downtown Specific Plan proposes six (6) new land use zones within the Specific Plan area, as described in *Section 2.3*. These zones will allow for a range of residential density and Floor Area Ratio (FAR) intensity. The total buildout for the Specific Plan area depends on the maximum density and FAR permitted in each zone, but is based on a selection of parcels which have been identified as having the likelihood for redevelopment. The parcels identified for redevelopment were selected through the Redevelopment Opportunity Analysis conducted by PlaceWorks[4]. Based on this analysis, a total of 53 parcels were selected. The location of the selected parcels is displayed in *Figure 2-1*. The proposed project reflects full redevelopment of each of the selected parcels utilizing the following assumptions:

- Eighty percent (80%) of the area within each parcel will be developed with residential land uses at the maximum allowed density.
- Twenty percent (20%) of the area within each parcel will be developed with non-residential land uses.
  - Twenty-five percent (25%) of the non-residential space will be developed with office land uses.
  - Seventy-five percent (75%) of the non-residential space will be developed with restaurant and retail land uses in a 50:50 ratio (i.e., 50% assumed to be restaurant and 50% assumed to be retail).

Application of these assumptions to the 53 parcels identified for redevelopment results in the following development totals summarized in ***Table 2-1***.

Table 2-1
Summary of Specific Plan Development Totals

RESIDENTIAL DWELLING UNITS	OFFICE SPACE (SF)	COMMERCIAL SPACE (SF)
1,981	105,730	397,190 [1]

[1] The commercial space includes an 80,000 square-foot, 150-room hotel located in the proposed Downtown South Zoning District.

[4] "Artesia Downtown Specific Plan Buildout Memo," PlaceWorks, December 11, 2023.

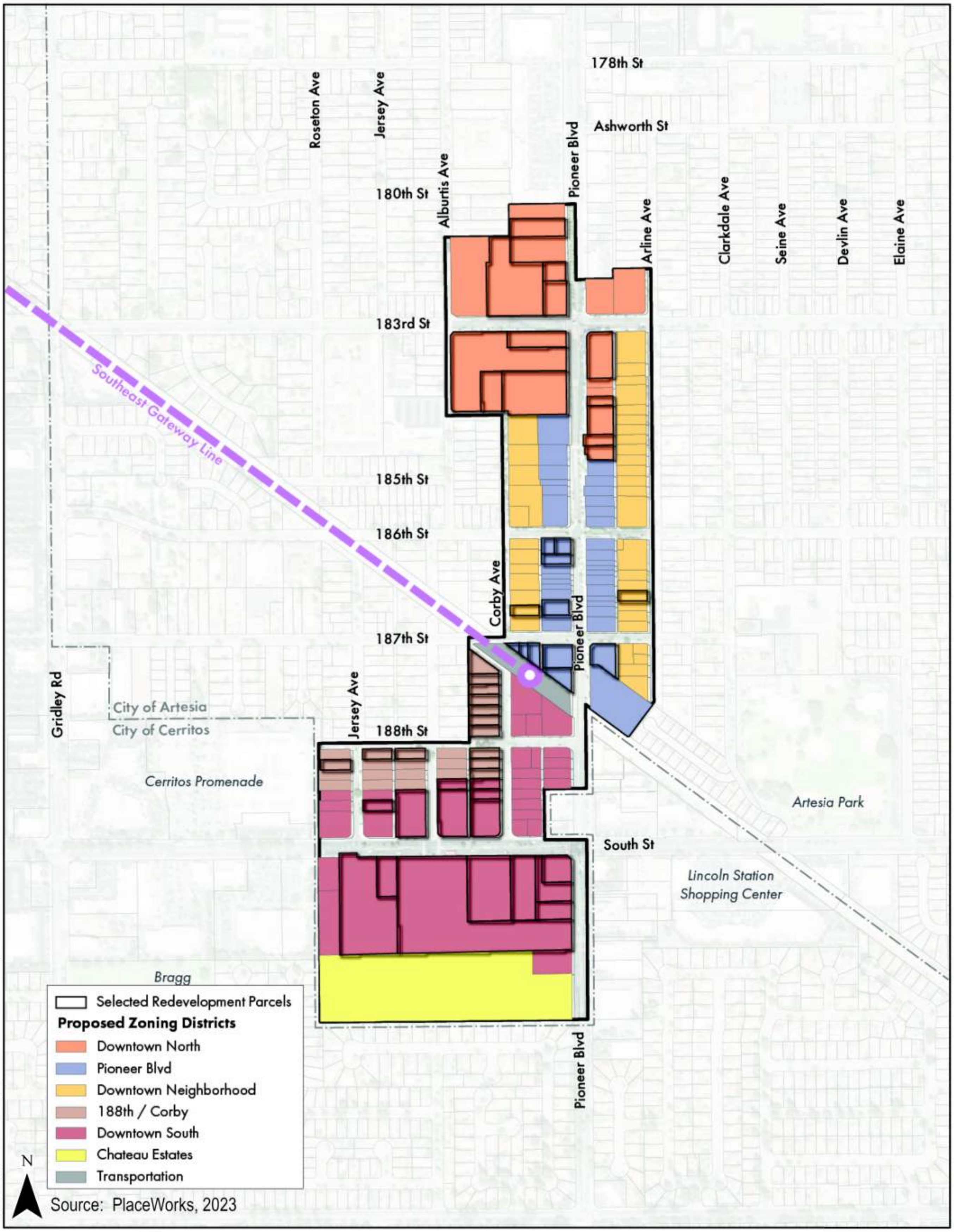

Figure 2-1
Proposed Zoning and Selected Redevelopment Parcels

Artesia Downtown Specific Plan

2.5 Project Site Access

The following sections provide a brief description of the existing and anticipated access to and within the Specific Plan area.

2.5.1 *Vehicle Access*

The roadway network serving the Specific Plan area is situated in a regular grid system of roadways which provide access to the individual parcels within the Specific Plan. Principal roadways providing access to and within the Specific Plan area include Pioneer Boulevard which provides connection to the SR-91 Freeway to the north and communities located south of the Specific Plan area, as well as South Street which provides connection to the I-605 Freeway to the west and communities located east of the Specific Plan area. Both Pioneer Boulevard and South Street are designated as Primary Arterial Highways in the City of Artesia's General Plan 2030 Circulation and Mobility Sub-Element. Additional vehicular access within the Specific Plan is accommodated by 183rd Street, which is designated as a Secondary Arterial Highway, and by roadways such as 186th Street and 187th Street which are designated as Collector roadways. These roadways, along with local streets, provide direct access to the parcels included in the Specific Plan area.

2.5.2 *Transit Access*

Public bus transit access within the Specific Plan area is provided by the Los Angeles County Metropolitan Transportation Authority (Metro), Norwalk Transit System, and the Orange County Transportation Authority (OCTA).

There are no existing light-rail lines providing service to the Specific Plan area. However, Metro plans to construct the new Southeast Gateway Light Rail Line, part of the West Santa Ana Branch Transit Corridor project, which will connect communities in southeast LA County to Downtown Los Angeles[5]. Metro planning documents indicate that the project area has population and employment densities which are five times higher than the average in LA County. The rail corridor is anticipated to serve commuters in a high travel demand corridor and provide relief to the limited transportation systems currently available in the adjacent communities. The new line will include 14.8 miles of new light rail transit connecting from the A (previously Blue) Line Slauson Station to the southern terminus at the Pioneer Station located in the City of Artesia. The project will construct nine (9) new stations along the Southeast Gateway Line and one new infill station on the C (previously Green) Line. Four (4) surface parking lots will be provided, and one parking garage will be constructed at the Pioneer Station in the City of Artesia. The Pioneer Station is planned to be located on the west side of Pioneer Boulevard between 187th Street and 188th Street. Construction of the Southeast Gateway Line and Pioneer Station is expected to result in the closure

[5] "West Santa Ana Branch Transit Corridor Fact Sheet", Metro, Spring 2023.

of 186th Street but will maintain through access along 187th Street[6]. The Southeast Gateway Line is currently expected to open in year 2035.

2.5.3 *Pedestrian and Bicycle Access*

Pedestrian access within the Specific Plan area is accommodated by a complete network of public sidewalks and supporting pedestrian infrastructure, including pedestrian-scale lighting, public benches, and public trash receptacles along Pioneer Boulevard between 183rd Street and 188th Street. The public sidewalks provide pedestrian access to all parcels within the Specific Plan area in a manner that promotes walkability (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 five basic components that are widely accepted as the key to achieving walkability, with the underlying principle being that pedestrians should not be delayed, diverted, or placed in danger. The five primary components of walkability include the following:

- Connectivity: People can walk from one place to another without encountering major obstacles, obstructions, or loss of interconnections.
- Convivial: Pedestrian routes are friendly and attractive, and are perceived as such by pedestrians.
- Conspicuous: Suitable levels of lighting and visibility 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 roadspace to 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.

These primary characteristics of walkability are currently provided within the Specific Plan area and are expected to be expanded as redevelopment within the Specific Plan area occurs.

Bicycle access is accommodated by on-street bicycle lanes provided on both sides of South Street and on Pioneer Boulevard south of South Street. Implementation of the Artesia Active Transportation Plan[7] will result in the construction of additional bicycle facilities along Pioneer Boulevard, 183rd Street, and 186th Street within the Specific Plan area. Where bicycle-specific facilities are not provided, bicycle access through the remainder of the Specific Plan area will be accommodated by the existing roadway network. The proposed project will not result in any changes to the existing pedestrian or bicycle access within the Specific Plan area.

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[6] *Southeast Gateway Line (Previously West Santa Ana Branch Transit Corridor)*. Los Angeles Metropolitan Transportation Authority. https://www.metro.net/projects/southeastgateway. Accessed August 28, 2024.

[7] "Artesia Active Transportation Plan," prepared by KTUA and Kimely-Horn and Associates, Adopted February 1, 2022.

3.0 VEHICLE MILES TRAVELED ANALYSIS

As described in *Section 1.1*, and in compliance with the current statutory requirements for analysis of transportation impacts under CEQA, the County Guidelines set forth the VMT screening criteria, impact criteria, and methodology applicable to proposed development projects and land use plans. The following sections discuss the VMT screening criteria, impact thresholds, methodology, and analysis for the proposed project.

