VALLEJO PANDA EXPRESS PROJECT
CATEGORICAL EXEMPTION

VALLEJO, CALIFORNIA

LSA

Feburary 2024

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CATEGORICAL EXEMPTION

VALLEJO, CALIFORNIA

Submitted to:

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TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

LIST OF ABBREVIATIONS AND ACRONYMS

ADA	Americans with Disabilities Act
AFY	acre feet per year
APN	Assessor's Parcel Number
BAAQMD	Bay Area Air Quality Management District
B/LR	Business/Limited Residential
bgs	below ground surface
BMP	best management practice
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CalRecycle	California Department of Resources Recycling and Recovery
CC	Central Corridor Commercial
CEQA	California Environmental Quality Act
CGP	Construction General Permit
CH_4	methane
City	City of Vallejo
Clean Air Plan	BAAQMD 2017 Clean Air Plan
CO	carbon monoxide
CO_2	carbon dioxide
dB	decibel(s)
dBA	A-weighted decibel(s)
DMA	Drainage Management Area
EIR	Environmental Impact Report
FEMA	Federal Emergency Management Agency

General Waste Discharge Permit	General Waste Discharge Requirements for Limited Threat Discharges to Surface Waters
GHG	greenhouse gas
gpd	gallons per day
GWP	Global Warming Potential
HFCs	hydrofluorocarbons
HVAC	heating, ventilation, and air conditioning
I-80	Interstate 80
in/sec	inch(es) per second
ITE	Institute of Transportation Engineers
Ldn	day-night average level
Leq	equivalent continuous sound level
LID	Low Impact Development
L_{max}	maximum instantaneous noise level
LUST	Leaking Underground Storage Tank
MRP	Municipal Regional Stormwater NPDES Permit
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
O_3	ozone
Pb	lead
PFCs	perfluorocarbons
PG&E	Pacific Gas and Electric
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter

PM_{10}	particulate matter less than 10 microns in diameter
POTW	publicly owned treatment works
PPV	peak particle velocity
proposed project	Vallejo Panda Express Project
RCM	Regulatory Compliance Measure
ROG	reactive organic gases
San Francisco Bay RWQCB	San Francisco Bay Regional Water Quality Control Board
SCP	Stormwater Control Plan
SF_6	sulfur hexafluoride
SO_2	sulfur dioxide
SolTrans	Solano County Transit
SPL	sound power level
Specific Plan	White Slough Specific Plan
SR	State Route
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
UWMP	Urban Water Management Plan
VFWD	Vallejo Flood and Wastewater District
VMC	Vallejo Municipal Code
VMT	vehicle miles traveled
VPD	Vallejo Police Department
VTC	Vallejo Transit Center

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1.0 INTRODUCTION

Article 19 of the *California Environmental Quality Act (CEQA) Guidelines* includes, as required by Public Resources Code Section 21084, a list of classes of projects that have been determined not to have a significant effect on the environment and, as a result, are exempt from review under CEQA. This document has been prepared to serve as the basis for compliance with CEQA as it pertains to the Vallejo Panda Express Project (proposed project). This document demonstrates that the proposed project qualifies for a CEQA Exemption as an Infill Development Project (Class 32), consistent with the provisions of *CEQA Guidelines* Sections 15332 and 15300.2, and provides information for City of Vallejo (City) decision makers regarding a finding that the proposed project is exempt under CEQA.

In summary, this document demonstrates that the proposed project qualifies for an exemption under *CEQA Guidelines* Section 15332 as an infill development project because: (1) the proposed project is consistent with the applicable General Plan designation and all applicable General Plan policies, as well as the applicable Zoning designations and regulations; (2) the proposed project would occur within the City limits on a site of less than 5 acres in size that is substantially surrounded by urban uses; (3) the project site has no value for endangered, rare, or threatened species; (4) the proposed project would not result in any significant effects related to traffic, noise, air quality, or water quality; and (5) the project site can be adequately served by all required utilities and public services. In addition, none of the exceptions to categorical exemptions identified in *CEQA Guidelines* Section 15300.2 apply; therefore, the proposed project is categorically exempt from CEQA review as a Class 32 In-Fill Development Project pursuant to *CEQA Guidelines* Sections 15300 and 15332.

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2.0 PROJECT DESCRIPTION

The following describes the proposed Vallejo Panda Express Project. This section includes a description of the project's location and existing site characteristics, project components, required approvals, and entitlements. The City is the lead agency for review of the project under CEQA.

2.1 PROJECT SITE

The following section describes the location and characteristics of the project site and provides a brief overview of the existing land uses within and in the vicinity of the site.

2.1.1 Location

The 1.57-acre (68,354-square-foot) project site is located at 4301 Sonoma Boulevard in Vallejo (Assessor's Parcel Number [APN] 0051-250-680), Solano County. The project site is currently undeveloped and is bounded by a self-storage facility to the north, a gas station and restaurant to the south, a vacant undeveloped parcel to the west, and State Route (SR) 29 (Sonoma Boulevard) to the east.

Regional access to the project site is primarily provided by Sonoma Boulevard, which directly abuts the project site, and SR-37, located approximately 0.25 mile to the west of the project site. Figure 2-1 depicts the site's regional and local context. Figure 2-2 depicts the project location on an aerial photograph of the project site. All figures are provided at the end of this section.

2.1.2 Existing Site Conditions

The generally level project site is currently vacant, with remnants of previous developments and vegetated areas. A concrete building slab is located within the western portion of the site, and an approximately 5-foot-deep basin is located in the eastern portion of the site. An approximately 0.102-acre wetland swale is located within the basin.[1]

2.1.3 Regulatory Setting

The City's General Plan Land Use Map designates the project site as Business/Limited Residential. The Business/Limited Residential (B/LR) designation allows professional office uses, light industrial uses, commercial/business uses, and residential uses.[2]

The project site is designated as Central Corridor Commercial (CC) on the City's Zoning Map.[3] The CC zoning district is intended to create and establish regulations for community-serving mixed-use

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1 Salix Consulting. 2023. *Aquatic Resources Delineation for the 1.6-Acre 4301 Sonoma Boulevard Study Area.* February.

2 City of Vallejo. 2020. General Plan 2040 Land Use Map. February 11. Website: https://ci.vallejo.ca.us/common/pages/DisplayFile.aspx?itemId=17961494 (accessed August 14, 2023).

3 City of Vallejo. 2018. Zoning Map. Website: https://covit.maps.arcgis.com/apps/View/index.html?appid=7638bbc2a29d4c4387366372429f6daa&extent=-122.3063,38.0807,-122.2239,38.1134 (accessed August 14, 2023).

areas along the Sonoma Boulevard Central Corridor. Permitted uses within the CC zoning district include mixed-use with housing, and medium- and high-density residential and or nonresidential uses at street level.[4]

2.2 PROPOSED PROJECT

The proposed project would consist of the demolition of the existing concrete slab and parking lot, located in the west and northwest portions of the project site, and the construction of an approximately 2,700-square-foot commercial restaurant building, to be occupied by Panda Express, with a drive-through feature. Vehicular access to the project site would be provided via a new internal drive aisle connecting to an existing access roadway and driveway along Sonoma Boulevard. The proposed project would not include any grading or earth disturbance within the wetlands on the eastern portion of the site. Figure 2-3 depicts the conceptual site plan for the proposed project.

2.2.1 Building Program

The proposed project would include the construction of an approximately 2,700-square-foot, one-story restaurant building with a drive-through feature. The proposed building would be in the southwest corner of the project site adjacent to the existing restaurant to the south. The proposed building would be a maximum of 23 feet, 3 inches in height. Refer to Figure 2-4 for the north and south building elevations for the proposed project and to Figure 2-5 for the east and west building elevations. Additionally, the proposed building would include a 363-square-foot patio area and a 306-square-foot trash enclosure area.

2.2.2 Parking and Circulation

A total of 33 automobile parking spaces would be provided throughout the project site, of which two stalls would be Americans with Disabilities Act (ADA) accessible.

The proposed project would also include pavement and utility improvements to the access roadway to the south of the project site. These improvements would begin at the southwest corner of the project site and extend to Yolano Drive, south of the project.

2.2.3 Operations

The proposed project would be open Monday through Sunday from 10:00 a.m. to 10:00 p.m. It is anticipated that the proposed project would employ up to three employees per shift.

2.2.4 Open Space and Landscaping

The proposed project would include a total of 15,484 square feet of landscaping on the project site. The majority of the landscaping would be around the perimeter of the project site and would consist of trees, shrubs, vines, and ground cover. Approximately 16 trees would be planted as part of the

[4] City of Vallejo. Municipal Code Library. Website https://library.municode.com/ca/vallejo/codes/municipal_code?nodeId=TIT16ZO_PTIIDIDETY_CH16.204CODI_16.204.01PUAP (accessed December 29, 2023).

proposed project. A total of 2,895 square feet of bioretention planters would be provided on site on the south, east, and west sides of the project site.

2.2.5 Utilities and Infrastructure

The project site is located in an urban area and is currently served by existing utilities, including water, sanitary sewer, storm drainage, electricity, and telecommunications. Existing and proposed utility connections are discussed below.

2.2.5.1 Water

The proposed project would install four 1.5-inch water lines south of the project site, which would connect to the existing 8-inch main line located within Yolano Drive to provide water service to the project site. Water service would be provided by the City. Additionally, a 1.5-inch water meter and backflow preventer would be installed south of the project site along the private utility easement adjacent to Yolano Drive.

2.2.5.2 Wastewater

Wastewater generated at the project site would be collected by the existing 6-inch sanitary sewer line located south of the project site (along the existing driveway), connected via a new 4-inch tie-in and a new 4-inch point of connection to the proposed building. Additionally, a 1,250-gallon grease interceptor would be installed, connecting to a new 4-inch grease sewer point of connection. A sewer manhole would be installed along the northwest boundary of the project site for maintenance purposes. The proposed project would remove and replace a section of the existing sanitary sewer pipe 3 feet beyond the new manhole along the northwest end of the project site. The Vallejo Flood and Wastewater District would provide wastewater service to the project site.

2.2.5.3 Stormwater

Approximately 13,027-square-foot (19 percent) of the 68,354-square-foot (1.57-acre) project site is currently covered with impervious surfaces, and 55,327 square feet is covered with pervious surfaces. Development of the proposed project would result in new and replaced impervious surfaces. The proposed project would increase impervious surfaces by 19,441 square feet on the project site. Approximately 32,468 square feet (47 percent) of the project site would be covered by impervious surfaces. As described above, the proposed project would include approximately 2,895 square feet of bioretention planters that would be used for treatment and storage of stormwater.

2.2.5.4 Power

Electric service to the project site would be provided via a transformer directly southwest of the project site. New electrical lines would be installed to connect to the existing transformer. Electrical service to the site would be provided by Pacific Gas and Electric (PG&E).

2.2.6 Grading and Construction

To prepare the project site for construction, remnants from previous developments and existing vegetation would be removed. In total, 40,975 square feet of land would be disturbed. The project site would be excavated to a depth of approximately 7 feet below existing ground surface for

trenching utilities at the southwest sewer point connection, 5 feet below existing ground surface for trenching utilities at the southwest storm drain connection, and 3.5 feet below existing ground surface for trenching utilities for the water system. Approximately, 2,440 cubic yards of soil would be excavated from the project site, of which 335 cubic yards would be kept on site and 2,105 cubic yards would be hauled off site. Project construction is estimated to begin July 8, 2024, and would occur over an approximate 9-month period.

