City of SACRAMENTO

MITIGATED NEGATIVE DECLARATION

The City of Sacramento, California, a municipal corporation, does hereby prepare, declare, and publish this Mitigated Negative Declaration for the following described project:

Arena Brownstone Living Project (P22-026): The 11.96 gross-acre project site is located at 2599 Arena Boulevard, Sacramento, CA 95834 in the North Natomas community area of the City of Sacramento, Sacramento County. The project site, identified by Assessor's Parcel Numbers (APNs) 225-2950-001 and 225-2950-003 thru -007.

The proposed project would include construction of the Arena Brownstone Living project (Project), which consist of residential condominium units in the North Natomas Community Plan Area in the City of Sacramento on an 11.96-gross-acre site. Overall, the community is planned with 282 market-rate condominiums ranging from 625 square feet (sf) to 1,100 sf, with most units containing either a private patio or balcony. The project also includes a club house, pool, spa, fitness center, barbecue areas, linear park, community green, and dog park in a condominium community setting.

The Lead Agency is the City of Sacramento. The City of Sacramento, Community Development Department, has reviewed the proposed project and, on the basis of the whole record before it, has determined that there is no substantial evidence that the project, with mitigation measures as identified in the attached Initial Study, will have a significant effect on the environment. This Mitigated Negative Declaration reflects the lead agency's independent judgment and analysis. An Environmental Impact Report is not required. This Mitigated Negative Declaration has been prepared pursuant to the California Environmental Quality Act (Public Resources Code [PRC] Sections 21000 et seq.), CEQA Guidelines (Title 14, Sections 15000 et seq. of the California Code of Regulations), the Sacramento Local Environmental Regulations (Resolution 91-892), and the Sacramento City Code.

Due to concerns over COVID-19, the City of Sacramento, Community Development Department's Public Counter, at 300 Richards Boulevard, 3rd Floor, Sacramento, CA 95811 is open by appointment on Tuesdays and Wednesdays. A copy of this document and all supportive documentation may be reviewed through the City's website at https://www.cityofsacramento.org/Community-Development/Planning/Environmental/ Impact-Reports.

Environmental Services Manager, City of Sacramento, California, a municipal corporation

By: Scott Johnson

Date: September 20, 2022

Draft

ARENA BROWNSTONE LIVING PROJECT

Initial Study

Prepared for
The City of Sacramento

September 2022

2600 Capitol Avenue
Suite 200
Sacramento, CA 95816
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www.esassoc.com

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202200150

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ENVIRONMENTAL CHECKLIST

Arena Brownstone Living Project

Section 1 Background

1. **Project Title and File Number:** Arena Brownstone Living Project (P22-026)
2. **Lead Agency Name and Address:** City of Sacramento, 300 Richards Blvd., 3rd Floor, Sacramento, CA 95811
3. **Project Planner & Phone Number:** Jose Quintanilla, Associate Planner, (916) 808-5879
4. **Environmental Staff & Phone Number:** Ron Bess, Associate Planner, (916) 808-8272
5. **Project Location:** 2599 Arena Boulevard, Sacramento, CA 95834
6. **Project Sponsor's Name and Address:** Innovate Natomas, a Brooks Street company
   2894 S. Coast Hwy., Unit 1
   Laguna Beach CA 92651
7. **General Plan Designation(s):** Urban Center High
8. **Zoning:** Employment Center – 40 – Arena Corporate Center Planned Unit Development (EC-40-PUD)
9. **Description of Project:**

The Arena Brownstone Living project (Project) proposes residential condominium units in the North Natomas Community Plan Area in the City of Sacramento on an 11.96-acre site, see **Figure 1-1***, Regional Location*. Overall, the community is planned with 282 market-rate condominiums ranging from 625 square feet (sf) to 1,100 sf, with most units containing either a private patio or balcony. The Project also includes a club house, pool, spa, fitness center, barbecue areas, linear park, community green, and dog park in a condominium community setting. For further details, see Section 2, *Project Description*.

10. Project Current Land Use and Zoning:

The current General Plan land use designation for the Project site is Urban Center High, reflecting its previous entitlements for office buildings and related facilities, and the site is zoned as Employment Center (EC-40) under the Arena Corporate Center PUD. The project proposes residential uses that would require a Conditional Use Permit per the terms of the PUD.

11. Surrounding Land Uses and Setting:

The approximately 9.57-acre site is bounded by Arena Boulevard to the south, Towne Place Suites hotel to the west, the existing Sports Parkway to the north, and the Ashton Parc Apartments to the east.

The project site is about a third of a mile from the Centene Campus Natomas, which lies northwest of the proposed site with other employment uses. The future California Northstate University Medical Center and campus, as well as the recently approved Innovation Park PUD, are immediately north of the Project site Additionally, Natomas Charter School Star Academy lies about a third of a mile southeast of the site. See **Figure 1-2**, *Project Location and Surrounding Area.*

12. Other public agencies whose approval is required:

This Initial Study-Mitigated Negative Declaration would provide the City (the CEQA Lead Agency), responsible agencies, and the general public with relevant environmental information to use in considering the proposed Project. The following approvals are anticipated:

- City of Sacramento Community Development: Conditional Use Permit to exceed the 25% residential threshold in the EC zone within the Arena Corporate Center PUD
- City of Sacramento Community Development: Planned Unit Development Schematic Plan Amendment
- City of Sacramento Community Development: Tentative Map to subdivide the property into 282 condominium units
- City of Sacramento Community Development: Site Plan and Design Review Approval

13. 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.?

On May 31, 2022 notices, pursuant to Public Resources Code section 21080.3.1 (AB 52) were delivered to the tribes that have previously requested to receive such notification. None of the tribes noticed responded requesting consultation and thus consultations are closed.

SOURCE: Esri, 2022; ESA, 2022

Natomas Arena Brownstone Living

Figure 1-1
Regional Location

ESA

SOURCE: Esri, 2022; ESA, 2022

Natomas Arena Brownstone Living

Figure 1-2
Project Location and Surrounding Area

ESA

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

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial study:

☐ 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.

Ron Bess — 9-20-2022

Signature — Date

Signature — Date

Section 2 Project Description

The project proposes market-rate residential condominium units in the North Natomas Community Plan Area in the City of Sacramento. The project consists of various three-story walk-up residences in one of two building types – either a three-story "U"-shaped building with a rear motor court or a three-story linear building with rear parking. The residences within the buildings will include a combination of studios, one-, and two-bedroom units. Overall, the community is planned with 12 residential buildings containing 282 homes ranging from 625 to 1,100 square feet.

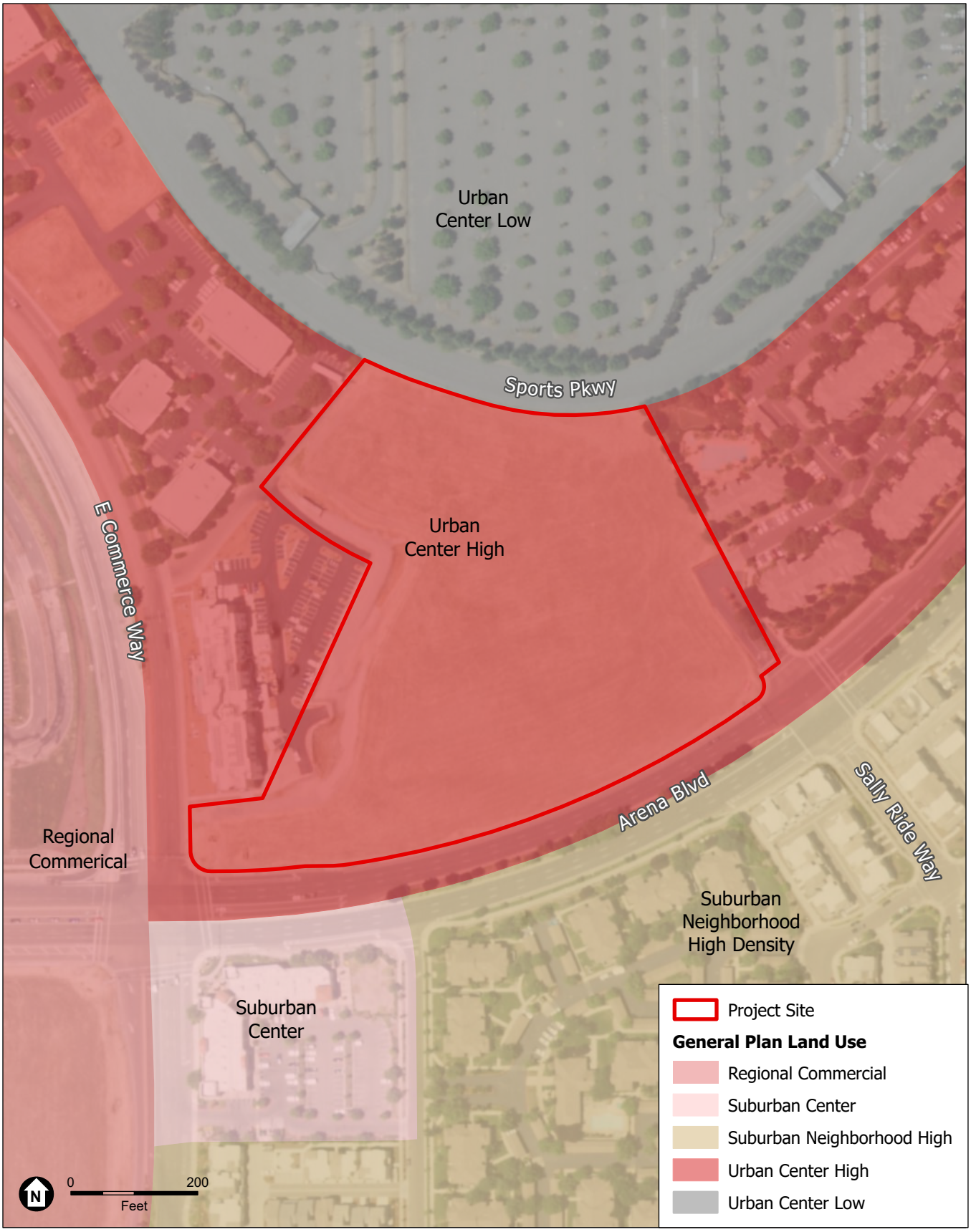
Project Location

The project site is located within the City of Sacramento's Arena Corporate Center Planned Unit Development ("PUD") in the North Natomas Community Plan Area (see Figure 1-2 Project Location and Surrounding Map). The approximately 9.57-net acre site is bounded by Arena Boulevard to the south, Towne Place Suites hotel to the west, the existing Sports Parkway to the north, and the Ashton Parc Apartments to the east. The Project proposes the construction of 12 buildings throughout the Property, which will be double-loaded along two internal east-west private drive isles. The Project's major community amenities—including a club house, pool, spa, fitness center, barbeque areas, linear park, community green, and dog park—would be centrally located in an open space area that spans the width of the property. In addition to providing vehicular access to the residential buildings, the drive isles also provide detached enclosed garages, guest parking spaces, trash enclosures, and facilitate north/south internal pedestrian connectivity.

The proposed residential community is located within the direct vicinity of surrounding employment uses, such as the Innovation Park PUD and the Centene Campus Natomas to the north, as well as proposed offices to the northwest. The future California Northstate University medical center and medical campus, along with the future Innovation Park project, is located immediately north of the Project site. The larger Project site received land use entitlements in 2017 for a hotel, office buildings and related facilities. The hotel development is now complete, and the office parcels (upon which the Project will be developed) remain undeveloped and vacant. Given the ongoing decline in economic viability of new office development in the post-Covid 19 environment, the Project Applicant is looking to re-entitle the property for residential uses.

Vehicular access to the property is provided via two existing entries off Arena Boulevard and East Commerce Way, which will facilitate access to nearby development. The main Project entry is provided to the site from Sally Ride Way off of Arena Boulevard.

The project site has a City of Sacramento 2035 General Plan land use designation of Urban Center High and the current zoning is under the Arena Corporate Center Planned Unit Development (PUD)**,** as illustrated in **Figure 2-1**, *Existing and Proposed General Plan Land Use Designation*, and **Figure 2-2**, *Existing and Proposed Zoning*.

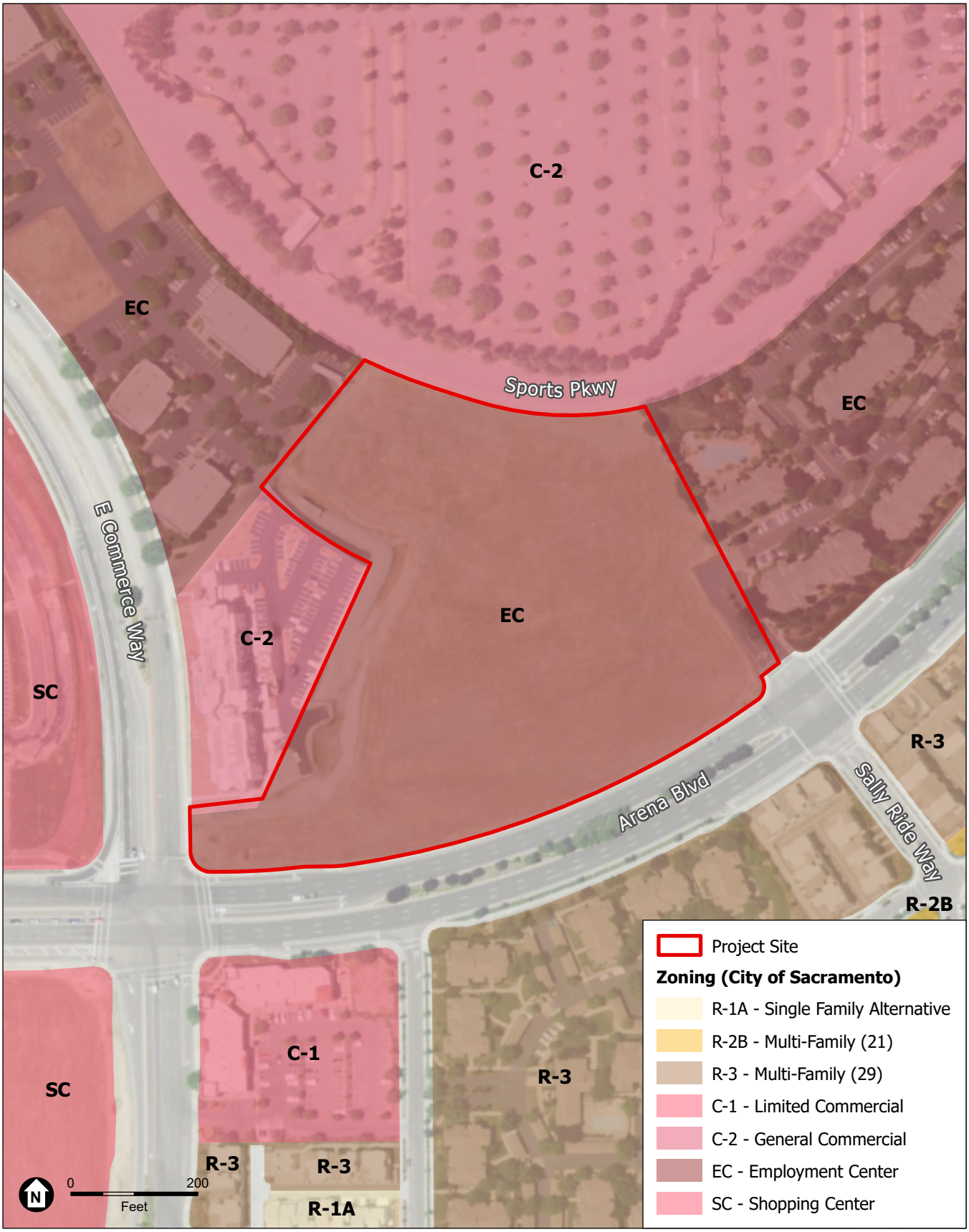


SOURCE: NAIP, 2020; City of Sacramento, 2022; ESA, 2022

Natomas Arena Brownstone Living

Figure 2-1
Existing and Proposed General Plan Land Use Designation

ESA



SOURCE: NAIP, 2020; City of Sacramento, 2022; ESA, 2022

Natomas Arena Brownstone Living

Figure 2-2
Existing and Proposed Zoning

ESA

Project Characteristics

The proposed Project is seeking the following entitlements:

- Conditional Use Permit to exceed the 25% residential threshold in the EC zone within the Arena Corporate Center PUD
- Planned Unit Development Schematic Plan Amendment
- Tentative Map to subdivide the property into 282 condominium units
- Site Plan and Design Review Approval

As seen in **Figure 2-3**, *Preliminary Site Plan*, the residential community of 282 homes, detached enclosed garages, and community amenities such as a linear park, community green, club house, and pool, are planned in a community setting with associated landscaping and infrastructure. Proposed dwelling units would range in size from 625 to 1,100 square feet.

The Project's gross acreage is 11.96 acres, which includes adjacent roadways to their centerlines. The total area of ground disturbance would be 9.57 acres,[1] resulting in a gross density of 29.5 dwelling units per acre. The net buildable area for buildings and structures (minus the conjunctive use areas[2]) is 7.97 acres, resulting in a net density of 35.4 dwelling units per acre.

The Project would include 485 total parking spaces. Parking spaces would include 222 spaces in garages, 142 spaces in independent garages, and 121 uncovered spaces plus one for postal and delivery.

The Project would also include 29 short-term bicycle parking spaces spread throughout the Project site, including in the conjunctive use area. Two long-term bicycle storage facilities, approximately 200 square feet each, would be provided onsite for residents' use. Additionally, each private parking garage would have space for resident bicycle storage.

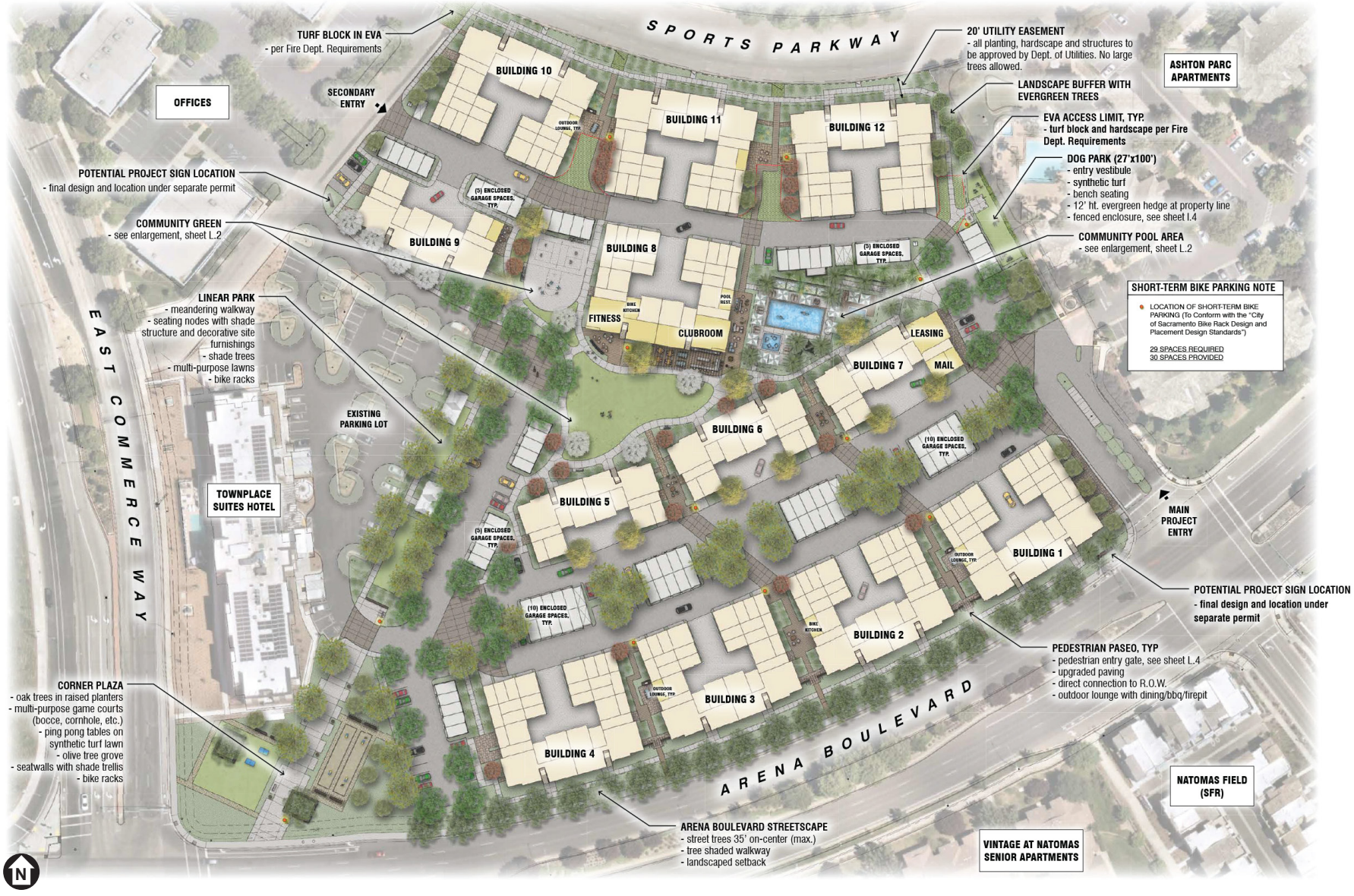
Unit Design

The proposed condominium units are designed to include three-story walk-up residences in one of two building types – either a three- story "U"-shaped building with a rear motor court or a three-story linear building with rear parking.

The residences within the buildings will include a combination of studios, one-, and two-bedroom units. Most units will have either a private patio or balcony. The buildings also contain a ground floor lounge and 2nd and 3rd floor private storage spaces. Both the motor court and rear parking areas are positioned to the site's interior, while the highly articulated front elevations face the two major arterials. The buildings are elevated in a traditional East Coast brownstone architectural vernacular, with this strong elevational theme facing the public streets and the hotel.

1 The area of ground disturbance includes 10,000 sf of community green; 5,000 sf for the pool area; 5,000 sf for play courts; and seven building courtyards totaling 8,400 sf.

2 Conjunctive use areas include the public plaza at the northwest corner of the Arena Boulevard / East Commerce Way intersection, the linear park, and associated parking. This area totals approximately 1.6 acres.



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SOURCE: Canyon Park Studio, 2022

Natomas Arena Brownstone Living

Figure 2-3
Preliminary Site Plan

ESA

Access and Circulation

The primary access to the Project site would be from Sally Ride Way from Arena Boulevard to the southeast of the Project site, as illustrated in Figure 2-3, *Preliminary Site Plan* and **Figure 2-4**, *Preliminary Architectural Plan*. Additionally, secondary vehicular access to the property would be provided via East Commerce Way. Both existing entries currently provide access to the adjacent hotel and apartments. Due to the property's adjacent location to the old Sleep Train Arena site, major roadways such as East Commerce Way and Arena Boulevard are equipped to accommodate heavy circulation near the Project site.

Additional pedestrian and bicycle access to the Project site would be provided via the gated pedestrian entry on Arena Boulevard. Multiple paseos and community walkways would allow pedestrians to circulate to each of the proposed buildings. In addition, the secondary entry connecting to the site from East Commerce Way will provide pedestrian access to nearby hotel offices northwest of the site. Private access gates would also allow pedestrian and bike traffic to the future California Northstate University Medical Center and campus north of the site. These circulation alternatives would facilitate transportation for Arena Brownstone Living residents who work in surrounding areas of employment.

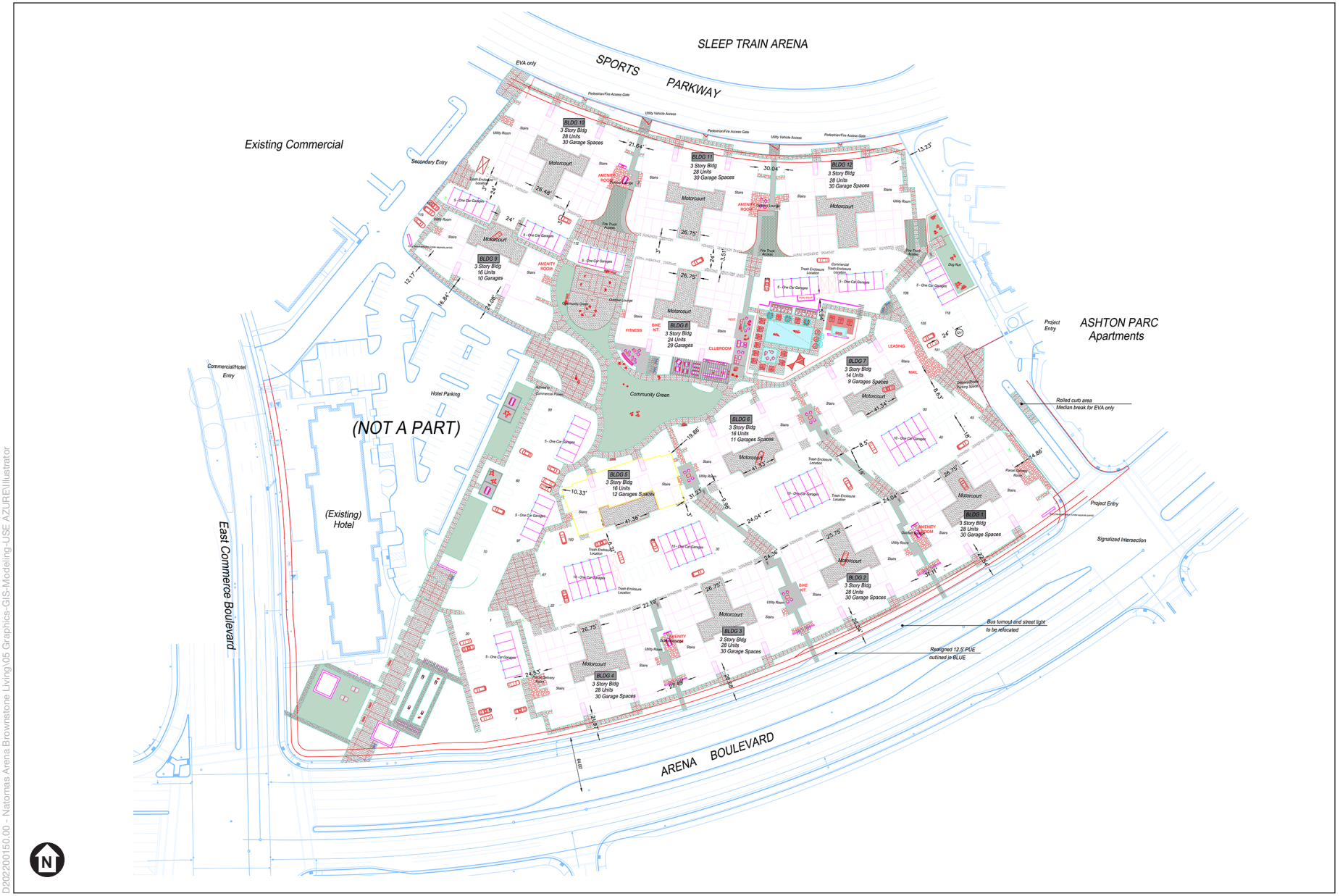
Emergency access would be provided to emergency vehicles through the northwest corner of the Project site, adjacent to the western edge of Sports Parkway.

Common Recreation Areas

The proposed Project would include common areas for recreation, situated near the center of the Project site. The major community amenities would include a club house, pool, spa, fitness center and sport court, barbeque areas, central green, linear park, corner plaza, and dog park.

The proposed Project would include a large programmed public open space area beginning at corner of Arena Boulevard and East Commerce Way and traversing northeast, approximately two thirds of the way to Sports Parkway. The proposed corner plaza would begin at this southwest corner of the Project site and continue toward the linear park moving northeast. This privately-owned, publicly-accessible open space would provide a passive partition between the existing hotel and the proposed residential community and would include conjunctive uses for the greater community, such as multi-purpose game courts (i.e., bocce, ping pong tables, cornhole), picnic areas, shaded areas, bike racks, and an enhanced hardscape and landscape area design. This combined plaza and park area would be publicly accessible to serve residential and office uses nearby.

In total, the proposed Project would include seven garden courtyards between the adjacent residential buildings, with each courtyard measuring about 3,000 square feet in size. The garden courtyards will include outdoor lounge areas, barbecues, and intimate gathering spaces for building residents, as well as facilitate internal pedestrian circulation to connect each of the buildings to the central community open space and public conjunctive use area.



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SOURCE: Preliminary Architectural Plan

Natomas Arena Brownstone Living

Figure 2-4
Preliminary Architectural Plan

ESA

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SOURCE: IDEArc, 2022

Natomas Arena Brownstone Living

Figure 2-5
Preliminary Schematic Plan

ESA

Landscaping

The proposed Project will be visible and accessible from Arena Boulevard, and will include a detailed landscape plan, as illustrated in **Figure 2-6,** *Preliminary Landscape Plan*. The plan will include outdoor light fixtures, which will be used to illuminate architectural and landscape features, as well as an irrigation system designed for water conservation and in compliance with applicable municipal codes. Proposed landscaping will also include the previously mentioned community green and garden courtyards, a variety of trees and shrubs, and other features.

Several types of trees and shrubs will be dispersed throughout the Project site, providing shade to proposed outdoor facilities and walkways. For instance, the northeastern corner of the Project site will be composed of a landscape buffer with evergreen trees. The streetscape along Arena Boulevard will be lined with a tree-shaded walkway and a landscaped setback.

The project signage is proposed to be located at both project site entrances, in order to be visible to residents and visitors arriving from both East Commerce Way and Arena Boulevard. The proposed pedestrian entry gate would be located adjacent to the main project entry at Sally Ride Way/Arena Boulevard. Pedestrian access and Department of Utility maintenance gates would line the northern edge of the Project site adjacent to Sports Parkway.

Parking

Parking for the residences would be a combination of attached garages within the residential buildings, detached enclosed garages, and uncovered guest spaces. The detached garages would be combined into single five- or ten-car garage buildings, and each garage space within the building would have its own garage door and private parking space. The detached garage buildings are anticipated to include rooftop solar panel arrays for passive onsite energy generation. In total, the proposed Project would include 485 parking spaces. Parking spaces would include 229 spaces in garages, 142 spaces in independent garages, and 121 uncovered spaces, plus one for postal and delivery.

There would be 29 short-term bike parking spaces scattered throughout the site. Bicycle racks would be located near the fitness terrace to encourage residents and visitors to ride bikes and use the paseos. Two long-term bicycle storage facilities, 200 square feet each, would be provided onsite. Each onside private garage would also have space available for long-term bicycle parking.

Site Preparation and Construction

As the proposed Project site is currently vacant and undeveloped, development would commence with clearing the existing vegetation, grading the site, and trenching and digging for underground utilities. Construction of the internal roadways, pads for buildings, sidewalks, driveways, buildings, recreational facilities, and landscaping will follow the site preparation.

Project construction will begin in Fall 2023 and is expected to last for a period of approximately 18 months.

SHADE CALCULATIONS

BOTANICAL NAME	COMMON NAME	QTY	SHADE	25%	50%	75%	100%	TOTALS
Quercus coccinea Quercus rubra (35' DIA)	Scarlet Oak Red Oak	58	962 SF	2 x 240 = 480	22 x 481 = 10,582	18 x 722 = 12,996	16 x 962 = 15,392	39,450
Ginkgo biloba (30' DIA)	Maidenhair Tree	6	491 SF	0 x 177 = 0	6 x 354 = 2,124	0 x 530 = 0	0 x 706 = 0	2,124
Cercis canadensis Lagerstroemia indica (20' DIA)	Eastern Redbud Crape Myrtle	5	491 SF	0 x 79 = 0	5 x 157 = 785	0 x 236 = 0	0 x 314 = 0	785

82,992 SF HARDSCAPE AREA REQUIRING 50% SHADE

82,992 x 50% = | 41,496 SF SHADE REQUIRED

42,359 SF SHADE PROVIDED

CONCEPTUAL PLANT SCHEDULE (TREES)

TREES	BOTANICAL NAME	COMMON NAME	SIZE	WUCOLS
	Cercis canadensis 'Forest Pansy'	Forest Pansy Eastern Redbud	24" Box	Moderate
	Ginkgo biloba 'Autumn Gold' TM	Autumn Gold Maidenhair Tree	24" Box	Moderate
	Lagerstroemia indica x fauriei 'Tuscarora'	Tuscarora Crape Myrtle	24" Box	Low
	Laurus x 'Saratoga'	Saratoga Hybrid Laurel	24" Box	Low
	Olea europaea 'Swan Hill' TM	Swan Hill Olive	24" Box	Low
	Phoenix dactylifera	Date Palm	18' BTH	Moderate
	Pinus canariensis	Canary Island Pine	24" Box	Low
	Quercus coccinea	Scarlet Oak	24" Box	Moderate
	Quercus rubra	Red Oak	15 gal.	Moderate
	Quercus virginiana	Southern Live Oak	24" Box	Moderate

GENERAL PLANTING NOTES

WATER CONSERVING LANDSCAPE WILL BE UTILIZED AS REQUIRED BY MUNICIPAL CODE AND STATE MANDATE SB1881 AND COMPLY WITH THE FOLLOWING CRITERIA

1. MAINTAIN SHRUBS AT 24" HIGH INSIDE VEHICULAR LINE-OF-SIGHT.
2. ROOT BARRIERS ARE REQUIRED FOR ALL TREES WITHIN 7' OF HARDSCAPE.
3. ALL PLANTING LOCATED ADJACENT A PARKING STALL WHERE THERE IS A BUMPER OVERHANG SHALL UTILIZE LOW-GROWING PLANT MATERIAL AS TO NOT IMPEDE PARKING FUNCTIONALITY.
4. PLANTING WITHIN STORM WATER TREATMENT AREAS WILL BE AN APPROPRIATE SPECIES THAT IS ADAPTED TO WET-DRY CONDITIONS.
5. EVERGREEN SCREEN PLANTING SHALL BE UTILIZED ADJACENT TRANSFORMERS AND UTILITIES VISIBLE FROM PUBLIC AND COMMON SPACES.
6. ALL SHRUB PLANTER AREAS TO RECEIVE 3" BARK MULCH.

CONCEPTUAL PLANT SCHEDULE (SHRUBS)

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	WUCOLS	SIZE (H x W)
SHRUBS, VINES & GROUNDCOVER					
	LARGE SHRUBS				
	Agave americana	Century Plant	5 gal.	Very Low	6' x 6'
	Cercis occidentalis	Western Redbud	15 gal.	Low	15' x 10'
	Dodonaea viscosa 'Purpurea'	Hopseed bush	5 gal.	Low	12' x 6'
	Pittosporum sp.	Mock Orange	5 gal.	Moderate	varies
	Prunus laurocerasus 'Otto Luyken'	Cherry Laurel	5 gal.	Moderate	5' x 7'
	MEDIUM SHRUBS				
	Arbutus unedo 'Compacta'	Compact Strawberry Bush	5 gal.	Low	6' x 5'
	Callistemon 'Little John'	Little John Bottlebrush	5 gal.	Low	4' x 5'
	Cistus x purpureus	Orchid Rockrose	5 gal.	Low	4' x 5'
	Dietes vegeta	African Iris	5 gal.	Low	3' x 1'
	Ilex cornuta 'Carissa'	Carissa Holly	5 gal.	Moderate	3' x 4'
	Nandina domestica	Heavenly Bamboo	5 gal.	Moderate	3' x 3'
	Rhaphiolepis sp.	Indian Hawthorne	5 gal.	Low	4' x 4'
	Rosa sp. (groundcover carpet var.)	Flowering Carpet Rose	1 gal.	Moderate	2' x 3'
	SMALL SHRUBS & GROUNDCOVERS				
	Arctostaphylos 'Woods Compact	Groundcover Manzanita	1 gal.	Low	1' x 6' 36" o.c. max.
	Baccharis pilularis 'Pigeon Point'	Dwarf Coyote Bush	1 gal.	Low	0.5' x 6' 36" o.c. max.
	Myoporum parvifolium	Myoporum	1 gal.	Low	0.5' x 4' 24" o.c. max.
	Rosmarinus officinalis 'Huntington Carpet'	Huntington Carpet Rosemary	1 gal.	Low	2.5' x 5' 36" o.c. max.
	Trachelospermum jasminoides	Star Jasmine	1 gal.	Moderate	2' x 5' 36" o.c. max.
	VINES				
	Ficus pumila	Creeping Fig	5 gal.	Moderate	up to 25'
	Jasminum polyanthum	Pink Jasmine	5 gal.	Moderate	up to 20'
	Rosa banksiae 'Lutea'	Lady Banks Rose	5 gal.	Low	up to 15'
	GRASSES				
	Calamagrostis x acutiflora 'Karl Foerster'	Feather Reed Grass	5 gal.	Low	5' x 3'
	Carex divulsa	Berkeley Sedge	1 gal.	Low	1' x 1'
	Festuca glauca 'Elijah Blue'	Blue Fescue	1 gal.	Low	1' x 1'
	Muhlenbergia capillaris	Pink Muhly	5 gal.	Low	3' x 3'
	Muhlenbergia rigens	Deer Grass	5 gal.	Low	5' x 5'
TURF					
	Natural Turf at Central Amenity Area			High	

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SOURCE: IDEArc, 2022

Natomas Arena Brownstone Living

Figure 2-6
Preliminary Landscape Plan

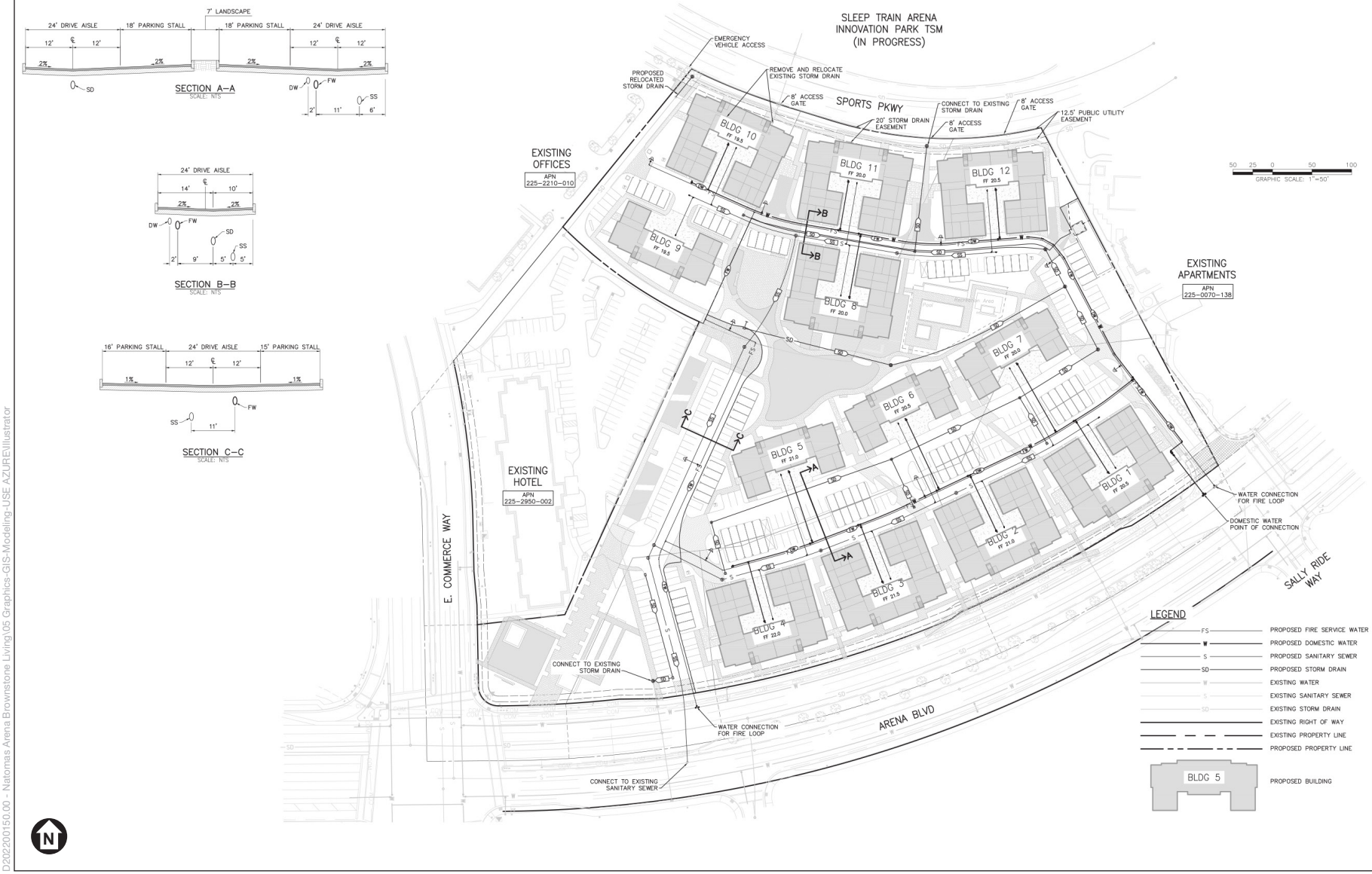
ESA

Utilities

The Project site would be served by domestic water and sewer from public mains extended and connected to the City of Sacramento system, as shown in **Figure 2-7,** *Preliminary Utility Plan*. Existing water, sanitary sewer, communications, and storm drain facilities are located along the north of the Project site near the existing Sports Parkway, and along the southern edge of the Project site at Arena Boulevard.

The Sacramento Area Sewer District's (SASD) local sanitary sewer collection system and water service systems would provide these respective utility connections to the Project. An existing 20-foot storm drain easement is located at the northeast corner of the site. All planting, hardscape, and structures would be approved by the Department of Utilities.

One existing storm drain currently located under future Building #10 would be relocated to the northwest corner of the site and reconnected to the existing downstream system.



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SOURCE: RICK Engineering Company, 2022

Natomas Arena Brownstone Living

Figure 2-7
Preliminary Utility Plan

ESA

Section 3 Environmental Checklist

3.1 Aesthetics

Issues (and Supporting Information Sources):		*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?	☐	☐	☐	☒
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c)	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d)	Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	☐	☐	☒	☐

Environmental Setting

The proposed Project site is located within North Natomas in the City of Sacramento. The approximately 9.57-acre site is currently undeveloped and vacant (Figure 1-2), and is surrounded by Arena Boulevard to the south, Towne Place Suites hotel to the west, the existing Sports Parkway to the north, and the Ashton Parc Apartments to the east.

Discussion

a-b) ***No Impact.*** There are no scenic vistas on or near the proposed Project site, nor are any officially recognized scenic highways present in proximity to or visible from the site.[3,4] As a result, the proposed Project would not result in impacts to a scenic vista or highway.

c) ***Less than Significant.*** The proposed Project site is currently vacant, and is bounded by Arena Boulevard to the south, Towne Place Suites hotel to the west, Sports Parkway to the north, and the Ashton Parc Apartments to the east.

Implementation of the proposed Project would result in the conversion of vacant land to developed residential uses with buildings up to three stories tall, and would therefore include alteration of the visual character of the Project area. Additionally, existing views of the Project site, as a vacant lot, visible to pedestrians and from travel along Arena Boulevard, would be affected by development of the proposed Project. As the proposed

[3] California Department of Transportation. California State Scenic Highway System Map. Available: https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=026e830c914c495797c969a3e5668538.

[4] California Department of Transportation, 2019. List of eligible and officially designated State Scenic Highways. July 2019. Available: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways.

Project would result in the development of residential uses similar to those which are already present in the vicinity of the Project site, such as the Ashton Parc Apartments, implementation of the proposed Project would be consistent with the overall visual character of the existing North Natomas Community Plan Area.

Developing the vacant lot would alter the visual character of the Project site; however, the existing developed neighborhood already includes residential uses of a similar scale to the proposed residences, as well as hotel and commercial uses, so the proposed Project would be in keeping with the existing visual character.

The City of Sacramento 2035 General Plan and the North Natomas Community Plan guide the design, development, and standards for development of various land uses, including residential communities such as the proposed Project.

The site will be easily accessible from Sally Ride Way and will provide future direct and pedestrian and bicycle access from the site to Arena Boulevard to the south of the site, East Commerce Way to the west, and Sports Parkway to the north. The proposed Project will provide shared outdoor spaces and amenities – including a club house, pool, spa, fitness center, barbeque areas, linear park, community green and dog park– to serve the anticipated needs of future residents, provide recreational opportunities, and foster a sense of community within the development. The residential buildings would be elevated in a traditional East Coast brownstone architectural vernacular, with the strong elevational theme facing public streets and providing interest and character to the Project area, as shown in **Figures 3.1-1** through **3.1-5**, *Schematic Design Elevations and Roof Plan*.

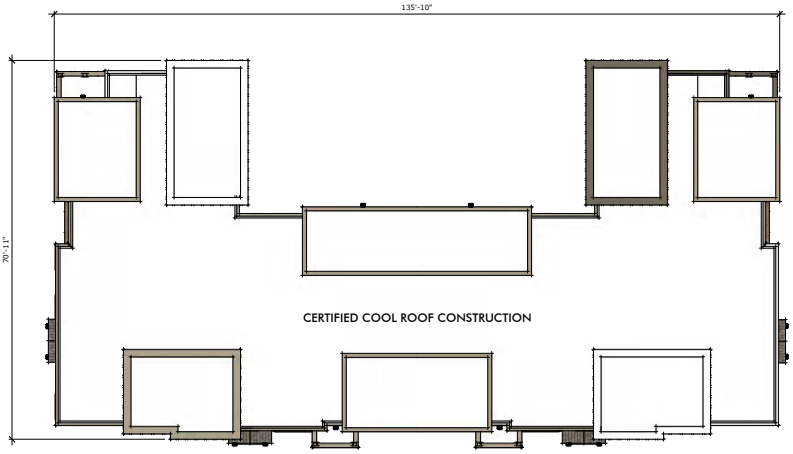
As is the intent of the City, the proposed Project's design, development, and maintenance standards will be consistent with those outlined in the City of Sacramento 2035 General Plan, and would ensure that the visual character of the proposed Project is consistent with the visual character of other similarly developed areas and the Project vicinity. Therefore, the impacts to the visual character of the proposed Project site would be **less than significant.**

d) ***Less than Significant.*** Although the proposed Project site is located adjacent to existing development, the site itself is currently undeveloped and vacant and emits little light or glare; implementation of the proposed Project could therefore result in new sources of spillover lighting or glare effects in the Project area. These sources may include building lighting, parking areas, and community lighting in common recreation areas. However, the proposed landscape plan notes key characteristics of lighting which will be used. For instance, lighting will consist of tree and shrub uplights, path lights and pole lights. All lighting will be low voltage and have low maintenance fixtures. Lighting would be angled to reduce glare and hot spots, and will be designed to showcase lit elements and not the light source. Additionally, lighting will be directed so that it does not fall outside the area to be lit, and outdoor light fixtures will use a narrow cone of light for the purpose of confining the light to the object of interest and minimizing light trespass and glare.

Furthermore, the proposed Project would be subject to City site plan and design review prior to approval. Exterior lighting conditions will utilize the Crime Prevention through Environmental Design (CPTED) recommendations following review of the site plan by the City of Sacramento Police Department (SPD), as listed below.

- Exterior lighting shall be white light using LED lamps with full cutoff fixtures to limit glare and light trespass. Color temperature shall be between 2700K and 4100K with a color rendering index of 80 or higher and a light loss factor of 0.95 or better. Lamp efficiency shall be 110 lumens per watt or better.
- Light poles, if applicable, shall be no higher than 16 feet in height.
- Entry drives, drive aisles, parking, and bicycle parking shall be illuminated to a maintained minimum of 1.5 foot candles per square foot of parking area of a 6:1 average to minimum ratios.
- Exterior walkways, alcoves, and passageways shall be illuminated to a maintained minimum of 1/3 foot candles per square foot of surface area at a 6:1 average to minimum ratio.
- Exterior lighting distribution and fixtures shall be approved by the SPD CPTED Sergeant (or designee) prior to issuance of a building permit.
- Exterior lighting shall be designed in coordination with the landscaping plan to minimize interference between the light standards and required illumination and the landscape trees and required shading.
- Exterior lighting shall be shielded or otherwise designed to avoid spill-over illumination to adjacent streets and properties.
- Adequate white light security lighting with full cut-off fixtures shall be provided during construction to illuminate vulnerable equipment and materials.

This site review, in addition to City of Sacramento Development Standards, and policies outlined in the City of Sacramento 2035 General Plan and the North Natomas Community Plan, would ensure that the proposed Project would not result in adverse impacts related to light and glare, and that the proposed Project would be compatible with existing development in the Project area. Results of the proposed Project related to light and glare would be **less than significant**.



16 PLEX - ROOF PLAN

16 PLEX - FRONT ELEVATION 'A'

16 PLEX - LEFT ELEVATION 'A'

16 PLEX - RIGHT ELEVATION 'A'

16 PLEX - REAR ELEVATION 'A'

MATERIAL LEGEND:
1. STUCCO
2. STONE VENEER
3. BRICK VENEER
4. BRICK TRIM
5. PAINTED TRIM
6. GARAGE DOOR
7. FAUX SHUTTER
8. PAINTED WOOD CORBEL
9. PAINTED WOOD RAILING
10. PAINTED WOOD COLUMN
11. WOOD PANELING
12. STUCCO FINISH OVER FOAM CORNICE
13. STUCCO FINISH OVER FOAM CORBEL
14. SHINGLE ROOFING
15. STUCCO CONTROL JOINT
16. WALL SCONCE

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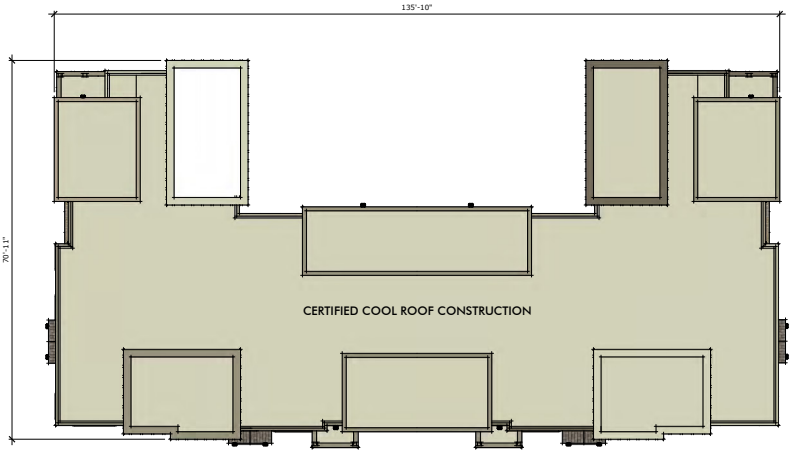
SOURCE: IDEArc, 2022

Natomas Arena Brownstone Living

Figure 3.1-1
Schematic Design Elevations and Roof Plan (16-Plex A)

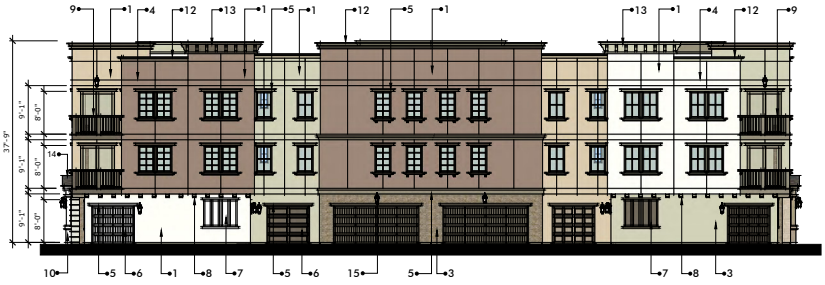


16 PLEX - ROOF PLAN

16 PLEX - FRONT ELEVATION 'B'

16 PLEX - LEFT ELEVATION 'B'

16 PLEX - RIGHT ELEVATION 'B'



16 PLEX - REAR ELEVATION 'B'

MATERIAL LEGEND:
1. STUCCO
2. STONE VENEER
3. BRICK VENEER
4. STUCCO CONTROL JOINT
5. PAINTED TRIM
6. GARAGE DOOR
7. FAUX SHUTTER
8. PAINTED WOOD CORBEL
9. PAINTED WOOD RAILING
10. PAINTED WOOD COLUMN
11. WOOD PANELING
12. STUCCO FINISH OVER FOAM CORNICE
13. STUCCO FINISH OVER FOAM CORBEL
14. SHINGLE ROOFING
15. WALL SCONCE

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SOURCE: IDEArc, 2022

Natomas Arena Brownstone Living

Figure 3.1-2
Schematic Design Elevations and Roof Plan (16-Plex B)

24 PLEX - FRONT ELEVATION 'A'

24 PLEX - RIGHT ELEVATION 'A'

24 PLEX - REAR ELEVATION 'A'

24 PLEX - LEFT ELEVATION 'A'

MATERIAL LEGEND:
1. STUCCO
2. STONE VENEER
3. BRICK VENEER
4. BRICK TRIM
5. PAINTED TRIM
6. GARAGE DOOR
7. FAUX SHUTTER
8. PAINTED WOOD CORBEL
9. PAINTED WOOD RAILING
10. PAINTED WOOD COLUMN
11. WOOD PANELING
12. STUCCO FINISH OVER FOAM CORNICE
13. STUCCO FINISH OVER FOAM CORBEL
14. SHINGLE ROOFING
15. STUCCO CONTROL JOINT
16. LOUVERED DOORS
17. WALL SCONCE

D2022200150.00 - Natomas Arena Brownstone Living\05 Graphics-GIS-Modeling-USE AZURE\Illustrator

SOURCE: IDEArc, 2022

Natomas Arena Brownstone Living

Figure 3.1-3
Schematic Design Elevations and Roof Plan (24-Plex A)

28 PLEX - FRONT ELEVATION 'A'

28 PLEX - RIGHT ELEVATION 'A'

28 PLEX - REAR ELEVATION 'A'

28 PLEX - LEFT ELEVATION 'A'

MATERIAL LEGEND:
1. STUCCO
2. STONE VENEER
3. BRICK VENEER
4. BRICK TRIM
5. PAINTED TRIM
6. GARAGE DOOR
7. FAUX SHUTTER
8. PAINTED WOOD CORBEL
9. PAINTED WOOD RAILING
10. PAINTED WOOD COLUMN
11. WOOD PANELING
12. STUCCO FINISH OVER FOAM CORNICE
13. STUCCO FINISH OVER FOAM CORBEL
14. SHINGLE ROOFING
15. STUCCO CONTROLE JOINT
16. LOUVERED DOORS
17. WALL SCONCE

D2022001S0.00 - Natomas Arena Brownstone Living\05 Graphics-GIS-Modeling-USE AZURE\Illustrator

SOURCE: IDEArc, 2022

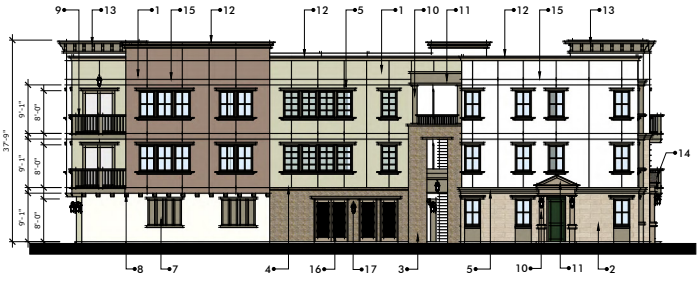
Natomas Arena Brownstone Living

Figure 3.1-4
Schematic Design Elevations and Roof Plan (28-Plex A)

28 PLEX - FRONT ELEVATION 'B'

28 PLEX - RIGHT ELEVATION 'B'

28 PLEX - REAR ELEVATION 'B'



28 PLEX - LEFT ELEVATION 'B'

MATERIAL LEGEND:
1. STUCCO
2. STONE VENEER
3. BRICK VENEER
4. BRICK TRIM
5. PAINTED TRIM
6. GARAGE DOOR
7. FAUX SHUTTER
8. PAINTED WOOD CORBEL
9. PAINTED WOOD RAILING
10. PAINTED WOOD COLUMN
11. WOOD PANELING
12. STUCCO FINISH OVER FOAM CORNICE
13. STUCCO FINISH OVER FOAM CORBEL
14. SHINGLE ROOFING
15. STUCCO CONTROL JOINT
16. LOUVERED DOORS
17. WALL SCONCE

D202200150.00 - Natomas Arena Brownstone Living\05 Graphics-GIS-Modeling-USE AZURE\Illustrator

SOURCE: IDEArc, 2022

Natomas Arena Brownstone Living

Figure 3.1-5
Schematic Design Elevations and Roof Plan (28-Plex B)

3.2 Agriculture and Forestry Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
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?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Environmental Setting

The approximate 9.57-acre site is currently in a undeveloped vacant state surrounded predominately by urban development. Developed areas include residential, hotel, commercial, paved roadways and access points, and mature ornamental landscape trees. The project site's vegetation includes the annual growth of grassland, which has been regularly disced in the past.

The site and its near vicinity are not used for any agricultural purposes. The project site is not under an active Williamson Act contract. No existing agricultural or timber-harvest uses are located on or in the vicinity of the Project site.

The City of Sacramento 2035 General Plan Master EIR (Master EIR) discusses the potential impact of development under the 2035 General Plan on agricultural resources (Chapter 4.1). Overall, directing future growth within the City limits not only minimizes conversion of existing farmlands outside the City, it also encourages infill within existing communities. The General Plan Master EIR concludes that the impact of the 2035 General Plan on agricultural resources within the city is **less than significant**.

Discussion

a) ***No Impact***. The Project site has not been used for any agricultural purposes. The California Department of Conservation, Important Farmland Finder (part of the FMMP survey), shows that the site is within the "Other Land" designation, and is surrounded primarily by Urban and Built-Up Land. The Project site does not contain land that is classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance based on the FMMP survey.[5] The project site does not contain soils designated as Important Farmland (i.e., Prime Farmland, Unique Farmland or Farmland of Statewide Importance). Therefore, the proposed Project would not convert any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural uses. There would be **no impact**.

b) ***No Impact.*** The project site is designated Urban Center High by the City of Sacramento. The vacant project site is not used for agricultural purposes. Further, the Project site is not governed by a Williamson Act contract. Therefore, the proposed use would be consistent with the zoning for the site, and no Williamson Act lands would be affected. Therefore, there would be no impact.

c) ***No Impact.*** The proposed Project site is not forest lands or zoned for forestry or timberland (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), nor is the site zoned for Timberland Production (as defined by Government Code section 51104(g)). The project site is located in an urbanized area adjoining other urbanized and developed land uses. As such, there would be no impact to forestry and timberland and timberland production/resources.

d) ***No Impact.*** As discussed above for (c), the Project site does not have any forest, nor is it designated for forestry. There will no loss of forest land or conversion of forest land to non-forest use. Therefore, there would be no impact.

e) ***No Impact.*** The project site is located in an urbanized setting with developed uses such as residential communities, places of worship, commercial, and retail uses. The site is not part of any proposal, due to its location or nature, that would lead to conversion of farmland to non-agricultural use or conversion of forest land to non-forest uses. There would be no impact.

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[5] California Department of Conservation. Farmland Mapping and Monitoring Program. Available: https://www.conservation.ca.gov/dlrp/fmmp. Accessed May 26, 2022.

3.3 Air Quality

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

Environmental Setting

The project site is located in Sacramento County, in the southeast corner of the Sacramento Valley Air Basin (SVAB). The SVAB is relatively flat, bordered by mountains to the east, west, and north. Air flows into the SVAB through the Carquinez Strait, the only breach in the western mountain barrier, and moves across the Delta, bringing with it pollutants from the heavily populated San Francisco Bay Area. The climate is characterized by hot, dry summers and cool, rainy winters. Periods of dense, persistent low-level fog that are most prevalent between storms are characteristic of SVAB winter weather. From May to October, the region's intense heat and sunlight lead to high ozone concentrations. Summer inversions are strong and frequent but are less troublesome than those that occur in fall. Autumn inversions, formed by warm air subsiding in a region of high pressure, have accompanying light winds that do not adequately disperse air pollutants.

Criteria Pollutants

Criteria air pollutants are a group of six common air pollutants for which the U.S. Environmental Protection Agency (EPA) has set ambient air quality standards. These pollutants include ozone, carbon monoxide, nitrogen dioxide (NO_2), sulfur dioxide, particulate matter 10 microns or less in diameter (PM_{10}), particulate matter 2.5 microns or less in diameter ($PM_{2.5}$), and lead. Most of the criteria pollutants are emitted as primary pollutants. Ground-level ozone, however, is a secondary pollutant that is formed in the atmosphere by chemical reactions between oxides of nitrogen (NO_X) and reactive organic gases (ROG) in sunlight. In addition to the criteria air pollutants identified by EPA, California adds four State criteria air pollutants: visibility-reducing particulates, sulfates, hydrogen sulfide, and vinyl chloride.

Sacramento County is under the jurisdiction of the Sacramento Metropolitan Air Quality Management District (SMAQMD). SMAQMD manages air quality conditions in Sacramento County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. SMAQMD's clean-air

strategy includes preparing plans to attain ambient air quality standards, adopting and enforcing rules and regulations governing sources of air pollution, and issuing permits for stationary sources of air pollution. SMAQMD also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the federal Clean Air Act and California Clean Air Act.

The Sacramento region is considered a nonattainment area with respect to the State and federal ozone standards and the State PM_{10} standard and a maintenance area with respect to the federal carbon monoxide and PM_{10} standards. The area is designated as unclassified or is in attainment with respect to all other State and federal standards. **Table 3.3-1** summarizes Sacramento County's attainment status for criteria air pollutants with respect to State and federal standards.

TABLE 3.3-1
SACRAMENTO COUNTY CRITERIA POLLUTANT ATTAINMENT STATUS

Pollutant and Averaging Time	Designation/Classification	
	State Standards	Federal Standards
Ozone (1-hour)	Non-attainment	No Federal Standard
Ozone (8-hour)	Non-attainment/Serious	Non-attainment/Severe
Carbon Monoxide	Attainment	Attainment/Maintenance
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified/Attainment
Respirable Particulate Matter (PM_{10})	Non-attainment	Attainment/Maintenance*
Fine Particulate Matter ($PM_{2.5}$)	Non-attainment	Non-attainment/Moderate**
Lead	Attainment	Unclassified/Attainment
Visibility Reducing Particles	Unclassified	No Federal Standard
Sulfates	Attainment	No Federal Standard
Hydrogen Sulfide	Unclassified	No Federal Standard
Vinyl Chloride	Unclassified	No Federal Standard

NOTES:
California Air Resources Board (CARB) makes area designations for ten criteria pollutants (O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, lead, visibility reducing particles, sulfates, and hydrogen sulfide. CARB does not designate areas according to the vinyl chloride standard.

* Effective October 28, 2013, the US EPA formally re-designated Sacramento County as attainment for the federal PM_{10} standard.
** As of 2015, the U.S. EPA found that the Sacramento area attained the 2006 $PM_{2.5}$ standards; thus Sacramento County is in the process of being redesignated by EPA.

SOURCE: California Air Resources Board, 2021. *Area Designation Maps*. Available: https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations. Accessed August 2022.

All areas designated as non-attainment are required to prepare plans showing how the area would meet the air quality standards by its attainment dates. The following are the most recent air quality plans applicable to the Project area:

- Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan;[6]
- SMAQMD's Triennial Report and Air Quality Plan Revision;[7]
- PM_{10} Implementation/Maintenance Plan and Redesignation Request for Sacramento County;[8] and
- $PM_{2.5}$ Maintenance Plan and Redesignation Request.[9]

Toxic Air Contaminants

Toxic air contaminants (TACs) are state-designated, airborne substances that are capable of causing short-term (acute) and long-term (chronic or carcinogenic, i.e., cancer-causing) adverse human health effects (injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted by a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations, as well as heavy-duty trucks and heavy equipment. The current California list of TACs includes nearly 200 compounds, including diesel particulate matter (DPM) emissions from diesel-fueled engines,[10] which is driving most of the inhalation pathway health risks in the state.

Odors

Odors are generally regarded as a nuisance or annoyance rather than a health hazard, although individuals can have a strong physical response to specific odors. Odor intensity depends on the concentration of the substance in the air. The ability to detect odors varies considerably among members of the population. The detection of odors is subjective; some individuals can smell minute quantities of specific substances, while others may be sensitive to odors from other substances. Reactions to odors vary substantially as well.

Sensitive Receptors

Air quality does not affect individuals or groups within the population in the same way, as some groups are more sensitive to adverse health effects caused by exposure to air pollutants than

6 Sacramento Metropolitan Air Quality Management District, 2017. *Sacramento Regional 2008 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress Plan*. July 24, 2017. Available: http://www.airquality.org/ProgramCoordination/Documents/Sac%20Regional%202008%20NAAQS%20Attainment%20and%20RFP%20Plan.pdf.

7 Sacramento Metropolitan Air Quality Management District, 2015. *Triennial Report and Air Quality Plan Revision*. May 28, 2015. Available: www.airquality.org/ProgramCoordinationDocuments11)%20%202015Triennial ReportandProgressRevision.pdf.

8 Sacramento Metropolitan Air Quality Management District, 2010. *PM_{10} Implementation/Maintenance Plan and Redesignation Request for Sacramento County*. October 28, 2010. Available: www.airquality.org/Program Coordination/Documents/10)%20%20PM10%20Imp%20and%20MP%202010.pdf.

9 Sacramento Metropolitan Air Quality Management District, 2013. *$PM_{2.5}$ Implementation/Maintenance Plan and Redesignation Request for Sacramento $PM_{2.5}$ Nonattainment Area*. October 24, 2013. Available: www.airquality.org/ProgramCoordination/Documents/9)%20%20PM2.5%20Imp%20and%20MP%202013.pdf.

10 California Air Resources Board, 2011. *Toxic Air Contaminant Identification List*. Available: https://ww2.arb.ca.gov/resources/documents/carb-identified-toxic-air-contaminants. Accessed August, 2022.

others. Population subgroups sensitive to the health effects of air pollutants include the elderly and the young, those with higher rates of respiratory disease such as asthma and chronic obstructive pulmonary disease, and with other environmental or occupational health exposures (e.g., indoor air quality) that affect cardiovascular or respiratory diseases.

Land uses such as schools, children's day care centers, hospitals, and nursing and convalescent homes are considered to be the most sensitive to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress. Parks and playgrounds are considered moderately sensitive to poor air quality because persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality; however, exposure times are generally far shorter in parks and playgrounds than in residential locations and schools, which typically reduces the overall health risk associated with exposure to pollutants. Residential areas are considered more sensitive to air quality conditions compared to commercial and industrial areas because people generally spend longer periods of time at their residences, with associated greater exposure to ambient air quality conditions. Workers are not considered sensitive receptors because all employers are required to follow regulations set forth by the Occupation Safety and Health Administration to ensure the health and well-being of their employees.

The approximately 9.57-acre site is bounded by Arena Boulevard to the south, TownePlace Suites hotel to the west, Sports Parkway to the north, and the Ashton Parc Apartments to the east.

The project site is surrounded by the following sensitive receptors:

- The nearest sensitive receptors to the Project site are the Ashton Parc Apartments located to the east of the Project site, with the nearest residences located less than 50 feet from the Project boundary.
- Residences are also located to the south and southeast of the Project site across Arena Boulevard that runs adjacent to the southern boundary of the Project site.
- The Natomas Charter School Star Academy and the Little Blossom Montessori School are located approximately 990 feet and 1,950 feet to the southeast and northeast of the Project site, respectively.
- Medical clinics including the San Lucas Pediatric Clinic and Natomas Obstetrics and Gynecology Clinic are located immediately west of the Project site approximately 65 feet from the Project boundary.

The guests at the TownePlace Suites hotel are not considered sensitive receptors with respect to air quality and health risk as they would not be exposed to emissions from the Project for extended durations.

Discussion

a) ***Less than Significant.*** SMAQMD relies on its *Guide to Air Quality Assessment in Sacramento County* (CEQA Guide) to help achieve and maintain all air quality standards

as relevant to land use projects.[11] Demonstration of the Project's conformity with all applicable thresholds of significance and best management practices described by SMAQMD's CEQA Guide is described below under Question b), which indicates compliance with the regional attainment plans.

The *Sacramento Regional 2008 NAAQS 8-Hour Ozone Attainment and Reasonable Further Progress Plan*, which addresses attainment of the federal 8-hour ozone standard, and the *2014 Triennial Report and Plan Revision*, are the current plans required by US EPA and CARB and issued by SMAQMD, in conjunction with other regional air districts, to meet attainment. These plans demonstrate reasonable progress towards attainment as required by the SIP and CCAA. To demonstrate compliance of the proposed Project with the plans there needs to be appropriate conformity analysis. In this case, the appropriate analysis incorporates land use assumptions and travel demand modeling from the Sacramento Area Council of Governments (SACOG). To determine compliance with the applicable air quality plan, SMAQMD recommends comparing the Project's VMT and population growth rate to the SACOG growth projections included in the *Metropolitan Transportation Plan/Sustainable Communities Strategy*.[12]

SACOG is required to consider adopted local land use plans, including the City of Sacramento 2035 General Plan, in the formulation of the land use forecast and growth projections in the MTP/SCS. Therefore, if the Project is consistent with the VMT and population growth projections in the City's 2035 General Plan, the Project would also be consistent with the SACOG MTP/SCS. Here, the project would be consistent with the existing land use designation for the site and would not require a General Plan Amendment.

The City of Sacramento uses screening criteria for VMT impacts based on the output from the SACOG regional travel demand model known as SACSIM. The traffic study determined that the proposed Project's residential land uses would generate 10,401 daily VMT. Based on the estimated project population, the proposed Project would produce an estimated 16.1 VMT per capita.[13] The SACOG regional threshold is 17.7 VMT per capita, which is 85 percent of the SACOG regional average. The regional average VMT per capita and the regional threshold were obtained from SACOG's Residential VMT map, last updated on May 26, 2021. The project would generate 16.1 VMT per capita, which would be 77 percent of the regional average and therefore not exceed the regional threshold.

The intensity of development proposed on the Project site: (1) comports with the infill nature of the site; (2) is located within a residential area with proximity to community

11 Sacramento Metropolitan Air Quality Management District, 2021. *Guide to Air Quality Assessment*. Adopted December 2009, Most recently updated April 2021. Available: https://www.airquality.org/residents/ceqa-land-use-planning/ceqa-guidance-tools.

12 Sacramento Area Council of Governments, 2019. *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy*. Adopted November 18, 2019. Available: https://www.sacog.org/sites/main/files/file-attachments/2020_mtp-scs.pdf?1580330993.

13 Kimley Horn, 2022. *Traffic Study – Natomas Brownstone, Sacramento, California*, July 26, 2022.

amenities such as schools, park, trails, shopping and transit; and (3) would be consistent with the MTP/SCS.

The 2035 General Plan projects that by the year 2035, the City's population will have grown to 640,381 people.[14] The most recently published data from the California Department of Finance state that the population of the City population was approximately 513,626 people in year 2020.[15] The proposed Project is anticipated to increase the population by 762 residents, which would not likely contribute to an exceedance of or be inconsistent with the City's 2035 population projections. For these reasons, the proposed Project would be consistent with the City of Sacramento's 2035 General Plan and would consequently be within the growth projections assumed by SACOG in its MTP/SCS.

In addition to the proposed Project's consistency with the SACOG 2020 MTP/SCS, as discussed under checklist Question b) below, the proposed Project would not generate operational emissions of ROG, NO_X, PM_{10} or $PM_{2.5}$ that would exceed the SMAQMD thresholds of significance for project operational emissions. Therefore, the emissions generated by the proposed Project would not conflict with or obstruct implementation of applicable air quality plans and the impact would be considered less than significant.

b) ***Less than Significant with Mitigation***. Cumulative impacts refer to the incremental effect of several projects that may have an individually minor, but collectively significant, impact on air quality. By its very nature, air pollution is largely a cumulative impact. Ambient air quality standards are violated or approach nonattainment levels due to past development that has formed the urban fabric, and attainment of standards can be jeopardized by increasing emissions-generating activity in the region. Although a project's emissions may be individually limited, they may be cumulatively considerable when taken in combination with past, present, and future development projects.

Consequently, the SMAQMD's approach to thresholds of significance is to determine whether a project's individual emissions would result in a cumulatively considerable adverse contribution to the SVAB's existing air quality conditions. If a project's emissions are estimated to be less than the thresholds, the project would not be expected to result in a cumulatively considerable contribution to the significant cumulative impact. Construction emissions exceeding the project-level thresholds after the implementation of all mitigation measures would be considered cumulatively significant. However, for operational emissions exceeding the project-level thresholds, the cumulative impact is determined by analyzing the consistency of the Project with the applicable local land use plan and/or general plan.

This impact analysis presented below takes into consideration both short-term construction and long-term operational impacts in terms of project increases for criteria

14 City of Sacramento, 2013. *City of Sacramento 2035 General Plan, 2013-2023 Housing Element, Table 3-3.* Available: https://www.cityofsacramento.org/-/media/Corporate/Files/CDD/Planning/Long-Range/Housing-Element/00_Sac-HE_Amended_Final_Dec142021.pdf?la=en.

15 State of California, Department of Finance, 2022. Report E-4 Population Estimates for Cities, Counties, and the State, 2011-2020, with 2010 Census Benchmark, released May 2, 2022.

pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard. The focus of this analysis is related to the ground-level ozone precursor NOx and particulate matter for which the SVAB is in non-attainment. Emissions were modeled using the California Emissions Estimator Model (CalEEMod), Version 2020.4.0.

Short-Term Construction Impacts

Construction-related emissions are considered short-term in duration, but nevertheless can represent a significant, adverse impact on air quality. Construction-related emissions arise from a variety of activities, including operation of heavy equipment, employee vehicles, excavation for infrastructure and building foundations, architectural coatings and paving.

Emissions of ozone precursors (ROG and NO_X) are generated primarily by construction equipment and mobile sources and largely vary as a function of vehicle trips per day and the type, quantity, intensity, and frequency of heavy-duty, off-road equipment used. Typically, a large portion of construction-related ROG emissions results from the application of asphalt on to roads and parking areas, and the application of architectural coatings. Construction-related fugitive dust emissions of particulate matter would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. Project construction activities could result in dust adversely affecting local visibility and PM_{10} concentrations on a temporary and intermittent basis.

Construction emissions were estimated for the proposed Project using the methods contained in SMAQMD's *Guide to Air Quality Assessment in Sacramento County*.[16] The CalEEMod model was used to quantify construction emissions from off-road equipment, haul trucks associated with exported soils, worker vehicle emissions, and vendor delivery trips.

Project construction would begin in Fall 2023 and is expected to last for a period of 18 months. Project-specific construction information was used for modeling when possible; where project-specific data were unavailable, defaults were used, which capture assumed values consistent with standard practice. CalEEMod defaults were used for durations of various construction phases, equipment used within each phase, number, size (horsepower [hp]) and activity level of equipment, number of worker, vendor and haul trips as well as trip lengths. CalEEMod inputs and outputs can be found in **Appendix A**.

Table 3.3-2 shows the unmitigated construction emissions for the worst-case day for each construction year. SMAQMD has established a zero-emissions threshold for unmitigated particulate matter emissions to promote a mandatory mitigation program to counteract air quality impacts from particulate matter. The anticipated project emissions are compared to SMAQMD's NO_X, PM_{10}, and $PM_{2.5}$ construction thresholds, which are

16 Sacramento Metropolitan Air Quality Management District, 2021. *Guide to Air Quality Assessment*. Adopted December 2009, Most recently updated April 2021. Available: https://www.airquality.org/residents/ceqa-land-use-planning/ceqa-guidance-tools.

appropriate for this analysis. SMAQMD does not recommend a significance threshold for ROG.

TABLE 3.3-2
UNMITIGATED PROJECT CONSTRUCTION EMISSIONS

Construction Year	NO_X (ppd)	PM_{10} (ppd)	$PM_{2.5}$ (ppd)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2023	27.6	21.1	11.3	0.28	0.15
2024	15.3	2.4	1.1	0.3	0.14
2025	14.2	2.3	1.0	<0.1	<0.1
SMAQMD Thresholds	85	0	0	0	0
Maximum Emissions	27.6	**21.1**	**11.3**	**0.28**	**0.15**
Significant (Yes or No)?	No	Yes	Yes	Yes	Yes

NOTES:

NO_X = oxides of nitrogen; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; PM_{10} = particulate matter 10 microns or less in diameter; ppd = pounds per day; SMAQMD = Sacramento Metropolitan Air Quality Management District; tpy = tons per year

1 Project construction emissions estimates were made using the California Emissions Estimator Model, Version 2020.4.0. See Appendix A for model outputs and more detailed assumptions.

2 Values in **bold** are in excess of the applicable SMAQMD significance threshold.

3 SMAQMD has established a zero-emissions threshold for PM_{10} and $PM_{2.5}$ when projects do not implement SMAQMD's Best Available Practices.