3.1 Screening Criteria

Traditionally, public agencies have set certain thresholds to determine whether a project requires detailed transportation analysis or if it could be assumed to have less than significant environmental impacts without additional study. Consistent with the recommendations provided by OPR in the *Technical Advisory*, the County Guidelines recognize four screening criteria which may be applied to screen proposed projects out of detailed VMT analysis. These criteria are based on a proposed project's number of daily vehicle trips, classification as a local serving retail use, proximity to high-quality transit, and inclusion of affordable housing. Proposed projects are not required to satisfy all of the screening criteria in order to screen out of further VMT analysis; satisfaction of one criterion is generally sufficient for screening purposes. Projects, or project components, which are screened out of detailed VMT assessment based on these criteria are presumed to have less than significant transportation impacts. Projects or project components which are not screened out would be required to conduct a formal Transportation Impact Analysis in order to determine the significance of project impacts.

3.1.1 *Non-Retail Project Trip Generation Screening Criteria*

Section 3.1.2.1 of the County Guidelines states that: "If the answer is no to the question below, further analysis is not required, and a less than significant determination can be made.

- Does the development project generate a net increase of 110 or more daily vehicle trips?"

The County Guidelines further indicate that a proposed project's daily vehicle trip generation should be estimated using the most recent edition of the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, or through use of empirical trip generation data if the project's land use is not listed in the *Manual*.

The proposed project is forecast to generate a net increase of 5,421 daily vehicle trips[8]. Therefore, the non-retail project trip generation screening criteria is not satisfied.

3.1.2 *Retail Project Screening Criteria*

New local serving retail development typically redistributes shopping trips rather than creating new ones. By adding retail opportunities into the urban fabric and improving retail destination

[8] Refer to "Artesia Downtown Specific Plan Local Transportation Analysis," prepared by Linscott, Law & Greenspan, Engineers, September 9, 2024, *Section 2.6.2 – Project Trip Generation* for a full discussion of the daily vehicle trip forecast.

proximity, local serving retail developments tend to shorten trips and reduce VMT, and may be presumed to cause less than significant impacts. Consistent with OPR's guidance, the County assumes that retail projects of any type which are less than 50,000 square feet may be considered local serving retail.

Therefore, Section 3.1.2.2 of the County Guidelines states: "A project that contains a local serving retail use is assumed to have less than significant VMT impacts for the retail portion of the project. If the answer to the following question is no, a less than significant determination can be made for the portion of the project that contains retail uses.

- Does the project contain retail uses that exceed 50,000 square feet of gross floor area?"

The proposed project includes the development of a total of 397,190 square feet of new commercial space within the Specific Plan area. While the redevelopment potential of commercial space on many parcels may fall below the 50,000 square foot threshold, no specific development projects are proposed at this time. The answer to this screening question cannot be determined at the redevelopment parcel level during the preparation and adoption of the Artesia Downtown Specific Plan. Because the screening criteria cannot be adequately assessed at this time, it is conservatively assumed that the criteria is not satisfied.

3.1.3 *Proximity to Transit Screening Criteria*

CEQA Guidelines Section 15064.3(b)(1) states in part: "Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact." In keeping with the statutory presumption of less than significant impacts due to nearby high-quality transit, the County Guidelines include a screening criterion based on proximity to transit. Consistent with the recommendations provided by OPR, the County also notes certain project-specific or location-specific information which might indicate that the presumption is not appropriate.

Thus, Section 3.1.2.3 of the County Guidelines states that: "If the project is located near a major transit stop or high-quality transit corridor, the following question should be considered:

- Is the project located within a one-half mile radius of a major transit stop[9] or an existing stop along a high-quality transit corridor[10]?

If the answer to the above question is yes, then the following subsequent questions should be considered:

- Does the project have a Floor Area Ratio (FAR) less than 0.75?

[9] Public Resources Code Section 21064.3: ""Major transit stop" means a site containing any of the following: (a) An existing rail or bus rapid transit station. (b) A ferry terminal served by either a bus or rail transit service. (c) The intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

[10] Public Resources Code Section 21155(b): "For purposes of this section, a high-quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours."

- Does the project provide more parking than required by the County Code?
- Is the project inconsistent with the SCAG RTP/SCS?
- Does the project replace residential units set aside for lower income households with a smaller number of market-rate residential units?

If the answer to all four subsequent questions is no, further analysis is not required, and a less than significant determination can be made."

The proposed project is located within 0.5-miles of the future Metro Southeast Gateway Light-Rail Line Pioneer Station, and therefore would potentially qualify for the proximity to transit screening criteria. However, the answers to the subsequent questions require project-specific information such as the proposed FAR, parking, and residential affordability levels. No specific development projects are proposed at this time. The answer to these screening questions cannot be determined at the redevelopment parcel level during the preparation and adoption of the Artesia Downtown Specific Plan. Because the screening criteria cannot be adequately assessed at this time, it is conservatively assumed that the criteria is not satisfied.

3.1.4 *Residential Project Screening Criteria*

Section 3.1.2.4 of the County Guidelines indicates that certain projects which further the State's affordable housing goals are presumed to have less than significant impacts on VMT. The County Guidelines state: "If the project requires discretionary action and the answer is yes to the question below, further analysis is not required, and a less than significant determination can be made.

- Are 100% of the units, excluding manager's units, set aside for lower income households?"

The proposed project includes the development of a total of 1,981 residential dwelling units. While a portion of the units may be set aside as affordable housing, no specific development projects are proposed at this time. The answer to this screening question cannot be determined at the redevelopment parcel level during the preparation and adoption of the Artesia Downtown Specific Plan. Because the screening criteria cannot be adequately assessed at this time, it is conservatively assumed that the criteria is not satisfied.

3.1.5 *Summary of Screening Conclusions*

The proposed project does not satisfy any of the four screening criteria stated in the County Guidelines. No specific development projects are proposed at this time, and the answers to the screening questions cannot be determined at the redevelopment parcel level during the preparation and adoption of the Artesia Downtown Specific Plan. The proposed project is not screened out of further analysis. Therefore, a detailed VMT analysis is required in order to determine the significance of any transportation impacts.

3.2 Methodology

As required by the County Guidelines, land use plans are to be evaluated using the current (SCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) travel demand forecast model to determine if it will have a significant impact on VMT. The current SCAG travel demand model is the 2016-2045 Activity-Based Model (ABM), which includes a baseline year of 2016 and a future cumulative year of 2045 (assuming full build-out of the RTP/SCS). The VMT methodology to be utilized for land use plans is the Origin-Destination (OD) VMT method, which tracks all trips by trip purpose and the full length of the trips generated by the proposed project. The OD VMT therefore represents the total VMT generated in a specific geographic area.

The level of project-generated daily VMT is determined by converting the proposed project's development totals into corresponding Socio-Economic Data (SED) and entering the SED into the Transportation Analysis Zone/s (TAZ) in which the project is located. The model is then run in order to generate a "With Project" VMT forecast. The "Without Project" VMT forecast is obtained from the baseline model outputs and is subtracted from the "With Project" forecast in order to determine the VMT expected to be generated by the proposed project.

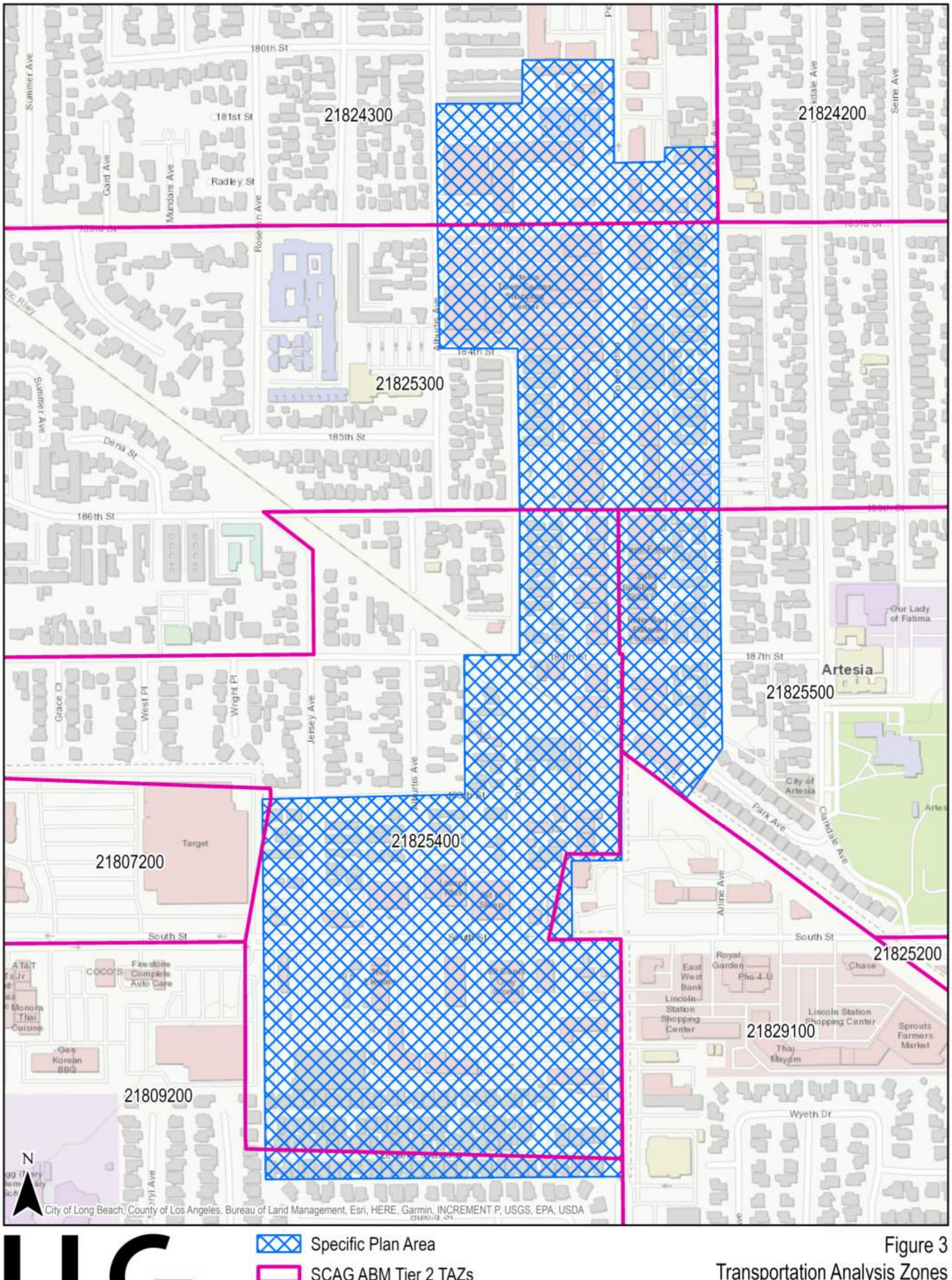
The Specific Plan area falls within four (4) TAZs, as illustrated in ***Figure 3-1***. The proposed development within each TAZ was determined based on the location of the parcels identified for full redevelopment and the redevelopment potential for each parcel. The proposed project's development totals within each TAZ are summarized in ***Table 3-1*** below.