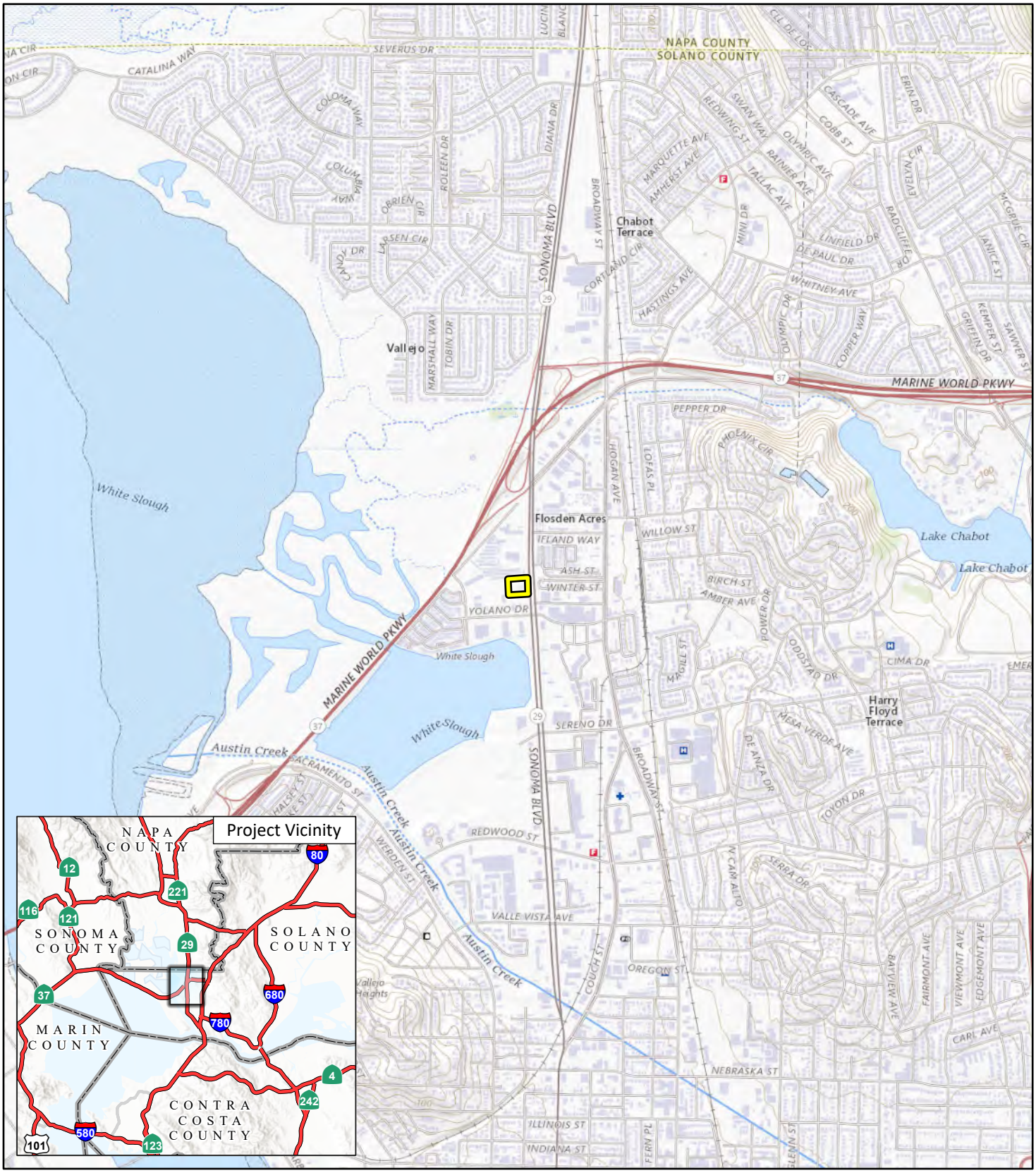
2.3 PROJECT APPROVALS

A number of permits and approvals would be required for the proposed project. A list of potential permits and approvals that may be required is provided in Table 2.A.

Table 2.A: Potential Permits and Approvals

Lead Agency	Potential Permits/Approvals
City of Vallejo	● CEQA Categorical Exemption and streamlined review ● Use Permit ● Architectural and site approval ● Provision of grading, construction, and Stormwater Pollution Prevention Plan permits and approvals

Source: LSA (2024).
CEQA = California Environmental Quality Act



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Project Location

FIGURE 2-1

N

0 1000 2000
FEET

SOURCE: USGS The National Map (2017)

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Vallejo Panda Express Project

Project Location and Regional Vicinity

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Project Site

FIGURE 2-2

N

0 50 100

FEET

SOURCE: Nearmap (2023)

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Vallejo Panda Express Project

Aerial Photograph of Project Site

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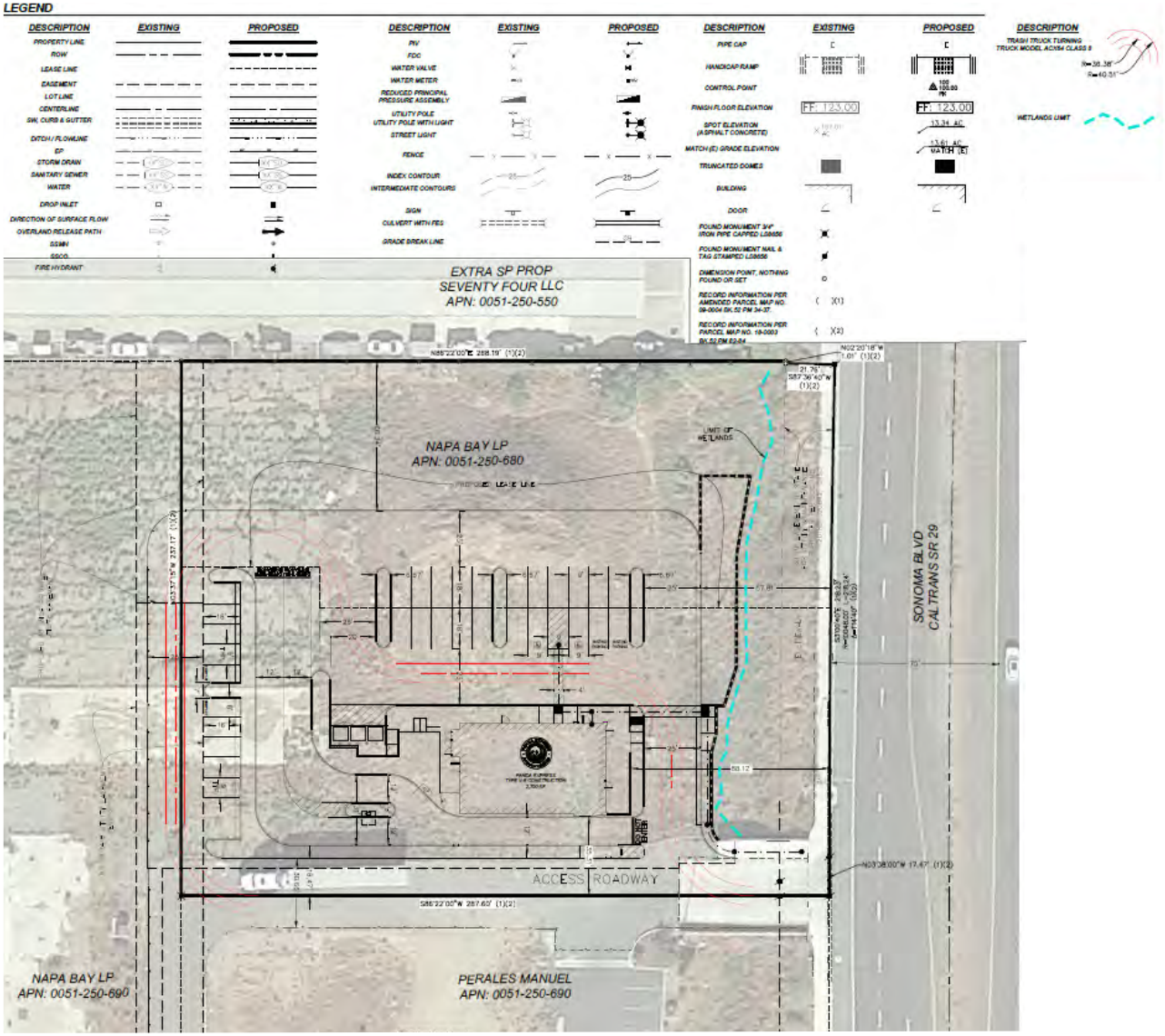

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FIGURE 2-3

0 40 80

FEET

SOURCE: CWE

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Vallejo Panda Express Project

Site Plan

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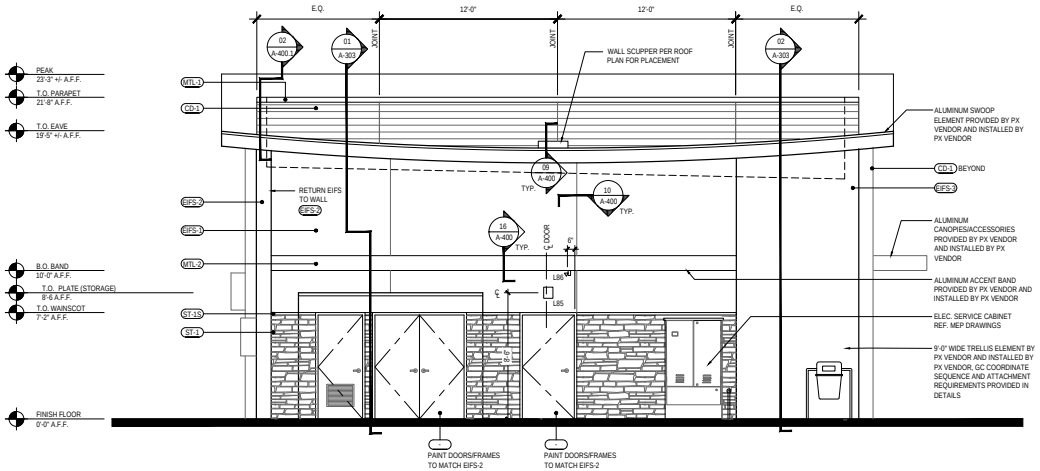
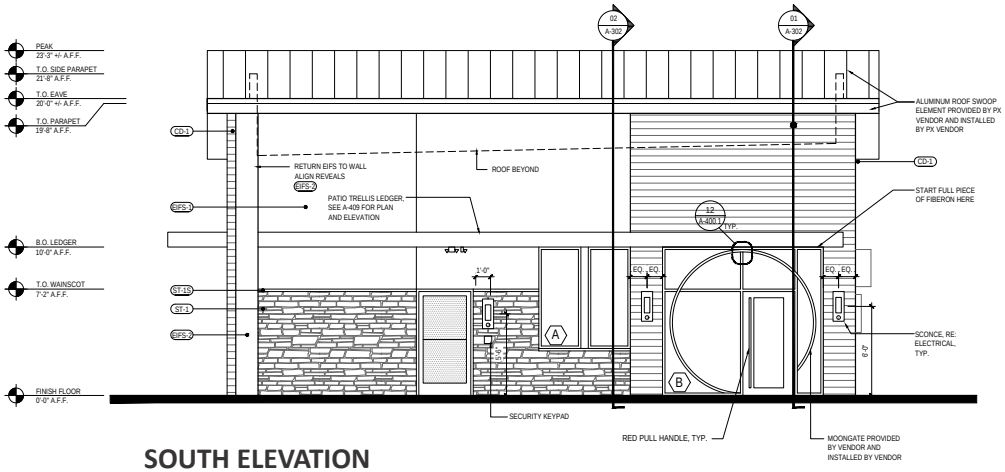


NORTH ELEVATION



SOUTH ELEVATION

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FIGURE 2-4

0 6.5 13

FEET

SOURCE: Gary Wang & Associates, Inc.