SOURCES: Data compiled by Environmental Science Associates in 2022; Sacramento Metropolitan Air Quality Management District (SMAQMD), 2021. *Guide to Air Quality Assessment*. Adopted December 2009, Most recently updated April 2021.

As shown in Table 3.3-2, unmitigated maximum daily NOX emissions would fall below the SMAQMD significance threshold for both years of construction; however, the maximum daily and annual unmitigated construction PM_{10} and $PM_{2.5}$ emissions would exceed the SMAQMD's zero-emissions thresholds.

SMAQMD has established a zero-emissions threshold for PM_{10} and $PM_{2.5}$, requiring that all construction projects implement SMAQMD's best management practices (BMPs) to control PM_{10} and $PM_{2.5}$, included in Mitigation Measure AQ-1. **Table 3.3-3** shows the mitigated construction emissions for the worst-case day for each construction year. With implementation of SMAQMD's BMPs, the maximum daily and annual thresholds for construction increase to 80 pounds per day and 14.6 tons per year of PM_{10} and 82 pounds per day and 15 tons per year of $PM_{2.5}$.

With implementation of **Mitigation Measure AQ-1** (SMAQMD BMPs), construction of the proposed project would result in emissions of PM_{10} and $PM_{2.5}$ below the SMAQMD significance thresholds, as shown in Table 3.3-3.

TABLE 3.3-3
MITIGATED PROJECT CONSTRUCTION EMISSIONS

Construction Year	NOx (ppd)	PM_{10} (ppd)	$PM_{2.5}$ (ppd)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2023	4.1	9.0	4.6	0.13	0.06
2024	4.1	1.8	0.5	0.23	0.07
2025	4.0	1.8	0.5	<0.1	<0.1
SMAQMD Thresholds	85	80	82	14.6	15
Maximum Emissions	4.1	9.0	4.6	0.23	0.07
Significant (Yes or No)?	No	No	No	No	No

NOTES:

NO_X = oxides of nitrogen; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; PM_{10} = particulate matter 10 microns or less in diameter; ppd = pounds per day; SMAQMD = Sacramento Metropolitan Air Quality Management District; tpy = tons per year

1 Project construction emissions estimates were made using the California Emissions Estimator Model, Version 2020.4.0. See Appendix A for model outputs and more detailed assumptions.
2 Includes Mitigation Measures AQ-1 and AQ-2 (addressed in Question c)).
3 Values in **bold** are in excess of the applicable SMAQMD significance threshold.

SOURCES: Data compiled by Environmental Science Associates in 2022; Sacramento Metropolitan Air Quality Management District (SMAQMD), 2021. *Guide to Air Quality Assessment*. Adopted December 2009, Most recently updated April 2021.

In addition, project construction activities would be subject to the applicable SMAQMD rules and regulations with regard to construction equipment, particulate matter generation, architectural coatings, and paving materials. These include, but are not limited to:

- Rule 401 (Ringelmann Chart/Opacity) which limits the discharge of pollutants darker in color than shade No. 1 on the Ringlemann Chart or that obscure a human observers view;
- Rule 402 (Nuisance) which prohibits emissions of contaminants that are a nuisance or cause harm to the public;
- Rule 403 (Fugitive Dust) which requires fugitive dust generating activities to take reasonable precautions to limit emissions of fugitive dust from being airborne beyond the property line;
- Rule 404 (Particulate Matter) which establishes limits emissions of particulate matter;
- Rule 420 (Sulfur Content of Fuels) which places limits on emissions of sulfur compounds from fuel combustion;
- Rule 442 (Architectural Coatings) which imposes limits on the VOC content of architectural coatings used within the SMAQMD; and
- Rule 453 (Cutback and Emulsified Asphalt Paving Materials) which prohibits the use of certain types of cutback asphalt and emulsified asphalt containing organic compounds.

Compliance with these SMAQMD rules is enforced as standard conditions of approval for all development projects within the SMAQMD jurisdiction. Therefore, the Project would comply with all applicable SMAQMD Rules and Regulations. Based on the above analysis, project construction would not result in a cumulatively considerable net increase in any criteria pollutant, and the impact would be less than significant with mitigation incorporated.

Long Term Operational Impacts

The proposed project would increase long-term operational emissions primarily due to motor vehicle trips and to a lesser extent from onsite area sources such as use of consumer products, landscaping activities and the application of architectural coatings. The project proposes to have an all-electric site with no natural gas infrastructure and would therefore generate no direct emissions from energy sources on-site. The project also does not propose fireplaces within any of the dwelling units.

The CalEEMod computer model was used to estimate operational pounds per day emissions of ROG, NOx, PM_{10}, and $PM_{2.5}$, and tons per year emissions of PM_{10} and $PM_{2.5}$; the results of this analysis are summarized in **Table 3.3-4**. Estimated emissions are compared to the SMAQMD significance thresholds, including non-zero thresholds for PM_{10} and $PM_{2.5}$ which assume implementation of Best Available Control Technology/BMPs.

SMAQMD identifies the following list of BMPs for operational PM emissions for residential land use development projects:

- Compliance with District rules that control operational PM and NOx emissions. Reference rules regarding wood burning devices, boilers, water heaters, generators and other PM control rules that may apply to equipment to be located at the Project.
- Compliance with mandatory measures in the California Building Energy Efficiency Standards (Title 24, Part 6) that pertain to efficient use of energy at a residential or non-residential land use.
- Compliance with mandatory measures in the California Green (CALGreen) Building Code (Title 24, Part 11). Current mandatory measures related to operational PM for residential projects include requirements for electric vehicle charging and fireplaces.

The proposed project would comply would all above requirements as part of law or as standard conditions of approval, which justifies the use of the non-zero operational thresholds for PM_{10} and $PM_{2.5}$. As shown in Table 3.3-4, emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ would not exceed SMAQMD's significance thresholds. Consequently, project operation would not result in a cumulatively considerable net increase in any criteria pollutant for which the region is nonattainment, and the impact would be less than significant.

TABLE 3.3-4
PROJECT OPERATIONAL EMISSIONS[1, 2]

Source	ROG (ppd)	NO_X (ppd)	PM_{10} (ppd)	$PM_{2.5}$ (ppd)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Area	9.0	0.3	0.1	0.1	<0.01	<0.01
Energy	0.0	0.0	0.0	0.0	0.0	0.0
Mobile	5.2	5.0	9.0	2.4	1.4	0.4
Total Emissions	14.2	5.3	9.1	2.5	1.4	0.4
SMAQMD Thresholds[3]	65	65	80	82	14.6	15
Significant (Yes or No)?	No	No	No	No	No	No

NOTES: ppd = pounds per day; tpy = tons per year

1 Project operational summer emissions estimates were made using CalEEMod version 2020.4.0. See Appendix A for model outputs and more detailed assumptions.
2 Totals may not add up due to rounding.
3 Uses SMAQMD's non-zero emissions threshold for PM_{10} and $PM_{2.5}$ when projects implement Best Available Control Technology/BMPs.

SOURCES: Data compiled by Environmental Science Associates in 2022; Sacramento Metropolitan Air Quality Management District (SMAQMD), 2021. *Guide to Air Quality Assessment*. Adopted December 2009, Most recently updated April 2021.

Mitigation Measure AQ-1: Implement SMAQMD Best Management Practices during Construction. The project shall implement the following required best management practices to control fugitive dust from project construction activities.

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways shall be covered.
- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).
- All roadways, driveways, sidewalks, parking lots to be paved shall be completed as soon as possible. In addition, building pads shall be laid as soon as possible after grading, unless seeding or soil binders are used.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [required by California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site.
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determine to be running in proper condition before it is operated.

- Maintain equipment inspection and maintenance programs to ensure work and fuel efficiencies.

c) ***Less than Significant with Mitigation.***

Health Risk from Toxic Air Contaminants

A discrete health risk assessment was completed to evaluate the risks to nearby receptors from exposure to TACs associated with the proposed project. The health risk assessment focused on construction emissions in the Project area, which is considered a new but temporary source. The project would not include any operational sources of TAC emissions. The residential nature of the Project would primarily generate light duty vehicle trips which are generally gasoline fueled. Any heavy duty diesel truck trips generated by the Project uses will be minimal. In addition, the Project does not propose any stationary sources, such as emergency generators and fire pumps fueled by diesel.

The analysis included evaluating additional cancer risks and chronic health hazards at the closest sensitive receptor to the Project site. Sensitive receptors in the form of residential uses are located adjacent to the eastern boundary of the Project site, approximately 50 feet from the Project site boundary.

A three-step process was used to estimate cancer risk and chronic health hazards of DPM exposure based on approved methods from the State Office of Environmental Health Hazard Assessment's Air Toxic Hot Spots Program Risk Assessment Guidelines.[17] The first step required the use of the CalEEMod software program to conservatively estimate average annual diesel exhaust emissions during project construction, as summarized in response to Question b), above.

The second step in the process involved using the AERSCREEN (Version 16216)[18] dispersion model to convert emissions to maximum annual DPM concentrations. Emissions from project construction were modeled as one area source in AERSCREEN to estimate risk: a conservative representation of the on-site construction equipment within the main project area, modeled as a rectangular area source with an internal vertical dimension of 1.4 meters. AERSCREEN produced estimates of "worst-case" 1-hour concentrations for the single source, which requires application of the included conversion factors to estimate worst-case annual concentrations.

The third step in the process involved using the unit-risk calculation methodologies presented in the State Office of Environmental Health Hazard Assessment's Air Toxic Hot Spots Program Risk Assessment Guidelines to convert maximum concentrations to

17 Office of Environmental Health Hazard Assessment, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments*. Air, Community, and Environmental Research Branch. California Environmental Protection Agency. February 2015. Available: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.

18 U.S. Environmental Protection Agency, 2019. *Support Center for Regulatory Atmospheric Modeling, Air Quality Dispersion Modeling - Screening Models*. Available: https://www.epa.gov/scram/air-quality-dispersion-modeling-screening-models#aerscreen.

cancer risks and chronic health hazard index.[19] Modeling parameters and health risk calculations are presented in Appendix A.

SMAQMD does not have published thresholds for addressing potential health risk impacts from construction activities; thus, it is common practice to use SMAQMD's published TAC thresholds for stationary sources. The recommended levels of significance are an incremental cancer burden risk of 10 per million and a hazard index of 1.

As shown in **Table 3.3-5**, the proposed project has a potential incremental cancer risk impact of 31.2 per million before mitigation, which exceeds the threshold of 10 per million.

TABLE 3.3-5
PROJECT CONSTRUCTION HEALTH RISK IMPACTS

Source	Cancer Risk (per million)	Hazard Index
Project Construction	**31.2**	0.04
Applied Thresholds	10	1
Exceeds Threshold?	**Yes**	No
Project Construction Mitigated*	2.7	0.003
Applied Thresholds	10	1
Exceeds Threshold?	No	No

NOTES:
Health risk calculations are included in Appendix A.
* With implementation of Mitigation Measures AQ-1 and AQ-2.

SOURCE: Table compiled by Environmental Science Associates in 2022

Implementing Mitigation Measure AQ-2 (below) would reduce DPM emissions through the use of construction equipment with EPA-certified Tier 4 engines. If all off-road construction equipment were to have Tier 4 engines, DPM emissions would be reduced by up to 90 percent, and the resulting incremental cancer risk would be 2.7 per million at the Maximum Exposed Individual Receptor (MEIR).

> **Mitigation Measure AQ-2: Implement Best Available Control Technology for Construction Equipment.** All diesel off-road equipment shall have engines that meet the Tier 4 Final off-road emission standards, as certified by CARB. This requirement shall be verified through submittal of an equipment inventory that includes the following information: (1) Type of Equipment, (2) Engine Year and Age, (3) Number of Years Since Rebuild of Engine (if applicable), (4) Type of Fuel Used, (5) Engine HP, (6) Verified Diesel Emission Control Strategy (VDECS)

19 Office of Environmental Health Hazard Assessment, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments*. Air, Community, and Environmental Research Branch. California Environmental Protection Agency. February 2015. Available: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.

information if applicable and other related equipment data. A Certification Statement is also required to be made by the Contractor for documentation of compliance and for future review by the air district as necessary. The Certification Statement must state that the Contractor agrees to compliance and acknowledges that a violation of this requirement shall constitute a material breach of contract.

The Lead Agency may waive the equipment requirement above only under the following unusual circumstances: if a particular piece of off-road equipment with Tier 4 Final standards is technically not feasible or not commercially available; the equipment would not produce desired emissions reduction due to expected operating modes; installation of the equipment would create a safety hazard or impaired visibility for the operator; or there is a compelling emergency need to use other alternate off-road equipment. If the Lead Agency grants the waiver, the contractor shall use the next cleanest piece of off-road equipment available, as detailed in **Table 3.3-6** below.

For purposes of this mitigation measure, "commercially available" shall mean the availability of Tier 4 Final engines similar to the availability for other large-scale construction projects in the region occurring at the same time and taking into consideration factors such as (i) potential significant delays to critical-path timing of construction for the Project and (ii) geographic proximity to the Project site of Tier 4 Final equipment.

The Contractor shall maintain records concerning its efforts to comply with this requirement.

Table 3.3-6 describes the Off Road Compliance Step Down approach. If engines that comply with Tier 4 Final off-road emission standards are not commercially available, then the Contractor shall meet Compliance Alternative 1. If off-road equipment meeting Compliance Alternative 1 are not commercially available, then the Project sponsor shall meet Compliance Alternative 2. If off-road equipment meeting Compliance Alternative 2 are not commercially available, then the Project sponsor shall meet Compliance Alternative 3 as demonstrated below.

TABLE 3.3-6
OFF ROAD EQUIPMENT COMPLIANCE STEP DOWN APPROACH

Compliance Alternative	Engine Emissions Standard	Emissions Control
1	Tier 4 Interim	N/A
2	Tier 3	CARB Level 3 VDECS
3	Tier 2	CARB Level 3 VDCES

With implementation of Mitigation Measure AQ-2, estimated health risk impacts would not exceed the health risk significance thresholds at the MEIR to the east of the Project site. Therefore, the proposed project would not expose sensitive receptors to substantial pollutant concentrations, and the impact would be less than significant with mitigation incorporated.

Health Effects of Criteria Air Pollutants

The Project would generate criteria pollutant emissions of ROG, NOx, and PM, as discussed under checklist Question b) above; however, the health risk impacts of these emissions on sensitive receptors are harder to quantify. ROG and NOx, the precursors of ozone react through a series of complex photo-chemical reactions in the presence of sunlight to form ozone in the atmosphere. Many factors affect the formation of ozone including the presence of sunlight, dispersion from wind, and topography which affects wind patterns. Therefore, the impacts of ozone are typically considered on a basin-wide or regional basis instead of a localized basis. The health-based ambient air quality standards for ozone therefore are as concentrations of ozone and not as tonnages of their precursor pollutants (i.e., NO_X and ROG).

Because of the complexity of ozone formation and the non-linear relationship of ozone concentration with its precursor pollutants, and given the state of environmental science modeling in use at this time, it is infeasible to convert specific project level emissions of NO_X or ROG emitted in a particular area to concentration of ozone in that area. Notwithstanding these scientific constraints, the disconnect between project level NO_X emissions and ozone-related health impact cannot be bridged at this time.

The ambient air quality standards adopted at the state and federal levels are health protective standards. Air districts such as the SMAQMD have established thresholds of significance for project level emissions at levels to ensure continued progress of their jurisdictions towards the attainment of these ambient air quality standards. Hence, projects that generate less than the significance thresholds can be considered to not cause exceedances of the standards or associated health impacts. As discussed under checklist Question b), with mitigation the Project's construction and operational emissions would be below SMAQMD's significance thresholds. Therefore, it can be inferred that criteria air pollutant emissions generated by the Project would not lead to significant health impacts and this impact would be less than significant.

d) ***Less than Significant.*** Engine exhaust from diesel-powered construction equipment can generate short-term, non-persistent odors. However, these odors would be localized, dissipate rapidly and are not expected to be carried over beyond the project site boundaries. Given the temporary nature of construction activity, the project would have a less-than-significant impact with respect to creation of odors affecting a substantial number of people. The project would not include any operational sources of odor. This impact would be less than significant.

3.4 Biological Resources

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

Environmental Setting

The project site is located within an urban area surrounded predominately by development. Developed areas include residential housing, a hotel, offices, a gravel parking area between the paved hotel parking lot and the project site, paved roadways, and mature ornamental landscape trees. Around the project site, landscape trees occur along the property line between the project site and the Ashton Parc Apartments to the east.

Vegetative communities within the project site include nonnative grassland. Dominant vegetation within the nonnative grassland includes black mustard (*Brassica nigra*), wild radish (*Raphanus raphanistrum*), redstem filaree (*Erodium cicutarium*), and Large Flowered Devil's Lettuce (*Amsinckia tessellate*). The site does not include any trees and is maintained and disked regularly (twice yearly) for fire fuel modification purposes, as required by the Fire Department. The vegetation within the nonnative grassland was densely distributed and between 2 and 3 feet high throughout the project site at the time of the March 12, 2022 site visit. No depressions or standing water were present. By the June 15, 2022 site visit, the site had been completely disked, resulting in removal of all onsite vegetation.

Methodology

Information in this section is based a review of relevant documentation for the project site and surrounding vicinity, database searches, and a biological survey and site visits conduced March 12, 2022 and June 15, 2022. The following background data was obtained:

- California Natural Diversity Database (CNDDB) records search for the Taylor Monument U.S. Geological Survey (USGS) quadrangle and 8 surrounding quadrangles (Appendix B);[20]
- U.S. Fish and Wildlife Service (USFWS) List of Threatened and Endangered Species (Appendix B);[21]
- California Native Plant Society (CNPS) online database of plant species documented on for the Rio Linda U.S. Geological Survey (USGS) quadrangle and 8 surrounding quadrangles (Appendix B);[22]
- Sacramento 2035 General Plan;[23]
- Sacramento 2035 General Plan Master Environmental Impact Report (Master EIR).[24]

Special-status species considered for this analysis are based on the CNDDB, CNPS, and USFWS lists. A comprehensive table of regionally occurring special-status plant and wildlife species is provided in **Appendix B**. The table includes the common and scientific names for each species, regulatory status (federal, State, local, CNPS), habitat descriptions, and a discussion of the potential for occurrence within the project site. Habitats present in the project site were compared to the habitat requirements of the regionally occurring special-status species and used to determine which of these species had the potential to occur within or adjacent to the project footprint. The potential for occurrence within the project site category is defined as follows:

- **None**: The project site and/or surrounding area do not support suitable habitat, the project site occurs outside of the known extant geographic or elevation range, or plant species were not observed within the evident and identifiable period during the March 12, 2022 site visit.
- **Low**: The project site and/or immediate area only provide limited amounts and low quality habitat for a particular species.
- **Moderate**: The project site and/or immediate area provide suitable habitat for a particular species and there are occurrences within 5 miles of the project site.
- **High**: The project site and/or immediate area provide ideal habitat conditions for a particular species and/or known populations occur in immediate area and/or within the project site.

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20 California Department of Fish and Wildlife, 2022. California Natural Diversity Database (CNDDB). Special-Status Species Occurrences on the Taylor Monument and 8 Surrounding Quadrangles. August 29, 2022.

21 U.S. Fish and Wildlife Service, 2022. List of Threatened and Endangered Species that may occur in your Proposed Project Location, and/or may be Affected by your Proposed Project. Information for Planning and Consultation (IPaC). Available: https://ecos.fws.gov/ipac/. Accessed August 30, 2022.

22 California Native Plant Society, Rare Plant Program. 2020. Inventory of Rare and Endangered Plants (online edition, v9-01 1.5). California Native Plant Society, Sacramento, CA. Available: http://www.rareplants.cnps.org. Accessed August 30, 2022.

23 City of Sacramento, 2015. *City of Sacramento 2035 General Plan*. Adopted March 3, 2015.

24 City of Sacramento, 2015. *Master Environmental Impact Report for the City of Sacramento 2035 General Plan Update, SCH#20121220006*. Certified March 3, 2015.

Only species classified as having moderate or high potential for occurrence were considered in the impact analysis.

Special-Status Plants

No special-status plants have the potential to occur in the project site.

Special-Status Wildlife

Migratory birds and other birds of prey have the potential to nest in the native and ornamental trees in the vicinity of the project site including the state-threatened Swainson's hawk (*Buteo swainsoni*), bank swallow (Riparia riparia), tricolored blackbird (*Agelaius tricolor*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), and the state fully-protected white-tailed kite (*Elanus leucurus*) and American peregrine falcon (*Falco peregrinus anatum*). Migratory birds and other birds of prey including burrowing owl (*Athene cunicularia*) has the potential to nest within the nonnative grassland within the project site, when the site has not been recently disked.

The CDFW considers 5 acres or more of annual grassland as suitable foraging habitat for Swainson's hawk.[25] While the project site is over 5 acres, the nonnative grassland only provides marginal foraging habitat given the vegetation present, which reduces Swainson's hawks' ability to spot prey on the ground. When the site is disked, it provides some foraging habitat for this species. However, the site is disconnected by development on all sides from other Swainson's hawk foraging areas. Therefore, the project site is not likely considered suitable foraging habitat for this species.

Designated Critical Habitat

The project site is not located within designated or proposed critical habitat for any listed species.[26]

Sensitive Natural Communities including Waters of the U.S. and Waters of the State

The project site does not contain a sensitive natural community or waters of the U.S. or waters of the state.

Wildlife Movement

The project site does not provide a wildlife corridor since it is surrounded by development on all sides.

Protected Trees

The project site is devoid of trees, and neither City nor private trees are present.

[25] California Department of Fish and Wildlife, 1994. Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California. Published November 8, 1994.

[26] U.S. Fish and Wildlife Service. 2022. Critical Habitat Mapper. Available: https://fws.maps.arcgis.com/apps/mapviewer/index.html. Accessed August 30, 2022.

Regulatory Setting

Federal

The Federal Endangered Species Act (FESA) prohibits the unauthorized "take" of any fish or wildlife species listed as threatened or endangered, including the destruction of habitat that could hinder species recovery. The term "take" is defined by the Endangered Species Act as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct."

Federal law protects raptors, migratory birds, and their nests under the Migratory Bird Treaty Act (MBTA). The federal MBTA (15 USC 703-711 and 16 USC Section 7.3, Supp I 1989), 50 CFR Part 21, and 50 CFR Part 10, prohibits killing, possessing or trading in migratory birds. Executive Order 13186 (January 11, 2001) requires that any project with federal involvement address impact of federal actions on migratory birds.

The federal Clean Water Act (CWA) was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the U.S. The CWA serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands.

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the U.S. Waters of the U.S. refers to oceans, bays, rivers, streams, lakes, ponds, and wetlands. Applicants must obtain a permit from the U.S. Army Corps of Engineers (USACE) for all discharges of dredged or fill material into waters of the U.S., including wetlands, before proceeding with a proposed activity. Waters of the U.S. are under the jurisdiction of the USACE and the Environmental Protection Agency (EPA).

Compliance with CWA Section 404 requires compliance with several other environmental laws and regulations. The USACE cannot issue an individual permit or verify the use of a general nationwide permit until the requirements of FESA and the National Historic Preservation Act (NHPA) have been met. In addition, the USACE cannot issue or verify any permit until a water quality certification or a waiver of certification has been issued pursuant to CWA Section 401.

Under CWA Section 401, applicants for a federal license or permit to conduct activities which may result in the discharge of a pollutant into waters of the U.S. must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect State water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401.

State

The California Endangered Species Act (CESA) prohibits the take of plant and animal species that the California Fish and Game Commission have designated as either threatened or endangered in California. "Take" in the context of the CESA means to hunt, pursue, kill, or capture a listed species, as well as any other actions that may result in adverse impacts when a

person is attempting to take individuals of a listed species. The take prohibitions also apply to candidates for listing under the CESA.

Under Section 3503 of the California Fish and Game Code (CFGC), it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation under it. Section 3503.5 prohibits the take, possession, or destruction of any birds in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs. CFGC Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) allow the designation of a species as fully protected. This is a greater level of protection than that afforded by the CESA. Except for take related to scientific research, all take of fully protected species is prohibited.

The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) (together "Boards") are the principal State agencies with primary responsibility for the coordination and control of water quality. In the Porter-Cologne Water Quality Control Act (Porter-Cologne), the Legislature declared that the "state must be prepared to exercise its full power and jurisdiction to protect the quality of the waters in the state from degradation..." (California Water Code section 13000).

Porter-Cologne grants the Boards the authority to implement and enforce the water quality laws, regulations, policies and plans to protect the groundwater and surface waters of the State. Waters of the State determined to be jurisdictional would require, if impacted, waste discharge permitting and/or a CWA Section 401 certification (in the case of a required USACE permit under Section 404). The enforcement of the State's water quality requirements is not solely the purview of the Boards and their staff. Other agencies (e.g., the CDFW under CFGC Section 5650) have the authority to enforce certain water quality provisions in State law.

Local

The City of Sacramento (City) has adopted an ordinance to protect trees as a significant resource to the community (City Code Title 12, Chapter 12.56, Ordinance 2016-0026 Section 4). Regulated work, including removal, pruning, or construction around trees that are protected by the tree ordinance, requires a tree permit and is subject to permission by the Director. The City considers several factors when making a determination for tree removal including, but not limited to, the health and structural condition of the tree, the desirability of the species, and the need for the proposed work in order to develop the property. The director may require, where appropriate, the replacement of city trees or private protected trees proposed for removal.

The City of Sacramento 2035 General Plan includes policies for both identification and preservation of biological resources (Policies ER 2.1.1 through 2.1.17) and the urban forest (Policies 3.1.1 through 3.1.9). Specifically, these policies address issues ranging from identification, retention, preservation, and public awareness of habitat areas, including open space, riparian areas, wetlands, annual grasslands, oak woodlands, and wildlife corridors. Policies relating to the urban forest focus on managing and enhancing the City's tree canopy and trees of significance.

Development within the Natomas Basin is subject to the Natomas Basin Habitat Conservation Plan (NBHCP). The NBHCP establishes a multi-species conservation program to minimize and mitigate the expected loss of habitat values and incidental take of covered species that could result from urban development, operation and maintenance of irrigation and drainage systems, and certain activities associated with the Natomas Basin Conservancy (TNBC) management of its system of serves established under the NBHCP. The NBHCP applies to the 53,537-acre area interior to the toe of levees surrounding the Natomas Basin, with the exception of areas that were considered to be existing development when the NBHCP was established. Development within the covered areas of the NBHCP is subject to HCP fees and compliance with the requirements of the NBHCP.

Discussion

a) ***Less than Significant with Mitigation.*** The proposed project could potentially have significant impacts on nesting migratory birds and other birds of prey including burrowing owl, Swainson's hawk, white-tailed kite, and peregrine falcon and on foraging habitat for Swainson's hawk.

Nesting Birds

The site does not include any trees and is maintained and disked regularly (twice a year) for fire fuel modification purposes, as required by the Fire Department. The project site and surrounding areas could support nesting birds, including, but not limited to, burrowing owl, Swainson's hawk, white-tailed kite, other raptors, and migratory birds including peregrine falcon. Swainson's hawk is a state threatened species. White-tailed kite is state fully protected. Burrowing owl and peregrine falcon are state Species of Special Concern. Common nesting birds and raptors are protected under California Fish and Game Code Sections 3503, 3503.5, and 3800 (i.e., take, possession, or destruction of birds, their nests, or eggs), and Section 3513 of the MBTA (16 USC, Section 703 Supp. I 1989). Construction activities associated with the proposed project including clearing and grubbing that could disturb nearby nests if any birds were nesting in close proximity to the project site. Additionally, human disturbances from construction activities have the potential to cause nest abandonment and death of young or loss of reproductive success if nests are active near project activities. Loss of active nests, or nest site disturbance which results in nest abandonment, loss of young, or reduced health and vigor of eggs and/or nestlings (resulting in reduced survival rates), or the direct removal of vegetation that supports nesting birds, may result in the killing of nestlings or fledgling bird species, and would be a potentially significant impact. Potentially significant impacts would be reduced to a less-than-significant level with the implementation of **Mitigation Measure BIO-1**.

Mitigation Measure BIO-1: Avoidance, Minimization, and Mitigation

- **Nesting Birds:** Initiation of ground disturbing activities shall occur during periods outside the bird nesting season (September 16 to January 31), to the extent feasible. For any construction activities that will begin between February 1 and September 15, the applicant shall obtain a qualified biologist to conduct pre-construction surveys in suitable nesting habitat within 0.25 miles for Swainson's

hawk nests, 250 feet for burrowing owl, 100 feet of the construction area for other nesting raptors, and 50 feet for migratory birds. Surveys shall be conducted within seven days prior to commencement of construction activities including removal of trees and clearing and grubbing. Surveys will be conducted on the project site and on areas that are publicly accessible within the survey radii.

If active nests are found during the survey, the applicant shall implement appropriate mitigation measures to ensure that the species will not be impacted, which will include establishing a no-work buffer zone, as determined by a qualified biologist, around the active nest. Measures may include, but would not be limited to:

- Maintaining a 100-foot buffer around all active raptor nests. No construction activities shall be permitted within this buffer. The buffer may be reduced based on the recommendations of the qualified biologist, depending on site conditions.
- For migratory birds, a no-work buffer zone shall be established, as determined by the qualified biologist, around the active nest. The no-work buffer may vary depending on species and site-specific conditions.
- Depending on conditions specific to each nest, and the relative location and rate of construction activities, it may be feasible for construction to occur as planned within the buffer without impacting the breeding effort. If a qualified biologist determines that the buffer may be reduced, the nest(s) shall be monitored as necessary by a qualified biologist during construction to verify that the reduced buffer is effective and protective of the nest. If, in the professional opinion of the monitor, the project would impact the nest, the biologist shall have the authority to halt construction activities within the buffer until the nest is no longer active or until the biologist has determined that construction activities have been modified to eliminate impacts to the nest. Construction activities may re-commence once the biological monitor determines that the nest is no longer occupied or the modifications have eliminated impacts. Modifications associated with eliminating impacts to the nest may be removed once the biological monitor determines that the nest is no longer active and the monitor is no longer needed.

Swainson's Hawk Foraging Habitat

Although nonnative grassland is sometimes considered suitable foraging habitat, the nonnative grassland within the project site is comprised mainly of weedy species and is disconnected by development on all sides from other Swainson's hawk foraging areas. The loss of 9.57 acres of nonnative grassland within the project site is not recognized by CDFW as significant foraging habitat for Swainson's hawk. Swainson's hawks require large, open grasslands with abundant prey in proximity to suitable nest trees. Suitable foraging areas include native grasslands or lightly grazed pastures, alfalfa, and other hay crops, and certain grain and row croplands. Therefore, impacts to Swainson's hawk foraging habitat are considered less than significant.

b) ***No Impacts.*** No sensitive natural communities occur within the project site. Therefore, no impacts would occur on sensitive natural communities.

c) ***No Impacts.*** There are no indications of jurisdictional waters being present on the project site. Therefore, no impacts would occur on waters of the U.S. or waters of the State.

d) ***Less than Significant.*** The proposed project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native residents or migratory wildlife corridors or impede the use of native wildlife nursery sites. Impacts would be considered less than significant.

e) ***Less than Significant.*** The project site does not have any trees, and removal of trees is not proposed as part of the project. Therefore, the City's tree preservation ordinance would not apply. There are no other local policies or ordinances protecting biological resources. Therefore, the impact would be less than significant.

f) ***Less than Significant.*** The proposed project is subject to the requirements set forth in the NBHCP. The project would be required to comply with the biological preservation provisions set forth in the NBHCP. Payment of fees, as required by the NBHCP, have not yet been paid,[27] but would be collected at the time the project applies for a grading permit. The proposed project would therefore result in less-than-significant impacts.

With implementation of the project-specific mitigation measures, the proposed project would not result in a significant impact on special-status species and would have a less than significant impact on biological resources. All significant environmental effects of the project relating to biological resources can be mitigated to a **less-than-significant level**.

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[27] City of Sacramento, 2022. HCP Area Summary of HCP Fees Paid Through 2021. Available: http://www.cityofsacramento.org/-/media/Corporate/Files/CDD/Planning/Major-Projects/Natomas-HCP/Habitat-Conservation-Plan-HCP-Fees-Paid-2021.pdf. Accessed August 30, 2022.

3.5 Cultural Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
V. CULTURAL RESOURCES — Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

Environmental Setting

The project site is an undeveloped parcel of land without any buildings or structures present that could be considered historical resources, as defined by CEQA section 15064.5. The project site itself is vacant, with scattered grasses, and is routinely disked.

Methodology

As part of its CEQA methodology, ESA consulted with the Native American Heritage Commission (NAHC) and requested a Sacred Lands search. Records search at the North Central Information Center (NCIC) of the California Historical Resources Information System to determine the known cultural resources of the project site and the likelihood of presence of unrecorded resources and a pedestrian survey of the project site supplemented the methodology.

Discussion

a) ***No Impact.*** A significant impact would occur if the project would cause a substantial adverse change to a historical resource, herein referring to historic-era architectural resources or the built environment, including buildings, structures, and objects. A significant impact could occur if the project would cause a substantial adverse change to a historical resource through physical demolition, destruction, relocation, or alteration of the resource.

ESA completed a records search for the project at the North Central Information Center (NCIC) of the California Historical Resources Information System on April 13, 2021 (File No. 21-67) as part of the Innovation Park PUD project. The purpose of the records search was to (1) determine whether known cultural resources have been recorded in the vicinity; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and preliminary evaluation of cultural resources.

The NCIC records search indicates that there is one previously recorded historic-era cultural resource within the Arena Brownstone Living project site. Reclamation District 1000, also known as RD 1000 Rural Historic Landscape District (designated P-34-005251), is a district comprising an area of approximately 53,548 acres. RD 1000 was

established in 1911 and encompasses more than 42 miles of water conveyance canals, roads, and levees constructed to control flooding in the Natomas Basin. RD 1000 currently maintains and administers all flood control systems within their boundary. Bradley and Corbett[28] recommended the entire RD 1000 eligible as a Rural Historic Landscape District under both the National Register of Historic Places and California Register Criterion A/1 for its association with the historic regional reclamation plan that physically, economically, and socially transformed the region. In 1994, the State Historic Preservation Officer (SHPO) concurred with this eligibility determination.

In 1997, Sacramento Area Flood Control Agency (SAFCA) completed an Historic American Engineering Record (HAER) for the RD 1000 Rural Historic Landscape District to satisfy the requirements of a Historic Properties Treatment Plan prepared for the U.S. Army Corps of Engineers (USACE). SAFCA required permits from the USACE for improvements to the levees in order to provide the Natomas area with well-above a 100-year flood protection. The USACE determined that the improved flood protection would contribute to an increase in development pressures within RD 1000 and that the resulting increase in development would have an adverse effect on the contributing elements of the District. The HAER was completed as part of a Memorandum of Agreement between SAFCA, USACE, and the SHPO. The district includes 26 contributing elements to the RD 1000 Rural Historic Landscape District; however, none of the contributing elements are recorded within the Arena Brownstone Living project site.[29]

The project site is an undeveloped parcel without any buildings or structures present that could be considered historical resources, as defined by CEQA section 15064.5. As there are no historical resources on the project site, the project would have no impact on historical resources.

b) ***Less than Significant with Mitigation.*** Archaeological resources can be considered historical resources, according to CEQA Guidelines section 15064.5, as well as unique archaeological resources, as defined in PRC section 21083.2(g). A significant impact could occur if the project would cause a substantial adverse change to an archaeological resource through physical demolition, destruction, relocation, or alteration of the resource.

The NCIC records search indicates that there are no previously recorded pre-contact Native American cultural resources on the project site or within a ½-mile radius of the project site. The project site is regularly disked, and no ground surface resources were identified onsite during a site visit on March 12, 2022 and June 15, 2022. No historic-era or pre-contact cultural resources were observed during the survey.

[28] Bradley, Denise and Michael Corbett, Final Rural Historic Landscape Report for Reclamation for the Cultural Resources Inventory and Evaluations for the American River Watershed Investigations, Sacramento and Sutter Counties, California. Dames & Moore, Inc. January 1996. Report on file at the NCIC. Report No. 11138, 1995.

[29] National Park Service, Department of the Interior, Historic American Engineering Record for Reclamation District 1000. HAER No. CA-187. On file at the NCIC, 1997.

Based on the results of the survey, paucity of nearby archaeological sites, previous disturbance, and the environmental context, the project has a low potential to impact archaeological resources. Despite the low potential, the discovery of archaeological materials during ground-disturbing activities cannot be entirely discounted. The inadvertent discovery of cultural materials during project implementation could be a potentially significant impact. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure CUL-1**, which requires avoidance measures or the appropriate treatment of archaeological resources if discovered during project implementation.

Mitigation Measure CUL-1: Treatment of Archaeological Resources

If pre-contact or historic-era cultural resources are encountered during project implementation, construction activities within 100 feet shall halt and a qualified archaeologist, defined as an archaeologist meeting the U.S. Secretary of the Interior's Professional Qualification Standards for Archeology, shall inspect the find within 24 hours of discovery and notify the City of Sacramento of their initial assessment. Pre-contact cultural materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include building or structure footings and walls, and deposits of metal, glass, and/or ceramic refuse.

If the City determines, based on recommendations from a qualified archaeologist and a Native American representative (if the resource is pre-contact), that the resource may qualify as a historical resource or unique archaeological resource (as defined in CEQA Guidelines Section 15064.5) or a tribal cultural resource (as defined in PRC Section 21080.3), the resource shall be avoided if feasible. Consistent with Section 15126.4(b)(3), this may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement.

If avoidance is not feasible, the City shall consult with appropriate Native American tribes (if the resource is pre-contact), and other appropriate interested parties to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource pursuant to PRC Section 21083.2, and CEQA Guidelines Section 15126.4. This shall include documentation of the resource and may include data recovery (according to PRC Section 21083.2), if deemed appropriate, or other actions such as treating the resource with culturally appropriate dignity and protecting the cultural character and integrity of the resource (according to PRC Section 21084.3).

c) ***Less than Significant with Mitigation.*** There is no indication from the archival research that any part of the project site has been used for human burial purposes in the recent or distant past. Therefore, it is unlikely that human remains would be encountered during construction of the project. Despite the low potential, the possibility of inadvertent discovery cannot be entirely discounted and would result in a potentially significant

impact. This impact would be reduced to a less-than-significant level with implementation of **Mitigation Measure CUL-2**, which requires avoidance measures or the appropriate treatment of human remains if accidentally discovered during project construction.

Mitigation Measure CUL-2

In the event of discovery or recognition of any human remains during project implementation, construction activities within 100 feet of the find shall cease until the Sacramento County Coroner has been contacted to determine that no investigation of the cause of death is required. The Coroner shall contact the Native American Heritage Commission within 24 hours, if the Coroner determines the remains to be Native American in origin. The Commission will then identify the person or persons it believes to be the most likely descendant from the deceased Native American (PRC Section 5097.98), who in turn would make recommendations to the City for the appropriate means of treating the human remains and any associated funerary objects (CEQA Guidelines Section 15064.5[d]).

With implementation of the project-specific mitigation measures, the proposed project would not result in any impacts to historic resources and would have a less-than-significant impact on potential archaeological resources and the potential to discover human remains. All potential significant environmental effects of the project relating to cultural resources can be mitigated to a less-than-significant level.

3.6 Energy

Issues (and Supporting Information Sources):	*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?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Environmental Setting

The Sacramento Municipal Utility District (SMUD) transmits and distributes electricity to the city of Sacramento. Although SMUD's current resources are sufficient to supply short-term electricity demand, SMUD continues to develop new resources, increase energy efficiency to meet long-term needs, and increase the percentage of power obtained from renewable carbon-free resources.[30] SMUD generates power through hydroelectric, natural gas, wind and solar. The 2020 power content mix for SMUD general mix included 34 percent renewables (i.e., geothermal, solar, wind, eligible hydroelectric, biomass and biowaste); 29 percent large hydroelectric; and 35 percent natural gas, with other miscellaneous sources making up the remaining one percent.[31] In addition, SMUD offers consumers the option to enroll in the Greenergy program, which provides up to 100 percent of the electricity needs from renewable and carbon-free sources like wind, solar and hydroelectric power.

Pacific Gas & Electric Company (PG&E) is responsible for the procurement, storage, and distribution of natural gas to its 70,000-square-mile Northern and Central California service area, which includes the project area. Natural gas is supplied from resources within the State, as well as from Canada. Continuous improvements to gas lines throughout the Sacramento region provide sufficient service to residents. The company is bound by contract to meet any additional energy demand.

Gasoline makes up the vast majority of transportation fuel usage in California, with 97 percent of all gasoline consumed by light-duty cars, pickup trucks, and sport utility vehicles.[32] Diesel fuel is the next most frequently used transportation fuel used in California, representing 17 percent of total fuel sales. Nearly all heavy-duty trucks, delivery vehicles, buses, trains, ships, boats and barges, farm equipment, construction equipment, and heavy-duty military vehicles have diesel engines. Diesel is popular for heavy-duty usage because it has 12 percent more energy per gallon than gasoline and has fuel properties that prolong engine life, making it ideal for heavy-duty

30 Sacramento Municipal Utility District, *2030 Zero Carbon Plan*, April 2021. Available: https://www.smud.org/-/media/Documents/Corporate/Environmental-Leadership/ZeroCarbon/2030-Zero-Carbon-Plan-Technical-Report.ashx.

31 Sacramento Municipal Utility District, *2020 Power Content Label*. Available: https://www.smud.org/SMUDPCL.

32 California Energy Commission, Energy Assessments Division, 2021a. California Gasoline Data, Facts, and Statistics. Available: https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-gasoline-data-facts-and-statistics.

vehicle applications.[33] According to the State Board of Equalization, approximately 13.8 billion gallons of gasoline, including aviation gasoline, and 3.1 billion gallons of diesel, including off-road diesel, were sold in California in 2021.[34,35]

Discussion

Consistent with Public Resources Code section 21100(b)(3), this impact analysis evaluates the potential for the proposed project to result in a substantial increase in energy demand and the potential for impacts from the wasteful use of energy during construction and operation or inconsistency with plans and policies adopted to increase energy efficiency and renewable energy use.

a) ***Less than Significant.*** Both construction and operation of the project would involve expenditure of energy. During construction, energy use would be both direct and indirect. Direct energy use would include the consumption of fuel (typically gasoline and diesel fuel) for operation of construction equipment and vehicles. Energy in the form of electricity may also be consumed by some pieces of construction equipment, such as welding machines, power tools, lighting, etc.; however, the amount of consumed electricity would be relatively minimal. Indirect energy use would include the energy required to make the materials and components used in construction. This includes energy used for extraction of raw materials, manufacturing, and transportation associated with manufacturing. Direct energy use represents about one-quarter of total construction-related consumption, while indirect energy use typically represents the remaining three-quarters.[36]

The estimates of direct energy use provided below are based on the energy input assumptions used in the analysis included in Section 3.3, *Air Quality*. Because the California Emissions Estimator Model (CalEEMod) program used for that analysis does not specifically quantify diesel and gasoline fuel volumes used for construction- and operational sources, additional calculations were completed to calculate diesel and gasoline volumes based on estimated carbon dioxide (CO_2) emissions and default factors from The Climate Registry for calculating CO_2 emissions from combustion of transport fuels.

Over the course of construction, the Project is expected to consume approximately 50,416 gallons of diesel fuel from construction equipment and vehicles, and approximately 19,098 gallons of gasoline from worker transportation. The quantification of construction-related energy use is based on the energy use assumptions and GHG emission estimates presented in Section 3.3, *Air Quality* and Section 3.8, *Greenhouse Gas Emissions*. Diesel fuel consumption associated with on-site construction equipment has been estimated based on the GHG emissions estimates for off-road equipment from

33 California Energy Commission, Energy Assessments Division. Diesel Fuel Data, Facts, and Statistics. Available: https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/diesel-fuel-data-facts-and-statistics.

34 California State Board of Equalization, 2021a. Motor Vehicle Fuel 10 Year Reports: Net Taxable Gasoline Gallons. Available: https://www.cdtfa.ca.gov/taxes-and-fees/spftrpts.htm.

35 California State Board of Equalization, 2021b. Taxable Diesel Gallons 10 Year Report, Net of Refunds. Available: https://www.cdtfa.ca.gov/taxes-and-fees/spftrpts.htm.

36 Hannon et al., 1978. *Energy and Labor in the Construction Sector*. Article in Science Magazine. November 24, 1978.

CalEEMod in combination with The Climate Registry (TCR) 2019 default factors for calculating CO_2 emissions from diesel fuel.[37] All off-road construction equipment is assumed to be diesel-fueled.

Due to the relatively small scope of the Project, the small construction crew required for the Project, as well as the limited duration of construction activities, the consumption of fuel energy during construction would be temporary, localized, and would not represent a significant amount of fuel in comparison to the 689 million gallons of gasoline and 90 million gallons of diesel that were sold in Sacramento County in 2020.[38] Vehicles used for project construction would be required to comply with all federal and state efficiency standards. Additionally, there are no project characteristics or features that would be inefficient or that would result in the use of construction-related equipment and vehicles in a manner that would be less energy efficient than similar projects. Although project construction would result in the consumption of energy, the energy consumption would not be wasteful, inefficient, or unnecessary. Fuel use for project construction would be consistent with typical construction and manufacturing practices, and energy standards such as the National Energy Policy Acts of 1975 and 2005, which promote strategic planning and building standards that reduce consumption of fossil fuels, increase use of renewable resources, and enhance energy efficiency.

In addition, the temporary energy consumption during construction would not result in long-term depletion of non-renewable energy resources and would not permanently increase reliance on energy resources that are not renewable. Because project construction would not interrupt existing local energy services and because project-specific construction-related energy demand would not be expected to have a material effect on energy resources, or result in wasteful, inefficient, or unnecessary use of energy, construction activities would result in a less-than-significant impact associated with energy consumption.

Operational transportation-related energy use was estimated based on projected VMT generated by the Project (as estimated in the Project's transportation study), Sacramento county-specific vehicle fleet mixes in EMFAC2021, and the fleet-average fuel consumption for each fuel. Fleet average fuel consumption factors for gasoline, diesel and natural gas, and EV energy economy (in kWh per mile) were derived from the EMFAC2021 model. Once operational, project trips are conservatively estimated to consume up to approximately 139,519 gallons of gasoline and 28,360 gallons of diesel annually. Electricity and natural gas use from transportation sources would account for 64 Megawatt hours (MWh) per year and 236 MMBtu per year. There would be no natural gas[39] used by the residences and common amenities. Electricity use would increase to approximately 2,822 MWh per year assuming all natural gas energy needs associated

37 The Climate Registry, 2020. *The Climate Registry 2020 Default Emission Factor Document*, April 2020. Available at https://www.theclimateregistry.org/wp-content/uploads/2020/04/The-Climate-Registry-2020-Default-Emission-Factor-Document.pdf.

38 California Energy Commission, Energy Assessments Division, 2020. 2020 California Annual Fuel Outlet Report Results (CEC-A15), August 31, 2020. Available: https://www.energy.ca.gov/media/3874.

39 City of Sacramento adopted the New Building Electrification Ordinance on June 1, 2021.

with project residences and common amenities would be met by electricity. This estimate conservatively excludes any electricity generated by the Project's rooftop solar. Project buildings would be subject to the most recent 2022 Title 24 energy efficiency standards that also emphasize use of renewable electricity by requiring photovoltaic (PV) panels be installed on all project residences. The Project proposes PV panels on all of the individual garages.

Further, as discussed in Section 3.8, *Greenhouse Gas Emissions*, the Project would also be consistent with the energy efficiency measures in the City's current Climate Action Plan. Project vehicle trips would continue to be subject to increasingly stringent fuel efficiency standards, which would increase the fuel efficiency of the overall fleet as newer fuel efficient and electric vehicles replace older lesser efficient vehicles.

Therefore, project construction and operation would not result in wasteful, inefficient, or unnecessary consumption of energy resources. This impact would be less than significant.

b) ***Less than Significant.*** To address energy usage from heavy-duty construction vehicles, in 2011, EPA and the National Highway Traffic Safety Administration (NHTSA) established a comprehensive Heavy-Duty National Program that would reduce greenhouse gas emissions from, and increase the fuel efficiency of, on-road heavy-duty vehicles beginning with model year 2014.[40] California Air Resources Board's Truck and Bus Regulation also requires that diesel trucks in California with a gross vehicle weight rating that are greater than 14,000 pounds, must be upgraded to reduce exhaust emissions so that all truck engines would have 2010 or newer model year by 2023.[41] Vehicles used during construction would already incorporate these standards; therefore, the proposed project would not impede the efficient use of fuel for heavy-duty vehicles. Off-road construction equipment would be subject to regulations for off-road equipment such as Tier 4 standards or the Off-Road Regulation implemented by CARB, and would therefore not impede the implementation of CARB's energy efficiency programs.

Once operational, the Project would be required to be consistent with the most recent Title 24 energy efficiency standards. The current 2019 standards require that rooftop PV panels be installed on all new low-rise residential buildings (single family homes and multifamily three stories or less). In addition, project dwellings would overall be energy efficient with the use of energy efficient lighting and appliances, dual paned windows, etc.

Vehicles used by construction workers and project residents would be subject to NHTSA's Corporate Average Fuel Economy (CAFE) standards for passenger cars and for light trucks (collectively, light-duty vehicles). The current CAFE standards set by

40 U.S. Environmental Protection Agency, 2011. Regulatory Announcement – EPA and NHTSA Adopt First-Ever Program to Reduce Greenhouse Gas Emissions and Improve Fuel Efficiency of Medium- and Heavy-Duty Vehicles. August 2011. Available: https://nepis.epa.gov/Exe/tiff2png.exe/p100bot1.png?-r+75+-g+7+D%3A%5czyfiles%5cindex%20data%5c11thru15%5ctiff%5c00000052%5cp100bot1.tif.

41 California Air Resources Board, 2021. Truck & Bus Regulation. Available: https://ww3.arb.ca.gov/msprog/truckstop/tb/truckbus.htm.

NHTSA in 2012 increase fuel efficiency to 41 mpg by 2021 and 49.7 mpg by 2025. In the course of more than 40 years, the National Energy Conservation Policy Act's regulatory program has resulted in improved fuel economy throughout the United States' vehicle fleet, and has protected against the inefficient, wasteful, and unnecessary use of energy. In addition, CARB's Advanced Clean Cars Program would continue to improve fuel efficiency and reduce gasoline use by promoting an increase in the number of zero-emission vehicles and plug-in hybrid electric vehicles. Vehicles used by project construction workers and future project residents would already incorporate these standards and programs; therefore, the proposed project would not impede the efficient use of fuel for light-duty vehicles.

Because the proposed project would have relatively low energy demand and would comply with fuel and energy-efficiency regulations, it would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. This impact would be less than significant.

3.7 Geology and Soils

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
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.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Environmental Setting

The City of Sacramento is located with the Great Valley of California, a flat alluvial plain approximately 50 miles wide and 400 miles long in the central portion of California, also known as the Sacramento Valley, and is drained by the Sacramento River. The Valley is surrounded by the Sierra Nevada to the east, the Tehachapi Mountains to the south, the Cascade Range to the north, and the Coastal Range to the west. Overall, the City of Sacramento gradually slopes from the sea levels at the delta in the southwestern portion of the City to approximately 75-feet above sea level in the northeastern portion of the City.

The project site is located in North Natomas, an area in the north of Downtown Sacramento and across the American River. The project site is flat, vacant and undeveloped.

Discussion

a. i-iii) ***Less than Significant.***

Seismic Activity: The project site is not in an Earthquake Fault Zone (EFZ) as delineated by the Earthquake Zones of Required Investigation Map (EZRIM) published by the California Geological Survey (CGS) as required by the Alquist-Priolo Earthquake Fault Zoning Act.[42] The City of Sacramento is not located within an Alquist-Priolo Earthquake Fault Zone and there are no known faults within the Project area and the greater Sacramento area.-The closest faults outside the city of Sacramento are the Midland Fault and San Andreas faults to the west, Dunningan Fault to the northwest, and the Foothills fault system to the east. In the event of major seismic activity outside the city of Sacramento, it is likely that the Project site may be subject to minor ground shaking.[43]

Ground Shaking: The associated ground shaking could manifest in primary effects and secondary effects. Primary effects such as vibrations could cause damage to the buildings, roads, and other infrastructure. Secondary effects to ground failures such as settlement of ground/soils or liquefaction occurs when grounds are filled with unstable artificial fill or alluvial deposits that are exposed to high intensity ground shaking. The highest intensity of groundshaking experienced in the city (MMI VI to VII) are likely to be caused by a Mw 7.9 earthquake on the San Andreas Fault or a Mw 6.6 earthquake on the Dunnigan Hills fault.

To prevent the primary and secondary effects of potential seismic activities in the City of Sacramento, all commercial, institutional, and large residential buildings and all associated infrastructure are required to reduce the exposure to potentially damaging seismic vibrations through seismic resistant design, in conformance with Chapter 16, Structural Design Requirements, Division IV, Earthquake Design, of the CBC. Chapter 16 of the CBC provides more detailed specifications for earthquake structural design requirements than the federal code, including the requirement that the design of foundation and excavation-wall supports must reduce the exposure to potentially damaging seismic vibrations through seismic-resistant design (Section A33 – Excavation and Grading).

The proposed project would include the construction of 282 single family residential units on an approximate 9.57 acre project site. The proposed project would be constructed in compliance with all applicable development and engineering standards including current Uniform Building Code (UBC) and California Building Code (CBC) (Title 24 of California Code of Regulations) standards.

Additionally, with implementation of the City of Sacramento General Plan Policies EC 1.1.1 and EC 1.1.2, the City keeps records of the up-to-date records of seismic conditions,

42 California Geological Survey, 2002. Earthquake Zones of Required Investigation ap. Scale 1:24,000. February 7, 2002.

43 City of Sacramento, 2015. *City of Sacramento 2035 General Plan*. Adopted March 3, 2015.

the City implements and enforces the most current building standards, and continues to require that site-specific geotechnical analyses be prepared for projects within the City.

With implementation of the existing regulatory framework that addresses earthquake safety issues, adherence to requirements of the UBC and CBC and various design standards, seismically induced ground-shaking and secondary effects would not be a potential hazard for the proposed project. Implementation of the proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault. Therefore, there would be a less than significant impact.

Liquefaction: As mapped on the EZRIM published by the CGS (which delineates liquefaction and earthquake-induced landslide zones, as well as EFZs), the Project site is not located in a liquefaction zone.[44,45] Due to the site's flat terrain and large distances from known faults and bodies of water, liquefaction impacts are anticipated to be low.

Nonetheless, all developments in the city are required to conform to the Seismic Zone 3 soil and foundation support parameters in Chapters 16 and 18 of the Building Code and the grading requirements in Chapters 18, 33, and the appendix to Chapter 33 of the Building Code. Additionally, the UBC specifies minimum standards to ensure less-than-significant impacts from structural damage resulting from liquefaction due to the occurrence of maximum credible earthquakes. Adherence to these requirements for structural work and grading would mitigate potential impacts of the proposed project resulting from liquefaction hazards to less than significant levels.

a. iv) ***No Impact.***

Landslide: The project site is located in a relatively flat terrain and devoid of any geologic features that have the potential for landslides. The EZRIM published by the CGS (which delineate earthquake-induced landslide zones, as well as EFZs) indicates the Project site is not within an earthquake-induced landslide zone.[46,47]

Due to the relatively flat terrain surrounding the area, the potential for landslides as a result of earthquakes is considered to be nearly minimal. The Earthquake Zones of Required Investigation Map (EZRIM) published by the California Geological Survey[48]

44 California Geological Survey, 2021. EQ Zapp: California Earthquake Hazards Zone Application. Available: http://www.conservation.ca.gov/cgs/geohazards/eq-zapp. Accessed April 28, 2021.

45 California Geological Survey, 2002. Earthquake Zones of Required Investigation ap. Scale 1:24,000. February 7, 2002.

46 California Geological Survey, 2021. EQ Zapp: California Earthquake Hazards Zone Application. Available: http://www.conservation.ca.gov/cgs/geohazards/eq-zapp. Accessed April 28, 2021.

47 California Geological Survey, 2002. Earthquake Zones of Required Investigation ap. Scale 1:24,000. February 7, 2002.

48 California Geological Survey, 2002. Earthquake Zones of Required Investigation ap. Scale 1:24,000. February 7, 2002.

also does not show the Project site located within a landslide zone. Therefore, there would be no impact.

b) ***Less than Significant.*** The proposed project would develop the 9.57 acre project site with 282 residential units. Site preparation would be anticipated to include grading and excavation for the structural foundations and utility installation. The project would involve excavating, filling, moving, grading, and temporary stockpiling of soils onsite, all of which would expose site soils to erosion from wind and surface water runoff, thereby increase the potential of soils erosion. Review of the Natural Resources Conservation Service (NRCS) soils maps shows that the Project site has the following soils types:

1. Capay clay loam, 0 to 2 percent slopes. The Capay series consists of very deep, moderately well and somewhat poorly drained soils that formed in fine textured alluvium derived from mostly sandstone and shale. Capay soils are on flood basins, alluvial fans, interfan basins and basin rims. The depth to the water table is approximately 60 to 72 inches.

2. Jacktone clay 0 to 2 percent slopes: The Jacktone clay soil profile typically consists of a surface layer of very dark gray clay about 11 inches thick. The underlying material is a very dark clay about 23 inches thick. The next layer is a light brownish gray and light gray weakly silica cemented hardpan about 18 inches thick. The underlying material, to a depth of 60 inches, is light yellowish brown sandy loam.

According to the Sacramento 2035 General Plan Master EIR, erosion hazards throughout the City do not represent substantial hazards to people or property,[49] and the potential for soil expansion and/or subsidence would be minimized through adherence to the UBC. Grading activities on the Project site would also be subject to the Sacramento City Code Title 15 Chapter 15.88, which requires the preparation of an Erosion and Sediment Control Plan by a qualified geotechnical engineer with oversight of the installation and implementation of erosion and sediment control measures during grading and construction. The Erosion and Sediment Control Plan would include standards and specifications to ensure that soil erosion potential would be minimized.

Construction related soils erosion is further minimized with the requirements of the National Pollution Discharge Elimination System (NPDES) permit program which requires acquisition of an NPDES permit and the preparation of a stormwater pollution prevention plan (SWPPP). The NPDES program is administered by the Central Valley Regional Water Quality Control Board (CVRWQCB) and the Project would be subject to those permitting requirements.

Compliance with this policy and adherence to the aforementioned requirements would minimize the potential for soils erosion as a result of the proposed project, and the potential impact would be less than significant.

49 City of Sacramento, 2015. Master Environmental Impact Report for the City of Sacramento 2035 General Plan Update, SCH#20121220006. Adopted March 3, 2015. P. 4.5-1.

c) Landslides are not considered a substantial threat in the Project area, given Sacramento's generally flat topography.

The Project area is underlain primarily by alluvial clay or clay loam soils, which may be susceptible to subsidence. Subsidence occurs over large areas where substantial withdrawal of groundwater, oil, or natural gas occurs. However, no oil or natural gas production operations or extensive groundwater withdrawal activities are located in the Project vicinity.

In addition to adherence to NPDES requirements, as discussed below under hydrology and water quality, under 2035 General Plan Policy EC 1.1.2, the City of Sacramento requires that geotechnical investigations of sites be completed before construction permits are issued, to determine the potential for expansive soils and subsidence at project sites. These evaluations must be completed by registered soil professionals, and, where applicable, measures to eliminate inappropriate soil conditions must be developed and applied. For this reason, impacts related to unstable geological units and expansive soils would be less than significant.

d) ***No Impact.*** **Septic Tanks.** The proposed residential community would not use septic tanks. Therefore, there would be no impacts.

e) ***Less than Significant with Mitigation.*** The project site is not considered sensitive for paleontological resources, nor is the City of Sacramento and the surrounding areas. Further, the Project site is not located on fossil bearing soils or rock formation below the ground surface and the potential for paleontological resources is very low.

However, ground disturbing activities, particularly grading, may reveal paleontological resources not previously identified. Should any paleontological resources be discovered during project construction, implementation of **Mitigation Measure GEO-1** would reduce potential impacts to paleontological resources to less than significant.

Mitigation Measure GEO-1: Treatment of Paleontological Resources

Implement Mitigation Measure CUL-1.

With implementation of the UBC, CBC, and project-specific mitigation measures, the proposed project would not result in any significant impacts to geological and soils. All potential environmental effects can be mitigated to a less than significant level.

3.8 Greenhouse Gas Emissions

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
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?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Environmental Setting

Certain gases in the Earth's atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining the earth's surface temperature. A portion of the solar radiation that enters Earth's atmosphere is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back toward space. Infrared radiation (i.e., thermal heat) is absorbed by GHGs; as a result, infrared radiation released from the earth that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on Earth.

Global warming is the name given to the increase in the average temperature of Earth's near-surface air and oceans since the mid-20th century. Increases in the GHG concentrations in Earth's atmosphere are thought to be the main cause of human-induced climate change. As discussed above, some GHGs occur naturally and are necessary for keeping Earth's surface habitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have decreased the amount of solar radiation that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature. GHG emissions from human activities are highly likely to be responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of the earth's atmosphere and oceans, with corresponding effects on global circulation patterns and climate.[50]

The principal anthropogenic (human-caused) GHGs are carbon dioxide (CO_2), methane, nitrous oxide, sulfur hexafluoride, perfluorocarbons, and hydrofluorocarbons. Each of the principal GHGs has a long atmospheric lifetime (1 year to several thousand years). In addition, the potential heat-trapping ability of each of these gases varies substantially from the others. For example, methane is 25 times as potent as CO_2, whereas sulfur hexafluoride is 22,800 times more potent than CO_2. GHGs have been reported as CO_2 equivalents (CO_2e). This approach takes into account the relative potency of non-CO_2 GHGs to convert their quantities to an equivalent amount of CO_2 so that all emissions can be reported as a single quantity.

50 Intergovernmental Panel on Climate Change, 2013. *Climate Change 2013 – The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, 2013. Available: https://www.ipcc.ch/report/ar5/wg1/.

The primary human-made processes that release these gases are the burning of fossil fuels for transportation, heating, and electricity generation; agricultural practices that release methane, such as livestock grazing and crop residue decomposition; and industrial processes that release smaller amounts of high global warming potential gases, such as sulfur hexafluoride, perfluorocarbons, and hydrofluorocarbons. Deforestation and land cover conversion also have been identified as contributing to global warming by reducing Earth's capacity to remove CO_2 from the air and altering Earth's albedo (or surface reflectance), allowing more solar radiation to be absorbed.

Discussion

a) ***Less than Significant.*** In 2020, the Sacramento Metropolitan Air Quality Management District (SMAQMD) updated its guidance to assess project impacts with respect to the State's 2030 GHG reduction goals.[51] The updated guidance provides recommended thresholds, including required Best Management Practices (BMPs) for operational emissions, for agencies without adopted GHG reduction plans (climate action plans) or their own adopted thresholds and for projects that are inconsistent with an agency's adopted GHG reduction plan. SMAQMD recommends a quantitative threshold of 1,100 metric tons (MT) of CO_2e per year to assess GHG emissions from the construction phase of all project types.[52] SMAQMD requires a project's operational GHG impact to be compared to an annual operational threshold of 1,100 MT of CO_2e per year with the appropriate level of implementation of BMPs.

Construction

Construction of the proposed project is assumed to begin in Fall 2023 and be completed over a period of 18 months. Construction-related GHG emissions would be generated from a variety of sources, including operation of construction equipment and haul truck and construction worker vehicle trips. As with the air quality analysis, GHG emissions from construction equipment and vehicle trips were estimated using the most recent version of CalEEMod (2020.4.0) using project-specific inputs when available, and supplemented by CalEEMod default values when project-specific data was not available.

Annual construction emissions associated with the Project are presented in **Table 3.8-1** and are estimated at 124, 531 and 46 MT of CO_2e in 2023, 2024 and 2025, respectively. As shown in Table 3.8-1, project construction emissions would not exceed the SMAQMD's significance threshold of 1,100 MT CO_2e per year, and the associated short-term construction emissions impact would be less than significant.

51 Sacramento Metropolitan Air Quality Management District, 2020. *CEQA Guide - SMAQMD Thresholds of Significance Table*, adopted December 2009, revised November 2014, May 2015, April 2020. Available: http://www.airquality.org/LandUseTransportation/Documents/CH2ThresholdsTable4-2020.pdf.

52 Sacramento Metropolitan Air Quality Management District, 2020. *CEQA Guide - SMAQMD Thresholds of Significance Table*, adopted December 2009, revised November 2014, May 2015, April 2020. Available: http://www.airquality.org/LandUseTransportation/Documents/CH2ThresholdsTable4-2020.pdf.

TABLE 3.8-1
PROJECT CONSTRUCTION GREENHOUSE GAS EMISSIONS

Construction Year	CO_2e (MT/year)
2023	124
2024	531
2025	46
Total Construction GHG Emissions	700
Construction Emissions Significance Threshold	1,100
Exceeds Threshold?	**No**

NOTES:
Project construction emissions were estimated using CalEEMod version 2020.4.0. See Appendix A for model outputs and more detailed assumptions.

CO_2e = carbon dioxide equivalent, MT = metric tons

SOURCE: ESA, 2022.

Operation

Over the long-term, the proposed project would result in an increase in direct GHG emissions primarily due to motor vehicle trips and onsite area sources (e.g., landscape maintenance, use of consumer products such as hairsprays, deodorants, and cleaning products). The project is proposed as an all-electric development with no natural gas infrastructure. Therefore, there would be no direct GHG emissions from energy use on-site. Indirect GHG emissions would be generated from the generation of electricity to power the Project.

For the operational phase, SMAQMD requires projects to demonstrate consistency with CARB's most recent Climate Change Scoping Plan (2017 Scoping Plan Update) by implementing the following BMPs, as applicable, or equivalent on-site or off-site mitigation.[53]

All projects are required to implement Tier 1 BMPs (BMP 1 & 2) which include:

- BMP 1: Projects shall be designed and constructed without natural gas infrastructure.
- BMP 2: Projects shall meet the current CALGreen Tier 2 standards, except all "Electric Vehicle (EV) Capable"[54] spaces shall instead be "EV Ready."[55]

53 Sacramento Metropolitan Air Quality Management District, 2020. *CEQA Guide - SMAQMD Thresholds of Significance Table*, adopted December 2009, revised November 2014, May 2015, April 2020. Available: http://www.airquality.org/LandUseTransportation/Documents/CH2ThresholdsTable4-2020.pdf.

54 "EV Capable" parking spaces have electrical panel capacity, a dedicated branch circuit and a listed raceway to the EV parking spot to accommodate a dedicated 208/40-volt branch circuit to support future installation of charging stations.

55 "EV Ready" parking spaces have installed electrical panel capacity and raceway with conduit that terminate in a junction box or 240-Volt charging outlet.

Projects that exceed 1,100 MT CO_2e per year after implementation of Tier 1 BMPs must implement Tier 2 BMPs (BMP 3):

- BMP 3: Residential projects shall achieve a 15 percent reduction in vehicle miles traveled per resident and office projects shall achieve a 15 percent reduction in vehicle miles traveled per worker compared to existing average vehicle miles traveled for the county, and retail projects shall achieve a no net increase in total vehicle miles traveled to show consistency with SB 743.

Consistency with BMP 1: As described in the Project Description, the Project is proposed as an all-electric development and natural gas service would not be offered for the individual residential units or to serve any of the communal amenities.

Consistency with BMP 2: BMP 2 requires projects to meet the current CALGreen Tier 2 standards, except all EV Capable spaces shall instead be EV Ready. Tier 2 requirements of the 2022 California Green Building Standards Code ("CALGreen", Title 24, Part 11) that go into effect on January 1, 2023 requires multifamily residential uses with more than 20 parking spaces to provide:

- 10 percent of the total parking spaces to be "EV capable" supporting future installation of Level 2 Electric Vehicle Supply Equipment[56] (EVSE or EV chargers);

- 40 percent of the total parking spaces to be "EV Ready" equipped with Level 2 EV charging receptacles and one receptacle per dwelling unit when more than one parking space is provided for use per dwelling unit; and

- 15 percent of the total parking spaces equipped with Level 2 EVSE with at least one EV charger located in the common use parking area available for use by all residents and guests.

As detailed in the Project Description, all 364 garage spaces of the total 485 parking spaces provided by the Project would include Level 2 charging receptacles. Therefore, 75 percent of the total parking spaces provided by the Project would be "EV Ready" which satisfies both the mandatory and Tier 2 "EV capable" and "EV Ready" requirements. However, as the Project does not include EVSE serving any of the parking spaces, BMP 2 would not be satisfied. Implementation of **Mitigation Measure GHG-1** would require the Project to provide Level 2 EVSE to at least 73 parking spaces to meet the Tier 2 EVSE requirement in the 2022 CALGreen Code, thus bringing the Project in compliance with BMP 2.

Therefore, with implementation of Mitigation Measure GHG-1, the Project would fully comply with both Tier 1 BMPs. However, as shown in **Table 3.8-2** below, the Project's operational emissions would exceed 1,100 MT CO_2e per year after implementation of Tier 1 BMPs. Therefore, the proposed project would be required to implement Tier 2

[56] EVSE includes the 208/240 V 40-ampere branch circuit, and the EV charging connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises and the electric vehicle.

BMPs (BMP 3) which, for residential uses, requires a 15 percent reduction in VMT per capita when compared to Sacramento County targets.

TABLE 3.8-2
PROJECT OPERATIONAL GREENHOUSE GAS EMISSIONS

Source	CO_2e (MT/year)
Area	4.9
Electricity Use	35.0
Mobile	1,242.3
Waste	65.2
Water	33.8
Total Annual Operational GHG Emissions	**1,381.2**
Operational Emissions Significance Threshold	1,100
Exceeds Operational Threshold?	**Yes**

NOTES:
Project construction emissions were estimated using CalEEMod version 2020.4.0. See Appendix A for model outputs and more detailed assumptions.
CO_2e = carbon dioxide equivalent, MT = metric tons

SOURCE: ESA, 2022.

Consistency with BMP 3: The SACOG regional threshold is 17.7 VMT per capita, which is 85-percent of the SACOG regional average of 20.8 VMT per capita. The traffic study determined that the proposed project's residential land uses would generate 10,401 daily VMT. Based on the estimated project population, the proposed project would produce an estimated 16.1 VMT per capita.[57] Therefore, the project would comply with BMP 3's requirement as it would generate VMT per capita that is less than the SACOG regional threshold and 77 percent of the regional average. Therefore, the Project satisfies BMP 3 and the operational impact of the Project's GHG emissions would be less than significant.

Overall, project construction and operation would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. This would be a less-than-significant impact with mitigation.

Mitigation Measure GHG-1: Consistency with 2022 CALGreen Tier 2 standards for EV charging. Consistent with Tier 2 CALGreen requirements, the Project shall provide Level 2 EVSE or EV chargers at 15 percent of the total parking spaces (73 parking spaces at a minimum).

b) ***Less than Significant.*** CEQA Guidelines section 15183.5 allows for public agencies to analyze and mitigate GHG emissions as part of a larger plan for the reduction of GHGs and describes the required contents of such a plan. As described below, the Project would

57 Kimley Horn, 2022. *Traffic Study – Natomas Brownstone, Sacramento, California*, July 26, 2022.

be consistent with the following plans and regulations adopted to reduce GHG emissions within the City of Sacramento and the State of California:

- CARB 2017 Scoping Plan Update;[58]
- The policies and programs as presented in Appendix B of the 2035 General Plan and Climate Action Plan;[59] and
- The Mayors' Commission on Climate Change's Achieving Carbon Zero in Sacramento and West Sacramento by 2045 Final Report.[60]

Consistency with 2017 Scoping Plan Update

The 2017 Scoping Plan Update establishes the framework for achieving the 2030 statewide GHG reduction target of 40 percent below 1990 levels. The plan update details local actions that land use development projects and municipalities can implement to support the statewide goal. For project-level CEQA analyses, the 2017 Scoping Plan Update states that projects should implement feasible mitigation, preferably measures that can be implemented onsite. Many of the Project features align with these actions and would contribute to direct and indirect reduction of GHG emissions.

The Scoping Plan Update incorporates a broad array of regulations, policies, and state plans designed to reduce GHG emissions. Those that are applicable to the construction and operation of the proposed project are listed in **Table 3.8-3**. As shown below, the proposed project would implement sustainability features and incorporate characteristics to reduce energy use, conserve water, reduce waste generation, and reduce vehicle travel consistent with statewide strategies and regulations. As a result, the proposed project would not conflict with applicable Climate Change Scoping Plan strategies and regulations to reduce GHG emissions.

58 California Air Resources Board, 2017. *California's 2017 Climate Change Scoping Plan*, November 2017. Available: https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf?utm_medium=email&utm_source=govdelivery.

59 City of Sacramento, 2015. *City of Sacramento 2035 General Plan*, adopted March 3, 2015. Available: https://www.cityofsacramento.org/Community-Development/Resources/Online-Library/2035--General-Plan.

60 Mayors' Commission on Climate Change, 2020. *Achieving carbon Zero in Sacramento and West Sacramento by 2045 – Final Report*, June 2020. Available: https://www.lgc.org/wordpress/wp-content/uploads/2020/06/Mayors-Commission-on-Climate-Change-Final-Report.pdf.

TABLE 3.8-3
CONSISTENCY WITH APPLICABLE GREENHOUSE GAS REDUCTION ACTIONS IN 2017 SCOPING PLAN UPDATE

Sector / Source	Category / Description	Consistency Analysis
Energy and Water		
California Renewables Portfolio Standard (RPS)	SB 100 requires that the proportion of electricity from renewable sources be 60 percent renewable power by 2030 and 100 percent renewable power by 2045.	**Consistent.** The proposed project's electricity will be provided by SMUD. SMUD is required to comply with SB 100 and the RPS.
California Renewables Portfolio Standard and SB 350	SB 350 requires that the proportion of electricity from renewable sources be 50 percent renewable power by 2030 (superseded by SB 100). It also requires the state to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.	**Consistent.** The proposed project's electricity will be provided through SMUD. SMUD is required to comply with both the RPS and SB 350 and will meet these standards.
California Building Efficiency Standards (CCR, Title 24, Part 6)	Energy Efficiency Standards for Residential and Nonresidential Buildings.	**Consistent.** Project buildings would be designed to comply with the applicable Title 24 Building Energy Efficiency Standards.
California Green Building Standards Code (CCR, Title 24, Part 11 - CALGreen)	California's Green Building Standards (CALGreen) Code includes energy and water efficiency requirements, as well as waste management and other design regulations that apply to residential buildings.	**Consistent.** Buildings constructed within the project site would comply with mandatory CALGreen measures.
Senate Bill X7-7	The Water Conservation Act of 2009 sets an overall goal of reducing per capita urban water use by 20 percent by December 31, 2020. Each urban retail water supplier shall develop water use targets to meet this goal.	**Consistent.** Water delivered to the project site would be supplied by the City of Sacramento Department of Utilities, which is required to comply with SB X7-7 and would meet these standards.
Mobile Sources		
Advanced Clean Cars Program (ACC) and Mobile Source Strategy (MSS)	In 2012, CARB adopted the Advanced Clean Cars (ACC) program to reduce criteria pollutants and GHG emissions for model year vehicles 2015 through 2025. ACC includes the that reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles, and the Zero-Emission Vehicle (ZEV) regulation, which requires manufacturers to produce an increasing number of pure ZEVs (meaning battery electric and fuel cell electric vehicles), with provisions to also produce plug-in hybrid electric vehicles (PHEV) in the 2018 through 2025 model years. The Mobile Source Strategy (2106) calls for 1.5 million ZEVs (including plug-in hybrid electric, battery-electric, and hydrogen fuel cell vehicles) on the road by 2025, and 4.2 million ZEVs by 2030.	**Consistent.** The standards would apply to all vehicles used by the residents of the proposed project, and to construction workers traveling to and from the project site. As discussed under checklist Question a) above, the project would provide EV charging infrastructure in excess of the mandatory requirements of the 2022 CALGreen Building Standards Code for EV Capable and EV Ready spaces. Implementation of Mitigation Measure GHG-1 would provide EVSE consistent with Tier 2 2022 CALGreen standards. The availability of EV charging infrastructure in excess of mandatory requirements would encourage use of EVs.