Table 3-1
Summary of Specific Plan Development Per TAZ

TAZ	RESIDENTIAL DWELLING UNITS	OFFICE SPACE (SF)	COMMERCIAL SPACE (SF)
21824300	203	14,867	44,602
21825300	431	31,620	94,861
21825400	1,322	57,592	252,775 [1]
21825500	25	1,651	4,952

[1] The commercial space in the TAZ includes an 80,000 square-foot, 150-room hotel.

The existing land uses on the parcels identified for redevelopment were subtracted from the totals summarized in *Table 3-1* in order to calculate the net increases due to the proposed project. The corresponding net increases in SED were then entered into the corresponding TAZs.



LLG

Figure 3
Transportation Analysis Zones

Artesia Downtown Specific Plan

3.3 Impact Criteria

The County Guidelines provides the following criteria for when a land use plan would result in a significant impact: "The plan total VMT per service population[11] would not be 16.8% below the existing total VMT per service population for the Baseline Area in which the project is located."

While the County Guidelines indicate that the threshold may be determined based on the project's location within the County (i.e., North County or South County), OPR has clarified that VMT thresholds should be derived based on the full geography of a region rather than only a select portion of a city or county.[12] Therefore, a threshold based on the existing Countywide total VMT per service population within Los Angeles County is most appropriate for determining the significance of the proposed project's VMT impacts. The County Guidelines further state that the baseline VMT applied in the transportation impact analysis should be consistent with the year the transportation study is conducted.

Long-term, or cumulative, impacts are determined through consistency with the SCAG RTP/SCS. Projects that are consistent with the current RTP/SCS plan in terms of meeting development location, density, and intensity are part of the regional solution for meeting air pollution and greenhouse gas (GHG) goals. Projects which fall under the RTP/SCS's efficiency-based impact thresholds are already shown to align with the long-term VMT and GHG reduction goals of the RTP/SCS. Therefore, if a project does not demonstrate a significant impact in the project-level impact analysis, then a less than significant cumulative can also be determined. Projects which are found to have a significant impact after applying an efficiency-based VMT threshold and which are not deemed consistent with the RTP/SCS should be evaluated further to determine the significance of the project's cumulative impact on VMT.

The applicable Countywide total VMT per service population has been derived the SCAG ABM baseline scenarios for years 2016 and 2045, and interpolated to reflect year 2024 conditions. The baseline total VMT per service population and relevant thresholds for existing and cumulative impacts are provided in ***Table 3-2*** below. The calculation and interpolation of the thresholds is summarized in ***Appendix Table B-1***.

Table 3-2
Thresholds of Significance

YEAR	BASELINE VMT/SP	THRESHOLD [1]
2024 (Existing)	30.81	25.63
2045 (Cumulative)	28.47	23.69

[1] Threshold represents 16.8% below the baseline VMT/SP.

[11] "Service population is the sum of the number of residents and the number of employees."

[12] *SB 743 Frequently Asked Questions*. California Governor's Office of Planning and Research. https://opr.ca.gov/ceqa/sb-743/faq.html#environmental-baseline. Accessed August 28, 2024.

3.4 VMT Impact Analysis

3.4.1 *Project-Generated VMT Analysis*

The proposed project's VMT per service population was forecast using the SCAG ABM. As described in *Section 3.2 – Methodology*, the project-generated VMT was determined by subtracting the baseline "Without Project" VMT forecast for the relevant TAZs from the "With Project" VMT forecast. The following model scenarios were utilized:

- Baseline Year 2016 Conditions
- Year 2016 With Project Conditions
- Baseline Cumulative Year 2045 Conditions
- Cumulative Year 2045 With Project Conditions

The project-generated VMT per service population was interpolated between years 2016 and 2045 in order to reflect year 2024 existing conditions. The calculation and interpolation of the project-generated VMT per service population in year 2024 is summarized in ***Appendix Tables B-2*** and ***B-3***.

The proposed project is forecast to generate 26.33 VMT per service population in year 2024, which exceeds the threshold of 25.63 VMT per service population. The proposed project is therefore expected to result in a significant project-level VMT impact. Mitigation measures will be required to reduce the VMT impact to less than significant levels. The project-generated VMT per service population, impact threshold, and percent reduction required (if any) under year 2024 conditions are summarized in ***Table 3-3***.

Table 3-3
Project Impact Analysis

TAZ	PROJECT-GENERATED VMT/SP	THRESHOLD	REQUIRED REDUCTION [1]
Year 2024	26.33	25.63	2.65%

[1] (Project VMT/SP – Threshold VMT/SP)/Project VMT SP

3.4.2 *Cumulative VMT Analysis*

As summarized in *Section 3.4.1*, the proposed project is expected to result in a significant project-level impact. The proposed project is assumed to be consistent with the SCAG RTP/SCS due to the Specific Plan area's proposed density and proximity to the future Metro Southeast Gateway Line Pioneer Station, which are expected to contribute towards achieving the State's VMT and GHG reduction goals. The proposed project may be presumed to result in a less than significant cumulative impact. However, in order to provide a complete analysis of the project's potential impacts, a cumulative impact assessment has been prepared.

The proposed project is forecast to generate 23.54 VMT per service population in year 2045, which is beneath the threshold of 23.69 VMT per service population. The proposed project is therefore expected to result in a less than significant cumulative VMT impact. The project-generated VMT per service population, impact threshold, and percent reduction required (if any) under year 2045 conditions are summarized in ***Table 3-4***. The calculation of the project-generated VMT per service population in year 2045 is summarized in *Appendix Table B-2*.

Table 3-4
Cumulative Impact Analysis

TAZ	PROJECT-GENERATED VMT/SP	THRESHOLD	REQUIRED REDUCTION
Year 2045	23.54	23.69	--

3.5 VMT Mitigation Measures

As described in *Section 3.4 – VMT Impact Analysis*, the proposed project is expected to result in a significant project-level impact under year 2024 conditions. CEQA requires identification of mitigation measures to reduce significant environmental impacts to less than significant levels, or to the greatest extent possible if a less than significant impact cannot be achieved.

3.5.1 *CAPCOA 2021 Handbook*

The California Air Pollution Control Officers Association's (CAPCOA) Handbook for Analyzing Greenhouse Gas Emissions Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity[13] ("2021 Handbook" herein) provides a comprehensive set of guidelines for assessing and quantifying reductions in greenhouse gas emissions. The emissions reduction measures are grouped by emission sector into nine categories, including transportation, energy, water, and other related areas. Transportation emissions can be reduced by improving the emissions profile of the vehicle fleet, or by reducing VMT. Reductions in VMT are achieved when any of the following occurs: 1) vehicle ownership declines, 2) vehicle trips are reduced, 3) vehicle trip lengths are reduced, or 4) any combination of the first three variables. The 2021 Handbook lists 34 quantified measures covering a total of six transportation subsectors, including land use, trip reduction programs, parking or road pricing/management, neighborhood design, transit, and clean vehicles and fuels. The majority of the measures (i.e., 32 of the 34 measures) quantified in the 2021 Handbook aim to reduce VMT, although two strategies are aimed at improving the emissions profile of the vehicle fleet and thus do not result in quantified VMT reductions. The VMT reducing strategies are broadly referred to as transportation demand management (TDM) strategies due to the focus on reducing the amount of automobile travel generated by a project.

[13] *Handbook for Analyzing Greenhouse Gas Emissions Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity Final Draft*, California Air Pollution Control Officers Association, December 2021, adopted December 15, 2021.

The 2021 Handbook acknowledges that interactions between transportation measures are complex and sometimes counterintuitive, whereby combining measures can have substantive impact on reported emissions reductions. Therefore, in order to safeguard the accuracy and reliability of the methods, certain rules are recommended when combining reductions achieved by transportation measures. First, the quantified measures may be applied at one of two scales of application: 1) the Project/Site scale, which refers to measures that reduce VMT at the scale of a parcel, employer, or development project, or 2) the Plan/Community scale, which refers to measures that reduce emissions at the scale of a neighborhood (e.g., specific plan, general plan, or climate action plan), corridor, or entire municipality (e.g., city- or county-level). Second, the effectiveness of multiple measures within a subsector should be multiplied (i.e., not added) in order to determine a combined level of effectiveness. Each quantified measure has a maximum allowable reduction, and in turn each subsector has a maximum allowable reduction which is intended to ensure that emissions reductions are not double counted when measures within the subsector are combined. The subsector maximums vary by scale of application. Finally, there is limited research directly analyzing the combined VMT impact from implementation of all, or a majority, of transportation sector measures. However, the 2021 Handbook adopts a 70 percent (70%) maximum for the combined VMT reduction from the following four subsectors: land use, neighborhood design, parking or road pricing/management, and transit. The multi-subsector maximum does not include the trip reduction program subsector, since these measures are implemented by individual employers and are not as directly correlated with place type as the other subsectors.