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Vallejo Panda Express Project

Proposed Conceptual Building Elevations – North and South

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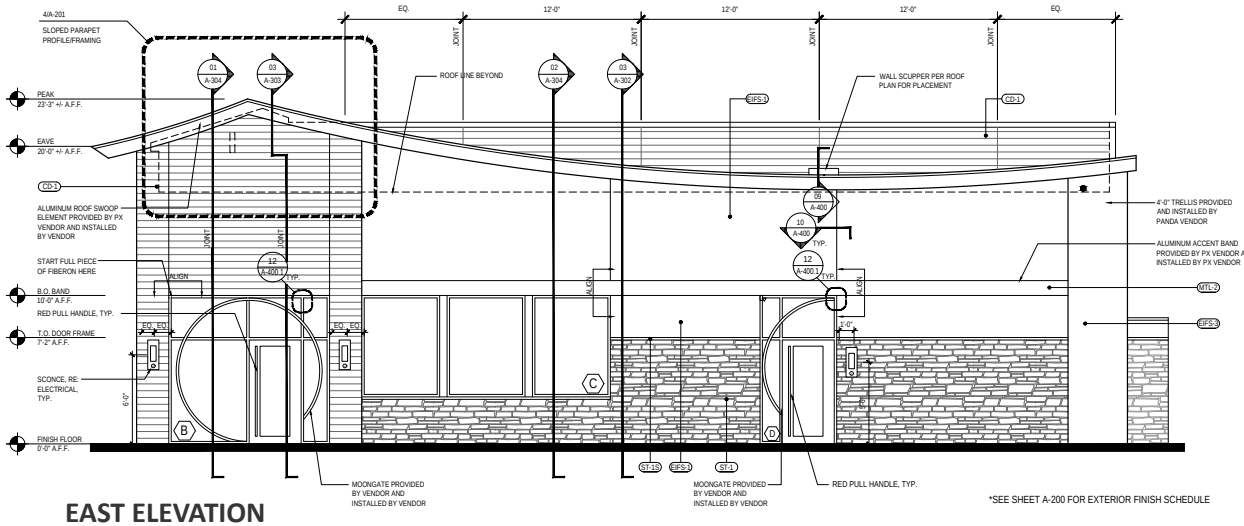
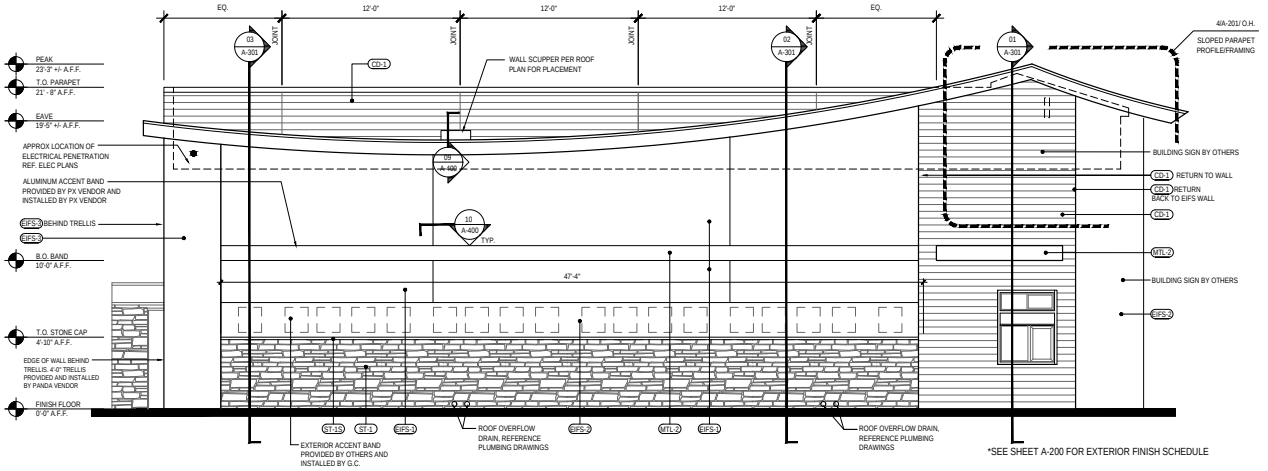


EAST ELEVATION



WEST ELEVATION

LSA

FIGURE 2-5

0 6.5 13

FEET

SOURCE: Gary Wang & Associates, Inc.

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Vallejo Panda Express Project

Proposed Conceptual Building Elevations – East and West

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3.0 EXEMPTIONS

Article 19 of the *CEQA Guidelines* includes, as required by Public Resources Code Section 21084, a list of classes of projects that have been determined not to have a significant effect on the environment and, as a result, are exempt from review under CEQA. This document has been prepared to serve as the basis for compliance with CEQA as it pertains to the proposed project, and to demonstrate that the project qualifies for a CEQA Exemption as an Infill Development Project, consistent with the provisions of *CEQA Guidelines* Sections 15332 and 15300.2. Specifically, the information provided herein shows that:

a. The project qualifies for an exemption under *CEQA Guidelines* Section 15332 (i.e., Class 32) and, as a result, would not have a significant effect on the environment;

b. No exceptions to the infill exemption, as identified in *CEQA Guidelines* Section 15300.2, apply to the proposed project.

CEQA Guidelines Section 15332 is applicable to projects characterized as infill development meeting the following conditions:

a. The project is consistent with the applicable general plan designation and all applicable general plan policies as well as with applicable zoning designation and regulations.

b. The proposed development occurs within city limits on a project site of no more than 5 acres substantially surrounded by urban uses.

c. The project site has no value as habitat for endangered, rare, or threatened species.

d. Approval of the project would not result in any significant effects relating to traffic, noise, air quality, or water quality.

e. The site can be adequately served by all required utilities and public services.

The analysis below concludes, based on substantial evidence, that the project qualifies for a Categorical Exemption under *CEQA Guidelines* Section 15332 (e.g., Class 32) and, as a result, would not have a significant effect on the environment. In addition, the analysis shows that none of the exceptions identified in *CEQA Guidelines* Section 15300.2 apply; therefore, the proposed project is categorically exempt from CEQA review.

3.1 CRITERION SECTION 15332(A): GENERAL PLAN AND ZONING CONSISTENCY

Criterion: *The project is consistent with the applicable general plan designation and all applicable general policies as well as with applicable zoning designation and regulations.*

The proposed project is consistent with the applicable General Plan designation and all applicable General Plan policies, as well as with the applicable zoning designations and regulations, as discussed below.

3.1.1 General Plan

The project site is designated Business/Limited Residential (B/LR) in the City of Vallejo General Plan.[5] The General Plan designation intends for this site to consist of primarily industrial and business uses. "Industrial use" refers to manufacturing, assembly, and research and development. Restaurants that cater to the needs of businesses, employees, and residents of the surrounding area are also accommodated under this designation.

The proposed project would result in the construction of an approximately 2,700-square-foot Panda Express restaurant building with a drive-through feature. The proposed building would be in the southwest corner of the project site, adjacent to the existing restaurant to the south. The proposed project meets the requirements of the B/LR land use that is permitted in the applicable zoning designation, as shown below, under the B/LR land use designation. The proposed project is also within the 35-foot height limit established in the General Plan for this land use designation. Therefore, the proposed project would be consistent with the site's General Plan designation.

3.1.2 Specific Plan

The project site is within the White Slough Specific Plan (Specific Plan) area, in Development Zone 1A. An Environmental Impact Report (EIR) was certified by the City Council for the Specific Plan on November 28, 1995. Zone 1A is intended to provide a mix of civic, commercial, industrial, and residential uses. The proposed project would be consistent with the vision for the area that is permitted for commercial uses, "eating and drinking establishments," "retail services-general," and "personal services-general."

3.1.3 Zoning

The project site is zoned Central Corridor (CC). The CC Zoning District is intended to create and establish regulations for community serving mixed-use areas along the Sonoma Boulevard Central Corridor. Permitted uses within the CC zoning district include mixed uses with housing, medium- and high-density residential or nonresidential uses at street level.

As stated above, the proposed project would result in the construction of an approximately 2,700-square-foot, one-story restaurant building. Commercial and restaurant activities are allowed in the CC district; therefore, the proposed project would be permitted within the CC zoning district. The proposed project would be within the maximum height allowed for the project site in the General Plan, which is 35 feet. Therefore, the proposed project would be consistent with the site's zoning designation.

3.2 CRITERION SECTION 15332(B): PROJECT LOCATION, SIZE, AND CONTEXT

Criterion: *The proposed development occurs within city limits on a project site of no more than five acres substantially surrounded by urban uses.*

[5] City of Vallejo General Plan 2040 Website: https://www.cityofvallejo.net/common/pages/DisplayFile.aspx?itemId=17961496 (accessed August 29, 2023).

The proposed project is located within the Vallejo city limits on a project site of less than 5 acres. The site is substantially surrounded by urban uses, including self-storage facilities, SR-37, SR-29, restaurants, and mobile home parks.

The project site is located within the incorporated limits of the City of Vallejo on a 1.57-acre site. The site is currently vacant. Immediately south of the project site, an existing restaurant and gas station and surface parking lot are present. The project site is surrounded by properties with urban land uses and paved public streets (see Figure 2-2). Therefore, the proposed project meets the criteria of *CEQA Guidelines* Section 15332(b).

3.3 CRITERION SECTION 15332(C): ENDANGERED, RARE, OR THREATENED SPECIES

Criterion: *The project site has no value, as habitat for endangered, rare, or threatened species.*

The project site has no value as habitat for endangered, rare, or threatened species. The project site is undeveloped and consists of weedy annual species and ruderal vegetation; no trees are present within the site. The project site contains a 0.102-acre wetland swale along the eastern boundary of the project site; however, the proposed project would not include any grading or earth disturbance within the wetlands on the eastern portion of the site. The proposed development would be set back approximately 22 feet from the existing wetland swale and no development would occur within this area. Additionally, there are no existing buildings that could potentially provide habitat for special-status bats.

For the reasons stated above, the proposed project meets the criteria of *CEQA Guidelines* Section 15332(c).

3.4 CRITERION SECTION 15332(D): TRAFFIC, NOISE, AIR QUALITY, OR WATER QUALITY

Criterion: *Approval of the project would not result in any significant effects relating to traffic, noise, air quality, or water quality.*

Relative to *CEQA Guidelines* Section 15332(d), the following provides a discussion demonstrating that the proposed project would not result in a significant effect on traffic, noise, air quality, and water quality, and that the project adheres to the *CEQA Guidelines* Section 15332(d) criterion.