TABLE 3.8-3
CONSISTENCY WITH APPLICABLE GREENHOUSE GAS REDUCTION ACTIONS IN 2017 SCOPING PLAN UPDATE

Sector / Source	Category / Description	Consistency Analysis
SB 375 and the SACOG MTP/SCS	SB 375 establishes mechanisms for the development of regional targets for reducing passenger vehicle GHG emissions. Under SB 375, CARB is required, in consultation with the state's Metropolitan Planning Organizations, to set regional GHG reduction targets for the passenger vehicle and light-duty truck sector 2035. SACOG's MTP/SCS calls for GHG reductions from passenger vehicles and light-duty trucks of 19 percent below 2005 levels by 2035.	**Consistent.** The proposed project would be consistent with SACOG MTP/SCS goals and objectives under SB 375 to implement "smart growth." The proposed project would consist of in-fill residential development in a compact land-use pattern in proximity to off-site employment opportunities in the City of Sacramento. The site provides a place where people can live in close proximity to work locations, and is located to provide access to convenient modes of transportation that provides options for reducing reliance on automobiles and minimizing associated air pollutant emissions. The proposed project is consistent with the smart growth land use pattern discussed in the MTP/SCS, and would therefore be conducive to meeting the SB 375 GHG reduction goal.
Solid Waste		
California Integrated Waste Management Act (IWMA) of 1989 and Assembly Bill (AB) 341	The IWMA mandated that state agencies develop and implement an integrated waste management plan which outlines the steps to be taken to divert at least 50 percent of their solid waste from disposal facilities. AB 341 directs CalRecycle to develop and adopt regulations for mandatory commercial recycling and sets a statewide goal for 75 percent disposal reduction by the year 2020.	**Consistent.** The proposed project would be served by a solid waste collection and recycling services from the City of Sacramento that includes weekly garbage and yard waste collection and recycling collection every other week. This yields waste diversion results comparable to source separation and consistent with Citywide recycling targets. The City of Sacramento has a goal to achieve 75 percent waste diversion by 2020 and zero waste to landfills by 2040.

SOURCE: ESA 2022.

Consistency with the City of Sacramento 2035 General Plan and Climate Action Plan

The City of Sacramento first adopted a Climate Action Plan in 2012 to reduce GHG emissions and adapt to climate change. In 2015 the CAP was incorporated into the 2035 General Plan.[61] The Sacramento CAP includes emission reduction targets, strategies, and specific actions for addressing climate change within the community and established a goal of reducing GHG emissions 15 percent below 2005 levels by 2020. The City of Sacramento met this 2020 climate goal in 2016. Between 2005 and 2016, community wide emissions decreased by over 19 percent and per capita emissions decreased by over 26 percent demonstrating that even though the City has grown substantially since 2005, emissions have decreased at a more rapid rate. The City is currently working on an

61 City of Sacramento, 2015. *City of Sacramento 2035 General Plan*, adopted March 3, 2015. Available: https://www.cityofsacramento.org/Community-Development/Resources/Online-Library/2035--General-Plan.

updated CAP to help the community reach even more aggressive climate targets in line with State goals, including carbon neutrality (0 MT CO_2e) by 2045.

In the absence of a CAP that addresses the State's GHG reduction goals beyond 2020, the analysis in this section presented as part of checklist Question a) above used SMAQMD recommended thresholds for the evaluation of project GHG impacts. As detailed above, SMAQMD thresholds include requiring BMPs for operational emissions, for agencies without adopted GHG reduction plans (or climate action plans) or their own adopted thresholds and for projects that are inconsistent with an agency's adopted GHG reduction plan to establish consistency with CARB's Climate Change Scoping Plan. Nevertheless, as the 2012 CAP is a City-adopted plan, a consistency analysis of the project with the strategies, measures, and actions contained in the 2012 Climate Action Plan is provided below. The Climate Action Plan policies are included as Appendix B of the General Plan.

Policies from the 2012 CAP are contained in Appendix B of the 2035 General Plan; those that are applicable to the construction and operation of the proposed project are listed in **Table 3.8-4**. As shown below, the proposed project would implement sustainability features and incorporate characteristics to reduce energy use, conserve water, and promote the use of alternative modes of transportation consistent with the City of Sacramento's policies. As a result, the project would not conflict with applicable 2035 General Plan and Climate Action Plan policies to reduce GHG emissions.

TABLE 3.8-4
CONSISTENCY WITH CITY OF SACRAMENTO GENERAL PLAN AND CLIMATE ACTION PLAN

General Plan Policy	Description	Consistency Analysis
Policy LU 7.1.2	**Housing in Employment Centers.** The City shall require compatible integration of housing in existing and proposed employment centers to help meet housing needs and reduce vehicle trips and commute times, where such development will not compromise the City's ability to attract and maintain employment-generating uses.	**Consistent.** The proposed project would develop 282 residential units as an infill development in an area with a mix of uses in close proximity to commercial and retail development, and well served by transit. As the proposed project would be built on undeveloped land and would be located close to Sacramento Regional Transit's (RT) transit stops on Truxel Road and in the immediate vicinity of the intersection of Truxel Road with Arena Boulevard. Access to transit would encourage the use of public transportation that could reduce vehicle trips and commute times.

TABLE 3.8-4
CONSISTENCY WITH CITY OF SACRAMENTO GENERAL PLAN AND CLIMATE ACTION PLAN

General Plan Policy	Description	Consistency Analysis
Policy M 5.1.5	**Motorists, Bicyclists, and Pedestrian Conflicts.** City shall develop safe and convenient bikeways, streets, roadways, and intersections that reduce conflicts between bicyclists and motor vehicles on streets, between bicyclists and pedestrians on multi-use trails and sidewalks, and between all users at intersections.	**Consistent.** As shown in the proposed project site plan, the project would construct several pedestrian entry gates along Arena Boulevard and Sports Parkway with a supporting sidewalk along Sports Parkway. In addition, the project would continue the sidewalk along Arena Boulevard north along Sally Ride Way to the project's entry and construct a sidewalk along the project's frontage along the shared driveway that accesses East Commerce Way. Existing crosswalks at both westbound approaches of the Arena Boulevard intersections with East Commerce Way and Sally Ride Way would provide sufficient access to pedestrians attempting to walk from the project to the commercial areas along East Commerce Way and Truxel Road. The project is located within a half-mile to RT Routes 11, 13, and 113. The nearest transit stops are located on Truxel Road in the immediate vicinity of the intersection of Truxel Road with Arena Boulevard. The project proposes onsite connectivity that would allow for bus transit ridership to easily access the site from the sidewalk and via a series of pedestrian paseos. The project would be served by existing Class II bike lanes along both sides of Arena Boulevard, East Commerce Way, and Truxel Road in the vicinity of the project location. Bicycle parking would be consistent with the requirements for bicycle facilities in the Zoning Code and CALGreen.
Policy U 2.1.10	**Water Conservation Standards.** The City shall achieve a 20 percent reduction in per-capita water use by 2020 consistent with the State's *20x2020 Water Conservation Plan* (California Water Resources Control Board, 2010).	**Consistent.** The proposed project would be required to be consistent with the State's *20x2020 Water Conservation Plan*. The project would also comply with the most recent (2022) mandatory CalGreen standards regarding water use and efficiency.
Policy U 2.1.15	**Landscaping.** The City shall continue to require the use of water-efficient and river-friendly landscaping in all new development, and shall use water conservation gardens (e.g., Glen Ellen Water Conservation Office) to demonstrate and promote water conserving landscapes.	**Consistent.** Project landscaping would include plants that are drought tolerant, native to California or other Mediterranean climates, or other low water use species. High efficiency irrigation systems with water-efficient sprinkler heads, and smart controllers will be used.
Policy U 6.1.16	**Energy Efficiency Appliances.** The City shall encourage builders to supply Energy STAR appliances and HVAC systems in all new residential developments.	**Consistent.** All residences would be equipped with Energy Star certified appliances (dishwashers and refrigerators). Energy efficient LED light fixtures would be installed within the residences and office suites and for exterior lighting.

SOURCE: ESA 2022.

Consistency with Climate Action Plan Consistency Review Checklist

The City has prepared a Climate Action Plan Consistency Review Checklist (CAP Consistency Review Checklist) to provide a streamlined review process for proposed new development projects which are subject to discretionary review and trigger environmental review pursuant to CEQA. Projects that demonstrate consistency with the CAP and the Sacramento 2035 General Plan are considered to have no additional significant environmental effect beyond the impacts of the General Plan and the Climate Action Plan and would therefore be considered less than significant. As shown in **Table 3.8-5**, the project would be consistent with the City's CAP Review Checklist.

TABLE 3.8-5
CONSISTENCY WITH CLIMATE ACTION PLAN REVIEW CHECKLIST

Checklist Item		Consistency Analysis
1.	Is the proposed project substantially consistent with the City's over-all goals for land use and urban form, allowable floor area ratio (FAR) and/or density standards in the City's 2035 General Plan, as it currently exists?	**Consistent.** The proposed project is an infill project, and consistent with the site's general plan designation (Urban Center High) and zoning (EC-40-PUD). The project would develop at 24 du/ac, within the prescribed range of 24-250 du/ac. The FAR would be 0.99, within the prescribed range of 0.5 to 8.0. As described in the 2035 General Plan, the City's goal is to grow inward, within the city limits, and develop vacant or underutilized parcels. The proposed urban form, with three-story buildings, parking interior to the site, and pedestrian connections to sidewalks, complies with the design requirements set forth in the City's Design Guidelines and is similar in nature to residential uses near the project site.
2.	Would the project incorporate traffic calming measures? (Examples of traffic calming measures include, but are not limited to: curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers.)	**Consistent.** The proposed project would include vehicular access to the site via driveways from Sally Ride Way and an existing local driveway to the west. The proposed project would not alter the streetscape along Arena Boulevard or East Commerce Way. Both streets are major collectors with relatively high speeds, which are not conducive to traffic calming measures. Due to the street characteristics, traffic calming measures would be inappropriate on Arena Boulevard or East Commerce Way. The interior of the project site is designed for slower, residential speeds. Crosswalks and pedestrian access points within the parking lot would reduce vehicular speeds. Garages interior to the site would also slow traffic as they present a potential conflict.

TABLE 3.8-5
CONSISTENCY WITH CLIMATE ACTION PLAN REVIEW CHECKLIST

Checklist Item		Consistency Analysis
3.	Would the project incorporate pedestrian facilities and connections to public transportation consistent with the City's Pedestrian Master Plan?	**Consistent.** As shown in the proposed project site plan, the project would construct several pedestrian entry gates along Arena Boulevard with several supporting pedestrian paths interior to the site. In addition, the project would continue the sidewalk along Arena Boulevard north along Sally Ride Way to the project's entry and construct a sidewalk along the project's frontage along the shared driveway that accesses East Commerce Way. Existing crosswalks at both westbound approaches of the Arena Boulevard intersections with East Commerce Way and Sally Ride Way would provide sufficient access to pedestrians attempting to walk from the project to the commercial areas along East Commerce Way and Truxel Road. The project is located within a half-mile to RT Routes 11, 13, and 113. The nearest transit stops are located on Truxel Road in the immediate vicinity of the intersection of Truxel Road with Arena Boulevard. The project proposes onsite connectivity that would allow for bus transit ridership to easily access the site from the sidewalk and via a series of pedestrian paseos.
4.	Would the project incorporate bicycle facilities consistent with the City's Bikeway Master Plan, and meet or exceed minimum standards for bicycle facilities in the Zoning Code and CALGreen?	**Consistent.** The project would be served by existing Class II bike lanes along both sides of Arena Boulevard, East Commerce Way, and Truxel Road in the vicinity of the project location. Bicycle parking would be consistent with the requirements for bicycle facilities in the Zoning Code and CALGreen.
5.	For residential projects of 10 or more units, commercial projects greater than 25,000 square feet, or industrial projects greater than 100,000 square feet, would the project include on-site renewable energy systems (e.g., photovoltaic systems) that would generate at least a minimum of 15% of the project's total energy demand on-site? (CAP Actions: 3.4.1 and 3.4.2)	**Consistent.** The Title 24 standards include a mandate that requires new single-family homes and multi-family dwellings up to three stories high to install solar panels, which would ensure consistency with this checklist item. The size of the PV system required under Title 24 is based on the floor area of the home and the climate zone and must be sized adequately to offset the electricity use of the proposed building as if it was a mixed-fuel building using a natural gas furnace, water heater, stove and clothes dryer.
6.	Would the project (if constructed on or after January 1, 2014) comply with minimum CALGreen Tier I water efficiency standards?	**Consistent.** The proposed project would be required to be consistent with the State's *20x2020 Water Conservation Plan*. The project would also comply with the most recent (2022) mandatory CalGreen standards regarding water use and efficiency.

SOURCE: ESA 2022.

Consistency with the Mayors' Commission on Climate's Achieving Carbon Zero in Sacramento and West Sacramento by 2045 Final Report

The Mayors' Commission on Climate published the Achieving Carbon Zero in Sacramento and West Sacramento by 2045 Final Report, which aims to reduce contributions to climate change by achieving "Carbon Zero" in the City of Sacramento and the City of West Sacramento.[62] The report includes various recommendations which would reduce carbon emissions from the built environment and the transportation sector, as well as through community health and resiliency efforts. The proposed project would be consistent with the recommendations included in the Achieving Carbon Zero in Sacramento and West Sacramento by 2045 Draft Report as it is characterized as infill development within an existing residential neighborhood, located in close proximity to commercial retail development and transit opportunities. In addition, the project would include several sustainability characteristics consistent with the most recent CalGreen standards including rooftop PV panels on residences and capability for electric vehicle charging. In addition, the project would be an all-electric site with no natural gas infrastructure to project residences or any of the common amenities. These project characteristics and project design features make the proposed project consistent with the applicable recommendations described in the Mayors' Commission on Climate's Achieving Carbon Zero in Sacramento and West Sacramento by 2045 Final Report.

The proposed project would implement sustainability measures so that it would be consistent with all applicable GHG reduction plans and policies. Therefore, this impact would be considered less than significant.

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62 Mayors' Commission on Climate Change, 2020. *Achieving carbon Zero in Sacramento and West Sacramento by 2045 – Final Report*, June 2020. Available: https://www.lgc.org/wordpress/wp-content/uploads/2020/06/Mayors-Commission-on-Climate-Change-Final-Report.pdf.

3.9 Hazards and Hazardous Materials

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

Environmental Setting

The City of Sacramento General Plan Goal PHS 3.1 aims to reduce exposure to hazardous materials and waste. General Plan Policies PSH 3.1.1 and PSH 3.1.2 ensure investigations of sites for contamination and for known contamination sites, preparation of a Hazardous Material Contamination Management Plan. The 9.27-acre site is vacant and undeveloped. A search of the State Water Resources Control Board (SWRCB) GeoTracker[63] and Department of Toxic Substances Control (DTSC) EnviroStor[64] databases indicates that there are no known hazardous materials sites within the Project site.

63 California State Water Resources Control Board, 2021. Geotracker Database. Available: https://geotracker.waterboards.ca.gov/map/?myaddress=California&from=header&cqid=9544721305. Accessed August 28, 2022.

64 U.S. Department of Toxic Substances Control, 2022. Envirostor Database. California Department of Toxic Substances Control. DTSC's Hazardous Waste and Substances Site List – Site Cleanup (Cortese List). Available: https://www.envirostor.dtsc.ca.gov/public/search?cmd=search&reporttype=CORTESE&site_type=CSITES,FUDS&status=ACT,BKLG,COM&reporttitle=HAZARDOUS+WASTE+AND+SUBSTANCES+SITE+LIST+%28CORTESE%29. Accessed August 28, 2022.

Discussion

a-b) **Less than Significant.** The project site does not indicate any known hazardous site conditions. As discussed above, the SWRCB GeoTracker and DTSC EnviroStor databases indicate that there are no known hazardous materials sites within the Project site. The GeoTracker and EnviroStor databases also indicate that there are no Cleanup Program Sites or Leaking Underground Storage Tank (LUST) and there is no indication that activities proposed for the Project would encounter any contaminated soil or groundwater during construction. Further, the Project site is also not on the Sacramento County Environmental Management Department's (SCEMD's) toxic site list.[65]

Use of construction materials and equipment to prepare the site and construct the proposed 282 residential homes and associated infrastructure would require the use of hazardous materials. Construction materials such as fuels, oils and lubricants, solvents and cleaners, glues and adhesives, paints and thinners, degreasers, cement and concrete, and asphalt mixtures are all commonly used in construction. The storage of hazardous materials or chemicals in large quantities is not generally associated with residential development. The routine use or an accidental spill of hazardous materials during construction could result in exposures or inadvertent releases, which could adversely affect construction workers, the public, and the environment.

However small the potential, construction activities would be required to comply with the numerous federal, State, and local hazardous materials regulations. These regulations are designed to ensure that hazardous materials are transported, used, stored, and disposed of in a safe and legal manner to protect construction workers' safety. These regulations are also intended to reduce the potential for a release of construction-related fuels or other hazardous materials into the environment, including stormwater and downstream receiving water bodies.

Based on these regulations, including Sacramento 2035 General Plan policies and City Code Title 8.60 (Hazardous Material Cleanup) and 8.64 (Hazardous Materials Disclosure), contractors would be required to prepare and implement Hazardous Materials Business Plans requiring that hazardous materials used for construction be used properly and stored in appropriate containers with secondary containment, as needed, to contain a potential release. In addition, the California Fire Code would require measures for the safe storage and handling of hazardous materials.

Compliance with those regulations would render the impact of hazardous materials risks related to construction and operation of the proposed project less than significant.

As discussed in, Section 3.7, *Geology and Soils*, above, construction contractors would be required to prepare a Storm Water Pollution Prevention Plan (SWPPP) for construction activities in compliance with requirements of the National Pollutant

65 Sacramento County Environmental Management, 2021. Available: https://emd.saccounty.net/EC/CUPA/Documents/Form/TOX1%203%2030%202021.pdf. Accessed April 30, 2021.

Discharge Elimination System's (NPDES) General Construction Permit. The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; describe spill prevention measures, equipment inspections, and equipment and fuel storage; protocols for responding immediately to spills; and describe best management practices (BMPs) for controlling site run-on and runoff.

Additionally, the transportation of hazardous materials would be regulated by the Department of Transportation (DOT), California Department of Transportation (Caltrans), and the California Highway Patrol (CHP). Together, federal and State agencies determine driver-training requirements, load labeling procedures, and container specifications designed to minimize the risk of an accidental release. In the event of a spill that releases hazardous materials, a coordinated response would occur at the federal, state, and local levels, including the City of Sacramento whose Fire Department is the local hazardous materials response team. In the event of a hazardous materials spill, the Sacramento Police and Fire Departments would be notified simultaneously and sent to the scene to assess and respond to the situation.

The required compliance with the numerous existing laws and regulations discussed above that govern the transportation, use, handling, and disposal of hazardous materials would limit the potential for creation of hazardous conditions from the use or accidental release of hazardous materials. Compliance with these regulations also minimizes the potential of hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment to a less than significant level.

c) **Less than Significant.** The project site is in a residential neighborhood with four schools, namely; 1) Westlake Charter High School, approximately 3,500 feet to the north, 2) Natomas Charter School, approximately 1,600 feet to the southeast, 3) Inderkum High School, approximately 5,000 feet to the north, and 4) American River College – Natomas Center, approximately 4,600 feet to the north of the Project site. No schools are within 0.25-mile of the Project site.

Implementation of the proposed project would not involve hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste as it is a residential community. The proposed project is residential uses; as such, storage of hazardous materials or chemicals in large quantities is not generally associated with residential development.

However, the construction of these residences, clubhouse/leasing office, roadways, landscaping, utilities, and infrastructure involves the use of construction equipment, staging, use of building materials, overhauling of dirt and debris. As such, there is potential for accidental leak or accidental exposure to hazardous materials during construction.

The project is subject to the Sacramento City Code, Titles 8.60 (Hazardous Material Cleanup) and 8.64 (Hazardous Materials Disclosure) that establishes parameters for the

safe handling of hazardous materials to limit the risk of public exposure. The grading permit that includes ground disturbing activities occurring as a result of the proposed project would require adherence to best management practices (BMPs) for hazardous material spill prevention and cleanup as established in the associated SWPPP.

Compliance with those regulations would render the impact of hazardous materials risks related to construction and operation of the proposed project less than significant. No mitigation measures would be required.

d) ***No Impact.*** As discussed above for a) and b), the Project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (also referred to as the "Cortese List"). Therefore, the proposed project would not create a significant hazard to the public or the environment on account of being located on a hazardous materials site. There would be no impact under this criterion.

e) ***No Impact.*** The nearest airport is the Sacramento International Airport, approximately 4 miles northwest of the Project site. According to the Comprehensive Land Use Plan (CLUP) for the Sacramento International Airport,[66] the Project site is not within the delineated Airport Influence Area (AIA) safety zones or noise contours. The proposed project would not result in a safety hazard or excessive noise for people residing in the area, and there would be no impact.

f) ***Less than Significant.*** The City of Sacramento has an Emergency Operations Plan and the Fire Department has a hazardous materials incident response team that works in coordination with other regional and state agencies in the event of a major emergency (Policy PHS 4.1.1). In addition, Sacramento County has developed an Area Plan for Emergency Response to Hazardous Materials Incidents and a Local Hazard Mitigation Plan. The City has adopted the latter and cooperates with the County with the adopted emergency response plans.

Construction activities for large projects would likely cause land closures or may restrict travel on city roadways for temporary periods of time. It is not anticipated that implementation of the proposed project would cause similar level of temporary closures. As specified by the Sacramento Municipal Code Sections 12.20.020 and 12.20.030, the City's Public Works Department requires preparation of a Traffic Management Plan for the construction activities to reduce major congestion problems, which could result in interference with emergency response.

With compliance with the Traffic Management Plan review and approval by the City's Public Works Department, the proposed project would minimize the potential for construction impacts to interfere with emergency response and implementation of Traffic Management Plans would reduce the impact to less than significant. The proposed

66 Sacramento Area Council of Governments, 2013. *Sacramento International Airport Land Use Compatibility Plan*. Adopted December 12, 2013. Available: https://www.sacog.org/sites/main/files/file-attachments/smf_alucp_all_adopted_dec_2013.pdf?1456339912.

development would not require substantial or permanent road closures which might affect implementation of an emergency response or evacuation plan, the proposed project impact would remain less than significant. No mitigation measures would be required.

g) ***Less than Significant.*** The project site is not located in a Very High Fire Hazard Severity Zone (VHFHSZ)[67] as mapped by the California Department of Forestry and Fire Protection (CAL FIRE). As directed by Government Code 51175-89, the CAL FIRE identifies areas of very high fire hazard severity zones within Local Responsibility Areas (LRA). The project site is located within the City of Sacramento's Fire Department service area.

Construction activities occurring during the dry season have the potential to create sparks that could ignite dry grasses and weeds in the Project area or on the Project site. However, this risk is similar to that found at other construction sites and ongoing vegetation management practices would ensure that wildland fires would be unlikely to occur.

The proposed project would develop the Project site with urbanized uses and would be subject to similar conditions for which vegetation management practices would remain applicable and effective in minimizing the potential fire hazards from construction. For this reason, the impact of the proposed project with respect to fire hazards would remain less than significant.

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67 California Department of Forestry and Fire Protection, 2021. Available: https://osfm.fire.ca.gov/media/6758/fhszl_map34.pdf. Accessed August 28, 2022.

3.10 Hydrology and Water Quality

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

Environmental Setting

The proposed project site is currently vacant and undeveloped. The entirety of the site consists of pervious soils.

The City of Sacramento is located within the Sacramento Valley Groundwater Basin, which includes both the 351,000-acre North American Subbasin and the 248,000-acre South American Subbasin. The proposed project site would fall within the North American Subbasin.[68]

The City is also situated at the confluence of the Sacramento River and American River, within the Sacramento River Basin. The basin consists of approximately 27,000 square miles bounded by the Cascade Range and Trinity Mountains to the north, the Sacramento-San Joaquin Delta to

[68] City of Sacramento, 2015. *City of Sacramento 2035 General Plan Background Report.* Adopted March 3, 2015. P. 6-48.

the southeast, the Sierra Nevada to the east, and the Coast Ranges to the west. This basin captures approximately 22 million acre-feet (AF) of average annual precipitation.[69]

Discussion

a) ***Less than Significant.*** Water quality in the City of Sacramento is regulated by the City of Sacramento Stormwater Quality Improvement Program (SQIP), a comprehensive program intended to reduce stormwater pollution to the Maximum Extent Practicable (MEP).[70] The State Water Resources Control Board (SWRCB) adopts a statewide general National Pollutant Discharge Elimination System (NPDES) permit to regulate stormwater discharges associated with construction activity. Projects which disturb at least one acre of soil are also required to obtain coverage under the General Permit for Discharges of Stormwater Associated with Construction Activity Construction General Permit Order 2009-0009-DWQ (General Permit). This permit applies to construction activities that include clearing, grading, and ground disturbances like stockpiling or excavation.

The City of Sacramento SQIP contains a Construction Element, or General Construction Permit, which seeks to eliminate prohibited non-stormwater discharges by directing implementation of the NPDES Permit for Stormwater Discharges Associated with Construction Activity. This General Construction Permit requires the development of implementation of a Stormwater Pollution Prevention Plan (SWPPP), which must include the best management practices (BMPs) the proposed project will utilize to protect stormwater runoff. The SWPPP also includes a visual monitoring program, and chemical monitoring program for "non-visible" pollutants to be implemented in case of BMP failure, and a sediment monitoring plan if the site discharges directly to a body of water listed on the 303(d) list for sediment.

Implementation of the proposed project would include construction activities, which could potentially degrade water quality as a result of increased sedimentation and discharge associated with stormwater runoff. The potential for stormwater erosion due to the disturbance of soils onsite would also be increased by the proposed project. As the proposed project would disturb more than one acre of land, it would be required to comply with the Construction General Permit by filing a Notice of Intent (NOI) through the State's Stormwater Multiple Application and Report Tracking System (SMARTS) and receiving a valid identification number prior to the issuance of any grading permits. During construction, the proposed project would be subject to the requirements of the Construction General Permit, NPDES, and General Permit.

Operation of the proposed project would be designed in adherence with standards and guidelines for source control, runoff reduction, and treatment control measures

69 City of Sacramento, 2015. *City of Sacramento 2035 General Plan Background Report.* Adopted March 3, 2015. P. 6-43.

70 City of Sacramento, 2022. "Stormwater." Available: https://www.cityofsacramento.org/utilities/drainage/stormwater. Accessed August 29, 2022.

established in the Stormwater Quality Design Manual for the Sacramento Region,[71] and with the stormwater pollutant reduction requirements of the Stormwater Management and Discharge Control Code under Chapter 13.16 of the Sacramento City Code. The project vicinity is served by the Central Valley Regional Water Quality Control Board, and is located within Reclamation District 1000 (RD 1000).[72] However, as the proposed project site is currently vacant, undeveloped, and largely pervious, and implementation of the proposed project would develop the site for residential uses with more than one acre of new or modified impervious area, the management of stormwater drainage would be required. Such management would include the use of Low Impact Development (LID), Hydromodification Management Plan (HMP), and on-site treatment control measures.

Compliance with the aforementioned permit requirements, Stormwater Quality Design Manual standards and guidelines, and Sacramento City Code regulations, along with the implementation of BMPs and associated monitoring programs, would result in a less-than-significant impact to water quality standards.

b) ***Less than Significant.*** The proposed project would introduce impervious surfaces throughout the approximately 9.57-acre project site, which is situated within the 351,000-acre North American Subbasin. In 2014, estimated that cumulative groundwater recharge to the North American Subbasin from various recharge components was approximately 114,400 AF.[73] Given the size of the subbasin and the cumulative recharge the basin receives, the relatively small acreage of pervious area which would be lost as a result of project implementation would not be anticipated to substantially decrease or interfere with groundwater recharge such that sustainable groundwater management of the basin would be impeded. Compliance with the 2014 Groundwater Management Plan and with the 2015 Sustainable Groundwater Management Act (SGMA) would further reduce environmental effects of the proposed project related to groundwater recharge, and the impact would be less than significant.

c.i) ***Less than Significant.*** Although the proposed project would introduce new impervious surfaces to the Project site, the Project would be subject to the development, review, and implementation of a project-specific drainage study and site-specific grading plan under the guidance of the City of Sacramento Department of Utilities (DOU), prior to construction. As mentioned above, the proposed project would be required to comply with the requirements of an NPDES permit, General Permit, and General Construction Permit to regulate ground-disturbing activities and stormwater runoff. Compliance with these permits would also include implementation of BMPs and monitoring programs to mitigate potential erosion or sedimentation resulting from stormwater runoff or discharge.

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71 Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, and Sacramento and County of Sacramento, 2018. *Stormwater Quality Design Manual for the Sacramento Region.* Published July 2018.

72 California State Water Resources Control Board, 2021. "State and Regional Water Boards." Available: https://www.waterboards.ca.gov/waterboards_map.html#rwqcbs. Accessed June 4, 2021.

73 Sacramento Groundwater Authority, 2014. *Groundwater Management Plan: Sacramento County – North Basin*. Published December 2014. P. 32.

The proposed project would also be subject to compliance with and inspections under the City of Sacramento's Grading, Erosion, and Sediment Control Ordinance, which requires project applicants to demonstrate erosion, sediment, and urban runoff pollution control methods on construction plans. Adhering to these conditions would result in a less-than-significant impact to on- or off-site erosion or siltation through alteration of the existing drainage pattern for the proposed project.

c.ii) ***Less than Significant.*** The proposed project would require a site-specific drainage study subject to review and approval by DOU. This drainage study would comply with the Master Drainage Plan for Basin-15[74] and would include analysis for mitigating sizing and drainage system design. Grading of the proposed project site would not occur prior the review and approval of a project-specific grading plan by the DOU.

Although the proposed project would alter existing drainage on the site through the addition of impervious surfaces, the proposed project is not anticipated to substantially alter existing patterns of the Project site or vicinity in a manner which would result in flooding on- or off-site. Completion of a project-specific drainage study would reduce potential flooding hazards resulting from project implementation. Compliance with relevant policies of the 2035 General Plan and with the requirements of the NPDES, General Permit, and General Construction Permit, as well as with Stormwater Quality Design Manual standards and guidelines and Stormwater Management and Discharge Control regulations, would reduce the potential environmental effects of increased surface runoff resulting from the proposed project, and would result in a less-than-significant impact to on- or off-site flooding.

c.iii) ***Less than Significant.*** Increased runoff in the Project vicinity would result from implementation of the proposed project, which would include the additional of new impervious surfaces on the proposed project site. However, the DOU has not indicated that construction or operation of the proposed project would exceed the capacity of existing or planned stormwater drainage systems. Any anticipated infrastructure for the drainage system at the proposed project site would be designed in accordance with the standards and guidelines of the Stormwater Quality Design Manual for the Sacramento Region and the DOU's Onsite Design Manual for Drainage, Sewer, Water, Stormwater Quality and Erosion and Sediment Control.[75]

Compliance with NPDES, General Permit, and General Construction Permit measures, implementation of BMPs to protect stormwater runoff and regulate discharge, and adherence to the City of Sacramento's Grading, Erosion, and Sediment Control Ordinance, would reduce the potential effects of drainage pattern alteration to runoff capacity or pollution resulting from the proposed project. The drainage study which

74 City of Sacramento, 2011. North Natomas Drainage Basins. Updated December 16, 2011. Available: http://www.cityofsacramento.org/-/media/Corporate/Files/CDD/Natomas/Natomas_Drainage_Basins.pdf?la=en. Accessed: August 29, 2022.

75 City of Sacramento Department of Utilities, 2020. *Onsite Design Manual for Onsite Drainage, Sewer, Water, Stormwater Quality and Erosion and Sediment Control.* Published May 1, 2020.

would be required for this project prior to project construction would confirm this conclusion. This impact would therefore be less than significant.

c.iv) ***Less than Significant.*** The proposed project site is situated within Zone A99, as mapped by the Federal Emergency Management Agency (FEMA).[76] Zone A99 areas are subject to inundation by a one-percent-annual-chance flood event, but are considered protected under the specified statutory progress toward or complete construction of flood protection systems.[77] The proposed Project site does not fall within any special flood hazard areas or other areas of flood hazard.

The proposed Project would require a site-specific drainage study in compliance with the Master Drainage Plan for Basin-15; this study would be subject to review and approval by the DOU. The proposed project would also comply with Section 15.88.010 of the Sacramento City Code, which prohibits development of a project such that the Project would obstruct, impede, or interfere with the natural flow of existing off-site drainage crossing the proposed project site. Grading of the proposed project site would not occur prior the review and approval of a project-specific grading plan by the DOU.

Although the proposed Project would alter existing drainage on the site through the addition of impervious surfaces, the proposed project is not anticipated to substantially alter existing patterns of the Project site or vicinity in a manner which would impede or redirect flood flows. The Natomas Levee Improvement Program (NLIP) is currently being carried out by the Sacramento Area Flood Control Agency (SAFCA) to address deficiencies in the levee system and to provide the Natomas Basin with protection against a 100-year flood as soon as possible.[78,79] Completion of a drainage study would reduce potential flooding hazards resulting from project implementation. Compliance with relevant policies of the 2035 General Plan and with FEMA-mandated flood insurance purchase requirements and National Flood Insurance Program (NFIP) floodplain management standards established for A99 zones would result in a less-than-significant impact to the alteration of existing drainage patterns such that flood flows would be impeded or redirected.

d) ***Less than Significant.*** The proposed project site is not located near a body of water such that the Project would place individuals or structures at risk of tsunami or seiche. However, the proposed project site is located within an A99 zone, as mapped by FEMA. Because of this designation, the proposed project would be subject to mandatory flood insurance purchase requirements and floodplain management and building requirements

76 Federal Emergency Management Agency, 2020. "National Flood Hazard Layer FIRMette." October 2020. Available: https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd&extent=-121.53563283226534,38.63453255876775,-121.4940907790416,38.65129213762712. Accessed August 29, 2022.

77 Federal Emergency Management Agency, 2020. "Zone A99." Updated July 22, 2022. Available: https://www.fema.gov/glossary/zone-a99. Accessed August 29, 2022.

78 City of Sacramento, 2022. Sacramento City Code Chapter 15.104.065: Zone A99 Regulations. Available: http://www.qcode.us/codes/sacramento/view.php?topic=15-15_104-i-15_104_065. Accessed August 29, 2022.

79 Reclamation District 1000. "Natomas Levee Project." Available: https://www.rd1000.org/natomas-levee-project. Accessed August 29, 2022.

as contained in Section 60 of NFIP regulations. These regulations include, but are not limited to, the provisions that:

- flood insurance not be sold or renewed within a community, unless the community has adopted adequate flood plain management regulations consistent with Federal criteria;[80]
- all permit applications for proposed construction be reviewed to determine whether proposed building sites will be reasonably safe from flooding;[81]
- and review subdivision proposals and other new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding.[82]

Should proposed buildings be situated within a flood-prone area, NFIP regulations require that all new construction and substantial improvements: (i) be designed or modified and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy, (ii) be constructed with materials resistant to flood damage, (iii) be constructed by methods and practices that minimize flood damages, and (iv) be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

If proposed subdivisions or other new development is located in a flood-prone area, NFIP regulations require that: (i) all proposals are consistent with the need to minimize flood damage within the flood-prone area, (ii) all public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed to minimize or eliminate flood damage, and (iii) adequate drainage is provided to reduce exposure to flood hazards.[83]

As the proposed project would comply with the NFIP floodplain management and building requirements delineated in Section 60.3, as well as previously mentioned permit conditions and BMPs, 2035 General Plan policies, and relevant City Code regulations to reduce erosion, sedimentation, and pollution discharge, the proposed project would not substantially risk the release of pollutants due to project inundation resulting from flood hazard. This result would be less than significant.

e) ***No Impact.*** The proposed project would be subject to the standards and guidelines of the City of Sacramento 2020 Urban Water Management Plan (UWMP) and the 2014 Sacramento County Groundwater Management Plan, and would not conflict with or obstruction implementation of a water quality control plan or sustainable groundwater

[80] Federal Code of Regulations (CFR). 44 CFR Part 60.1 Purpose of subpart.
[81] Federal Code of Regulations (CFR). 44 CFR Part 60.3 Flood plain management criteria for flood-prone areas.
[82] Federal Code of Regulations (CFR). 44 CFR Part 60.3 Flood plain management criteria for flood-prone areas.
[83] Federal Code of Regulations (CFR). 44 CFR Part 60.3 Flood plain management criteria for flood-prone areas.

management plan. There would be no impact to water management plans resulting from implementation of the proposed project.

3.11 Land Use and Planning

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
XI. LAND USE AND PLANNING — Would the project:				
a) Physically divide an established community?	☐	☐	☒	☐
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

Environmental Setting

The project site is located in the North Natomas area of the City of Sacramento. The project site is designated as Urban Center High (Density Range: 24.0 to 250.0 du/ac) with a Floor Area Ratio (FAR) range of 0.50 FAR to 8.00 FAR in the 2035 General Plan.[84] This land use designation is meant to provide for a balanced mix of high-density/intensity single-use commercial or residential development or horizontal and vertical mixed-use development. The site is zoned Employment Center (EC-40-PUD). Per the terms of the PUD, the project proposes a Conditional Use Permit (CUP) to allow residential development in the EC-40-PUD zone. The site is also governed by the Arena Corporate Center Planned Unit Development (PUD) Guidelines.

Discussion

a) ***Less than Significant.*** The project site is surrounded by other development, including multi-family residential, hotel, office, and retail uses. Immediately east is Ashton Parc Apartments, a multi-family residential complex with 3-story buildings and free-standing garages. Access to the complex is provided along Sally Ride Way, the same street that the proposed project would use as one access point. Immediately west of the site is the 4-story TownePlace Suites by Marriott hotel. Single-story business/office buildings are located to the northwest of the Project site. Multi-family residential uses and retail buildings are to the south of the Project site, across Arena Boulevard. The recently approved Innovation Park PUD project is immediately north of the Project site, across Sports Parkway. Innovation Park will include a major regional employer, the California Northstate University Medical Center, as well as residential, educational, commercial, and open space uses. Slightly farther out, residential, retail, and office uses are present.

The proposed 282-unit residential project would be infill development, developing vacant parcels within an urbanized neighborhood on a site designated for urban development in the City's 2035 General Plan. The Urban Center High designation provides for a mix of uses, including high-density residential and open space gathering spaces such as plazas and public or quasi-public uses.

As mentioned, the Urban Center High land use designation would allow for residential density between 24-250 du/ac. The proposed project's density would be 29.5 du/ac gross,

84 City of Sacramento, 2015. *City of Sacramento 2035 General Plan.* Adopted March 3, 2015.

or 35.4 du/ac net, which is within the density range permitted. The project would provide additional housing needed in the City and the region, and be proximate to major employers, including the Centene/Health Net campus along East Commerce Way and the future California Northstate University medical center. The project would not result in any physical division to an established community.

The project site is zoned Employment Center (EC), and multi-unit residential uses are permitted with a Conditional Use Permit, as residential uses are considered a non-primary use in this zone. Development of residential uses on the Project site would provide supportive use to major employment centers in the North Natomas area. Provision of residential units would further the City's goal of providing additional housing, while also placing residents close to places they may work.

The project would increase housing within a growing residential area, and would not physically divide an established community. For the reasons described above, the Project would have a less than significant impact.

b) ***Less than Significant.*** The proposed project, a residential community, is consistent with the regional, local, neighborhood and conservation plans and policies that guide the development of land uses and avoid or mitigate for environmental effects.

SACOG Blueprint: The Sacramento Area Council of Governments (SACOG) adopted the Sacramento Region Blueprint Transportation and Land Use Study Preferred Blueprint Scenario (Blueprint) in December 2004.[85] The Blueprint, previously called the Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS), links land use, air quality, and transportation needs in the Sacramento region. SACOG's long-range plan is updated every four years, and the updated version of this long-range plan, expected to be adopted in early 2024 will be called the 2024 Blueprint.

Although the proposed project is on a site originally envisioned for office development, it is adjacent to a medium density mixed use corridor. Further, the SACOG Blueprint importantly links employment centers with housing choices. The proposed project furthers the Blueprint's goal of "creating environments that are more compactly built and use space in an efficient but attractive manner helps to encourage more walking, biking, and transit use and shorter auto trips." With development of multi-family residential units, the proposed project is consistent with the regional Preferred Blueprint Scenario.

2035 General Plan: The City's General Plan includes policies intended for protection, maintenance, and enhancement of Sacramento's residential neighborhoods. Policies that address diversity of housing types and support the development of more complete residential neighborhoods and complementary community and neighborhood serving

[85] Sacramento Area Council of Governments, 2017. "2004 Sacramento Region Blueprint." Available: https://www.sacog.org/2004-sacramento-regional-blueprint. Accessed August 29, 2022.

uses, such as parks and schools and places of assembly, are applicable to the proposed project.

The project site is designated Urban Center High, which allows for a density range of 24 to 250 dwelling units per acre. The project proposes 282 units on an approximately 9.57-acre site (which includes the conjunctive use area), which equates to a gross density of 29.5 dwelling units per acre. The net buildable acreage, not including the conjunctive use area, is 7.97 acres, resulting in a density of 35.4 units per acre These densities are within the range of allowable densities.

General Plan policies for suburban neighborhoods also focus on enhancing the housing choices, pedestrian safety and neighborhood connectivity. The project proposes housing that is compatible with the surrounding uses, and similar in nature to other residential units in North Natomas. The project reinforces accessibility through inclusion of sidewalks for pedestrians and connection to Arena Boulevard through pedestrian access points along the street.

North Natomas Community Plan: The project site is located within the North Natomas Community Plan area, and is designed to be consistent with the overall community plan–land use and urban form for North Natomas as illustrated in Figure NN-2 of the North Natomas Community Plan.[86]

Natomas Basin Habitat Conservation Plan: The project site is subject to the Natomas Basin Habitat Conservation Plan (NBHCP). The project site is in an area that was anticipated for development as part of the North Natomas Community Plan.[87] Therefore, the proposed project would not conflict with the NBHCP.

For the reasons described above, the proposed project would require a Conditional Use Permit to allow residential development on the Project site, as discussed above, and would have a less-than-significant impact related conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

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86 City of Sacramento, 2015. *North Natomas Community Plan*. Adopted March 3, 2105. Available: https://www.cityofsacramento.org/-/media/Corporate/Files/CDD/Planning/Community-Plans/North-Natomas.pdf?la=en. Accessed August 29, 2022.

87 City of Sacramento, Sutter County, and Natomas Basin Conservancy, 2006. *Final Natomas Basin Habitat Conservation Plan*, Ch. 5, Land Use Issues. Available: www.natomasbasin.org/helpful-documents/2003-nbhcp-related-documents/. Accessed August 29, 2022. Pp. III-12 through III-14 & Implementation Agreement Exhibit B.

3.12 Mineral Resources

Issues (and Supporting Information Sources):	*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 of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

Environmental Setting

Existing mineral extraction activities around the City of Sacramento include clay and gold, as well as fine sand and coarse gravel aggregates. Over 67 million tons of permitted aggregate resources exist in Sacramento County, and the City of Sacramento had one permitted mining operation in the southeastern portion of the city; however, this operation is no longer an active mining site. One other mining operation for construction sand is located adjacent to the American River in the South Natomas Community Plan area; however, this has been ordered to cease and desist by both the City and the State, as it is not a permitted mining operation.[88]

Mineral Resource Zones (MRZs) are categorized by geologic factors into four broad classifications (MRZ-1 through MRZ-4). Zones that are likely to include significant existing or likely mineral deposits are classified as MRZ-2 areas. Many of the areas within the City of Sacramento that are classified as MRZ-2 have already been developed.

Discussion

a) ***No Impact.*** The City of Sacramento 2035 General Plan Background Report identified one MRZ within the General Plan area where the likelihood of significant mineral deposits is high (MRZ-2).[89] This MRZ-2 zone is located approximately 3.5 miles southeast of the proposed project site, along the American River, and is not situated within the Project area.[90] No MRZ-2 zones have been mapped by the California Geologic Survey in proximity to the proposed project site, although areas containing mineral deposits, the significance of which cannot be evaluated from available data (MRZ-3), have been mapped south of the proposed project site, along the American River.

The project area is classified as MRZ-1,[91] indicating that there is adequate information to suggest that no significant mineral deposits are present or that there is little likelihood of

88 City of Sacramento, 2015. *City of Sacramento 2035 General Plan Background Report.* Adopted March 3, 2015. P. 6-93.

89 City of Sacramento, 2015. *City of Sacramento 2035 General Plan Background Report.* Adopted March 3, 2015. P. 6-93.

90 Dupras, Don L., 1999. Mineral Land Classification Map of PCC-Grade Aggregate Resources in Sacramento County, Plate 3. Published 1999.

91 Dupras, Don L., 1999. Mineral Land Classification Map of PCC-Grade Aggregate Resources in Sacramento County, Plate 3. Published 1999.

their presence in the area. As there are no known mineral resources located on the proposed project site, no impact to known mineral resources of regional or state-wide would value result from implementation of the proposed project.

b) ***No Impact.*** No locally-important mineral resources or locally-important mineral resource recovery sites were identified within the City of Sacramento 2035 General Plan or the North Natomas Community Plan. Although existing mineral extraction activities in the vicinity of Sacramento include clay and fine and course construction aggregates (sand and gravel, respectively), these activities do not pertain to locally-important mineral resources or recovery sites.

As the proposed project vicinity is classified as MRZ-1, indicating a lack of the presence or likelihood of significant mineral deposits, the proposed project would result in no impact related to the loss of availability of a locally-important mineral resource recovery site.

3.13 Noise

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
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?	☐	☒	☐	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Environmental Setting

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise can be defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. Sound pressure level is measured in decibels (dB), with 0 dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies instead focusing on the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). All sound pressure levels and sound power levels reported below are A-weighted.

Noise Exposure and Ambient Noise

An individual's noise exposure is a measure of the noise experienced by the individual over a period of time. A noise level is a measure of noise at a given instant in time. However, noise levels rarely persist consistently over a long period of time. In fact, noise varies continuously with time with respect to the contributing sources in the noise environment. Different noise descriptors used to characterize environmental noise are summarized below:

L_{eq}: The equivalent sound level is used to describe noise over a specified period of time, in terms of a single numerical value. The L_{eq} is the constant sound level which would

contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

L_{dn}: The energy average of the A-weighted sound levels occurring during a 24-hour period, and which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10 p.m. and 7 a.m. is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.

L_{max}: The instantaneous maximum noise level measured during the measurement period of interest.

Effects of Noise on People

The effects of noise on people can be placed into three categories:

- subjective effects of annoyance, nuisance, dissatisfaction;
- interference with activities such as speech, sleep, learning; and
- physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers at industrial plants often experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation exists in the individual thresholds of annoyance, and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way the new noise compares to the existing noise levels that one has adapted to, which is referred to as the "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it.

With regard to increases in A-weighted noise level, the following relationships occur:[92]

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference when the change in noise is perceived but does not cause a human response;
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and
- A 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

92 California Department of Transportation, 2020. *Transportation and Construction Vibration Guidance Manual.* April 2020. Available: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion; hence, the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather they combine logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. However, where ambient noise levels are high in comparison to a new noise source, there will be a small change in noise levels. For example, when 70 dBA ambient noise levels are combined with a 60 dBA noise source, the resulting noise level equals 70.4 dBA.

Noise Attenuation

Sound level naturally decreases with more distance from the source. This basic attenuation rate is referred to as the *geometric spreading loss*. The basic rate of geometric spreading loss depends on whether a given noise source can be characterized as a point source or a line source. Point sources of noise, including stationary mobile sources such as idling vehicles or on-site construction equipment, attenuate (lessen) at a rate of 6.0 to 7.5 dBA per doubling of distance from the source. Widely distributed noises such as a street with moving vehicles (a "line" source) would typically attenuate at a lower rate of approximately 3.0 to 4.5 dBA for each doubling of distance between the source and the receiver depending on the ground conditions between the source and the receiver. Atmospheric effects, such as wind and temperature gradients, presence of trees and vegetation, buildings, and barriers also influence noise attenuation rates from both line and point sources of noise. Generally, a solid noise barrier that breaks the line of sight between source and receiver will provide at least a 5-dBA reduction in noise.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal and is typically expressed in units of inches per second (in/sec). The PPV is most frequently used to describe vibration impacts on buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration.[93] Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration.

Some common sources of ground-borne vibration are trains, heavy trucks traveling on rough roads, and construction activities such as blasting, pile driving, and operation of heavy earthmoving equipment. The effects of ground-borne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, vibration can cause damage to buildings. Building damage is not a

[93] Federal Transit Administration, 2018. *Transit Noise and Vibration Impact Assessment Manual*. September 2018. Available: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf.

factor for most projects, with the occasional exception of blasting and pile-driving during construction. In residential areas, the background vibration velocity level is usually around 50 VdB.

Sensitive Receptors

Human response to noise varies considerably from one individual to another. Effects of noise at various levels can include interference with sleep, concentration, and communication, and can cause stress and hearing loss. Given these effects, some land uses are considered more sensitive to ambient noise levels than others. In general, residences, schools, hotels, hospitals, and nursing homes are considered to be the most sensitive to noise. Places such as churches, libraries, and cemeteries, where people tend to pray, study, and/or contemplate are also sensitive to noise. Commercial and industrial uses are considered the least noise-sensitive.

The project site is surrounded by the following sensitive receptors:

- The nearest sensitive receptors to the Project site are the Ashton Parc Apartments located to the east of the Project site; with the nearest residences located less than 50 feet from the Project boundary.
- Residences are also located to the south and southeast of the Project site across Arena Boulevard that runs adjacent to the southern boundary of the Project site.
- The Natomas Charter School Star Academy and the Little Blossom Montessori School are located approximately 990 feet and 1,950 feet to the southeast and northeast of the Project site, respectively.
- Medical clinics including the San Lucas Pediatric Clinic and Natomas Obstetrics and Gynecology Clinic are located immediately west of the Project site approximately 65 feet from the Project boundary.
- The guests at the Towne Place Suites would also be exposed to increased noise levels from project construction, but their exposure would be limited to the duration of their stay.

Regulatory Setting

Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies. Local regulation of noise involves implementation of general plan policies and noise ordinance standards. Local general plans tend to identify general principles intended to guide and influence development plans; local ordinances establish standards and procedures for addressing specific noise sources and activities.

California Residential Code, Title 24, Part 2.5

Title 24 requires multi-family buildings to implement specific measures to mitigate sound transmission between dwelling units and other dwelling units and occupancies. Wall and floor-to-ceiling assemblies separating dwelling units, including those separating adjacent townhouse units, must provide airborne sound insulation for walls, and both airborne and impact sound insulation for floor-to-ceiling assemblies. Airborne sound insulation for wall and floor-to-ceiling assemblies

must meet a sound transmission class (STC) rating of 45 when tested in accordance with ASTM E90. Penetrations of openings in construction assemblies for piping, electrical devices, recessed cabinets, bathtubs, soffits, or heating, ventilating or exhaust ducts must be sealed, lined, insulated, or otherwise treated to maintain the required ratings. Dwelling unit entrance doors which share a common space must be tight fitting to the frame and sill.

City of Sacramento 2035 General Plan

The following noise and vibration-related standards identified in the Environmental Constraints Element of the City of Sacramento 2035 General Plan[94] are relevant to the proposed project.

Exterior Noise Standards. Per Policy EC 3.1.1, the City shall require noise mitigation for all development where the projected exterior noise levels exceed those shown in **Table 3.13-1** (Table EC 1 in the General Plan), to the extent feasible.

TABLE 3.13-1
EXTERIOR NOISE COMPATIBILITY STANDARDS FOR VARIOUS LAND USES

Land Use Type	Highest Level of Noise Exposure that is Regarded as "Normally Acceptable"[a] (L_{dn}[b] or CNEL[c])
Residential—Low Density Single Family, Duplex, Mobile Homes	60 dBA[d,e]
Residential—Multi-family	65 dBA
Urban Residential Infill[f] and Mixed-Use Projects[g]	70 dBA
Transient Lodging—Motels, Hotels	65 dBA
Schools, Libraries, Churches, Hospitals, Nursing Homes	70 dBA
Auditoriums, Concert Halls, Amphitheaters	Mitigation based on site-specific study
Sports Arena, Outdoor Spectator Sports	Mitigation based on site-specific study
Playgrounds, Neighborhood Parks	70 dBA
Golf Courses, Riding Stables, Water Recreation, Cemeteries	75 dBA
Office Buildings—Business, Commercial and Professional	70 dBA
Industrial, Manufacturing, Utilities, Agriculture	75 dBA

NOTES:
a. As defined in the **State of California General Plan Guidelines**, "Normally Acceptable" means that the "specified land use is satisfactory, based upon the assumption that any building involved is of normal conventional construction, without any special noise insulation requirements."
b. L_{dn} or Day Night Average Level is an average 24-hour noise measurement that factors in day and night noise levels.
c. CNEL or Community Noise Equivalent Level measurements are a weighted average of sound levels gathered throughout a 24-hour period.
d. dBA or A-weighted decibel scale is a measurement of noise levels.
e. The exterior noise standard for the residential area west of McClellan Airport known as McClellan Heights/Parker Homes is 65 dBA.
f. With land use designations of Central Business District, Urban Neighborhood (Low, Medium, or High) Urban Center (Low or High), Urban Corridor (Low or High).
g. All mixed-use projects located anywhere in the City of Sacramento.

SOURCE: City of Sacramento, 2015. *City of Sacramento 2035 General Plan.* Adopted March 3, 2015.

94 City of Sacramento, 2015. *City of Sacramento 2035 General Plan.* Adopted March 3, 2015. Available: https://www.cityofsacramento.org/Community-Development/Resources/Online-Library/2035--General-Plan.

Exterior Incremental Noise Standards. Policy EC 3.1.2 requires that the City shall require noise mitigation for all development that increases existing noise levels by more than the allowable increment shown in **Table 3.13-2** (Table EC 2 in the General Plan), to the extent feasible.

TABLE 3.13-2
EXTERIOR INCREMENTAL NOISE IMPACT STANDARDS FOR NOISE-SENSITIVE USES (DBA)

Residences and Buildings where People Normally Sleep[a]		Institutional Land Uses with Primarily Daytime and Evening Uses[b]	
Existing L_{dn}	Allowable Noise Increment	Existing Peak Hour L_{eq}	Allowable Noise Increment
45	8	45	12
50	5	50	9
55	3	55	6
60	2	60	5
65	1	65	3
70	1	70	3
75	0	75	1
80	0	80	0

NOTES:
a. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
b. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material.

SOURCE: City of Sacramento, 2015. *City of Sacramento 2035 General Plan.* Adopted March 3, 2015.

Interior Noise Standards. Policy EC 3.1.3 requires new development to include noise mitigation to assure acceptable interior noise levels appropriate to the land use type: 45 dBA L_{dn} for residential, transient lodgings, hospitals, nursing homes, and other uses where people normally sleep; and 45 dBA L_{eq} (peak hour) for office buildings and similar uses.

Vibration. Policy EC 3.1.5 requires construction projects anticipated to generate a significant amount of vibration to ensure acceptable interior vibration levels at nearby residential and commercial uses based on the current City or FTA criteria. Policy EC 3.1.7 requires an assessment of the damage potential of vibration-induced construction activities, highways, and rail lines in close proximity to historic buildings and archaeological sites and require all feasible measures be implemented to ensure no damage would occur.

Operational Noise. Policy EC 3.1.8 requires mixed-use, commercial, and industrial projects to mitigate operational noise impacts to adjoining sensitive uses when operational noise thresholds are exceeded.

Construction Noise. Policy EC 3.1.10 requires development projects subject to discretionary approval to assess potential construction noise impacts on nearby sensitive uses and to minimize impacts on these uses, to the extent feasible.

City of Sacramento Municipal Code (Noise Control Ordinance)

The Sacramento Municipal Code includes noise regulations in Title 8 – Health and Safety, Chapter 8.68 – Noise Control (referred to generally as the Noise Control Ordinance). Of the regulations in Chapter 8.68, the following regulations would be applicable to the proposed Project:

- Section 8.68.060 sets standards for cumulative exterior noise levels at residential and agricultural properties, including exterior noise standards of 55 dBA from 7 a.m. to 10 p.m., and 50 dBA from 10 p.m. to 7 a.m. Per Section 8.68.060(b), the allowable decibel increase above the exterior noise standards in any one hour are:

  1. 0 dB for cumulative period of 30 minutes per hour;
  3. 5 dB for cumulative period of 15 minutes per hour;
  4. 10 dB for cumulative period of 5 minutes per hour;
  5. 15 dB for cumulative period of 1 minutes per hour; or
  6. 20 dB not to be exceeded for any time per hour.

  In addition, per Section 8.68.060(c), each of the noise limits above shall be reduced by 5 dB for impulsive or simple tone noises, or for noises consisting of speech or music. If the ambient noise level exceeds that permitted by any of the first four noise limit categories specified in subsection (b) above, the allowable noise limit shall be increased in 5 dB increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the fifth noise level category, the maximum ambient noise level shall be the noise limit for that category.

- Section 8.68.080 exempts certain activities from Chapter 8.68, including "noise sources due to the erection (including excavation), demolition, alteration, or repair of any building or structure" as long as these activities are limited to between the hours of 7 a.m. and 6 p.m. Monday through Saturday, and between the hours of 9 a.m. and 6 p.m. on Sunday. The use of exhaust and intake silencers for internal combustion engines is also required. Construction work can occur outside of the designated hours if the work is of urgent necessity and in the interest of public health and welfare for a period not to exceed 3 days. Section 8.68.080 also exempts noise from any mechanical device, apparatus, or equipment related to or connected with emergency activities or emergency work from Chapter 8.68 requirements.

  - Section 8.68.110 restricts noise from stationary sources such as mechanical equipment, pumps, fans, air conditioning apparatus, cooling towers, compressors, or any combination thereof to:
    - 60 dBA at any point at least one foot inside the property line of the affected residential property and three to five feet above ground level.
    - 55 dBA in the center of a neighboring patio three to five feet above ground level.
    - 55 dBA outside of the neighboring living area window nearest the equipment location. Measurements shall be taken with the microphone not more than three feet from the window opening but at least three feet from any other surface.

Discussion

a) ***Less than Significant with Mitigation***. This noise impact analysis evaluates the temporary noise increases related to construction activities associated with the Project, as

well as operational noise generated primarily from the increase in traffic noise associated with changes in traffic volumes and patterns due to project. Operational noise from any on-site sources associated with the residential uses proposed as part of the Project would be minimal.

Construction Noise

As detailed in Section 2, *Project Description*, the proposed project would construct 282 residential units over the approximately 9.57-acre site. Construction of the Project is expected to take place over a period of 18 months starting in Fall 2023.

Construction, although typically short-term, can be a significant source of noise. Construction is most significant when it takes place near sensitive land uses, occurs during noise-sensitive evening and nighttime hours or when construction takes place over an extended period of time. Construction activities would temporarily increase ambient noise levels within and in the vicinity of the Project area over the duration of construction. Construction activities would be temporary and intermittent, occurring at different parts of the site. Construction-related noise levels would fluctuate depending on the particular type, number, and duration of use of various pieces of construction equipment. The effect of construction noise would depend upon the phase of construction, level of construction activity on a given day, the related noise generated by that activity, the distance between construction activities and the nearest noise-sensitive uses, the presence or absence of barriers between the noise and the receptor, and the existing noise levels at the receptors.

Noise associated with construction equipment and activities is regulated through the enforcement of City of Sacramento noise ordinance standards, implementation of General Plan policies and imposition of conditions of approval for building or grading permits. As detailed earlier, Section 8.68.080 exempts certain activities from complying with standards in the noise ordinance, including "noise sources due to the erection (including excavation), demolition, alteration, or repair of any building or structure" as long as these activities are limited to between the hours of 7 a.m. and 6 p.m. Monday through Saturday, and between the hours of 9 a.m. and 6 p.m. on Sunday and use exhaust and intake silencers for internal combustion engines. All construction activities associated with the Project would occur during these hours pursuant to Section 8.68.080.

Table 3.13-3 shows typical noise levels associated with various types of construction equipment.

TABLE 3.13-3
REFERENCE CONSTRUCTION EQUIPMENT NOISE LEVELS
(50 FEET FROM SOURCE)

Type of Equipment	L_{max}, dBA	Acoustical Usage Factor (%)	Hourly L_{eq}, dBA
Backhoe	78	40	74
Grader	85	40	81
Scraper	84	40	80
Crane	81	16	73
Dozer	82	40	78
Paver	77	50	74
Roller	80	20	73
Loader	78	40	74
Air Compressor	78	40	74
Excavator	81	40	77

SOURCE: Federal Highway Administration, 2008. *FHWA Roadway Construction Noise Model, Version 1.1,* December 2008.

As shown in Table 3.13-3, operation of construction equipment could generate maximum noise levels as high as 85 dBA at 50 feet. However, these maximum noise levels do not persist over the entire workday, as equipment would not consistently need to be operated at peak capacity. Equipment would operate at lower loads, idle and even be turned off during a typical workday. This range of activity is captured by the acoustical usage factor, also shown in Table 3.13-3. The L_{eq} for the various construction equipment (also shown in Table 3.13-3) is estimated as the equivalent noise level over an hour of construction taking into account the usage factor. Noise from construction activities generally attenuates at a rate of 6.0 to 7.5 dBA per doubling of distance.

Residential uses are considered most sensitive to noise as people spend extended amounts of time in them and therefore chances of exposure to noise is high. Residences in the Ashton Parc Apartments to the east of the Project site are located as close as 50 feet from the Project site boundary. Assuming simultaneous operation of the two noisiest pieces of equipment (grader and scraper), which represents the worst case scenario, these receptors would intermittently experience noise levels of up to 83 dBA, well above the exterior noise compatibility standard of 65 dBA for residential multifamily uses shown in Table 3.13-1 and are also likely to exceed the exterior incremental noise impact standards shown in Table 3.13-2 for residential uses.

Though the Project would comply with construction hours in the City's noise ordinance, due to the proximity of existing sensitive receptors, the impact of temporary increase in ambient noise levels from the worst-case scenario for construction would be considered a short-term significant impact on the nearby sensitive receptors.

Implementation of **Mitigation Measure NOI-1** would reduce this impact to a less-than-significant level by requiring noise control devices on construction equipment and implementation of best management practices to reduce noise impacts to adjacent receptors consistent with General Plan Policy ES 3.1.10.

Mitigation Measure NOI-1: The project applicant shall require construction contractors to prepare and implement a Construction Noise Reduction Plan, to be approved by the City Planning Department, that implements the following construction noise reduction measures during grading and construction activities:

i. Consistent with Section 8.68.080 of the City of Sacramento Noise Ordinance, construction activities shall be limited to the hours between 7 a.m. and 6 p.m. Monday through Saturday and between the hours of 9 a.m. and 6 p.m. on Sundays.

ii. Any construction activity proposed to occur outside of the designated hours above shall be evaluated on a case by case basis and only be allowed with the prior written authorization of the City's Building Services Division. Such activities shall not exceed a period of 3 days.

iii. All equipment and trucks used for construction shall be equipped with the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds).

iv. Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible; this could achieve a reduction of 5 dBA.

v. Stationary noise sources shall be located as far from adjacent receptors as possible and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or include other measures.

vi. Temporary noise barriers or shielding shall be erected for construction work involving heavy duty construction equipment if the other noise reduction methods are not effective or possible and if occurring within 300 feet of receptors for an extended period of time (more than 2 weeks).

vii. Advance notice shall be provided to all residences located within 300 feet of extensive construction activities, including the approximate start date and duration of such activities.

Implementation of Mitigation Measure NOI-1 would reduce noise impacts to existing nearby sensitive receptors by limiting exposure to the less noise-sensitive daytime hours of the day, using noise control devices on all construction equipment that reduce noise and by using best management practices to separate noise sources from

receptors to allow for increased attenuation consistent with General Plan Policy EC 3.1.10. This impact would be less than significant with mitigation.

Operational Noise

Most of the long-term noise that would result due to the proposed project would primarily be generated by vehicle traffic on local roadways. The project would contribute to an increase in local traffic volumes, resulting in higher traffic noise levels along local roadways. Noise generated from stationary sources at the clubhouse and pool (HVAC equipment, pumps, etc.) would be minimal.

The project would generate additional vehicle trips to the Project site resulting in an increase in traffic along the roadway network in and around the area. This would increase noise levels along roadway segments and intersections leading to the area. The traffic analysis for the Project estimated the Project would generate approximately 110 and 142 vehicle trips during the a.m. and p.m. peak hours, respectively.[95] These trips would be distributed on the roadway network in the vicinity of the Project site.

Traffic noise levels along roadway segments affected by project traffic were determined using algorithms of the FHWA Traffic Noise Prediction Model Technical Manual and evening peak hour turning movements for Existing and Existing plus Project conditions from the traffic analysis prepared for the Project. Intersections selected for analysis were based on the presence of sensitive receptors along the roadway segments. The segments analyzed and the modeled noise increases along these segments are shown in **Table 3.13-4**, below.

Typically, it takes a doubling of traffic volume (100 percent increase) to increase the associated noise level by 3 dBA, a change that is considered just-perceivable. A noise increase of 5 dBA is considered readily perceivable. As shown in Table 3.13-4, the increase in traffic noise from the Existing plus Project scenario compared to the Existing scenario would be less than 5 dBA at all analyzed roadway segments and would therefore result in a less-than-significant impact with respect to traffic noise along these roadway segments.

95 Kimley Horn, 2022. *Traffic Study – Natomas Brownstone, Sacramento, California*, July 26, 2022.

TABLE 3.13-4
PEAK-HOUR TRAFFIC NOISE LEVELS (dBA) NEAR THE PROJECT SITE[a,b]

Roadway Segment	Hourly L_{eq}, dBA		
	Existing	Existing Plus Project	Difference between Existing Plus Project and Existing
Arena Blvd. east of Commerce Way	66.7	66.9	+0.2
E Commerce Way south of Arena Blvd.	60.2	60.2	+0.0
Arena Blvd. east of Sally Ride Way	66.4	66.5	+0.1
Arena Blvd. west of Sally Ride Way	66.6	66.7	+0.1
Sally Ride Way south of Arena Blvd.	53.1	53.1	+0.0
Arena Blvd. west of Innovation Dr./S Entrance Road	66.3	66.4	+0.1
S Entrance Road north of Arena Blvd.	48.3	48.3	+0.0
Innovation Dr. south of Arena Blvd.	59.6	59.6	+0.0
Arena Blvd. east of Truxel Road	64.1	64.1	+0.0
Truxel Road north of Arena Blvd.	67.5	67.5	+0.0

NOTES:
a. Noise levels were determine using methodology described in FHWA Traffic Noise Model Technical Manual and p.m. peak traffic data for intersections.
b. Traffic noise increases greater than 5 dB is considered a significant increase in ambient noise levels.

Project construction, with the implementation of Mitigation Measure NOI-1, and project operation would not result in ambient noise levels in the vicinity of the Project in excess of standards established in the City's general plan or noise ordinance. This impact would be less than significant with mitigation.

b) ***Less than Significant.*** Construction activity can result in varying degrees of groundborne vibration, depending on the type of soil, equipment, and methods employed. Operation of construction equipment can cause ground vibrations that spread through the ground and diminish in strength with distance. Buildings on the soil near the construction site respond to these vibrations with varying results, ranging from no perceptible effects at the lowest levels, low rumbling sounds and perceptible vibrations at moderate levels, and slight damage at the highest levels. While ground vibrations from construction activities do not often reach the levels that can damage structures, fragile buildings must receive special consideration.

There are no structures in the vicinity of the Project site that are of historical significance (see Section 3.5, *Cultural Resources*, for additional details about historic resources). Therefore, the analysis below focuses on the potential for construction vibration to cause damage to buildings of conventional construction and generate human annoyance impacts. Policy EC 3.1.5 of the Sacramento General Plan requires construction projects anticipated to generate a significant amount of vibration to ensure acceptable interior vibration levels at nearby residential and commercial uses based on the current City or other criteria.

Construction vibration may generate perceptible vibration when impact equipment or heavy earth moving equipment are used. Construction equipment expected to be used for project construction are shown in Table 3.13-3 and do not include any high vibration generating equipment such as pile drivers or drill rigs. The City does not specify any vibration thresholds in its General Plan, but the FTA and Caltrans have adopted vibration standards that are used to evaluate potential impacts related to sensitive receiving land uses from vibration. The FTA *Transit Noise and Vibration Impact Assessment Manual*[96] identifies 0.2 and 0.3 in/sec PPV as the levels at which potential damage could result to non-engineered timber and masonry buildings and engineered concrete and masonry buildings, respectively. The Caltrans' *Transportation and Construction Vibration Guidance Manual*[97] identifies 0.24 in/sec PPV as the level at which vibration is distinctly perceivable to humans.

Based on groundborne vibration levels for standard types of construction equipment provided by the FTA, of the equipment proposed to be used for project construction, the use of a vibratory roller/compactor would be expected to generate the highest vibration levels. Vibratory rollers typically generate vibration levels of 0.210 in/sec PPV at a distance of 25 feet.[98] Construction activities would take place as close as 50 feet from residential receptors. Vibration levels associated with a vibratory roller at this distance would be approximately 0.07 in/sec PPV, which would be lower than both the building damage and human annoyance vibration thresholds identified above. Therefore, operation of the Project's highest vibration generating construction equipment would result in less-than-significant impacts at nearby residences. Vibration impacts from other equipment are expected to be lower. Further, the operation and location of each piece of construction equipment at the Project site would not be constant throughout the day, as equipment would be operating at different locations within the Project site and would not always be operating concurrently. Consequently, vibration levels during the majority of the construction period at the nearest off-site residences would be much lower. Therefore, vibration impacts from project construction would be less than significant.

Once operational, the Project would not include any new sources of vibration. The project would involve operation of equipment such as pumps and motors associated with the swimming pool at the clubhouse, which do not generate significant vibration. Therefore, the Project would have no operational impacts with regard to ground-borne vibration.

96 Federal Transit Administration, 2018. *Transit Noise and Vibration Impact Assessment Manual*. September 2018. Available: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf.

97 California Department of Transportation, 2020. *Transportation and Construction Vibration Guidance manual.* April 2020. Available: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf.

98 Federal Transit Administration, 2018. *Transit Noise and Vibration Impact Assessment Manual*. September 2018. Available: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf.

c) ***No Impact.*** There are no private airstrips or public airports located within two miles of the Project site. The nearest airport, the Rio Linda Airport is located more than 4 miles northeast of the Project site and the Sacramento International Airport is located 4.5 miles to the northwest. Therefore, the Project would not expose people residing or working in the Project area to excessive noise levels from aircraft activity. There would be no impact with respect to this criterion.

3.14 Population and Housing

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
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)?	☐	☐	☒	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Environmental Setting

The 2035 General Plan Master EIR projected that Sacramento's population would grow to approximately 640,400 residents by 2035, including 131,076 residents living in multifamily (MF) housing.[99] The 2035 General Plan Master EIR estimated that in order to support these projections, approximately 68,000 housing units would need to be developed. These projections were influenced by a variety of factors, including employment opportunities and housing conditions and needs.

Although the proposed project site is currently vacant and undeveloped, it is designated for residential development and part of the 2035 General Plan build-out projections for provision of housing units.

Discussion

a) ***Less than Significant.*** Under the proposed project, 282 new residential units would be developed over 9.57acres of undeveloped land, resulting in a direct increase to population. The project site is currently designated as Urban Center High, with an acceptable range of 24.0 to 250.0 dwelling units per acre (du/ac) and a floor area ratio (FAR) between 0.5 and 8.0 in the City of Sacramento 2035 General Plan.

The site is currently zoned as EC-40-PUD – Employment Center. Per the terms of the PUD, a Conditional Use Permit would be required to allow residential uses in this zone.

Using an average estimated household factor of 2.7[100] for the City of Sacramento, implementation of the proposed project would result in an anticipated introduction of approximately 762 residents to the proposed project site. While this result would represent a direct increase to population in the Project vicinity, such an increase would be consistent with growth anticipated by the City of Sacramento 2035 General Plan.

[99] City of Sacramento, 2015. *Draft Master Environmental Impact Report for the City of Sacramento 2035 General Plan Update, SCH#2012122006.* Pg. 3-5.

[100] California Department of Finance, 2021. E-5 Population and Housing Estimates for Cities, Counties, and the State, January 2011-2021 with 2010 Benchmark. Published May 2021. Available: https://www.dof.ca.gov/Forecasting/Demographics/Estimates/e-5/. Accessed May 21, 2021.

Impacts resulting from this population increase would be reduced by consistency with 2035 General Plan land use policies, which encourages sustainable growth and change through well-planned development that accounts for the needs of present and future residents (Goal LU 1.1). The proposed residential uses would also serve nearby employment centers, placing residents in close proximity to jobs. These policies ensure that the City regulates building intensity and population density in accordance with the standards and land use designations established in the General Plan Update and the City's Zoning Code. The project's proposed land use and zoning designation would be consistent for the neighborhood and the resulting population growth and this impact would be less than significant.

b) **No Impact.** The proposed project site is currently vacant and undeveloped; as such, the proposed project would not displace existing residents or housing that would necessitate the construction of replacement housing elsewhere. The project would therefore not result in an impact that would displace existing residents or housing.

3.15 Public Services

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

Environmental Setting

The proposed Project site is currently vacant and undeveloped but is located near existing residential, hotel, and office uses. The site is bordered to the west by the Towne Place Suites hotel, to the north by the existing Sports Parkway, to the east by the Ashton Parc Apartments, and to the south by Arena Boulevard and other multi-family residential units. Residential uses introduced to the Project vicinity through implementation of the proposed Project would generate increased demand for public services which serve the area, such as fire protection, police protection, and school services. Consideration of the demand for parks and recreational facilities is discussed in detail under Section 3.16, "Recreation."

Fire Protection Services

Fire protection and prevention services to the proposed Project site would be provided by the City of Sacramento Fire Department (SFD). In addition to fire protection services, the SFD also provides Emergency Medical Services (EMS) and Special Operations services, including Hazardous Materials, Domestic Preparedness, Technical Rescue, Boat and Heavy Rescue, and Urban Search and Rescue programs.[101] SFD personnel respond to approximately 80,000 calls each year and provide service to approximately 480,000 residents and over 20,000 businesses within the City.[102]

Police Protection Services

Police protection services are provided by the City of Sacramento Police Department (SPD) within incorporated areas of the city, and by the Sacramento County Sheriff's Department

[101] City of Sacramento. 2022. "Special Operations." Available: https://www.cityofsacramento.org/Fire/Operations/Special-Operations. Accessed May 27, 2022.

[102] City of Sacramento. 2022. "About." Available: https://www.cityofsacramento.org/Fire/About. Accessed May 27, 2022.

(Sheriff's Department) for areas located outside of the city but within the 2035 General Plan policy area. Law enforcement services may also be provided by the California Highway Patrol (CHP) in the form of traffic enforcement on highways and roadways within unincorporated portions of Sacramento.[103] Services provided by the SPD are distributed among four offices: the Office of Operations, the Office of Investigations, the Office of Specialized Services, and the Office of the Chief.

The SPD is divided into four command areas, each of which is served by an SPD station: North Command, Central Command, East Command, and South Command. The project site falls within the North Command area, within District 1.[104] The SPD does not have an adopted officer-to-resident ratio staffing goal; however, the Department maintains an unofficial goal of 2.0 to 2.5 sworn police officers per 1,000 residents and one civilian staff per two sworn officers.[105]

Schools

The proposed project site falls within the Natomas Unified School District (NUSD). The NUSD operates 15 schools, with a total enrollment of 11,868 students.[106]

Library Services

The City of Sacramento operates 30 public libraries.[107] The library located closest to the Project site is the North Natomas Library, located at 4660 Via Ingoglia Street, about 1.4 miles from the Project site.

Recreation

The City currently contains 230 developed and undeveloped park sites, 88 miles of off-street bikeways and trails, 21 lakes/ponds or beaches, over 20 aquatic facilities, and extensive recreation facilities in the City parks. The developed park sites comprise 218 total parks with 4,829 acres of parkland.

Discussion

Overall, the Project proposes a total of 282 units, including 32 studios, 150 one-bedroom units, and 100 two-bedroom units. As the Project site is zoned for employment uses and received previous entitlements for a hotel, office buildings, and related facilities, an increase in population within the site area is previously planned and accounted for.

[103] City of Sacramento, 2015. *City of Sacramento 2035 General Plan Background Report.* Adopted on March 3, 2015. P. 5-1.

[104] City of Sacramento. 2022. "William J. Kinney Police Facility." Available: http://www.cityofsacramento.org/police/contact/police-facilities/william-j-kinney-police-facility. Accessed May 27, 2022.

[105] City of Sacramento, 2015. *City of Sacramento 2035 General Plan Background Report.* Adopted on March 3, 2015. P. 5-5.

[106] Natomas Unified School District. 2022. "About Us." Available: https://natomasunified.org/about-us/. Accessed May 27, 2022.