3.5.2 *Transportation Demand Management (TDM) Program*

For the purpose of identifying mitigation measures for the proposed project, the TDM strategies provided in the CAPCOA 2021 Handbook were reviewed for applicability based on land use type, location, and feasibility of implementation. The TDM strategies which are applicable to the proposed project are summarized below:

- T-16. Unbundle Residential Parking Costs from Property Cost

  According to the CAPCOA 2021 Handbook, "This measure will unbundle, or separate, a residential project's parking costs from property costs, requiring those who wish to purchase parking spaces to do so at an additional cost. On the assumption that parking costs are passed through to the vehicle owners/drivers utilizing the parking spaces, this measure results in decreased vehicle ownership and, therefore, a reduction in VMT and GHG emissions."

  It is assumed that qualifying residential projects within the Specific Plan area will comply with the provisions of California Civil Code §1947.1 resulting from AB 1317 (2023, Carillo), which requires residential developments of 16 or more units located in Los Angeles County to unbundle parking from the cost of rent. Based on the redevelopment potential for each parcel identified for full redevelopment, it is assumed that this requirement will apply to 1,668 of the total 1,981 units, or approximately 84.2% of the proposed residential units. The remaining residential development is expected to occur on small parcels which would not support the development of 16 or more units. A cost of $25.00 per month, or $300.00 per year, per parking space has been assumed for the purpose of calculating the potential VMT reductions resulting from implementation of this measure. Unbundling parking for qualifying residential developments is therefore expected to reduce VMT within the Specific Plan area by 0.84%. Calculation of the VMT reduction for this strategy is provided in ***Appendix C***. Greater monthly and annual parking costs would result in greater VMT reductions.

No action is required by the City of Artesia to implement this measure, as project developers would be required to comply with all applicable State laws at the time of project entitlement.

- T-24. Implement Market Price Public Parking (On-Street)

  According to the CAPCOA 2021 Handbook, "This measure will price all on-street parking in a given community. Increasing the costs of parking increases the total cost of driving to a location, incentivizing shifts to other modes and thus decreasing total VMT to and from the priced areas."

  The City of Artesia currently provides priced on-street parking within the Specific Plan area, primarily along Pioneer Boulevard, 186^{th} Street, and 187^{th} Street. Based on a review of aerial photography obtained from Google Earth in 2024, approximately 2,635 public parking spaces are provided within the Specific Plan area in support of the existing commercial and industrial land uses (via a mix of on-street spaces and off-street parking lots). It is conservatively estimated that approximately 175 on-street parking spaces are provided adjacent to non-residential land uses (approximately 6.6% of the total supply), with approximately 140 spaces currently priced (approximately 5.3% of the total supply).

  The SCAG ABM does not account for the presence of existing priced on-street parking within the Specific Plan area, therefore with the continued implementation of the City of Artesia's existing priced on-street parking, this measure is expected to reduce VMT within the Specific Plan area by 2.13%. Calculation of the VMT reduction for this strategy is provided in *Appendix C*. Decreases in the supply of free off-street public parking resulting from redevelopment of the identified parcels would potentially increase the effectiveness of this measure as the proportion of priced public parking in the area increases. Expansion of the priced on-street parking program to include all on-street parking spaces adjacent to non-residential land uses would also increase the effectiveness of this measure and lead to greater VMT reductions.

  The City of Artesia should continue to implement the priced on-street parking which currently exists within the Specific Plan area.

The TDM measures and associated VMT reductions described above are expected to result in a total VMT reduction of 2.95%. Calculation of the total VMT reduction for this strategy is provided in *Appendix C.* Application of the 2.95% VMT reduction to the proposed project's VMT forecast would therefore result in a project VMT of 25.55 VMT per service population (i.e., 26.33 * [1-

0.0295] = 25.55), which falls below the threshold of 25.63 VMT per service population. The mitigated VMT per service population, impact threshold, and percent reduction required (if any) under year 2024 conditions are summarized in ***Table 3-5***.

Table 3-5
Mitigated Project Impact Analysis

TAZ	PROJECT-GENERATED VMT/SP	THRESHOLD	REQUIRED REDUCTION
Year 2024	25.55	25.63	--

Implementation of the mitigation measures described above is therefore expected to reduce the proposed project's VMT impact to less than significant levels.

4.0 SUMMARY AND CONCLUSIONS

- ***Project Description*** **–** The Artesia Downtown Specific Plan would implement new land use, zoning, and development standards to guide the scale of future development and growth in Artesia's Downtown district as the city prepares for the planned expansion of the new Metro Southeast Gateway Light Rail Line that would connect southeastern Los Angeles County communities, including Artesia, to Downtown Los Angeles. There are no specific development projects proposed at this time. The Artesia Downtown Specific Plan proposes six (6) new land use zones within the Specific Plan area, which will allow for a range of residential density and Floor Area Ratio (FAR) intensity. The proposed project assumed for analysis purposes is based on the potential redevelopment of certain parcels within the specific plan area, which would result in the development of a total of 1,981 residential units, approximately 105,730 square feet of office space, and approximately 397,190 square feet of commercial space.

- ***Vehicle Miles Traveled Analysis*** **–** The proposed project's VMT per service population was forecast using the SCAG ABM. The proposed project is forecast to generate 26.33 VMT per service population in year 2024, which exceeds the threshold of 25.63 VMT per service population. The proposed project is therefore expected to result in a significant project-level VMT impact. The proposed project is forecast to generate 23.54 VMT per service population in year 2045, which is beneath the threshold of 23.69 VMT per service population. The proposed project is therefore not expected to result in significant cumulative VMT impact.

- ***Mitigation Measures*** **–** The proposed project is expected to result in a project-level VMT impact, and therefore mitigation measures are required to reduce the significant environmental impact to less than significant levels, or to the greatest extent possible if a less than significant impact cannot be achieved. Pursuant to the CAPCOA 2021 Handbook, the proposed project will implement the following mitigation measures:

    - <u>T-16. Unbundle Residential Parking Costs from Property Cost</u>: It is assumed that qualifying residential projects within the Specific Plan area will comply with the provisions of California Civil Code §1947.1 resulting from AB 1317 (2023, Carillo), which requires residential developments of 16 or more units located in Los Angeles County to unbundle parking from the cost of rent. A cost of $25.00 per month, or $300.00 per year, per leased parking space, is assumed for analysis purposes. The measure is expected to reduce VMT within the Specific Plan area by 0.84%. Greater monthly and annual parking costs would result in greater VMT reductions. No action is required by the City of Artesia to implement this measure, as project developers would be required to comply with all applicable State laws at the time of project entitlement.

- T-24. Implement Market Price Public Parking (On-Street): The City of Artesia currently provides priced on-street parking within the Specific Plan area, primarily along Pioneer Boulevard, 186th Street, and 187th Street. Based on a review of aerial photography of the Specific Plan area, approximately 5.3% of the total parking supply is currently priced. The SCAG ABM does not account for the presence of existing priced on-street parking within the Specific Plan area, therefore with the continued implementation of the City of Artesia's existing priced on-street parking, this measure is expected to reduce VMT within the Specific Plan area by 2.13%. Expansion of the priced on-street parking program to include all on-street parking spaces adjacent to non-residential land uses would lead to greater VMT reductions. The City of Artesia should continue to implement the priced on-street parking which currently exists within the Specific Plan area.

The TDM measures and associated VMT reductions described above are expected to result in a total VMT reduction of 2.95%. Application of the mitigation measures described above are expected to reduce the proposed project's project-level VMT impact to less than significant levels.

APPENDIX A

APPROVED TRANSPORTATION IMPACT STUDY SCOPE OF WORK

600 S. Lake Avenue
Suite 500
Pasadena, CA 91106
626.796.2322 T
www.llgengineers.com

Pasadena
Irvine
San Diego

MEMORANDUM

To:	Karen Lee, Special Projects Manager City of Artesia	Date:	April 5, 2024
From:	Grace Turney, P.E., RSP1 Francesca Bravo LLG Engineers	LLG Ref:	1-23-4585-1
Subject:	Artesia Downtown Specific Plan – Transportation Impact Study Scope of Work		

Linscott, Law and Greenspan, Engineers (LLG) is pleased to submit the following Transportation Impact Study Scope of Work for the Artesia Downtown Specific Plan (DTSP) project ("proposed project") for review and approval.

TRANSPORTATION IMPACT STUDY SCOPE OF WORK

The Transportation Impact Study (TIS) for the Artesia DTSP Environmental Impact Report (EIR) will be prepared according to the analysis and significance criteria outlined in the Los Angeles County Public Works "Transportation Impact Analysis Guidelines" ("Guidelines"), July 2020. In compliance with the Guidelines, the proposed TIS will be prepared using appropriate VMT screening, analysis methodologies, and thresholds of significance. The applicable non-CEQA site access and circulation studies set forth in the Guidelines will also be prepared and provided in a separate Local Transportation Assessment study.

PROJECT DESCRIPTION

A. Project Description: The TIS will evaluate the preferred CEQA Alternative Project: Redevelopment with Commercial Incentives Utilized (Density Bonus), as identified in the "Artesia Downtown Specific Plan Buildout Memo", dated December 11, 2023, prepared by PlaceWorks. The Artesia DTSP area is located within ½-mile of the future Metro Southeast Gateway Light Rail Line Pioneer Station. The identified Project includes land use and zoning changes that would allow for development of 1,981 new residential units and 502,919 square feet of new commercial and non-residential development. The proposed rezoning and identified potential future redevelopment parcels are displayed in ***Figure 1***. The proposed Project includes estimates for full redevelopment of selected sites. The Project assumes the development of commercial uses (at 20 percent of the land, assuming at least 2 stories) results in increased residential density through density bonus. The proposed buildout by proposed zone is summarized in ***Table 1*** below. The assumed buildout year for the proposed Project is year 2045.

Table 1
PROPOSED PROJECT BUILDOUT BY PROPOSED ZONE [1]

Proposed Zone	Maximum Buildout of Units on Selected Sites[1]
Station Mixed Use	150 DU
South Street Mixed Use	1,094 DU
Pioneer Boulevard Mixed Use	90 DU
183rd Street Mixed Use	634 DU
Downtown Housing (housing only)	13 DU
Mobile Home Park	0 DU
Commercial as Mixed Use[2]	502,936 SF
Total Residential	**1,981 DU**
Total Commercial	**502,919 SF**

1. On sites where commercial uses are identified for 20% of the site, the residential units total the density multiplied by the remaining acreage at 80%.
2. Commercial buildout assumes 20% of land at a minimum of 2 stories on selected sites in the South St. Mixed Use, 183rd St. Mixed Use, and the Pioneer Blvd. Mixed Use zones.