3.4.1 Traffic, Parking, Access, and Circulation

The proposed project would result in the construction of a new 2,700-square-foot restaurant building with dual drive-through lanes. Trip generation is typically estimated based on the trip generation rates from the latest *Institute of Transportation Engineers (ITE) Trip Generation Manual*. The latest and most recent version (11th Edition, 2021) of the ITE Manual has been utilized for this trip generation analysis. As stated above, the proposed project would construct a fast-food restaurant with dual drive-through lanes. The hours of operation for the proposed project would be from 10:00 a.m. to 10:00 p.m. As project operations would begin after the typical a.m. peak period (i.e., after 9:00 a.m.), using peak-hour trip rates would lead to an overestimation of a.m. conditions. The a.m. peak hours for the proposed project would occur after 10:00 a.m. As a result, trip rates for Land Use Code 930 (Fast Casual Restaurant) were utilized for the a.m. peak hour to provide a more

realistic trip generation forecast. The a.m. peak hours for Land Use Code 930 would be lower compared to the a.m. peak hours for Land Use Code 934, as Land Use Code 934 assumes an earlier opening time than the proposed project. During daily p.m. peak hours, trip rates for Land Use Code 934 (Fast-Food Restaurant with Drive-Through Window) were utilized.

Table 3.A, below, summarizes the trip generation for the proposed project. As presented in Table 3.A, the proposed project is forecast to generate approximately 1,136 net daily trips, approximately 4 total a.m. peak-hour trips, and approximately 40 total p.m. peak-hour trips. The new trips generated by the proposed project would result in a total increase of fewer than 100 trips during the a.m. and p.m. peak hours; therefore, as identified in the Trip Generation Analysis prepared for the proposed project,[6] which is included as Appendix A, the new level of project-generated traffic would not be considered significant.

Table 3.A Trip Generation Rates

Land Use	Quantity	Units	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Trip Rates[1]									
Fast Casual Restaurant[2]		TSF	0.714	0.715	1.43	--	--	--	--
Fast-Food Restaurant with Drive-Through Window[3]		TSF	--	--	--	17.18	15.85	33.03	467.48
Project Trip Generation									
Panda Express with Drive-Through	2.7	TSF	2	2	4	46	43	89	1,262
Pass-by3 4 (0% AM, 55% PM, 10% Daily)			0	0	0	-25	-24	-49	-126
Net New Trip Generation			**2**	**2**	**4**	**21**	**19**	**40**	**1,136**

Source: *2021 Institute of Transportation Engineers Trip Generation Manual,* 11th Edition.

1 Trip rates from the Institute of Transportation Engineers *Trip Generation* Manual, 11th Edition (2021).

2 Land Use Code (930) – Fast Casual Restaurant

3 Fast-Food Restaurant with Drive-Through Window (Drive-Through Window Land Use: 0% AM (assumed), 55% PM, and 10% daily (estimated).

TSF = thousand square feet

The project site is located in northern Vallejo and would be readily accessible to pedestrians, bicyclists, and transit users. Given the nature of the proposed development site, users are primarily expected to access the site via automobile. The proposed project's driveway and surface-level parking would be adequate to serve the project's vehicular traffic. Regional access to the project site is provided from Interstate 80 (I-80) and SR 29. Vehicular access to and from the project site would not change from existing conditions.

Public access to the project site is provided by a local municipal bus line (Solano County Transit [SolTrans] Lines R, 2, 3 and 84), with bus stops approximately 0.20 mile from the project site. These bus lines provide access to and from the Vallejo Transit Center (VTC), Fairfield, Richmond, and Six Flags among other destinations. The proposed project would not make major modifications to the existing pedestrian facilities at the project site.

Implementation of the proposed project would increase the daytime population at the project site, resulting in approximately 1,136 net daily trips; however, the project is not expected to result in any

6 RK Engineering Group, Inc. 2022. *Sonoma Boulevard & Yolano Drive Panda Express Project Trip Generation & Vehicle Miles Traveled (VMT) Screening Assessment, City of Vallejo, CA.*

significant adverse impacts to roadway operations or intersections. Therefore, project implementation would not result in changes to the City's transportation and circulation system that could conflict with adopted policies, plans, or programs regarding transit, bicycle, or pedestrian facilities. The proposed project would not otherwise decrease the performance or safety of such facilities or cause a substantial increase in transit demand that cannot be accommodated by existing or proposed transit capacity or alternative travel modes.

3.4.2 Noise

The following is based on the *Noise Analysis for the Vallejo Panda Express Project,* prepared for the proposed project, which is included in Appendix C.[7]

A project will normally have a significant effect on the environment related to noise if it would substantially increase the ambient noise levels for adjoining areas or conflict with the adopted environmental plans and goals of the community in which it is located. Noise impacts can be described in three categories. The first category is audible impacts, which refers to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3 decibels (dB) or greater because this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1 and 3 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise levels of less than 1 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 A-weighted decibels (dBA). Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by the feeling of pain in the ear. This is called the threshold of pain. A sound level of 160–165 dBA will result in dizziness or loss of equilibrium. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying, less developed areas.

The first is audible impacts that increase noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3 dB or greater since this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, is a change in the noise level between 1 and 3 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise levels of less than 1 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

[7] LSA Associates, Inc. 2024. *Noise Analysis – Vallejo Panda Express Project.* February 2.

Certain land uses are considered more sensitive to noise than others. Examples of these include residential areas, educational facilities, hospitals, childcare facilities, and senior housing. The closest sensitive receptor to the project is the existing mobile home community opposite of Sonoma Boulevard, which is approximately 150 feet from the project site property line.

The primary existing noise sources in the project area are transportation facilities, including Sonoma Boulevard and Yolano Drive. In addition, commercial uses operations, such as car wash operations and parking lot activities, are audible at the project site.

In order to assess the existing noise conditions in the area, long-term noise measurements were conducted at the project site. Two long-term, 24-hour measurements were taken from August 24, 2023, to August 25, 2023. The locations of the noise measurements and the results are summarized in Table 3.B. Noise measurement data are provided in Attachment B of this analysis.

Table 3.B: Existing Noise Level Measurements

Location Number	Location Description	Daytime Noise Levels[1] (dBA L_{eq})	Nighttime Noise Levels[3] (dBA L_{eq})	Average Daily Noise Levels (dBA L_{dn})	Primary Noise Sources
LT-1	East of Sonoma Boulevard, on a tree by the gate at Vallejo Mobile Home Community and RV Park, approximately 100 ft away from the Sonomo Boulevard centerline	69.4–73.9	63.1–69.2	74.0	Traffic on Sonoma Boulevard. Occasional community activity noise.
LT-2	On a tree east of the parking lot at MTS Training Academy, approximately 70 ft away from the Yolano Drive centerline.	58.4–63.7	50.0–61.6	64.3	Traffic on Yolano Drive and Sonoma Boulevard. Car wash operations. Occasional parking lot activities.

Source: Compiled by LSA (2024).
[1] Daytime Noise Levels = noise levels during the hours of 7:00 a.m. to 10:00 p.m.
[3] Nighttime Noise Levels = noise levels during the hours of 10:00 p.m. to 7:00 a.m.
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibel(s)
ft = foot/feet
L_{dn} = day-night average level
L_{eq} = equivalent continuous sound level

3.4.2.1 Applicable Noise Standards

The applicable noise standards governing the project site include the criteria in the City's General Plan and the City of Vallejo Municipal Code (VMC).

City of Vallejo. The City of Vallejo provides noise and land use compatibility standards in the Noise Element of the 2040 General Plan. In addition, the City regulates noise in Section 16.502.09 of the City of Vallejo Municipal Code, as detailed below.

> ***Vallejo General Plan 2040.*** The General Plan Noise Element provides the City's goals and policies related to noise. The City has identified the following policies and actions in the Noise Element that are applicable to the project:

- **Policy NBE-5.13 Noise Control**. Ensure that noise does not affect quality of life in the community.
    - **Action NBE-5.13A** Continue to require that new noise-producing uses are located sufficiently far away from noise-sensitive receptors and/or include adequate noise mitigation, such as screening, barriers, sound enclosures, noise insulation, and/or restrictions on hours of operation.
    - **Action NBE-5.13B** Update City regulations to require that parking, loading, and shipping facilities and all associated mechanical equipment be located and designed to minimize potential noise and vibration impacts on residential neighborhoods.
    - **Action NBE-5.13C** Update City regulations to restrict the allowable hours to between 7 a.m. and 7 p.m. on weekdays for construction, demolition, maintenance, and loading/unloading activities that may impact noise-sensitive land use.
    - **Policy NBE-5.13 Vibration Control**. Ensure that vibration does not affect quality of life in the community.
    - **Action NBE-5.14A** Update City regulations to establish quantified vibration level limits similar to commonly used guidelines found in the Federal Transit Administration document “Transit Noise and Vibration Impact Assessment” (2006).
- **Policy NBE-5.15 Noise Compatibility Standards**. Apply the General Plan noise and land use compatibility standards to all new residential, commercial, and mixed-use development and redevelopment.
    - **Action NBE-5.15E** When approving new development, limit project-related noise increases to the following for permanent stationary and transportation-related noise sources:
        - no more than 10 dB in non-residential areas;
        - no more than 5 dB in residential areas where the with-project noise level is less than the maximum "normally acceptable" level in the Noise and Land Use Compatibility figure; and
        - no more than 3 dB where the with-project noise level exceeds the "normally acceptable" level in Noise and Land Use Compatibility figure.
    - **Action NBE-5.15F** Require acoustical studies with appropriate mitigation measures for projects that are likely to be exposed to noise levels that exceed the ‘normally acceptable’ standard and for any other projects that are likely to generate noise in excess of these standards.

City of Vallejo Municipal Code. This project utilizes the City’s noise control guidelines, found in Section 16.502.09, for determining and mitigating nontransportation or stationary-noise source

impacts from operations.[3] Table 16.502-C of the Municipal Code, maximum noise level by noise zone, classifies uses and facilities and establishes the maximum noise level to be generated by daily operations as measured at the property line or at any boundary of a residential zone. For single-unit residential and multiple-unit residential, the maximum noise level is 60 dBA L_{eq} and 65 dBA L_{eq}, respectively. For commercial uses, the maximum noise level is 70 dBA L_{eq}.

Construction, demolition, and related loading/unloading activities that may generate noise exceeding levels in Table 3.C shall be limited to between 7:00 a.m. and 7:00 p.m. in residential zoning districts and in any mixed-use district.

Table 3.C: Maximum Noise Level For Temporary Construction Activity (Mobile Construction Equipment)

Time	RR, RLD	RMD, RHD, NMX, NC	Commercial (Including Medical and Office) and Industrial
Weekdays 7:00 AM to 6:00 PM	75 dBA	80 dBA	85 dBA
Saturdays 9:00 AM to 6:00 PM	60 dBA	65 dBA	70 dBA
Sundays and Legal Holidays	None	None	None

Source: Section 16.502.09 of the City of Vallejo Code of Ordinance.
dBA = A-weighted decibels
NC = Neighborhood Commercial
NMX = Neighborhood Mixed Use
RHD = Residential High Density
RLD = Residential Low Density
RMD = Residential Medium Density
RR = Rural Residential

3.4.2.2 Generation of Substantial Increase in Ambient Noise Levels

The following section describes how the short-term construction and long-term operational noise impacts of the proposed project would be less than significant.