[107] City of Sacramento, Sacramento Public Library. 2022. "Locations." Available: https://www.saclibrary.org/Locations. Accessed: June 2, 2022.

a.i) ***Less than Significant***. The SFD does not utilize and official staffing ratio goal. However, the Department seeks to provide one station for every 1.5-mile service radius, per every 16,000 residents, and for every location where a company experiences call volumes exceeding 3,500 calls per year.[108]

The SFD currently staffs 24 fire stations, 24 fire engines, nine ladder trucks, and one heavy rescue unit; these facilities and equipment are divided into three battalions. With the exception of one engine staffed by three people, each fire engine and truck is staffed by four personnel. This staffing, in addition to three battalion chiefs, 34 suppression companies, 15 advanced life support (ALS) ambulances, and one EMS captain, contributes to a daily operational staffing of 169 SFD personnel.[109]

The station nearest to the Project site is Fire Station 43, located approximately 1.2 miles west of the Project site at 4201 El Centro Road. In 2017, Station 43 received a call volume of 1951 calls and was dispatched for 1749 of those incidents.[110] In 2017, engine companies within the service area were able to respond, on average, within five minutes, 27 seconds of receiving a call, while medics and truck companies were able to respond within seven minutes, one second and five minutes, 46 seconds, respectively.[111]

The project would involve the construction of 282 new residential units and the introduction of approximately 762 residents to the Project area. This population growth would increase the demand for fire protection services provided by the SFD and could therefore also result in the need for additional fire protection facilities and/or staff. However, development projects anticipated in the 2035 General Plan include construction of new and/or replacement of fire stations in 12 locations throughout the City of Sacramento.[112] Construction and staffing of these facilities would be completed such that staffing ratio, call volume, and response time goals would be maintained, and would be financed by development within the City of Sacramento as anticipated under the 2035 General Plan, in accordance with Policy PHS 2.1.10. Where possible, these planned future facilities may also co-locate with police protection services, in adherence with 2035 General Plan Policy 2.1.8. The anticipated future facilities, in conjunction with compliance with 2035 General Plan policies and with adherence to the California Fire Code, would reduce the potential environmental impact of increased demand on fire protection services resulting from the Project to a less-than-significant level.

a.ii) ***Less than Significant.*** The project site would be served by Beat 1C of the North Command, within District 1. This command broadly encompasses North Natomas, South

[108] City of Sacramento, 2014. *Draft Master Environmental Impact Report for the City of Sacramento 2035 General Plan Update, SCH#20121220006*. Pp. 4.10-4 to 4.10-5.

[109] City of Sacramento, 2021. "Fire Suppression." Available: https://www.cityofsacramento.org/Fire/Operations/Fire-Suppression. Accessed May 21, 2021.

[110] City of Sacramento Fire Department, 2017. *2017 Annual Report*. Available: https://www.cityofsacramento.org/-/media/Fire/Sacramento-Fire-2017-Annual-Report.pdf?la=en. P. 59.

[111] City of Sacramento Fire Department, 2017. *2017 Annual Report*. Available: https://www.cityofsacramento.org/-/media/Fire/Sacramento-Fire-2017-Annual-Report.pdf?la=en. P. 68.

[112] City of Sacramento, 2014. *Draft Master Environmental Impact Report for the City of Sacramento 2035 General Plan Update*. P. 2-40.

Natomas, Robla, Del Paso Heights, Strawberry Manor, and Arden Fair. The station which will serve the Project site is the William J. Kinney Police Facility, located at 3550 Marysville Boulevard.[113] The Project will involve the construction of 282 new residential units, introducing approximately 762 new residents to the Project area. The increase in population will contribute to an increase in the demand for police protection services provided by the SPD and could subsequently result in the need for additional or expanded law enforcement facilities and staff.

Current population estimates for the City of Sacramento total approximately 525,041 residents.[114] As of 2016, the SPD employed 669 sworn officers and 280 civilian staff members.[115] This staffing level meets the SPD goal for the ratio of civilian staff members to sworn police officers but falls short of the unofficial goal of 2.0 to 2.5 sworn officers per 1,000 residents. However, the number of additional residents which the Project would contribute to the City of Sacramento population would not be substantial enough to induce the need for additional police facilities or staff beyond what is already present within the City of Sacramento and has been considered within the 2035 General Plan Master EIR. The EIR describes the proposed construction of several new police stations and associated facilities which would accommodate up to 600 new sworn officers and civilian staff.[116] Construction and staffing of these facilities would be completed as to maintain staffing ratio goals, and would be financed by development within the City of Sacramento as anticipated under the 2035 General Plan in accordance with Policy PHS 1.1.8.

Furthermore, it should also be considered that the Project site is originally zoned for Employment Center uses, which would require the service of police facilities in the area. Therefore, the need for police service to the Project site was anticipated prior to its designation as residential use.

Development which will occur under the Arena Brownstone Living project would be constructed and operated in adherence to the policies of the City of Sacramento 2035 General Plan Public Health and Safety Element, including Policies PHS 1.1.2, PHS 1.1.3, PHS 1.1.4, PHS 1.1.5, PHS 1.1.17, and PHS 1.1.8. Compliance with these General Plan policies, in conjunction with the expansion of facilities and staffing anticipated by the 2035 General Plan, would reduce the potential environmental impact of increased

113 City of Sacramento, 2016. *Sacramento Police Department 2016 Annual Report*. Available: https://www.cityofsacramento.org/-/media/Corporate/Files/Police/About-SPD/Annual-Reports/ar16pdf?la=en. Accessed June 1, 2022.

114 U.S. Census Bureau, 2022. "QuickFacts: Sacramento city, California; United States." Available: https://www.census.gov/quickfacts/fact/table/sacramentocitycalifornia,sacramentocountycalifornia/PST045221. Accessed June 1, 2022.

115 City of Sacramento, 2016. *Sacramento Police Department 2016 Annual Report*. Published 2016. Available: https://www.cityofsacramento.org/-/media/Corporate/Files/Police/About-SPD/Annual-Reports/ar16.pdf?la=en. P. 11. Accessed June 1, 2022.

116 City of Sacramento, 2014. *Draft Master Environmental Impact Report for the City of Sacramento 2035 General Plan Update.* P. 4.10-4.

demand for law enforcement facilities and staffing resulting from the Project to a less-than-significant level.

a.iii) ***Less than Significant.*** The project would introduce approximately 762 residents to the Project area, and any school-age children living on the Project site would be served by the NUSD and could attend schools located within the District's boundaries. The schools located nearest to the Project site are:

- Natomas Charter School - Star Academy, located at 4004 Gloster Way
- Natomas High School, located at 2500 New Market Drive

As school capacity is the primary determination of the need for additional public school facilities and resources, anticipated student yields for elementary, middle, and high school students resulting from the Project are shown in **Table 3.15-1**.

TABLE 3.15-1
STUDENT GENERATION RESULTING FROM THE PROPOSED PROJECT

Type of School	Single-Family Generation Rate	Number of Single-Family Dwelling Units	Multi-Family Generation Rate	Number of Multi-Family Dwelling Units	Number of Students Generated
Elementary	0.44	N/A	0.19	282	54
Middle	0.12	N/A	0.03	282	9
High	0.23	N/A	0.04	282	12
Total					**75**

SOURCE: City of Sacramento, 2014. Draft Master Environmental Impact Report for the City of Sacramento 2035 General Plan Update, SCH#20121220006. P. 4.10-9.

Based on student generation rates from the City of Sacramento's Draft Master EIR for the 2035 General Plan Update, there are anticipated to be approximately 75 students generated from the Project. Although the number of students anticipated under the Project would result in an increased demand upon school facilities and resources, the relatively small contribution of the student population which would result from the Project (i.e., 75 students compared to NUSD's current 11,868 students) is unlikely to add a substantial number of school-age children within the NUSD. The project is therefore unlikely to result in an increased demand such that the construction or expansion of school facilities would be required.

Furthermore, the Project Applicant will be required to pay school impact fees to be allocated to the NUSD. Although school impact fees are often insufficient to completely fund the construction and operation of new school facilities, the California State Legislature has deemed such fees complete and adequate mitigation under CEQA, pursuant to SB 50 and AB 1600.In the event that construction or expansion would be necessary as a result of the Project, the payment of these school impact fees would reduce

potential environmental impacts to less-than-significant levels under CEQA. Thus, no additional mitigation would be required.

Should construction or expansion of new school facilities be required, consistency with Policies ERC 1.1.1 through 1.1.9 of the 2035 General Plan would further reduce the potential environmental effects resulting from such facilities modifications. These policies require the City to provide the efficient and equitable distribution of quality educational facilities. Compliance with these policies would reduce any potential environmental impacts to less than significant.

a.iv) ***Less than Significant.*** Consideration of the demand for parks and recreational facilities is discussed in detail in the following section, "Recreation."

a.v) ***Less than Significant***. Analysis under the 2035 General Plan Master EIR concluded that impacts on library facilities from development under the General Plan were considered less than significant (Impact 4.10-5). As mentioned, the library located closest to the proposed Project site is North Natomas Library. The North Natomas Library has a number of facilities, including 92 internet workstations, four early learning workstations, two laptops, one photocopier and one printer, a Wi-Fi plaza with three outdoor tables, three study rooms, one quiet room, and a meeting room with a capacity of 140.[117] These facilities would not exceed capacity from the introduction of approximately 762 people. Therefore, impacts to library services would be less than significant.

As discussed above, while implementation of the proposed project may result in increased demand for fire protection, police protection, education, recreational, and library services, the environmental impacts resulting from the need for new or expanded facilities in these sectors, and public services as a whole, would be less than significant.

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[117] City of Sacramento, Sacramento Public Library. 2022. "North Natomas." Available: https://www.saclibrary.org/Locations/North-Natomas. Accessed: June 2, 2022.

3.16 Recreation

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
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?	☐	☐	☒	☐
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?	☐	☐	☒	☐

Environmental Setting

The City currently contains 230 developed and undeveloped park sites, 88 miles of off-street bikeways and trails, 21 lakes/ponds or beaches, over 20 aquatic facilities, and extensive recreation facilities in the City parks. The developed park sites comprise 218 total parks with 4,829 acres of parkland.The project site is currently vacant and undeveloped. At present, there are no neighborhood, local, or regional parks or bikeways existing on the site. In the near vicinity of the Project area, several sites are zoned as Parks under the Sacramento 2035 General Plan. River Birch Park lies about 0.7 miles northeast of the Project site, Linden Park is about 0.4 miles southeast, and Tanzanite Community Park lies about 0.9 miles southeast of the site as well. Airfield Park is about 0.4 miles to the south, and North Natomas Regional Park lies about 1.2 miles to the north. Additionally, Sundance Lake lies approximately 0.9 miles to the west of the Project site, providing additional recreational opportunities to nearby residents.

Discussion

a) ***Less than Significant.*** The proposed project would not cause or accelerate substantial physical deterioration of existing area parks or recreational facilities. The project anticipates the development of 282 residential units, with an estimated population increase of 762 residents. The Quimby Act, or California Government Code section 66477, is intended to preserve open space and parkland in urban areas throughout California, and establishes the allocation of five acres of parkland per 1,000 residents.

The City of Sacramento 2035 General Plan establishes park acreage service level goals of 1.75 acres of neighborhood and community parks per 1,000 residents and 3.5 acres of neighborhood and community parks per 1,000 residents.[118] The project would be served by regional, neighborhood, and community parks. The City of Sacramento defines a regional park as ranging from 75 to 200 acres and serving the entire City and beyond.[119] North Natomas Regional Park is approximately 212 acres in size, with a large capacity to

[118] City of Sacramento, 2015. *City of Sacramento 2035 General Plan*. Adopted March 3, 2015. P. 4.9-1.

[119] City of Sacramento, 2022. "Sacramento Parks." Available: https://www.cityofsacramento.org/ParksandRec/Parks. Accessed May 31, 2022.

serve nearby residents.[120] Community parks range in size from 6 to 60 acres and serve a 3-mile radius. Tanzanite Community Park is approximately 31 acres and lies within a 1-mile radius of the Project site.[121] Neighborhood parks range in size from 2 to 10 acres and serve a half-mile radius.[122] Linden Park and Airfield Park are about 0.4 miles from the Project site, and are approximately 5 and 9.4 acres in size, respectively.[123,124] Given the variety of park options available within the vicinity of the Project site, the Project would not represent an increase in population which would exceed Quimby Act parkland dedication standards or City of Sacramento park acreage service level goals.

Additionally, the Project intends the development of common recreation areas within the site itself which would not only serve Arena Brownstone Living residents, but some of which would be available for public use. The public plaza and linear park at the corner of Arena Boulevard and East Commerce Way would be open and accessible to the public, and could serve as a community gathering space for passive recreation or planned community events. Accordingly, the Project is unlikely to increase the use of existing area parks or recreational facilities such that substantial physical deterioration of those facilities would occur or be accelerated. Therefore, impacts to existing parks and recreational facilities would be less than significant.

b) ***Less than Significant.*** The project would not create a need for construction or expansion of recreational facilities beyond what was anticipated in the 2035 General Plan. As mentioned, the 2035 General Plan establishes specific park acreage service level goals in order to properly serve residents. As mentioned, the estimated population which will be generated from the Project is 762 people, based on the average household size in the City of Sacramento from the latest census data. There are a sufficient number of parks available, in addition to the recreational facilities which would be built as part of the Project, to serve future residents. Therefore, there will not be a need for additional facilities, and the impact would be less than significant.

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120 City of Sacramento, 2022. "North Natomas Regional Park." Available: http://www.cityofsacramento.org/ParksandRec/Parks/Park-Directory/North-Natomas/North-Natomas-Regional-Park. Accessed May 31, 2022.

121 City of Sacramento, 2022. "Tanzanite Community Park." Available: http://www.cityofsacramento.org/ParksandRec/Parks/Park-Directory/North-Natomas/Tanzanite-Community-Park. Accessed May 31, 2022.

122 City of Sacramento, 2022. "Sacramento Parks." Available: https://www.cityofsacramento.org/ParksandRec/Parks. Accessed May 31, 2022.

123 City of Sacramento, 2022. "Linden Park." Available: http://www.cityofsacramento.org/ParksandRec/Parks/Park-Directory/North-Natomas/Linden-Park. Accessed May 31, 2022.

124 City of Sacramento, 2022. "Airfield Park." Available: http://www.cityofsacramento.org/ParksandRec/Parks/Park-Directory/North-Natomas/Airfield-Park. Accessed May 31, 2022.

3.17 Transportation

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
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?	☐	☐	☐	☒
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☒	☐

Environmental Setting

The project site is located in the North Natomas area at the northeast corner of the Arena Boulevard/East Commerce Way intersection. The Project proposes to construct a 282-unit residential condominium complex on a vacant project site. The project is expected to access the surrounding roadway network via the Project's primary access point with the existing apartment complex along Sally Ride Way but would have a secondary access point along the driveway that would be shared with the existing hotel along East Commerce Way.

This analysis is based on the Natomas Brownstone Traffic Study, July 26, 2022, prepared by Kimley-Horn (**Appendix C**).

Travel forecasting for the Project's transportation analysis was conducted using SACOG's most recently released SACSIM travel demand model (SACSIM19). The SACSIM model was used to estimate all likely future travel into, out of, and within the Project site. The model predicts the number of trips, trip purposes, origins and destinations of trips, time of day of the trips, travel mode (walk, bike, transit, automobile), and travel path. Project-specific factors considered in the model included household demographics (assumed to be similar to the demographics of adjacent North Natomas neighborhoods); the roadway network (e.g., connections to the existing roadway system, number of lanes, free-flow travel speeds); the pedestrian network and on-street and off-street bicycle networks; and development patterns (grid connectivity).

Discussion

a) ***No Impact.***

The following are descriptions of the primary roadways near the Project site.

- **Arena Boulevard** is an east-west arterial roadway bordering the southern edge of the Project site. South of the Project site, Arena Boulevard has three lanes in each direction and the roadway travel lanes are separated by a raised median. Sidewalk and bicycle lanes are provided along the proposed project frontage.

- **East Commerce Way** is a north-south arterial roadway located just west of the Project site. In the vicinity of the Project site, East Commerce Way has three lanes in the northbound direction and two lanes in the southbound direction, separated by a raised median. In addition, sidewalks and bicycle lanes are provided in the vicinity of the Project site.
- **Truxel Road** is a north-south arterial roadway located east of the Project site. Truxel Road has four lanes traveling north and south, separated by a raised median.

Multimodal Access and Site Circulation

Project impacts to transit, bicycle facilities, and pedestrian circulation were determined based on the standards of significance defined in the City's Traffic Impact Analysis Guidelines (City of Sacramento, updated with the adopted LOS policies of the Sacramento 2035 General Plan). Considerations were given to offsite bicycle and pedestrian facilities and connectivity in the immediate vicinity of the Project site.

Pedestrians: There are currently sidewalks along both sides of Arena Boulevard, East Commerce Way, and Truxel Road within the Project vicinity. In addition, streetlights are installed along these roadways. At the intersections of Arena Boulevard with East Commerce Way and Truxel Road, four striped crosswalks are provided with corresponding pedestrian signal heads. Similarly, at the intersection of Arena Boulevard with Sally Ride Way, three striped crosswalks are provided with corresponding pedestrian signal heads. Existing and proposed pedestrian facilities are contained in the City's Pedestrian Master Plan.[125]

As shown in the proposed project site plan, the Project would construct several pedestrian entry gates along Arena Boulevard and Sports Parkway with a supporting sidewalk along Sports Parkway and to the west via the hotel parking lot to East Commerce Parkway. In addition, the Project would continue the sidewalk along Arena Boulevard north along Sally Ride Way to the Project's entry and construct a sidewalk along the Project's frontage along the shared driveway that accesses East Commerce Way.

The eastbound approach of the Arena Boulevard intersection with Sally Ride Way (Intersection #4) was reviewed to determine whether the addition of a crosswalk at this approach would be appropriate. After a review of the existing conditions at the intersection and a determination of the origins and destinations of the pedestrians that may use this approach, it was determined that this crosswalk was not necessary. The primary physical restrictions at the intersection include the location of the drainage inlet in close proximity to the southern end of the crosswalk and the requirement that the eastbound stop bar and median would need to be moved further west. When reviewing the origins and destinations of pedestrians that may use this crosswalk, it should be noted that there is an existing crosswalk at both westbound approaches of the Arena Boulevard intersections with East Commerce Way and Sally Ride Way. These crosswalks would provide sufficient access to pedestrians attempting to walk from the Project to the commercial areas along East Commerce Way and Truxel Road. Therefore, it was

[125] City of Sacramento Department of Transportation, 2006. *Pedestrian Master Plan*, September 2006.

determined that the crosswalk at the eastbound approach of the Arena Boulevard intersection with Sally Ride Way (Intersection #4) is not necessary.

Transit: Sacramento Regional Transit District (RT) provides transit service in the greater Sacramento metropolitan area. The project is located within a half-mile to RT Routes 11, 13, and 113.[126] The nearest transit stops are located on Truxel Road in the immediate vicinity of the intersection of Truxel Road with Arena Boulevard.

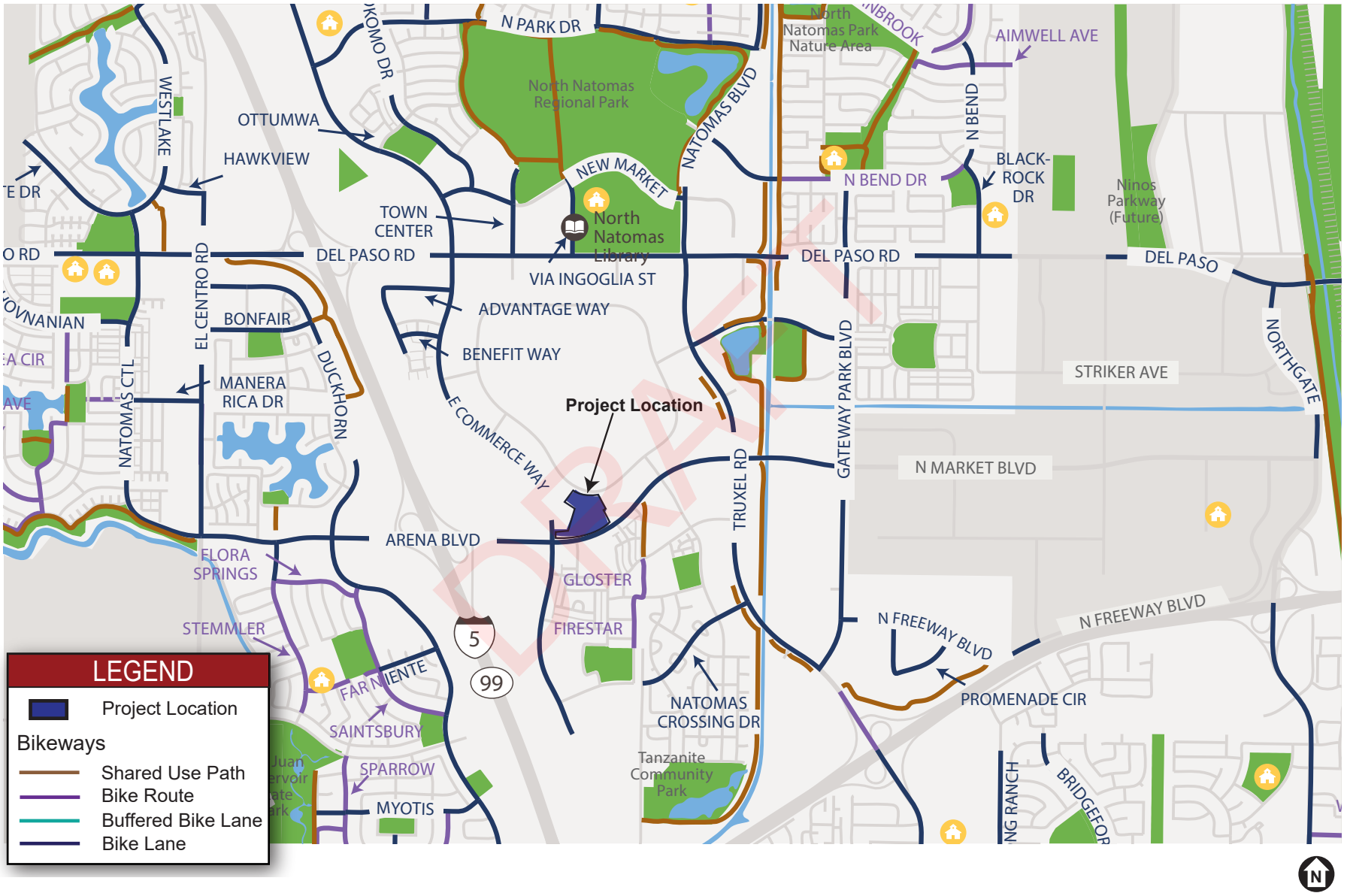
1. Route 11 Natomas/Land Park provides weekday and weekend service between Natomas and the Sacramento City College in Land Park. Weekday half-hour headways, approximately, are common, and service runs from 6:00 AM to 8:00 PM.
2. Route 13 Natomas/Arden provides weekday and weekend service between Natomas and the Arden Fair Mall Transit center. Weekday hourly headways increased to 40 min headways during AM and PM peak commute hours start at 6:00 AM and terminate at 9:00 PM.
3. Route 113 North Market Commuter provides weekday service only and connects North Natomas to the Arden/Del Paso light rail station. Headways are long, with only four buses operating to the Arden/Del Paso light rail station and only three buses operating to the Truxel Avenue/Gateway park intersection.

The project proposes onsite connectivity that would allow for bus transit ridership to easily access the site from the sidewalk and via a series of pedestrian paseos. The project causes no impacts on the surrounding transit network.

Bicycles: There are currently Class II bike lanes along both sides of Arena Boulevard, East Commerce Way, and Truxel Road in the vicinity of the Project location. **Figure 3.17-1** provides a detailed map of bicycle facilities within the Project vicinity.

Construction: Construction of the Project site is consistent with adopted general plan goals and policies. The project is proposed to be constructed in one phase and construction traffic in not anticipated to affect the traffic operations of the study area. The proposed project does not conflict with the City of Sacramento's policies related to bicycle and pedestrian connectivity and regional plans related to transit. There are no impacts.

[126] Sacramento Regional Transit District, https://www.sacrt.com/systemmap/2021/SacRT_SystemMap_Effective-August-29-2021.pdf.



D2022001500.00 - Natomas Arena Brownstone Living\05 Graphics-GIS-Modeling-USE AZURE\Illustrator

SOURCE: Kimley Horn, 2022

Natomas Arena Brownstone Living

Figure 3.17-1
Existing Bicycle Facilities

ESA

b) ***Less than Significant.*** Travel forecasting for the Project's transportation analysis was conducted using SACOG's most recently released SACSIM travel demand model (SACSIM19).

SACSIM is a complete travel demand model that SACOG uses for planning in the Sacramento region. The demand for personal travel in the region is modeled by DaySim, an activity-based demand model. Features of DaySim include the ability to model the complete daily activity pattern of each person in the Sacramento region, including the number and sequence of activities. A series of destination, mode, and time-of-day choice models are used to simulate each individual's choices. The model can estimate start and end times for all activities and trips to the half-hour level of resolution.

Other components of SACSIM are used to model, at an aggregate level, the remaining components of regional travel, including travel into, out of, and through the region; truck travel; and travel to and from Sacramento International Airport.

The SACSIM model was used to estimate all likely future travel into, out of, and within the Project site. The model predicts the number of trips, trip purposes, origins and destinations of trips, time of day of the trips, travel mode (walk, bike, transit, automobile), and travel path. Project-specific factors considered in the model included household demographics (assumed to be similar to the demographics of adjacent North Natomas neighborhoods); the roadway network (e.g., connections to the existing roadway system, number of lanes, free-flow travel speeds); the pedestrian network and on-street and off-street bicycle networks; and development patterns (grid connectivity).

To determine the VMT for the proposed project's residential land use, the number and type of project residential units were added into the model. In addition, the population synthesis process was undertaken to determine the socioeconomic characteristics of the future residents, assumed to be consistent with surrounding existing neighborhoods.

To calculate VMT per capita produced by the residential land use, the process provided by SACOG,[127] which involves using SACSIM outputs, was used. This process included calculating the trip distance for all project trips internal to the SACOG region, or trips that both start and end within the SACOG region. Next, the distance for trips either starting or ending outside of the SACOG region were calculated. Trips that would both start and end outside of the SACOG region were not included in the analysis.

As shown in **Table 3.17-1**, the proposed Project's residential land uses would generate 10,401 daily VMT. When combined with the number of future residents estimated to live in the Project area (644 people, based on transportation modeling), the proposed Project would produce an estimated 16.1 VMT per capita. Based on the SACOG regional threshold shown, 17.7 VMT per capita, the residential land uses are not expected to exceed the regional threshold. The regional average VMT per capita and the regional

[127] Sacramento Area Council of Governments. 2020. *VMT Computation Procedures—Draft.* Last updated September 30, 2020.

threshold were obtained from SACOG's Residential VMT map, last updated on May 26, 2021. The SACOG regional threshold is 85-percent of the SACOG regional average. Other factors, like the local presence of two major, local employers – Centene/HealthNet and the California Northstate University Medical Center – were not individually considered in this analysis. Therefore, a project that produces a VMT per capita above 85-percent of the regional average would result in a significant VMT impact. As the proposed project's VMT per capita is calculated to be 77.6-percent of the regional average, the addition of the proposed project results in a **less-than-significant impact** for VMT.

TABLE 3.17-1
EXISTING (2022) PLUS PROPOSED PROJECT VEHICLE MILES TRAVELED (VMT) ANALYSIS SUMMARY

Residential VMT Results	Population and VMT per Capita
Project Population	644
Project Residential VMT	10,401
Project VMT per Capita	16.1
SACOG Regional Average	20.8
SACOG Regional Threshold (85% of Regional Average)	17.7
Project VMT per Capita as % of Regional Average	***77.6%***

SOURCE: Kimley-Horn, 2022. Natomas Brownstone Traffic Study. July 26. Table 5.

c) ***No Impact.*** The Local Transportation Analysis prepared by Kimley-Horn addresses access, circulation, including queuing, and safety for the proposed project. The proposed project does not introduce a geometrical or other design feature that would increase or substantially increase hazards related to roadway geometrics. There would be **no impact**.

d) ***Less than Significant.*** The proposed project is designed to have three primary entrances: one at Sally Ride Way and two along the existing driveway on the northwest portion of the Project site. There is also an emergency access provided from Sports Parkway. The site plan has been designed to accommodate fire engine turning radii and allow for emergency access to all sides of the proposed buildings. The proposed project would have adequate emergency access to and through the Project site, and would not impede emergency access on adjacent roadways. Therefore, the impact to emergency access is **less than significant**.

3.18 Tribal Cultural Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
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 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	☐	☒	☐	☐
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 Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Environmental Setting

This section focuses on the contemporary tribal communities and tribal cultural resources as they pertain to AB52.

This section analyzes and evaluates the potential impacts of the project on Tribal cultural resources, both identified and undiscovered. Tribal cultural resources, as defined by Assembly Bill (AB) 52, Statutes of 2014, in Public Resources Code (PRC) Section 21074, are sites, features, places, cultural landscapes, sacred places and objects, with cultural value to a Tribe. A Tribal cultural landscape is defined as a geographic area (including both cultural and natural resources and the wildlife therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.

The unanticipated find of Native American human remains would also be considered a Tribal cultural resource, and are therefore analyzed in this section.

The proposed project area is situated within the lands traditionally occupied by the Valley Nisenan, or Southern Maidu. Many descendants of Valley Nisenan throughout the larger Sacramento region belong to the United Auburn Indian Community, Shingle Springs, Ione Band, Colfax-Todds Valley, and Wilton Rancheria Tribes. The Tribes actively participate in the identification, evaluation, preservation, and restoration of Tribal Cultural Resources.

Discussion

a.i/ii) ***Less than Significant with Mitigation.*** Tribal cultural resources are: 1) sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are listed, or determined to be eligible for listing in the

California Register of Historical Resources (California Register), or local register of historical resources, as defined in PRC Section 5020.1(k); or, 2) a resource determined by the lead CEQA agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in PRC Section 5024.1(c). For a cultural landscape to be considered a tribal cultural resource, it must be geographically defined in terms of the size and scope of the landscape (PRC Section 21074[b]). A historical resource, as defined in PRC Section 21084.1, unique archaeological resource, as defined in PRC Section 21083.2(g), or non-unique archaeological resource, as defined in PRC Section 21083.2(h), may also be a tribal cultural resource.

Through background research at the North Central Information Center of the California Historical Resources Information System and a survey, no known archaeological resources that could be considered tribal cultural resources, listed or determined eligible for listing in the California Register, or included in a local register of historical resources as defined in PRC Section 5020.1(k), pursuant to PRC Section 21074(a)(1), would be impacted by the Project.

According to the provision of PRC Section 21080.3, four Native American tribes have requested to receive notification for consultation on projects in the jurisdiction of the City of Sacramento. Notification was provided on May 31, 2022 to each of the tribes that had previously requested to receive such notification. No tribe responded to the notification. Even without specific input from the tribes, subsurface tribal cultural resources have the potential to be found on-site during grading and construction activities. Due to the predominant historic theme of the region as a whole, which includes thousands of years of occupation by Native American groups prior to non-Native peoples settling in the region, the possibility exists that unknown resources could be encountered during grading and excavation activities associated with development of the project. Therefore, the proposed project could have a potentially significant impact related to pre-contact tribal cultural resources. However, with implementation of **Mitigation Measure TCR-1** and **Mitigation Measure TCR-2**, in addition to the implementation of **Mitigation Measure TCR-3** as described below, the effect can be mitigated to **less than significant**.

If any previously unrecorded archaeological resource were identified during ground-disturbing construction activities and were found to qualify as a tribal cultural resource pursuant to PRC Section 21074(a)(1) (determined to be eligible for listing in the California Register or in a local register of historical resources), any impacts to the resource resulting from the Project could be potentially significant. Any such potential significant impacts would be reduced to a less-than-significant level by implementing **Mitigation Measure TCR-3**. This mitigation measure would ensure that work halt in the vicinity of a find until a qualified archaeologist can make an assessment and provide additional recommendations if necessary, including contacting Native American tribes (refer to Section 3.5, *Cultural Resources*).

Mitigation MeasuresTCR-1: In the Event that Tribal Cultural Resources are Discovered During Construction, Implement Procedures to Evaluate Tribal

Cultural Resources and Implement Avoidance and Minimization Measures to Avoid Significant Impact.

If tribal cultural resources (such as structural features, unusual amounts of bone or shell, artifacts, or human remains) are encountered at the project site during construction, work shall be suspended within 100 feet of the find (based on the apparent distribution of cultural materials), and the construction contractor shall immediately notify the project's City representative. Avoidance and preservation in place is the preferred manner of mitigating impacts to tribal cultural resources. This will be accomplished, if feasible, by several alternative means, including:

- Planning construction to avoid tribal cultural resources, archaeological sites and/or other cultural resources; incorporating cultural resources within parks, green-space or other open space; covering archaeological resources; deeding a cultural resource to a permanent conservation easement; or other preservation and protection methods agreeable to consulting parties and regulatory authorities with jurisdiction over the activity.

- Recommendations for avoidance of tribal cultural resources will be reviewed by the City representative, interested culturally affiliated Native American tribes and other appropriate agencies, in light of factors such as costs, logistics, feasibility, design, technology and social, cultural and environmental considerations, and the extent to which avoidance is consistent with project objectives. Avoidance and design alternatives may include realignment within the project site to avoid tribal cultural resources, modification of the design to eliminate or reduce impacts to tribal cultural resources or modification or realignment to avoid highly significant features within a cultural resource or tribal cultural resource.

- Native American representatives from interested culturally affiliated Native American tribes will be notified to review and comment on these analyses and shall have the opportunity to meet with the City representative and its representatives who have technical expertise to identify and recommend feasible avoidance and design alternatives, so that appropriate and feasible avoidance and design alternatives can be identified.

- If the discovered tribal cultural resource can be avoided, the construction contractor(s), will install protective fencing outside the site boundary, including a 100-foot buffer area, before construction restarts. The boundary of a tribal cultural resource will be determined in consultation with interested culturally affiliated Native American tribes and tribes will be notified to monitor the installation of fencing. Use of temporary and permanent forms of protective fencing will be determined in consultation with Native American representatives from interested culturally affiliated Native American tribes.

- The construction contractor(s) will maintain the protective fencing throughout construction to avoid the site during all remaining phases of construction. The area will be demarcated as an "Environmentally Sensitive Area".

If a tribal cultural resource cannot be avoided, the following performance standard shall be met prior to continuance of construction and associated activities that may result in damage to or destruction of tribal cultural resources:

- Each resource will be evaluated for California Register of Historical Resources-(CRHR) eligibility through application of established eligibility criteria (California Code of Regulations 15064.636), in consultation with consulting Native American Tribes, as applicable.

If a tribal cultural resource is determined to be eligible for listing in the CRHR, the City will avoid damaging effects to the resource in accordance with California PRC Section 21084.3, if feasible. The City shall coordinate the investigation of the find with a qualified archaeologist (meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology) approved by the City and with interested culturally affiliated Native American tribes that respond to the City's notification. As part of the site investigation and resource assessment, the City and the archaeologist shall consult with interested culturally affiliated Native American tribes to assess the significance of the find, make recommendations for further evaluation and treatment as necessary and provide proper management recommendations should potential impacts to the resources be determined by the City to be significant. A written report detailing the site assessment, coordination activities, and management recommendations shall be provided to the City representative by the qualified archaeologist. These recommendations will be documented in the project record. For any recommendations made by interested culturally affiliated Native American tribes that are not implemented, a justification for why the recommendation was not followed will be provided in the project record.

Native American representatives from interested culturally affiliated Native American Tribes and the City representative will also consult to develop measures for long-term management of any discovered tribal cultural resources. Consultation will be limited to actions consistent with the jurisdiction of the City and taking into account ownership of the subject property. To the extent that the City has jurisdiction, routine operation and maintenance within tribal cultural resources retaining tribal cultural integrity shall be consistent with the avoidance and minimization standards identified in this mitigation measure.

If the City determines that the project may cause a significant impact to a tribal cultural resource, and measures are not otherwise identified in the consultation process, the following are examples of mitigation capable of avoiding or substantially lessening potential significant impacts to a tribal cultural resource or alternatives that would avoid significant impacts to the resource. These measures may be considered

to avoid or minimize significant adverse impacts and constitute the standard by which an impact conclusion of less-than significant may be reached:

- Avoid and preserve resources in place, including, but not limited to, planning construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

- Treat 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:

    - Protect the cultural character and integrity of the resource.
    - Protect the traditional use of the resource.
    - Protect the confidentiality of the resource.
    - Establish permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or using the resources or places.
    - Rebury the resource in place.
    - Protect the resource.

Mitigation Measure TCR-2: Implement Procedures in the Event of the Inadvertent Discovery of Native American Human Remains.

Implement Procedures in the Event of the Inadvertent Discovery of Human Remains. If an inadvertent discovery of human remains is made at any time during project-related construction activities or project planning, the City the following performance standards shall be met prior to implementing or continuing actions such as construction, which may result in damage to or destruction of human remains. In accordance with the California Health and Safety Code (HSC), if human remains are encountered during ground-disturbing activities, the City shall immediately halt potentially damaging excavation in the area of the remains and notify the Sacramento County Coroner and a professional archaeologist to determine the nature of the remains. The Coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or State lands (HSC Section 7050.5[b]).

If the human remains are of historic age and are determined to be not of Native American origin, the City will follow the provisions of the HSC Section 7000 (et seq.) regarding the disinterment and removal of non-Native American human remains.

If the Coroner determines that the remains are those of a Native American, he or she must contact the Native American Heritage Commission (NAHC) by phone within

24 hours of making that determination (HSC Section 7050[c]). After the Coroner's findings have been made, the archaeologist and the NAHC-designated Most Likely Descendant (MLD), in consultation with the landowner, shall determine the ultimate treatment and disposition of the remains. The responsibilities of the City for acting upon notification of a discovery of Native American human remains are identified in California PRC Section 5097.9 et seq.

Mitigation Measure TCR-3: Treatment of Archeological Resources

Implement Mitigation Measure CUL-1.

3.19 Utilities and Service Systems

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
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?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

Environmental Setting

Water Supply

The City of Sacramento provides domestic water service within City limits through a combination of surface water and groundwater sources, including the American River, the Sacramento River, and wells which pump in groundwater from the North and South American Subbasins.[128] Water from the American and Sacramento Rivers is diverted by two water treatment plants, the Sacramento River Water Treatment Plant and the E.A. Fairbairn Water Treatment Plant. Following treatment, water diverted from the American and Sacramento Rivers is stored in reservoirs and pumped to customers via an existing conveyance utility network. The proposed project site would be situated within the City of Sacramento Retail Water Service Area.[129]

California Water Code requires that urban water suppliers prepare and adopt an Urban Water Management Plan (UWMP) every five years. The most recent UWMP for the City of Sacramento is the 2020 Urban Water Management Plan, which considers water demand for the City under normal, single dry year, and five consecutive dry year scenarios. Water supply and demand projections include anticipated future development through 2045.

[128] City of Sacramento, 2015. *City of Sacramento 2035 General Plan Background Report.* Adopted March 3, 2015. P. 4-25.

[129] City of Sacramento, 2021. *2020 Urban Water Management Plan: Draft Report.* Published May 2021. Pp. 3-4 to 3-5.

Wastewater

The Sacramento Area Sewer District (SASD) would be responsible for providing local sewer service to the proposed project site via its local sanitary sewer collection system. Sacramento Regional County Sanitation District (Regional San) would be responsible for the conveyance of wastewater from the SASD collection system to the Sacramento Regional Wastewater Treatment Plant (SRWTP).

Stormwater

Storm water drainage for the proposed project site and its vicinity would be collected by storm drain systems owned and managed by the City of Sacramento, and subsequently pumped into nearby rivers, creeks, and drainages.

The project vicinity is served by the Central Valley Regional Water Quality Control Board, and is located within Reclamation District 1000 (RD 1000).[130] However, as the proposed project site is currently vacant, undeveloped, and largely pervious, and implementation of the proposed project would develop the site for residential uses with more than one acre of new or modified impervious area, the management of stormwater drainage would be required. Such management would include the use of Low Impact Development (LID), Hydromodification Management Plan (HMP), and on-site treatment control measures.

Solid Waste

The City of Sacramento collects all residential solid waste within the City limits; solid waste collected in the northern portion of the city is transported to the Sacramento County North Area Recovery Station (NARS) before being transferred to the Sacramento County Kiefer Landfill. Refuse and garden refuse are collected on a weekly basis, with curbside recycling collected every other week. Garden refuse and recycling are both taken to the Sacramento Recycling and Transfer Station (SRTS), with garden refuse then transferred to the Elder Creek Transfer Station.[131]

Electricity

Electrical utilities are provided to Sacramento County, including the proposed project site and its vicinity, by the Sacramento Municipal Utility District (SMUD). The proposed project site would be anticipated to connect to the SMUD electrical grid via existing electric lines and boxes are present on the proposed project site along Arena Boulevard.

Discussion

a) ***Less than Significant.*** Existing utilities infrastructure adjacent to the proposed project site includes water, wastewater, and storm drainage lines in Arena Boulevard, and a storm drainage line in Sports Parkway (see Figure 2-6). The proposed project would connect to these main infrastructure lines through smaller, onsite pipes.

[130] California State Water Resources Control Board, 2021. "State and Regional Water Boards." Available: https://www.waterboards.ca.gov/waterboards_map.html#rwqcbs. Accessed June 4, 2021.

[131] City of Sacramento, 2014. *Draft Master Environmental Impact Report for the City of Sacramento 2035 General Plan Update, SCH#20121220006*. P. 4-44.

Water Infrastructure

An existing water distribution main is present near the proposed project site within Arena Boulevard. In accordance with City code, the Project would have separate water infrastructure for fire services and domestic water supply. The anticipated domestic water lines which would be used for the conveyance of both the on-site potable and fire system water supplies and connect to this main, would be provided by the City of Sacramento local water service systems. As part of routine conditions of approval, the Project would prepare a project-specific water study for review and approval by the City of Sacramento Department of Utilities (DOU). . The City of Sacramento has not identified existing capacity as a constraining factor in development of the proposed project; as such, this impact would be less than significant.

Stormwater Infrastructure

As the proposed project would develop a currently undeveloped, vacant and largely pervious site for residential purposes, the proposed project would add impervious surface to approximately 9.57 acres of the Drainage Basin-15 service area.[132] Although this development may increase peak storm water flow rates and rainfall run-off volume in the immediate project vicinity, the proposed project site was previously designated for employment center development and future drainage needs for the Project vicinity were anticipated. Implementation of the proposed project would require the construction of storm drainage infrastructure for connection to the existing City of Sacramento conveyance system.

Onsite storm drain systems anticipated by the proposed Project would be private systems maintained by the Project owner or other approved entity, and would be constructed per Onsite Design Manual and the City of Sacramento Standard Specifications. The Project would prepare a project-specific drainage study subject to review and approval by the City of Sacramento Department of Utilities (DOU). This drainage study would comply with the Master Drainage Plan for Basin-15 and would include analysis for mitigating sizing and drainage system design meeting the criteria specified in the current Onsite Design Manual and/or the Design and Procedures Manual. Appropriate detention for the proposed project would be provided.

Design of the proposed Project would comply with Section 15.88.010 of the Sacramento City Code, which prohibits development of the proposed project should the Project would obstruct, impede, or interfere with the natural flow of existing off-site drainage crossing the proposed project site. Grading of the proposed project site would not occur prior the review and approval of a project-specific grading plan by the DOU. Any required stormwater drainage infrastructure would be constructed in compliance with the standards, regulations, and design guidelines of the Department of Utilities Onsite Design

[132] City of Sacramento, 2018. *City of Sacramento Design and Procedures Manual*, *Section 11.* Published July 24, 2018. P. 11-39.

Manual,[133] the Sacramento Region Stormwater Quality Design Manual,[134] the City of Sacramento Stormwater Collection Systems,[135] and with applicable goals and policies of the 2035 General Plan. Post-construction stormwater quality control measures to minimize additional urban runoff resulting from the proposed project would also be incorporated into the development, including certified full capture trash control devices in accordance with the requirements of the Sacramento Region Stormwater Quality Design Manual. Compliance with Sacramento City Code regulations, 2035 General Plan policies, and applicable design standards and guidelines, in addition to implementation of construction and post-construction mitigation proposed by the site-specific drainage study required by the DOU would therefore result in a less-than-significant impact to stormwater infrastructure resulting from the proposed project.

Wastewater Infrastructure

Sewer connections from public mains to the proposed project site would be provided by the SASD local sanitary sewer collection system. In addition to the sewer connections and associated SASD sewer infrastructure which would be constructed throughout the site, each residential unit would have a separate connection to SASD's sewer system, per SASD requirements. Construction of this sewer infrastructure would adhere to current SASD Standards and Specifications for public sewer construction or modification and would be reflected on improvement plans prior to the approval of such plans. Additionally, the Project applicant would be required to pay sewer impact fees prior to the issuance of building permits to alleviate sewer impact and connection costs. These considerations would help to reduce the environmental effects of the proposed project on sewer service systems.

The force main operated by Regional San is located within Arena Boulevard adjacent to the proposed project site. Anticipated connections to the existing sewer conveyance system would comply with SASD Standards and Specifications, and the proposed project would not require changes to the local wastewater conveyance system. These considerations, in addition to the payment of fees to existing impact fee programs, would result in a less-than significant impact on sewer infrastructure following construction and operation of the proposed project.

Dry Utilities Infrastructure

Existing utilities infrastructure is also present on the proposed project site for the provision of electric power, natural gas, and telecommunications facilities to the proposed project site. Electrical service for the proposed project site would be provided by SMUD, and the proposed project would not utilize natural gas service. Beyond connections or service laterals which could be required to tie project systems into existing utilities service infrastructure, no additional requirements for electrical power, natural

[133] City of Sacramento Department of Utilities, 2020. *Onsite Design Manual for Onsite Drainage, Sewer, Water, Stormwater Quality and Erosion and Sediment Control.* Published May 1, 2020.

[134] Cities of Citrus Heights, Elk Grove, Folsom, Galt, Rancho Cordova, and Sacramento and County of Sacramento, 2018. *Stormwater Quality Design Manual for the Sacramento Region.* Published July 2018.

[135] City of Sacramento, 2018. *City of Sacramento Design and Procedures Manual*, *Section 11.* Published July 24, 2018.

gas, or telecommunications facilities would be anticipated on the Project site, at present, nor would these existing utilities require relocation, which could result in significant environmental effects.

b) ***Less than Significant.*** The project results in the determination that adequate capacity is available to serve the Project's demand in addition to existing commitments. The project would introduce 282 new residential units to the Project site. Using water demand rates from the City of Sacramento's Water Distribution System Criteria, the proposed project would result in an annual water demand of approximately 110 acre-feet per year (AFY). See **Table 3.19-1** below:

TABLE 3.19-1
WATER DEMAND RESULTING FROM THE PROPOSED PROJECT

Land Use Type	Number of Units	Composite Residential Use Factor (AFY/unit)	Demand (AFY)
Residential Medium	282	0.39	109.98

SOURCE: City of Sacramento, 2018. *Water Study Design Manual*. Published January 2018. P. 8.

The 2020 UWMP projects that the City of Sacramento's water supply for the year 2045 will include 29,155 acre-feet (AF) of groundwater and 326,800 AF of surface water,[136] and that future water supplies available to the City through the year 2045 would be approximately 350,200 AF.[137] The 2020 UWMP also anticipates that the City's water supply would exceed projected demand during five consecutive dry years through 2045, with a fifth year projected retail supply of 350,200 AF and an expected demand of 151,764 AF. This difference between supply and demand would result in a 198,436 AF surplus in 2045 during drought.[138] As a result of this surplus, and because the water demand which would result from implementation of the Project is well below projected future water supply for the City of Sacramento, the Project would have a less-than-significant impact on water supply.

c) ***Less than Significant.*** As mentioned, the Project would introduce 282 new residential units and approximately 762 new residents to the North Natomas area. The City of Sacramento uses an Equivalent Single Family Dwelling Unit (ESD) standard to determine project-specific wastewater demand relative to treatment and conveyance infrastructure. The existing standard for sewer generation is 310 gallons per day (gpd) per ESD.[139] As shown in **Table 3.19-2**, the Project would generate approximately 65,565 gpd of wastewater according to current City standards.

[136] City of Sacramento, 2021. *2020 Urban Water Management Plan: Draft Report.* Published May 2021. Pp. 6-8 to 6-12.
[137] City of Sacramento, 2021. *2020 Urban Water Management Plan: Draft Report.* Published May 2021. Pp. 6-26.
[138] City of Sacramento, 2021. *2020 Urban Water Management Plan: Draft Report.* Published May 2021. Pp. 7-13.
[139] City of Sacramento, 2018. *City of Sacramento Design Procedures Manual, Section 9.* Published July 24, 2018. P. 9-17.

TABLE 3.19-2
WASTEWATER GENERATION RESULTING FROM THE PROPOSED PROJECT

Land Use Type	Number of Units	ESD Factor	ESD	Generation Rate[1] (gpd/unit)	Average Dry Weather Flow (ADWF) (gpd)
Residential	282	0.75 / Residential Unit (Condo, Townhouse, Apartments, or Mobile Home)	211.50	232.5 gpd/unit	65,565 gpd

NOTES:
[1] 310 gpd x ESD factor

SOURCE: City of Sacramento, 2018. *City of Sacramento Design and Procedures Manual*, Section 9. July 24, 2018. Pp. 9-17 and 9-54.

Because the SASD did not identify existing capacity of current wastewater infrastructure or treatment facilities as a limiting factor to the Project, implementation of the Project would not result in a determination by SASD that it does not have adequate capacity to serve the Project's projected demand in addition to existing SASD commitments. This impact to wastewater capacity is less than significant.

d) ***Less than Significant.*** Solid waste for the proposed project would be managed and collected by the City of Sacramento. The Sacramento Kiefer Landfill, located at 12701 Kiefer Boulevard in Sloughhouse, California, serves as the primary location for solid waste disposal by the City.

In 2019, California had an annual per capita disposal rate per resident of 6.7 pounds per resident per day.[140] Given that the proposed Project would introduce approximately 764 new residents to the proposed project site, operation of the proposed Project would have the potential to generate approximately 5,119 pounds of solid waste per day, or approximately 1,868,362 pounds annually. The Sacramento Kiefer Landfill has a designed capacity of 117.4 million cubic yards and is permitted to receive a maximum of 10,815 tons of solid waste per day. The current estimated closure year of the facility is 2035.[141] The proposed project would therefore generate an estimated daily disposal far below the current permitted maximum and would be able to serve the proposed Project until the year 2035. As a result, the proposed Project would not generate solid waste in excess of State or local standards or in excess of the capacity of local infrastructure, and impacts to solid waste due to implementation of the proposed project would be less than significant.

e) ***Less than Significant.*** The proposed Project would comply with applicable federal, state, and local management and reduction statues and regulations related to solid waste. Solid waste collection for the proposed Project would be subject to Chapter 1, Subchapter 1, Parts 239 through 259 of Title 40 of the Code of Federal Regulations (CFR), which

[140] California Department of Resources Recycling and Recovery, 2021. *State of Disposal and Recycling for Calendar Year 2019.* Published February 12, 2021. P. 4.

[141] California Department of Resources Recycling and Recovery, 2018. Solid Waste Facility Permit No. 34-AA-0001. Issued November 18, 2018. Available: https://secure.calrecycle.ca.gov/SWISDocument/Document/Details/356050.

include regulations pertaining to solid waste. The proposed project would also be subject to applicable policies for solid waste management within the 2035 General Plan. The proposed project would also comply with implementation programs for state and local solid waste reduction goals; as such, the impact of the proposed Project on solid waste management regulations and reduction statuses would be less than significant.

3.20 Wildfire

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐

Environmental Setting

The proposed project site is located in the South Natomas Community Plan area within the City of Sacramento. The site and its surroundings are not located in the Very High Fire Hazard Severity Zone (VHFHSZ)[142] as mapped by the California Department of Forestry and Fire Protection (CAL FIRE). The project site is located within the City of Sacramento's Fire Department service area.

Discussion

a, c) ***Less than Significant.*** The Project site is not located in the VHFHSZ as mapped by the CAL FIRE. As directed by Government Code Sections 51175-89, the CAL FIRE identifies areas of very high fire hazard severity zones within Local Responsibility Areas (LRA). The project site is located within the City of Sacramento's Fire Department service area.

Nonetheless, the City of Sacramento has an Emergency Operations Plan and the Fire Department has a hazardous materials incident response team that works in coordination with other regional and state agencies in the event of a major emergency (General Plan Policy PHS 4.1.1.). As discussed earlier in Section 3.9, *Hazards and Hazardous Materials,* Sacramento County has also developed an Area Plan for Emergency Response to Hazardous Materials Incidents and a Local Hazard Mitigation Plan. The City has adopted the latter and cooperates with the County with the adopted emergency response plans.

142 California Department of Forestry and Fire Protection, 2021. Available: https://osfm.fire.ca.gov/media/6758/fhszl_map34.pdf. Accessed April 30, 2021.

Construction and operations of the proposed project would not affect or alter impair an adopted emergency response plan or emergency evacuation plan. It is not anticipated that implementation of the proposed project would cause similar level of temporary closures as could be the case during construction of large projects.

As specified by the Sacramento Municipal Code Sections 12.20.020 and 12.20.030, the City's Public Works Department requires preparation of a Traffic Management Plan for the construction activities to reduce major congestion problems, which could result in interference with emergency response.

With compliance with the Traffic Management Plan review and approval by the City's Public Works Department, the proposed project would minimize the potential for construction impacts to interfere with emergency response and implementation of Traffic Management Plans would reduce the impact to less than significant.

b, d) ***Less than Significant.*** The site is flat , vacant, and surrounded by urban development. The site is not near any existing forests or stands of trees, or slopes that are vegetated with potential for wildfires.

There are no site or project characteristics such as slope, prevailing winds, and other factors that would exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. As such, there is no potential for spread of wildfires due to the site characteristics.

The Project site is not in a general area located downslope or downstream to experience post wildfire secondary effects such as flooding, landslides, or post fire slope collapse and drainage changes. As discussed earlier in Section 3.7, *Geology and Soils*, the site is not part of the wildfire ecological setting.

Construction activities occurring during the dry season have the potential to create sparks that could ignite dry grasses and weeds in the Project area or on the Project site. However, this risk is similar to that found at other construction sites and ongoing vegetation management practices would ensure that wildland fires would be unlikely to occur. The proposed project would develop the Project site with urbanized uses and would be subject to similar conditions for which vegetation management practices would remain applicable and effective in minimizing the potential fire hazards from construction. For this reason, the impact of the proposed project with respect to fire hazards would remain less than significant.

3.21 Mandatory Findings of Significance

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
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?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Discussion

a) ***Less than Significant with Mitigation.*** As discussed earlier in Section 3.4, *Biological Resources*, the proposed project would not degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species or cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of a rare or endangered plant or animal. For additional discussion, please refer to the impact analysis in Section 3.4, *Biological Resources*. Mitigation Measure BIO-1 requires the avoidance, minimization, and mitigation for nesting birds and requires a pre-construction survey. Implementation of this measure would ensure no substantial loss of wildlife.

There are no historic resources on site and potential archaeological resources if uncovered during construction would be subject to the mitigation measures identified in Section 3.5, *Cultural Resources*.

b) ***Less than Significant.*** Consideration of the proposed project-related impacts along with, or in combination with other project-related impacts are defined as cumulative impacts. As discussed in various sections, the proposed project has potential impacts related to construction. These are short-term in nature and therefore, considered to be temporary impacts. All of the potential direct and indirect impacts of the proposed project were determined to be fully avoided or a less-than-significant level. Other projects in the vicinity of the proposed project would be also subject to the City of Sacramento General Plan policies, codes, regional requirements similar to that applicable to the proposed project. As a result, the potential impacts of the proposed project are not considered cumulatively considerable, and impacts would be less than significant.

Therefore, these cumulative impacts would be mitigated to a less-than-significant level; therefore, cumulative effects are not considered a significant impact.

c) ***Less than Significant with Mitigation.*** All potential environmental impacts identified in support of the proposed project would either be minimal or reduced to a less-than-significant level with mitigation. The project site does not contain any hazards or known to have any sensitive biological and cultural resources. The proposed project does not have any environmental impacts that could have a substantial adverse direct or indirect effects on human beings. No potentially significant impacts that could cause substantial adverse direct or indirect effects on human beings were identified. No mitigation would be required.

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Appendix A

Air Quality and Greenhouse Gas Emissions Calculations

Arena Brownstone Living Project - Construction data for AQ/GHG/HRA

Data from PD	CalEEMod defaults

Proposed Land Uses	Size	Units	Area (sqft)
Condominiums + amenity buildings	282	DU	334236
Parking			
covered spaces	366		
Uncovered spaces	118		
Total	484		
Paved area (streets & carports)	139,392	sqft	
Open space	94,090	sqft	

Site Area	7.97	acres
Area to be demolished	0	square feet
Total Proposed building area	334,236	square feet
Volume of infill to be brought in	0	cubic yards
Volume of material to be exported	0	cubic yards

Construction schedule

Start date of construction	9/22/2023
First year of operation	2025

Construction Phase	From	To	# of days
Site Preparation	9/22/2023	10/10/2023	13
Grading	10/11/2023	11/15/2023	26
Building Construction	11/16/2023	1/8/2025	300
Paving	1/9/2025	2/13/2025	26
Architectural Coating	2/14/2025	3/21/2025	26
			391

Construction Equipment - CalEEMod defaults used

Equipment	Number	No. of Days used	Hrs/day used	Horsepower
Site Preparation				
Rubber Tired Dozers	3	13	8	247
Tractors/Loaders/Backhoes	4	13	8	97
Grading				
Excavators	1	26	8	158
Graders	1	26	8	187
Rubber Tired Dozers	1	26	8	247
Tractors/Loaders/Backhoes	3	26	8	97
Building Construction				
Cranes	1	300	7	231
Forklifts	3	300	8	89
Generator Sets	1	300	8	84
Tractors/Loaders/Backhoes	3	300	7	97
Welders	1	300	8.0	46
Paving				
Pavers	2	26	8	130
Paving Equipment	2	26	8	132
Rollers	2	26	8	80
Architectural Coating				
Air Compressors	1	26	6	78

Vehicle Trips - CalEEMod defaults

Construction Phase	Worker Commute trips/day	Vendor Trips/day	Hauling trips/day
Site Preparation	18	0	0
Grading	15	0	0
Building Construction	203	30	0
Paving	15	0	0
Architectural Coating	41	0	0

Arena Brownstone Living Project

Operational Trip Generation Adjustment

Proposed Land Uses	DU/1,000 sqft	Weekday Daily Trips	Wkdy daily Trip Rate
Multifamily - Low Rise	282	1883	6.68
		1883	

CalEEMod defaults

CalEEMod Land Use	Wkdy	Sat	Sun
Condo/Townhouse	7.32	8.14	6.28

CalEEMod weekday, Sat and Sun trips rates adjusted based on project traffic report

CalEEMod Land Use	Wkday	Sat	Sun
Condo/Townhouse	6.68	7.43	5.73

Table 3 – Proposed Project Trip Generation

ITE Land Use Code	Land Use	# Units	Daily Trips	AM Peak-Hour			PM Peak-Hour		
				Total	In	Out	Total	In	Out
220	Multifamily Housing (Low-Rise) (Not Proximate to Transit)	282	1,883	110	26	84	142	89	53
	Total Project Trips		1,883	110	26	84	142	89	53

Source: Kimley Horn, 2022. Traffic Study for Natomas Brownstone, Sacramento, California, July 26, 2022.

Reduction in GHG emissions from electricity replacing natural gas in residential uses:

Increase in electricity use per year =	1,447,163.64	kWh/year
Carbon intensity factor for SMUD electricity for 2025 =	297	lb CO_2e per MMBtu
=	1.071412729	lb CO2e per KWh
Reduction in GHG emissions from building energy =	1,550,509.55	lb CO2e per year
=	703.3	$MTCO_2e/yr$

1	Btu =	0.000293071	KWh
1	MMBtu =	314	lb CO_2e
293.071	KWh =	314	lb CO_2e
1	kKWh =	1.071412729	lb CO_2e
1	MT =	2204.62	lbs

CAPCOA Method

From the 2021 CAPCOA Handbook for Analyzing GHG Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (page 283),

GHG Reduction Formula

A = (-E * C * G * I * J) + (F * C * H * K * J)

A =	Reduction in GHG emissions from building energy (MT CO_2e per year)	
B =	residential	housing or building type
C =	282	DU, number of DU or size of commercial building
D =	13	Electricity Demand Forecast Zone from Fig E-1.1 and Table E-1.1
E =	361	therm per year per DU, existing fuel consumption for natural gas end uses, Table E-15.1
F =	3496	kWh per year per DU, additional electricity use for equivalent electrified end uses, Table E-15.1
G =	117	lb CO_2e per MMBtu, carbon intensity of natural gas for residential
H =	297	lb CO_2e per MMBtu, carbon intensity of local electricity provider, Table E-4.3
I =	0.1	MMBtu per therm conversion
J =	0.00054	MT per lb conversion
K =	0.001	MWh per kWh conversion
Reduction in GHG emissions from building energy =	-485.1	$MTCO_2e/yr$

(NG sources included: water heater, primary heat, range/oven min - recommended in the methodology)

Arena Brownstone Living Project - CALEEMOD EMISSIONS SUMMARIES

CONSTRUCTION EMISSIONS - Criteria Air Pollutants - Uncontrolled

Year	Tons per year					Maximum Pounds per day			
	ROG	NOx	Total PM-10	Exhaust PM-10	Total PM-2.5	ROG	NOx	Total PM-10	Total PM-2.5
2023	0.08	0.67	0.28	0.03	0.15	2.7	27.6	21.1	11.3
2024	0.27	1.99	0.30	0.08	0.14	2.1	15.3	2.4	1.1
2025	2.11	0.17	0.02	0.01	0.01	161.2	14.2	2.3	1.0
PROJECT OVERALL	2.46	2.83	0.60	0.12	0.29	161.2	27.6	21.1	11.3

Year	Start Date	End Date
2023	9/22/2023	12/31/2023
2024	1/1/2024	12/31/2024
2025	1/1/2025	3/21/2025

CONSTRUCTION EMISSIONS - Criteria Air Pollutants - Tier 4 Final for all equipment

Year	Tons per year					Maximum Pounds per day			
	ROG	NOx	Total PM-10	Exhaust PM-10	Total PM-2.5	ROG	NOx	Total PM-10	Total PM-2.5
2023	0.02	0.10	0.130	0.002	0.059	1.1	4.1	9.0	4.6
2024	0.12	0.52	0.226	0.007	0.066	1.0	4.1	1.8	0.5
2025	2.10	0.03	0.011	0.001	0.003	161.0	4.0	1.8	0.5
PROJECT OVERALL	2.24	0.65	0.367	0.010	0.129	161.0	4.1	9.0	4.6

OPERATIONAL EMISSIONS - Criteria Air Pollutants

Source	Tons per year				Maximum pounds per day (summer)				Maximum pounds per day (winter)			
	ROG	NOx	Total PM-10	Total PM-2.5	ROG	NOx	Total PM-10	Total PM-2.5	ROG	NOx	Total PM-10	Total PM-2.5
Proposed Uses												
Area	1.60	3.35E-02	1.61E-02	1.61E-02	9.0	0.3	0.1	0.1	9.0	0.3	0.1	0.1
Energy	0.00	0.00E+00	0.00E+00	0.00E+00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mobile	0.69	0.88	1.42	0.39	5.2	5.0	9.0	2.4	4.1	5.7	9.0	2.4
TOTAL	2.29	0.91	1.43	0.40	14.2	5.2	9.1	2.6	13.1	6.0	9.1	2.6

CONSTRUCTION EMISSIONS - GHG as MT

Year	CO_2	CH_4	N_2O	CO_2e
2023	122.3	0.03	1.91E-03	124
2024	524.9	0.08	1.47E-02	531
2025	45.2	0.01	4.30E-04	46
Total	692.4	0.12	1.70E-02	700

VMT Adjustment	
CalEEMod project VMY/yr =	4813257.983
Project residential VMT =	3796365
	0.788730837

OPERATIONAL EMISSIONS - GHG as MT/year

Operational Source	CO_2	CH_4	N_2O	CO_2e
Proposed Uses				
Area	4.8	0.005	0.000	4.9
Energy	517.8	0.014	0.006	520.1
Energy - reduction from no NG				-485.1
Mobile	1222.0	0.084	0.061	1242.3
Solid waste	26.3	1.556	0.000	65.2
Water & Wastewater	29.0	0.023	0.014	33.8
Total Project Operational Emissions	1799.8	1.682	0.082	1381.2

	CO_2	CH_4	N_2O
GWP	1	25	298

Source: https://ww2.arb.ca.gov/ghg-gwps

Table 5 – Existing (2022) plus Proposed Project Vehicle Miles Traveled (VMT) Analysis Summary

Residential VMT Results	Population and VMT per Capita
Project Population	644
Project Residential VMT	10,401
Project VMT per Capita	16.1
SACOG Regional Average	20.8
SACOG Regional Threshold (85% of Regional Average)	17.7
Project VMT per Capita as % of Regional Average	***77.6%***

Energy Calculations - Arena Brownstone Living Project

Construction Energy

Construction Year	Source	Fuel	GHG ($MTCO_2e/yr$)
2023	Onsite Equipment	Diesel	92.7
2023	Onroad Vehicles	Gasoline	10.7
2023	Onroad Vehicles	Diesel	8.9
2024	Onsite Equipment	Diesel	303.7
2024	Onroad Vehicles	Gasoline	149.7
2024	Onroad Vehicles	Diesel	71.5
2025	Onsite Equipment	Diesel	36.3
2025	Onroad Vehicles	Gasoline	7.3
2025	Onroad Vehicles	Diesel	1.6

Source	Diesel Emission	% of Total
Onsite	432.7347	0.840675035
Onroad	82.012	0.159324965

Construction Diesel and Gasoline Use

Diesel Sources - Construction	Units	Total	gallons per year
TOTAL Diesel Sources =	MT of CO_2	515	
Convert to kilograms	kg of CO_2	514,747	
CO_2 from diesel fuel combustion[a]	kg of CO_2/gallon of diesel	10.2	
Diesel Use over construction period	gallons of diesel	50,416	33,611
Onsite equipment	gallons of diesel	42,383	
Onroad vehicles	gallons of diesel	8,033	
Gasoline Sources - Construction	**Units**	**Amount**	**gallons per year**
Construction workers	MT of CO_2	168	
Convert to kilograms	kg of CO_2	167,678	
CO_2 from gasoline fuel combustion[a]	kg of CO_2/gallon of gasoline	8.8	
Gasoline Use over construction period	gallons of gasoline	19,098	12,732

Notes:

[a] Emissions factors per The Climate Registry 2019 Default Emission Factors (Table 2.1 - US Default Factors for Calculating CO_2

Conversion	1 MT =	1000	kg

Operational Energy

Transportation Energy

Fuel	Sacramento VMT (miles/day)	Fuel Use (gallons/day)	miles/gallon	Project VMT (miles/day)	Project Fuel Use (gallons/day)	Project Fuel Use (gallons/year)
Diesel	2,501,777	296,255	8	656	78	28,360
Gasoline	34,910,811	1,444,343	24	9,156	379	138,267
Gasoline - Plug in hybrid	366,223	13,079	28	96	3	1,252

Fuel	Sacramento VMT (miles/day)	Energy Use (kWh/day)	Energy Use (kWh/100miles)	Project VMT (miles/day)	Project Electricity Use (kWh/day)	Project Electricity Use (MWh/year)	
Electricity	1,380,405	551,982	40	362	145	53	
Electricity - Plug in hybrid	394,102	119,031	30	103	31	11	
	Sacramento VMT (miles/day)	**Fuel Use (gallons/day)**	**miles/gal**	**Project VMT (miles/day)**	**Project Fuel Use (gallons/day)**	**Project Fuel Use (gallons/year)**	**Project Fuel Use (MMBtu/year)**
Natural Gas	103,786	19,176	5	27	5	1,836	236
		Daily Project VMT from traffic data		10,401			1 CNG gallon = 128488 Btu

NOTES:

VMT based on EMFAC2017 data for Sacramento County for 2024, for aggregated model years and speed and all vehicle categories

CNG = 128,488 Btu. Available at: https://afdc.energy.gov/fuels/equivalency_methodology.html.