[1] Proposed Project Buildout provided by PlaceWorks, December 2023.

CEQA SCOPE OF WORK

B. Vehicle Miles Traveled (VMT) Screening: LLG has reviewed the screening criteria set forth in the Los Angeles County Guidelines. Projects which satisfy any one of the screening criteria can be determined to have a less than significant transportation impact without providing further VMT analysis. The Guidelines provide screening criteria based on daily trip generation, size of local-serving retail, proximity to high quality transit, and provision of affordable housing.

Based on a review of the screening criteria, the proposed Project is not expected to be screened from further VMT analysis. It is noted that the Artesia DTSP area falls within ½-mile of the future Metro Pioneer Station, and therefore potentially would qualify for the proximity to transit screening criteria. However, the Guidelines include secondary screening questions which require project-specific information (e.g., proposed Floor Area Ratio, proposed parking, consistency with RTP/SCS, and replacement of affordable housing with market-rate dwelling units). Since the answers to these questions cannot be determined at the redevelopment parcel-level during the preparation and adoption of the Artesia DTSP, and further since the proposed Specific Plan consists of rezoning of various parcels, it is conservatively concluded that the proposed Project does not meet the screening criteria, and will be required to provide quantitative VMT analysis in order to determine the significance of transportation impacts.

C. ***VMT Thresholds:*** According to the Los Angeles County Guidelines, a Land Use Plan has a potentially significant impact if it meets the criteria listed below:

- The plan total VMT per service population[1] (residents and employees) would not be 16.8% below the existing VMT per service population for the Baseline Area in which the plan is located.

D. ***VMT Methodology:*** The VMT analysis will be conducted using the Southern California Association of Governments' (SCAG) current Regional Travel Demand Model (RTDM), which includes a baseline year of 2016 and a future year of 2045. The proposed Project development totals will be converted into socio-economic data (SED). The SED for the appropriate Transportation Analysis Zones (TAZs) will be updated to reflect full buildout of the proposed project.

E. ***VMT Mitigation:*** If a significant transportation impact is identified through the above-described analysis, potential VMT mitigation measures will be identified which could reduce the VMT impact to less than significant levels. LLG will review the transportation demand management (TDM) strategies provided in the California Air Pollution Control Officer's Association (CAPCOA) *Handbook for Analyzing Greenhouse Gas Emissions Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (2021)*, which provides substantial evidence for calculating the reduction in VMT associated with each measure.

NON-CEQA SITE ACCESS STUDIES

LLG will prepare an operational analysis of nearby intersections in order to determine the proposed Project's effects on circulation in the vicinity of the Specific Plan area (i.e., vehicular delay and queueing). While not required for CEQA, the local transportation analysis is provided for informational purposes in support of the City of Artesia's discretionary review of the proposed Project.

F. ***Project Study Area:*** The following eight (8) study locations have been identified for intersection operational evaluation, including four (4) intersections in the vicinity of the specific plan area and four (4) freeway ramp intersections which will be analyzed for potential impacts to freeway off-ramp queuing (refer to *Item J* below). The study locations which have been selected are expected to be integral to access and circulation in the specific plan area. The location of the study intersections is presented in ***Figure 2***, and listed below:

1. Gridley Road/South Street (City of Cerritos)
2. Pioneer Boulevard/183rd Street (City of Artesia)

[1] Service population is the sum of the number of residents and the number of employees.

3. Pioneer Boulevard/187th Street (City of Artesia)
4. Pioneer Boulevard/South Street (City of Artesia)
5. I-605 Freeway Southbound Off-Ramp/South Street (City of Cerritos/Caltrans)
6. I-605 Freeway Northbound Off-Ramp/South Street (City of Cerritos/Caltrans)
7. Pioneer Boulevard/SR-91 Freeway Westbound Off-Ramp (City of Artesia/Caltrans)
8. Pioneer Boulevard/SR-91 Freeway Eastbound Off-Ramp (City of Artesia/Caltrans)

G. *Traffic Counts*

New traffic counts will be collected in April 2024, when local schools are in session. The manual intersection turning movement counts will be conducted during the weekday morning (7:00 to 9:00 AM) and afternoon (4:00 to 6:00 PM) peak commute periods for each of the eight study intersections identified in *Item F*.

H. *Project Trip Generation*

Traffic volumes to be generated by the proposed project were forecast for the weekday AM and PM peak hours, and over a 24-hour period. Trip generation rates provided in the Institute of Transportation Engineers' (ITE) Trip Generation Manual were utilized to forecast vehicular traffic generation for existing conditions, in order to identify the net change resulting from the proposed project. Specifically, the following land use trip rates were utilized to forecast the traffic volumes generated by the existing land uses present on each of the parcels identified for redevelopment:

- ITE Land Use 110: General Light Industrial
- ITE Land Use 210: Single-Family Detached Housing
- ITE Land Use 220: Multifamily Housing (Low Rise) (Not Close to Rail Transit)
- ITE Land Use 710: General Office Building
- ITE Land Use 821: Shopping Plaza (40-150K) (No Supermarket)
- ITE Land Use 822: Strip Retail Plaza (<40K)

The trip generation forecast for the existing land uses provided on the proposed rezone parcels is summarized in ***Table 2 – Existing Conditions Trip Generation Forecast***. It should be noted that the trip generation forecast was prepared based on four (4) transportation analysis subareas. The boundaries of the subareas were determined based on the intersection of the Artesia DTSP area and the Tier 2 TAZs utilized in the SCAG RTDM. The subareas are displayed in ***Figure 3***.

The following land use trip rates were utilized to forecast the traffic volumes expected to be generated by the proposed specific plan land uses on the redevelopment parcels:

- ITE Land Use 220: Multifamily Housing (Low-Rise) (Close to Rail Transit)

- ITE Land Use 310: Hotel
- ITE Land Use 710: General Office Building
- ITE Land Use 821: Shopping Plaza (40-150K) (No Supermarket)
- ITE Land Use 822: Strip Retail Plaza (<40K)
- ITE Land Use 931: Fine Dining Restaurant
- ITE Land Use 932: High-Turnover (Sit-Down) Restaurant

It should be noted that the trip generation rates utilized for forecasting purposes are based on single-use stand-alone sites in suburban contexts, which generate primarily vehicular traffic. However, in locations which have a variety of complimentary land uses, there is the potential for interaction among those uses, particularly where trips between uses can be made via active transportation modes such as walking or biking. Therefore, the total trip generation is typically less than the trips forecast for each land use as a stand-alone use.

A 25% trip reduction adjustment has been applied to the proposed project trip generation forecast for all proposed land uses in order to reflect the mixed-use nature of the proposed zoning and land use assumptions[2]. The adjustment accounts for the synergy among the specific plan land uses which is expected to result in increased activation and walkability in the Downtown Artesia area. The mixed-use nature of the proposed Specific Plan will allow for shorter trips between various land use components to be completed on foot or by bicycle, resulting in fewer vehicular trips than would be forecast for each land use component on a stand-alone basis.

In addition, a 10% adjustment has been applied to the proposed non-residential land uses in order to reflect the anticipated use of light-rail transit in the specific plan area upon completion of the Metro Southwest Gateway Line[3]. The specific plan area falls within 0.5-miles of the planned Southeast Gateway Line Pioneer Station. Similar to the existing use trip forecast, the proposed project trip forecast was prepared for each of the four (4) transportation analysis subareas.

The trips generated by the existing land uses on the redevelopment parcels are assumed to be removed in order to accommodate full build-out of the Specific Plan. Therefore, the existing trips have been applied as a credit towards the proposed project's trip generation forecast.

[2] LLG reviewed the methodology provided in NCHRP Report 684 in order to estimate the potential trip reductions which can be expected due to the mixed-use nature of the specific plan. The proposed mix of land uses would be expected to result in up to 50% fewer trips during the PM peak hour. A 25% trip reduction was applied to daily as well as AM and PM peak hour trips in order to provide a conservative trip forecast.
[3] A 10% transit reduction is consistent with typical practice in the Southern California region. Many agencies, including the City of Los Angeles, allow between 10 and 25% transit reductions for projects located within 0.5-miles of major transit facilities such as light rail stations. A 10% trip reduction was applied in order to provide a conservative trip forecast.

The trip generation forecast for the proposed project is summarized in ***Table 3 – Specific Plan Trip Generation Forecast***. As presented in *Table 3*, the proposed project is expected to generate 1,235 net new vehicle trips (520 net new inbound trips and 715 net new outbound trips) during the weekday AM peak hour. During the weekday PM peak hour, the proposed project is expected to generate 835 net new vehicle trips (634 net new inbound trips and 201 net new outbound trips). Over a 24-hour period, the proposed project is forecast to generate 5,421 net new trip ends during a typical weekday (approximately 2,711 net new inbound trips and approximately 2,710 net new outbound trips).

The net new vehicle trips will be assigned to the study locations. Distribution patterns will be prepared for residential and non-residential land uses for each transportation analysis subarea. The distribution patterns will be prepared based on the location and intensity of potential re-development sites within each subarea, and will reflect the anticipated turning movements at each location required to access each subarea.

I. Future Traffic Volume Forecasts

Future traffic volumes will be estimated based on the SCAG RTDM for future year 2045. The model data will be post-processed in order to determine future intersection turning movement volumes without the proposed project.

J. Caltrans Facilities Analysis

In compliance with CEQA, Caltrans also now requires VMT-based analysis of land use projects and plans. Caltrans' Vehicle Miles Traveled-Focused Transportation Impact Study Guidelines (dated May 20, 2020) states that Caltrans will review and comment on impact determinations which are consistent with OPR's Technical Advisory and State greenhouse gas (GHG) emissions goals. The VMT analysis prepared for the City of Artesia will be consistent with the Technical Advisory and State GHG goals, and therefore no separate VMT analysis will be prepared for Caltrans. However, Caltrans has also released the Interim Land Development and Intergovernmental Review (LD-IGR) Safety Review Practitioner's Guide (dated July 2020), which requires a detailed safety review for land use projects or plans which are expected to affect the State Highway System. Therefore, based on the specific plan's location and proximity to the I-605 and SR-91 Freeways, existing and future year analyses will be prepared for the I-605 Freeway/South Street and SR-91 Freeway/Pioneer Boulevard ramp intersections (Study Intersection Nos. 5-8 in *Item F* above) in order to address any potential impacts in accordance with the Interim LD-IGR Safety Review Practitioner's Guide.