Short-Term Construction-Related Analysis. Project construction would result in short-term noise and vibration. Maximum construction noise would be short-term, generally intermittent depending on the construction phase, and variable depending on receiver distance from the active construction zone. The duration of various types of construction noise and vibration would vary from 1 day to several weeks, depending on the phase of construction. The levels and types of noise and vibration that may occur during construction are described below.

Construction Noise Analysis. Two types of short-term noise would occur during project construction, including: (1) equipment delivery and construction worker commutes; and (2) project construction operations.

The first type of short-term construction noise would result from the transport of construction equipment and materials to the project site and construction worker commutes. These transportation activities would incrementally raise noise levels on access roads leading to the site. It is expected that larger trucks used in equipment delivery would generate higher noise impacts

[3] City of Vallejo. 2023. *Municipal Code Section 16.502.09*. September 7. Website: https://library.municode.com/ca/vallejo/codes/municipal_code.

than trucks associated with worker commutes. The single-event noise from equipment trucks passing at a distance of 50 feet from a sensitive noise receptor would reach a maximum level of 84 dBA maximum instantaneous noise level (L_{max}). However, the pieces of heavy equipment for construction activities would be moved on site just once and would remain on site for the duration of each construction phase. This one-time trip, when heavy construction equipment is moved on and off site, would not add to the daily traffic noise in the project vicinity. The total number of daily vehicle trips would be minimal when compared to existing traffic volumes on the affected streets, and the long-term noise level changes associated with these trips would not be perceptible. Therefore, equipment transport noise and construction-related worker commute impacts would be short term and would not result in a significant off-site noise impact.

The second type of short-term noise impact is related to noise generated during demolition, site preparation, grading, building construction, architectural coating, and paving on the project site. Construction is undertaken in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the project site. Therefore, the noise levels would vary as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table 3.D lists the maximum noise levels recommended for noise impact assessments for typical construction equipment based on a distance of 50 feet between the construction equipment and a noise receptor. Typical operating cycles for these types of construction equipment may involve 1–2 minutes of full-power operation followed by 3–4 minutes at lower power settings.

Table 3.D: Typical Construction Equipment Noise Levels

Equipment Description	Acoustical Usage Factor (%)	Maximum Noise Level (L_{max}) at 50 ft
Compressor	100	81
Concrete Mixer	40	85
Concrete Pump	40	85
Crane	16	83
Dozer	40	80
Forklift	20	75
Front [End] Loader	40	79
Generator	100	78
Grader	8	85
Scraper	40	88
Welder	40	74

Sources: *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances* (USEPA 1971); Roadway Construction Noise Model (FHWA 2006).
FHWA = Federal Highway Administration
ft = foot/feet
L_{max} = maximum instantaneous sound level
USEPA = United States Environmental Protection Agency

Table 3.E shows the composite noise levels of one piece of equipment type for each construction phase at a distance of 50 feet from the construction area.

Table 3.E: Construction Noise Levels by Phase

Phase	Duration (days)	Equipment	Composite Noise Level at 50 ft (dBA L_{eq})	Distance to Sensitive Receptor (ft)[1]	Noise Level at Receptor (dBA L_{eq})
Demolition	15	1 concrete/industrial saw, 1 dozer, and 3 tractors	88	310	72
Site Preparation	2	1 grader, 1 dozer, and 1 tractor	85	310	69
Grading	10	1 grader, 1 dozer, and 2 tractors	86	310	70
Building Construction	160	1 crane, 1 forklift, 1 generator set, 1 tractor, and 3 welders	83	310	68
Paving	10	1 cement and mortar mixer, 1 paver,1 piece of paving equipment, 1 roller, and 1 tractor	85	310	70
Architectural Coating	10	1 air compressor	74	310	58

Source: Compiled by LSA (2024).
[1] Distances are from the average location of construction activity for each phase, assumed to be the center of the project site.
dBA L_{eq} = average A-weighted hourly noise level
ft = foot/feet

As presented above, Table 3.E shows the construction phases, the expected duration of each phase, the equipment expected to be used during each phase, the composite noise levels of the equipment at 50 feet, the distance of the nearest sensitive receptor (the Vallejo Mobile Home Community & RV Park) to the east from the average location of construction activities (a distance of 310 feet from the center of the project site), and noise levels expected during each phase of construction. These noise level projections do not take into account intervening topography or barriers.

It is expected that average noise levels during construction at the nearest sensitive receptor, the Vallejo Mobile Home Community & RV Park to the east, would approach 72 dBA L_{eq} during the demolition phase, which would occur for a duration of approximately 15 days. Average noise levels during other construction phases would range from 58 dBA equivalent continuous sound level (L_{eq}) to 70 dBA L_{eq}. Noise levels at the nearest off-site commercial uses to the south would reach an average noise level of 79 dBA L_{eq} during the daytime hours. These predicted noise levels would only occur when all construction equipment is operating simultaneously; therefore, these noise levels are assumed to be conservative in nature.

Although the project construction-related short-term noise levels have the potential to be higher than the ambient noise in the project vicinity, construction noise would cease to occur once the project construction is completed. Furthermore, the construction-related noise levels would be below the 75 dBA L_{eq} and 85 dBA L_{eq} criteria established by the City's Municipal Code for residential and commercial uses, respectively. Although the short-term construction noise level exceeds the Saturdays (9:00 a.m. to 6:00 p.m.) standard of 60 dBA L_{eq} at residential-zoned areas, the construction noise levels would remain below the existing ambient noise level of approximately 69 dBA L_{eq} measured for the same time period and, therefore, would be considered less than significant.

The project would be constructed in compliance with the requirements of the City's Noise Ordinance, which states that construction activities are allowed between the hours of 7:00 a.m. and 7:00 p.m. on weekdays and between 9:00 a.m. and 6:00 p.m. on Saturdays.

Long-Term Off-Site Traffic Noise Impact Analysis. In order to assess the potential traffic impacts related to the proposed project, RK Engineering Group, Inc., estimates that the proposed project would result in a net increase of 1,136 ADT based on the proposed increase in square footage. Based on the ADTs provided in the City of Vallejo General Plan, the ADT along Sonoma Boulevard in the project vicinity is approximately 27,100 based on the existing (2014) traffic volumes.[4] While the existing ADT is likely higher, using 27,100 ADT as the existing count would be a conservative approach. The following equation was used to determine the potential impacts of the project:

$$\text{Change in } L_{dn} = 10 \log_{10} [V_{e+p}/V_{existing}]$$

Where: $V_{existing}$ = the existing daily volume

V_{e+p} = existing daily volumes plus project

Change in L_{dn} = the increase in noise level due to the project

The results of the calculations show that an increase of less than 0.2 dBA day-night average level (L_{dn}) is expected along Sonoma Boulevard. A noise level increase of less than 3 dBA would not be perceptible to the human ear; therefore, the traffic noise increase along Sonoma Boulevard resulting from the proposed project would be less than established thresholds.

Long-Term Operational Noise Impact Analysis. Adjacent off-site land uses would be potentially exposed to stationary-source noise impacts from the proposed on-site uses, such as drive-through speakers; heating, ventilation, and air conditioning (HVAC) equipment; and trash-emptying activities. It is assumed in this analysis that the hours of operation of the proposed use would remain between the hours of 7:00 a.m. and 10:00 p.m. Therefore, noise impacts associated with the long-term operation of the project must comply with the City's standard of 60 dBA L_{eq} at surrounding sensitive residential uses and 70 dBA L_{eq} for surrounding commercial uses.

To determine the future noise impacts from project operations to the noise-sensitive uses, a 3-D noise model, SoundPLAN, was used to incorporate the site topography as well as the shielding from the proposed building on site. A graphic representation of the operational noise impacts is presented in Appendix B.

The initial analysis of typical operations assumed in this analysis are conservative in nature (i.e., with all operations occurring simultaneously and for the entirety of each applicable hour). A description of the sources and their respective sound levels, from reference materials as well as measurements gathered by LSA for other projects, included in the analysis is as follows:

[4] City of Vallejo. 2017. *General Plan 2040 – Table MTC-1 Vallejo General Plan Mitigated Update: Traffic Volume Forecasting*. August 29.

- Drive-through speakers (2) that have a sound pressure noise level of 60 dBA L_{eq} at a distance of 55 feet.[5] Drive-through speakers are expected to operate continuously during daytime hours.

- Rooftop HVAC equipment (2) on the restaurant could operate 24 hours per day and would generate sound power levels (SPL) of up to 87 dBA SPL or 72 dBA L_{eq} at 5 feet, based on manufacturer data.[6] All HVAC equipment is expected to operate continuously during daytime hours.

- Parking lot operations are expected to result in maximum noise levels of 83.4 dBA L_{max} at a distance of 5 feet. For each parking lot area, noise impacts are expected to occur for a period of 30 minutes or less in a given hour. Parking lot activities are expected to operate during daytime hours.

- The trash-emptying activities would take place for a period of less than 1 minute and would generate SPLs of up to 118.6 dBA SPL or 84 dBA L_{eq} at 50 feet, based on reference information within SoundPLAN. Trash bin-emptying activities would only occur during daytime hours.

The results on Sheet 1, presented in Appendix B, show that the existing residential uses to the east would experience noise level impacts that would remain below the exterior noise level standard of 60 dBA L_{eq}. Additionally, noise levels would not exceed 70 dBA L_{eq} at the project property lines; therefore, there would be no impact to surrounding commercial uses as well.

3.4.2.3 Aircraft Noise Impacts

The closest airport to the project site is the Napa County Airport, located approximately 5.4 miles north of the project site. The project site is not located within the 65 dBA CNEL noise contour for the airport and is not located within the vicinity of a private airstrip. Although aircraft-related noise may be audible on the project site, the proposed project would not expose people working in the project area to excessive noise levels due to the proximity of a public airport. Additionally, there are no helipads or private airstrips within 2 miles from the project area.

3.4.2.4 Generation of Excessive Groundborne Vibration

Vibration refers to ground-borne noise and perceptible motion. Ground-borne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may not be discernible. Typically, there is more adverse reaction to effects associated with the shaking of a building. Vibration energy propagates from a source through intervening soil and rock layers to the foundations of nearby buildings. The vibration then propagates from the foundation throughout the remainder of the structure. Building vibration may be perceived by occupants as the motion of building surfaces, the rattling of items on shelves or hanging on walls, or a low-frequency rumbling noise. The rumbling noise is caused by the vibration of walls, floors, and ceilings that radiate sound waves.

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5 HM Electronics. 1998. *Drive-Thru Sound Pressure Levels From the Menu Board or Speaker Post*. December.

6 Trane. *Fan Performance - Product Specifications RT-PRC023AU-EN.*

Typical sources of ground-borne vibration are construction activities (e.g., blasting, pile driving, and operating heavy-duty earthmoving equipment), steel-wheeled trains, and occasional traffic on rough roads. Problems with both ground-borne vibration and noise from these sources are usually localized to areas within approximately 100 feet of the vibration source, although there are examples of ground-borne vibration causing interference out to distances greater than 200 feet.[2] When roadways are smooth, vibration from traffic, even heavy trucks, is rarely perceptible. It is assumed for most projects that the roadway surface will be smooth enough that ground-borne vibration from street traffic will not exceed the impact criteria; however, the construction of the project could result in ground-borne vibration that may be perceptible.