Building Energy

Electricity 2822263.6 kWh/yr

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Arena Brownstone Living Project - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Arena Brownstone Living Project

Sacramento County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	282.00	Dwelling Unit	7.97	334,236.00	644

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2025
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	374.84	**CH4 Intensity (lb/MWhr)**	0.013	**N2O Intensity (lb/MWhr)**	0.002

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project data

Construction Phase - CalEEMod default schedule adjusted to last total 18 month construction duration

Grading -

Vehicle Trips - Trip gen rates adjusted based on project traffic study

Construction Off-road Equipment Mitigation - Tier 4F equipment used for mitigation along with dust control BMPs

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	26.00
tblConstructionPhase	NumDays	230.00	300.00
tblConstructionPhase	NumDays	20.00	26.00
tblConstructionPhase	NumDays	20.00	26.00
tblConstructionPhase	NumDays	10.00	13.00
tblConstructionPhase	PhaseEndDate	12/12/2024	3/21/2025

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	PhaseEndDate	10/17/2024	1/8/2025
tblConstructionPhase	PhaseEndDate	11/30/2023	11/15/2023
tblConstructionPhase	PhaseEndDate	11/14/2024	2/13/2025
tblConstructionPhase	PhaseEndDate	11/2/2023	10/10/2023
tblConstructionPhase	PhaseStartDate	11/15/2024	2/14/2025
tblConstructionPhase	PhaseStartDate	12/1/2023	11/16/2023
tblConstructionPhase	PhaseStartDate	11/3/2023	10/11/2023
tblConstructionPhase	PhaseStartDate	10/18/2024	1/9/2025
tblConstructionPhase	PhaseStartDate	10/20/2023	9/22/2023
tblLandUse	LandUseSquareFeet	282,000.00	334,236.00
tblLandUse	LotAcreage	17.63	7.97
tblLandUse	Population	753.00	644.00
tblVehicleTrips	ST_TR	8.14	7.43
tblVehicleTrips	SU_TR	6.28	5.73
tblVehicleTrips	WD_TR	7.32	6.68

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0755	0.6719	0.6601	1.38E-03	0.2488	0.0298	0.2786	0.118	0.0276	0.1456	0	122.3283	122.3283	0.0277	1.91E-03	123.5886
2024	0.2689	1.9909	2.7483	5.90E-03	0.2183	0.0823	0.3007	0.0586	0.0775	0.136	0	524.9159	524.9159	0.0781	0.0147	531.2419
2025	2.1131	0.17	0.2895	5.10E-04	0.0104	7.76E-03	0.0181	2.76E-03	7.23E-03	9.99E-03	0	45.1778	45.1778	0.0105	4.30E-04	45.5685
Maximum	**2.1131**	**1.9909**	**2.7483**	**5.90E-03**	**0.2488**	**0.0823**	**0.3007**	**0.118**	**0.0775**	**0.1456**	**0**	**524.9159**	**524.9159**	**0.0781**	**0.0147**	**531.2419**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0238	0.099	0.7356	1.38E-03	0.1279	1.95E-03	0.1298	0.0574	1.93E-03	0.0593	0	122.3282	122.3282	0.0277	1.91E-03	123.5885
2024	0.1191	0.5225	2.9177	5.90E-03	0.2183	7.34E-03	0.2257	0.0586	7.22E-03	0.0658	0	524.9155	524.9155	0.0781	0.0147	531.2415
2025	2.0999	0.0303	0.3293	5.10E-04	0.0104	7.30E-04	0.0111	2.76E-03	7.30E-04	3.49E-03	0	45.1778	45.1778	0.0105	4.30E-04	45.5685
Maximum	**2.0999**	**0.5225**	**2.9177**	**5.90E-03**	**0.2183**	**7.34E-03**	**0.2257**	**0.0586**	**7.22E-03**	**0.0658**	**0**	**524.9155**	**524.9155**	**0.0781**	**0.0147**	**531.2415**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**8.74**	**76.99**	**-7.70**	**0.00**	**25.32**	**91.64**	**38.63**	**33.80**	**91.20**	**55.91**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	9-22-2023	12-21-2023	0.6968	0.1089
2	12-22-2023	3-21-2024	0.5677	0.1625
3	3-22-2024	6-21-2024	0.5670	0.1611
4	6-22-2024	9-21-2024	0.5667	0.1608
5	9-22-2024	12-21-2024	0.5633	0.1618
6	12-22-2024	3-21-2025	2.3186	2.1245
		Highest	2.3186	2.1245

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.6017	0.0335	2.9054	1.50E-04		0.0161	0.0161		0.0161	0.0161	0	4.7504	4.7504	4.55E-03	0	4.8642
Energy	0.0287	0.2452	0.1044	1.57E-03		0.0198	0.0198		0.0198	0.0198	0	517.7984	517.7984	0.0136	6.45E-03	520.0605
Mobile	0.8728	1.1142	7.964	0.0167	1.7837	0.0132	1.7969	0.4768	0.0123	0.4891	0	1,549.29	1,549.29	0.1071	0.0775	1,575.07

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Waste						0	0		0	0	26.332	0	26.332	1.5562	0	65.2364
Water						0	0		0	0	6.5006	22.4584	28.9589	0.0232	0.0143	33.7861
Total	**2.5032**	**1.3929**	**10.9737**	**0.0185**	**1.7837**	**0.0491**	**1.8328**	**0.4768**	**0.0483**	**0.5251**	**32.8325**	**2,094.30**	**2,127.13**	**1.7045**	**0.0983**	**2,199.02**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.6017	0.0335	2.9054	1.50E-04		0.0161	0.0161		0.0161	0.0161	0	4.7504	4.7504	4.55E-03	0	4.8642
Energy	0.0287	0.2452	0.1044	1.57E-03		0.0198	0.0198		0.0198	0.0198	0	517.7984	517.7984	0.0136	6.45E-03	520.0605
Mobile	0.8728	1.1142	7.964	0.0167	1.7837	0.0132	1.7969	0.4768	0.0123	0.4891	0	1,549.29	1,549.29	0.1071	0.0775	1,575.07
Waste						0	0		0	0	26.332	0	26.332	1.5562	0	65.2364
Water						0	0		0	0	6.5006	22.4584	28.9589	0.0232	0.0143	33.7861
Total	**2.5032**	**1.3929**	**10.9737**	**0.0185**	**1.7837**	**0.0491**	**1.8328**	**0.4768**	**0.0483**	**0.5251**	**32.8325**	**2,094.2979**	**2,127.1304**	**1.7045**	**0.0983**	**2,199.0218**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	9/22/2023	10/10/2023	5	13	
2	Grading	Grading	10/11/2023	11/15/2023	5	26	
3	Building Construction	Building Construction	11/16/2023	1/8/2025	5	300	
4	Paving	Paving	1/9/2025	2/13/2025	5	26	
5	Architectural Coating	Architectural Coating	2/14/2025	3/21/2025	5	26	

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Acres of Grading (Site Preparation Phase): 19.5

Acres of Grading (Grading Phase): 26

Acres of Paving: 0

Residential Indoor: 676,828; Residential Outdoor: 225,609; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Grading	Excavators	1	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

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Grading	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	203.00	30.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	41.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1278	0	0.1278	0.0657	0	0.0657	0	0	0	0	0	0
Off-Road	0.0173	0.1789	0.1186	2.50E-04		8.23E-03	8.23E-03		7.57E-03	7.57E-03	0	21.743	21.743	7.03E-03	0	21.9188
Total	**0.0173**	**0.1789**	**0.1186**	**2.50E-04**	**0.1278**	**8.23E-03**	**0.136**	**0.0657**	**7.57E-03**	**0.0732**	**0**	**21.743**	**21.743**	**7.03E-03**	**0**	**21.9188**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker	3.40E-04	2.10E-04	2.72E-03	1.00E-05	8.60E-04	0	8.60E-04	2.30E-04	0	2.30E-04	0	0.6808	0.6808	2.00E-05	2.00E-05	0.6872
Total	**3.40E-04**	**2.10E-04**	**2.72E-03**	**1.00E-05**	**8.60E-04**	**0**	**8.60E-04**	**2.30E-04**	**0**	**2.30E-04**	**0**	**0.6808**	**0.6808**	**2.00E-05**	**2.00E-05**	**0.6872**

Mitigated Construction On-Site

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0575	0	0.0575	0.0296	0	0.0296	0	0	0	0	0	0
Off-Road	3.03E-03	0.0131	0.1357	2.50E-04		4.00E-04	4.00E-04		4.00E-04	4.00E-04	0	21.7429	21.7429	7.03E-03	0	21.9187
Total	**3.03E-03**	**0.0131**	**0.1357**	**2.50E-04**	**0.0575**	**4.00E-04**	**0.0579**	**0.0296**	**4.00E-04**	**0.03**	**0**	**21.7429**	**21.7429**	**7.03E-03**	**0**	**21.9187**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker	3.40E-04	2.10E-04	2.72E-03	1.00E-05	8.60E-04	0	8.60E-04	2.30E-04	0	2.30E-04	0	0.6808	0.6808	2.00E-05	2.00E-05	0.6872
Total	**3.40E-04**	**2.10E-04**	**2.72E-03**	**1.00E-05**	**8.60E-04**	**0**	**8.60E-04**	**2.30E-04**	**0**	**2.30E-04**	**0**	**0.6808**	**0.6808**	**2.00E-05**	**2.00E-05**	**0.6872**

3.3 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0921	0	0.0921	0.0445	0	0.0445	0	0	0	0	0	0
Off-Road	0.0222	0.2332	0.1918	3.90E-04		0.0101	0.0101		9.27E-03	9.27E-03	0	33.8788	33.8788	0.011	0	34.1527
Total	**0.0222**	**0.2332**	**0.1918**	**3.90E-04**	**0.0921**	**0.0101**	**0.1021**	**0.0445**	**9.27E-03**	**0.0538**	**0**	**33.8788**	**33.8788**	**0.011**	**0**	**34.1527**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Worker	5.60E-04	3.50E-04	4.53E-03	1.00E-05	1.43E-03	1.00E-05	1.44E-03	3.80E-04	1.00E-05	3.90E-04	0	1.1347	1.1347	4.00E-05	3.00E-05	1.1454
Total	**5.60E-04**	**3.50E-04**	**4.53E-03**	**1.00E-05**	**1.43E-03**	**1.00E-05**	**1.44E-03**	**3.80E-04**	**1.00E-05**	**3.90E-04**	**0**	**1.1347**	**1.1347**	**4.00E-05**	**3.00E-05**	**1.1454**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0414	0	0.0414	0.02	0	0.02	0	0	0	0	0	0
Off-Road	4.72E-03	0.0205	0.2308	3.90E-04		6.30E-04	6.30E-04		6.30E-04	6.30E-04	0	33.8788	33.8788	0.011	0	34.1527
Total	**4.72E-03**	**0.0205**	**0.2308**	**3.90E-04**	**0.0414**	**6.30E-04**	**0.0421**	**0.02**	**6.30E-04**	**0.0207**	**0**	**33.8788**	**33.8788**	**0.011**	**0**	**34.1527**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Worker	5.60E-04	3.50E-04	4.53E-03	1.00E-05	1.43E-03	1.00E-05	1.44E-03	3.80E-04	1.00E-05	3.90E-04	0	1.1347	1.1347	4.00E-05	3.00E-05	1.1454
Total	**5.60E-04**	**3.50E-04**	**4.53E-03**	**1.00E-05**	**1.43E-03**	**1.00E-05**	**1.44E-03**	**3.80E-04**	**1.00E-05**	**3.90E-04**	**0**	**1.1347**	**1.1347**	**4.00E-05**	**3.00E-05**	**1.1454**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0252	0.2302	0.2599	4.30E-04		0.0112	0.0112		0.0105	0.0105	0	37.0888	37.0888	8.82E-03	0	37.3093
Total	**0.0252**	**0.2302**	**0.2599**	**4.30E-04**		**0.0112**	**0.0112**		**0.0105**	**0.0105**	**0**	**37.0888**	**37.0888**	**8.82E-03**	**0**	**37.3093**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	tons/yr										MT/yr					
Hauling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor	6.30E-04	0.0234	7.05E-03	9.00E-05	2.81E-03	1.20E-04	2.93E-03	8.10E-04	1.20E-04	9.30E-04	0	8.9025	8.9025	2.20E-04	1.31E-03	9.2973
Worker	9.31E-03	5.76E-03	0.0755	2.10E-04	0.0239	1.30E-04	0.024	6.34E-03	1.20E-04	6.46E-03	0	18.8998	18.8998	6.10E-04	5.50E-04	19.0779
Total	**9.94E-03**	**0.0292**	**0.0826**	**3.00E-04**	**0.0267**	**2.50E-04**	**0.0269**	**7.15E-03**	**2.40E-04**	**7.39E-03**	**0**	**27.8023**	**27.8023**	**8.30E-04**	**1.86E-03**	**28.3752**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.25E-03	0.0358	0.2794	4.30E-04		6.50E-04	6.50E-04		6.50E-04	6.50E-04	0	37.0887	37.0887	8.82E-03	0	37.3093
Total	**5.25E-03**	**0.0358**	**0.2794**	**4.30E-04**		**6.50E-04**	**6.50E-04**		**6.50E-04**	**6.50E-04**	**0**	**37.0887**	**37.0887**	**8.82E-03**	**0**	**37.3093**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor	6.30E-04	0.0234	7.05E-03	9.00E-05	2.81E-03	1.20E-04	2.93E-03	8.10E-04	1.20E-04	9.30E-04	0	8.9025	8.9025	2.20E-04	1.31E-03	9.2973
Worker	9.31E-03	5.76E-03	0.0755	2.10E-04	0.0239	1.30E-04	0.024	6.34E-03	1.20E-04	6.46E-03	0	18.8998	18.8998	6.10E-04	5.50E-04	19.0779
Total	**9.94E-03**	**0.0292**	**0.0826**	**3.00E-04**	**0.0267**	**2.50E-04**	**0.0269**	**7.15E-03**	**2.40E-04**	**7.39E-03**	**0**	**27.8023**	**27.8023**	**8.30E-04**	**1.86E-03**	**28.3752**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

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

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Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor	4.90E-03	0.1878	0.056	7.30E-04	0.023	1.01E-03	0.024	6.65E-03	9.60E-04	7.61E-03	0	71.5051	71.5051	1.75E-03	0.0105	74.6823
Worker	0.0713	0.042	0.5745	1.63E-03	0.1953	9.90E-04	0.1963	0.052	9.10E-04	0.0529	0	149.6885	149.6885	4.50E-03	4.16E-03	151.0417
Total	**0.0762**	**0.2297**	**0.6305**	**2.36E-03**	**0.2183**	**2.00E-03**	**0.2203**	**0.0586**	**1.87E-03**	**0.0605**	**0**	**221.1936**	**221.1936**	**6.25E-03**	**0.0147**	**225.724**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0429	0.2928	2.2873	3.53E-03		5.34E-03	5.34E-03		5.34E-03	5.34E-03	0	303.722	303.722	0.0718	0	305.5175
Total	**0.0429**	**0.2928**	**2.2873**	**3.53E-03**		**5.34E-03**	**5.34E-03**		**5.34E-03**	**5.34E-03**	**0**	**303.722**	**303.722**	**0.0718**	**0**	**305.5175**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor	4.90E-03	0.1878	0.056	7.30E-04	0.023	1.01E-03	0.024	6.65E-03	9.60E-04	7.61E-03	0	71.5051	71.5051	1.75E-03	0.0105	74.6823
Worker	0.0713	0.042	0.5745	1.63E-03	0.1953	9.90E-04	0.1963	0.052	9.10E-04	0.0529	0	149.6885	149.6885	4.50E-03	4.16E-03	151.0417
Total	**0.0762**	**0.2297**	**0.6305**	**2.36E-03**	**0.2183**	**2.00E-03**	**0.2203**	**0.0586**	**1.87E-03**	**0.0605**	**0**	**221.1936**	**221.1936**	**6.25E-03**	**0.0147**	**225.724**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.10E-03	0.0374	0.0483	8.00E-05		1.58E-03	1.58E-03		1.49E-03	1.49E-03	0	6.9576	6.9576	1.64E-03	0	6.9985

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Total	**4.10E-03**	**0.0374**	**0.0483**	**8.00E-05**		**1.58E-03**	**1.58E-03**		**1.49E-03**	**1.49E-03**	**0**	**6.9576**	**6.9576**	**1.64E-03**	**0**	**6.9985**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor	1.10E-04	4.21E-03	1.25E-03	2.00E-05	5.30E-04	2.00E-05	5.50E-04	1.50E-04	2.00E-05	1.70E-04	0	1.6044	1.6044	4.00E-05	2.40E-04	1.6758
Worker	1.53E-03	8.60E-04	0.0123	4.00E-05	4.47E-03	2.00E-05	4.49E-03	1.19E-03	2.00E-05	1.21E-03	0	3.3122	3.3122	9.00E-05	9.00E-05	3.3411
Total	**1.64E-03**	**5.07E-03**	**0.0135**	**6.00E-05**	**5.00E-03**	**4.00E-05**	**5.04E-03**	**1.34E-03**	**4.00E-05**	**1.38E-03**	**0**	**4.9166**	**4.9166**	**1.30E-04**	**3.30E-04**	**5.0169**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.80E-04	6.70E-03	0.0524	8.00E-05		1.20E-04	1.20E-04		1.20E-04	1.20E-04	0	6.9576	6.9576	1.64E-03	0	6.9985
Total	**9.80E-04**	**6.70E-03**	**0.0524**	**8.00E-05**		**1.20E-04**	**1.20E-04**		**1.20E-04**	**1.20E-04**	**0**	**6.9576**	**6.9576**	**1.64E-03**	**0**	**6.9985**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vendor	1.10E-04	4.21E-03	1.25E-03	2.00E-05	5.30E-04	2.00E-05	5.50E-04	1.50E-04	2.00E-05	1.70E-04	0	1.6044	1.6044	4.00E-05	2.40E-04	1.6758
Worker	1.53E-03	8.60E-04	0.0123	4.00E-05	4.47E-03	2.00E-05	4.49E-03	1.19E-03	2.00E-05	1.21E-03	0	3.3122	3.3122	9.00E-05	9.00E-05	3.3411
Total	**1.64E-03**	**5.07E-03**	**0.0135**	**6.00E-05**	**5.00E-03**	**4.00E-05**	**5.04E-03**	**1.34E-03**	**4.00E-05**	**1.38E-03**	**0**	**4.9166**	**4.9166**	**1.30E-04**	**3.30E-04**	**5.0169**

3.5 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

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Arena Brownstone Living Project - Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	tons/yr										MT/yr					
Off-Road	0.0119	0.1116	0.1895	3.00E-04		5.44E-03	5.44E-03		5.01E-03	5.01E-03	0	26.025	26.025	8.42E-03	0	26.2355
Paving	0					0	0		0	0	0	0	0	0	0	0
Total	**0.0119**	**0.1116**	**0.1895**	**3.00E-04**		**5.44E-03**	**5.44E-03**		**5.01E-03**	**5.01E-03**	**0**	**26.025**	**26.025**	**8.42E-03**	**0**	**26.2355**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Arena Brownstone Living Project - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Arena Brownstone Living Project

Sacramento County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	282.00	Dwelling Unit	7.97	334,236.00	644

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2025
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	374.84	**CH4 Intensity (lb/MWhr)**	0.013	**N2O Intensity (lb/MWhr)**	0.002

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project data

Construction Phase - CalEEMod default schedule adjusted to last total 18 month construction duration

Grading -

Vehicle Trips - Trip gen rates adjusted based on project traffic study

Construction Off-road Equipment Mitigation - Tier 4F equipment used for mitigation along with dust control BMPs

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00

Arena Brownstone Living Project - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	26.00
tblConstructionPhase	NumDays	230.00	300.00
tblConstructionPhase	NumDays	20.00	26.00
tblConstructionPhase	NumDays	20.00	26.00
tblConstructionPhase	NumDays	10.00	13.00
tblConstructionPhase	PhaseEndDate	12/12/2024	3/21/2025
tblConstructionPhase	PhaseEndDate	10/17/2024	1/8/2025
tblConstructionPhase	PhaseEndDate	11/30/2023	11/15/2023
tblConstructionPhase	PhaseEndDate	11/14/2024	2/13/2025
tblConstructionPhase	PhaseEndDate	11/2/2023	10/10/2023
tblConstructionPhase	PhaseStartDate	11/15/2024	2/14/2025
tblConstructionPhase	PhaseStartDate	12/1/2023	11/16/2023
tblConstructionPhase	PhaseStartDate	11/3/2023	10/11/2023

Arena Brownstone Living Project - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	PhaseStartDate	10/18/2024	1/9/2025
tblConstructionPhase	PhaseStartDate	10/20/2023	9/22/2023
tblLandUse	LandUseSquareFeet	282,000.00	334,236.00
tblLandUse	LotAcreage	17.63	7.97
tblLandUse	Population	753.00	644.00
tblVehicleTrips	ST_TR	8.14	7.43
tblVehicleTrips	SU_TR	6.28	5.73
tblVehicleTrips	WD_TR	7.32	6.68

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	2.7201	27.5533	22.1939	0.0468	19.7939	1.2667	21.0607	10.1388	1.1654	11.3042	0	4,595.22	4,595.22	1.1961	0.1254	4,649.14
2024	2.1483	15.0977	21.6988	0.0462	1.7249	0.6285	2.3534	0.4616	0.5912	1.0528	0	4,537.07	4,537.07	0.6549	0.1214	4,589.62
2025	161.1686	14.0659	21.2569	0.0456	1.7249	0.5422	2.2672	0.4616	0.5101	0.9717	0	4,478.72	4,478.72	0.7161	0.1176	4,529.96
Maximum	**161.1686**	**27.5533**	**22.1939**	**0.0468**	**19.7939**	**1.2667**	**21.0607**	**10.1388**	**1.1654**	**11.3042**	**0**	**4,595.22**	**4,595.22**	**1.1961**	**0.1254**	**4,649.14**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	1.0516	3.9523	23.4102	0.0468	8.9826	0.0628	9.0454	4.5824	0.0627	4.6452	0	4,595.22	4,595.22	1.1961	0.1254	4,649.14
2024	1.0045	3.8887	22.9923	0.0462	1.7249	0.056	1.7809	0.4616	0.0551	0.5167	0	4,537.07	4,537.07	0.6549	0.1214	4,589.62
2025	161.0274	3.8309	22.6325	0.0456	1.7249	0.0555	1.7804	0.4616	0.0546	0.5162	0	4,478.72	4,478.72	0.7161	0.1176	4,529.96
Maximum	**161.0274**	**3.9523**	**23.4102**	**0.0468**	**8.9826**	**0.0628**	**9.0454**	**4.5824**	**0.0627**	**4.6452**	**0**	**4,595.22**	**4,595.22**	**1.1961**	**0.1254**	**4,649.14**

Arena Brownstone Living Project - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**1.78**	**79.42**	**-5.96**	**0.00**	**46.51**	**92.85**	**50.91**	**50.23**	**92.40**	**57.40**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.9965	0.2677	23.2433	1.23E-03		0.129	0.129		0.129	0.129	0	41.8918	41.8918	0.0401	0	42.8947
Energy	0.1572	1.3437	0.5718	8.58E-03		0.1086	0.1086		0.1086	0.1086		1,715.36	1,715.36	0.0329	0.0315	1,725.55
Mobile	6.5978	6.2974	52.6638	0.1104	11.3357	0.081	11.4167	3.0218	0.0756	3.0975		11,255.69	11,255.69	0.6911	0.5038	11,423.08
Total	**15.7516**	**7.9088**	**76.4789**	**0.1202**	**11.3357**	**0.3186**	**11.6543**	**3.0218**	**0.3132**	**3.3351**	**0**	**13,012.94**	**13,012.94**	**0.7641**	**0.5352**	**13,191.53**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.9965	0.2677	23.2433	1.23E-03		0.129	0.129		0.129	0.129	0	41.8918	41.8918	0.0401	0	42.8947
Energy	0.1572	1.3437	0.5718	8.58E-03		0.1086	0.1086		0.1086	0.1086		1,715.36	1,715.36	0.0329	0.0315	1,725.55
Mobile	6.5978	6.2974	52.6638	0.1104	11.3357	0.081	11.4167	3.0218	0.0756	3.0975		11,255.69	11,255.69	0.6911	0.5038	11,423.08
Total	**15.7516**	**7.9088**	**76.4789**	**0.1202**	**11.3357**	**0.3186**	**11.6543**	**3.0218**	**0.3132**	**3.3351**	**0**	**13,012.94**	**13,012.94**	**0.7641**	**0.5352**	**13,191.53**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description

Arena Brownstone Living Project - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

1	Site Preparation	Site Preparation	9/22/2023	10/10/2023	5	13	
2	Grading	Grading	10/11/2023	11/15/2023	5	26	
3	Building Construction	Building Construction	11/16/2023	1/8/2025	5	300	
4	Paving	Paving	1/9/2025	2/13/2025	5	26	
5	Architectural Coating	Architectural Coating	2/14/2025	3/21/2025	5	26	

Acres of Grading (Site Preparation Phase): 19.5

Acres of Grading (Grading Phase): 26

Acres of Paving: 0

Residential Indoor: 676,828; Residential Outdoor: 225,609; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Grading	Excavators	1	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37

Arena Brownstone Living Project - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	203.00	30.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	41.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**19.6570**	**1.2660**	**20.9230**	**10.1025**	**1.1647**	**11.2672**		**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Arena Brownstone Living Project - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0606	0.0291	0.4892	1.2500e-003	0.1369	7.0000e-004	0.1376	0.0363	6.5000e-004	0.0370		126.5195	126.5195	3.5200e-003	3.1500e-003	127.5449
Total	**0.0606**	**0.0291**	**0.4892**	**1.2500e-003**	**0.1369**	**7.0000e-004**	**0.1376**	**0.0363**	**6.5000e-004**	**0.0370**		**126.5195**	**126.5195**	**3.5200e-003**	**3.1500e-003**	**127.5449**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.8457	0.0000	8.8457	4.5461	0.0000	4.5461			0.0000			0.0000
Off-Road	0.4656	2.0175	20.8690	0.0381		0.0621	0.0621		0.0621	0.0621	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**0.4656**	**2.0175**	**20.8690**	**0.0381**	**8.8457**	**0.0621**	**8.9077**	**4.5461**	**0.0621**	**4.6082**	**0.0000**	**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0606	0.0291	0.4892	1.2500e-003	0.1369	7.0000e-004	0.1376	0.0363	6.5000e-004	0.0370		126.5195	126.5195	3.5200e-003	3.1500e-003	127.5449
Total	**0.0606**	**0.0291**	**0.4892**	**1.2500e-003**	**0.1369**	**7.0000e-004**	**0.1376**	**0.0363**	**6.5000e-004**	**0.0370**		**126.5195**	**126.5195**	**3.5200e-003**	**3.1500e-003**	**127.5449**

3.3 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0826	0.0000	7.0826	3.4247	0.0000	3.4247			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.6910	2,872.6910	0.9291		2,895.9182

Arena Brownstone Living Project - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**7.0826**	**0.7749**	**7.8575**	**3.4247**	**0.7129**	**4.1377**		**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0505	0.0243	0.4077	1.0400e-003	0.1141	5.9000e-004	0.1147	0.0303	5.4000e-004	0.0308		105.4329	105.4329	2.9300e-003	2.6200e-003	106.2874
Total	**0.0505**	**0.0243**	**0.4077**	**1.0400e-003**	**0.1141**	**5.9000e-004**	**0.1147**	**0.0303**	**5.4000e-004**	**0.0308**		**105.4329**	**105.4329**	**2.9300e-003**	**2.6200e-003**	**106.2874**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.1872	0.0000	3.1872	1.5411	0.0000	1.5411			0.0000			0.0000
Off-Road	0.3632	1.5737	17.7527	0.0297		0.0484	0.0484		0.0484	0.0484	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**0.3632**	**1.5737**	**17.7527**	**0.0297**	**3.1872**	**0.0484**	**3.2356**	**1.5411**	**0.0484**	**1.5896**	**0.0000**	**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0505	0.0243	0.4077	1.0400e-003	0.1141	5.9000e-004	0.1147	0.0303	5.4000e-004	0.0308		105.4329	105.4329	2.9300e-003	2.6200e-003	106.2874
Total	**0.0505**	**0.0243**	**0.4077**	**1.0400e-003**	**0.1141**	**5.9000e-004**	**0.1147**	**0.0303**	**5.4000e-004**	**0.0308**		**105.4329**	**105.4329**	**2.9300e-003**	**2.6200e-003**	**106.2874**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

Arena Brownstone Living Project - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0401	1.3891	0.4325	5.7200e-003	0.1807	7.7600e-003	0.1885	0.0520	7.4200e-003	0.0594		613.1526	613.1526	0.0152	0.0899	640.3156
Worker	0.6836	0.3284	5.5175	0.0141	1.5442	7.9400e-003	1.5522	0.4096	7.3100e-003	0.4169		1,426.8584	1,426.8584	0.0397	0.0355	1,438.4226
Total	**0.7238**	**1.7176**	**5.9499**	**0.0198**	**1.7250**	**0.0157**	**1.7407**	**0.4616**	**0.0147**	**0.4764**		**2,040.0110**	**2,040.0110**	**0.0548**	**0.1254**	**2,078.7382**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3278	2.2347	17.4603	0.0269		0.0408	0.0408		0.0408	0.0408	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**0.3278**	**2.2347**	**17.4603**	**0.0269**		**0.0408**	**0.0408**		**0.0408**	**0.0408**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0401	1.3891	0.4325	5.7200e-003	0.1807	7.7600e-003	0.1885	0.0520	7.4200e-003	0.0594		613.1526	613.1526	0.0152	0.0899	640.3156
Worker	0.6836	0.3284	5.5175	0.0141	1.5442	7.9400e-003	1.5522	0.4096	7.3100e-003	0.4169		1,426.8584	1,426.8584	0.0397	0.0355	1,438.4226
Total	**0.7238**	**1.7176**	**5.9499**	**0.0198**	**1.7250**	**0.0157**	**1.7407**	**0.4616**	**0.0147**	**0.4764**		**2,040.0110**	**2,040.0110**	**0.0548**	**0.1254**	**2,078.7382**

Arena Brownstone Living Project - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0384	1.3615	0.4189	5.6000e-003	0.1807	7.6400e-003	0.1884	0.0520	7.3100e-003	0.0593		601.4752	601.4752	0.0147	0.0884	628.1786
Worker	0.6383	0.2924	5.1131	0.0137	1.5442	7.5400e-003	1.5518	0.4096	6.9500e-003	0.4166		1,379.8988	1,379.8988	0.0358	0.0330	1,390.6298
Total	**0.6767**	**1.6540**	**5.5320**	**0.0193**	**1.7249**	**0.0152**	**1.7401**	**0.4616**	**0.0143**	**0.4759**		**1,981.3740**	**1,981.3740**	**0.0505**	**0.1214**	**2,018.8084**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3278	2.2347	17.4603	0.0270		0.0408	0.0408		0.0408	0.0408	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**0.3278**	**2.2347**	**17.4603**	**0.0270**		**0.0408**	**0.0408**		**0.0408**	**0.0408**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0384	1.3615	0.4189	5.6000e-003	0.1807	7.6400e-003	0.1884	0.0520	7.3100e-003	0.0593		601.4752	601.4752	0.0147	0.0884	628.1786
Worker	0.6383	0.2924	5.1131	0.0137	1.5442	7.5400e-003	1.5518	0.4096	6.9500e-003	0.4166		1,379.8988	1,379.8988	0.0358	0.0330	1,390.6298

Arena Brownstone Living Project - Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**0.6767**	**1.6540**	**5.5320**	**0.0193**	**1.7249**	**0.0152**	**1.7401**	**0.4616**	**0.0143**	**0.4759**		**1,981.3740**	**1,981.3740**	**0.0505**	**0.1214**	**2,018.8084**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0370	1.3338	0.4091	5.4900e-003	0.1807	7.4900e-003	0.1882	0.0520	7.1700e-003	0.0592		589.2788	589.2788	0.0144	0.0868	615.4894
Worker	0.5989	0.2624	4.7632	0.0132	1.5442	7.2000e-003	1.5514	0.4096	6.6200e-003	0.4162		1,332.9686	1,332.9686	0.0324	0.0309	1,342.9772
Total	**0.6359**	**1.5962**	**5.1722**	**0.0187**	**1.7249**	**0.0147**	**1.7396**	**0.4616**	**0.0138**	**0.4754**		**1,922.2474**	**1,922.2474**	**0.0468**	**0.1176**	**1,958.4666**

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Arena Brownstone Living Project - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Arena Brownstone Living Project

Sacramento County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	282.00	Dwelling Unit	7.97	334,236.00	644

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.5	**Precipitation Freq (Days)**	58
Climate Zone	6			**Operational Year**	2025
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	374.84	**CH4 Intensity (lb/MWhr)**	0.013	**N2O Intensity (lb/MWhr)**	0.002

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project data

Construction Phase - CalEEMod default schedule adjusted to last total 18 month construction duration

Grading -

Vehicle Trips - Trip gen rates adjusted based on project traffic study

Construction Off-road Equipment Mitigation - Tier 4F equipment used for mitigation along with dust control BMPs

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00

Arena Brownstone Living Project - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	26.00
tblConstructionPhase	NumDays	230.00	300.00
tblConstructionPhase	NumDays	20.00	26.00
tblConstructionPhase	NumDays	20.00	26.00
tblConstructionPhase	NumDays	10.00	13.00
tblConstructionPhase	PhaseEndDate	12/12/2024	3/21/2025
tblConstructionPhase	PhaseEndDate	10/17/2024	1/8/2025
tblConstructionPhase	PhaseEndDate	11/30/2023	11/15/2023
tblConstructionPhase	PhaseEndDate	11/14/2024	2/13/2025
tblConstructionPhase	PhaseEndDate	11/2/2023	10/10/2023
tblConstructionPhase	PhaseStartDate	11/15/2024	2/14/2025
tblConstructionPhase	PhaseStartDate	12/1/2023	11/16/2023
tblConstructionPhase	PhaseStartDate	11/3/2023	10/11/2023
tblConstructionPhase	PhaseStartDate	10/18/2024	1/9/2025

Arena Brownstone Living Project - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	PhaseStartDate	10/20/2023	9/22/2023
tblLandUse	LandUseSquareFeet	282,000.00	334,236.00
tblLandUse	LotAcreage	17.63	7.97
tblLandUse	Population	753.00	644.00
tblVehicleTrips	ST_TR	8.14	7.43
tblVehicleTrips	SU_TR	6.28	5.73
tblVehicleTrips	WD_TR	7.32	6.68

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	2.7131	27.5599	21.5015	0.0452	19.7939	1.2667	21.0607	10.1388	1.1654	11.3042	0	4,438.05	4,438.05	1.1966	0.1308	4,493.74
2024	2.0751	15.2661	21.0794	0.0447	1.7249	0.6286	2.3535	0.4616	0.5912	1.0529	0	4,385.56	4,385.56	0.6605	0.1264	4,439.75
2025	161.1551	14.2257	20.6965	0.0442	1.7249	0.5423	2.2672	0.4616	0.5101	0.9717	0	4,332.79	4,332.79	0.7165	0.1223	4,385.56
Maximum	**161.1551**	**27.5599**	**21.5015**	**0.0452**	**19.7939**	**1.2667**	**21.0607**	**10.1388**	**1.1654**	**11.3042**	**0**	**4,438.05**	**4,438.05**	**1.1966**	**0.1308**	**4,493.74**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.9721	4.1307	22.7178	0.0452	8.9826	0.0628	9.0454	4.5824	0.0627	4.6452	0	4,438.05	4,438.05	1.1966	0.1308	4,493.74
2024	0.9313	4.0571	22.3728	0.0447	1.7249	0.0561	1.781	0.4616	0.0551	0.5168	0	4,385.56	4,385.56	0.6605	0.1264	4,439.75
2025	161.0139	3.9907	22.0721	0.0442	1.7249	0.0556	1.7805	0.4616	0.0547	0.5163	0	4,332.79	4,332.79	0.7165	0.1223	4,385.56
Maximum	**161.0139**	**4.1307**	**22.7178**	**0.0452**	**8.9826**	**0.0628**	**9.0454**	**4.5824**	**0.0627**	**4.6452**	**0**	**4,438.05**	**4,438.05**	**1.1966**	**0.1308**	**4,493.74**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**1.82**	**78.65**	**-6.14**	**0.00**	**46.51**	**92.85**	**50.91**	**50.23**	**92.39**	**57.40**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Arena Brownstone Living Project - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.9965	0.2677	23.2433	1.23E-03		0.129	0.129		0.129	0.129	0	41.8918	41.8918	0.0401	0	42.8947
Energy	0.1572	1.3437	0.5718	8.58E-03		0.1086	0.1086		0.1086	0.1086		1,715.36	1,715.36	0.0329	0.0315	1,725.55
Mobile	5.1618	7.284	52.1845	0.1009	11.3357	0.0811	11.4168	3.0218	0.0757	3.0976		10,298.69	10,298.69	0.7784	0.5497	10,481.97
Total	**14.3155**	**8.8954**	**75.9996**	**0.1107**	**11.3357**	**0.3187**	**11.6544**	**3.0218**	**0.3134**	**3.3352**	**0**	**12,055.94**	**12,055.94**	**0.8514**	**0.5812**	**12,250.42**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive	Exhaust	PM10 Total	Fugitive	Exhaust	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.9965	0.2677	23.2433	1.23E-03		0.129	0.129		0.129	0.129	0	41.8918	41.8918	0.0401	0	42.8947
Energy	0.1572	1.3437	0.5718	8.58E-03		0.1086	0.1086		0.1086	0.1086		1,715.36	1,715.36	0.0329	0.0315	1,725.55
Mobile	5.1618	7.284	52.1845	0.1009	11.3357	0.0811	11.4168	3.0218	0.0757	3.0976		10,298.69	10,298.69	0.7784	0.5497	10,481.97
Total	**14.3155**	**8.8954**	**75.9996**	**0.1107**	**11.3357**	**0.3187**	**11.6544**	**3.0218**	**0.3134**	**3.3352**	**0**	**12,055.94**	**12,055.94**	**0.8514**	**0.5812**	**12,250.42**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	9/22/2023	10/10/2023	5	13	
2	Grading	Grading	10/11/2023	11/15/2023	5	26	
3	Building Construction	Building Construction	11/16/2023	1/8/2025	5	300	
4	Paving	Paving	1/9/2025	2/13/2025	5	26	
5	Architectural Coating	Architectural Coating	2/14/2025	3/21/2025	5	26	

Acres of Grading (Site Preparation Phase): 19.5

Acres of Grading (Grading Phase): 26

Date: 8/30/2022 7:26 PM

Arena Brownstone Living Project - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Acres of Paving: 0

Residential Indoor: 676,828; Residential Outdoor: 225,609; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction	Cranes	1	7.00	231	0.29
Grading	Excavators	1	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	203.00	30.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	41.00	0.00	0.00	10.00	6.50	20.00	LD_Mix	HDT_Mix	HHDT

Arena Brownstone Living Project - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**19.6570**	**1.2660**	**20.9230**	**10.1025**	**1.1647**	**11.2672**		**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0537	0.0357	0.4261	1.1100e-003	0.1369	7.0000e-004	0.1376	0.0363	6.5000e-004	0.0370		112.5438	112.5438	4.0500e-003	3.6100e-003	113.7203
Total	**0.0537**	**0.0357**	**0.4261**	**1.1100e-003**	**0.1369**	**7.0000e-004**	**0.1376**	**0.0363**	**6.5000e-004**	**0.0370**		**112.5438**	**112.5438**	**4.0500e-003**	**3.6100e-003**	**113.7203**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.8457	0.0000	8.8457	4.5461	0.0000	4.5461			0.0000			0.0000
Off-Road	0.4656	2.0175	20.8690	0.0381		0.0621	0.0621		0.0621	0.0621	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**0.4656**	**2.0175**	**20.8690**	**0.0381**	**8.8457**	**0.0621**	**8.9077**	**4.5461**	**0.0621**	**4.6082**	**0.0000**	**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Arena Brownstone Living Project - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0537	0.0357	0.4261	1.1100e-003	0.1369	7.0000e-004	0.1376	0.0363	6.5000e-004	0.0370		112.5438	112.5438	4.0500e-003	3.6100e-003	113.7203
Total	**0.0537**	**0.0357**	**0.4261**	**1.1100e-003**	**0.1369**	**7.0000e-004**	**0.1376**	**0.0363**	**6.5000e-004**	**0.0370**		**112.5438**	**112.5438**	**4.0500e-003**	**3.6100e-003**	**113.7203**

3.3 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0826	0.0000	7.0826	3.4247	0.0000	3.4247			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**7.0826**	**0.7749**	**7.8575**	**3.4247**	**0.7129**	**4.1377**		**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0447	0.0298	0.3551	9.3000e-004	0.1141	5.9000e-004	0.1147	0.0303	5.4000e-004	0.0308		93.7865	93.7865	3.3700e-003	3.0100e-003	94.7669
Total	**0.0447**	**0.0298**	**0.3551**	**9.3000e-004**	**0.1141**	**5.9000e-004**	**0.1147**	**0.0303**	**5.4000e-004**	**0.0308**		**93.7865**	**93.7865**	**3.3700e-003**	**3.0100e-003**	**94.7669**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.1872	0.0000	3.1872	1.5411	0.0000	1.5411			0.0000			0.0000

Arena Brownstone Living Project - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-Road	0.3632	1.5737	17.7527	0.0297		0.0484	0.0484		0.0484	0.0484	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**0.3632**	**1.5737**	**17.7527**	**0.0297**	**3.1872**	**0.0484**	**3.2356**	**1.5411**	**0.0484**	**1.5896**	**0.0000**	**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0447	0.0298	0.3551	9.3000e-004	0.1141	5.9000e-004	0.1147	0.0303	5.4000e-004	0.0308		93.7865	93.7865	3.3700e-003	3.0100e-003	94.7669
Total	**0.0447**	**0.0298**	**0.3551**	**9.3000e-004**	**0.1141**	**5.9000e-004**	**0.1147**	**0.0303**	**5.4000e-004**	**0.0308**		**93.7865**	**93.7865**	**3.3700e-003**	**3.0100e-003**	**94.7669**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0388	1.4930	0.4521	5.7200e-003	0.1807	7.8400e-003	0.1886	0.0520	7.5000e-003	0.0595		613.5921	613.5921	0.0151	0.0901	640.8175
Worker	0.6054	0.4030	4.8054	0.0126	1.5442	7.9400e-003	1.5522	0.4096	7.3100e-003	0.4169		1,269.2442	1,269.2442	0.0457	0.0407	1,282.5122
Total	**0.6442**	**1.8960**	**5.2575**	**0.0183**	**1.7250**	**0.0158**	**1.7408**	**0.4616**	**0.0148**	**0.4765**		**1,882.8363**	**1,882.8363**	**0.0608**	**0.1308**	**1,923.3297**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Arena Brownstone Living Project - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Category	lb/day										lb/day					
Off-Road	0.3278	2.2347	17.4603	0.0269		0.0408	0.0408		0.0408	0.0408	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**0.3278**	**2.2347**	**17.4603**	**0.0269**		**0.0408**	**0.0408**		**0.0408**	**0.0408**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0388	1.4930	0.4521	5.7200e-003	0.1807	7.8400e-003	0.1886	0.0520	7.5000e-003	0.0595		613.5921	613.5921	0.0151	0.0901	640.8175
Worker	0.6054	0.4030	4.8054	0.0126	1.5442	7.9400e-003	1.5522	0.4096	7.3100e-003	0.4169		1,269.2442	1,269.2442	0.0457	0.0407	1,282.5122
Total	**0.6442**	**1.8960**	**5.2575**	**0.0183**	**1.7250**	**0.0158**	**1.7408**	**0.4616**	**0.0148**	**0.4765**		**1,882.8363**	**1,882.8363**	**0.0608**	**0.1308**	**1,923.3297**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0371	1.4638	0.4382	5.6100e-003	0.1807	7.7200e-003	0.1884	0.0520	7.3900e-003	0.0594		601.9827	601.9827	0.0147	0.0886	628.7462
Worker	0.5664	0.3586	4.4744	0.0122	1.5442	7.5400e-003	1.5518	0.4096	6.9500e-003	0.4166		1,227.8812	1,227.8812	0.0415	0.0378	1,240.1918
Total	**0.6035**	**1.8224**	**4.9126**	**0.0178**	**1.7249**	**0.0153**	**1.7402**	**0.4616**	**0.0143**	**0.4760**		**1,829.8638**	**1,829.8638**	**0.0561**	**0.1264**	**1,868.9380**

Mitigated Construction On-Site

Arena Brownstone Living Project - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3278	2.2347	17.4603	0.0270		0.0408	0.0408		0.0408	0.0408	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**0.3278**	**2.2347**	**17.4603**	**0.0270**		**0.0408**	**0.0408**		**0.0408**	**0.0408**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0371	1.4638	0.4382	5.6100e-003	0.1807	7.7200e-003	0.1884	0.0520	7.3900e-003	0.0594		601.9827	601.9827	0.0147	0.0886	628.7462
Worker	0.5664	0.3586	4.4744	0.0122	1.5442	7.5400e-003	1.5518	0.4096	6.9500e-003	0.4166		1,227.8812	1,227.8812	0.0415	0.0378	1,240.1918
Total	**0.6035**	**1.8224**	**4.9126**	**0.0178**	**1.7249**	**0.0153**	**1.7402**	**0.4616**	**0.0143**	**0.4760**		**1,829.8638**	**1,829.8638**	**0.0561**	**0.1264**	**1,868.9380**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0357	1.4344	0.4279	5.4900e-003	0.1807	7.5600e-003	0.1883	0.0520	7.2400e-003	0.0592		589.8425	589.8425	0.0144	0.0870	616.1117
Worker	0.5322	0.3216	4.1840	0.0117	1.5442	7.2000e-003	1.5514	0.4096	6.6200e-003	0.4162		1,186.4733	1,186.4733	0.0377	0.0354	1,197.9539
Total	**0.5679**	**1.7560**	**4.6119**	**0.0172**	**1.7249**	**0.0148**	**1.7397**	**0.4616**	**0.0139**	**0.4755**		**1,776.3158**	**1,776.3158**	**0.0521**	**0.1223**	**1,814.0656**

Arena Brownstone Living Project - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3278	2.2347	17.4603	0.0270		0.0408	0.0408		0.0408	0.0408	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**0.3278**	**2.2347**	**17.4603**	**0.0270**		**0.0408**	**0.0408**		**0.0408**	**0.0408**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0357	1.4344	0.4279	5.4900e-003	0.1807	7.5600e-003	0.1883	0.0520	7.2400e-003	0.0592		589.8425	589.8425	0.0144	0.0870	616.1117
Worker	0.5322	0.3216	4.1840	0.0117	1.5442	7.2000e-003	1.5514	0.4096	6.6200e-003	0.4162		1,186.4733	1,186.4733	0.0377	0.0354	1,197.9539
Total	**0.5679**	**1.7560**	**4.6119**	**0.0172**	**1.7249**	**0.0148**	**1.7397**	**0.4616**	**0.0139**	**0.4755**		**1,776.3158**	**1,776.3158**	**0.0521**	**0.1223**	**1,814.0656**

3.5 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9152**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0393	0.0238	0.3092	8.7000e-004	0.1141	5.3000e-004	0.1146	0.0303	4.9000e-004	0.0308		87.6704	87.6704	2.7900e-003	2.6100e-003	88.5188

Arena Brownstone Living Project - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Total	**0.0393**	**0.0238**	**0.3092**	**8.7000e-004**	**0.1141**	**5.3000e-004**	**0.1146**	**0.0303**	**4.9000e-004**	**0.0308**		**87.6704**	**87.6704**	**2.7900e-003**	**2.6100e-003**	**88.5188**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2805	1.2154	17.2957	0.0228		0.0374	0.0374		0.0374	0.0374	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2805**	**1.2154**	**17.2957**	**0.0228**		**0.0374**	**0.0374**		**0.0374**	**0.0374**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0393	0.0238	0.3092	8.7000e-004	0.1141	5.3000e-004	0.1146	0.0303	4.9000e-004	0.0308		87.6704	87.6704	2.7900e-003	2.6100e-003	88.5188
Total	**0.0393**	**0.0238**	**0.3092**	**8.7000e-004**	**0.1141**	**5.3000e-004**	**0.1146**	**0.0303**	**4.9000e-004**	**0.0308**		**87.6704**	**87.6704**	**2.7900e-003**	**2.6100e-003**	**88.5188**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	160.8768					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**161.0476**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Arena Brownstone Living Project - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1075	0.0650	0.8450	2.3700e-003	0.3119	1.4500e-003	0.3133	0.0827	1.3400e-003	0.0841		239.6325	239.6325	7.6200e-003	7.1400e-003	241.9513
Total	**0.1075**	**0.0650**	**0.8450**	**2.3700e-003**	**0.3119**	**1.4500e-003**	**0.3133**	**0.0827**	**1.3400e-003**	**0.0841**		**239.6325**	**239.6325**	**7.6200e-003**	**7.1400e-003**	**241.9513**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	160.8768					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**160.9065**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1075	0.0650	0.8450	2.3700e-003	0.3119	1.4500e-003	0.3133	0.0827	1.3400e-003	0.0841		239.6325	239.6325	7.6200e-003	7.1400e-003	241.9513
Total	**0.1075**	**0.0650**	**0.8450**	**2.3700e-003**	**0.3119**	**1.4500e-003**	**0.3133**	**0.0827**	**1.3400e-003**	**0.0841**		**239.6325**	**239.6325**	**7.6200e-003**	**7.1400e-003**	**241.9513**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.1618	7.2840	52.1845	0.1009	11.3357	0.0811	11.4168	3.0218	0.0757	3.0976		10,298.6902	10,298.6902	0.7784	0.5497	10,481.9733
Unmitigated	5.1618	7.2840	52.1845	0.1009	11.3357	0.0811	11.4168	3.0218	0.0757	3.0976		10,298.6902	10,298.6902	0.7784	0.5497	10,481.9733

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse	1,883.76	2,095.26	1615.86	4,813,258	4,813,258
Total	1,883.76	2,095.26	1,615.86	4,813,258	4,813,258

Arena Brownstone Living Project - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse	10.00	5.00	6.50	46.50	12.50	41.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Condo/Townhouse	0.546433	0.056674	0.183423	0.128799	0.024661	0.005883	0.013276	0.009437	0.000898	0.000581	0.025768	0.000959	0.003207

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1572	1.3437	0.5718	8.5800e-003		0.1086	0.1086		0.1086	0.1086		1,715.3608	1,715.3608	0.0329	0.0315	1,725.5543
NaturalGas Unmitigated	0.1572	1.3437	0.5718	8.5800e-003		0.1086	0.1086		0.1086	0.1086		1,715.3608	1,715.3608	0.0329	0.0315	1,725.5543

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Condo/Townhouse	14580.6	0.1572	1.3437	0.5718	8.5800e-003		0.1086	0.1086		0.1086	0.1086		1,715.3608	1,715.3608	0.0329	0.0315	1,725.5543
Total		**0.1572**	**1.3437**	**0.5718**	**8.5800e-003**		**0.1086**	**0.1086**		**0.1086**	**0.1086**		**1,715.3608**	**1,715.3608**	**0.0329**	**0.0315**	**1,725.5543**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Condo/Townhouse	14.5806	0.1572	1.3437	0.5718	8.5800e-003		0.1086	0.1086		0.1086	0.1086		1,715.3608	1,715.3608	0.0329	0.0315	1,725.5543
Total		**0.1572**	**1.3437**	**0.5718**	**8.5800e-003**		**0.1086**	**0.1086**		**0.1086**	**0.1086**		**1,715.3608**	**1,715.3608**	**0.0329**	**0.0315**	**1,725.5543**

6.0 Area Detail

Arena Brownstone Living Project - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.9965	0.2677	23.2433	1.2300e-003		0.1290	0.1290		0.1290	0.1290	0.0000	41.8918	41.8918	0.0401	0.0000	42.8947
Unmitigated	8.9965	0.2677	23.2433	1.2300e-003		0.1290	0.1290		0.1290	0.1290	0.0000	41.8918	41.8918	0.0401	0.0000	42.8947

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1460					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	7.1527					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6979	0.2677	23.2433	1.2300e-003		0.1290	0.1290		0.1290	0.1290		41.8918	41.8918	0.0401		42.8947
Total	**8.9965**	**0.2677**	**23.2433**	**1.2300e-003**		**0.1290**	**0.1290**		**0.1290**	**0.1290**	**0.0000**	**41.8918**	**41.8918**	**0.0401**	**0.0000**	**42.8947**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1460					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	7.1527					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6979	0.2677	23.2433	1.2300e-003		0.1290	0.1290		0.1290	0.1290		41.8918	41.8918	0.0401		42.8947
Total	**8.9965**	**0.2677**	**23.2433**	**1.2300e-003**		**0.1290**	**0.1290**		**0.1290**	**0.1290**	**0.0000**	**41.8918**	**41.8918**	**0.0401**	**0.0000**	**42.8947**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

Date: 8/30/2022 7:26 PM

Arena Brownstone Living Project - Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Arena Brownstone Living Project - Construction Health Risk Assessment

Onsite DPM Emissions per Year (tons)

Residential Risk

Year	Start Date	End Date	Calendar Days	Uncontrolled	Tier 4
2023	9/22/2023	12/31/2023	100	0.03	1.95E-03
2024	1/1/2024	12/31/2024	365	0.08	7.34E-03
2025	1/1/2025	3/21/2025	79	0.01	7.30E-04
			544		
			1.49	*years*	

Emission Rates - Scaling Factors (g/s)

Year	Uncontrolled	Tier 4
2023	0.0031	0.0002
2024	0.0024	0.0002
2025	0.0010	0.0001

Exposure Duration in seconds	
2023	8640000
2024	31536000
2025	6825600

AERSCREEN Output [µg/m^3]/[g/s] - Maximum

Maximum 1 Hour	Resident	660.38	µg/m^3
Annual Average	Resident	66.04	µg/m^3

Maximum Emission Impact - (µg/m^3)

Year	Uncontrolled	Tier 4
2023	2.07E-01	1.35E-02
2024	1.56E-01	1.39E-02
2025	6.81E-02	6.41E-03

Age Group	3rd Trimester	Age 0<2	Age 2<9
Exposure Duration	91	374	0
2023	0.27	0.00	0.00
2024	0.00	1.00	0.00
2025	0.00	0.22	0.00

Cancer Risk = Dose inhalation × Inhalation CPF × ASF × ED/AT × FAH **(Equation 8.2.4 A)**

Where:

Cancer Risk = residential inhalation cancer risk

Dose inhalation (mg/kg-day) = C_{AIR} × DBR × A × EF × 10^{-6} **(Equation 2)**

Inhalation CPF = inhalation cancer potency factor ([mg/kg/day]$^{-1}$)
ASF = age sensitivity factor for a specified age group (unitless)
ED = exposure duration for a specified age group (years)
AT = averaging time period over which exposure is averaged in days (years)
FAH = fraction of time at home (unitless)

Where:

C_{AIR} = concentration of compound in air in micrograms per cubic meter (µg/m^3)
DBR = daily breathing rate in liter per kilogram of body weight per day (L/kg-body weight/day)
A = inhalation absorption factor (1 for DPM, unitless)
EF = exposure frequency in days per year (unitless, days/365 days)
10^{-6} = micrograms to milligrams conversion, liters to cubic meters conversion

Dose Inhalation Inputs

Receptor Type	Exposure Scenario	Receptor Group Age	Uncontrolled C_{AIR} ($\mu g/m^3$)	Tier 4 C_{AIR} ($\mu g/m^3$)	DBR (L/kg-day)	A (unitless)	EF (days/year)
Off-Site Child Resident	Construction	3rd Trimester	2.07E-01	1.35E-02	361	1	0.96
		Age 0<2	1.41E-01	1.26E-02	1090	1	0.96
		Age 2<9	0.00E+00	0.00E+00	861	1	0.96

Dose Inhalation Outputs

Receptor Type	Exposure Scenario	Receptor Group Age	Uncontrolled Dose inhalation (mg/kg-day)	Tier 4 Dose inhalation (mg/kg-day)
Off-Site Child Resident	Construction	3rd Trimester	7.15E-05	4.68E-06
		Age 0<2	1.47E-04	1.32E-05
		Age 2<9	0.00E+00	0.00E+00

Risk Inputs

Receptor Type	Exposure Scenario	Receptor Group Age	CPF ($mg/kg\text{-}day^{-1}$)	ASF (unitless)	ED (years)	AT (years)	FAH (unitless)	REL ($\mu g/m^3$)
Off-Site Child Resident	Construction	3rd Trimester	1.1	10	0.27	70.00	1	5
		Age 0<2	1.1	10	1.22	70.00	1	5
		Age 2<9	1.1	3	0.00	70.00	1	5

Risk Outputs

Receptor Type	Exposure Scenario	Receptor Group Age	Uncontrolled Cancer Risk	Tier 4 Cancer Risk	Uncontrolled Chronic Non-Cancer Risk	Tier 4 Chronic Non-Cancer Risk
Off-Site Child Resident	Construction	3rd Trimester	3.08E-06	2.02E-07		
		Age 0<2	2.81E-05	2.52E-06		
		Age 2<9	0.00E+00	0.00E+00		
		Total Risk	3.12E-05	2.72E-06	0.041	0.003
		Risk per Million	31.18	2.72	NA	NA

SOURCE: Office of Environmental Health Hazard Assessment, 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments* . February.

Daily breathing rate for residential receptor is based on the OEHHA 95th percentile moderate intensity breathing rates (OEHHA Table 5.7).

Fraction of time at home is conservatively set to 1 assuming the nearest school has an unmitigated cancer risk of >1 per million.

Fraction of time at home is set to values per OEHHA Table 8.4 for residential conservatively assuming that the nearest school has an unmitigated cancer risk of >1 per million.

Inhalation cancer potency factor from OEHHA Table 7.1

Arena Brownstone Living Project - AERSCREEN Output

```
AERSCREEN 16216 / AERMOD 19191                    08/24/22
                                                  23:29:16
TITLE: natomas Brownstone
---------------------------------------------------------------------------
****************************** AREA PARAMETERS ****************************
---------------------------------------------------------------------------

SOURCE EMISSION RATE:          1.0000 g/s              7.937 lb/hr

AREA EMISSION RATE:         0.202E-04 g/(s-m2)      0.160E-03 lb/(hr-m2)
AREA HEIGHT:                5.00 meters             16.40 feet
AREA SOURCE LONG SIDE:      285.00 meters           935.04 feet
AREA SOURCE SHORT SIDE:     174.00 meters           570.87 feet
INITIAL VERTICAL DIMENSION: 1.40 meters             4.59 feet
RURAL OR URBAN:             URBAN
POPULATION:                 513624

FLAGPOLE RECEPTOR HEIGHT:   1.80 meters             5.91 feet

INITIAL PROBE DISTANCE =    5000. meters            16404. feet
---------------------------------------------------------------------------
********************** BUILDING DOWNWASH PARAMETERS **********************
---------------------------------------------------------------------------

          BUILDING DOWNWASH NOT USED FOR NON-POINT SOURCES
---------------------------------------------------------------------------
************************** FLOW SECTOR ANALYSIS ***************************
           25 meter receptor spacing: 1. meters - 5000. meters
---------------------------------------------------------------------------
  MAXIMUM  IMPACT  RECEPTOR

  Zo       SURFACE   1-HR CONC  RADIAL  DIST   TEMPORAL
  SECTOR   ROUGHNESS  (ug/m3)   (deg)   (m)    PERIOD
 ----------------------------------------------------
    1*      1.000    664.1     20   150.0     WIN
* = worst case diagonal
---------------------------------------------------------------------------
********************** MAKEMET METEOROLOGY PARAMETERS **********************
---------------------------------------------------------------------------

MIN/MAX TEMPERATURE:    282.0 / 296.0 (K)

MINIMUM WIND SPEED:      0.5 m/s

ANEMOMETER HEIGHT:     10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Urban
DOMINANT CLIMATE TYPE:    Average Moisture
DOMINANT SEASON:          Winter

ALBEDO:                 0.35
```

BOWEN RATIO: 1.50
ROUGHNESS LENGTH: 1.000 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

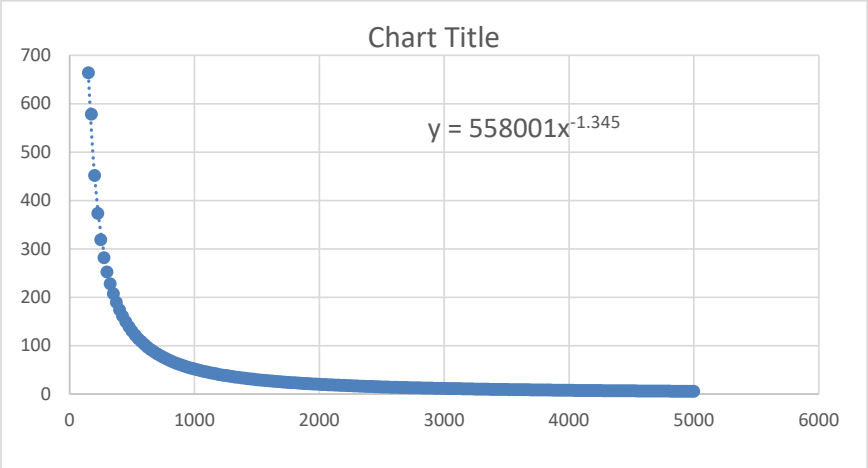
YR MO DY JDY HR
-- -- -- --- --
10 01 10 10 01

H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS
-1.27	0.043	-9.000	0.020	-999.	21.	5.9	1.000	1.50	0.35	0.50

HT	REF TA	HT
10.0	296.0	2.0

********** AERSCREEN AUTOMATED DISTANCES **********
OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

DIST (m)	MAXIMUM 1-HR CONC (ug/m3)
1	493
25	531.2
50	565.6
75	595.5
100	621.9
125	645.8
150	664.1
175	578.8
200	452.2
225	373.7
250	319.1
275	281.9
300	252.5
325	228
350	207.3
375	189.7
400	174.4
425	161.2
450	149.6
475	139.4
500	130.3
525	122.2
550	115
575	108.4
600	102.5
625	97.11
650	92.21
675	87.66



700	83.5
725	79.71
750	76.19
775	72.96
800	69.95
825	67.13
850	64.5
875	62.03
900	59.73
925	57.58
950	55.56
975	53.67
1000	51.89
1025	50.19
1050	48.59
1075	47.08
1100	45.64
1125	44.29
1150	43
1175	41.78
1200	40.62
1225	39.5
1250	38.44
1275	37.43
1300	36.47
1325	35.55
1350	34.67
1375	33.81
1400	33
1425	32.21
1450	31.46
1475	30.74
1500	30.05
1525	29.39
1550	28.75
1575	28.13
1600	27.54
1625	26.97
1650	26.42
1675	25.88
1700	25.37
1725	24.88
1750	24.4
1775	23.94
1800	23.49
1825	23.06
1850	22.64
1875	22.23
1900	21.83
1925	21.45
1950	21.08
1975	20.72
2000	20.37
2025	20.03
2050	19.7

2075	19.37
2100	19.06
2125	18.76
2150	18.46
2175	18.17
2200	17.89
2225	17.62
2250	17.35
2275	17.1
2300	16.84
2325	16.6
2350	16.36
2375	16.13
2400	15.9
2425	15.68
2450	15.46
2475	15.25
2500	15.04
2525	14.84
2550	14.64
2575	14.45
2600	14.26
2625	14.08
2650	13.9
2675	13.72
2700	13.55
2725	13.38
2750	13.22
2775	13.06
2800.01	12.9
2825	12.74
2850	12.59
2875	12.44
2900	12.3
2925	12.16
2950	12.02
2975	11.88
3000	11.75
3025	11.61
3050	11.49
3075	11.36
3100	11.24
3125	11.19
3150	11.07
3175	10.95
3200	10.83
3225	10.72
3250	10.6
3275	10.49
3300	10.38
3325	10.28
3350	10.17
3375	10.07
3400	9.969
3425	9.87

3450	9.772
3475	9.676
3500	9.582
3525	9.489
3550	9.397
3575	9.308
3600	9.219
3625	9.132
3650	9.047
3675	8.963
3700	8.88
3725	8.799
3750	8.719
3775	8.64
3800	8.562
3825	8.486
3850	8.41
3875	8.336
3900	8.263
3925	8.191
3950	8.121
3975	8.051
4000	7.982
4025	7.914
4050	7.848
4075	7.782
4100	7.717
4125	7.653
4150	7.59
4175	7.528
4200	7.467
4225	7.406
4250	7.347
4275	7.288
4300	7.23
4325	7.173
4350	7.117
4375	7.061
4400	7.006
4425	6.952
4449.99	6.899
4475	6.846
4500	6.794
4525	6.743
4550	6.693
4575	6.643
4600	6.593
4625	6.545
4650	6.496
4675	6.449
4700	6.402
4725	6.356
4750	6.31
4775	6.265
4800	6.22

4825	6.176
4850	6.133
4875	6.09
4900	6.048
4924.99	6.006
4950	5.964
4975	5.923
5000	5.883

********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

3-hour, 8-hour, and 24-hour scaled
concentrations are equal to the 1-hour concentration as referenced in
SCREENING PROCEDURES FOR ESTIMATING THE AIR QUALITY
IMPACT OF STATIONARY SOURCES, REVISED (Section 4.5.4)
Report number EPA-454/R-92-019
http://www.epa.gov/scram001/guidance_permit.htm
under Screening Guidance

CALCULATION PROCEDURE	MAXIMUM 1-HOUR CONC (ug/m3)	SCALED 3-HOUR CONC (ug/m3)	SCALED 8-HOUR CONC (ug/m3)	SCALED 24-HOUR CONC (ug/m3)	SCALED ANNUAL CONC (ug/m3)
FLAT TERRAIN	665.0	665.0	665.0	665.0	N/A

DISTANCE FROM SOURCE 153.00 meters

IMPACT AT THE AMBIENT BOUNDARY	493.0	493.0	493.0	493.0	N/A

DISTANCE FROM SOURCE 1.00 meters

Arena Brownstone Living Project - AERSCREEN Inputs

	Construction
	Off-Road Equip + Trucks
Title	Natomas Brownstone
Units	M
Source Type	A
DPM emission rate (g/s)	1
Center of volume height (meters)	n/a
Initial Lateral Dimension (meters)	n/a
Initial Vertical Dimension (meters)	n/a
Release Height above ground OR stack height (meters)	5
Maximum horizontal dimension of area source (meters)	285
Minimum horizontal dimension of area source (meters)	174
Initial Vertical Dimension (meters)	1.4
Stack diameter (meters)	n/a
Stack temperature (K)	n/a
Exit velocity (m/s)	n/a
rural/urban	urban
population of urban area	*513,624*
min distance to ambient air (meters)	default
NO_2 chemistry	1
Include building downwash?	n/a
Include terrain heights?	n/a
max distance to probe	default
include discrete receptors	no
use flagpole receptors	yes
flagpole receptor height (meters)	1.8
source elevation	default
min ambient temperature (K)	282
max ambient temperature (K)	296
min wind speed (m/s)	default
anemometer height (m)	default
surface characteristics	2
Dominant surface profile	7
dominant climate profile	1
adjust	no
debug	no
Output file name	NatomasBrownstone.out

935 feet

570 feet

48.1 F

73.6 F

1 foot = 0.3048 meter

Appendix B
List of Biological Special-Status Species

CNDDB Quad Species List 28 records.

Element Type	Scientific Name	Common Name	Element Code	Federal Status	State Status	CDFW Status	CA Rare Plant Rank	Quad Code	Quad Name	Data Status	Taxonomic Sort
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Ardea alba	great egret	ABNGA04040	None	None	-	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Birds - Ardeidae - Ardea alba
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Botaurus lentiginosus	American bittern	ABNGA01020	None	None	-	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Birds - Ardeidae - Botaurus lentiginosus
Animals - Birds	Egretta thula	snowy egret	ABNGA06030	None	None	-	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Birds - Ardeidae - Egretta thula
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	ABNGA11010	None	None	-	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Birds - Ardeidae - Nycticorax nycticorax
Animals - Birds	Coccyzus americanus occidentalis	western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	-	-	3812165	TAYLOR MONUMENT	Mapped	Animals - Birds - Cuculidae - Coccyzus americanus occidentalis
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3812165	TAYLOR MONUMENT	Mapped	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Melospiza melodia pop. 1	song sparrow (-inModesto-in population)	ABPBXA3013	None	None	SSC	-	3812165	TAYLOR MONUMENT	Mapped	Animals - Birds - Passerellidae - Melospiza melodia pop. 1
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Plegadis chihi	white-faced ibis	ABNGE02020	None	None	WL	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Birds - Threskiornithidae - Plegadis chihi
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812165	TAYLOR MONUMENT	Mapped	Animals - Crustaceans - Chirocephalidae - Linderiella occidentalis
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	AFCAA01031	Threatened	None	-	-	3812165	TAYLOR MONUMENT	Mapped	Animals - Fish - Acipenseridae - Acipenser medirostris pop. 1
Animals - Fish	Lavinia exilicauda exilicauda	Sacramento hitch	AFCJB19012	None	None	SSC	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Fish - Cyprinidae - Lavinia exilicauda exilicauda
Animals - Fish	Mylopharodon conocephalus	hardhead	AFCJB25010	None	None	SSC	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Fish - Cyprinidae - Mylopharodon conocephalus
Animals - Fish	Pogonichthys macrolepidotus	Sacramento splittail	AFCJB34020	None	None	SSC	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Fish - Cyprinidae - Pogonichthys macrolepidotus
Animals - Fish	Hysterocarpus traskii traskii	Sacramento-San Joaquin tule perch	AFCQK02012	None	None	-	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Fish - Embiotocidae - Hysterocarpus traskii traskii

Animals - Fish	Hypomesus transpacificus	Delta smelt	AFCHB01040	Threatened	Endangered	-	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Fish - Osmeridae - Hypomesus transpacificus
Animals - Fish	Spirinchus thaleichthys	longfin smelt	AFCHB03010	Candidate	Threatened	-	-	3812165	TAYLOR MONUMENT	Mapped	Animals - Fish - Osmeridae - Spirinchus thaleichthys
Animals - Fish	Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	-	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 11
Animals - Fish	Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	AFCHA0205L	Threatened	Threatened	-	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 11
Animals - Fish	Oncorhynchus tshawytscha pop. 13	chinook salmon - Central Valley fall / late fall-run ESU	AFCHA0205N	None	None	SSC	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 13
Animals - Fish	Oncorhynchus tshawytscha pop. 7	chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	-	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 7
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3812165	TAYLOR MONUMENT	Mapped	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus
Animals - Mollusks	Gonidea angulata	western ridged mussel	IMBIV19010	None	None	-	-	3812165	TAYLOR MONUMENT	Mapped	Animals - Mollusks - Unionidae - Gonidea angulata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Thamnophis gigas	giant gartersnake	ARADB36150	Threatened	Threatened	-	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Reptiles - Natricidae - Thamnophis gigas
Plants - Vascular	Centromadia parryi ssp. rudis	Parry's rough tarplant	PDAST4R0P3	None	None	-	4.2	3812165	TAYLOR MONUMENT	Unprocessed	Plants - Vascular - Asteraceae - Centromadia parryi ssp. rudis

CNDDB 9-Quad Species List 298 records.

Element Type	Scientific Name	Common Name	Element Code	Federal Status	State Status	CDFW Status	CA Rare Plant Rank	Quad Code	Quad Name	Data Status	Taxonomic Sort
Animals - Amphibians	Spea hammondii	western spadefoot	AAABF02020	None	None	SSC	-	3812174	PLEASANT GROVE	Mapped	Animals - Amphibians - Scaphiopodidae - Spea hammondii
Animals - Birds	Accipiter cooperii	Cooper's hawk	ABNKC12040	None	None	WL	-	3812156	DAVIS	Unprocessed	Animals - Birds - Accipitridae - Accipiter cooperii
Animals - Birds	Accipiter cooperii	Cooper's hawk	ABNKC12040	None	None	WL	-	3812154	SACRAMENTO EAST	Mapped and Unprocessed	Animals - Birds - Accipitridae - Accipiter cooperii
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812154	SACRAMENTO EAST	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812156	DAVIS	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812155	SACRAMENTO WEST	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812174	PLEASANT GROVE	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812176	KNIGHTS LANDING	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812175	VERONA	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812166	GRAYS BEND	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Buteo swainsoni	Swainson's hawk	ABNKC19070	None	Threatened	-	-	3812164	RIO LINDA	Mapped and Unprocessed	Animals - Birds - Accipitridae - Buteo swainsoni
Animals - Birds	Circus hudsonius	northern harrier	ABNKC11011	None	None	SSC	-	3812166	GRAYS BEND	Unprocessed	Animals - Birds - Accipitridae - Circus hudsonius
Animals - Birds	Circus hudsonius	northern harrier	ABNKC11011	None	None	SSC	-	3812164	RIO LINDA	Unprocessed	Animals - Birds - Accipitridae - Circus hudsonius
Animals - Birds	Circus hudsonius	northern harrier	ABNKC11011	None	None	SSC	-	3812156	DAVIS	Unprocessed	Animals - Birds - Accipitridae - Circus hudsonius
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812156	DAVIS	Mapped and Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812155	SACRAMENTO WEST	Mapped and Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812154	SACRAMENTO EAST	Mapped and Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812164	RIO LINDA	Mapped and Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812176	KNIGHTS LANDING	Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Elanus leucurus	white-tailed kite	ABNKC06010	None	None	FP	-	3812166	GRAYS BEND	Unprocessed	Animals - Birds - Accipitridae - Elanus leucurus
Animals - Birds	Haliaeetus leucocephalus	bald eagle	ABNKC10010	Delisted	Endangered	FP	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Birds - Accipitridae - Haliaeetus leucocephalus

Animals - Birds	Ardea alba	great egret	ABNGA04040	None	None	-	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Birds - Ardeidae - Ardea alba
Animals - Birds	Ardea alba	great egret	ABNGA04040	None	None	-	-	3812156	DAVIS	Unprocessed	Animals - Birds - Ardeidae - Ardea alba
Animals - Birds	Ardea alba	great egret	ABNGA04040	None	None	-	-	3812174	PLEASANT GROVE	Unprocessed	Animals - Birds - Ardeidae - Ardea alba
Animals - Birds	Ardea alba	great egret	ABNGA04040	None	None	-	-	3812176	KNIGHTS LANDING	Unprocessed	Animals - Birds - Ardeidae - Ardea alba
Animals - Birds	Ardea alba	great egret	ABNGA04040	None	None	-	-	3812164	RIO LINDA	Mapped and Unprocessed	Animals - Birds - Ardeidae - Ardea alba
Animals - Birds	Ardea alba	great egret	ABNGA04040	None	None	-	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Birds - Ardeidae - Ardea alba
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3812164	RIO LINDA	Mapped and Unprocessed	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3812176	KNIGHTS LANDING	Unprocessed	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3812174	PLEASANT GROVE	Unprocessed	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3812166	GRAYS BEND	Unprocessed	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Ardea herodias	great blue heron	ABNGA04010	None	None	-	-	3812154	SACRAMENTO EAST	Mapped	Animals - Birds - Ardeidae - Ardea herodias
Animals - Birds	Botaurus lentiginosus	American bittern	ABNGA01020	None	None	-	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Birds - Ardeidae - Botaurus lentiginosus
Animals - Birds	Egretta thula	snowy egret	ABNGA06030	None	None	-	-	3812164	RIO LINDA	Unprocessed	Animals - Birds - Ardeidae - Egretta thula
Animals - Birds	Egretta thula	snowy egret	ABNGA06030	None	None	-	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Birds - Ardeidae - Egretta thula
Animals - Birds	Egretta thula	snowy egret	ABNGA06030	None	None	-	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Birds - Ardeidae - Egretta thula
Animals - Birds	Egretta thula	snowy egret	ABNGA06030	None	None	-	-	3812156	DAVIS	Unprocessed	Animals - Birds - Ardeidae - Egretta thula
Animals - Birds	Ixobrychus exilis	least bittern	ABNGA02010	None	None	SSC	-	3812156	DAVIS	Unprocessed	Animals - Birds - Ardeidae - Ixobrychus exilis
Animals - Birds	Ixobrychus exilis	least bittern	ABNGA02010	None	None	SSC	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Birds - Ardeidae - Ixobrychus exilis
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	ABNGA11010	None	None	-	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Birds - Ardeidae - Nycticorax nycticorax
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	ABNGA11010	None	None	-	-	3812156	DAVIS	Unprocessed	Animals - Birds - Ardeidae - Nycticorax nycticorax
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	ABNGA11010	None	None	-	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Birds - Ardeidae - Nycticorax nycticorax

Animals - Birds	Nycticorax nycticorax	black-crowned night heron	ABNGA11010	None	None	-	-	3812164	RIO LINDA	Unprocessed	Animals - Birds - Ardeidae - Nycticorax nycticorax
Animals - Birds	Nycticorax nycticorax	black-crowned night heron	ABNGA11010	None	None	-	-	3812175	VERONA	Mapped	Animals - Birds - Ardeidae - Nycticorax nycticorax
Animals - Birds	Charadrius montanus	mountain plover	ABNNB03100	None	None	SSC	-	3812176	KNIGHTS LANDING	Mapped	Animals - Birds - Charadriidae - Charadrius montanus
Animals - Birds	Charadrius montanus	mountain plover	ABNNB03100	None	None	SSC	-	3812166	GRAYS BEND	Mapped and Unprocessed	Animals - Birds - Charadriidae - Charadrius montanus
Animals - Birds	Charadrius montanus	mountain plover	ABNNB03100	None	None	SSC	-	3812156	DAVIS	Unprocessed	Animals - Birds - Charadriidae - Charadrius montanus
Animals - Birds	Charadrius montanus	mountain plover	ABNNB03100	None	None	SSC	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Birds - Charadriidae - Charadrius montanus
Animals - Birds	Charadrius nivosus nivosus	western snowy plover	ABNNB03031	Threatened	None	SSC	-	3812156	DAVIS	Mapped	Animals - Birds - Charadriidae - Charadrius nivosus nivosus
Animals - Birds	Charadrius nivosus nivosus	western snowy plover	ABNNB03031	Threatened	None	SSC	-	3812166	GRAYS BEND	Mapped and Unprocessed	Animals - Birds - Charadriidae - Charadrius nivosus nivosus
Animals - Birds	Pica nuttalli	yellow-billed magpie	ABPAV09020	None	None	-	-	3812156	DAVIS	Unprocessed	Animals - Birds - Corvidae - Pica nuttalli
Animals - Birds	Pica nuttalli	yellow-billed magpie	ABPAV09020	None	None	-	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Birds - Corvidae - Pica nuttalli
Animals - Birds	Coccyzus americanus occidentalis	western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	-	-	3812154	SACRAMENTO EAST	Mapped	Animals - Birds - Cuculidae - Coccyzus americanus occidentalis
Animals - Birds	Coccyzus americanus occidentalis	western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	-	-	3812155	SACRAMENTO WEST	Mapped	Animals - Birds - Cuculidae - Coccyzus americanus occidentalis
Animals - Birds	Coccyzus americanus occidentalis	western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	-	-	3812164	RIO LINDA	Mapped	Animals - Birds - Cuculidae - Coccyzus americanus occidentalis
Animals - Birds	Coccyzus americanus occidentalis	western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	-	-	3812165	TAYLOR MONUMENT	Mapped	Animals - Birds - Cuculidae - Coccyzus americanus occidentalis
Animals - Birds	Coccyzus americanus occidentalis	western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	-	-	3812176	KNIGHTS LANDING	Mapped	Animals - Birds - Cuculidae - Coccyzus americanus occidentalis
Animals - Birds	Falco columbarius	merlin	ABNKD06030	None	None	WL	-	3812166	GRAYS BEND	Mapped	Animals - Birds - Falconidae - Falco columbarius
Animals - Birds	Falco mexicanus	prairie falcon	ABNKD06090	None	None	WL	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Birds - Falconidae - Falco mexicanus
Animals - Birds	Falco mexicanus	prairie falcon	ABNKD06090	None	None	WL	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Birds - Falconidae - Falco mexicanus
Animals - Birds	Falco peregrinus anatum	American peregrine falcon	ABNKD06071	Delisted	Delisted	FP	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Birds - Falconidae - Falco peregrinus anatum

Animals - Birds	Progne subis	purple martin	ABPAU01010	None	None	SSC	-	3812156	DAVIS	Unprocessed	Animals - Birds - Hirundinidae - Progne subis
Animals - Birds	Progne subis	purple martin	ABPAU01010	None	None	SSC	-	3812155	SACRAMENTO WEST	Mapped and Unprocessed	Animals - Birds - Hirundinidae - Progne subis
Animals - Birds	Progne subis	purple martin	ABPAU01010	None	None	SSC	-	3812154	SACRAMENTO EAST	Mapped and Unprocessed	Animals - Birds - Hirundinidae - Progne subis
Animals - Birds	Progne subis	purple martin	ABPAU01010	None	None	SSC	-	3812164	RIO LINDA	Mapped and Unprocessed	Animals - Birds - Hirundinidae - Progne subis
Animals - Birds	Riparia riparia	bank swallow	ABPAU08010	None	Threatened	-	-	3812176	KNIGHTS LANDING	Mapped and Unprocessed	Animals - Birds - Hirundinidae - Riparia riparia
Animals - Birds	Riparia riparia	bank swallow	ABPAU08010	None	Threatened	-	-	3812175	VERONA	Mapped	Animals - Birds - Hirundinidae - Riparia riparia
Animals - Birds	Riparia riparia	bank swallow	ABPAU08010	None	Threatened	-	-	3812154	SACRAMENTO EAST	Mapped	Animals - Birds - Hirundinidae - Riparia riparia
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3812155	SACRAMENTO WEST	Mapped	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3812156	DAVIS	Mapped and Unprocessed	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3812175	VERONA	Mapped and Unprocessed	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3812174	PLEASANT GROVE	Mapped	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3812176	KNIGHTS LANDING	Mapped	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3812164	RIO LINDA	Mapped	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3812165	TAYLOR MONUMENT	Mapped	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Agelaius tricolor	tricolored blackbird	ABPBXB0020	None	Threatened	SSC	-	3812166	GRAYS BEND	Mapped and Unprocessed	Animals - Birds - Icteridae - Agelaius tricolor
Animals - Birds	Xanthocephalus xanthocephalus	yellow-headed blackbird	ABPBXB3010	None	None	SSC	-	3812156	DAVIS	Unprocessed	Animals - Birds - Icteridae - Xanthocephalus xanthocephalus
Animals - Birds	Lanius ludovicianus	loggerhead shrike	ABPBR01030	None	None	SSC	-	3812156	DAVIS	Unprocessed	Animals - Birds - Laniidae - Lanius ludovicianus
Animals - Birds	Lanius ludovicianus	loggerhead shrike	ABPBR01030	None	None	SSC	-	3812164	RIO LINDA	Unprocessed	Animals - Birds - Laniidae - Lanius ludovicianus
Animals - Birds	Lanius ludovicianus	loggerhead shrike	ABPBR01030	None	None	SSC	-	3812175	VERONA	Unprocessed	Animals - Birds - Laniidae - Lanius ludovicianus
Animals - Birds	Larus californicus	California gull	ABNNM03110	None	None	WL	-	3812156	DAVIS	Unprocessed	Animals - Birds - Laridae - Larus californicus
Animals - Birds	Pandion haliaetus	osprey	ABNKC01010	None	None	WL	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Birds - Pandionidae - Pandion haliaetus
Animals - Birds	Setophaga petechia	yellow warbler	ABPBX03010	None	None	SSC	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Birds - Parulidae - Setophaga petechia
Animals - Birds	Setophaga petechia	yellow warbler	ABPBX03010	None	None	SSC	-	3812166	GRAYS BEND	Unprocessed	Animals - Birds - Parulidae - Setophaga petechia

Animals - Birds	Ammodramus savannarum	grasshopper sparrow	ABPBXA0020	None	None	SSC	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Birds - Passerellidae - Ammodramus savannarum
Animals - Birds	Ammodramus savannarum	grasshopper sparrow	ABPBXA0020	None	None	SSC	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Birds - Passerellidae - Ammodramus savannarum
Animals - Birds	Melospiza melodia pop. 1	song sparrow (-inModesto-in population)	ABPBXA3013	None	None	SSC	-	3812154	SACRAMENTO EAST	Mapped	Animals - Birds - Passerellidae - Melospiza melodia pop. 1
Animals - Birds	Melospiza melodia pop. 1	song sparrow (-inModesto-in population)	ABPBXA3013	None	None	SSC	-	3812155	SACRAMENTO WEST	Mapped	Animals - Birds - Passerellidae - Melospiza melodia pop. 1
Animals - Birds	Melospiza melodia pop. 1	song sparrow (-inModesto-in population)	ABPBXA3013	None	None	SSC	-	3812166	GRAYS BEND	Mapped	Animals - Birds - Passerellidae - Melospiza melodia pop. 1
Animals - Birds	Melospiza melodia pop. 1	song sparrow (-inModesto-in population)	ABPBXA3013	None	None	SSC	-	3812164	RIO LINDA	Mapped	Animals - Birds - Passerellidae - Melospiza melodia pop. 1
Animals - Birds	Melospiza melodia pop. 1	song sparrow (-inModesto-in population)	ABPBXA3013	None	None	SSC	-	3812165	TAYLOR MONUMENT	Mapped	Animals - Birds - Passerellidae - Melospiza melodia pop. 1
Animals - Birds	Spizella breweri	Brewer's sparrow	ABPBX94040	None	None	-	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Birds - Passerellidae - Spizella breweri
Animals - Birds	Spizella breweri	Brewer's sparrow	ABPBX94040	None	None	-	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Birds - Passerellidae - Spizella breweri
Animals - Birds	Nannopterum auritum	double-crested cormorant	ABNFD01020	None	None	WL	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Birds - Phalacrocoracidae - Nannopterum auritum
Animals - Birds	Nannopterum auritum	double-crested cormorant	ABNFD01020	None	None	WL	-	3812176	KNIGHTS LANDING	Unprocessed	Animals - Birds - Phalacrocoracidae - Nannopterum auritum
Animals - Birds	Laterallus jamaicensis coturniculus	California black rail	ABNME03041	None	Threatened	FP	-	3812155	SACRAMENTO WEST	Mapped	Animals - Birds - Rallidae - Laterallus jamaicensis coturniculus
Animals - Birds	Numenius americanus	long-billed curlew	ABNNF07070	None	None	WL	-	3812156	DAVIS	Unprocessed	Animals - Birds - Scolopacidae - Numenius americanus
Animals - Birds	Numenius americanus	long-billed curlew	ABNNF07070	None	None	WL	-	3812166	GRAYS BEND	Unprocessed	Animals - Birds - Scolopacidae - Numenius americanus
Animals - Birds	Asio otus	long-eared owl	ABNSB13010	None	None	SSC	-	3812174	PLEASANT GROVE	Unprocessed	Animals - Birds - Strigidae - Asio otus
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812174	PLEASANT GROVE	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812175	VERONA	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812166	GRAYS BEND	Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812164	RIO LINDA	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812156	DAVIS	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia

Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812155	SACRAMENTO WEST	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Athene cunicularia	burrowing owl	ABNSB10010	None	None	SSC	-	3812154	SACRAMENTO EAST	Mapped and Unprocessed	Animals - Birds - Strigidae - Athene cunicularia
Animals - Birds	Plegadis chihi	white-faced ibis	ABNGE02020	None	None	WL	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Birds - Threskiornithidae - Plegadis chihi
Animals - Birds	Plegadis chihi	white-faced ibis	ABNGE02020	None	None	WL	-	3812156	DAVIS	Unprocessed	Animals - Birds - Threskiornithidae - Plegadis chihi
Animals - Birds	Plegadis chihi	white-faced ibis	ABNGE02020	None	None	WL	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Birds - Threskiornithidae - Plegadis chihi
Animals - Birds	Plegadis chihi	white-faced ibis	ABNGE02020	None	None	WL	-	3812166	GRAYS BEND	Mapped	Animals - Birds - Threskiornithidae - Plegadis chihi
Animals - Birds	Empidonax traillii	willow flycatcher	ABPAE33040	None	Endangered	-	-	3812175	VERONA	Unprocessed	Animals - Birds - Tyrannidae - Empidonax traillii
Animals - Birds	Vireo bellii pusillus	least Bell's vireo	ABPBW01114	Endangered	Endangered	-	-	3812156	DAVIS	Unprocessed	Animals - Birds - Vireonidae - Vireo bellii pusillus
Animals - Birds	Vireo bellii pusillus	least Bell's vireo	ABPBW01114	Endangered	Endangered	-	-	3812155	SACRAMENTO WEST	Mapped and Unprocessed	Animals - Birds - Vireonidae - Vireo bellii pusillus
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3812154	SACRAMENTO EAST	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3812164	RIO LINDA	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3812174	PLEASANT GROVE	Mapped and Unprocessed	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Branchinecta lynchi	vernal pool fairy shrimp	ICBRA03030	Threatened	None	-	-	3812175	VERONA	Mapped	Animals - Crustaceans - Branchinectidae - Branchinecta lynchi
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812175	VERONA	Mapped	Animals - Crustaceans - Chirocephalidae - Linderiella occidentalis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812174	PLEASANT GROVE	Mapped and Unprocessed	Animals - Crustaceans - Chirocephalidae - Linderiella occidentalis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812165	TAYLOR MONUMENT	Mapped	Animals - Crustaceans - Chirocephalidae - Linderiella occidentalis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812164	RIO LINDA	Mapped and Unprocessed	Animals - Crustaceans - Chirocephalidae - Linderiella occidentalis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812156	DAVIS	Mapped	Animals - Crustaceans - Chirocephalidae - Linderiella occidentalis
Animals - Crustaceans	Linderiella occidentalis	California linderiella	ICBRA06010	None	None	-	-	3812154	SACRAMENTO EAST	Mapped and Unprocessed	Animals - Crustaceans - Chirocephalidae - Linderiella occidentalis

Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3812154	SACRAMENTO EAST	Mapped	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3812156	DAVIS	Mapped	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3812164	RIO LINDA	Mapped and Unprocessed	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3812166	GRAYS BEND	Mapped and Unprocessed	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3812174	PLEASANT GROVE	Mapped and Unprocessed	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Crustaceans	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered	None	-	-	3812175	VERONA	Mapped	Animals - Crustaceans - Triopsidae - Lepidurus packardi
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	AFCAA01031	Threatened	None	-	-	3812175	VERONA	Mapped	Animals - Fish - Acipenseridae - Acipenser medirostris pop. 1
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	AFCAA01031	Threatened	None	-	-	3812176	KNIGHTS LANDING	Mapped	Animals - Fish - Acipenseridae - Acipenser medirostris pop. 1
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	AFCAA01031	Threatened	None	-	-	3812166	GRAYS BEND	Mapped	Animals - Fish - Acipenseridae - Acipenser medirostris pop. 1
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	AFCAA01031	Threatened	None	-	-	3812165	TAYLOR MONUMENT	Mapped	Animals - Fish - Acipenseridae - Acipenser medirostris pop. 1
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	AFCAA01031	Threatened	None	-	-	3812156	DAVIS	Mapped	Animals - Fish - Acipenseridae - Acipenser medirostris pop. 1
Animals - Fish	Acipenser medirostris pop. 1	green sturgeon - southern DPS	AFCAA01031	Threatened	None	-	-	3812155	SACRAMENTO WEST	Mapped	Animals - Fish - Acipenseridae - Acipenser medirostris pop. 1
Animals - Fish	Acipenser transmontanus	white sturgeon	AFCAA01050	None	None	SSC	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Fish - Acipenseridae - Acipenser transmontanus
Animals - Fish	Acipenser transmontanus	white sturgeon	AFCAA01050	None	None	SSC	-	3812176	KNIGHTS LANDING	Unprocessed	Animals - Fish - Acipenseridae - Acipenser transmontanus
Animals - Fish	Archoplites interruptus	Sacramento perch	AFCQB07010	None	None	SSC	-	3812155	SACRAMENTO WEST	Mapped	Animals - Fish - Centrarchidae - Archoplites interruptus
Animals - Fish	Lavinia exilicauda exilicauda	Sacramento hitch	AFCJB19012	None	None	SSC	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Fish - Cyprinidae - Lavinia exilicauda exilicauda
Animals - Fish	Lavinia exilicauda exilicauda	Sacramento hitch	AFCJB19012	None	None	SSC	-	3812156	DAVIS	Unprocessed	Animals - Fish - Cyprinidae - Lavinia exilicauda exilicauda
Animals - Fish	Lavinia exilicauda exilicauda	Sacramento hitch	AFCJB19012	None	None	SSC	-	3812176	KNIGHTS LANDING	Unprocessed	Animals - Fish - Cyprinidae - Lavinia exilicauda exilicauda

Animals - Fish	Lavinia exilicauda exilicauda	Sacramento hitch	AFCJB19012	None	None	SSC	-	3812175	VERONA	Unprocessed	Animals - Fish - Cyprinidae - Lavinia exilicauda exilicauda
Animals - Fish	Lavinia exilicauda exilicauda	Sacramento hitch	AFCJB19012	None	None	SSC	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Fish - Cyprinidae - Lavinia exilicauda exilicauda
Animals - Fish	Mylopharodon conocephalus	hardhead	AFCJB25010	None	None	SSC	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Fish - Cyprinidae - Mylopharodon conocephalus
Animals - Fish	Mylopharodon conocephalus	hardhead	AFCJB25010	None	None	SSC	-	3812175	VERONA	Unprocessed	Animals - Fish - Cyprinidae - Mylopharodon conocephalus
Animals - Fish	Mylopharodon conocephalus	hardhead	AFCJB25010	None	None	SSC	-	3812176	KNIGHTS LANDING	Unprocessed	Animals - Fish - Cyprinidae - Mylopharodon conocephalus
Animals - Fish	Mylopharodon conocephalus	hardhead	AFCJB25010	None	None	SSC	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Fish - Cyprinidae - Mylopharodon conocephalus
Animals - Fish	Mylopharodon conocephalus	hardhead	AFCJB25010	None	None	SSC	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Fish - Cyprinidae - Mylopharodon conocephalus
Animals - Fish	Pogonichthys macrolepidotus	Sacramento splittail	AFCJB34020	None	None	SSC	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Fish - Cyprinidae - Pogonichthys macrolepidotus
Animals - Fish	Pogonichthys macrolepidotus	Sacramento splittail	AFCJB34020	None	None	SSC	-	3812155	SACRAMENTO WEST	Mapped and Unprocessed	Animals - Fish - Cyprinidae - Pogonichthys macrolepidotus
Animals - Fish	Pogonichthys macrolepidotus	Sacramento splittail	AFCJB34020	None	None	SSC	-	3812176	KNIGHTS LANDING	Mapped and Unprocessed	Animals - Fish - Cyprinidae - Pogonichthys macrolepidotus
Animals - Fish	Pogonichthys macrolepidotus	Sacramento splittail	AFCJB34020	None	None	SSC	-	3812175	VERONA	Mapped and Unprocessed	Animals - Fish - Cyprinidae - Pogonichthys macrolepidotus
Animals - Fish	Pogonichthys macrolepidotus	Sacramento splittail	AFCJB34020	None	None	SSC	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Fish - Cyprinidae - Pogonichthys macrolepidotus
Animals - Fish	Pogonichthys macrolepidotus	Sacramento splittail	AFCJB34020	None	None	SSC	-	3812166	GRAYS BEND	Mapped	Animals - Fish - Cyprinidae - Pogonichthys macrolepidotus
Animals - Fish	Hysterocarpus traskii traskii	Sacramento-San Joaquin tule perch	AFCQK02012	None	None	-	-	3812166	GRAYS BEND	Unprocessed	Animals - Fish - Embiotocidae - Hysterocarpus traskii traskii
Animals - Fish	Hysterocarpus traskii traskii	Sacramento-San Joaquin tule perch	AFCQK02012	None	None	-	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Fish - Embiotocidae - Hysterocarpus traskii traskii
Animals - Fish	Hysterocarpus traskii traskii	Sacramento-San Joaquin tule perch	AFCQK02012	None	None	-	-	3812175	VERONA	Unprocessed	Animals - Fish - Embiotocidae - Hysterocarpus traskii traskii
Animals - Fish	Hysterocarpus traskii traskii	Sacramento-San Joaquin tule perch	AFCQK02012	None	None	-	-	3812176	KNIGHTS LANDING	Unprocessed	Animals - Fish - Embiotocidae - Hysterocarpus traskii traskii
Animals - Fish	Hysterocarpus traskii traskii	Sacramento-San Joaquin tule perch	AFCQK02012	None	None	-	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Fish - Embiotocidae - Hysterocarpus traskii traskii
Animals - Fish	Hysterocarpus traskii traskii	Sacramento-San Joaquin tule perch	AFCQK02012	None	None	-	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Fish - Embiotocidae - Hysterocarpus traskii traskii

Animals - Fish	Hypomesus transpacificus	Delta smelt	AFCHB01040	Threatened	Endangered	-	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Fish - Osmeridae - Hypomesus transpacificus
Animals - Fish	Hypomesus transpacificus	Delta smelt	AFCHB01040	Threatened	Endangered	-	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Fish - Osmeridae - Hypomesus transpacificus
Animals - Fish	Hypomesus transpacificus	Delta smelt	AFCHB01040	Threatened	Endangered	-	-	3812176	KNIGHTS LANDING	Unprocessed	Animals - Fish - Osmeridae - Hypomesus transpacificus
Animals - Fish	Hypomesus transpacificus	Delta smelt	AFCHB01040	Threatened	Endangered	-	-	3812175	VERONA	Unprocessed	Animals - Fish - Osmeridae - Hypomesus transpacificus
Animals - Fish	Hypomesus transpacificus	Delta smelt	AFCHB01040	Threatened	Endangered	-	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Fish - Osmeridae - Hypomesus transpacificus
Animals - Fish	Spirinchus thaleichthys	longfin smelt	AFCHB03010	Candidate	Threatened	-	-	3812165	TAYLOR MONUMENT	Mapped	Animals - Fish - Osmeridae - Spirinchus thaleichthys
Animals - Fish	Spirinchus thaleichthys	longfin smelt	AFCHB03010	Candidate	Threatened	-	-	3812166	GRAYS BEND	Mapped	Animals - Fish - Osmeridae - Spirinchus thaleichthys
Animals - Fish	Spirinchus thaleichthys	longfin smelt	AFCHB03010	Candidate	Threatened	-	-	3812176	KNIGHTS LANDING	Mapped	Animals - Fish - Osmeridae - Spirinchus thaleichthys
Animals - Fish	Spirinchus thaleichthys	longfin smelt	AFCHB03010	Candidate	Threatened	-	-	3812155	SACRAMENTO WEST	Mapped and Unprocessed	Animals - Fish - Osmeridae - Spirinchus thaleichthys
Animals - Fish	Thaleichthys pacificus	eulachon	AFCHB04010	Threatened	None	-	-	3812176	KNIGHTS LANDING	Mapped	Animals - Fish - Osmeridae - Thaleichthys pacificus
Animals - Fish	Entosphenus tridentatus	Pacific lamprey	AFBAA02100	None	None	SSC	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Fish - Petromyzontidae - Entosphenus tridentatus
Animals - Fish	Entosphenus tridentatus	Pacific lamprey	AFBAA02100	None	None	SSC	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Fish - Petromyzontidae - Entosphenus tridentatus
Animals - Fish	Lampetra ayresii	western river lamprey	AFBAA02030	None	None	SSC	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Fish - Petromyzontidae - Lampetra ayresii
Animals - Fish	Lampetra ayresii	western river lamprey	AFBAA02030	None	None	SSC	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Fish - Petromyzontidae - Lampetra ayresii
Animals - Fish	Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	-	-	3812155	SACRAMENTO WEST	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 11
Animals - Fish	Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	-	-	3812154	SACRAMENTO EAST	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 11
Animals - Fish	Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	-	-	3812176	KNIGHTS LANDING	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 11
Animals - Fish	Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	-	-	3812174	PLEASANT GROVE	Mapped	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 11

Animals - Fish	Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	-	-	3812175	VERONA	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 11
Animals - Fish	Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	-	-	3812166	GRAYS BEND	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 11
Animals - Fish	Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	-	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 11
Animals - Fish	Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	-	-	3812164	RIO LINDA	Mapped	Animals - Fish - Salmonidae - Oncorhynchus mykiss irideus pop. 11
Animals - Fish	Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	AFCHA0205L	Threatened	Threatened	-	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 11
Animals - Fish	Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	AFCHA0205L	Threatened	Threatened	-	-	3812166	GRAYS BEND	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 11
Animals - Fish	Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	AFCHA0205L	Threatened	Threatened	-	-	3812175	VERONA	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 11
Animals - Fish	Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	AFCHA0205L	Threatened	Threatened	-	-	3812176	KNIGHTS LANDING	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 11
Animals - Fish	Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	AFCHA0205L	Threatened	Threatened	-	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 11
Animals - Fish	Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	AFCHA0205L	Threatened	Threatened	-	-	3812155	SACRAMENTO WEST	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 11
Animals - Fish	Oncorhynchus tshawytscha pop. 13	chinook salmon - Central Valley fall / late fall-run ESU	AFCHA0205N	None	None	SSC	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 13
Animals - Fish	Oncorhynchus tshawytscha pop. 13	chinook salmon - Central Valley fall / late fall-run ESU	AFCHA0205N	None	None	SSC	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 13
Animals - Fish	Oncorhynchus tshawytscha pop. 13	chinook salmon - Central Valley fall / late fall-run ESU	AFCHA0205N	None	None	SSC	-	3812176	KNIGHTS LANDING	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 13
Animals - Fish	Oncorhynchus tshawytscha pop. 13	chinook salmon - Central Valley fall / late fall-run ESU	AFCHA0205N	None	None	SSC	-	3812175	VERONA	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 13

Animals - Fish	Oncorhynchus tshawytscha pop. 13	chinook salmon - Central Valley fall / late fall-run ESU	AFCHA0205N	None	None	SSC	-	3812166	GRAYS BEND	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 13
Animals - Fish	Oncorhynchus tshawytscha pop. 13	chinook salmon - Central Valley fall / late fall-run ESU	AFCHA0205N	None	None	SSC	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 13
Animals - Fish	Oncorhynchus tshawytscha pop. 7	chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	-	-	3812165	TAYLOR MONUMENT	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 7
Animals - Fish	Oncorhynchus tshawytscha pop. 7	chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	-	-	3812166	GRAYS BEND	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 7
Animals - Fish	Oncorhynchus tshawytscha pop. 7	chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	-	-	3812175	VERONA	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 7
Animals - Fish	Oncorhynchus tshawytscha pop. 7	chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	-	-	3812176	KNIGHTS LANDING	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 7
Animals - Fish	Oncorhynchus tshawytscha pop. 7	chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	-	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 7
Animals - Fish	Oncorhynchus tshawytscha pop. 7	chinook salmon - Sacramento River winter-run ESU	AFCHA0205B	Endangered	Endangered	-	-	3812155	SACRAMENTO WEST	Mapped and Unprocessed	Animals - Fish - Salmonidae - Oncorhynchus tshawytscha pop. 7
Animals - Insects	Bombus crotchii	Crotch bumble bee	IIHYM24480	None	None	-	-	3812156	DAVIS	Mapped	Animals - Insects - Apidae - Bombus crotchii
Animals - Insects	Bombus occidentalis	western bumble bee	IIHYM24250	None	None	-	-	3812156	DAVIS	Mapped and Unprocessed	Animals - Insects - Apidae - Bombus occidentalis
Animals - Insects	Cicindela hirticollis abrupta	Sacramento Valley tiger beetle	IICOL02106	None	None	-	-	3812156	DAVIS	Mapped	Animals - Insects - Carabidae - Cicindela hirticollis abrupta
Animals - Insects	Cicindela hirticollis abrupta	Sacramento Valley tiger beetle	IICOL02106	None	None	-	-	3812155	SACRAMENTO WEST	Mapped	Animals - Insects - Carabidae - Cicindela hirticollis abrupta
Animals - Insects	Cicindela hirticollis abrupta	Sacramento Valley tiger beetle	IICOL02106	None	None	-	-	3812176	KNIGHTS LANDING	Mapped	Animals - Insects - Carabidae - Cicindela hirticollis abrupta
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3812176	KNIGHTS LANDING	Mapped	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3812175	VERONA	Mapped	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3812165	TAYLOR MONUMENT	Mapped	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus

Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3812155	SACRAMENTO WEST	Mapped and Unprocessed	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3812154	SACRAMENTO EAST	Mapped and Unprocessed	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus
Animals - Insects	Desmocerus californicus dimorphus	valley elderberry longhorn beetle	IICOL48011	Threatened	None	-	-	3812156	DAVIS	Mapped and Unprocessed	Animals - Insects - Cerambycidae - Desmocerus californicus dimorphus
Animals - Insects	Myrmosula pacifica	Antioch multilid wasp	IIHYM15010	None	None	-	-	3812156	DAVIS	Mapped	Animals - Insects - Mutillidae - Myrmosula pacifica
Animals - Mammals	Vulpes vulpes patwin	Sacramento Valley red fox	AMAJA03015	None	None	-	-	3812156	DAVIS	Unprocessed	Animals - Mammals - Canidae - Vulpes vulpes patwin
Animals - Mammals	Vulpes vulpes patwin	Sacramento Valley red fox	AMAJA03015	None	None	-	-	3812164	RIO LINDA	Unprocessed	Animals - Mammals - Canidae - Vulpes vulpes patwin
Animals - Mammals	Vulpes vulpes patwin	Sacramento Valley red fox	AMAJA03015	None	None	-	-	3812176	KNIGHTS LANDING	Unprocessed	Animals - Mammals - Canidae - Vulpes vulpes patwin
Animals - Mammals	Taxidea taxus	American badger	AMAJF04010	None	None	SSC	-	3812156	DAVIS	Mapped	Animals - Mammals - Mustelidae - Taxidea taxus
Animals - Mammals	Taxidea taxus	American badger	AMAJF04010	None	None	SSC	-	3812154	SACRAMENTO EAST	Mapped	Animals - Mammals - Mustelidae - Taxidea taxus
Animals - Mammals	Antrozous pallidus	pallid bat	AMACC10010	None	None	SSC	-	3812156	DAVIS	Mapped	Animals - Mammals - Vespertilionidae - Antrozous pallidus
Animals - Mammals	Lasionycteris noctivagans	silver-haired bat	AMACC02010	None	None	-	-	3812156	DAVIS	Mapped	Animals - Mammals - Vespertilionidae - Lasionycteris noctivagans
Animals - Mammals	Lasiurus blossevillii	western red bat	AMACC05060	None	None	SSC	-	3812176	KNIGHTS LANDING	Mapped	Animals - Mammals - Vespertilionidae - Lasiurus blossevillii
Animals - Mammals	Lasiurus cinereus	hoary bat	AMACC05030	None	None	-	-	3812176	KNIGHTS LANDING	Mapped	Animals - Mammals - Vespertilionidae - Lasiurus cinereus
Animals - Mammals	Lasiurus cinereus	hoary bat	AMACC05030	None	None	-	-	3812156	DAVIS	Mapped	Animals - Mammals - Vespertilionidae - Lasiurus cinereus
Animals - Mammals	Lasiurus cinereus	hoary bat	AMACC05030	None	None	-	-	3812155	SACRAMENTO WEST	Mapped	Animals - Mammals - Vespertilionidae - Lasiurus cinereus
Animals - Mammals	Myotis yumanensis	Yuma myotis	AMACC01020	None	None	-	-	3812156	DAVIS	Unprocessed	Animals - Mammals - Vespertilionidae - Myotis yumanensis
Animals - Mollusks	Margaritifera falcata	western pearlshell	IMBIV27020	None	None	-	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Mollusks - Margaritiferidae - Margaritifera falcata
Animals - Mollusks	Gonidea angulata	western ridged mussel	IMBIV19010	None	None	-	-	3812154	SACRAMENTO EAST	Mapped	Animals - Mollusks - Unionidae - Gonidea angulata

Animals - Mollusks	Gonidea angulata	western ridged mussel	IMBIV19010	None	None	-	-	3812155	SACRAMENTO WEST	Mapped	Animals - Mollusks - Unionidae - Gonidea angulata
Animals - Mollusks	Gonidea angulata	western ridged mussel	IMBIV19010	None	None	-	-	3812164	RIO LINDA	Mapped	Animals - Mollusks - Unionidae - Gonidea angulata
Animals - Mollusks	Gonidea angulata	western ridged mussel	IMBIV19010	None	None	-	-	3812165	TAYLOR MONUMENT	Mapped	Animals - Mollusks - Unionidae - Gonidea angulata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812164	RIO LINDA	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812166	GRAYS BEND	Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812176	KNIGHTS LANDING	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812175	VERONA	Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812174	PLEASANT GROVE	Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812156	DAVIS	Mapped and Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812155	SACRAMENTO WEST	Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Emys marmorata	western pond turtle	ARAAD02030	None	None	SSC	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Reptiles - Emydidae - Emys marmorata
Animals - Reptiles	Thamnophis gigas	giant gartersnake	ARADB36150	Threatened	Threatened	-	-	3812155	SACRAMENTO WEST	Mapped	Animals - Reptiles - Natricidae - Thamnophis gigas
Animals - Reptiles	Thamnophis gigas	giant gartersnake	ARADB36150	Threatened	Threatened	-	-	3812156	DAVIS	Mapped and Unprocessed	Animals - Reptiles - Natricidae - Thamnophis gigas
Animals - Reptiles	Thamnophis gigas	giant gartersnake	ARADB36150	Threatened	Threatened	-	-	3812175	VERONA	Mapped and Unprocessed	Animals - Reptiles - Natricidae - Thamnophis gigas
Animals - Reptiles	Thamnophis gigas	giant gartersnake	ARADB36150	Threatened	Threatened	-	-	3812176	KNIGHTS LANDING	Mapped and Unprocessed	Animals - Reptiles - Natricidae - Thamnophis gigas
Animals - Reptiles	Thamnophis gigas	giant gartersnake	ARADB36150	Threatened	Threatened	-	-	3812166	GRAYS BEND	Mapped and Unprocessed	Animals - Reptiles - Natricidae - Thamnophis gigas
Animals - Reptiles	Thamnophis gigas	giant gartersnake	ARADB36150	Threatened	Threatened	-	-	3812165	TAYLOR MONUMENT	Mapped and Unprocessed	Animals - Reptiles - Natricidae - Thamnophis gigas
Animals - Reptiles	Thamnophis gigas	giant gartersnake	ARADB36150	Threatened	Threatened	-	-	3812164	RIO LINDA	Mapped and Unprocessed	Animals - Reptiles - Natricidae - Thamnophis gigas
Animals - Reptiles	Phrynosoma blainvillii	coast horned lizard	ARACF12100	None	None	SSC	-	3812154	SACRAMENTO EAST	Unprocessed	Animals - Reptiles - Phrynosomatidae - Phrynosoma blainvillii
Community - Terrestrial	Elderberry Savanna	Elderberry Savanna	CTT63440CA	None	None	-	-	3812154	SACRAMENTO EAST	Mapped	Community - Terrestrial - Elderberry Savanna
Community - Terrestrial	Elderberry Savanna	Elderberry Savanna	CTT63440CA	None	None	-	-	3812155	SACRAMENTO WEST	Mapped	Community - Terrestrial - Elderberry Savanna
Community - Terrestrial	Great Valley Cottonwood Riparian Forest	Great Valley Cottonwood Riparian Forest	CTT61410CA	None	None	-	-	3812155	SACRAMENTO WEST	Mapped	Community - Terrestrial - Great Valley Cottonwood Riparian Forest

Community - Terrestrial	Great Valley Mixed Riparian Forest	Great Valley Mixed Riparian Forest	CTT61420CA	None	None	-	-	3812176	KNIGHTS LANDING	Mapped	Community - Terrestrial - Great Valley Mixed Riparian Forest
Community - Terrestrial	Northern Claypan Vernal Pool	Northern Claypan Vernal Pool	CTT44120CA	None	None	-	-	3812164	RIO LINDA	Mapped	Community - Terrestrial - Northern Claypan Vernal Pool
Community - Terrestrial	Northern Hardpan Vernal Pool	Northern Hardpan Vernal Pool	CTT44110CA	None	None	-	-	3812164	RIO LINDA	Mapped	Community - Terrestrial - Northern Hardpan Vernal Pool
Plants - Vascular	Sagittaria sanfordii	Sanford's arrowhead	PMALI040Q0	None	None	-	1B.2	3812164	RIO LINDA	Mapped	Plants - Vascular - Alismataceae - Sagittaria sanfordii
Plants - Vascular	Sagittaria sanfordii	Sanford's arrowhead	PMALI040Q0	None	None	-	1B.2	3812154	SACRAMENTO EAST	Mapped	Plants - Vascular - Alismataceae - Sagittaria sanfordii
Plants - Vascular	Centromadia parryi ssp. parryi	pappose tarplant	PDAST4R0P2	None	None	-	1B.2	3812156	DAVIS	Mapped	Plants - Vascular - Asteraceae - Centromadia parryi ssp. parryi
Plants - Vascular	Centromadia parryi ssp. rudis	Parry's rough tarplant	PDAST4R0P3	None	None	-	4.2	3812156	DAVIS	Unprocessed	Plants - Vascular - Asteraceae - Centromadia parryi ssp. rudis
Plants - Vascular	Centromadia parryi ssp. rudis	Parry's rough tarplant	PDAST4R0P3	None	None	-	4.2	3812155	SACRAMENTO WEST	Unprocessed	Plants - Vascular - Asteraceae - Centromadia parryi ssp. rudis
Plants - Vascular	Centromadia parryi ssp. rudis	Parry's rough tarplant	PDAST4R0P3	None	None	-	4.2	3812165	TAYLOR MONUMENT	Unprocessed	Plants - Vascular - Asteraceae - Centromadia parryi ssp. rudis
Plants - Vascular	Centromadia parryi ssp. rudis	Parry's rough tarplant	PDAST4R0P3	None	None	-	4.2	3812166	GRAYS BEND	Unprocessed	Plants - Vascular - Asteraceae - Centromadia parryi ssp. rudis
Plants - Vascular	Symphyotrichum lentum	Suisun Marsh aster	PDASTE8470	None	None	-	1B.2	3812176	KNIGHTS LANDING	Mapped	Plants - Vascular - Asteraceae - Symphyotrichum lentum
Plants - Vascular	Symphyotrichum lentum	Suisun Marsh aster	PDASTE8470	None	None	-	1B.2	3812155	SACRAMENTO WEST	Mapped	Plants - Vascular - Asteraceae - Symphyotrichum lentum
Plants - Vascular	Lepidium latipes var. heckardii	Heckard's pepper-grass	PDBRA1M0K1	None	None	-	1B.2	3812156	DAVIS	Mapped	Plants - Vascular - Brassicaceae - Lepidium latipes var. heckardii
Plants - Vascular	Lepidium latipes var. heckardii	Heckard's pepper-grass	PDBRA1M0K1	None	None	-	1B.2	3812166	GRAYS BEND	Mapped and Unprocessed	Plants - Vascular - Brassicaceae - Lepidium latipes var. heckardii
Plants - Vascular	Downingia pusilla	dwarf downingia	PDCAM060C0	None	None	-	2B.2	3812174	PLEASANT GROVE	Mapped	Plants - Vascular - Campanulaceae - Downingia pusilla
Plants - Vascular	Downingia pusilla	dwarf downingia	PDCAM060C0	None	None	-	2B.2	3812164	RIO LINDA	Mapped and Unprocessed	Plants - Vascular - Campanulaceae - Downingia pusilla
Plants - Vascular	Legenere limosa	legenere	PDCAM0C010	None	None	-	1B.1	3812164	RIO LINDA	Mapped	Plants - Vascular - Campanulaceae - Legenere limosa
Plants - Vascular	Atriplex cordulata var. cordulata	heartscale	PDCHE040B0	None	None	-	1B.2	3812156	DAVIS	Mapped	Plants - Vascular - Chenopodiaceae - Atriplex cordulata var. cordulata
Plants - Vascular	Atriplex depressa	brittlescale	PDCHE042L0	None	None	-	1B.2	3812156	DAVIS	Mapped	Plants - Vascular - Chenopodiaceae - Atriplex depressa
Plants - Vascular	Atriplex depressa	brittlescale	PDCHE042L0	None	None	-	1B.2	3812166	GRAYS BEND	Mapped and Unprocessed	Plants - Vascular - Chenopodiaceae - Atriplex depressa

Plants - Vascular	Extriplex joaquinana	San Joaquin spearscale	PDCHE041F3	None	None	-	1B.2	3812166	GRAYS BEND	Mapped and Unprocessed	Plants - Vascular - Chenopodiaceae - Extriplex joaquinana
Plants - Vascular	Extriplex joaquinana	San Joaquin spearscale	PDCHE041F3	None	None	-	1B.2	3812156	DAVIS	Mapped	Plants - Vascular - Chenopodiaceae - Extriplex joaquinana
Plants - Vascular	Astragalus pauperculus	depauperate milk-vetch	PDFAB0F6N0	None	None	-	4.3	3812166	GRAYS BEND	Unprocessed	Plants - Vascular - Fabaceae - Astragalus pauperculus
Plants - Vascular	Astragalus tener var. ferrisiae	Ferris' milk-vetch	PDFAB0F8R3	None	None	-	1B.1	3812156	DAVIS	Mapped	Plants - Vascular - Fabaceae - Astragalus tener var. ferrisiae
Plants - Vascular	Astragalus tener var. ferrisiae	Ferris' milk-vetch	PDFAB0F8R3	None	None	-	1B.1	3812155	SACRAMENTO WEST	Mapped	Plants - Vascular - Fabaceae - Astragalus tener var. ferrisiae
Plants - Vascular	Astragalus tener var. tener	alkali milk-vetch	PDFAB0F8R1	None	None	-	1B.2	3812156	DAVIS	Mapped	Plants - Vascular - Fabaceae - Astragalus tener var. tener
Plants - Vascular	Astragalus tener var. tener	alkali milk-vetch	PDFAB0F8R1	None	None	-	1B.2	3812166	GRAYS BEND	Mapped and Unprocessed	Plants - Vascular - Fabaceae - Astragalus tener var. tener
Plants - Vascular	Trifolium hydrophilum	saline clover	PDFAB400R5	None	None	-	1B.2	3812166	GRAYS BEND	Mapped	Plants - Vascular - Fabaceae - Trifolium hydrophilum
Plants - Vascular	Fritillaria agrestis	stinkbells	PMLIL0V010	None	None	-	4.2	3812156	DAVIS	Unprocessed	Plants - Vascular - Liliaceae - Fritillaria agrestis
Plants - Vascular	Fritillaria agrestis	stinkbells	PMLIL0V010	None	None	-	4.2	3812164	RIO LINDA	Mapped and Unprocessed	Plants - Vascular - Liliaceae - Fritillaria agrestis
Plants - Vascular	Fritillaria agrestis	stinkbells	PMLIL0V010	None	None	-	4.2	3812155	SACRAMENTO WEST	Unprocessed	Plants - Vascular - Liliaceae - Fritillaria agrestis
Plants - Vascular	Fritillaria agrestis	stinkbells	PMLIL0V010	None	None	-	4.2	3812154	SACRAMENTO EAST	Unprocessed	Plants - Vascular - Liliaceae - Fritillaria agrestis
Plants - Vascular	Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	PDMAL0H0R3	None	None	-	1B.2	3812155	SACRAMENTO WEST	Mapped	Plants - Vascular - Malvaceae - Hibiscus lasiocarpos var. occidentalis
Plants - Vascular	Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	PDMAL0H0R3	None	None	-	1B.2	3812166	GRAYS BEND	Mapped	Plants - Vascular - Malvaceae - Hibiscus lasiocarpos var. occidentalis
Plants - Vascular	Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	PDMAL0H0R3	None	None	-	1B.2	3812175	VERONA	Mapped	Plants - Vascular - Malvaceae - Hibiscus lasiocarpos var. occidentalis
Plants - Vascular	Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	PDMAL0H0R3	None	None	-	1B.2	3812176	KNIGHTS LANDING	Mapped	Plants - Vascular - Malvaceae - Hibiscus lasiocarpos var. occidentalis
Plants - Vascular	Chloropyron palmatum	palmate-bracted bird's-beak	PDSCR0J0J0	Endangered	Endangered	-	1B.1	3812166	GRAYS BEND	Mapped and Unprocessed	Plants - Vascular - Orobanchaceae - Chloropyron palmatum
Plants - Vascular	Gratiola heterosepala	Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	-	1B.2	3812174	PLEASANT GROVE	Mapped	Plants - Vascular - Plantaginaceae - Gratiola heterosepala
Plants - Vascular	Gratiola heterosepala	Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	-	1B.2	3812164	RIO LINDA	Mapped	Plants - Vascular - Plantaginaceae - Gratiola heterosepala

Plants - Vascular	Puccinellia simplex	California alkali grass	PMPOA53110	None	None	-	1B.2	3812156	DAVIS	Mapped	Plants - Vascular - Poaceae - Puccinellia simplex
Plants - Vascular	Puccinellia simplex	California alkali grass	PMPOA53110	None	None	-	1B.2	3812166	GRAYS BEND	Mapped	Plants - Vascular - Poaceae - Puccinellia simplex
Plants - Vascular	Navarretia cotulifolia	cotula navarretia	PDPLM0C040	None	None	-	4.2	3812166	GRAYS BEND	Unprocessed	Plants - Vascular - Polemoniaceae - Navarretia cotulifolia
Plants - Vascular	Brodiaea rosea ssp. vallicola	valley brodiaea	PMLIL0C0K2	None	None	-	4.2	3812174	PLEASANT GROVE	Unprocessed	Plants - Vascular - Themidaceae - Brodiaea rosea ssp. vallicola
Plants - Vascular	Brodiaea rosea ssp. vallicola	valley brodiaea	PMLIL0C0K2	None	None	-	4.2	3812164	RIO LINDA	Unprocessed	Plants - Vascular - Themidaceae - Brodiaea rosea ssp. vallicola
Plants - Vascular	Brodiaea rosea ssp. vallicola	valley brodiaea	PMLIL0C0K2	None	None	-	4.2	3812154	SACRAMENTO EAST	Unprocessed	Plants - Vascular - Themidaceae - Brodiaea rosea ssp. vallicola

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

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Location

Sacramento County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

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Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

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2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Reptiles

NAME	STATUS
Giant Garter Snake Thamnophis gigas Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

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Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp Lepidurus packardi Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2246	Endangered

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Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

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NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Belding's Savannah Sparrow Passerculus sandwichensis beldingi This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15

Bullock's Oriole Icterus bullockii — Breeds Mar 21 to Jul 25
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Clark's Grebe Aechmophorus clarkii — Breeds Jun 1 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Long-eared Owl asio otus — Breeds Mar 1 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3631

Marbled Godwit Limosa fedoa — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

NOT FOR CONSULTATION

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Western Grebe aechmophorus occidentalis — Breeds Jun 1 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/6743

Willet Tringa semipalmata — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

▪ probability of presence ▪ breeding season | survey effort – no data

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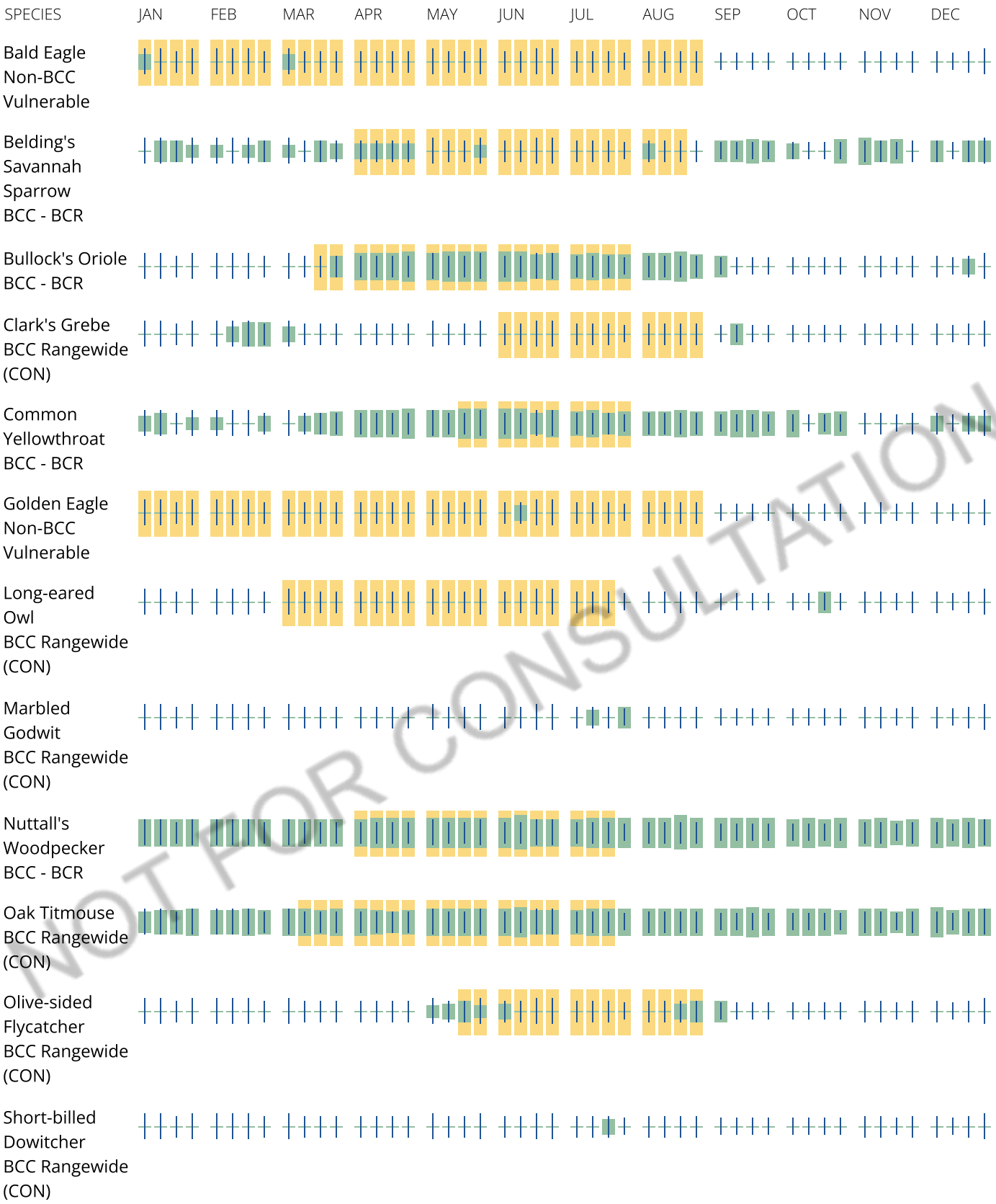
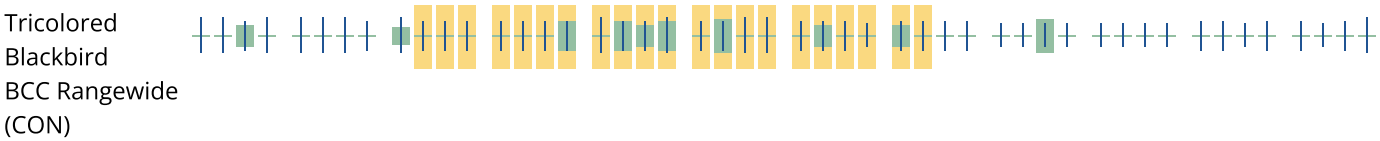


SPECIES
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC



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Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

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Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

NOT FOR CONSULTATION

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

NOT FOR CONSULTATION

Coastal Barrier Resources System

Projects within the John H. Chafee Coastal Barrier Resources System (CBRS) may be subject to the restrictions on federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local Ecological Services Field Office or visit the CBRA Consultations website. The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

There are no known coastal barriers at this location.

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the official CBRS maps. The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

NOT FOR CONSULTATION

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

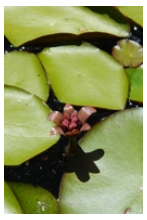
CNPS Rare Plant Inventory

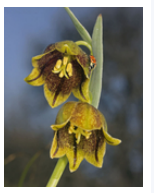
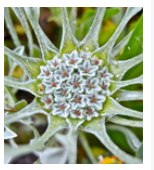
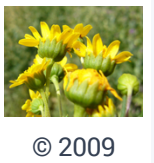
California Native Plant Society

Search Results

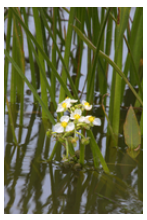
36 matches found. Click on scientific name for details

Search Criteria: CRPR is one of **[1A:1B:2A:2B:3:4:CBR]** , County is one of **[SAC]**, Lifeform is one of **[Tree:Shrub:Leaf succulent:Herb:Vine:Stem succulent]**

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Brasenia schreberi	watershield	Cabombaceae	perennial rhizomatous herb (aquatic)	Jun-Sep	None	None	G5	S3	2B.3	 ©2014 Kirsten Bovee
Brodiaea rosea ssp. *vallicola*	valley brodiaea	Themidaceae	perennial bulbiferous herb	Apr-May(Jun)	None	None	G5T3	S3	4.2	© 2011 Steven Perry
Carex comosa	bristly sedge	Cyperaceae	perennial rhizomatous herb	May-Sep	None	None	G5	S2	2B.1	Dean Wm. Taylor 1997
Centromadia parryi ssp. *rudis*	Parry's rough tarplant	Asteraceae	annual herb	May-Oct	None	None	G3T3	S3	4.2	No Photo Available
Chloropyron molle ssp. *molle*	soft salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Nov	FE	CR	G2T1	S1	1B.2	No Photo Available
Cicuta maculata var. *bolanderi*	Bolander's water-hemlock	Apiaceae	perennial herb	Jul-Sep	None	None	G5T4T5	S2?	2B.1	No Photo Available
Clarkia biloba ssp. *brandegeeae*	Brandegee's clarkia	Onagraceae	annual herb	May-Jul	None	None	G4G5T4	S4	4.2	No Photo Available
Cryptantha hooveri	Hoover's cryptantha	Boraginaceae	annual herb	Apr-May	None	None	GH	SH	1A	No Photo Available
Cuscuta obtusiflora var. *glandulosa*	Peruvian dodder	Convolvulaceae	annual vine (parasitic)	Jul-Oct	None	None	G5T4?	SH	2B.2	No Photo Available
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	None	None	GU	S2	2B.2	No Photo Available

Eryngium pinnatisectum	Tuolumne button-celery	Apiaceae	annual/perennial herb	May-Aug	None	None	G2	S2	1B.2	© 2007 Robert E. Preston, Ph.D.
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	No Photo Available
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3	S3	4.2	 © 2016 Aaron Schusteff
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	Apr-Aug	None	CE	G2	S2	1B.2	©2004 Carol W. Witham
Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.2	 © 2017 John Doyen
Hibiscus lasiocarpos var. *occidentalis*	woolly rose-mallow	Malvaceae	perennial rhizomatous herb (emergent)	Jun-Sep	None	None	G5T3	S3	1B.2	© 2020 Steven Perry
Juncus leiospermus var. *ahartii*	Ahart's dwarf rush	Juncaceae	annual herb	Mar-May	None	None	G2T1	S1	1B.2	© 2004 Carol W. Witham
Lasthenia chrysantha	alkali-sink goldfields	Asteraceae	annual herb	Feb-Apr	None	None	G2	S2	1B.1	© 2009 California State University, Stanislaus
Lasthenia ferrisiae	Ferris' goldfields	Asteraceae	annual herb	Feb-May	None	None	G3	S3	4.2	 © 2009 Zoya

										Zoya Akulova
Lathyrus jepsonii var. jepsonii	Delta tule pea	Fabaceae	perennial herb	May-Jul(Aug-Sep)	None	None	G5T2	S2	1B.2	© 2003 Mark Fogiel
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.1	©2000 John Game
Lepidium latipes var. heckardii	Heckard's pepper-grass	Brassicaceae	annual herb	Mar-May	None	None	G4T1	S1	1B.2	2018 Jennifer Buck
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	Apr-Nov	None	CR	G2	S2	1B.1	No Photo Available
Limosella australis	Delta mudwort	Scrophulariaceae	perennial stoloniferous herb	May-Aug	None	None	G4G5	S2	2B.1	© 2020 Richard Sage
Navarretia eriocephala	hoary navarretia	Polemoniaceae	annual herb	May-Jun	None	None	G4?	S4?	4.3	© 2018 Leigh Johnson
Navarretia myersii ssp. myersii	pincushion navarretia	Polemoniaceae	annual herb	Apr-May	None	None	G2T2	S2	1B.1	© 2020 Leigh Johnson
Oenothera deltoides ssp. howellii	Antioch Dunes evening-primrose	Onagraceae	perennial herb	Mar-Sep	FE	CE	G5T1	S1	1B.1	No Photo Available
Orcuttia tenuis	slender Orcutt grass	Poaceae	annual herb	May-Sep(Oct)	FT	CE	G2	S2	1B.1	© 2013 Justy Leppert
Orcuttia viscida	Sacramento Orcutt grass	Poaceae	annual herb	Apr-Jul(Sep)	FE	CE	G1	S1	1B.1	No Photo Available
Ranunculus lobbii	Lobb's	Ranunculaceae	annual herb	Feb-May	None	None	G4	S3	4.2	

	aquatic buttercup		(aquatic)							No Photo Available
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	G3	S3	1B.2	 ©2013 Debra L. Cook
Scutellaria galericulata	marsh skullcap	Lamiaceae	perennial rhizomatous herb	Jun-Sep	None	None	G5	S2	2B.2	© 2021 Scot Loring
Scutellaria lateriflora	side-flowering skullcap	Lamiaceae	perennial rhizomatous herb	Jul-Sep	None	None	G5	S2	2B.2	No Photo Available
Senecio hydrophiloides	sweet marsh ragwort	Asteraceae	perennial herb	May-Aug	None	None	G5	S3	4.2	© 2021 Scot Loring
Symphyotrichum lentum	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	(Apr)May-Nov	None	None	G2	S2	1B.2	No Photo Available
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.2	No Photo Available

Showing 1 to 36 of 36 entries

Suggested Citation:
California Native Plant Society, Rare Plant Program. 2022. Rare Plant Inventory (online edition, v9-01 1.5). Website https://www.rareplants.cnps.org [accessed 30 August 2022].

Metadata
Description of CNDDB QuickView fields

(In alphabetical order)

- California Rare Plant Rank
- California Department of Fish and Wildlife Status
- Common Name
- County Name
- Data Status
- Element Code
- Element Type
- Federal Status
- Quad Code
- Quad Name
- Scientific Name
- State Status
- Taxonomic Sort

California Rare Plant Rank

The *California Rare Plant Rank* status applies to plants only. The *California Rare Plant Ranks* are a ranking system originally developed by the California Native Plant Society (CNPS) to better define and categorize rarity in California's flora. These ranks were previously known as the CNPS lists but were renamed to the *California Rare Plant Ranks* to better reflect the joint effort among the CNPS, the CNDDB, and a wide range of botanical experts, who work together to assign a rarity ranking. All plants tracked by the CNDDB are assigned to a *California Rare Plant Rank* category. These categories are:

CA Rare Plant Rank	Description
1A	Plants presumed extinct in California and rare/extinct elsewhere
1B.1	Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California
1B.2	Plants rare, threatened, or endangered in California and elsewhere; fairly threatened in California
1B.3	Plants rare, threatened, or endangered in California and elsewhere; not very threatened in California
2A	Plants presumed extirpated in California, but more common elsewhere
2B.1	Plants rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California
2B.2	Plants rare, threatened, or endangered in California, but more common elsewhere; fairly threatened in California

2B.3	Plants rare, threatened, or endangered in California, but more common elsewhere; not very threatened in California
3.1	Plants about which we need more information; seriously threatened in California
3.2	Plants about which we need more information; fairly threatened in California
3.3	Plants about which we need more information; not very threatened in California
4.1	Plants of limited distribution; seriously threatened in California
4.2	Plants of limited distribution; fairly threatened in California
4.3	Plants of limited distribution; not very threatened in California

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California Department of Fish and Wildlife Status

The *California Department of Fish and Wildlife (CDFW) Status* applies to animals only. The possible values for *CDFW Status* are:

Status	Description
FP	Fully Protected: This classification was the State of California's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds and mammals. Most of the species on these lists have subsequently been listed under the state and/or federal endangered species acts.
SSC	Species of Special Concern: It is the goal and responsibility of the Department of Fish and Wildlife to maintain viable populations of all native species. To this end, the Department has designated certain vertebrate species as "Species of Special Concern" because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction. The goal of designating species as "Species of Special Concern" is to halt or reverse their decline by calling attention to their plight and addressing the issues of concern early enough to secure their long-term viability.
WL	Watch List: The Department of Fish and Wildlife maintains a list consisting of taxa that were previously designated as "Species of Special Concern" but no longer merit that status, or which do not yet meet SSC criteria, but for which there is concern and a need for additional information to clarify status.

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Common Name

The *Common Name* of an element or taxon, recognized at the state level. The *Common Name* value for natural communities is the same as that for *Scientific Name*.

County Name

The name of the California county containing the element data.

Data Status

This field is used to indicate the status of the data for a particular element for a particular area. The possible values for *Data Status* are:

Status	Description
Mapped	Indicates that there is currently information from the specified quad/county and element within the CNDDB occurrence database.
Unprocessed	Indicates that there is not currently any information from that quad/county for that element within the quality-controlled CNDDB occurrence database but there is unprocessed data at the CNDDB waiting to be evaluated.
Mapped and Unprocessed	Indicates that there is both: information from the specified quad/county and element within the CNDDB occurrence database and within the CNDDB unprocessed data.

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Element Code

The *Element Code* is a ten-character code assigned to each element/taxon by NatureServe for data management purposes. These codes are common to all Natural Heritage Programs and Conservation Data Centers both within and outside of the United States and allow efficient inter-jurisdictional communication. The upper level of classification is presented below. Complete coding information is contained in the Natural Heritage Program Operations Manual, TNC, Arlington, Virginia, April 1982, revised June 1988.

First character	Meaning
A	Vertebrate animal
C	Community (as in Natural Community or plant community)
I	Invertebrate animal
N	Non-vascular plant
P	Vascular plant
O	Other (State trees, etc.; not used by the CNDDB)
G	Geologic (not used by the CNDDB)

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Element Type

The *Element Type* indicates the general taxonomic group that an element falls within. The following *Element Types* are currently used by the CNDDB:

Animals	Amphibians
	Arachnids
	Birds
	Crustaceans
	Fish
	Insects
	Mollusks
	Reptiles
Community	Aquatic
	Terrestrial
Plants	Bryophytes
	Lichens
	Vascular

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Federal Status

The United States legal status under the Federal Endangered Species Act (ESA).

Listing Status	Description
Endangered	The classification provided to an animal or plant in danger of extinction within the foreseeable future throughout all or a significant portion of its range.
Threatened	The classification provided to an animal or plant which is likely to become an Endangered species within the foreseeable future throughout all or a significant portion of its range.
Proposed Endangered	The classification provided to an animal or plant that is proposed for federal listing as Endangered in the Federal Register under Section 4 of the Endangered Species Act.
Proposed Threatened	The classification provided to an animal or plant that is proposed for federal listing as Threatened in the Federal Register under Section 4 of the Endangered Species Act.
Candidate	The classification provided to an animal or plant that has been studied by the United States Fish and Wildlife Service, and the Service has concluded that it should be proposed for addition to the Federal Endangered and Threatened species list.
None	The plant or animal has no federal status.
Delisted	The plant or animal was previously listed as Endangered or Threatened, but is no longer listed on the Federal Endangered and

	Threatened species list.

(Please see the Federal Register for the current legal definitions of Federal status.)

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Quad Code

A code used by the California Department of Fish and Wildlife to uniquely identify USGS 7.5 minute quadrangles (quads). The USGS quad code consists of one degree blocks sub-divided into sixty-four 7.5 minute maps. The one degree block is referenced by the latitude and longitude of its southeast corner (e.g., 38121). Individual maps within the block are referenced by an alpha-numeric code. This code originates at the same southeast corner as the one degree block and runs numerically east to west, and alphabetically south to north. This creates a grid allowing maps to be coded by the intersection of these axes (e.g., B5). An example of a complete map code would be 38121B5. The CDFW *Quad Code* converts this value to an integer by replacing the alpha character with a numeric equivalent (A = 1, B = 2, C = 3, D = 4, E = 5, F = 6, G = 7, H = 8).

Quad Name

The name of the USGS 7.5 minute quadrangle (quad) map containing the element data.

Scientific Name

The *Scientific (Latin) Name* of a plant or animal or the name of a Natural Community recognized at the state level.

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State Status

The State of California legal status.

Listing Status	Description
Endangered	The classification provided to a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.
Threatened	The classification provided to a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts.
Rare	The classification provided to a native plant species, subspecies, or variety when, although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens. This designation stems from the Native Plant Protection Act of 1977.
None	The plant or animal has no state status.
Delisted	The plant or animal was previously listed as Endangered, Threatened or Rare but is no longer listed by the State of California.
Candidate	The classification provided to a native species or subspecies of a bird,

Endangered	mammal, fish, amphibian, reptile, or plant that the Fish and Game Commission has formally noticed as being under review by the Department of Fish and Wildlife for addition to the list of endangered species, or a species for which the commission has published a notice of proposed regulation to add the species to the list of endangered species.
Candidate Threatened	The classification provided to a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the Fish and Game Commission has formally noticed as being under review by the Department of Fish and Wildlife for addition to the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to the list of threatened species.

(See Fish and Game code, sections 1901, 2062, 2067, and 2068 for legal definitions of California State status.)

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Taxonomic Sort

This field is used to sort the results into hierarchical taxonomic groupings. When a query is run with the CNDDB QuickView Tool, the results are returned based on this hierarchy so that similar organisms are grouped together (i.e. all birds are grouped together, all amphibians are grouped together, etc.).

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Appendix C
Traffic Study

Traffic Study

Natomas Brownstone
Sacramento, California

DRAFT

July 26, 2022

Prepared for:

City of Sacramento

Prepared by:

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Sacramento, California 95814

Phone: (916) 858-5800

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DRAFT

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DRAFT

INTRODUCTION

Purpose

This report documents the results of a traffic assessment completed for the proposed Natomas Brownstone development project (the "proposed project" or "project"), located at the northeast corner of the Arena Boulevard intersection with E Commerce Way in Sacramento, California.

The purpose of this study is to complete a traffic access, circulation, and queuing assessment of the proposed project on the adjacent transportation system. The on-site circulation and project impacts to adjacent intersections and surrounding roadway network, including freeway facilities, will also be assessed. In addition, a Vehicle Miles Traveled (VMT) analysis was completed for the proposed project.

Project Description

As detailed in site plan, the project proposes to construct a 282-unit residential condo complex on the vacant project site. The project is expected to access the surrounding roadway network via the project's primary access point with the existing apartment complex along Sally Ride Way but would have a secondary access point along the driveway that would be shared with the existing hotel along E Commerce Way. The project location and study intersections are shown in Figure 1. The proposed site plan is shown in Figure 2.

Study Area

The following intersections are included in this evaluation:

1. Arena Boulevard @ I-5 SB Ramps
2. Arena Boulevard @ I-5 NB Ramps
3. Arena Boulevard @ E Commerce Way
4. Arena Boulevard @ Sally Ride Way
5. Arena Boulevard @ S Entrance Road/Innovator Drive
6. Arena Boulevard @ Truxel Road
7. E Commerce Way @ Site Access Road
8. E Commerce Way @ Centene Lane

This traffic impact analysis was conducted for the above-listed study facilities for the following scenarios:

A. Existing (2022) Conditions
B. Existing (2022) plus Proposed Project Conditions

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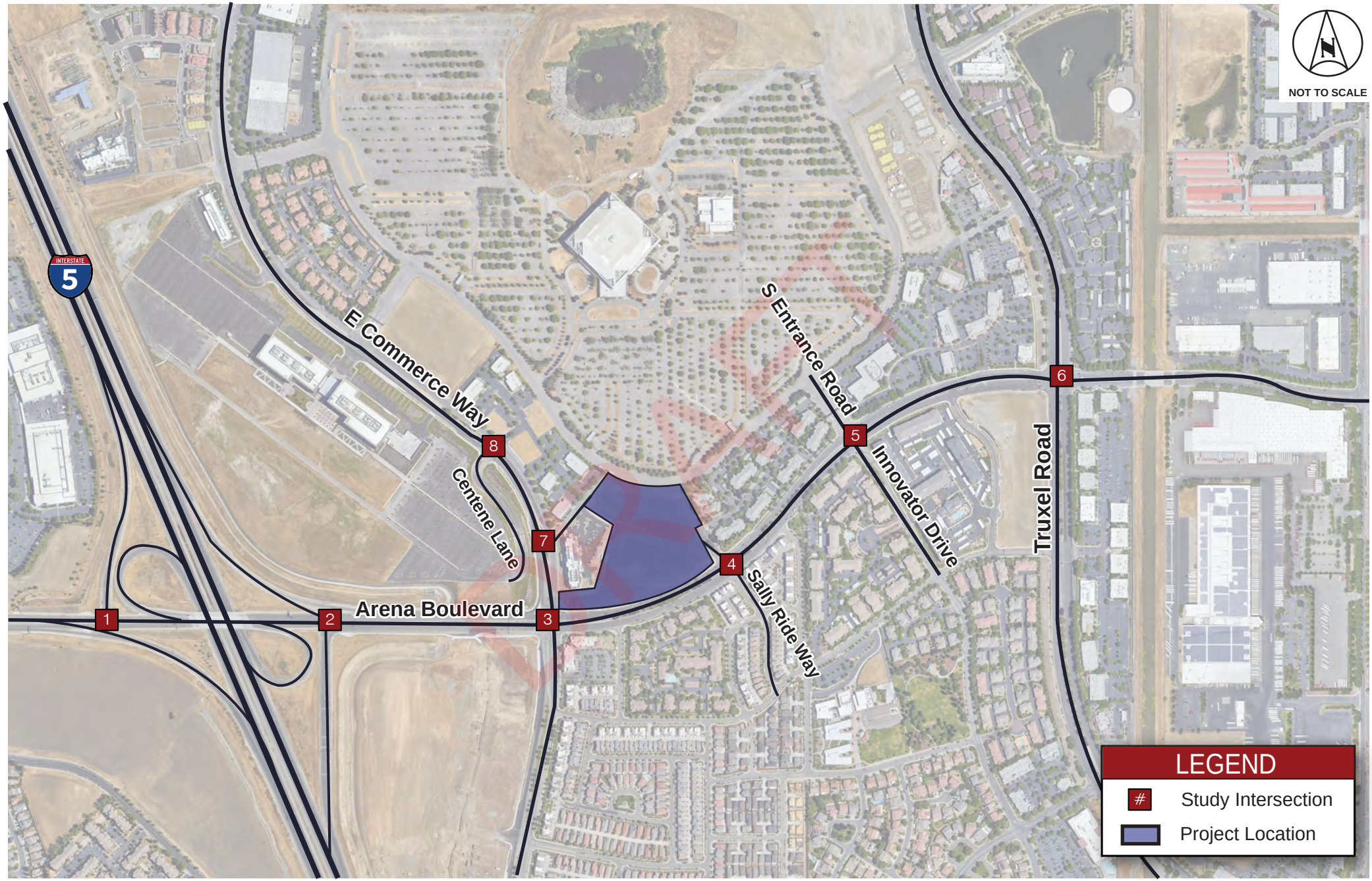

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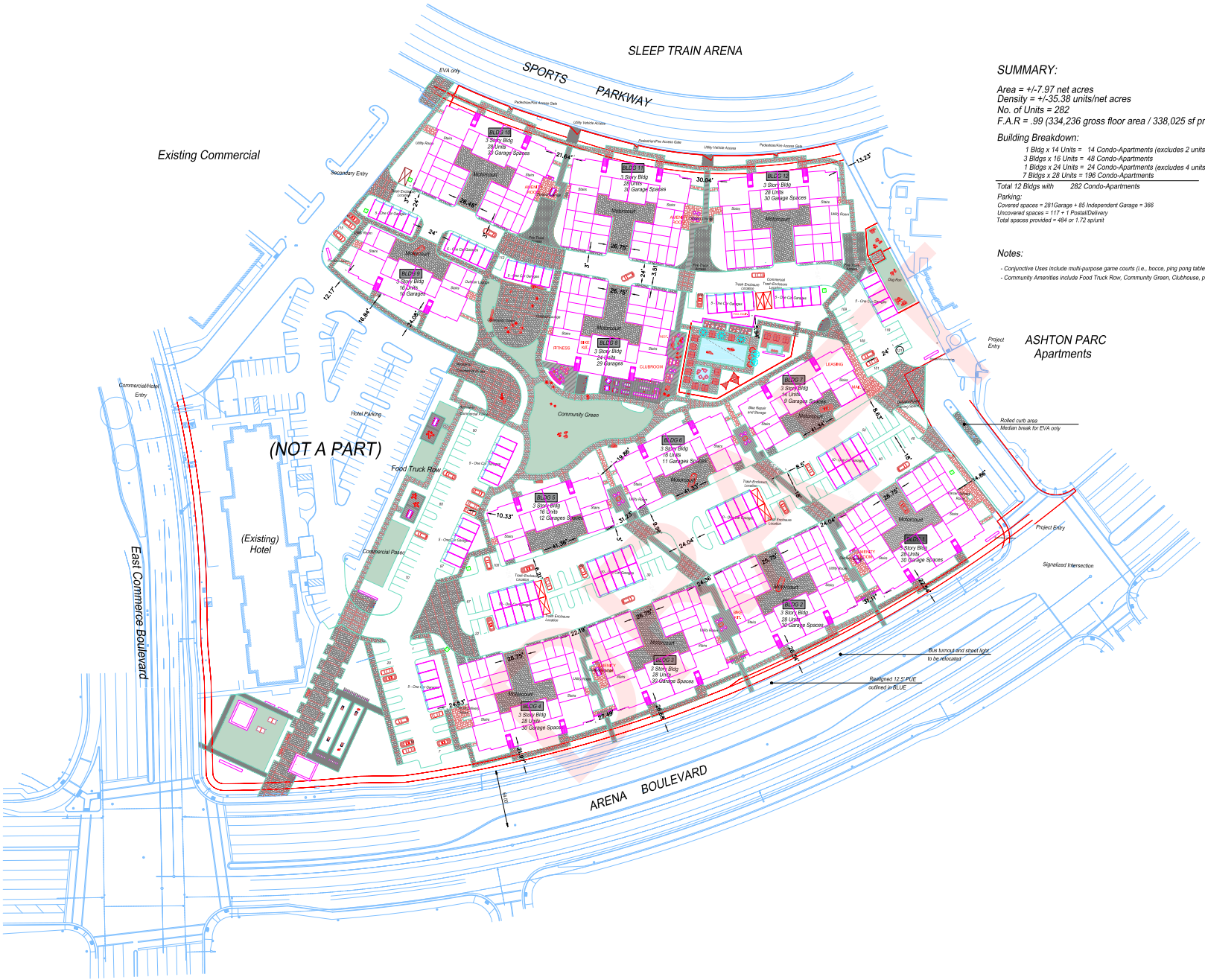
Figure 1
Project Vicinity Map



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SUMMARY:

Area = +/-7.97 net acres
Density = +/-35.38 units/net acres
No. of Units = 282
F.A.R = .99 (334,236 gross floor area / 338,025 sf project area)

Building Breakdown:

1 Bldg x 14 Units = 14 Condo-Apartments (excludes 2 units for Leasing and Bike Repair/Storage Room)
3 Bldgs x 16 Units = 48 Condo-Apartments
1 Bldgs x 24 Units = 24 Condo-Apartments (excludes 4 units for Fitness Room and Clubhouse)
7 Bldgs x 28 Units = 196 Condo-Apartments

Total 12 Bldgs with 282 Condo-Apartments

Parking:

Covered spaces = 281Garage + 85 Independent Garage = 366
Uncovered spaces = 117 + 1 Postal/Delivery
Total spaces provided = 484 or 1.72 sp/unit

Notes:

- *Conjunctive Uses include multi-purpose game courts (i.e., bocce, ping pong tables, cornhole), picnic areas, and enhanced hardscape and landscape areas*
- *Community Amenities include Food Truck Row, Community Green, Clubhouse, pool, spa, fitness center, outdoor lounge areas, barbeque areas, and dog park*

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Figure 2
Proposed Project Site Plan

ENVIRONMENTAL SETTING

Project Area Roadways

The following are descriptions of the primary roadways near the project site.

- Arena Boulevard is an east-west arterial roadway bordering the southern edge of the project site. South of the project site, Arena Boulevard has three lanes in each direction and the roadway travel lanes are separated by a raised median. Sidewalk and bicycle lanes are provided along the proposed project frontage.
- E Commerce Way is a north-south arterial roadway located just west of the project site. In the vicinity of the project site, E Commerce Way has three lanes in the northbound direction and two lanes in the southbound direction, separated by a raised median. In addition, sidewalks and bicycle lanes are provided in the vicinity of the project site.
- Truxel Road is a north-south arterial roadway located east of the project site. Truxel Road has four lanes traveling north and south, separated by a raised median.

Public Transit System

Sacramento Regional Transit District (RT) provides transit service in the greater Sacramento metropolitan area. The project is located within a half-mile to RT Routes 11, 13, and 113 [1]. The nearest transit stops are located on Truxel Road in the immediate vicinity of the intersection of Truxel Road with Arena Boulevard. Figure 3 depicts the transit routes within the project vicinity.

Bicycle and Pedestrian Facilities

There are currently Class II bike lanes along both sides of Arena Boulevard, E Commerce Way, and Truxel Road in the vicinity of the project location. In addition, a drainage canal located east of the project site, just east of Truxel Road, currently offers an off-street Class I bike path located along the western edge, with proposed expansion along the eastern edge that would provide access along Truxel Road, as shown in the City's *Bicycle Master Plan*[2]. This off-street Class I bike path was recently extended south to connect with Airport Road at Tanzanite Community Park. Figure 4 provides a detailed map of bicycle facilities within the project vicinity.

There are currently sidewalks along both sides of Arena Boulevard, E Commerce Way, and Truxel Road within the project vicinity. In addition, streetlights are installed along these roadways. At the intersections of Arena Boulevard with E Commerce Way and Truxel Road, four striped crosswalks are provided with corresponding pedestrian signal heads. Similarly, at the intersection of Arena Boulevard with Sally Ride Way, three striped crosswalks are provided with corresponding pedestrian signal heads. Existing and proposed pedestrian facilities are contained in the City's *Pedestrian Master Plan*[3].

Existing (2022) Intersection Geometry and Volumes

Figure 5 illustrates the study facilities, existing traffic control, and existing lane configurations. Figure 6 illustrates the AM and PM peak-hour turning movement volumes that were collected on Tuesday, June 7, 2022 and Appendix A contains the traffic counts data sheets. These counts were collected on a typical weekday while school was in session. It should be noted that when these counts are compared to those that were collected at identical intersections in 2019, they will be different for a majority of the movements. However, rather than adjusting for pre-COVID conditions, these traffic counts should be considered representative of current traffic conditions and a "new normal" rather than a temporary shift of volumes.

[1] Sacramento Regional Transit District, https://www.sacrt.com/systemmap/2021/SacRT_SystemMap_Effective-August-29-2021.pdf.
[2] *Sacramento Bikeway User Map*. City of Sacramento. Summer 2020.
[3] *Pedestrian Master Plan*, City of Sacramento Department of Transportation, September 2006.