K. Transportation Impact Study

LLG will prepare a Transportation Impact Study in technical memorandum format which summarizes the above-mentioned CEQA-compliant VMT impact analysis, including our analysis, findings, and conclusions. The Transportation Impact Study will be suitably documented with tables, figures, and appendix materials.

LLG will also prepare a separate Local Transportation Assessment in report format which summarizes the above-mentioned non-CEQA site access studies, including our analysis, findings, and conclusions. The Local Transportation Assessment will be suitably documented with tables, figures, and appendix materials.

Please feel free to call us at 626.796.2322 if you have any questions, comments or suggested revisions regarding the above. Thank you!

Attachments

c: Addie Farrell, PlaceWorks
Jennifer Kelly, PlaceWorks

Table 2
EXISTING USE TRIP GENERATION FORECAST [1]
Summary for All Subareas

ITE LAND USE CATEGORY	ITE LAND USE CODE	VARIABLE	WEEKDAY DAILY	WEEKDAY AM PEAK HOUR IN (%)	WEEKDAY AM PEAK HOUR OUT (%)	WEEKDAY AM PEAK HOUR TOTAL	WEEKDAY PM PEAK HOUR IN (%)	WEEKDAY PM PEAK HOUR OUT (%)	WEEKDAY PM PEAK HOUR TOTAL
TRIP GENERATION RATES [1]									
General Light Industrial	110	Per 1,000 SF	4.87	88%	12%	0.74	13%	87%	0.65
Single-Family Detached Housing	210	Per Dwelling Unit	9.43	26%	74%	0.70	63%	37%	0.94
Multifamily Housing (Low Rise) (Not Close to Rail Transit)	220	Per Dwelling Unit	6.74	24%	76%	0.40	63%	37%	0.51
General Office Building	710	Per 1,000 SF	10.84	88%	12%	1.52	17%	83%	1.44
Shopping Plaza (40-150K) (No Supermarket)	821	Per 1,000 SF	67.52	62%	38%	1.73	49%	51%	5.19
Strip Retail Plaza (<40K)	822	Per 1,000 SF	54.45	60%	40%	2.36	50%	50%	6.59

LAND USE	ITE LAND USE CODE	SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2] IN	AM PEAK HOUR VOLUMES [2] OUT	AM PEAK HOUR VOLUMES [2] TOTAL	PM PEAK HOUR VOLUMES [2] IN	PM PEAK HOUR VOLUMES [2] OUT	PM PEAK HOUR VOLUMES [2] TOTAL
PROJECT TRIP GENERATION FORECAST									
Subarea 1									
Multi-Family Residential	220	6 DU	40	0	2	2	2	1	3
Commercial General	822	38,231 SF	2,082	54	36	90	126	126	252
Service & Professional	710	3,252 SF	35	4	1	5	1	4	5
			2,157	*58*	*39*	*97*	*129*	*131*	*260*
Subarea 2									
Commercial General	821	89,366 SF	6,034	96	59	155	227	237	464
Subarea 3									
Single Family Residential	210	3 DU	28	1	1	2	2	1	3
Multi-Family Residential	220	9 DU	61	1	3	4	3	2	5
South Street Specific Plan [3]	710	40,170 SF	435	54	7	61	10	48	58
South Street Specific Plan [3]	821	40,170 SF	2,712	43	26	69	102	106	208
Commercial Planned Development	821	100,389 SF	6,778	108	66	174	255	266	521
Commercial General	821	79,581 SF	5,373	86	52	138	202	211	413
Light Industrial	110	26,379 SF	128	18	2	20	2	15	17
			15,487	*310*	*156*	*466*	*574*	*648*	*1,222*
Subarea 4									
Single Family Residential	210	1 DU	9	0	1	1	1	0	1
Commercial General	822	6,480 SF	353	9	6	15	22	21	43
			362	*9*	*7*	*16*	*23*	*21*	*44*
Total Existing Uses			***24,040***	***473***	***261***	***734***	***953***	***1,037***	***1,990***

[1] Source: ITE "Trip Generation Manual", 11th Edition, 2021.
[2] Trips are one-way traffic movements, entering or leaving.
[3] The South Street Specific Plan is assumed to consist of 50% service and professional land uses and 50% retail land uses.

Table 3
SPECIFIC PLAN TRIP GENERATION FORECAST [1]
Summary for All Subareas

TRIP GENERATION RATES [1]

ITE LAND USE CATEGORY	ITE LAND USE CODE	VARIABLE	WEEKDAY DAILY	WEEKDAY AM PEAK HOUR IN (%)	OUT (%)	TOTAL	WEEKDAY PM PEAK HOUR IN (%)	OUT (%)	TOTAL
Multifamily Housing (Low Rise) (Close to Rail Transit)	220	Per Dwelling Unit	4.72	29%	71%	0.38	60%	40%	0.61
Hotel	310	Per Room	7.99	56%	44%	0.46	51%	49%	0.59
General Office Building	710	Per 1,000 SF	10.84	88%	12%	1.52	17%	83%	1.44
Shopping Plaza (40-150K) No Supermarket	821	Per 1,000 SF	67.52	62%	38%	1.73	49%	51%	5.19
Strip Retail Plaza (<40K)	822	Per 1,000 SF	54.45	60%	40%	2.36	50%	50%	6.59
Fine Dining Restaurant	931	Per 1,000 SF	83.84	50%	50%	0.73	67%	33%	7.80
High-Turnover (Sit-Down) Restaurant	932	Per 1,000 SF	107.20	55%	45%	9.57	61%	39%	9.05

PROJECT TRIP GENERATION FORECAST

LAND USE	ITE LAND USE CODE	SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2] IN	OUT	TOTAL	PM PEAK HOUR VOLUMES [2] IN	OUT	TOTAL
Subarea 1									
Multi-Family Residential	220	203 DU	958	22	55	77	74	50	124
General Office	710	14,867 SF	161	20	3	23	4	17	21
Retail [3]	822	22,301 SF	1,214	32	21	53	74	73	147
Fine Dining Restaurant [4]	931	3,345 SF	280	1	1	2	17	9	26
High-Turnover (Sit-Down) Restaurant [4]	932	18,956 SF	2,032	100	81	181	105	67	172
Less 25% Mixed-Use TOD Adjustment [5]			(1,161)	(44)	(40)	(84)	(69)	(54)	(123)
Less 10% Transit Adjustment [6]			(369)	(15)	(11)	(26)	(20)	(17)	(37)
			3,115	*116*	*110*	*226*	*185*	*145*	*330*
Subarea 2									
Multi-Family Residential	220	431 DU	2,034	48	116	164	158	105	263
General Office	710	31,620 SF	343	42	6	48	8	38	46
Retail	821	47,430 SF	3,202	51	31	82	121	125	246
Fine Dining Restaurant [4]	931	7,115 SF	597	3	2	5	37	18	55
High-Turnover (Sit-Down) Restaurant [4]	932	40,315 SF	4,322	212	174	386	223	142	365
Less 25% Mixed-Use TOD Adjustment [5]			(2,625)	(89)	(82)	(171)	(137)	(107)	(244)
Less 10% Transit Adjustment [6]			(846)	(31)	(21)	(52)	(39)	(32)	(71)
			7,027	*236*	*226*	*462*	*371*	*289*	*660*
Subarea 3									
Multi-Family Residential	220	1,322 DU	6,240	146	356	502	484	322	806
Hotel	310	150 Rooms	1,199	39	30	69	45	44	89
General Office	710	77,592 SF	841	104	14	118	19	93	112
Retail	821	116,388 SF	7,859	125	76	201	296	308	604
Fine Dining Restaurant [4]	931	17,458 SF	1,464	7	6	13	91	45	136
High-Turnover (Sit-Down) Restaurant [4]	932	98,930 SF	10,605	521	426	947	546	349	895
Less 25% Mixed-Use TOD Adjustment [5]			(7,052)	(236)	(227)	(463)	(370)	(290)	(660)
Less 10% Transit Adjustment [6]			(2,197)	(80)	(55)	(135)	(100)	(84)	(184)
			18,959	*626*	*626*	*1,252*	*1,011*	*787*	*1,798*
Subarea 4									
Multi-Family Residential	220	25 DU	118	3	7	10	9	6	15
General Office	710	1,651 SF	18	3	0	3	0	2	2
Retail	822	2,476 SF	135	4	2	6	8	8	16
High-Turnover (Sit-Down) Restaurant [4]	932	2,476 SF	265	13	11	24	13	9	22
Less 25% Mixed-Use TOD Adjustment [5]			(134)	(6)	(5)	(11)	(8)	(6)	(14)
Less 10% Transit Adjustment [6]			(42)	(2)	(1)	(3)	(2)	(2)	(4)
			360	*15*	*14*	*29*	*20*	*17*	*37*
Subtotal Specific Plan Buildout			*29,461*	*993*	*976*	*1,969*	*1,587*	*1,238*	*2,825*
Less Existing Uses (Refer to Table 2)			(24,040)	(473)	(261)	(734)	(953)	(1,037)	(1,990)
NET NEW PROJECT TRIPS			***5,421***	***520***	***715***	***1,235***	***634***	***201***	***835***

[1] Source: ITE "Trip Generation Manual", 11th Edition, 2021.
[2] Trips are one-way traffic movements, entering or leaving.
[3] The size of this project component reflects the sum of all proposed square-footage in the subject area. Individual developments are anticipated to be less than 40,000 square feet, therefore the trip rates provided for ITE Land Use 822: Strip Retail Plaza (<40K) have been applied.
[4] The total restaurant space within each subarea was assumed to consist of 15% quality and fine dining restaurant space and 85% high-turnover (sit-down) restaurant space. Total restaurant space under 2,500 square feet was assumed to consist of high-turnover (sit-down) restaurant only.
[5] A 25% mixed-use adjustment has been applied to all specific plan land uses. The adjustment accounts for the synergistic nature of the proposed mixed-use zoning included in the specific plan, which is expected to result in increased walkability in the Downtown Artesia area. The mixed-use nature of the Specific Plan will allow for shorter trips between various land use components to be completed on foot or by bicycle, resulting in fewer vehicular trips compared to the trips which would be generated by the land use components on a stand-alone basis.
[6] A 10% transit adjustment has been applied to all non-residential land uses. The transit adjustment reflects the anticipated use of light-rail transit in the specific plan area upon completion of the Metro Southeast Gateway Light-Rail Line. It is noted that the Specific Plan area falls within 1/2 mile of the planned Artesia Station.