Ground-borne vibration has the potential to damage buildings. Although it is very rare for typical construction activities to cause even cosmetic building damage, it is not uncommon for construction processes such as blasting and pile driving to cause vibration of sufficient amplitudes to damage nearby buildings.[2] Ground-borne vibration that may resulting in damage is usually measured in terms of peak particle velocity (PPV).

Vibration standards included in the FTA Manual (2018) are used in this analysis for ground-borne vibration impacts on surrounding buildings.

The criteria for environmental impacts resulting from ground-borne vibration are based on the maximum levels for a single event. The City's Municipal Code does not include specific criteria for assessing vibration impacts associated with damage. Therefore, for the purpose of determining the significance of vibration impacts experienced at sensitive uses surrounding the project site, the guidelines within the FTA Manual have been used to determine vibration impacts (refer to Table 3.F, below).

Table 3.F: Construction Vibration Damage Criteria

Building Category	PPV (in/sec)
Reinforced concrete, steel, or timber (no plaster)	0.50
Engineered concrete and masonry (no plaster)	0.30
Non-engineered timber and masonry buildings	0.20
Buildings extremely susceptible to vibration damage	0.12

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
in/sec = inch(es(per second PPV = peak particle velocity

The FTA Manual guidelines show that a vibration level of up to 0.2 inch per second (in/sec) in PPV is considered safe for non-engineered timber and masonry buildings, which are the types of buildings located on properties adjacent to the project site. Accordingly, the 0.2 in/sec PPV threshold was used to evaluate vibration impacts at the nearest structures to the site.

Construction Vibration. Ground-borne noise and vibration from construction activity would be low. Table 3.G provides reference PPV values and vibration levels (in terms of VdB) from typical

[2] Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment Manual – FTA Report No. .0123*. September.

Table 3.G: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L_V at 25 ft	
	PPV (in/sec)	L_V (VdB)[1]
Hoe Ram	0.089	87
Large Bulldozer	0.089	87
Caisson Drilling	0.089	87
Loaded Trucks	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] RMS VdB re 1 µin/sec.
µin/sec = micro-inches per second
ft = foot/feet
FTA = Federal Transit Administration
in/sec = inch(es) per second
L_V = velocity in decibels
PPV = peak particle velocity
RMS = root-mean-square
VdB = vibration velocity in decibels

construction vibration sources at 25 feet. While there is currently limited information regarding vibration source levels specific to the equipment that would be used for the project, to provide a comparison of vibration levels expected for a project of this size, a large bulldozer would generate 0.089 PPV (in/sec) of ground-borne vibration when measured at 25 feet, based on the FTA Manual. As shown previously in Table 3.G, it would take a minimum of 0.2 PPV (in/sec) to cause any potential building damage to non-engineered timber and masonry buildings.

The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the project construction boundary (assuming the construction equipment would only be used at or near the project setback line). The formula for vibration transmission is provided below:

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

The closest structures to the construction activities are the commercial uses to the south, which are approximately 30 feet from the project's southern construction boundary. Using the reference data from Table 3.G and the equation above, it is expected that vibration levels generated by dump trucks and other large equipment would generate ground-borne vibration levels of 0.068 PPV (in/sec) at the closest structures to the project site. This vibration level would not exceed the 0.2 PPV (in/sec) threshold considered safe for non-engineered timber and masonry buildings. Vibration levels at all other buildings would be lower. Therefore, construction would not result in any vibration damage.

Long-Term Ground-Borne Noise and Vibration from Vehicular Traffic. The proposed project would not generate vibration levels related to on-site operations. In addition, vibration levels generated from project-related traffic on the adjacent roadways are unusual for on-road vehicles because the rubber tires and suspension systems of on-road vehicles provide vibration isolation. Based on a reference vibration level of 0.076 PPV (in/sec), structures more than 20 feet from the roadways that contain project trips would experience vibration levels below the most conservative standard of 0.12 PPV (in/sec); therefore, vibration levels generated from project-related traffic on the adjacent roadways would not occur.

3.4.3 Air Quality

The following is based on the *Air Quality Analysis for the Vallejo Panda Express Project* prepared for the proposed project, which is included in Appendix C.[8] The proposed project is located in Vallejo and is within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD), which regulates air quality in the San Francisco Bay Area. Air quality conditions in the San Francisco Bay Area have improved significantly since the BAAQMD was created in 1955. Ambient concentrations of air pollutants and the number of days during which the region exceeds air quality standards have fallen dramatically. Neither California nor National Ambient Air Quality Standards (CAAQS and NAAQS, respectively) for the following chemicals have been violated in recent decades: nitrogen dioxide (NO_2), sulfur dioxide (SO_2), sulfates, lead (Pb), hydrogen sulfide, and vinyl chloride. Those exceedances of air quality standards that do occur primarily happen during meteorological conditions conducive to high pollution levels, such as cold, windless nights or hot, sunny summer afternoons. Ambient concentrations of air pollutants and the number of days during which the region exceeds air quality standards have fallen substantially.

Both the State and federal governments have established health-based ambient air quality standards for six criteria air pollutants: carbon monoxide (CO), ozone (O_3), NO_2, SO_2, Pb, and suspended particulate matter. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. Two criteria pollutants, O_3 and NO_2, are considered regional pollutants because they (or their precursors) affect air quality on a regional scale. Pollutants such as CO, SO_2, and Pb are considered local pollutants that tend to accumulate in the air locally. The BAAQMD is under State nonattainment status for O_3 and particulate matter standards. The BAAQMD is classified as nonattainment for the federal O_3 8-hour standard and nonattainment for the federal particulate matter less than 2.5 microns in size ($PM_{2.5}$) 24-hour standard. As such, the primary pollutants of concern in the project area are O_3, CO, and $PM_{2.5}$.

3.4.3.1 Consistency with Applicable Air Quality Plans

The applicable air quality plan is the BAAQMD 2017 Clean Air Plan (Clean Air Plan), which defines control strategies to reduce emissions and ambient concentrations of air pollutants; safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, with an emphasis on protecting the communities most heavily affected by air pollution; and reduce greenhouse gas (GHG) emissions to protect the climate. Consistency with the Clean Air Plan can be determined if the project: (1) supports the goals of the Clean Air Plan; (2) includes applicable control measures from the Clean Air Plan; and (3) would not disrupt or hinder implementation of any control measures from the Clean Air Plan.

3.4.3.2 Clean Air Plan Goals

The primary goals of the Bay Area Clean Air Plan are to attain air quality standards; reduce population exposure and protect public health in the Bay Area; and reduce GHG emissions and protect climate.

[8] LSA Associates, Inc. 2024. *Air Quality and Greenhouse Gas Analysis – Vallejo Panda Express Project.* January 29.

The BAAQMD has established significance thresholds for project construction and operational impacts at a level at which the cumulative impact of exceeding these thresholds would have an adverse impact on the region's attainment of air quality standards. The health and hazards thresholds were established to help protect public health. As discussed below, construction and operation of the proposed project would not result in the generation of criteria air pollutants that would exceed BAAQMD thresholds of significance. Therefore, the proposed project would not conflict with the Clean Air Plan goals.

3.4.3.3 Clean Air Plan Control Measures

The control strategies of the Clean Air Plan include measures in the following categories: Stationary Source Measures, Transportation Measures, Energy Measures, Building Measures, Agriculture Measures, Natural and Working Lands Measures, Waste Management Measures, Water Measures, and Super-GHG Pollutants Measures. The proposed project's compliance with each of these control measures is discussed below.

Stationary Source Control Measures. The Stationary Source Control Measures, which are designed to reduce emissions from stationary sources such as metal melting facilities, cement kilns, refineries, and glass furnaces, are incorporated into rules adopted by the BAAQMD and then enforced by the BAAQMD Permit and Inspection programs. Since the proposed project would not include any of these stationary sources, the Stationary Source Control Measures of the Clean Air Plan are not applicable to the proposed project.

Transportation Control Measures. The BAAQMD identifies Transportation Control Measures as part of the Clean Air Plan to decrease emissions of criteria pollutants, toxic air contaminants (TACs), and GHGs by reducing demand for motor vehicle travel, promoting efficient vehicles and transit service, decarbonizing transportation fuels, and electrifying motor vehicles and equipment. The proposed project would result in the redevelopment of the site with a 2,700-square-foot fast-food restaurant on an infill site located near existing commercial and residential uses, reducing the demand for travel by single-occupancy vehicles. In addition, since the proposed project would consist of a local-serving retail project less than 50,000 square feet, the proposed project may be presumed to have a less than significant impact on vehicle miles traveled (VMT).[9] Therefore, the proposed project would not conflict with the identified Transportation Control Measures of the Clean Air Plan.

Energy Control Measures. The Clean Air Plan also includes Energy Control Measures, which are designed to reduce emissions of criteria air pollutants, TACs, and GHGs by decreasing the amount of electricity consumed in the Bay Area, as well as decreasing the carbon intensity of the electricity used by switching to less GHG-intensive fuel sources for electricity generation. Since these measures apply to electrical utility providers and local government agencies (and not individual projects), the Energy Control Measures of the Clean Air Plan are not applicable to the proposed project.

Building Control Measures. The BAAQMD has authority to regulate emissions from certain sources in buildings such as boilers and water heaters but has limited authority to regulate buildings themselves. Therefore, the strategies in the control measures for this sector focus on working with

[9] RK Engineering Group, Inc. 2022. op. cit.

local governments that do have authority over local building codes, to facilitate adoption of best GHG control practices and policies. The proposed project would be required to comply with the latest Title 24 standards of the California Code of Regulations regarding energy conservation and green building standards. Therefore, the proposed project would not conflict with any of the Building Control Measures.

Agriculture Control Measures. The Agriculture Control Measures are designed to primarily reduce emissions of methane (CH_4). Since the project does not include any agricultural activities, the Agriculture Control Measures of the Clean Air Plan are not applicable to the proposed project.

Natural and Working Lands Control Measures. The Natural and Working Lands Control Measures focus on increasing carbon sequestration on rangelands and wetlands, as well as encouraging local governments to adopt ordinances that promote urban tree plantings. Since the proposed project does not include the disturbance of any rangelands or wetlands, the Natural and Working Lands Control Measures of the Clean Air Plan are not applicable to the proposed project.

Waste Management Control Measures. The Waste Management Control Measures focus on reducing or capturing CH_4 emissions from landfills and composting facilities, diverting organic materials away from landfills, and increasing waste diversion rates through efforts to reduce, reuse, and recycle. The proposed project would comply with local requirements for waste management (e.g., recycling and composting services). Therefore, the proposed project would be consistent with the Waste Management Control Measures of the Clean Air Plan.

Water Control Measures. The Water Control Measures focus on reducing emissions of criteria pollutants, TACs, and GHGs by encouraging water conservation, limiting GHG emissions from publicly owned treatment works (POTWs), and promoting the use of biogas recovery systems. Since these measures apply to POTWs and local government agencies (and not individual projects), the Water Control Measures are not applicable to the proposed project.

Super GHG Control Measures. The Super-GHG Control Measures are designed to facilitate the adoption of best GHG control practices and policies through the BAAQMD and local government agencies. Since these measures do not apply to individual projects, the Super-GHG Control Measures are not applicable to the proposed project.