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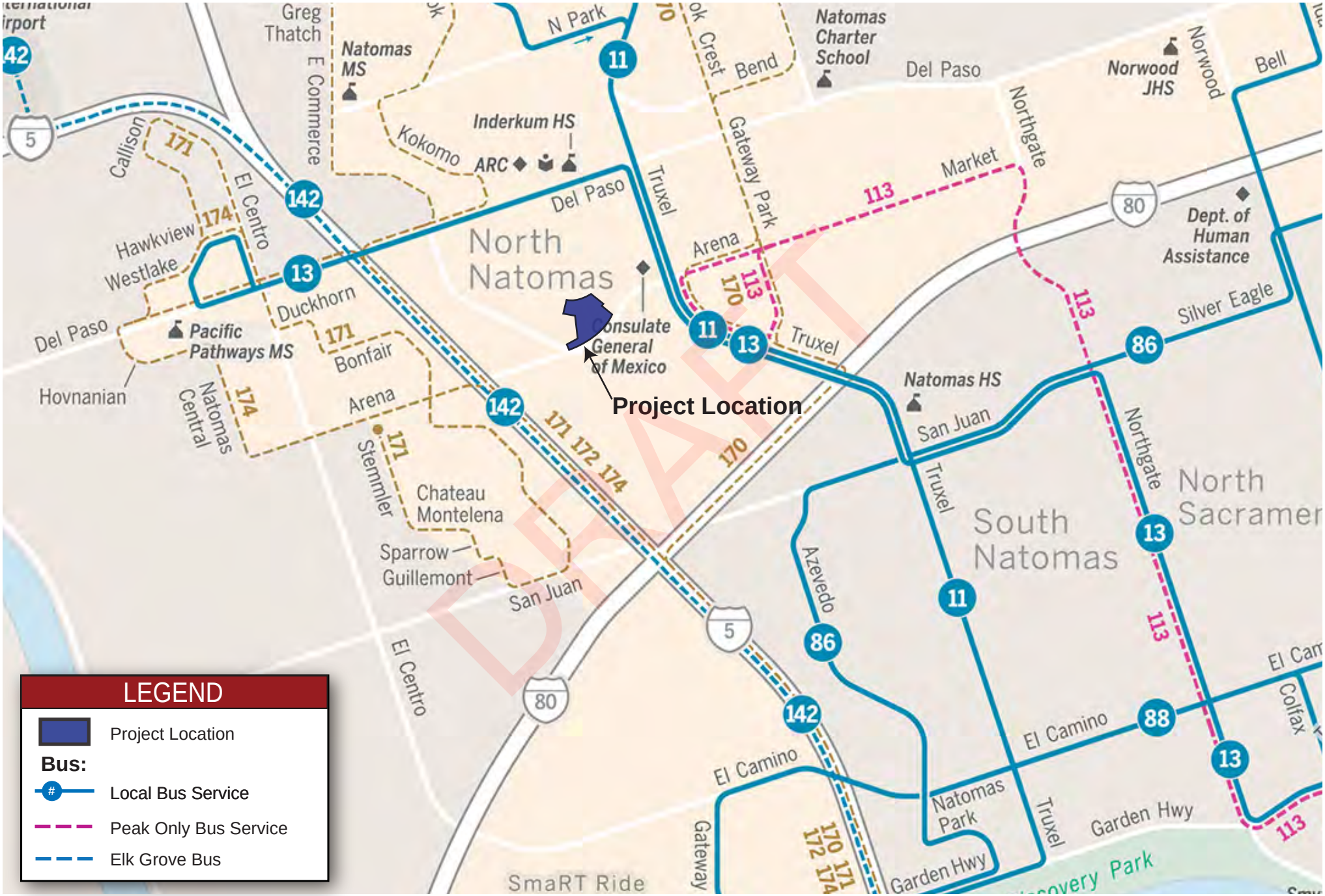

Figure 3
Sacramento RT Transit System Map

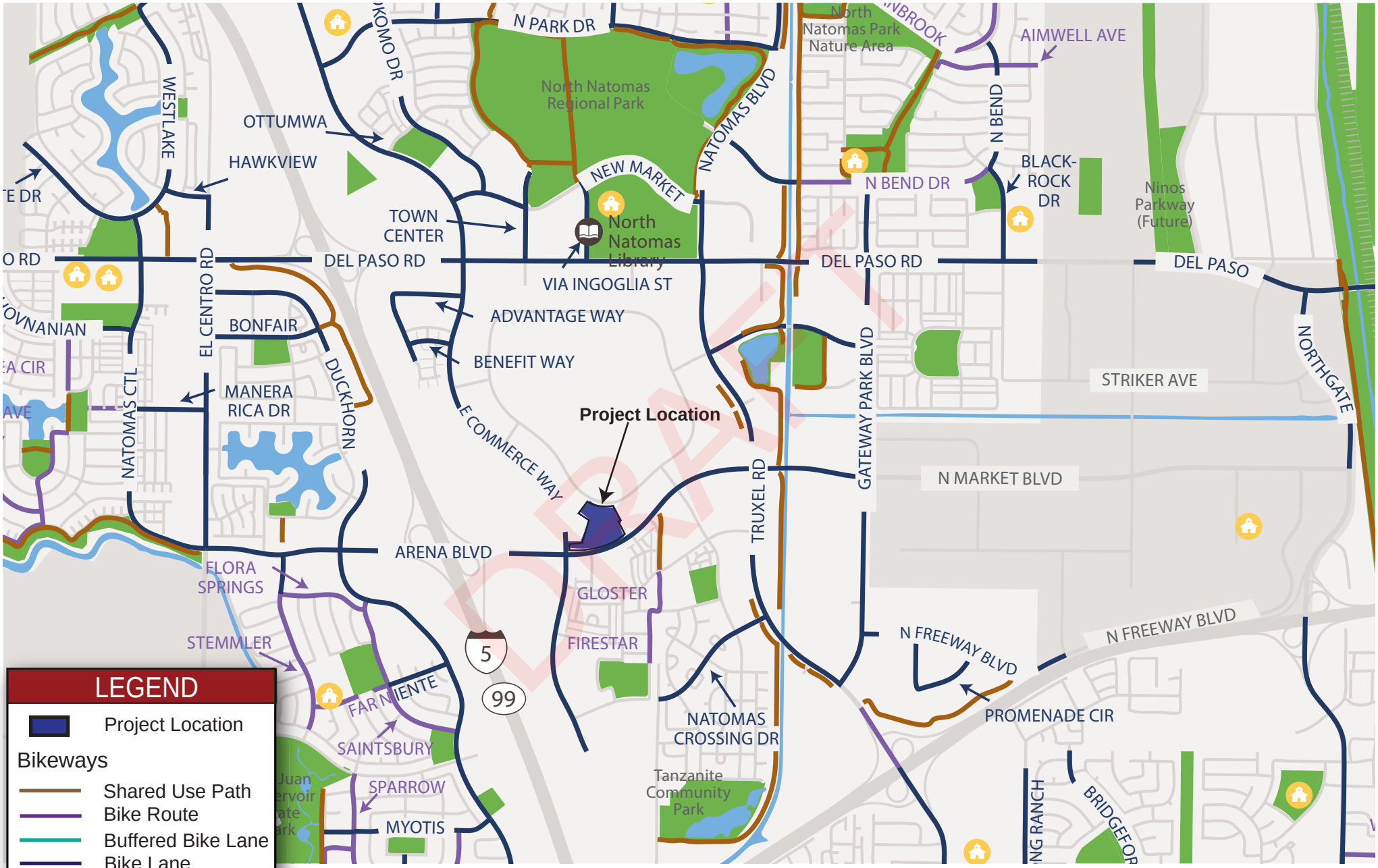

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Figure 4
City of Sacramento Bikeways

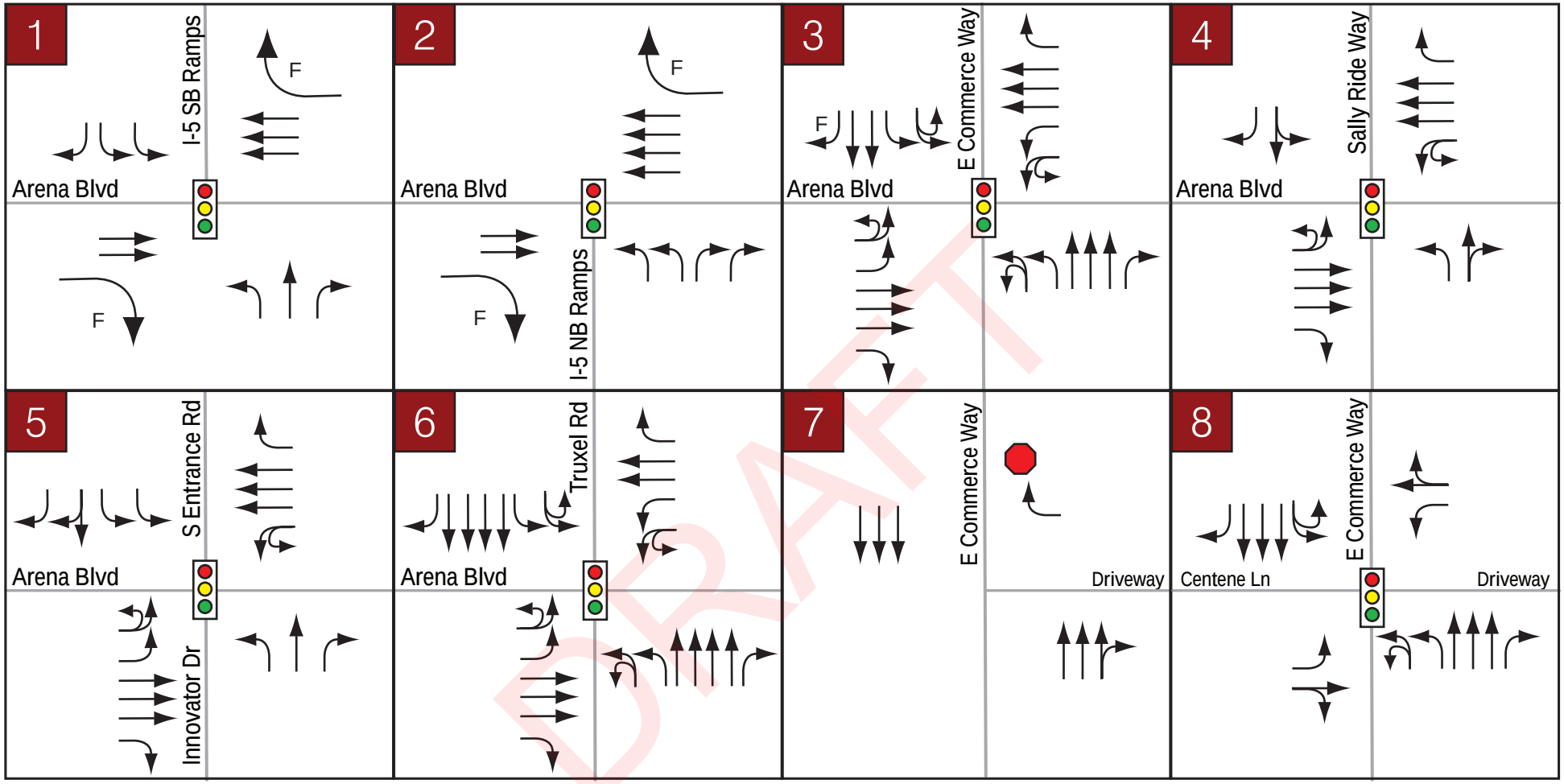

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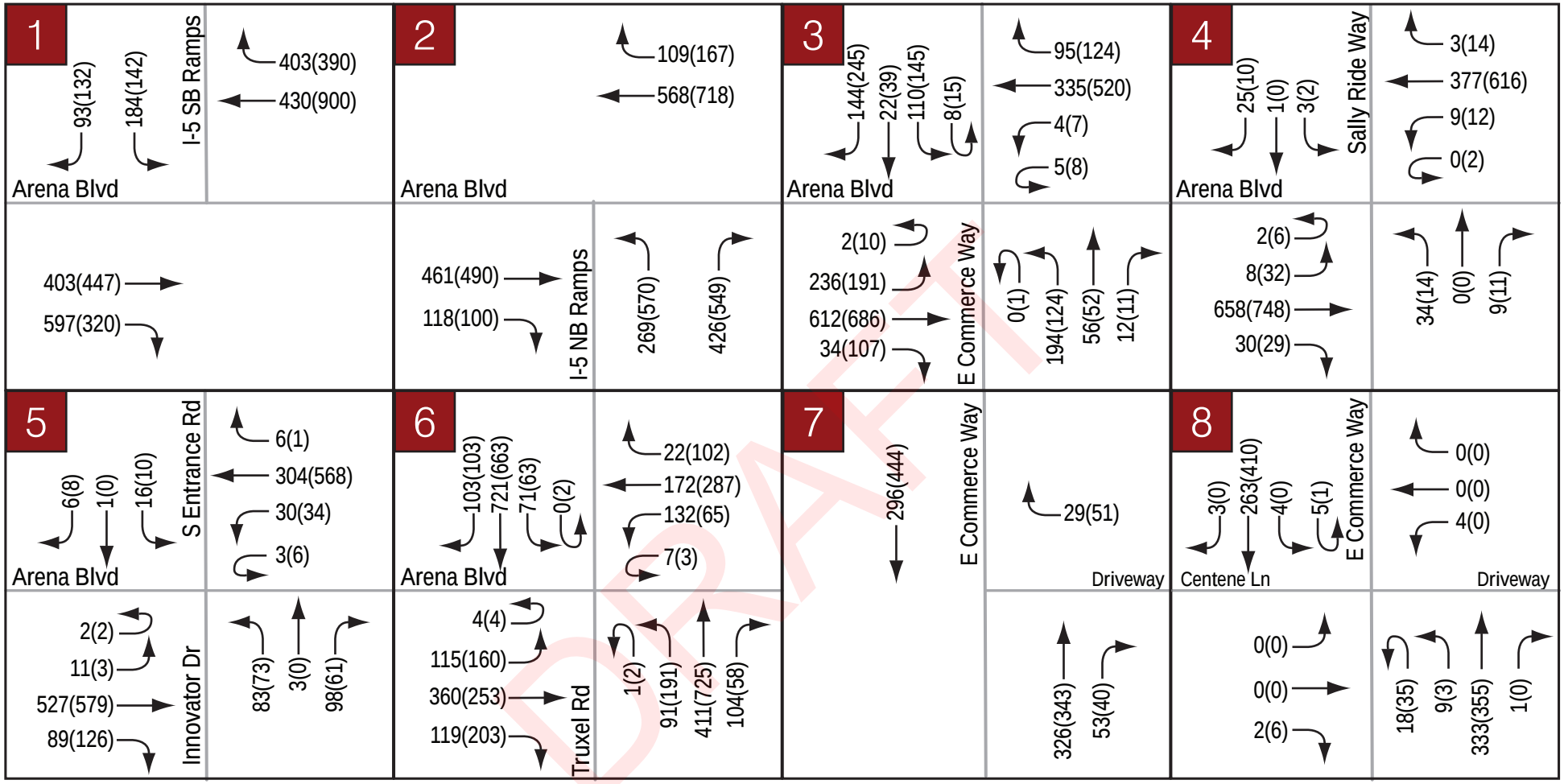
Figure 5
Study Intersections, Traffic Control, and Lane Geometries



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LEGEND	
#	Study Intersection
XX(YY)	AM(PM) Peak-hour Volume

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Figure 6
Existing (2022) Peak-Hour Traffic Volumes

Intersection Analysis

Levels of Service for this study were determined using methods defined in the *Highway Capacity Manual, 6th Edition* and Simtraffic© software. The HCM includes procedures for analyzing side-street stop controlled (SSSC), all-way stop controlled (AWSC), and signalized intersections. Table 1 presents intersection LOS definitions as defined in the HCM.

Table 1 – Intersection Level of Service Criteria

Level of Service (LOS)	Unsignalized	Signalized
	Average Control Delay (sec/veh)	Control Delay per Vehicle (sec/veh)
A	≤ 10	≤ 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

Source: Highway Capacity Manual, 6th Edition
Note: SSSC delay is based on the worst approach movement.

Results of Existing (2022) Conditions Analysis

Table 2 presents the peak-hour intersection operating conditions for this analysis scenario. As indicated in Table 2, the study intersections operate between LOS A and C in the AM and PM peak-hours. Analysis worksheets for this scenario are provided in Appendix B.

Table 2 – Existing (2022) Intersection Levels of Service

ID	Intersection	Control	Peak Hour	Existing (2022)	
				Delay (sec)	LOS
1	Arena Boulevard @ I-5 SB Ramps	Signal	AM	4.2	A
			PM	4.5	A
2	Arena Boulevard @ I-5 SB Ramps	Signal	AM	6.1	A
			PM	7.5	A
3	Arena Boulevard @ E Commerce Way	Signal	AM	18.2	B
			PM	17.9	B
4	Arena Boulevard @ Sally Ride Way	Signal	AM	7.2	A
			PM	6.2	A
5	Arena Boulevard @ S Entrance Road/Innovator Drive	Signal	AM	10.0	B
			PM	9.4	A
6	Arena Boulevard @ Truxel Road	Signal	AM	30.3	C
			PM	30.5	C
7	E Commerce Way @ Site Access Road	SSSC	AM	1.1 (2.9 WBR)	A(A)
			PM	1.2 (3.2 WBR)	A(A)
8	E Commerce Way @ Centene Lane	Signal	AM	2.4	A
			PM	1.2	A

Side Street Stop Controlled (SSSC) reported as intersection delay followed by worst movement's delay.

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INTRODUCTION TO ANALYSIS

Project Land Use and Circulation

Land Use

As previously discussed and shown in **Figure 2**, the project proposes to construct a maximum of 282 multi-family housing units on the vacant project site.

Access

The project is located at the currently vacant parcel located northeast of the Arena Boulevard intersection with E Commerce Way. The proposed site plan (**Figure 2**) shows access to the surrounding roadway network is proposed via a shared full access driveway along Arena Boulevard at Sally Ride Way and a shared right-in/right-out driveway along E Commerce Way. The site access locations are displayed in **Figure 2**.

Trip Generation

The number of trips anticipated to be generated by the proposed project was approximated using data included in the *Trip Generation Manual, 11th Edition,* published by the Institute of Transportation Engineers (ITE). ITE Land Use Code 220 (Multifamily Housing (Low-Rise)) represents the apartment development. Regression equations provided by ITE were used to estimate the number of trips generated by the project, which are presented in **Table 3**.

Table 3 – Proposed Project Trip Generation

ITE Land Use Code	Land Use	# Units	Daily Trips	AM Peak-Hour			PM Peak-Hour		
				Total	In	Out	Total	In	Out
220	Multifamily Housing (Low-Rise) (Not Proximate to Transit)	282	1,883	110	26	84	142	89	53
Total Project Trips			**1,883**	**110**	**26**	**84**	**142**	**89**	**53**

As shown in **Table 3**,the proposed project is estimated to generate 1,883 new daily trips, with 110 and 142 trips occurring during the AM and PM peak-hours, respectively.

Trip Distribution

Project traffic distribution was developed using knowledge of local traffic patterns and engineering judgement. The proposed project trip distribution percentages and trip assignment are illustrated in **Figure 7** and **Figure 8**, respectively. As shown in **Figure 7**, due to the varying traffic control measures at the study intersections, separate distributions were developed for inbound and outbound trips. The following distribution percentages were found for the proposed project in the outbound direction:

- 15% are expected to exit at the E Commerce Way driveway to travel northbound on E Commerce Way
  - 5% are expected to continue to westbound Del Paso Road to access the I-5 northbound ramp to travel northbound on I-5
  - 10% are expected to travel elsewhere north of the project including the commercial area along Del Paso Road
- 60% are expected to exit at the Arena Boulevard driveway to travel westbound to I-5
  - 50% are expected to use the I-5 southbound on-ramp to travel southbound on I-5
  - 10% are expected to use the I-5 northbound on-ramp to travel northbound on I-5
- 25% are expected to exit at the Arena Boulevard driveway to travel eastbound towards Truxel Road
  - 20% are expected to turn right to continue southbound on Truxel Road
  - 3% are expected to travel through Truxel Road to head eastbound on Arena Boulevard/N Market Boulevard

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- 2% are expected to turn left to continue northbound on Truxel Road

As shown in Figure 7, the following distribution percentages were found for the proposed project in the inbound direction:

- 10% are expected to use southbound E Commerce Way and make a U-turn at the intersection with Arena Boulevard to access the driveway on E Commerce Way
- 65% are expected to exit I-5 at the Arena Boulevard interchange to travel eastbound on Arena Boulevard
  - 50% are expected to exit I-5 at the northbound off-ramp to travel eastbound on Arena Boulevard
  - 15% are expected to exit I-5 at the southbound off-ramp to travel eastbound on Arena Boulevard
  - 30% are expected to travel from the I-5 interchange to turn left at the eastbound approach of the Arena Boulevard intersection with E Commerce Way to access the driveway on E Commerce Way
  - 35% are expected to continue eastbound from I-5 on Arena Boulevard to access the driveway on Arena boulevard
- 25% are expected to enter at the Arena Boulevard driveway traveling westbound from Truxel Road
  - 20% are expected to turn left onto Arena Boulevard from northbound Truxel Road
  - 3% are expected to travel through Truxel Road to head westbound on Arena Boulevard from Arena Boulevard/N Market Boulevard
  - 2% are expected to turn right onto Arena Boulevard from southbound Truxel Road

Results of Existing (2022) Plus Proposed Project Conditions Analysis

Table 4 presents the peak-hour intersection operating conditions for both the Existing (2022) and Existing (2022) plus Project analysis scenarios. As shown in Table 4, the study intersections operate between LOS A and C in the AM and PM peak-hours for both analysis scenarios. Analysis worksheets for the Existing (2022) plus Project scenario are provided in Appendix C and intersection turning movement volumes for Existing (2022) plus Proposed Project Conditions for the AM and PM peak-hours are illustrated in Figure 9.

Table 4 – Existing (2022) plus Proposed Project Intersection Levels of Service

ID	Intersection	Control	Peak Hour	Existing (2022)		Existing (2022) plus Project	
				Delay (sec)	LOS	Delay (sec)	LOS
1	Arena Boulevard @ I-5 SB Ramps	Signal	AM	4.2	A	4.2	A
			PM	4.5	A	4.6	A
2	Arena Boulevard @ I-5 SB Ramps	Signal	AM	6.1	A	6.6	A
			PM	7.5	A	7.7	A
3	Arena Boulevard @ E Commerce Way	Signal	AM	18.2	B	18.1	B
			PM	17.9	B	19.0	B
4	Arena Boulevard @ Sally Ride Way	Signal	AM	7.2	A	9.1	A
			PM	6.2	A	9.2	A
5	Arena Boulevard @ S Entrance Road/Innovator Drive	Signal	AM	10.0	B	11.0	B
			PM	9.4	A	9.8	A
6	Arena Boulevard @ Truxel Road	Signal	AM	30.3	C	30.6	C
			PM	30.5	C	30.5	C
7	E Commerce Way @ Site Access Road	SSSC	AM	1.1 (2.9 WBR)	A(A)	1.1 (2.9 WBR)	A(A)
			PM	1.2 (3.2 WBR)	A(A)	1.2 (3.2 WBR)	A(A)
8	E Commerce Way @ Centene Lane	Signal	AM	2.4	A	2.2	A
			PM	1.2	A	1.2	A

Side Street Stop Controlled (SSSC) reported as intersection delay followed by worst movement's delay.

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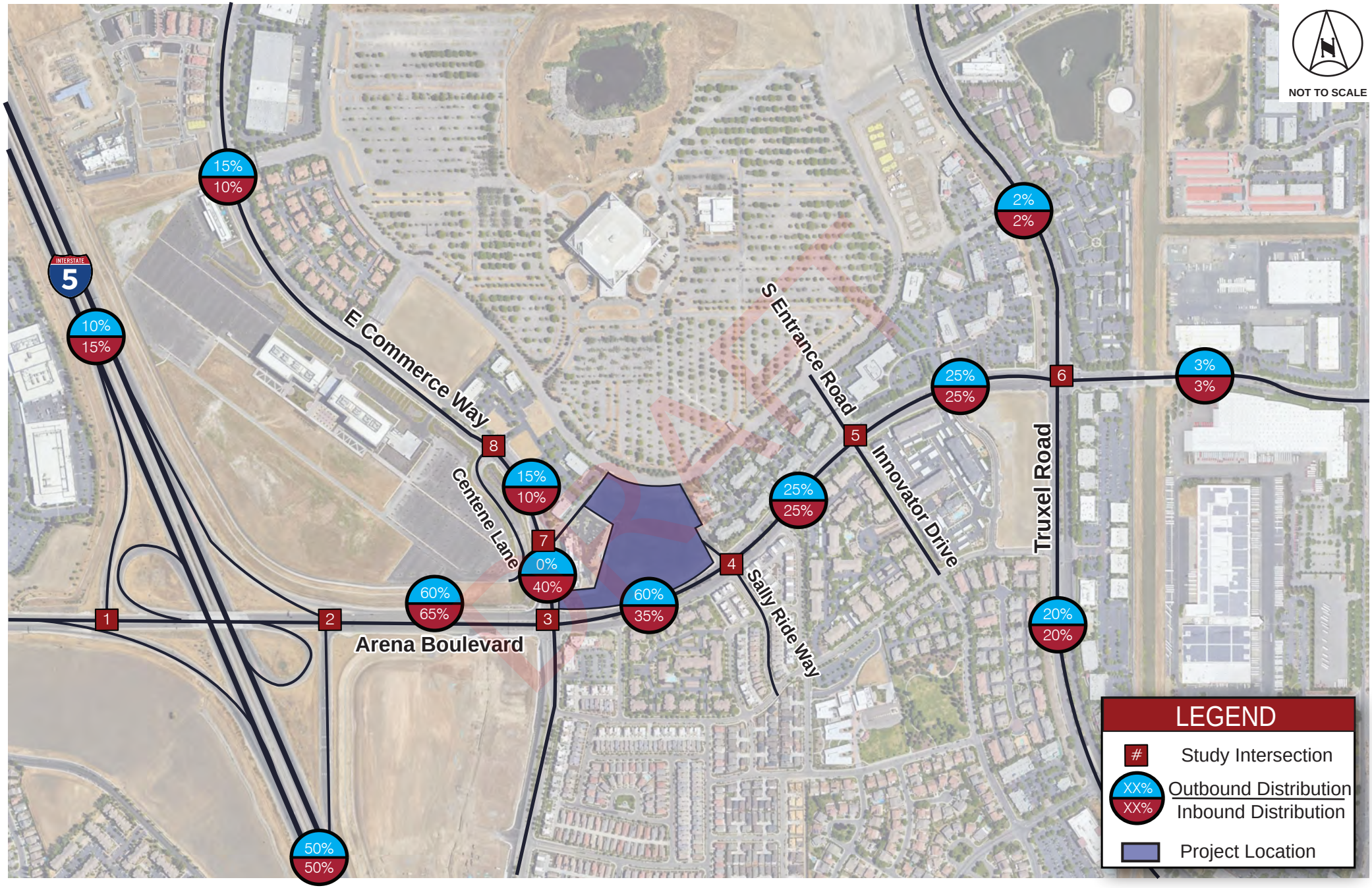

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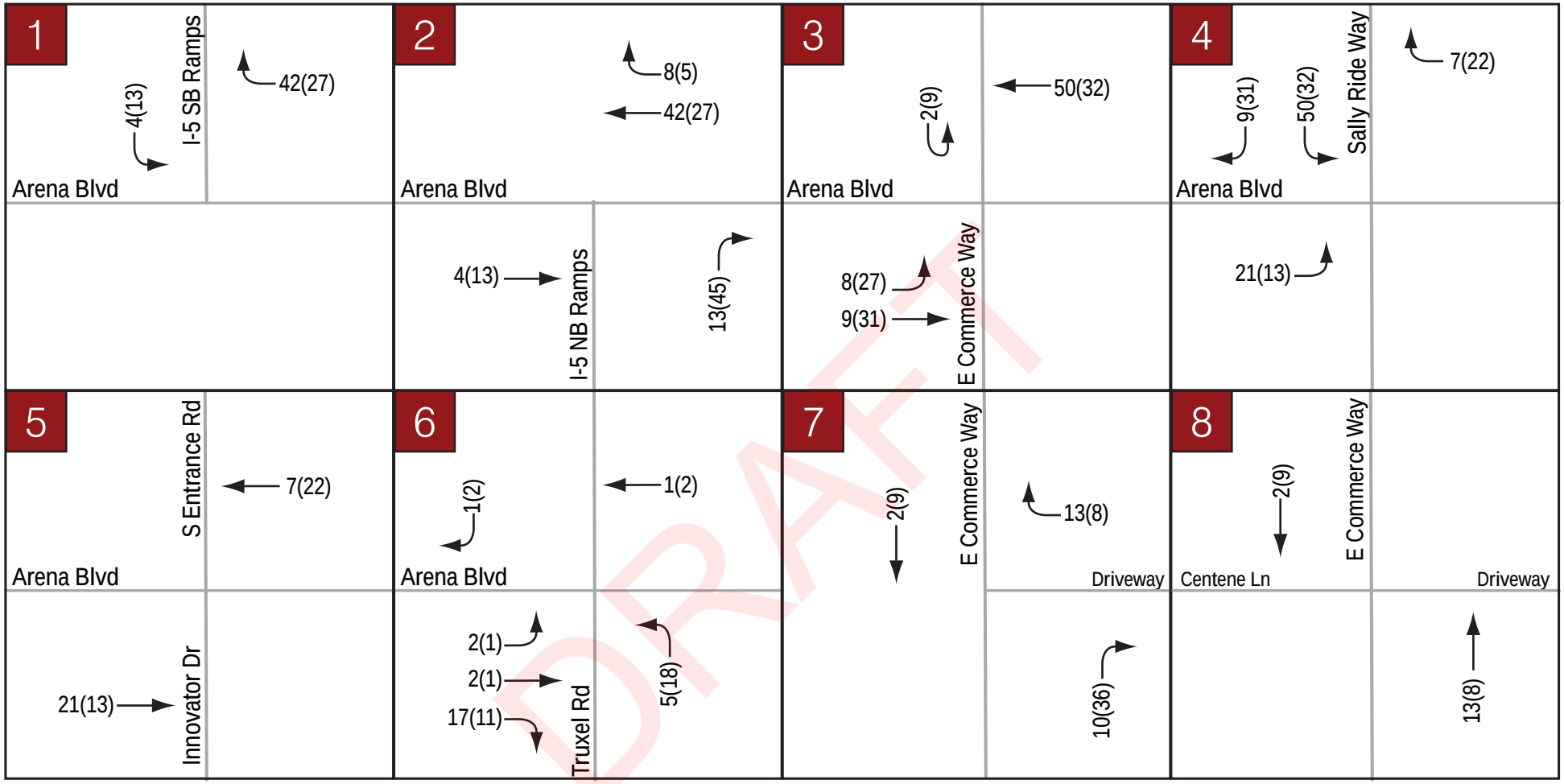
Figure 7
Project Trip Distribution



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LEGEND	
#	Study Intersection
XX(YY)	AM(PM) Peak-hour Volume

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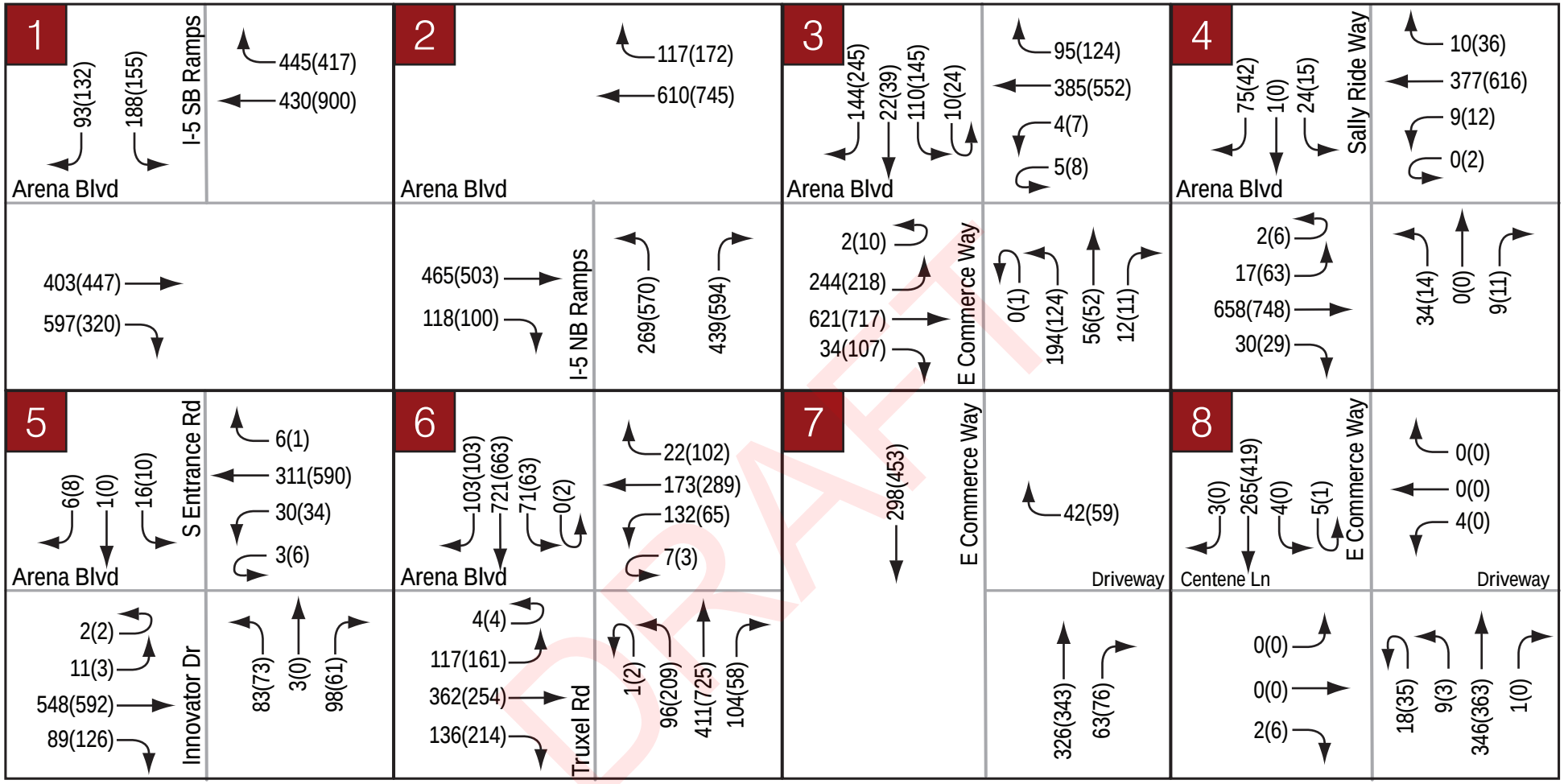
Figure 8
Project Trip Assignment



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NOT TO SCALE

LEGEND	
#	Study Intersection
XX(YY)	AM(PM) Peak-hour Volume

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Figure 9
Existing (2022) plus Proposed Project Peak-Hour Traffic Volumes

VEHICLE MILES TRAVELED (VMT) ANALYSIS METHODOLOGY

Introduction

Travel forecasting for the project's transportation analysis was conducted using SACOG's most recently released SACSIM travel demand model (SACSIM19).

SACSIM is a complete travel demand model that SACOG uses for planning in the Sacramento region. The demand for personal travel in the region is modeled by DaySim, an activity-based demand model. Features of DaySim include the ability to model the complete daily activity pattern of each person in the Sacramento region, including the number and sequence of activities. A series of destination, mode, and time-of-day choice models are used to simulate each individual's choices. The model can estimate start and end times for all activities and trips to the half-hour level of resolution.

Other components of SACSIM are used to model, at an aggregate level, the remaining components of regional travel, including travel into, out of, and through the region; truck travel; and travel to and from Sacramento International Airport.

The SACSIM model was used to estimate all likely future travel into, out of, and within the project site. The model predicts the number of trips, trip purposes, origins and destinations of trips, time of day of the trips, travel mode (walk, bike, transit, automobile), and travel path. Project-specific factors considered in the model included household demographics (assumed to be similar to the demographics of adjacent North Natomas neighborhoods); the roadway network (e.g., connections to the existing roadway system, number of lanes, free-flow travel speeds); the pedestrian network and on-street and off-street bicycle networks; and development patterns (grid connectivity).

Residential Land Use Analysis Methodology

To determine the VMT for the proposed project's residential land use, the number and type of project residential units were added into the model. In addition, the population synthesis process was undertaken to determine the socioeconomic characteristics of the future residents, assumed to be consistent with surrounding existing neighborhoods.

To calculate VMT per capita produced by the residential land use, the process provided by SACOG[4], which involves using SACSIM outputs, was used. This process included calculating the trip distance for all project trips internal to the SACOG region, or trips that both start and end within the SACOG region. Next, the distance for trips either starting or ending outside of the SACOG region needed to be calculated. Trips that would both start and end outside of the SACOG region were not included in this analysis.

As shown in Table 5, the proposed project's residential land uses would generate 10,401 daily VMT. When combined with the number of future residents estimated to live in the project area (644 people), the proposed project would produce an estimated 16.1 VMT per capita. Based on the SACOG regional threshold shown, 17.7 VMT per capita, the residential land uses are expected to not exceed the regional threshold. The regional average VMT per capita and the regional threshold were obtained from SACOG's Residential VMT map, last updated on May 26, 2021. The SACOG regional threshold is 85-percent of the SACOG regional average. Therefore, a project that produces a VMT per capita above 85-percent of the regional average would result in a significant VMT impact. As the proposed project's VMT per capita is calculated to be 77.6-percent of the regional average, the addition of the proposed project results in a less than significant impact for VMT.

[4] Sacramento Area Council of Governments. 2020. *VMT Computation Procedures—Draft*. Last updated September 30, 2020.

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Table 5 – Existing (2022) plus Proposed Project Vehicle Miles Traveled (VMT) Analysis Summary

Residential VMT Results	Population and VMT per Capita
Project Population	644
Project Residential VMT	10,401
Project VMT per Capita	16.1
SACOG Regional Average	20.8
SACOG Regional Threshold (85% of Regional Average)	17.7
Project VMT per Capita as % of Regional Average	***77.6%***

PROJECT ON-SITE OPERATIONS AND ACCESS EVALUATION

On-Site Operations

Based on the project's site plan depicted in Figure 2, the proposed project is to be served by a several drive aisles throughout the site, providing access to buildings and parking. Access to these internal site roadways will be via the full-access project driveways located along Sally Ride Way and the shared driveway connecting to E Commerce Way.

Project Access

The minimum required throat depth (MRTD) was calculated for the Existing (2022) plus Proposed Project conditions for both the AM and PM peak-hours. Specifically, the queuing at the two access roads (Sally Ride Way and the shared driveway accessing E Commerce Way) was analyzed to determine if vehicle queuing could restrict vehicles attempting to access the project site and lead to off-site safety issues. As summarized in Table 6, the MRTD was calculated for the southbound approach of Intersection #4 and the westbound approach of Intersection #7 under Existing (2022) plus Proposed Project conditions. The MRTD was calculated using Highway Capacity Manual (HCM) 6th Edition methodology per Synchro© v11/Simtraffic and reporting the queues at the stated approaches.

As summarized in Table 6, the calculated MRTD for Intersection #4 is 41-feet and 36-feet for the AM and PM peak-hours, respectively based on using the southbound right/thru lane, which has the longest queues of the two lanes at the approach. The calculated MRTD for Intersection #7 is 45-feet and 44-feet for the AM and PM peak-hours, respectively. The available throat depth for the southbound approach of Intersection #4 is 75-feet, while the available throat depth for the westbound approach of Intersection #7 is 180-feet. The available storage for Intersection #4 is based on the proposed location for the median break designed for emergency vehicle access (EVA) only, while the available storage for Intersection #7 Is based on the driveway location for the existing hotel. Therefore, based on the results summarized in Table 6 and shown in Figure 10, the necessary available storage is provided for the proposed median break and the existing hotel driveway to avoid any potential off-site safety issues.

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Table 6 – Minimum Required Throat Depth

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95th % Queue (ft)	Available Storage (ft)	95th % Queue (ft)
#4, Arena Blvd @ Sally Ride Way	SBL				
Existing (2022) plus Proposed Project		75	38	75	29
	SBT/R				
Existing (2022) plus Proposed Project		75	41	75	36
#7, E Commerce Way @ Site Access Rd	WBR				
Existing (2022) plus Proposed Project		180	45	180	44

Source: *Highway Capacity Manual (HCM) 2016* methodology per Synchro© v11/Simtraffic.
Notes: For approaches with dual left-turn lanes, the longest queue length is reported.
*Minimal 95th Percentile Queue, shaded cell indicates queue exceeds storage by > 25' (one vehicle length)

Vehicle Queuing at Intersections

To assess the impacts of the project of off-site vehicle queues, the 95th percentile queues were analyzed for the study intersections. Table 7 compares the calculated vehicle queue lengths to available storage for each movement. The shaded cells represent movements where the calculated queues exceed the available storage by more than one vehicle length (25 feet). Under both Existing (2022) Conditions and Existing (2022) plus Proposed Project Conditions all available storage is sufficient to store the calculated queue lengths for the AM and PM peak-hours. It is important to note that ninety-five percent of the time during peak-hours, the vehicle queuing will be less than or equal to those reported. Analysis sheets that include the anticipated vehicle queues are presented in Appendix B and Appendix C.

Table 7 – Intersection Queuing Evaluation Results

Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95th % Queue (ft)	Available Storage (ft)	95th % Queue (ft)
#1, Arena Blvd @ I-5 SB Ramps	SBL				
Existing (2022)		1,440	56	1,440	50
Existing (2022) plus Proposed Project			55		54
	SBR				
Existing (2022)		1,440	45	1,440	56
Existing (2022) plus Proposed Project			43		56
#2, Arena Blvd @ I-5 NB Ramps	NBL				
Existing (2022)		1,450	68	1,450	114
Existing (2022) plus Proposed Project			73		127
	NBR				
Existing (2022)		1,450	76	1,450	89
Existing (2022) plus Proposed Project			78		100
#3, Arena Blvd @ E Commerce Way	WBL				
Existing (2022)		220	31	220	36
Existing (2022) plus Proposed Project			28		40
	EBL				
Existing (2022)		360	116	360	107
Existing (2022) plus Proposed Project			122		118

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Intersection / Analysis Scenario	Movement	AM Peak-Hour		PM Peak-Hour	
		Available Storage (ft)	95th % Queue (ft)	Available Storage (ft)	95th % Queue (ft)
	NBL				
Existing (2022)		290	126	290	84
Existing (2022) plus Proposed Project			110		86
	SBL				
Existing (2022)		200	85	200	105
Existing (2022) plus Proposed Project			85		104
#4, Arena Blvd @ Sally Ride Way	**WBR**				
Existing (2022)		150	11	150	28
Existing (2022) plus Proposed Project			30		44
	EBL				
Existing (2022)		215	21	215	45
Existing (2022) plus Proposed Project			29		59
	SBL				
Existing (2022)		57	14	57	8
Existing (2022) plus Proposed Project			38		29
	SBT/R				
Existing (2022)		57	30	57	20
Existing (2022) plus Proposed Project			41		36
#5, Arena Blvd @ S Entrance Rd	**WBL**				
Existing (2022)		190	38	190	44
Existing (2022) plus Proposed Project			40		45
	EBL				
Existing (2022)		235	30	235	16
Existing (2022) plus Proposed Project			27		16
#6, Arena Blvd @ Truxel Rd	**WBL**				
Existing (2022)		200	102	200	67
Existing (2022) plus Proposed Project			103		71
	EBL				
Existing (2022)		370	88	370	114
Existing (2022) plus Proposed Project			87		115
	NBL				
Existing (2022)		215	96	215	152
Existing (2022) plus Proposed Project			95		163
	SBL				
Existing (2022)		220	75	220	69
Existing (2022) plus Proposed Project			74		72
#7, E Commerce Way @ Site Access Rd	**WBR**				
Existing (2022)		-	44	-	46
Existing (2022) plus Proposed Project			45		44
#8, E Commerce Way @ Centene Ln	**NBL/U**				
Existing (2022)		430	17	430	28
Existing (2022) plus Proposed Project			19		26

Source: *Highway Capacity Manual (HCM) 2016* methodology per Synchro© v11/Simtraffic.
Notes: For approaches with dual left-turn lanes, the longest queue length is reported.
*Minimal 95th Percentile Queue, shaded cell indicates queue exceeds storage by > 25' (one vehicle length)

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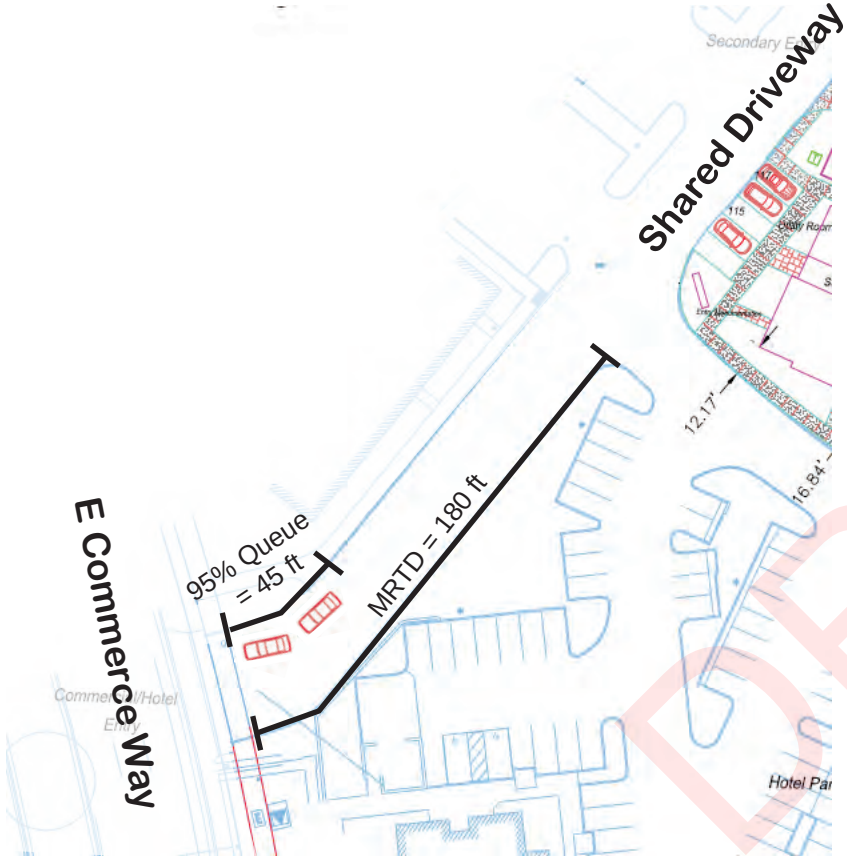
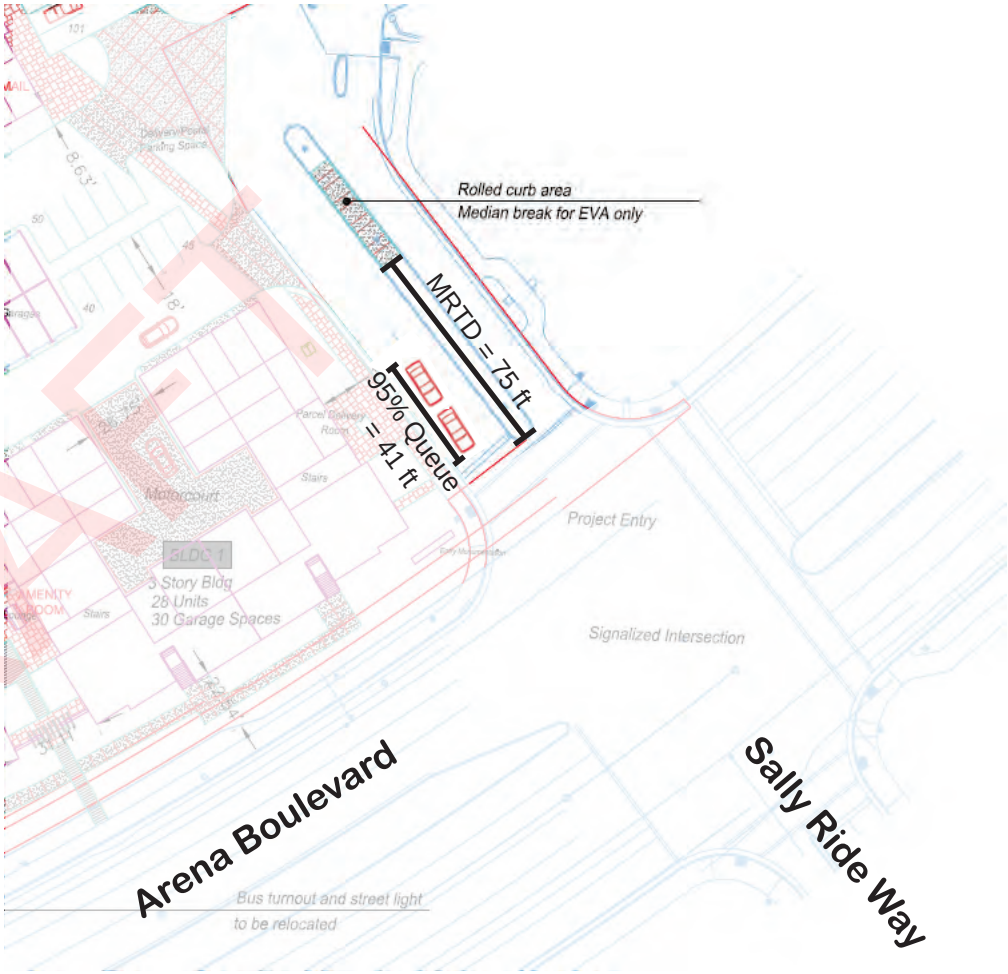
Intersection #7



Intersection #4



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NOT TO SCALE

Figure 10
Minimum Required Throat Depth

Pedestrian Access and Circulation

There are currently sidewalks present along both sides of Arena Boulevard, E Commerce Way, and Truxel Road within the project vicinity. As shown in the proposed project site plan (Figure 2), the project will construct several pedestrian entry gates along Arena Boulevard and Sports Parkway with a supporting sidewalk along Sports Parkway. In addition, the project will continue the sidewalk along Arena Boulevard north along Sally Ride Way to the project's entry and construct a sidewalk along the project's frontage along the shared driveway that accesses E Commerce Way.

The eastbound approach of the Arena Boulevard intersection with Sally Ride Way (Intersection #4) was reviewed to determine whether the addition of a crosswalk at this approach would be appropriate. After a review of the existing conditions at the intersection and a determination of the origins and destinations of the pedestrians that may use this approach, it was determined that this crosswalk was not necessary. The primary physical restrictions at the intersection include the location of the drainage inlet in close proximity to the southern end of the crosswalk and the requirement that the eastbound stop bar and median would need to be moved further west. When reviewing the origins and destinations of pedestrians that may use this crosswalk, it should be noted that there is an existing crosswalk at both westbound approaches of the Arena Boulevard intersections with E Commerce Way and Sally Ride Way. These crosswalks would provide sufficient access to pedestrians attempting to walk from the project to the commercial areas along E Commerce Way and Truxel Road. Therefore, it was determined that the crosswalk at the eastbound approach of the Arena Boulevard intersection with Sally Ride Way (Intersection #4) is not necessary.

SUMMARY OF RECOMMENDATIONS

Intersections

- All intersections operate at LOS C or better conditions during Existing (2022) plus Proposed Project Conditions.

Vehicle Miles Traveled (VMT)

- As shown in Table 5, the proposed project's residential land uses would generate 10,401 daily VMT. When combined with the number of future residents estimated to live in the project area (644 people), the proposed project would produce an estimated 16.1 VMT per capita. Based on the SACOG regional threshold shown, 17.7 VMT per capita, the residential land uses are expected to not exceed the regional threshold and therefore the addition of the proposed project results in a less than significant impact for VMT.

Project Access

- Based on the results summarized in Table 6 and shown in Figure 10, the necessary available storage is provided for the proposed median break and the existing hotel driveway to avoid any potential off-site safety issues related to queuing and throat depth.
- All signing and striping should be installed in a manner consistent with City of Sacramento standards and the requirements of the *California Manual on Uniform Traffic Control Devices (CMUTCD), 2014 Edition (Revision 6, March 30, 2021).*

Vehicle Queuing at Intersections

- Under both Existing (2022) Conditions and Existing (2022) plus Proposed Project Conditions all available storage is sufficient to store the calculated queue lengths for the AM and PM peak-hours.

Bicycle Facilities

- The Project shall accommodate all proposed trails as part of the City's Bicycle Master Plan/General Plan through dedication and/or construction to the City's satisfaction.

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Pedestrian Facilities

- Due to both physical restrictions and that there is an existing crosswalk at both westbound approaches of the Arena Boulevard intersections with E Commerce Way and Sally Ride Way, it was determined that the crosswalk at the eastbound approach of the Arena Boulevard intersection with Sally Ride Way (Intersection #4) is not necessary.

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Appendix A

Traffic Count Data Sheets

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Prepared by National Data & Surveying Services

I 5 SB Ramps & Arena Blvd

Peak Hour Turning Movement Count

ID: 22-070126-001
City: Sacramento

Day: Tuesday
Date: 6/7/2022

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	4:00 PM - 06:00 PM

SOUTHBOUND (I 5 SB Ramps)

AM	93	0	184	0	403	AM
NOON	0	0	0	0	0	NOON
PM	132	0	142	0	390	PM
	1	0	2	0		

EASTBOUND (Arena Blvd)

AM	NOON	PM	
523	0	1032	
0	0	0	0
0	0	0	0
403	0	447	2
597	0	320	1
AM	NOON	PM	

WESTBOUND (Arena Blvd)

PM	NOON	AM	
390	0	403	1
900	0	430	3
0	0	0	0
0	0	0	0
589	0	587	
PM	NOON	AM	

NORTHBOUND (I 5 SB Ramps)

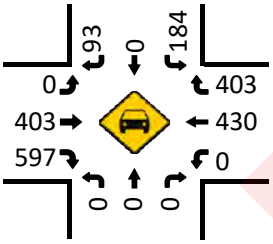
PM	320	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	597	0	0	0	0	AM
		0	0	0	0	

CONTROL

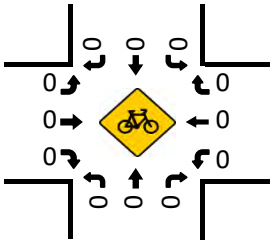
Signalized

TEV	2110 AM	0 NOON	2331 PM
PHF	0.98		0.91

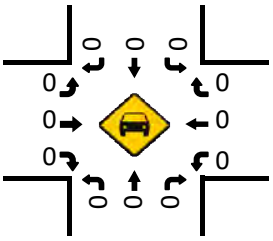
Totals (AM)



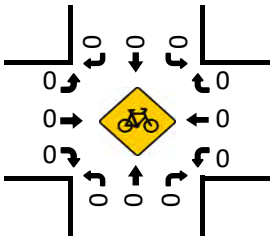
Total Bikes (AM)



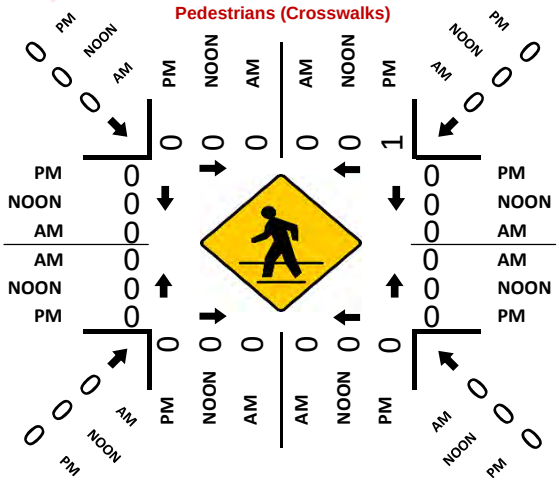
Totals (NOON)



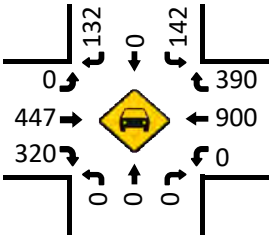
Total Bikes (NOON)



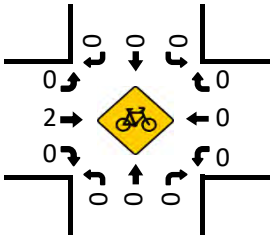
Pedestrians (Crosswalks)



Totals (PM)



Total Bikes (PM)



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Prepared by National Data & Surveying Services

I 5 NB Ramps & Arena Blvd

Peak Hour Turning Movement Count

ID: 22-070126-002
City: Sacramento

Day: Tuesday
Date: 6/7/2022

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	4:00 PM - 06:00 PM

SOUTHBOUND — I 5 NB Ramps

AM	0	0	0	0	109	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	167	PM

EASTBOUND — Arena Blvd

AM	NOON	PM		
837	0	1288	⇦	
0	0	0	↶	0
0	0	0	↱	0
461	0	490	→	2
118	0	100	↴	1
AM	NOON	PM		

WESTBOUND — Arena Blvd

PM	NOON	AM		
167	0	109	↰	1
718	0	568	←	4
0	0	0	↩	0
0	0	0	↲	0
1039	0	887	⇨	
PM	NOON	AM		

NORTHBOUND — I 5 NB Ramps

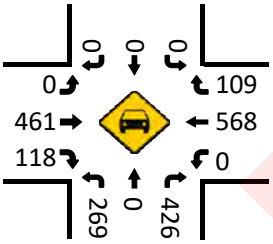
PM	100	0	570	0	549	PM
NOON	0	0	0	0	0	NOON
AM	118	0	269	0	426	AM

CONTROL

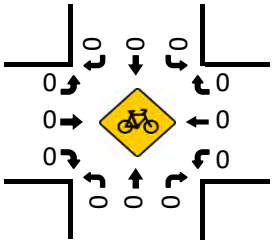
Signalized

TEV	1951 AM	0 NOON	2594 PM
PHF	0.93		0.94

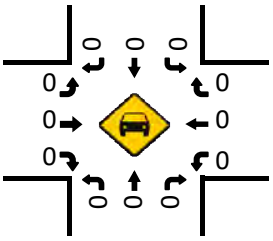
Totals (AM)



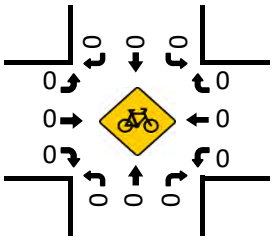
Total Bikes (AM)



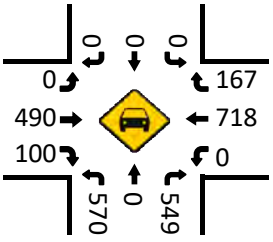
Totals (NOON)



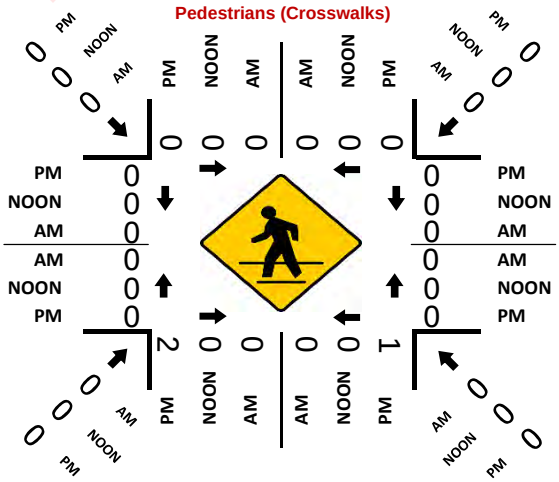
Total Bikes (NOON)



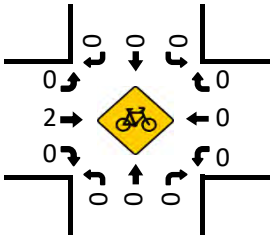
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



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Prepared by National Data & Surveying Services

E Commerce Way & Arena Blvd

Peak Hour Turning Movement Count

ID: 22-070126-003
City: Sacramento

Day: Tuesday
Date: 6/7/2022

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (E Commerce Way)

AM	144	22	110	8	395	AM
NOON	0	0	0	0	0	NOON
PM	245	39	145	15	382	PM
	1	2	2	0		

EASTBOUND (Arena Blvd)

AM	NOON	PM	
675	0	899	
2	0	10	0
236	0	191	2
612	0	686	3
34	0	107	1
AM	NOON	PM	

WESTBOUND (Arena Blvd)

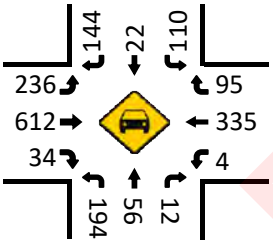
PM	NOON	AM	
124	0	95	1
520	0	335	3
7	0	4	2
8	0	5	0
850	0	739	
PM	NOON	AM	

NORTHBOUND (E Commerce Way)

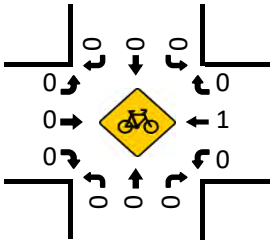
	0	2	3	1		
PM	154	1	124	52	11	PM
NOON	0	0	0	0	0	NOON
AM	60	0	194	56	12	AM

CONTROL			
Signalized			
TEV	1869	0	2285
	AM	NOON	PM
PHF	0.87		0.91

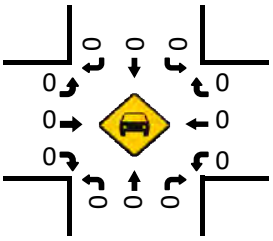
Totals (AM)



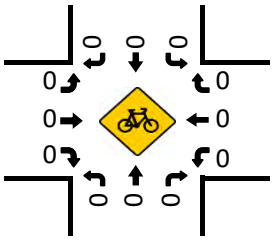
Total Bikes (AM)



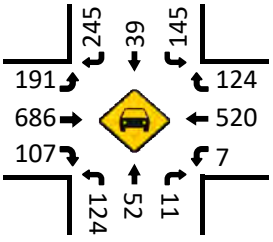
Totals (NOON)



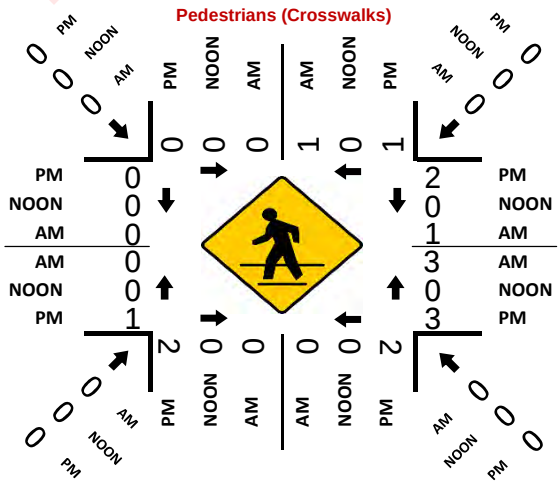
Total Bikes (NOON)



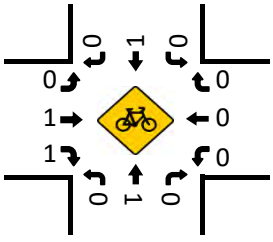
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



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Prepared by National Data & Surveying Services

Sally Ride Way & Arena Blvd

Peak Hour Turning Movement Count

ID: 22-070126-004
City: Sacramento

Day: Tuesday
Date: 6/7/2022

	PEAK HOURS	COUNT PERIODS
AM	07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NOON	NONE	NONE
PM	05:00 PM - 06:00 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Sally Ride Way)

	Right	Through	Left	U-Turn	Departing (⇧)
Lanes	1	0.5	0.5	0	
AM	25	1	3	0	11
NOON	0	0	0	0	0
PM	10	0	2	0	46

EASTBOUND (Arena Blvd)

	Lanes	AM	NOON	PM
Departing (⇦)		438	0	646
U-Turn	0	2	0	6
Left	1	8	0	32
Through	3	658	0	748
Right	1	30	0	29

WESTBOUND (Arena Blvd)

	Lanes	PM	NOON	AM
Right	1	14	0	3
Through	3	616	0	377
Left	1	12	0	9
U-Turn	0	2	0	0
Departing (⇨)		763	0	670

NORTHBOUND (Sally Ride Way)

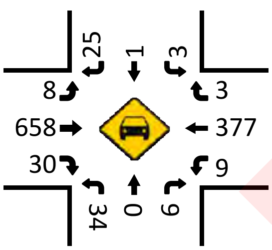
	Departing (⇩)	U-Turn	Left	Through	Right
Lanes		0	1	1	0
PM	41	0	14	0	11
NOON	0	0	0	0	0
AM	40	0	34	0	9

CONTROL

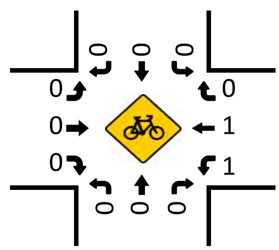
Signalized

	AM	NOON	PM
TEV	1159	0	1496
PHF	0.91		0.96

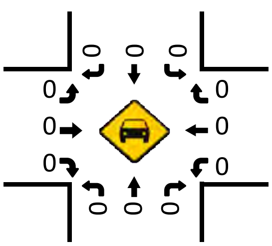
Totals (AM)



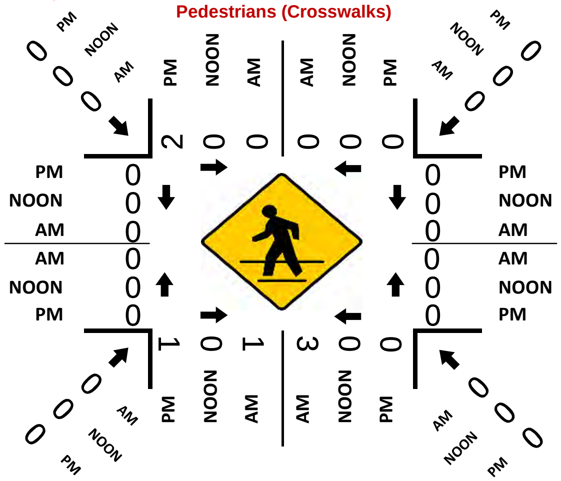
Total Bikes (AM)



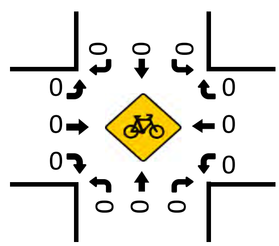
Totals (NOON)



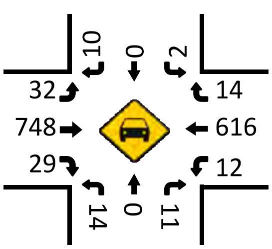
Pedestrians (Crosswalks)



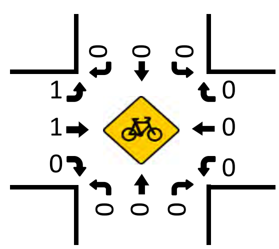
Total Bikes (NOON)



Totals (PM)



Total Bikes (PM)



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Prepared by National Data & Surveying Services

S Entrance Rd/Innovator Dr & Arena Blvd

Peak Hour Turning Movement Count

ID: 22-070126-005
City: Sacramento

Day: Tuesday
Date: 6/7/2022

PEAK HOURS		COUNT PERIODS
07:45 AM - 08:45 AM	AM	7:00 AM - 09:00 AM
NONE	NOON	NONE
04:30 PM - 05:30 PM	PM	4:00 PM - 06:00 PM

SOUTHBOUND (S Entrance Rd/Innovator Dr)

	Right	Thru	Left	U-Turn	Out
AM	6	1	16	1	21
NOON	0	0	0	0	0
PM	8	0	10	0	4
Lanes	1.5	0.5	2	0	

EASTBOUND (Arena Blvd)

	AM	NOON	PM	Lanes
Out	395	0	651	
U-Turn	2	0	2	0
Left	11	0	3	2
Thru	527	0	579	3
Right	89	0	126	1

WESTBOUND (Arena Blvd)

	Lanes	PM	NOON	AM
Right	1	1	0	6
Thru	3	568	0	304
Left	1	34	0	30
U-Turn	0	6	0	3
Out		656	0	644

NORTHBOUND (S Entrance Rd/Innovator Dr)

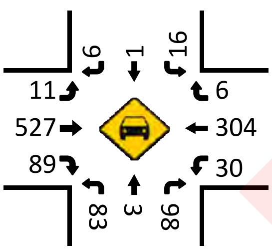
	Out	U-Turn	Left	Thru	Right
Lanes		0	1	1	1
PM	160	0	73	0	61
NOON	0	0	0	0	0
AM	120	0	83	3	98

CONTROL

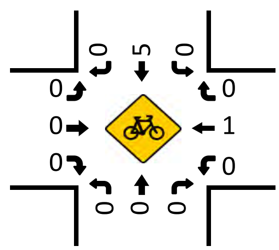
Signalized

	AM	NOON	PM
TEV	1180	0	1471
PHF	0.92		0.96

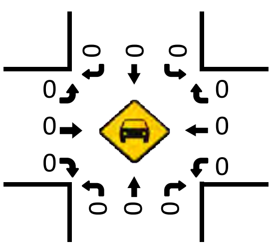
Totals (AM)



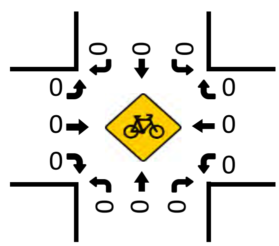
Total Bikes (AM)



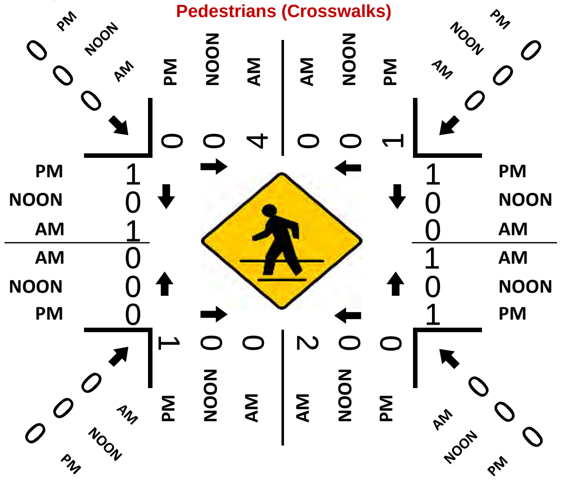
Totals (NOON)



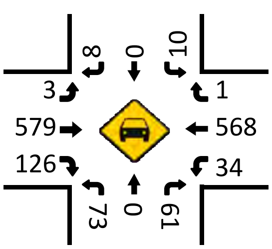
Total Bikes (NOON)



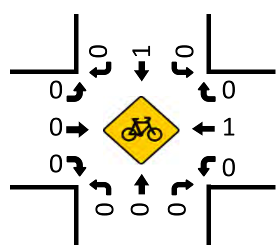
Pedestrians (Crosswalks)



Totals (PM)



Total Bikes (PM)



Prepared by National Data & Surveying Services

Truxel Rd & Arena Blvd

Peak Hour Turning Movement Count

ID: 22-070126-006
City: Sacramento

Day: Tuesday
Date: 6/7/2022

PEAK HOURS		COUNT PERIODS
AM	07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:45 PM - 05:45 PM	4:00 PM - 06:00 PM

Truxel Rd — SOUTHBOUND

	Right	Through	Left	U-Turn	Exit
AM	103	721	71	0	548
NOON	0	0	0	0	0
PM	103	663	63	2	989
Lanes	1	4	2	0	

Arena Blvd — EASTBOUND

	AM	NOON	PM	Lanes
Exit	370	0	585	
U-Turn	4	0	4	0
Left	115	0	160	2
Through	360	0	253	3
Right	119	0	203	1

Arena Blvd — WESTBOUND

	Lanes	PM	NOON	AM
Right	1	102	0	22
Through	2	287	0	172
Left	2	65	0	132
U-Turn	0	3	0	7
Exit		377	0	542

Truxel Rd — NORTHBOUND

	Exit	U-Turn	Left	Through	Right
Lanes		0	2	4	1
PM	933	2	191	725	58
NOON	0	0	0	0	0
AM	973	1	91	411	104

CONTROL

Signalized

	AM	NOON	PM
TEV	2433	0	2884
PHF	0.91		0.94

Totals

Approach	Movement	Totals (AM)	Totals (NOON)	Totals (PM)
Southbound	Right	103	0	103
Southbound	Through	721	0	663
Southbound	Left	71	0	63
Eastbound	Left	115	0	160
Eastbound	Through	360	0	253
Eastbound	Right	119	0	203
Westbound	Right	22	0	102
Westbound	Through	172	0	287
Westbound	Left	132	0	65
Northbound	Left	91	0	191
Northbound	Through	411	0	725
Northbound	Right	104	0	58

Total Bikes

Approach	Movement	Total Bikes (AM)	Total Bikes (NOON)	Total Bikes (PM)
Southbound	Right	0	0	0
Southbound	Through	0	0	2
Southbound	Left	0	0	0
Eastbound	Left	0	0	0
Eastbound	Through	0	0	0
Eastbound	Right	0	0	0
Westbound	Right	0	0	0
Westbound	Through	0	0	0
Westbound	Left	0	0	0
Northbound	Left	1	0	1
Northbound	Through	0	0	0
Northbound	Right	0	0	0

Pedestrians (Crosswalks)

Crosswalk	Direction	AM	NOON	PM
North	Eastbound	0	0	1
North	Westbound	2	0	0
West	Southbound	0	0	4
West	Northbound	0	0	0
East	Southbound	1	0	0
East	Northbound	0	0	0
South	Eastbound	0	0	0
South	Westbound	0	0	1
Northwest diagonal		0	0	0
Northeast diagonal		0	0	0
Southwest diagonal		0	0	0
Southeast diagonal		0	0	0

DRAFT

Prepared by National Data & Surveying Services

E Commerce Way & San Lucas Pediatric Clinic Dwy/Site Access Rd

Peak Hour Turning Movement Count

ID: 22-070126-007
City: Sacramento

Day: Tuesday
Date: 6/7/2022

PEAK HOURS	COUNT PERIODS
07:45 AM - 08:45 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (E Commerce Way)

AM	0	296	0	0	355	AM
NOON	0	0	0	0	0	NOON
PM	0	444	0	0	394	PM

EASTBOUND (San Lucas Pediatric Clinic Dwy/Site Access Rd)

AM	NOON	PM
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

WESTBOUND (San Lucas Pediatric Clinic Dwy/Site Access Rd)

PM	NOON	AM
51	0	29
0	0	0
0	0	0
0	0	0
40	0	53

NORTHBOUND (E Commerce Way)

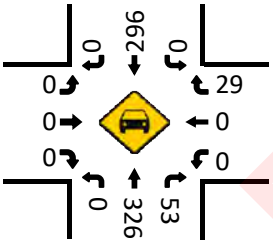
PM	444	0	0	343	40	PM
NOON	0	0	0	0	0	NOON
AM	296	0	0	326	53	AM

CONTROL

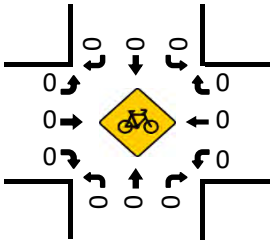
No Control

TEV	704 AM	0 NOON	878 PM
PHF	0.80		0.80

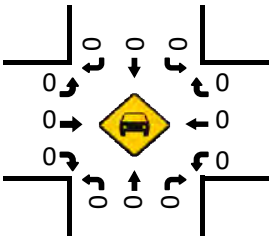
Totals (AM)



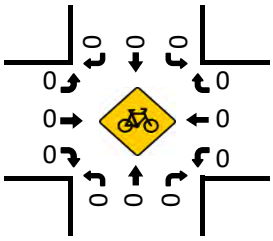
Total Bikes (AM)



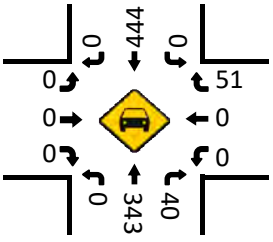
Totals (NOON)



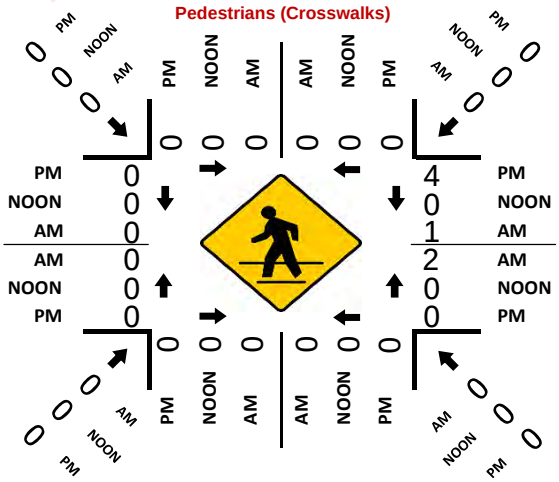
Total Bikes (NOON)



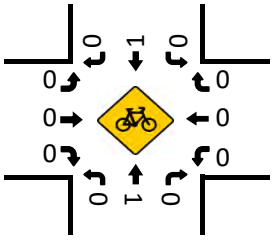
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



DRAFT

Prepared by National Data & Surveying Services

E Commerce Way & Centene Ln

Peak Hour Turning Movement Count

ID: 22-070126-008
City: Sacramento

Day: Tuesday
Date: 6/7/2022

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	7:00 AM - 09:00 AM
NONE	NONE
04:30 PM - 05:30 PM	4:00 PM - 06:00 PM

SOUTHBOUND (E Commerce Way)

AM	3	263	4	5	338	AM
NOON	0	0	0	0	0	NOON
PM	0	410	0	1	356	PM

EASTBOUND (Centene Ln)

AM	NOON	PM	
12	0	3	
0	0	0	0
0	0	0	1
0	0	0	0.5
2	0	6	0.5

WESTBOUND (Centene Ln)

PM	NOON	AM	
0	0	0	0.5
0	0	0	0.5
0	0	4	1
0	0	0	0
0	0	5	

NORTHBOUND (E Commerce Way)

PM	451	35	3	355	0	PM
NOON	0	0	0	0	0	NOON
AM	287	18	9	333	1	AM

	1	3	1	0
	0	2	3	1

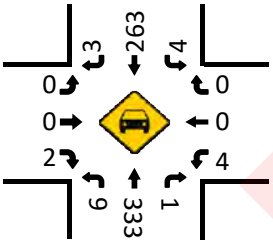
CONTROL

Signalized

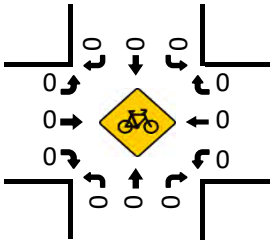
TEV	642 AM	0 NOON	810 PM
PHF	0.76		0.82

DRAFT

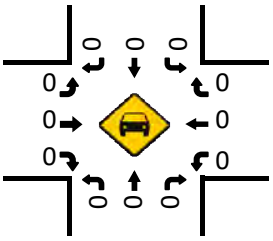
Totals (AM)



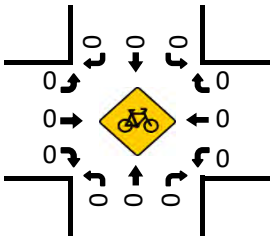
Total Bikes (AM)



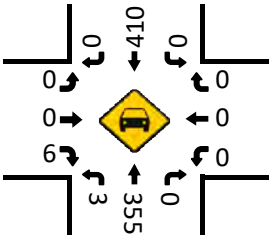
Totals (NOON)



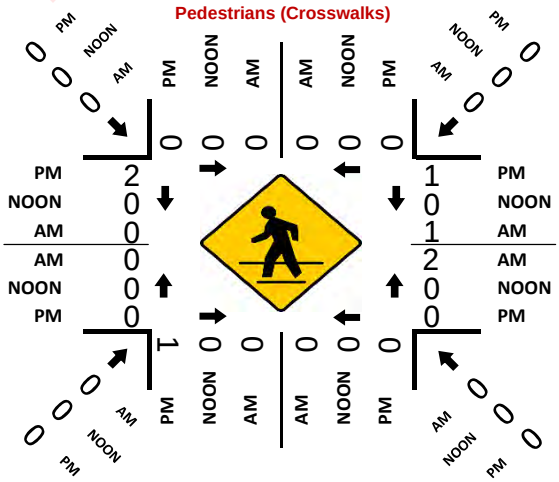
Total Bikes (NOON)



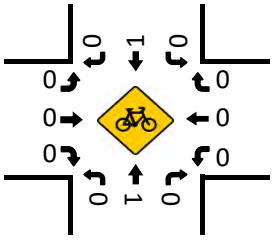
Totals (PM)



Pedestrians (Crosswalks)



Total Bikes (PM)



Appendix B

Analysis Worksheets for Existing (2022) Conditions

DRAFT

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	16793	16947	16935	17019	16884	17394	17037
Vehs Exited	16766	17001	16990	17003	16878	17406	17007
Starting Vehs	272	310	320	270	262	280	269
Ending Vehs	299	256	265	286	268	268	299
Denied Entry Before	1	1	1	2	3	3	0
Denied Entry After	2	4	3	6	0	6	2
Travel Distance (mi)	5831	5961	5947	5940	5795	5996	5958
Travel Time (hr)	273.8	279.5	282.8	277.9	271.5	285.6	279.6
Total Delay (hr)	94.2	95.8	99.9	95.7	92.6	100.9	96.5
Total Stops	10636	10588	10930	10610	10412	11071	10710
Fuel Used (gal)	272.9	277.7	278.9	276.5	270.9	281.2	278.6

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	16567	16930	17006	16951
Vehs Exited	16575	16908	16978	16951
Starting Vehs	284	265	275	278
Ending Vehs	276	287	303	278
Denied Entry Before	0	1	2	0
Denied Entry After	4	2	2	2
Travel Distance (mi)	5791	5949	5879	5905
Travel Time (hr)	272.4	281.6	276.3	278.1
Total Delay (hr)	94.2	97.9	95.3	96.3
Total Stops	10592	10875	10560	10691
Fuel Used (gal)	271.0	278.4	274.9	276.1

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

DRAFT

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4244	4270	4400	4206	4212	4321	4259
Vehs Exited	4237	4273	4419	4186	4210	4326	4252
Starting Vehs	272	310	320	270	262	280	269
Ending Vehs	279	307	301	290	264	275	276
Denied Entry Before	1	1	1	2	3	3	0
Denied Entry After	2	1	2	4	3	2	1
Travel Distance (mi)	1492	1522	1524	1479	1450	1487	1495
Travel Time (hr)	70.3	71.0	73.2	69.2	68.2	69.8	70.4
Total Delay (hr)	24.3	24.3	26.1	23.7	23.4	24.0	24.6
Total Stops	2718	2724	2866	2636	2679	2726	2626
Fuel Used (gal)	69.4	70.5	71.8	68.8	67.4	69.5	69.9

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	4072	4308	4199	4246
Vehs Exited	4094	4331	4206	4248
Starting Vehs	284	265	275	278
Ending Vehs	262	242	268	279
Denied Entry Before	0	1	2	0
Denied Entry After	3	1	2	0
Travel Distance (mi)	1432	1528	1433	1484
Travel Time (hr)	67.5	71.9	68.0	69.9
Total Delay (hr)	23.4	24.8	23.7	24.2
Total Stops	2605	2709	2622	2686
Fuel Used (gal)	67.1	71.4	67.4	69.3

DRAFT

Interval #2 Information

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4197	4269	4267	4294	4218	4330	4334
Vehs Exited	4184	4299	4275	4283	4207	4304	4319
Starting Vehs	279	307	301	290	264	275	276
Ending Vehs	292	277	293	301	275	301	291
Denied Entry Before	2	1	2	4	3	2	1
Denied Entry After	2	4	1	3	3	2	3
Travel Distance (mi)	1454	1520	1521	1492	1498	1467	1506
Travel Time (hr)	67.3	71.0	72.5	70.2	71.3	69.8	70.6
Total Delay (hr)	22.8	24.3	25.9	24.5	25.0	24.3	24.6
Total Stops	2611	2599	2789	2779	2741	2653	2730
Fuel Used (gal)	67.9	70.6	71.4	69.6	70.5	68.5	70.5