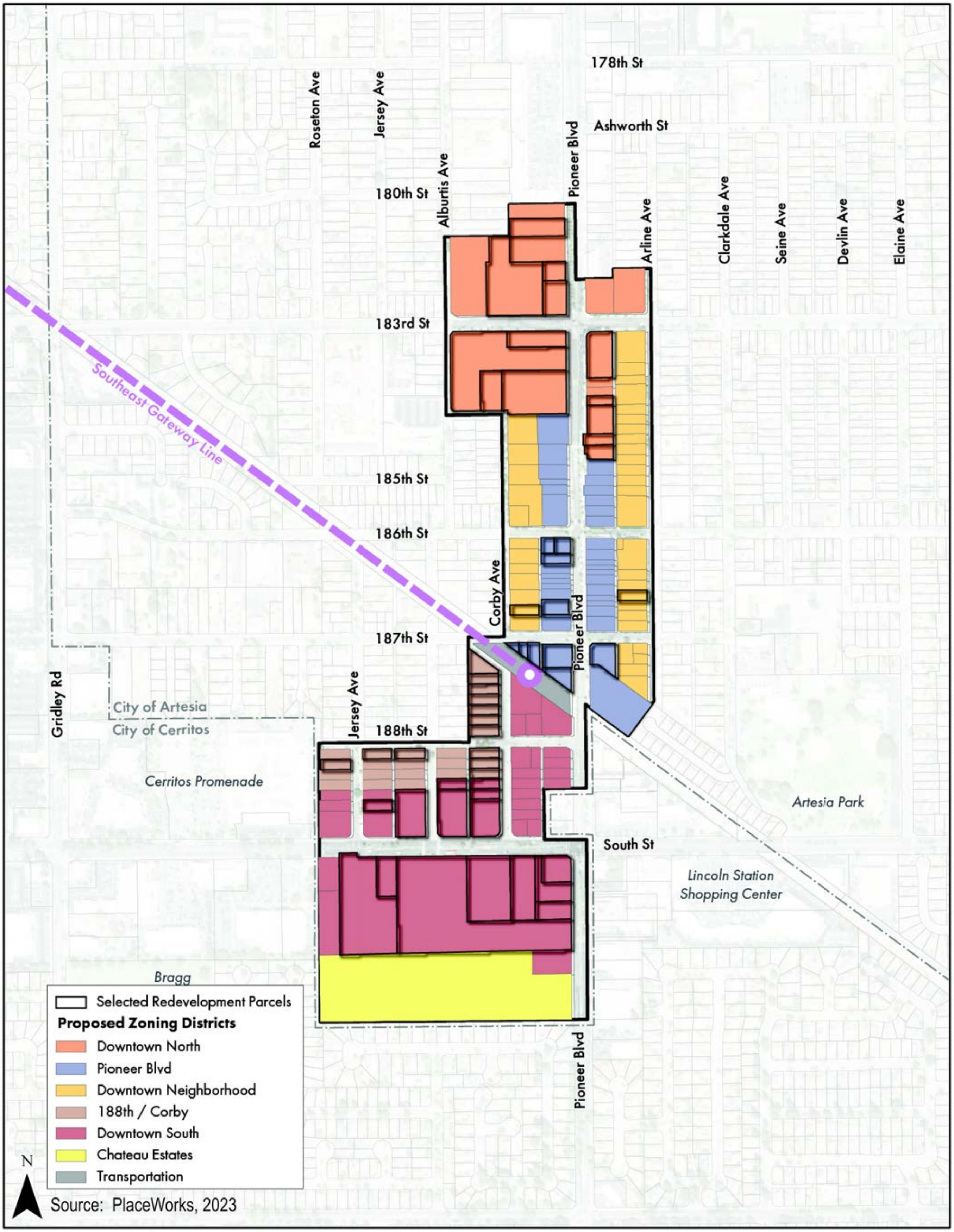
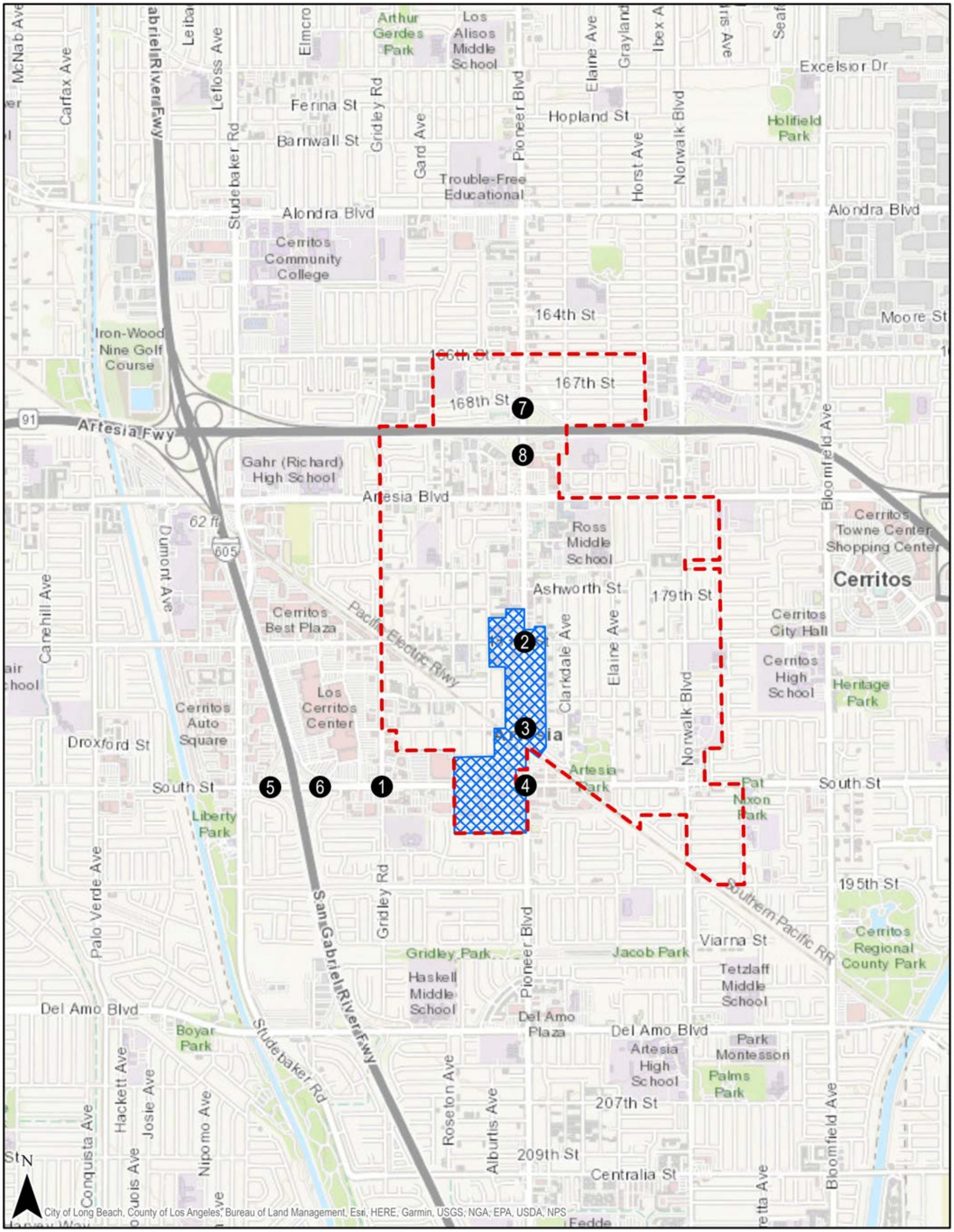