3.4.3.4 Clean Air Plan Implementation

As discussed above, the proposed project would generally implement the applicable measures outlined in the Clean Air Plan, including Transportation Control Measures. Therefore, the project would not disrupt or hinder implementation of a control measure from the Clean Air Plan.

3.4.3.5 Criteria Pollutant Analysis

As noted above, the BAAQMD is currently designated as a nonattainment area for O_3 CAAQS and NAAQS and particulate matter NAAQS. The BAAQMD's nonattainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing

cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant.

In developing thresholds of significance for air pollutants, the BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, additional analysis to assess cumulative impacts is unnecessary. The following analysis assesses the potential project-level construction- and operation-related air quality impacts.

3.4.4 Greenhouse Gas Emissions

While GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere, over the last 200 years, humans have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere and enhancing the natural greenhouse effect, believed to be causing global warming. The gases that are widely seen as the principal contributors to human-induced global climate change are:

- Carbon dioxide (CO_2);
- CH_4;
- Nitrous oxide (N_2O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulfur hexafluoride (SF_6).

While manmade GHGs include naturally occurring GHGs such as CO_2, CH_4, and N_2O, some gases, like HFCs, PFCs, and SF_6, are completely new to the atmosphere.

Certain gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of GHGs, above, because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation. These gases vary considerably in terms of Global Warming Potential (GWP), a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP is based on several factors, including the relative effectiveness of a gas in absorbing infrared radiation and length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured compared to CO_2, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO_2 equivalents" (CO_2e).

In 2023, the BAAQMD published an updated version of the CEQA Guidelines.[10] The BAAQMD CEQA Guidelines include thresholds to evaluate project impacts to protectively evaluate the potential

[10] Bay Area Air Quality Management District (BAAQMD). 2023. *2022 California Environmental Quality Act Air Quality Guidelines*. April 20.

effects of the project on air quality. These protective thresholds are appropriate in the context of the size, scale, and location of the proposed project.

3.4.4.1 Local Regulations

The Community Health Element of the City of Vallejo General Plan[11] includes air quality policies and actions intended to protect the community from harmful levels of air pollution. The following actions are applicable to the project:

- **Action CP-1.12B:** Update City regulations to set BAAQMD-recommended limits for particulate emissions from construction, demolition, debris hauling, and utility maintenance.
- **Action CP-1.12C:** Provide information regarding advances in air-quality protection measures to schools, homeowners, and operators of "sensitive receptors" such as senior and childcare facilities.
- **Action CP-1.12D:** Periodically review and update City regulations to comply with changes in State law and BAAQMD Guidelines pertaining to coal or wood-burning devices.
- **Action CP-1.12E:** Periodically review the Building Code for consistency with the latest California Green Building Standards Code, and assess the need for updates to require new construction and remodels to employ best practices and materials to reduce emissions, both during and after construction.
- **Action CP-1.12F:** Update City regulations to prohibit grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour or require the use of water trucks to wet soil.

3.4.4.2 Construction Emissions

Construction activities can generate a substantial amount of air pollution. Construction activities are considered temporary; however, short-term impacts can contribute to exceedances of air quality standards. Construction activities include site preparation, earthmoving, and general construction. The emissions generated from these common construction activities include fugitive dust from soil disturbance and fuel combustion from mobile heavy-duty diesel- and gasoline-powered equipment, portable auxiliary equipment, and worker commute trips. The California Emissions Estimator Model (CalEEMod) Version 2022.1 computer program was used to calculate emissions from on-site construction equipment and emissions from worker and vehicle trips to the site. As identified in Section 2.0, Project Description, construction activities for the project would begin July 8, 2024, and would occur over a 288-day period. In addition, the proposed project would include the demolition of 20,130 square feet of building area and the export of 15 cubic yards of soil, which were included in CalEEMod. This analysis also assumes use of Tier 2 construction equipment. Other detailed construction information is currently unavailable; therefore, this analysis utilizes CalEEMod default assumptions.

[11] City of Vallejo. 2018. *Propel Vallejo General Plan 2040*. July 24. Website: https://www.cityofvallejo.net/common/pages/DisplayFile.aspx?itemId=17961496 (accessed January 2024).

3.4.4.3 Short-Term Construction Emissions

During construction, short-term degradation of air quality may occur due to the release of particulate emissions generated by demolition, grading, paving, building, and other activities. Emissions from construction equipment are also anticipated and would include CO, NO_X, ROG, directly emitted particulate matter ($PM_{2.5}$ and PM_{10}), and TACs such as diesel exhaust particulate matter.

Project construction activities would include demolition, site preparation, grading, building, paving, and architectural coating (painting). Construction-related effects on air quality from the proposed project would be greatest during the site preparation phase due to the disturbance of soils. If not properly controlled, these activities would temporarily generate particulate emissions. Sources of fugitive dust would include disturbed soils at the construction site. Unless properly controlled, vehicles leaving the site would deposit dirt and mud on local streets, which could be an additional source of airborne dust after it dries. PM_{10} emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of operating equipment. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Water or other soil stabilizers can be used to control dust, resulting in emission reductions of 50 percent or more. The BAAQMD has established standard measures for reducing fugitive dust emissions (PM_{10}). With the implementation of these Basic Construction Mitigation Measures, fugitive dust emissions from construction activities would not result in adverse air quality impacts.

In addition to dust-related PM_{10} emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO_2, NO_X, reactive organic gases (ROG), and some soot particulate ($PM_{2.5}$ and PM_{10}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles idle in traffic. These emissions would be temporary in nature and limited to the immediate area surrounding the construction site.

As discussed above, CalEEMod was used to calculate emissions from on-site construction equipment and emissions from worker and vehicle trips to the site. Construction-related emissions are presented in Table 3.H, below.

Table 3.H: Project Construction Emissions (in Pounds per Day)

Project Construction	ROG	NO_X	Exhaust PM_{10}	Fugitive Dust PM_{10}	Exhaust $PM_{2.5}$	Fugitive Dust $PM_{2.5}$
Average Daily Emissions	0.5	9.6	0.8	0.7	0.7	0.4
BAAQMD Thresholds	54.0	54.0	82.0	BMP	54.0	BMP
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: LSA (January 2024).
BAAQMD = Bay Area Air Quality Management District
BMP = Best Management Practice
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROG = reactive organic gases

As shown in Table 3.H, construction emissions associated with the project would not exceed the BAAQMD's thresholds for ROG, NO_X, exhaust PM_{10}, and exhaust $PM_{2.5}$ emissions. The BAAQMD requires the implementation of the BAAQMD's basic best management practices (BMPs) to reduce construction fugitive dust impacts to a less than significant level. Therefore, implementation of Regulatory Compliance Measure (RCM) AIR-1 would be required.

RCM AIR-1: In order to meet the BAAQMD fugitive dust threshold, the following BAAQMD Basic Best Management Practices shall be implemented by the project applicant during the project construction period:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off site shall be covered.
- All visible mud or dirt tracked out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
- Unpaved roads proving access to sites located 100 feet or farther from a paved road shall be treated with a 6- to 12-inch layer of compacted wood chips, mulch, or gravel.
- A publicly visible sign shall be posted with the telephone number and person to contact at the City of Vallejo regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Bay Area Air Quality Management District's General Air Pollution Complaints phone number shall also be visible to ensure compliance with applicable regulations.

With RCM-1, construction of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable NAAQS or CAAQS.

3.4.4.4 Operational Emissions

This air quality analysis includes estimating emissions associated with long-term operation of the project. Indirect emissions of criteria pollutants with regional impacts would be emitted by project-

generated vehicle trips. In addition, localized air quality impacts (i.e., higher CO concentrations or "hot spots") near intersections or roadway segments in the project vicinity would also potentially occur due to project-generated vehicle trips.

Consistent with BAAQMD's guidance for estimating emissions, CalEEMod was used to calculate the long-term operational emissions associated with the project. As described in Section 2.0, Project Description, the proposed project would develop an approximately 2,700-square-foot restaurant with a drive-through feature and 33 parking spaces. The analysis was conducted using land use codes *Fast Food Restaurant with Drive Thru* and *Parking Lot*. The proposed project would also include a total of 15,484 square feet of landscaping on the project site, which was included in CalEEMod. This analysis assumes the proposed project would generate approximately 1,136 average daily trips.[12] The proposed project would be all-electric, which was also included in CalEEMod. Where project-specific data were not available, default assumptions (e.g., energy usage, water usage, and solid waste generation) from CalEEMod were used to estimate project emissions. CalEEMod output sheets are attached in Appendix B.

Long-Term Operational Emissions. Long-term air pollutant emission impacts considered for projects in the BAAQMD include those associated with mobile sources (e.g., vehicle trips), energy sources (e.g., natural gas), and area sources (e.g., architectural coatings and the use of landscape maintenance equipment).

Mobile-source emissions include ROG and NO_X emissions that contribute to the formation of O_3. Additionally, PM_{10} emissions result from running exhaust, tire and brake wear, and the entrainment of dust into the atmosphere from vehicles traveling on paved roadways.

Energy-source emissions would typically result from activities in buildings for which natural gas is used. As identified above, the proposed project would be all-electric; therefore, the proposed project would not generate energy-source emissions.

Typically, area-source emissions consist of direct sources of air emissions located at the project site, including architectural coatings, consumer products, and the use of landscape maintenance equipment.

Emission estimates for operation of the project were calculated using CalEEMod. The primary emissions associated with the project are regional in nature, meaning that air pollutants are rapidly dispersed on release or, in the case of vehicle emissions associated with the project, emissions are released in other areas of the air basin. The daily and annual emissions associated with project operational trip generation, energy, and area sources are identified in Table 3.I for ROG, NO_X, PM_{10}, and $PM_{2.5}$.

The results shown in Table 3.I indicate the project would not exceed the significance criteria for daily or annual ROG, NO_X, PM_{10}, and $PM_{2.5}$ emissions; therefore, operation of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable NAAQS or CAAQS.

[12] RK Engineering Group, Inc. 2022. op. cit.

Table 3.I: Project Operational Emissions

	ROG	NO_x	PM_{10}	$PM_{2.5}$
Pounds per Day				
Mobile-Source Emissions	4.5	3.9	5.8	1.5
Area-Source Emissions	0.1	<0.1	<0.1	<0.1
Energy-Source Emissions	0.0	0.0	0.0	0.0
Total Emissions	**4.6**	**3.9**	**5.8**	**1.5**
BAAQMD Thresholds	54.0	54.0	82.0	54.0
Exceed Threshold?	**No**	**No**	**No**	**No**
Tons per Year				
Mobile-Source Emissions	0.8	0.7	1.1	0.3
Area-Source Emissions	<0.1	<0.1	<0.1	<0.1
Energy-Source Emissions	0.0	0.0	0.0	0.0
Total Emissions	**0.8**	**0.7**	**1.1**	**0.3**
BAAQMD Thresholds	10.0	10.0	15.0	10.0
Exceed Threshold?	**No**	**No**	**No**	**No**

Source: LSA (January 2024).
BAAQMD = Bay Area Air Quality Management District
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROG = reactive organic gases

Localized CO Impacts. Emissions and ambient concentrations of CO have decreased dramatically in the Bay Area since the introduction of the catalytic converter in 1975. No exceedances of the State or federal CO standards have been recorded at Bay Area monitoring stations since 1991. The BAAQMD CEQA Guidelines include recommended methodologies for quantifying concentrations of localized CO levels for proposed transportation projects. A screening-level analysis using guidance from the BAAQMD CEQA Guidelines was performed to determine the impacts of the project. The screening methodology provides a conservative indication of whether the implementation of a proposed project would result in significant CO emissions. According to the BAAQMD CEQA Guidelines, a proposed project would result in a less than significant impact to localized CO concentrations if the following screening criteria are met:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, and the regional transportation plan and local congestion management agency plans.