Interval #2 Information

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4175	4217	4183	4246
Vehs Exited	4158	4190	4155	4237
Starting Vehs	262	242	268	279
Ending Vehs	279	269	296	282
Denied Entry Before	3	1	2	0
Denied Entry After	3	0	0	1
Travel Distance (mi)	1469	1476	1433	1484
Travel Time (hr)	69.3	70.0	66.6	69.9
Total Delay (hr)	23.9	24.5	22.3	24.2
Total Stops	2675	2728	2561	2684
Fuel Used (gal)	68.7	69.2	66.8	69.4

DRAFT

Interval #3 Information

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4134	4210	4084	4273	4193	4379	4221
Vehs Exited	4140	4219	4137	4308	4206	4403	4277
Starting Vehs	292	277	293	301	275	301	291
Ending Vehs	286	268	240	266	262	277	235
Denied Entry Before	2	4	1	3	3	2	3
Denied Entry After	0	1	3	1	0	2	0
Travel Distance (mi)	1402	1463	1440	1490	1425	1519	1485
Travel Time (hr)	66.4	69.1	69.2	69.4	65.8	72.1	70.0
Total Delay (hr)	23.1	24.0	24.9	23.7	22.1	25.5	24.1
Total Stops	2571	2697	2663	2617	2482	2785	2670
Fuel Used (gal)	65.5	68.5	67.9	69.2	67.0	71.2	69.6

Interval #3 Information

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	4133	4215	4259	4204
Vehs Exited	4145	4195	4243	4224
Starting Vehs	279	269	296	282
Ending Vehs	267	289	312	267
Denied Entry Before	3	0	0	1
Denied Entry After	1	2	3	0
Travel Distance (mi)	1426	1485	1495	1463
Travel Time (hr)	67.1	69.7	69.9	68.9
Total Delay (hr)	23.3	24.0	24.0	23.9
Total Stops	2654	2768	2614	2650
Fuel Used (gal)	66.9	69.5	69.9	68.5

DRAFT

Interval #4 Information

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4218	4198	4184	4246	4261	4364	4223
Vehs Exited	4205	4210	4159	4226	4255	4373	4159
Starting Vehs	286	268	240	266	262	277	235
Ending Vehs	299	256	265	286	268	268	299
Denied Entry Before	0	1	3	1	0	2	0
Denied Entry After	2	4	3	6	0	6	2
Travel Distance (mi)	1483	1456	1462	1478	1421	1523	1470
Travel Time (hr)	69.7	68.4	68.0	69.1	66.2	73.9	68.6
Total Delay (hr)	24.1	23.2	23.0	23.8	22.0	27.1	23.2
Total Stops	2736	2568	2612	2578	2510	2907	2684
Fuel Used (gal)	70.1	68.0	67.8	68.9	66.0	72.0	68.6

Interval #4 Information

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	4187	4190	4365	4237
Vehs Exited	4178	4192	4374	4233
Starting Vehs	267	289	312	267
Ending Vehs	276	287	303	278
Denied Entry Before	1	2	3	0
Denied Entry After	4	2	2	2
Travel Distance (mi)	1464	1459	1518	1474
Travel Time (hr)	68.5	69.9	71.8	69.4
Total Delay (hr)	23.6	24.6	25.3	24.0
Total Stops	2658	2670	2763	2665
Fuel Used (gal)	68.3	68.3	70.8	68.9

DRAFT

1: Arena Bloulevard & I-5 Southbound Off Ramp Performance by movement

Movement	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.0
Total Delay (hr)	0.7	0.5	0.1	0.3	0.1	1.8
Total Del/Veh (s)	6.4	4.3	1.2	6.2	3.0	4.2
Vehicles Entered	405	424	412	183	95	1519
Vehicles Exited	404	424	412	184	95	1519
Hourly Exit Rate	404	424	412	184	95	1519
Input Volume	403	430	403	184	93	1513
% of Volume	100	99	102	100	102	100
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0

2: I-5 Northbound Off Ramp & Arena Bloulevard Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.1	0.2	0.1
Total Delay (hr)	1.0	1.0	0.5	0.4	3.0
Total Del/Veh (s)	7.7	6.3	6.9	3.7	6.1
Vehicles Entered	458	568	274	427	1727
Vehicles Exited	459	569	274	427	1729
Hourly Exit Rate	459	569	274	427	1729
Input Volume	461	568	269	426	1724
% of Volume	100	100	102	100	100
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

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3: East Commerce Way & Arena Bloulevard Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	1.8	2.1	0.0	0.1	0.0	2.3	0.2	1.3	0.4	0.0	0.1
Total Del/Veh (s)	25.9	27.3	12.1	1.8	42.0	33.0	25.1	6.9	23.3	25.6	5.1	30.0
Vehicles Entered	2	234	616	33	5	5	334	98	194	59	13	7
Vehicles Exited	2	233	617	33	5	4	335	98	196	59	13	7
Hourly Exit Rate	2	233	617	33	5	4	335	98	196	59	13	7
Input Volume	2	236	615	34	5	4	336	95	194	56	12	8
% of Volume	100	99	100	97	100	100	100	103	101	105	108	88
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: East Commerce Way & Arena Bloulevard Performance by movement

Movement	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Delay (hr)	1.0	0.3	0.1	9.7
Total Del/Veh (s)	30.4	26.4	2.3	18.2
Vehicles Entered	112	37	145	1894
Vehicles Exited	110	37	145	1894
Hourly Exit Rate	110	37	145	1894
Input Volume	110	34	144	1885
% of Volume	100	109	101	100
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

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4: Arena Bloulevard & Sally Ride Way Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.2	0.3	0.1	4.2
Total Delay (hr)	0.0	0.0	1.4	0.0	0.0	0.7	0.0	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	12.6	16.5	7.3	4.4	15.8	6.7	4.5	12.1	5.1	22.2	19.0	3.5
Vehicles Entered	1	8	699	33	10	382	3	37	10	2	1	26
Vehicles Exited	2	8	699	33	10	381	3	37	10	2	1	26
Hourly Exit Rate	2	8	699	33	10	381	3	37	10	2	1	26
Input Volume	2	8	699	30	9	383	3	34	9	3	1	25
% of Volume	100	100	100	110	111	99	100	109	111	67	100	104
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: Arena Bloulevard & Sally Ride Way Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.2
Total Delay (hr)	2.5
Total Del/Veh (s)	7.2
Vehicles Entered	1212
Vehicles Exited	1212
Hourly Exit Rate	1212
Input Volume	1206
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

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5: Innovator Road/South Entrance Road & Arena Bloulevard Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.8	3.9	0.1
Total Delay (hr)	0.0	0.1	1.6	0.1	0.0	0.2	0.9	0.0	0.4	0.0	0.1	0.0
Total Del/Veh (s)	25.8	26.4	9.9	4.8	19.1	24.2	9.1	4.2	15.1	17.6	4.6	19.9
Vehicles Entered	2	12	566	86	2	28	336	6	84	3	100	1
Vehicles Exited	2	12	569	86	2	28	331	6	84	3	100	1
Hourly Exit Rate	2	12	569	86	2	28	331	6	84	3	100	1
Input Volume	2	11	568	89	3	30	331	6	83	3	98	1
% of Volume	100	109	100	97	67	93	100	100	101	100	102	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

5: Innovator Road/South Entrance Road & Arena Bloulevard Performance by movement

Movement	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.2
Denied Del/Veh (s)	0.1	0.1	0.1	0.6
Total Delay (hr)	0.1	0.0	0.0	3.5
Total Del/Veh (s)	25.0	20.7	5.5	10.0
Vehicles Entered	16	2	4	1248
Vehicles Exited	16	2	4	1246
Hourly Exit Rate	16	2	4	1246
Input Volume	16	1	6	1248
% of Volume	100	200	67	100
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

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6: Truxel Road & Arena Bloulevard Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	3.7	3.6	0.2	3.5	3.4	3.1	0.1	3.2
Total Delay (hr)	0.1	1.8	5.0	0.3	0.1	2.1	2.3	0.0	0.0	1.4	2.4	0.1
Total Del/Veh (s)	49.3	53.2	43.4	8.3	53.4	53.6	46.0	4.8	52.9	56.2	20.5	3.6
Vehicles Entered	4	118	404	119	5	134	174	23	1	87	412	103
Vehicles Exited	4	118	409	119	5	136	176	23	1	87	409	104
Hourly Exit Rate	4	118	409	119	5	136	176	23	1	87	409	104
Input Volume	4	115	406	119	7	132	172	22	1	91	411	104
% of Volume	100	103	101	100	71	103	102	105	100	96	100	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

6: Truxel Road & Arena Bloulevard Performance by movement

Movement	SBL	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.1	0.5
Denied Del/Veh (s)	2.7	0.1	2.8	0.7
Total Delay (hr)	1.1	4.6	0.1	21.2
Total Del/Veh (s)	54.4	22.8	3.8	30.3
Vehicles Entered	68	727	104	2483
Vehicles Exited	68	720	105	2484
Hourly Exit Rate	68	720	105	2484
Input Volume	71	721	103	2479
% of Volume	96	100	102	100
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

7: East Commerce Way Performance by movement

Movement	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.1	0.0	0.1	0.2
Total Del/Veh (s)	2.9	1.2	1.1	1.0	1.1
Vehicles Entered	30	345	53	301	729
Vehicles Exited	31	345	53	300	729
Hourly Exit Rate	31	345	53	300	729
Input Volume	29	342	53	296	720
% of Volume	107	101	100	101	101
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

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8: East Commerce Way & KSP Arena Driveway Performance by movement

Movement	EBR	WBL	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	3.7	4.1	0.2	3.6	0.1
Total Delay (hr)	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.4
Total Del/Veh (s)	3.3	10.2	7.9	6.6	1.7	1.1	9.4	8.1	2.6	1.1	2.4
Vehicles Entered	3	4	18	9	338	1	5	4	268	3	653
Vehicles Exited	2	4	18	9	338	1	5	4	268	3	652
Hourly Exit Rate	2	4	18	9	338	1	5	4	268	3	652
Input Volume	2	4	18	9	334	1	5	4	263	3	643
% of Volume	100	100	100	100	101	100	100	100	102	100	101
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

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Total Network Performance

Denied Delay (hr)	2.7
Denied Del/Veh (s)	0.6
Total Delay (hr)	93.6
Total Del/Veh (s)	19.6
Vehicles Entered	16951
Vehicles Exited	16951
Hourly Exit Rate	16951
Input Volume	59512
% of Volume	28
Denied Entry Before	0
Denied Entry After	2

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Intersection: 1: Arena Bloulevard & I-5 Southbound Off Ramp

Movement	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	L	L	R
Maximum Queue (ft)	75	82	72	59	71	64	64	58
Average Queue (ft)	35	38	31	25	26	31	23	22
95th Queue (ft)	67	74	60	55	60	56	49	45
Link Distance (ft)	245	245	143	143	143	855	855	855
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2: I-5 Northbound Off Ramp & Arena Bloulevard

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	L	R	R
Maximum Queue (ft)	103	101	55	58	79	106	44	84	89	78
Average Queue (ft)	51	46	16	23	32	48	15	33	46	35
95th Queue (ft)	86	84	44	52	67	89	35	68	76	62
Link Distance (ft)	264	264	164	164	164	164	693	693	693	693
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)										
Storage Blk Time (%)										
Queuing Penalty (veh)										

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Intersection: 3: East Commerce Way & Arena Bloulevard

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB
Directions Served	UL	L	T	T	T	R	UL	L	T	T	T	R
Maximum Queue (ft)	105	132	106	120	145	38	45	9	79	102	184	83
Average Queue (ft)	49	77	47	53	78	5	9	0	28	38	87	28
95th Queue (ft)	94	116	89	103	123	24	31	6	62	81	150	62
Link Distance (ft)			662	662	662				995	995	995	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	360	360				230	220	220				150
Storage Blk Time (%)											1	
Queuing Penalty (veh)											1	

Intersection: 3: East Commerce Way & Arena Bloulevard

Movement	NB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	L	T	T	T	R	UL	L	T	T
Maximum Queue (ft)	87	150	61	42	38	23	85	101	63	11
Average Queue (ft)	21	75	17	7	5	4	27	48	23	0
95th Queue (ft)	63	126	44	25	21	15	64	85	55	7
Link Distance (ft)			413	413	413				450	450
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	290	290				200	200	200		
Storage Blk Time (%)										
Queuing Penalty (veh)										

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Intersection: 4: Arena Bloulevard & Sally Ride Way

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	UL	T	T	T	R	L	T	T	T	R	L	TR
Maximum Queue (ft)	28	96	99	121	19	34	58	77	137	25	51	24
Average Queue (ft)	6	26	24	40	3	8	11	16	42	1	21	5
95th Queue (ft)	21	71	70	98	12	27	40	55	103	11	46	21
Link Distance (ft)		995	995	995			954	954	954			463
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	215				150	180				150	100	
Storage Blk Time (%)				0					0			
Queuing Penalty (veh)				0					0			

Intersection: 4: Arena Bloulevard & Sally Ride Way

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	26	36
Average Queue (ft)	2	12
95th Queue (ft)	14	30
Link Distance (ft)	359	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		57
Storage Blk Time (%)	0	0
Queuing Penalty (veh)	0	0

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Intersection: 5: Innovator Road/South Entrance Road & Arena Bloulevard

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB
Directions Served	UL	L	T	T	T	R	UL	T	T	T	R	L
Maximum Queue (ft)	21	40	103	109	131	53	60	54	86	118	26	100
Average Queue (ft)	2	9	39	39	52	18	13	9	17	41	2	36
95th Queue (ft)	12	30	86	85	109	43	38	33	55	94	14	74
Link Distance (ft)			954	954	954			1094	1094	1094		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	235	235				150	190				125	135
Storage Blk Time (%)					0					0		0
Queuing Penalty (veh)					0					0		0

Intersection: 5: Innovator Road/South Entrance Road & Arena Bloulevard

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	UL	L	TR	R
Maximum Queue (ft)	22	64	30	22	20	16
Average Queue (ft)	2	22	9	3	2	2
95th Queue (ft)	11	47	28	15	11	11
Link Distance (ft)	793		490	490	490	490
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		135				
Storage Blk Time (%)						
Queuing Penalty (veh)						

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Intersection: 6: Truxel Road & Arena Bloulevard

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB
Directions Served	UL	L	T	T	T	R	UL	L	T	T	R	UL
Maximum Queue (ft)	90	104	134	148	163	122	87	111	111	132	24	72
Average Queue (ft)	36	51	57	79	89	31	40	63	49	62	8	24
95th Queue (ft)	79	88	118	131	144	75	78	102	93	116	25	58
Link Distance (ft)			1094	1094	1094				935	935		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	370	370				150	200	200			140	215
Storage Blk Time (%)					1					0		
Queuing Penalty (veh)					1					0		

Intersection: 6: Truxel Road & Arena Bloulevard

Movement	NB	NB	NB	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	L	T	T	T	T	R	L	L	T	T	T	T
Maximum Queue (ft)	110	134	118	97	28	65	62	84	177	156	155	129
Average Queue (ft)	53	74	62	30	3	21	18	41	112	100	81	29
95th Queue (ft)	96	123	105	76	16	46	52	75	162	143	146	88
Link Distance (ft)		840	840	840	840				996	996	996	996
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	215					145	220	220				
Storage Blk Time (%)									0			0
Queuing Penalty (veh)									0			0

Intersection: 6: Truxel Road & Arena Bloulevard

Movement	SB
Directions Served	R
Maximum Queue (ft)	62
Average Queue (ft)	22
95th Queue (ft)	48
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	140
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 7: East Commerce Way

Movement	WB
Directions Served	R
Maximum Queue (ft)	50
Average Queue (ft)	19
95th Queue (ft)	44
Link Distance (ft)	363
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: East Commerce Way & KSP Arena Driveway

Movement	EB	WB	NB	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	TR	L	UL	L	T	T	T	UL	T	T	T	R
Maximum Queue (ft)	16	23	29	20	44	47	54	19	50	9	62	12
Average Queue (ft)	1	3	5	3	3	4	8	5	7	0	9	1
95th Queue (ft)	9	16	17	13	21	24	35	16	30	6	37	6
Link Distance (ft)	395	451			475	475	475		449	449	449	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			430	430				200				170
Storage Blk Time (%)												
Queuing Penalty (veh)												

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Network Summary

Network wide Queuing Penalty: 4

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Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	4:50	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	17439	17475	17645	17571	17600	17645	17587
Vehs Exited	17466	17483	17637	17536	17617	17666	17545
Starting Vehs	337	307	301	288	302	335	280
Ending Vehs	310	299	309	323	285	314	322
Denied Entry Before	1	0	1	2	2	1	5
Denied Entry After	1	3	1	3	2	0	4
Travel Distance (mi)	6498	6459	6554	6524	6613	6592	6481
Travel Time (hr)	302.2	300.3	303.4	304.7	304.4	306.1	300.3
Total Delay (hr)	106.2	105.7	106.4	108.5	105.8	107.8	104.7
Total Stops	11636	11452	11576	11707	11608	11735	11522
Fuel Used (gal)	300.2	297.9	301.5	301.1	303.3	304.1	298.6

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	17388	17480	17625	17540
Vehs Exited	17319	17427	17601	17528
Starting Vehs	270	298	280	296
Ending Vehs	339	351	304	309
Denied Entry Before	4	2	3	0
Denied Entry After	3	3	0	0
Travel Distance (mi)	6440	6499	6620	6528
Travel Time (hr)	298.3	304.7	308.7	303.3
Total Delay (hr)	103.4	108.5	109.0	106.6
Total Stops	11282	11666	11826	11591
Fuel Used (gal)	296.9	300.3	305.6	300.9

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

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Interval #1 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4384	4489	4397	4353	4367	4347	4391
Vehs Exited	4422	4522	4385	4291	4359	4329	4396
Starting Vehs	337	307	301	288	302	335	280
Ending Vehs	299	274	313	350	310	353	275
Denied Entry Before	1	0	1	2	2	1	5
Denied Entry After	1	2	1	2	4	1	0
Travel Distance (mi)	1645	1659	1622	1620	1648	1616	1606
Travel Time (hr)	75.8	79.8	75.4	76.0	75.7	75.1	73.9
Total Delay (hr)	26.3	29.8	26.9	27.1	26.4	26.3	25.4
Total Stops	2818	3147	2855	2953	2864	2856	2822
Fuel Used (gal)	75.5	76.7	74.9	74.8	75.5	74.8	73.8

Interval #1 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	4283	4462	4434	4386
Vehs Exited	4270	4465	4399	4387
Starting Vehs	270	298	280	296
Ending Vehs	283	295	315	307
Denied Entry Before	4	2	3	0
Denied Entry After	1	2	0	0
Travel Distance (mi)	1583	1672	1708	1638
Travel Time (hr)	74.0	80.2	79.6	76.5
Total Delay (hr)	26.2	29.5	28.2	27.2
Total Stops	2831	3103	2972	2922
Fuel Used (gal)	73.6	77.8	78.5	75.6

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Interval #2 Information

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4355	4284	4336	4410	4435	4419	4457
Vehs Exited	4366	4257	4360	4479	4430	4449	4458
Starting Vehs	299	274	313	350	310	353	275
Ending Vehs	288	301	289	281	315	323	274
Denied Entry Before	1	2	1	2	4	1	0
Denied Entry After	1	3	1	1	1	0	1
Travel Distance (mi)	1631	1587	1610	1671	1634	1652	1648
Travel Time (hr)	76.4	73.2	74.5	78.7	75.0	77.1	76.9
Total Delay (hr)	27.4	25.3	26.4	28.4	25.8	27.4	27.3
Total Stops	3012	2754	2899	3058	2848	2980	3019
Fuel Used (gal)	75.7	73.4	74.3	77.5	74.8	76.3	76.0

Interval #2 Information

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4445	4386	4436	4391
Vehs Exited	4412	4370	4411	4397
Starting Vehs	283	295	315	307
Ending Vehs	316	311	340	300
Denied Entry Before	1	2	0	0
Denied Entry After	1	1	6	0
Travel Distance (mi)	1692	1624	1642	1639
Travel Time (hr)	77.9	75.0	75.9	76.1
Total Delay (hr)	26.9	26.4	26.7	26.8
Total Stops	2905	2844	2907	2920
Fuel Used (gal)	77.4	74.7	75.5	75.6

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Interval #3 Information

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4315	4322	4444	4395	4410	4467	4378
Vehs Exited	4325	4346	4414	4365	4431	4497	4377
Starting Vehs	288	301	289	281	315	323	274
Ending Vehs	278	277	319	311	294	293	275
Denied Entry Before	1	3	1	1	1	0	1
Denied Entry After	3	3	0	1	1	0	3
Travel Distance (mi)	1627	1613	1633	1614	1677	1666	1635
Travel Time (hr)	75.8	74.1	75.5	74.9	77.9	77.6	75.5
Total Delay (hr)	26.7	25.6	26.0	26.6	27.5	27.3	26.2
Total Stops	2893	2827	2840	2826	3024	2957	2820
Fuel Used (gal)	75.8	74.0	75.2	73.9	77.3	77.1	75.4

Interval #3 Information

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	4321	4344	4391	4376
Vehs Exited	4346	4340	4428	4388
Starting Vehs	316	311	340	300
Ending Vehs	291	315	303	292
Denied Entry Before	1	1	6	0
Denied Entry After	1	6	15	2
Travel Distance (mi)	1571	1646	1635	1632
Travel Time (hr)	72.7	77.1	76.8	75.8
Total Delay (hr)	25.1	27.3	27.3	26.6
Total Stops	2805	2934	2992	2892
Fuel Used (gal)	72.6	76.1	75.8	75.3

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Interval #4 Information

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4385	4380	4468	4413	4388	4412	4361
Vehs Exited	4353	4358	4478	4401	4397	4391	4314
Starting Vehs	278	277	319	311	294	293	275
Ending Vehs	310	299	309	323	285	314	322
Denied Entry Before	3	3	0	1	1	0	3
Denied Entry After	1	3	1	3	2	0	4
Travel Distance (mi)	1594	1600	1689	1619	1655	1658	1592
Travel Time (hr)	74.3	73.2	78.0	75.1	75.8	76.4	74.0
Total Delay (hr)	25.8	25.0	27.1	26.5	26.0	26.8	25.7
Total Stops	2913	2724	2982	2870	2872	2942	2861
Fuel Used (gal)	73.2	73.7	77.1	74.9	75.7	75.9	73.4

Interval #4 Information

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	4339	4288	4364	4377
Vehs Exited	4291	4252	4363	4359
Starting Vehs	291	315	303	292
Ending Vehs	339	351	304	309
Denied Entry Before	1	6	15	2
Denied Entry After	3	3	0	0
Travel Distance (mi)	1594	1556	1635	1619
Travel Time (hr)	73.7	72.4	76.4	74.9
Total Delay (hr)	25.3	25.4	26.8	26.0
Total Stops	2741	2785	2955	2862
Fuel Used (gal)	73.3	71.7	75.7	74.5

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1: Arena Bloulevard & I-5 Southbound Off Ramp Performance by movement

Movement	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.2	0.0
Total Delay (hr)	0.7	1.2	0.1	0.3	0.2	2.5
Total Del/Veh (s)	5.7	4.7	1.1	7.8	4.5	4.5
Vehicles Entered	445	916	392	140	132	2025
Vehicles Exited	444	916	392	140	131	2023
Hourly Exit Rate	444	916	392	140	131	2023
Input Volume	447	900	390	142	132	2011
% of Volume	99	102	101	99	99	101
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0

2: I-5 Northbound Off Ramp & Arena Bloulevard Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.2	0.2	0.1
Total Delay (hr)	1.3	1.6	1.4	0.6	4.9
Total Del/Veh (s)	9.3	7.9	8.7	4.1	7.5
Vehicles Entered	485	730	577	553	2345
Vehicles Exited	486	733	575	552	2346
Hourly Exit Rate	486	733	575	552	2346
Input Volume	490	718	570	549	2327
% of Volume	99	102	101	101	101
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

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3: East Commerce Way & Arena Bloulevard Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	1.7	2.6	0.1	0.1	0.1	3.2	0.3	0.0	1.0	0.4	0.0
Total Del/Veh (s)	31.0	31.1	12.7	2.7	42.7	45.6	21.7	7.3	29.6	27.0	30.5	6.6
Vehicles Entered	9	194	724	110	8	8	522	128	1	127	52	11
Vehicles Exited	9	194	723	110	8	7	523	129	1	128	52	11
Hourly Exit Rate	9	194	723	110	8	7	523	129	1	128	52	11
Input Volume	10	191	731	107	8	7	520	124	1	124	52	11
% of Volume	90	102	99	103	100	100	101	104	100	103	100	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: East Commerce Way & Arena Bloulevard Performance by movement

Movement	SBU	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	1.4	0.5	0.2	11.8
Total Del/Veh (s)	32.9	35.2	40.9	2.7	17.9
Vehicles Entered	16	145	46	253	2354
Vehicles Exited	16	147	46	254	2358
Hourly Exit Rate	16	147	46	254	2358
Input Volume	15	145	39	245	2330
% of Volume	107	101	118	104	101
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

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4: Arena Bloulevard & Sally Ride Way Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBR	SBL	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.2	0.1	4.3
Total Delay (hr)	0.0	0.1	1.2	0.0	0.0	0.0	1.1	0.0	0.1	0.0	0.0	0.0
Total Del/Veh (s)	11.2	14.3	5.6	4.4	16.9	16.9	6.3	5.0	13.9	6.6	30.5	3.4
Vehicles Entered	6	33	776	28	2	10	635	13	14	13	1	10
Vehicles Exited	6	33	778	28	2	10	634	13	14	13	1	10
Hourly Exit Rate	6	33	778	28	2	10	634	13	14	13	1	10
Input Volume	6	32	783	29	2	12	623	14	14	11	2	10
% of Volume	100	103	99	97	100	83	102	93	100	118	50	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: Arena Bloulevard & Sally Ride Way Performance by movement

Movement	All
Denied Delay (hr)	0.0
Denied Del/Veh (s)	0.1
Total Delay (hr)	2.7
Total Del/Veh (s)	6.2
Vehicles Entered	1541
Vehicles Exited	1542
Hourly Exit Rate	1542
Input Volume	1538
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

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5: Innovator Road/South Entrance Road & Arena Bloulevard Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBR	SBL	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	3.9	4.0	0.1	0.1
Total Delay (hr)	0.0	0.0	1.6	0.2	0.0	0.2	1.5	0.0	0.3	0.1	0.1	0.0
Total Del/Veh (s)	25.8	37.5	9.0	4.6	24.2	24.6	9.3	6.7	15.7	4.5	27.0	7.0
Vehicles Entered	2	3	630	124	6	30	581	2	73	63	10	10
Vehicles Exited	2	3	632	124	6	29	575	2	73	63	10	11
Hourly Exit Rate	2	3	632	124	6	29	575	2	73	63	10	11
Input Volume	2	3	632	126	6	34	568	1	73	61	10	8
% of Volume	100	100	100	98	100	85	101	200	100	103	100	138
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

5: Innovator Road/South Entrance Road & Arena Bloulevard Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.4
Total Delay (hr)	4.0
Total Del/Veh (s)	9.4
Vehicles Entered	1534
Vehicles Exited	1530
Hourly Exit Rate	1530
Input Volume	1524
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

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6: Truxel Road & Arena Bloulevard Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.2	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	3.1	3.3	0.3	3.4	3.2	2.7	0.1	2.7
Total Delay (hr)	0.1	2.5	3.2	0.5	0.0	1.0	3.8	0.2	0.0	3.0	4.8	0.1
Total Del/Veh (s)	50.5	55.4	39.0	8.9	46.5	51.8	46.7	6.2	57.0	54.2	23.7	3.6
Vehicles Entered	4	159	291	202	3	66	290	98	1	197	721	59
Vehicles Exited	4	158	293	202	3	68	292	98	1	198	715	59
Hourly Exit Rate	4	158	293	202	3	68	292	98	1	198	715	59
Input Volume	4	160	289	203	3	65	287	102	2	191	725	58
% of Volume	100	99	101	100	100	105	102	96	50	104	99	102
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

6: Truxel Road & Arena Bloulevard Performance by movement

Movement	SBU	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.1	0.0	0.1	0.6
Denied Del/Veh (s)	3.2	2.9	0.1	2.8	0.7
Total Delay (hr)	0.0	1.0	4.6	0.1	24.9
Total Del/Veh (s)	86.8	54.0	25.5	4.6	30.5
Vehicles Entered	1	64	652	100	2908
Vehicles Exited	1	65	647	100	2904
Hourly Exit Rate	1	65	647	100	2904
Input Volume	2	63	663	103	2920
% of Volume	50	103	98	97	99
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

7: East Commerce Way Performance by movement

Movement	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.1	0.0	0.1	0.3
Total Del/Veh (s)	3.2	1.1	0.9	1.0	1.2
Vehicles Entered	52	348	43	467	910
Vehicles Exited	52	349	43	467	911
Hourly Exit Rate	52	349	43	467	911
Input Volume	51	343	40	451	885
% of Volume	102	102	108	104	103
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

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8: East Commerce Way & KSP Arena Driveway Performance by movement

Movement	EBR	NBU	NBL	NBT	SBU	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	2.8	0.2	0.1
Total Delay (hr)	0.0	0.1	0.0	0.0	0.0	0.2	0.3
Total Del/Veh (s)	5.1	5.3	4.8	0.3	4.2	1.5	1.2
Vehicles Entered	5	36	3	362	1	426	833
Vehicles Exited	5	36	3	362	1	426	833
Hourly Exit Rate	5	36	3	362	1	426	833
Input Volume	6	35	3	356	1	410	811
% of Volume	83	103	100	102	100	104	103
Denied Entry Before	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0

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Total Network Performance

Denied Delay (hr)	2.6
Denied Del/Veh (s)	0.5
Total Delay (hr)	104.0
Total Del/Veh (s)	21.0
Vehicles Entered	17540
Vehicles Exited	17528
Hourly Exit Rate	17528
Input Volume	64599
% of Volume	27
Denied Entry Before	0
Denied Entry After	0

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Intersection: 1: Arena Bloulevard & I-5 Southbound Off Ramp

Movement	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	L	L	R
Maximum Queue (ft)	76	114	102	110	104	56	62	64
Average Queue (ft)	34	42	45	48	47	25	23	30
95th Queue (ft)	66	85	78	84	87	49	50	56
Link Distance (ft)	245	245	143	143	143	855	855	855
Upstream Blk Time (%)			0	0	0			
Queuing Penalty (veh)			0	0	0			
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2: I-5 Northbound Off Ramp & Arena Bloulevard

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	T	T	T	T	L	L	R	R
Maximum Queue (ft)	110	119	95	113	129	120	106	130	110	83
Average Queue (ft)	52	61	27	44	57	51	43	69	55	42
95th Queue (ft)	92	102	71	88	103	101	83	114	89	71
Link Distance (ft)	264	264	164	164	164	164	693	693	693	693
Upstream Blk Time (%)				0	0					
Queuing Penalty (veh)				0	0					
Storage Bay Dist (ft)										
Storage Blk Time (%)										
Queuing Penalty (veh)										

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Intersection: 3: East Commerce Way & Arena Bloulevard

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB
Directions Served	UL	L	T	T	T	R	UL	L	T	T	T	R
Maximum Queue (ft)	103	121	122	133	166	52	47	20	128	157	230	147
Average Queue (ft)	47	68	56	62	92	19	12	1	54	64	99	33
95th Queue (ft)	89	107	103	116	148	45	36	12	108	127	182	86
Link Distance (ft)			662	662	662				995	995	995	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	360	360				230	220	220				150
Storage Blk Time (%)											2	
Queuing Penalty (veh)											3	

Intersection: 3: East Commerce Way & Arena Bloulevard

Movement	NB	NB	NB	NB	NB	NB	SB	SB	SB	SB		
Directions Served	UL	L	T	T	T	R	UL	L	T	T		
Maximum Queue (ft)	59	99	45	23	28	20	108	121	74	30		
Average Queue (ft)	16	50	18	5	3	3	41	63	34	2		
95th Queue (ft)	46	84	42	18	16	14	88	105	67	16		
Link Distance (ft)			413	413	413				450	450		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	290	290				200	200	200				
Storage Blk Time (%)												
Queuing Penalty (veh)												

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Intersection: 4: Arena Bloulevard & Sally Ride Way

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	UL	T	T	T	R	UL	T	T	T	R	L	TR
Maximum Queue (ft)	55	77	79	155	14	39	84	108	177	50	33	22
Average Queue (ft)	18	16	13	33	1	10	18	22	45	3	10	7
95th Queue (ft)	45	55	51	103	8	33	58	72	122	28	31	24
Link Distance (ft)		995	995	995			954	954	954			463
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	215				150	180				150	100	
Storage Blk Time (%)				0					0			
Queuing Penalty (veh)				0					0			

Intersection: 4: Arena Bloulevard & Sally Ride Way

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	14	20
Average Queue (ft)	1	5
95th Queue (ft)	8	20
Link Distance (ft)	359	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		57
Storage Blk Time (%)		
Queuing Penalty (veh)		

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Intersection: 5: Innovator Road/South Entrance Road & Arena Bloulevard

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB
Directions Served	UL	L	T	T	T	R	UL	T	T	T	R	L
Maximum Queue (ft)	27	26	113	93	143	71	67	94	130	169	35	71
Average Queue (ft)	2	3	42	31	57	21	15	22	33	62	1	30
95th Queue (ft)	13	16	92	72	118	55	44	63	90	132	23	59
Link Distance (ft)			954	954	954			1094	1094	1094		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	235	235				150	190				125	135
Storage Blk Time (%)					0					1		
Queuing Penalty (veh)					0					0		

Intersection: 5: Innovator Road/South Entrance Road & Arena Bloulevard

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	L	TR	R
Maximum Queue (ft)	54	26	24	22	18
Average Queue (ft)	17	5	2	4	2
95th Queue (ft)	39	19	13	17	12
Link Distance (ft)		490	490	490	490
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	135				
Storage Blk Time (%)					
Queuing Penalty (veh)					

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Intersection: 6: Truxel Road & Arena Bloulevard

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB
Directions Served	UL	L	T	T	T	R	UL	L	T	T	R	UL
Maximum Queue (ft)	111	129	105	118	121	110	57	78	172	195	62	139
Average Queue (ft)	56	68	35	54	60	44	16	38	86	98	25	55
95th Queue (ft)	101	114	81	99	107	85	46	67	145	170	49	111
Link Distance (ft)			1094	1094	1094				935	935		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	370	370				150	200	200			140	215
Storage Blk Time (%)					0				0	3		0
Queuing Penalty (veh)					0				0	3		0

Intersection: 6: Truxel Road & Arena Bloulevard

Movement	NB	NB	NB	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	L	T	T	T	T	R	UL	L	T	T	T	T
Maximum Queue (ft)	180	181	166	152	128	49	54	74	163	169	161	111
Average Queue (ft)	95	110	101	79	30	16	15	39	108	99	76	22
95th Queue (ft)	152	161	148	136	88	39	44	69	155	144	142	73
Link Distance (ft)		840	840	840	840				996	996	996	996
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	215					145	220	220				
Storage Blk Time (%)	0	0			0							0
Queuing Penalty (veh)	0	0			0							0

Intersection: 6: Truxel Road & Arena Bloulevard

Movement	SB
Directions Served	R
Maximum Queue (ft)	64
Average Queue (ft)	24
95th Queue (ft)	50
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	140
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 7: East Commerce Way

Movement	WB
Directions Served	R
Maximum Queue (ft)	54
Average Queue (ft)	24
95th Queue (ft)	46
Link Distance (ft)	363
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: East Commerce Way & KSP Arena Driveway

Movement	EB	NB	NB	NB	SB	SB	SB
Directions Served	TR	UL	L	T	UL	T	T
Maximum Queue (ft)	21	44	14	2	6	55	61
Average Queue (ft)	3	10	1	0	0	7	9
95th Queue (ft)	14	28	8	2	4	30	37
Link Distance (ft)	395			475		449	449
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		430	430		200		
Storage Blk Time (%)							
Queuing Penalty (veh)							

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Network Summary

Network wide Queuing Penalty: 10

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Appendix C

Analysis Worksheets for Existing (2022) plus Proposed Project Conditions

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Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	17114	17428	17345	17215	17128	17296	17356
Vehs Exited	17163	17457	17313	17220	17091	17330	17367
Starting Vehs	314	307	283	290	270	301	300
Ending Vehs	265	278	315	285	307	267	289
Denied Entry Before	1	0	1	0	1	2	1
Denied Entry After	1	3	6	1	1	5	1
Travel Distance (mi)	5952	6006	5978	5967	5922	5959	6057
Travel Time (hr)	283.1	286.5	285.1	290.4	280.3	283.9	288.8
Total Delay (hr)	99.4	100.5	100.7	106.2	97.4	99.9	101.9
Total Stops	10951	11139	11147	11411	10781	11211	11155
Fuel Used (gal)	280.6	282.5	281.7	283.7	277.7	279.8	284.6

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	17333	17459	17193	17286
Vehs Exited	17327	17452	17211	17295
Starting Vehs	273	273	289	289
Ending Vehs	279	280	271	283
Denied Entry Before	4	2	4	0
Denied Entry After	0	3	1	0
Travel Distance (mi)	5970	6088	6011	5991
Travel Time (hr)	280.7	291.0	285.4	285.5
Total Delay (hr)	96.7	102.8	100.0	100.5
Total Stops	10771	11378	11090	11098
Fuel Used (gal)	279.2	287.5	282.8	282.0

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

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Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4374	4387	4372	4236	4256	4267	4315
Vehs Exited	4397	4395	4366	4241	4228	4276	4340
Starting Vehs	314	307	283	290	270	301	300
Ending Vehs	291	299	289	285	298	292	275
Denied Entry Before	1	0	1	0	1	2	1
Denied Entry After	3	0	3	31	1	2	2
Travel Distance (mi)	1515	1540	1496	1467	1474	1502	1510
Travel Time (hr)	72.2	73.9	71.4	71.9	69.9	71.4	71.4
Total Delay (hr)	25.8	26.0	25.1	26.7	24.6	25.1	25.1
Total Stops	2771	2870	2739	2773	2706	2786	2738
Fuel Used (gal)	71.8	72.2	70.5	70.2	69.3	70.2	71.1

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	4232	4436	4314	4321
Vehs Exited	4232	4421	4362	4324
Starting Vehs	273	273	289	289
Ending Vehs	273	288	241	274
Denied Entry Before	4	2	4	0
Denied Entry After	3	1	3	3
Travel Distance (mi)	1484	1516	1536	1504
Travel Time (hr)	69.4	73.3	72.8	71.7
Total Delay (hr)	23.7	25.9	25.6	25.4
Total Stops	2637	2962	2879	2784
Fuel Used (gal)	69.1	72.2	72.4	70.9

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Interval #2 Information

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4246	4368	4362	4336	4270	4372	4361
Vehs Exited	4259	4392	4425	4395	4316	4392	4348
Starting Vehs	291	299	289	285	298	292	275
Ending Vehs	278	275	226	226	252	272	288
Denied Entry Before	3	0	3	31	1	2	2
Denied Entry After	2	0	0	2	1	5	1
Travel Distance (mi)	1443	1490	1537	1504	1464	1520	1531
Travel Time (hr)	68.8	70.3	72.5	74.6	69.3	72.8	73.4
Total Delay (hr)	24.1	24.2	25.3	28.1	24.2	25.8	26.0
Total Stops	2754	2727	2830	2932	2688	2860	2906
Fuel Used (gal)	68.4	70.0	72.1	72.0	68.6	71.9	71.9

Interval #2 Information

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4488	4342	4284	4339
Vehs Exited	4462	4365	4235	4356
Starting Vehs	273	288	241	274
Ending Vehs	299	265	290	258
Denied Entry Before	3	1	3	3
Denied Entry After	1	2	3	0
Travel Distance (mi)	1531	1520	1464	1500
Travel Time (hr)	72.9	71.6	70.0	71.6
Total Delay (hr)	25.5	24.7	24.5	25.2
Total Stops	2794	2787	2617	2781
Fuel Used (gal)	71.9	71.3	69.0	70.7

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Interval #3 Information

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4299	4334	4270	4424	4257	4286	4267
Vehs Exited	4275	4317	4237	4353	4245	4264	4275
Starting Vehs	278	275	226	226	252	272	288
Ending Vehs	302	292	259	297	264	294	280
Denied Entry Before	2	0	0	2	1	5	1
Denied Entry After	1	0	0	2	3	9	1
Travel Distance (mi)	1543	1455	1467	1492	1463	1434	1483
Travel Time (hr)	73.5	68.6	70.2	71.0	67.8	68.7	69.6
Total Delay (hr)	26.0	23.6	24.9	24.9	22.4	24.0	23.7
Total Stops	2834	2611	2781	2854	2525	2711	2649
Fuel Used (gal)	72.0	67.9	69.3	70.2	68.0	67.7	69.3

Interval #3 Information

Start Time	7:30
End Time	7:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	4280	4290	4326	4302
Vehs Exited	4334	4261	4321	4290
Starting Vehs	299	265	290	258
Ending Vehs	245	294	295	271
Denied Entry Before	1	2	3	0
Denied Entry After	3	6	1	1
Travel Distance (mi)	1498	1492	1519	1485
Travel Time (hr)	69.8	70.6	72.5	70.2
Total Delay (hr)	23.8	24.7	25.9	24.4
Total Stops	2676	2688	2799	2704
Fuel Used (gal)	70.0	70.5	71.5	69.6

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Interval #4 Information

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4195	4339	4341	4219	4345	4371	4413
Vehs Exited	4232	4353	4285	4231	4302	4398	4404
Starting Vehs	302	292	259	297	264	294	280
Ending Vehs	265	278	315	285	307	267	289
Denied Entry Before	1	0	0	2	3	9	1
Denied Entry After	1	3	6	1	1	5	1
Travel Distance (mi)	1450	1522	1479	1504	1522	1502	1533
Travel Time (hr)	68.6	73.7	71.1	72.9	73.3	71.0	74.4
Total Delay (hr)	23.6	26.6	25.4	26.5	26.2	25.0	27.1
Total Stops	2592	2931	2797	2852	2862	2854	2862
Fuel Used (gal)	68.4	72.6	69.7	71.2	71.7	70.0	72.3

Interval #4 Information

Start Time	7:45
End Time	8:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	4333	4391	4269	4322
Vehs Exited	4299	4405	4293	4319
Starting Vehs	245	294	295	271
Ending Vehs	279	280	271	283
Denied Entry Before	3	6	1	1
Denied Entry After	0	3	1	0
Travel Distance (mi)	1457	1560	1492	1502
Travel Time (hr)	68.6	75.5	70.2	71.9
Total Delay (hr)	23.7	27.4	24.0	25.5
Total Stops	2664	2941	2795	2809
Fuel Used (gal)	68.2	73.5	69.8	70.8

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1: Arena Bloulevard & I-5 Southbound Off Ramp Performance by movement

Movement	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.0
Total Delay (hr)	0.8	0.5	0.2	0.3	0.1	1.8
Total Del/Veh (s)	6.8	4.3	1.3	6.2	2.8	4.2
Vehicles Entered	408	427	440	192	86	1553
Vehicles Exited	408	426	441	192	87	1554
Hourly Exit Rate	408	426	441	192	87	1554
Input Volume	403	430	445	188	93	1559
% of Volume	101	99	99	102	94	100
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0

2: I-5 Northbound Off Ramp & Arena Bloulevard Performance by movement

Movement	EBT	EBR	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.1	0.0	0.1	0.2	0.1
Total Delay (hr)	1.1	0.1	1.2	0.6	0.5	3.5
Total Del/Veh (s)	8.6	4.4	6.9	8.0	3.9	6.6
Vehicles Entered	471	119	607	261	443	1901
Vehicles Exited	470	119	608	261	444	1902
Hourly Exit Rate	470	119	608	261	444	1902
Input Volume	465	118	610	269	439	1901
% of Volume	101	101	100	97	101	100
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0

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3: East Commerce Way & Arena Bloulevard Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	2.0	2.0	0.0	0.1	0.0	2.6	0.2	1.2	0.5	0.0	0.1
Total Del/Veh (s)	20.0	28.7	11.3	1.9	47.9	42.2	24.0	7.3	22.3	28.4	4.4	29.5
Vehicles Entered	2	251	616	41	4	4	388	97	188	58	12	9
Vehicles Exited	2	251	618	41	4	4	390	97	187	59	12	9
Hourly Exit Rate	2	251	618	41	4	4	390	97	187	59	12	9
Input Volume	2	244	621	34	5	4	386	95	194	56	12	10
% of Volume	100	103	100	121	80	100	101	102	96	105	100	90
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: East Commerce Way & Arena Bloulevard Performance by movement

Movement	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Delay (hr)	1.0	0.2	0.1	10.0
Total Del/Veh (s)	31.5	24.8	2.3	18.1
Vehicles Entered	114	34	150	1968
Vehicles Exited	114	34	150	1972
Hourly Exit Rate	114	34	150	1972
Input Volume	110	34	144	1951
% of Volume	104	100	104	101
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

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4: Arena Bloulevard & Sally Ride Way Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.2	0.4	0.3	4.0
Total Delay (hr)	0.0	0.1	1.7	0.0	0.1	1.0	0.0	0.1	0.0	0.1	0.0	0.1
Total Del/Veh (s)	13.9	19.6	8.9	4.3	20.4	9.1	4.9	16.6	4.6	17.6	14.1	4.2
Vehicles Entered	2	17	698	31	8	388	10	32	11	22	2	74
Vehicles Exited	2	17	698	31	9	390	10	32	10	22	2	74
Hourly Exit Rate	2	17	698	31	9	390	10	32	10	22	2	74
Input Volume	2	17	699	30	9	383	10	34	9	24	1	75
% of Volume	100	100	100	103	100	102	100	94	111	92	200	99
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: Arena Bloulevard & Sally Ride Way Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.3
Total Delay (hr)	3.3
Total Del/Veh (s)	9.1
Vehicles Entered	1295
Vehicles Exited	1297
Hourly Exit Rate	1297
Input Volume	1293
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

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5: Innovator Road/South Entrance Road & Arena Bloulevard Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.4	3.9	0.1
Total Delay (hr)	0.0	0.1	1.9	0.1	0.0	0.2	0.9	0.0	0.4	0.0	0.1	0.0
Total Del/Veh (s)	24.0	27.2	11.7	5.7	26.4	26.9	9.3	4.2	16.0	12.7	5.1	7.9
Vehicles Entered	1	10	590	88	3	31	347	6	83	3	102	1
Vehicles Exited	1	10	592	88	3	30	345	6	83	3	103	1
Hourly Exit Rate	1	10	592	88	3	30	345	6	83	3	103	1
Input Volume	2	11	589	89	3	30	338	6	83	3	98	1
% of Volume	50	91	101	99	100	100	102	100	100	100	105	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

5: Innovator Road/South Entrance Road & Arena Bloulevard Performance by movement

Movement	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.2
Denied Del/Veh (s)	0.1	0.1	0.1	0.6
Total Delay (hr)	0.1	0.0	0.0	4.0
Total Del/Veh (s)	25.6	25.5	5.0	11.0
Vehicles Entered	17	1	7	1290
Vehicles Exited	18	1	7	1291
Hourly Exit Rate	18	1	7	1291
Input Volume	16	1	6	1276
% of Volume	112	100	117	101
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

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6: Truxel Road & Arena Bloulevard Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	3.5	3.6	0.2	3.5	1.6	3.1	0.1	3.1
Total Delay (hr)	0.1	1.7	5.0	0.3	0.1	2.0	2.2	0.0	0.0	1.5	2.5	0.1
Total Del/Veh (s)	61.1	53.2	42.7	9.0	52.1	54.0	45.2	4.8	17.1	56.8	21.7	3.6
Vehicles Entered	4	116	418	133	7	133	174	23	1	94	416	111
Vehicles Exited	4	116	421	133	7	134	177	23	1	94	409	110
Hourly Exit Rate	4	116	421	133	7	134	177	23	1	94	409	110
Input Volume	4	117	408	136	7	132	173	22	1	96	411	104
% of Volume	100	99	103	98	100	102	102	105	100	98	100	106
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

6: Truxel Road & Arena Bloulevard Performance by movement

Movement	SBL	SBT	SBR	All
Denied Delay (hr)	0.1	0.0	0.1	0.5
Denied Del/Veh (s)	2.8	0.1	2.8	0.8
Total Delay (hr)	1.1	4.8	0.1	21.7
Total Del/Veh (s)	53.1	24.0	3.9	30.6
Vehicles Entered	71	709	113	2523
Vehicles Exited	69	700	113	2511
Hourly Exit Rate	69	700	113	2511
Input Volume	71	721	104	2507
% of Volume	97	97	109	100
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

7: East Commerce Way Performance by movement

Movement	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.1	0.0	0.1	0.2
Total Del/Veh (s)	2.9	1.2	1.2	0.9	1.2
Vehicles Entered	39	350	65	308	762
Vehicles Exited	40	350	66	308	764
Hourly Exit Rate	40	350	66	308	764
Input Volume	42	342	63	298	745
% of Volume	95	102	105	103	103
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

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8: East Commerce Way & KSP Arena Driveway Performance by movement

Movement	EBR	WBL	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.1	4.1	3.4	0.2	4.1	0.1
Total Delay (hr)	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.4
Total Del/Veh (s)	3.3	13.3	7.6	6.4	1.3	1.1	9.0	9.3	2.4	0.9	2.2
Vehicles Entered	3	5	18	8	342	14	5	4	273	3	675
Vehicles Exited	3	5	18	8	342	14	5	4	273	3	675
Hourly Exit Rate	3	5	18	8	342	14	5	4	273	3	675
Input Volume	2	4	18	9	334	14	5	4	265	3	658
% of Volume	150	125	100	89	102	100	100	100	103	100	103
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

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Total Network Performance

Denied Delay (hr)	3.1
Denied Del/Veh (s)	0.6
Total Delay (hr)	97.4
Total Del/Veh (s)	20.0
Vehicles Entered	17286
Vehicles Exited	17295
Hourly Exit Rate	17295
Input Volume	60313
% of Volume	29
Denied Entry Before	0
Denied Entry After	0

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Intersection: 1: Arena Bloulevard & I-5 Southbound Off Ramp

Movement	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	L	L	R
Maximum Queue (ft)	75	88	70	61	65	63	60	58
Average Queue (ft)	32	43	31	26	24	27	28	19
95th Queue (ft)	63	76	62	55	58	53	55	43
Link Distance (ft)	245	245	143	143	143	855	855	855
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2: I-5 Northbound Off Ramp & Arena Bloulevard

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	TR	T	T	T	T	L	L	R	R
Maximum Queue (ft)	122	133	57	70	102	123	59	88	87	77
Average Queue (ft)	59	63	23	27	36	58	20	39	49	38
95th Queue (ft)	99	110	54	60	76	104	43	73	78	65
Link Distance (ft)	252	252	164	164	164	164	693	693	693	693
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)										
Storage Blk Time (%)										
Queuing Penalty (veh)										

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Intersection: 3: East Commerce Way & Arena Bloulevard

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB
Directions Served	UL	L	T	T	T	R	UL	L	T	T	T	R
Maximum Queue (ft)	118	137	98	123	149	38	43	4	96	121	192	104
Average Queue (ft)	52	80	46	53	76	7	7	0	32	42	97	28
95th Queue (ft)	98	122	86	100	124	27	28	4	69	91	164	67
Link Distance (ft)			662	662	662				995	995	995	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	360	360				230	220	220				150
Storage Blk Time (%)					0						2	
Queuing Penalty (veh)					0						2	

Intersection: 3: East Commerce Way & Arena Bloulevard

Movement	NB	NB	NB	NB	NB	NB	B1020	SB	SB	SB	SB	
Directions Served	L	L	T	T	T	R	T	UL	L	T	T	
Maximum Queue (ft)	67	132	44	31	38	16	4	78	98	58	9	
Average Queue (ft)	19	66	16	6	6	3	0	29	48	20	0	
95th Queue (ft)	51	110	39	22	23	13	4	64	85	50	5	
Link Distance (ft)			413	413	413		150			450	450	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	290	290				200		200	200			
Storage Blk Time (%)												
Queuing Penalty (veh)												

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Intersection: 4: Arena Bloulevard & Sally Ride Way

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	UL	T	T	T	R	L	T	T	T	R	L	TR
Maximum Queue (ft)	41	102	111	140	41	37	62	90	149	49	58	27
Average Queue (ft)	10	31	32	50	4	7	16	21	52	5	21	6
95th Queue (ft)	29	76	82	113	16	27	46	63	116	30	51	22
Link Distance (ft)		995	995	995			954	954	954			463
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	215				150	180				150	100	
Storage Blk Time (%)				0	0				0		0	
Queuing Penalty (veh)				0	0				0		0	

Intersection: 4: Arena Bloulevard & Sally Ride Way

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	49	54
Average Queue (ft)	14	21
95th Queue (ft)	38	41
Link Distance (ft)	359	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		57
Storage Blk Time (%)	0	0
Queuing Penalty (veh)	0	0

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Intersection: 5: Innovator Road/South Entrance Road & Arena Bloulevard

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB
Directions Served	UL	L	T	T	T	R	UL	T	T	T	R	L
Maximum Queue (ft)	15	40	118	128	149	74	62	52	79	121	24	90
Average Queue (ft)	1	7	43	41	58	18	14	10	19	47	2	36
95th Queue (ft)	9	27	93	93	121	52	40	36	56	100	13	74
Link Distance (ft)			954	954	954			1094	1094	1094		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	235	235				150	190				125	135
Storage Blk Time (%)					0					0		0
Queuing Penalty (veh)					0					0		0

Intersection: 5: Innovator Road/South Entrance Road & Arena Bloulevard

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	R	UL	L	TR	R
Maximum Queue (ft)	15	78	32	26	20	16
Average Queue (ft)	1	24	9	4	3	2
95th Queue (ft)	9	53	28	17	15	11
Link Distance (ft)	793		490	490	490	490
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		135				
Storage Blk Time (%)		0				
Queuing Penalty (veh)		0				

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Intersection: 6: Truxel Road & Arena Bloulevard

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB
Directions Served	UL	L	T	T	T	R	UL	L	T	T	R	UL
Maximum Queue (ft)	91	100	141	163	178	154	100	115	114	140	33	70
Average Queue (ft)	32	51	65	83	90	35	41	62	48	60	8	24
95th Queue (ft)	75	87	122	140	150	87	84	103	96	114	25	59
Link Distance (ft)			1094	1094	1094				935	935		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	370	370				150	200	200			140	215
Storage Blk Time (%)					1	0				0		
Queuing Penalty (veh)					1	0				0		

Intersection: 6: Truxel Road & Arena Bloulevard

Movement	NB	NB	NB	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	L	T	T	T	T	R	L	L	T	T	T	T
Maximum Queue (ft)	108	127	114	96	33	57	60	84	175	173	166	137
Average Queue (ft)	55	77	63	31	3	23	17	42	112	102	85	30
95th Queue (ft)	95	118	103	72	17	46	48	74	162	150	150	92
Link Distance (ft)		840	840	840	840				996	996	996	996
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	215					145	220	220				
Storage Blk Time (%)									0			0
Queuing Penalty (veh)									0			0

Intersection: 6: Truxel Road & Arena Bloulevard

Movement	SB
Directions Served	R
Maximum Queue (ft)	53
Average Queue (ft)	23
95th Queue (ft)	46
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	140
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 7: East Commerce Way

Movement	WB
Directions Served	R
Maximum Queue (ft)	49
Average Queue (ft)	21
95th Queue (ft)	45
Link Distance (ft)	363
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: East Commerce Way & KSP Arena Driveway

Movement	EB	WB	NB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	TR	L	UL	L	T	T	T	R	UL	T	T	T
Maximum Queue (ft)	17	24	30	17	25	40	51	24	22	56	5	62
Average Queue (ft)	1	4	6	3	3	4	5	1	4	7	0	9
95th Queue (ft)	9	18	19	13	15	22	29	10	17	33	4	36
Link Distance (ft)	395	451			475	475	475			449	449	449
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			430	430				145	200			
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 8: East Commerce Way & KSP Arena Driveway

Movement	SB
Directions Served	R
Maximum Queue (ft)	10
Average Queue (ft)	0
95th Queue (ft)	6
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	170
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Network Summary

Network wide Queuing Penalty: 6

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Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	4:50	4:50	4:50	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	5	5	5	5	5	5	5
# of Recorded Intervals	4	4	4	4	4	4	4
Vehs Entered	17885	18031	17934	17930	18039	17882	17982
Vehs Exited	17890	18044	17910	17980	18055	17871	17949
Starting Vehs	295	319	273	303	320	337	318
Ending Vehs	290	306	297	253	304	348	351
Denied Entry Before	1	1	1	1	2	0	1
Denied Entry After	0	1	2	2	0	2	4
Travel Distance (mi)	6652	6686	6633	6582	6661	6618	6656
Travel Time (hr)	313.2	317.9	313.6	309.8	312.0	310.8	311.5
Total Delay (hr)	111.3	115.3	113.1	111.3	110.5	110.6	110.3
Total Stops	12266	12478	12535	12223	12242	12156	12155
Fuel Used (gal)	309.8	312.1	308.1	307.0	309.0	306.7	308.1

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	4:50	4:50	4:50	4:50
End Time	6:00	6:00	6:00	6:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	5	5	5	5
# of Recorded Intervals	4	4	4	4
Vehs Entered	17741	17805	18038	17926
Vehs Exited	17751	17794	17988	17925
Starting Vehs	345	304	276	305
Ending Vehs	335	315	326	310
Denied Entry Before	3	3	1	0
Denied Entry After	1	1	0	0
Travel Distance (mi)	6572	6629	6637	6633
Travel Time (hr)	308.5	312.3	310.5	312.0
Total Delay (hr)	109.9	112.1	110.2	111.5
Total Stops	11968	12089	12127	12219
Fuel Used (gal)	305.1	307.2	307.2	308.0

Interval #0 Information Seeding

Start Time	4:50
End Time	5:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

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Interval #1 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4486	4540	4504	4486	4417	4427	4453
Vehs Exited	4480	4513	4469	4498	4432	4487	4520
Starting Vehs	295	319	273	303	320	337	318
Ending Vehs	301	346	308	291	305	277	251
Denied Entry Before	1	1	1	1	2	0	1
Denied Entry After	2	0	1	1	3	2	0
Travel Distance (mi)	1687	1705	1665	1664	1665	1639	1659
Travel Time (hr)	79.9	81.1	79.7	78.6	77.6	77.1	77.5
Total Delay (hr)	28.8	29.6	29.5	28.4	27.4	27.5	27.1
Total Stops	3192	3120	3220	3023	3025	2974	2991
Fuel Used (gal)	78.5	79.2	77.6	78.2	76.2	75.7	76.6

Interval #1 Information Recording

Start Time	5:00
End Time	5:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	4387	4539	4465	4465
Vehs Exited	4487	4529	4455	4487
Starting Vehs	345	304	276	305
Ending Vehs	245	314	286	289
Denied Entry Before	3	3	1	0
Denied Entry After	1	1	1	0
Travel Distance (mi)	1653	1720	1631	1669
Travel Time (hr)	77.6	80.7	76.4	78.6
Total Delay (hr)	27.8	28.9	27.3	28.2
Total Stops	3022	3119	2990	3060
Fuel Used (gal)	77.7	79.7	75.9	77.5

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Interval #2 Information

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4470	4489	4535	4527	4487	4476	4630
Vehs Exited	4468	4524	4534	4509	4491	4470	4576
Starting Vehs	301	346	308	291	305	277	251
Ending Vehs	303	311	309	309	301	283	305
Denied Entry Before	2	0	1	1	3	2	0
Denied Entry After	2	4	4	2	2	0	1
Travel Distance (mi)	1657	1660	1699	1672	1641	1633	1735
Travel Time (hr)	77.9	78.9	80.9	79.8	77.3	76.3	80.4
Total Delay (hr)	27.7	28.4	29.4	29.1	27.6	27.0	28.2
Total Stops	2989	3129	3187	3210	3035	2995	3065
Fuel Used (gal)	77.4	77.6	79.0	77.9	77.5	75.0	79.7

Interval #2 Information

Start Time	5:15
End Time	5:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4432	4448	4463	4492
Vehs Exited	4375	4478	4430	4486
Starting Vehs	245	314	286	289
Ending Vehs	302	284	319	295
Denied Entry Before	1	1	1	0
Denied Entry After	3	0	8	1
Travel Distance (mi)	1621	1661	1642	1662
Travel Time (hr)	76.1	78.7	76.5	78.3
Total Delay (hr)	26.7	28.4	27.0	28.0
Total Stops	2903	3084	2994	3059
Fuel Used (gal)	75.5	77.1	75.8	77.3

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Interval #3 Information

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4517	4440	4476	4492	4539	4478	4413
Vehs Exited	4466	4453	4482	4465	4546	4483	4409
Starting Vehs	303	311	309	309	301	283	305
Ending Vehs	354	298	303	336	294	278	309
Denied Entry Before	2	4	4	2	2	0	1
Denied Entry After	3	3	0	1	1	2	2
Travel Distance (mi)	1642	1627	1645	1622	1678	1679	1652
Travel Time (hr)	77.3	76.2	77.4	75.9	78.9	78.2	78.1
Total Delay (hr)	27.3	26.8	27.6	26.8	28.2	27.3	28.3
Total Stops	3070	2988	3070	2987	3133	2975	3075
Fuel Used (gal)	76.5	75.5	76.6	75.3	77.6	77.6	76.7

Interval #3 Information

Start Time	5:30
End Time	5:45
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	4445	4389	4491	4465
Vehs Exited	4424	4390	4528	4465
Starting Vehs	302	284	319	295
Ending Vehs	323	283	282	303
Denied Entry Before	3	0	8	1
Denied Entry After	3	1	1	0
Travel Distance (mi)	1644	1619	1690	1650
Travel Time (hr)	77.0	77.0	79.4	77.5
Total Delay (hr)	27.3	28.0	28.4	27.6
Total Stops	3018	3002	3157	3042
Fuel Used (gal)	75.4	75.9	78.7	76.6

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Interval #4 Information

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4412	4562	4419	4425	4596	4501	4486
Vehs Exited	4476	4554	4425	4508	4586	4431	4444
Starting Vehs	354	298	303	336	294	278	309
Ending Vehs	290	306	297	253	304	348	351
Denied Entry Before	3	3	0	1	1	2	2
Denied Entry After	0	1	2	2	0	2	4
Travel Distance (mi)	1666	1694	1624	1624	1676	1667	1610
Travel Time (hr)	78.2	81.7	75.6	75.5	78.2	79.2	75.5
Total Delay (hr)	27.4	30.5	26.7	27.0	27.3	28.9	26.6
Total Stops	3015	3241	3058	3003	3049	3212	3024
Fuel Used (gal)	77.4	79.6	74.8	75.5	77.6	78.5	75.2

Interval #4 Information

Start Time	5:45
End Time	6:00
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	8	9	10	Avg
Vehs Entered	4477	4429	4619	4489
Vehs Exited	4465	4397	4575	4489
Starting Vehs	323	283	282	303
Ending Vehs	335	315	326	310
Denied Entry Before	3	1	1	0
Denied Entry After	1	1	0	0
Travel Distance (mi)	1654	1630	1674	1652
Travel Time (hr)	77.9	76.0	78.2	77.6
Total Delay (hr)	28.0	26.8	27.5	27.7
Total Stops	3025	2884	2986	3043
Fuel Used (gal)	76.5	74.4	76.8	76.6

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1: Arena Bloulevard & I-5 Southbound Off Ramp Performance by movement

Movement	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.2	0.0
Total Delay (hr)	0.7	1.2	0.1	0.3	0.2	2.6
Total Del/Veh (s)	6.0	4.9	1.2	7.5	4.4	4.6
Vehicles Entered	443	911	410	151	138	2053
Vehicles Exited	444	910	410	152	140	2056
Hourly Exit Rate	444	910	410	152	140	2056
Input Volume	447	900	417	155	132	2051
% of Volume	99	101	98	98	106	100
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0

2: I-5 Northbound Off Ramp & Arena Bloulevard Performance by movement

Movement	EBT	EBR	WBT	NBL	NBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.0	0.1	0.0	0.2	0.2	0.1
Total Delay (hr)	1.4	0.1	1.6	1.5	0.8	5.4
Total Del/Veh (s)	9.7	5.5	7.8	9.4	4.6	7.7
Vehicles Entered	504	95	748	575	596	2518
Vehicles Exited	504	95	748	574	596	2517
Hourly Exit Rate	504	95	748	574	596	2517
Input Volume	503	100	745	570	594	2512
% of Volume	100	95	100	101	100	100
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0

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3: East Commerce Way & Arena Bloulevard Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	2.0	2.8	0.1	0.1	0.1	3.7	0.3	0.0	1.0	0.4	0.0
Total Del/Veh (s)	31.5	32.9	13.8	2.6	47.2	43.3	23.8	9.0	28.1	28.2	26.8	6.1
Vehicles Entered	9	212	721	107	8	7	552	130	1	124	52	12
Vehicles Exited	10	211	722	108	8	7	561	130	1	124	52	12
Hourly Exit Rate	10	211	722	108	8	7	561	130	1	124	52	12
Input Volume	10	218	718	107	8	7	552	124	1	124	52	11
% of Volume	100	97	101	101	100	100	102	105	100	100	100	109
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

3: East Commerce Way & Arena Bloulevard Performance by movement

Movement	SBU	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.2	1.4	0.4	0.2	12.7
Total Del/Veh (s)	31.0	34.0	37.3	2.6	19.0
Vehicles Entered	24	140	40	240	2379
Vehicles Exited	24	140	40	240	2390
Hourly Exit Rate	24	140	40	240	2390
Input Volume	24	145	39	245	2385
% of Volume	100	97	103	98	100
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

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4: Arena Bloulevard & Sally Ride Way Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBR	SBL	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.2	0.2	4.1
Total Delay (hr)	0.0	0.3	1.7	0.0	0.0	0.1	1.8	0.1	0.1	0.0	0.1	0.1
Total Del/Veh (s)	15.0	17.8	7.7	4.7	23.3	22.9	10.1	5.9	21.7	6.0	21.2	4.9
Vehicles Entered	5	62	786	28	1	13	636	38	13	11	14	41
Vehicles Exited	5	62	786	28	1	13	631	38	13	11	14	42
Hourly Exit Rate	5	62	786	28	1	13	631	38	13	11	14	42
Input Volume	6	63	783	29	2	12	623	36	14	11	15	42
% of Volume	83	98	100	97	50	108	101	106	93	100	93	100
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

4: Arena Bloulevard & Sally Ride Way Performance by movement

Movement	All
Denied Delay (hr)	0.1
Denied Del/Veh (s)	0.1
Total Delay (hr)	4.2
Total Del/Veh (s)	9.2
Vehicles Entered	1648
Vehicles Exited	1644
Hourly Exit Rate	1644
Input Volume	1636
% of Volume	100
Denied Entry Before	0
Denied Entry After	0

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5: Innovator Road/South Entrance Road & Arena Bloulevard Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBR	SBL	SBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.2	4.0	3.9	0.1	0.1
Total Delay (hr)	0.0	0.0	1.8	0.2	0.0	0.2	1.5	0.0	0.3	0.1	0.1	0.0
Total Del/Veh (s)	29.4	27.5	9.9	5.5	22.8	23.6	9.0	4.8	16.9	4.6	28.1	6.4
Vehicles Entered	2	4	648	125	7	32	608	2	73	62	11	9
Vehicles Exited	2	4	650	126	7	32	605	2	73	62	12	9
Hourly Exit Rate	2	4	650	126	7	32	605	2	73	62	12	9
Input Volume	2	3	645	126	6	34	590	1	73	61	10	8
% of Volume	100	133	101	100	117	94	103	200	100	102	120	112
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

5: Innovator Road/South Entrance Road & Arena Bloulevard Performance by movement

Movement	All
Denied Delay (hr)	0.2
Denied Del/Veh (s)	0.3
Total Delay (hr)	4.4
Total Del/Veh (s)	9.8
Vehicles Entered	1583
Vehicles Exited	1584
Hourly Exit Rate	1584
Input Volume	1559
% of Volume	102
Denied Entry Before	0
Denied Entry After	0

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6: Truxel Road & Arena Bloulevard Performance by movement

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.2	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	2.8	3.2	0.3	3.2	3.3	2.7	0.2	2.8
Total Delay (hr)	0.0	2.5	3.1	0.6	0.0	1.0	3.9	0.2	0.0	3.3	4.7	0.1
Total Del/Veh (s)	43.3	54.8	37.1	9.5	44.8	54.0	45.8	6.2	75.8	55.8	23.5	3.2
Vehicles Entered	3	158	291	219	3	67	298	107	2	206	711	56
Vehicles Exited	3	159	294	218	3	67	304	107	2	208	707	56
Hourly Exit Rate	3	159	294	218	3	67	304	107	2	208	707	56
Input Volume	4	161	290	214	3	65	289	102	2	209	725	58
% of Volume	75	99	101	102	100	103	105	105	100	100	98	97
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0	0

6: Truxel Road & Arena Bloulevard Performance by movement

Movement	SBU	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.1	0.6
Denied Del/Veh (s)	3.5	2.7	0.1	2.8	0.7
Total Delay (hr)	0.0	1.0	4.8	0.1	25.3
Total Del/Veh (s)	56.2	54.7	26.1	4.9	30.5
Vehicles Entered	1	64	658	109	2953
Vehicles Exited	1	65	652	108	2954
Hourly Exit Rate	1	65	652	108	2954
Input Volume	2	63	663	105	2955
% of Volume	50	103	98	103	100
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

7: East Commerce Way Performance by movement

Movement	WBR	NBT	NBR	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0
Total Delay (hr)	0.1	0.1	0.0	0.1	0.3
Total Del/Veh (s)	3.2	1.2	1.1	0.9	1.2
Vehicles Entered	57	342	76	451	926
Vehicles Exited	58	342	75	451	926
Hourly Exit Rate	58	342	75	451	926
Input Volume	59	344	76	460	939
% of Volume	98	99	99	98	99
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

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8: East Commerce Way & KSP Arena Driveway Performance by movement

Movement	EBR	NBU	NBL	NBT	NBR	SBU	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0		0.2	0.1
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3
Total Del/Veh (s)	4.5	5.2	6.6	0.4	0.5		1.6	1.2
Vehicles Entered	5	34	2	353	10	0	412	816
Vehicles Exited	5	34	2	352	10	0	412	815
Hourly Exit Rate	5	34	2	352	10	0	412	815
Input Volume	6	35	3	356	8	1	419	828
% of Volume	83	97	67	99	125	0	98	98
Denied Entry Before	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0

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Total Network Performance

Denied Delay (hr)	2.6
Denied Del/Veh (s)	0.5
Total Delay (hr)	108.8
Total Del/Veh (s)	21.5
Vehicles Entered	17926
Vehicles Exited	17925
Hourly Exit Rate	17925
Input Volume	65483
% of Volume	27
Denied Entry Before	0
Denied Entry After	0

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Intersection: 1: Arena Bloulevard & I-5 Southbound Off Ramp

Movement	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	T	T	L	L	R
Maximum Queue (ft)	74	107	94	100	112	56	62	73
Average Queue (ft)	32	46	48	48	47	24	26	28
95th Queue (ft)	64	87	82	80	92	48	54	56
Link Distance (ft)	245	245	143	143	143	855	855	855
Upstream Blk Time (%)			0	0	0			
Queuing Penalty (veh)			0	0	0			
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 2: I-5 Northbound Off Ramp & Arena Bloulevard

Movement	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	TR	T	T	T	T	L	L	R	R
Maximum Queue (ft)	139	158	104	121	131	127	119	143	123	99
Average Queue (ft)	59	75	32	45	57	51	53	75	61	47
95th Queue (ft)	105	128	74	94	104	101	95	127	100	80
Link Distance (ft)	252	252	164	164	164	164	693	693	693	693
Upstream Blk Time (%)		0			0	0				
Queuing Penalty (veh)		0			0	0				
Storage Bay Dist (ft)										
Storage Blk Time (%)										
Queuing Penalty (veh)										

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Intersection: 3: East Commerce Way & Arena Bloulevard

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB
Directions Served	UL	L	T	T	T	R	UL	L	T	T	T	R
Maximum Queue (ft)	105	131	131	142	179	49	49	17	128	155	216	136
Average Queue (ft)	52	78	63	65	98	16	13	0	58	72	110	35
95th Queue (ft)	94	118	115	120	155	41	40	8	111	135	187	87
Link Distance (ft)			662	662	662				995	995	995	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	360	360				230	220	220				150
Storage Blk Time (%)					0						3	
Queuing Penalty (veh)					0						4	

Intersection: 3: East Commerce Way & Arena Bloulevard

Movement	NB	NB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	UL	L	T	T	T	R	UL	L	T	T
Maximum Queue (ft)	69	101	50	33	29	14	97	121	78	34
Average Queue (ft)	16	48	16	4	5	4	44	62	30	2
95th Queue (ft)	48	86	41	19	20	13	84	104	67	17
Link Distance (ft)			413	413	413				450	450
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	290	290				200	200	200		
Storage Blk Time (%)										
Queuing Penalty (veh)										

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Intersection: 4: Arena Bloulevard & Sally Ride Way

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	UL	T	T	T	R	UL	T	T	T	R	L	TR
Maximum Queue (ft)	72	101	106	162	21	50	94	130	185	61	39	22
Average Queue (ft)	27	24	24	50	2	11	29	41	73	11	10	6
95th Queue (ft)	59	71	70	128	13	35	71	101	155	44	32	22
Link Distance (ft)		995	995	995			954	954	954			463
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	215				150	180				150	100	
Storage Blk Time (%)				0					1			
Queuing Penalty (veh)				0					0			

Intersection: 4: Arena Bloulevard & Sally Ride Way

Movement	SB	SB
Directions Served	LT	R
Maximum Queue (ft)	38	43
Average Queue (ft)	9	16
95th Queue (ft)	29	36
Link Distance (ft)	359	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		57
Storage Blk Time (%)	0	0
Queuing Penalty (veh)	0	0

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Intersection: 5: Innovator Road/South Entrance Road & Arena Bloulevard

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB
Directions Served	UL	L	T	T	T	R	UL	T	T	T	R	L
Maximum Queue (ft)	25	28	130	109	177	114	63	90	124	172	8	76
Average Queue (ft)	2	3	44	34	59	26	16	21	32	60	1	31
95th Queue (ft)	13	16	97	80	132	70	45	62	90	137	6	63
Link Distance (ft)			954	954	954			1094	1094	1094		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	235	235				150	190				125	135
Storage Blk Time (%)					1					1		
Queuing Penalty (veh)					1					0		

Intersection: 5: Innovator Road/South Entrance Road & Arena Bloulevard

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	L	TR	R
Maximum Queue (ft)	50	28	24	20	18
Average Queue (ft)	16	6	3	3	2
95th Queue (ft)	37	22	15	15	11
Link Distance (ft)		490	490	490	490
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	135				
Storage Blk Time (%)					
Queuing Penalty (veh)					

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Intersection: 6: Truxel Road & Arena Bloulevard

Movement	EB	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB
Directions Served	UL	L	T	T	T	R	UL	L	T	T	R	UL
Maximum Queue (ft)	133	144	102	116	127	120	64	84	163	193	55	161
Average Queue (ft)	56	67	34	52	58	48	17	37	86	101	28	64
95th Queue (ft)	109	115	82	97	109	98	47	71	147	166	50	126
Link Distance (ft)			1094	1094	1094				935	935		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	370	370				150	200	200			140	215
Storage Blk Time (%)					0	0			0	3		0
Queuing Penalty (veh)					0	0			0	3		0

Intersection: 6: Truxel Road & Arena Bloulevard

Movement	NB	NB	NB	NB	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	L	T	T	T	T	R	UL	L	T	T	T	T
Maximum Queue (ft)	204	218	162	145	128	54	59	83	170	155	156	124
Average Queue (ft)	101	113	100	77	29	14	14	40	110	100	79	27
95th Queue (ft)	163	175	149	138	89	37	45	72	157	139	140	83
Link Distance (ft)		840	840	840	840				996	996	996	996
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	215					145	220	220				
Storage Blk Time (%)	0	0			0							0
Queuing Penalty (veh)	0	0			0							0

Intersection: 6: Truxel Road & Arena Bloulevard

Movement	SB
Directions Served	R
Maximum Queue (ft)	65
Average Queue (ft)	26
95th Queue (ft)	52
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	140
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 7: East Commerce Way

Movement	WB
Directions Served	R
Maximum Queue (ft)	50
Average Queue (ft)	25
95th Queue (ft)	44
Link Distance (ft)	363
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: East Commerce Way & KSP Arena Driveway

Movement	EB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	TR	UL	L	T	T	UL	T	T	T
Maximum Queue (ft)	19	36	19	1	2	5	45	4	60
Average Queue (ft)	3	9	1	0	0	0	5	0	10
95th Queue (ft)	14	26	8	1	2	3	24	3	38
Link Distance (ft)	395			475	475		449	449	449
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)		430	430			200			
Storage Blk Time (%)									
Queuing Penalty (veh)									

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Network Summary

Network wide Queuing Penalty: 13

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