Figure 1
Proposed Zoning and Selected Redevelopment Parcels

Artesia Downtown Specific Plan



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● Study Intersection

City of Artesia

Specific Plan Area

Figure 2
Vicinity Map

Artesia Downtown Specific Plan

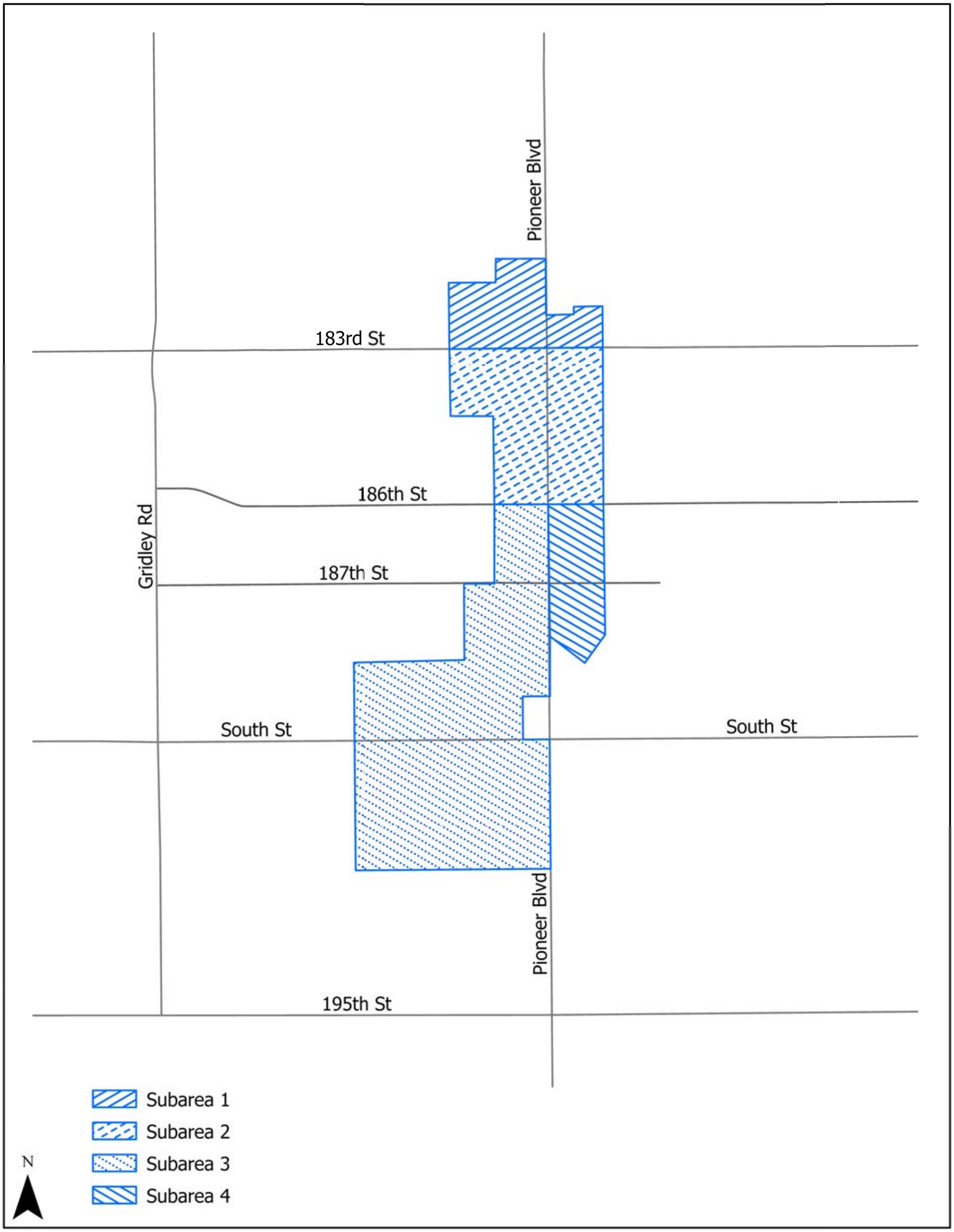

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Figure 3
Transportation Analysis Subareas

Artesia Downtown Specific Plan

APPENDIX B

VMT ANALYSIS CALCULATIONS

Appendix Table B-1
SUMMARY OF COUNTYWIDE VMT PER SERVICE POPULATION AND SIGNIFICANCE THRESHOLDS BY YEAR

	YEAR [1]		
	2016	**2024**	**2045**
Baseline OD VMT	470,679,733	--	485,385,391
Baseline SP	14,847,720	--	17,048,723
Baseline VMT/SP	31.70	30.81	28.47
Threshold (16.8% Below Baseline)	26.37	25.63	23.69

[1] Years 2016 and 2045 values obtained from the SCAG ABM baseline conditions. Year 2024 VMT/SP values are interpolated between years 2016 and 2045 VMT/SP.

Appendix Table B-2

SUMMARY OF VEHICLE MILES TRAVELED (VMT) MODELING RESULTS [1]

BASELINE YEAR 2016				
	TAZ (Tier 1) [2]	Service Population	Origin-Destination (OD) VMT	VMT per Service Pop.
Without Project [3]	21824000	8,711	271,640	
	21825000	9,639	281,830	
Total Without Project		*18,350*	*553,470*	*30.16*
With Project [4]	21824000	9,443	292,279	
	21825000	15,664	446,287	
Total With Project		*25,107*	*738,565*	*29.42*
Net Change Due to Project [5]	21824000	732	20,638	
	21825000	6,025	164,457	
Project-Generated VMT per Service Population		***6,757***	***185,095***	***27.39***

CUMULATIVE YEAR 2045				
	TAZ (Tier 1) [2]	Service Population	Origin-Destination (OD) VMT	VMT per Service Pop.
Without Project [3]	21824000	9,220	265,496	
	21825000	10,553	287,241	
Total Without Project		*19,773*	*552,737*	*27.95*
With Project [4]	21824000	9,903	278,276	
	21825000	16,393	428,028	
Total With Project		*26,296*	*706,304*	*26.86*
Net Change Due to Project [5]	21824000	683	12,780	
	21825000	5,840	140,787	
Project-Generated VMT per Service Population		***6,523***	***153,567***	***23.54***

[1] VMT analysis conducted with the SCAG ABM.

[2] Origin-Destination (OD) VMT is reported at the Tier 1 Transportation Analysis Zone (TAZ) level. Tier 1 TAZs are comprised of multiple Tier 2 TAZs.

[3] The Without Project results reflect the baseline model output without the addition of the proposed project.

[4] The proposed project was incorporated into the appropriate Tier 2 Transportation Analysis Zones (TAZs) and run in order to obtain the With Project modeling results at the Tier 1 level.

[5] The Without Project results have been subtracted from the With Project results in order to isolate the project-generated changes in service population (SP), origin-destination (OD) VMT, and VMT per SP.

Appendix Table B-3
SUMMARY OF PROJECT-GENERATED VMT PER SERVICE POPULATION BY YEAR

	YEAR [1]		
	2016	2024	2045
Project-Generated OD VMT	185,095	--	153,567
Project-Generated SP	6,757	--	6,523
Project-Generated VMT/SP	27.39	26.33	23.54

[1] Years 2016 and 2045 values obtained from the SCAG ABM, as presented in *Appendix Table B-2.* Year 2024 VMT/SP is interpolated between years 2016 and 2045 VMT/SP.

APPENDIX C

VMT MITIGATION MEASURE CALCULATIONS

VMT Reduction Summary
Near-Term Mitigation Analysis

Measure No.	Name	% VMT Reduction
Land Use		
	Land Use Subtotal (Project/Site Scale)	**0.00%**

Trip Reduction Programs		
	Trip Reduction Programs Subtotal (Project/Site Scale)	**0.00%**

Parking or Road Pricing/Management		
T-16	Unbundle Residential Parking Costs from Property Cost	0.84%
T-24	Implement Market Price Public Parking (On-Street)	2.13%
	Parking or Road Pricing/Management Subtotal	**2.95%**

Neighborhood Design		
	Neighborhood Design Subtotal (Plan/Community Scale)	**0.00%**

Transit		
	Transit Subtotal (Plan/Community Scale)	**0.00%**

Clean Vehicles and Fuels		
	Clean Vehicles and Fuels Subtotal	No VMT Reduction

Total VMT Reduction	**2.95%**

- $Reduction_{Subsector} = 1 - [(1-A) \times (1-B) \times (1-C) \times \ldots]$

  $where\ A, B, C, \ldots\ are\ the\ individual\ measure\ reduction\ percentages\ in\ each\ subsector$

- $Reduction_{Total} = 1 - [(1 - Land) \times (1 - Trip\ Reduction) \times (1 - Parking)\_$

  $\times (1 - Design) \times (1 - Transit)]$

Measure T-16. Unbundle Residential Parking Costs from Property Cost	
Subsector	Parking or Road Pricing/Management
Measure Scale	Project/Site
Maximum Reduction	15.7%

Project VMT Reduction Due to Unbundling Residential Parking Costs from Property Cost		
B	Annual parking cost per space ($ per year) [1]	$300.00
C	Average annual vehicle cost ($ per year) [2]	$12,182.00
D	Elasticity of vehicle ownership with respect to total vehicle cost	-0.4
E	Adjustment factor from vehicle ownership to VMT	1.01
A	VMT Reduction = (B/C) * D * E	1.0%
	VMT Reduction	***0.99%***
	VMT Reduction Utilized [3]	***0.84%***

[1] A cost of $25.00 per month (corresponding to $300.00 per year) is assumed for analysis purposes. Greater annual parking costs will result in greater VMT reductions.

[2] "Your Driving Costs 2023", American Automobile Association (AAA), 2023.

[3] It is assumed that qualifying residential projects within the Specific Plan area will comply with the provisions of California Civil Code Section 1947.1, which requires residential developments of 16 or more units located in Los Angeles County to unbundle parking from the price of rent. Based on the assumed redevelopment potential for each parcel indentified for full redevelopment, it is assumed that this requirement will apply to 1,668 of the total 1,981 units, or approximately 84.2% of the residential units. Therefore, the VMT reduction applied to the project-generated VMT is adjusted downward to reflect 84.2% of the calculated VMT reduction in order to apply the reduction at the Specific Plan scale.

Measure T-24. Implement Market Price Public Parking (On-Street)	
Subsector	Parking or Road Pricing/Management
Measure Scale	Plan/Community
Maximum Reduction	30.0%

Project VMT Reduction Due to Market Price Public Parking (On-Street)		
B	VMT in priced area without measure (VMT per day) [1]	[1]
C	VMT in plan/community without measure (VMT per day) [1]	[1]
D	Proposed parking price ($ per hour)	[2]
E	Initial parking price ($ per hour)	[2]
F	Default percentage of trips parking on street [3]	5.3%
G	Elasticity of parking demand with respect to price	-0.4
H	Ratio of VMT to vehicle trips	1
A	VMT Reduction = (B/C) * ([D - E]/E) * F * G * H	2.13%
	VMT Reduction	***2.13%***

[1] The measure applies to the full Specific Plan area. Therefore, a B/C ratio of 1.0 has been utilized in the equation in place of the (B/C) term.

[2] The travel demand model does not currently account for the presence of priced on-street parking. Therefore, the initial parking price is considered to be free under existing conditions. Pursuant to the CAPCOA 2021 Handbook, when parking is free, variable E should be set to half the value of variable D in order to produce a percentage increase in cost of 100%. A value of 100% has been utilized in the equation in place of the ([D - E]/E) term.

[3] Based on a review of aerial photography of the Specific Plan area (obtained from Google Earth, 2024), the Specific Plan area provides approximately 2,635 public parking spaces in support of the existing commercial and industrial land uses, including approximately 140 priced on-street parking spaces. Therefore, the priced on-street parking spaces represents approximately 5.3% of the parking supply.