- Project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

- The project would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, or below-grade roadway).

Implementation of the proposed project would not conflict with the policies or programs of the Solano Transportation Authority. The proposed project would generate a total of 4 a.m. peak-hour

trips and a total of 40 p.m. peak-hour trips[13]; therefore, the project's contribution to peak-hour traffic volumes at intersections in the vicinity of the project site would be well below 44,000 vehicles per hour. As such, the proposed project would not result in localized CO concentrations that exceed State or federal standards.

3.4.4.5 Sensitive Receptors

Sensitive receptors are defined as people that have an increased sensitivity to air pollution or environmental contaminants. Sensitive receptor locations include schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential dwelling units. The closest sensitive receptors to the project site include the residential uses approximately 150 feet east of the project site across Sonoma Boulevard.

Construction of the proposed project may expose surrounding sensitive receptors to airborne particulates, as well as a small quantity of construction equipment pollutants (i.e., usually diesel-fueled vehicles and equipment). However, construction contractors would be required to implement RCM AIR-1 described above. With implementation of this regulatory measure, project construction pollutant emissions would be below the BAAQMD significance thresholds. Once the project is constructed, the project would not be a source of substantial emissions, as demonstrated through the CalEEMod evaluation, which shows that the proposed project would be below the BAAQMD thresholds of significance for criteria pollutants. Additionally, the proposed project would not be expected to be a significant source of TACs. Therefore, sensitive receptors are not expected to be exposed to substantial pollutant concentrations during project construction or operation.

3.4.4.6 Objectionable Odors

During construction, the various diesel-powered vehicles and equipment in use on site would create localized odors. These odors would be temporary and are not likely to be noticeable for extended periods of time beyond the project site. Additionally, the proposed uses that would be developed within the project site are not expected to produce any offensive odors that would result in frequent odor complaints. Therefore, the proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

3.4.5 Water Quality

Stormwater runoff is regulated by the National Pollutant Discharge Elimination System (NPDES) Program (established through the federal Clean Water Act). The NPDES program objective is to control and reduce pollutant discharges to surface water bodies. Compliance with NPDES permits is mandated by State and federal statutes and regulations. Locally, the NPDES program is administered by the San Francisco Bay Regional Water Quality Control Board (San Francisco Bay RWQCB).

3.4.5.1 Construction Related Water Quality Impacts

Construction activities are subject to the State Water Resources Control Board (SWRCB) NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (CGP), Order No. 2022-0057-DWQ, NPDES No. CAS000002. Any construction activity,

[13] RK Engineering Group, Inc. 2022. op. cit.

including grading, that would result in the disturbance of 1 acre or more would require compliance with SWRCB's CGP, which requires preparation of a Stormwater Pollution Prevention Plan (SWPPP) and implementation of Construction BMPs during construction activities. The proposed project would include the demolition of the existing concrete slab (20,130 square feet) in the northwest portion of the project site and the construction of a 2,700-square-foot, one-story building; drive-through; and associated surface parking on a 1.57-acre site. The proposed project would disturb 0.941 acre (40,972 square feet). Pollutants of concern during construction include sediments, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals. Each of these pollutants on its own or in combination with other pollutants can have a detrimental effect on water quality. During construction activities, excavated soil would be exposed, and there would be an increased potential for soil erosion and sedimentation compared to existing conditions. In addition, chemicals, liquid products, petroleum products (e.g., paints, solvents, and fuels), and concrete-related waste may be spilled or leaked, and they have the potential to be transported via stormwater runoff into receiving waters.

Because construction of the proposed project would disturb less than 1 acre of soil, the project is not subject to the requirements of the CGP. Nevertheless, the proposed project must comply with Sections 12.40 and 12.41 of the City's Municipal Code, which require applicants to prepare a SWPPP and implement BMPs during construction activities. Construction BMPs would include, but not be limited to, erosion control and sediment control BMPs designed to minimize erosion and retain sediment on site, and source control, site design, and good housekeeping BMPs to prevent spills, leaks, and discharge of construction debris and waste into receiving waters.

Groundwater Dewatering. According to the Geotechnical Engineering Investigation prepared for the proposed project, groundwater was encountered at depths of 6 to 9 ft below ground surface (bgs). Excavation during construction would be to a maximum depth of approximately 7 feet bgs. Due to the relatively shallow depth of groundwater and the proposed depth of excavation, groundwater dewatering may be required during construction. If dewatering is required, it would be conducted in accordance with the requirements of the General Waste Discharge Requirements for Limited Threat Discharges to Surface Waters (General Waste Discharge Permit), Order No. 2003-003-DWQ.[14] If needed, groundwater dewatering would be localized and temporary, and the volume of groundwater removed would not be substantial. Therefore, the proposed project would continue to minimize pollutant runoff from the project site.

3.4.5.2 Operational Related Water Quality Impacts

The project site is predominantly vacant and has approximately 0.071 acre (3,085 square feet) of impervious surfaces. The proposed project would develop a majority of the project site and increase the amount of impervious surface by 0.743 acre (32,351 square feet) on site and 0.164 acre (7,148 square feet) off site, for a total increase in impervious surfaces of 0.976 acre (42,514 square feet). Pollutants of concern from long-term operations include pathogens (bacteria/viruses), metals,

[14] State Water Resources Control Board (SWRCB). 2003. Division of Water Quality. General Waste Discharge Requirements (WDRs) for Discharges to Land with a Low Threat to Water Quality (General WDRs). Website: https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf (accessed January 9, 2024).

nutrients, toxic organic compounds, pesticides/herbicides, sediments/total suspended solids, trash and debris, and oil and grease.

The City, which has joined the cities of Fairfield and Suisun City and the Vallejo Flood & Wastewater District to form the Solano Stormwater Alliance, and which is collectively referred to along with these entities as the "Solano Permittees," is a permittee on the California Regional Water Quality Control Board San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (MRP) (Order No. R2-2022-0018, NPDES Permit No. CAS612008 as amended by Order No.R2-2022-0018).[15] Provision C.3 of the MRP requires all new development and redevelopment projects that create and or replace between 2,500 and 50,00 square feet of impervious surfaces to incorporate post-construction stormwater control measures.[16] Under Provision C.3 requirements, the preparation and submittal of a Stormwater Control Plan (SCP) would be required for the project site as the proposed project would include the replacement of approximately 3,017 square feet and would add approximately 32,448 square feet of impervious surface. The purpose of an SCP is to detail the design elements and implementation measures necessary to meet the post-construction stormwater control requirements of the MRP. In particular, SCPs must include Low Impact Development (LID) design measures, which reduce water quality impacts by preserving and recreating natural landscape features, minimizing impervious surfaces, and using stormwater as a resource rather than a waste product.

Under existing conditions, stormwater flows to the east side of the lot, down a gradual slope, and is conveyed into an existing drainage ditch along the eastern boundary of the project site. The drainage ditch conveys flows to the south along the project site frontage along SR-29 into existing 12-inch storm drain pipelines located within Yolano Drive (south of the project site).

Upon construction of the proposed project, approximately 32,468 square feet (47 percent) of the project site would be covered by impervious surfaces and approximately 35,886 square feet (52 percent) would be covered by pervious surfaces consisting of landscaped areas.

Consistent with Provision C.3 of the MRP and Section 12.41 of the City's Municipal Code, the applicant has prepared an SCP. According to the SCP, the proposed project would include approximately 2,895 square feet of bioretention space throughout the project site that would be used for stormwater control. In addition, the proposed project would include 16 Drainage Management Areas (DMAs) totaling approximately 46,734 square feet. The DMAs would include asphalt parking areas, drive aisles, sidewalks, landscaped areas, and rooftops. Runoff from these DMAs would be conveyed into the three bioretention areas throughout the project site, as outlined below.

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15 California Regional Water Quality Control Board. 2023. San Francisco Bay Region Municipal Regional Stormwater NPDES Permit Order No. R2-2023-0019, Permit No. CAS612008 as amended by order No. R2-2022-0018. May 11. Website: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.waterboards.ca.gov%2Fsanfranciscobay%2Fboard_info%2Fagendas%2F2023%2FOctober%2F5_final_to.docx&wdOrigin=BROWSELINK (accessed January 9, 2024).

16 Contra Costa Clean Water Program. 2023. Municipal Regional Stormwater Permit (MRP 3.0). Website: https://www.cccleanwater.org/development-infrastructure/development/stormwater-c-3-guidebook.

DMAs 1–6, located on the northern, southern, and eastern portions of the project site, would drain to bioretention planter IMP-1 on the east side of the project. DMAs 7–9, located on the western side of the site, would drain to bioretention planter IMP-2 on the northwestern side of the proposed building and drive-through. DMAs 10–16, located in the southern portion of the site, would drain to bioretention planter IMP-3 on the south side of the project site.

The proposed project would be required to comply with the MRP and SCP, which would act as the overall program document designed to provide measures to mitigate potential water quality impacts associated with operation of the proposed project. Therefore, the proposed project would continue to minimize pollutant runoff from the project site.

Groundwater for Project Operations. The project site is currently vacant and primarily covered with pervious surfaces. Development of the proposed project would increase the impervious surface area by 47 percent. An increase in impervious surface area decreases infiltration, which can decrease the amount of water that is able to recharge the aquifer/groundwater. In the existing condition, stormwater is not a significant source of groundwater recharge because it does not infiltrate, but rather flows across the site and into the existing storm drain system. The proposed project would not alter existing drainage, and stormwater would continue to be collected on site and directed to the city's storm drains. Therefore, the proposed project would not interfere substantially with groundwater recharge.

Project operations would not require groundwater extraction, as the proposed project would connect to the existing water lines within the public alley located just south of the project site. While the project would increase water use on the project site, the City of Vallejo obtains water from the Sacramento River Watershed; the Solano Project from the Putah Creek Watershed, which includes Lake Berryessa; the Wild Horse Creek Watershed through Lake Madigan, Lake Frey, and the Green Valley Diversion; and the Upper Suisun Creek Watershed through Lake Curry.[17] Because the City does not use groundwater for municipal water supply, water use during operation of the proposed project would not affect groundwater.

3.4.5.3 Flooding

The project site is not located within a Federal Emergency Management Agency (FEMA) designated 100-year or 500-year floodplain.[18] The project site is not located in an area mapped by the California Emergency Management Agency as being potentially inundated by a tsunami.[19] Seiches are waves that are created in an enclosed body of water, such as a bay, lake, or harbor, and go up and down or oscillate and do not progress forward like standard ocean waves. The nearest water bodies are the Napa River, located approximately 0.7 mile west of the project site, and San Pablo Bay, located approximately 3.5 miles southeast of the project site. Both of these water bodies are located at a

17 City of Vallejo. 2021. 2020 Urban Water Management Plan. October 12, 2021.

18 Federal Emergency Management Agency (FEMA). 2016. Flood Insurance Rate Map No. 06095C0419F. August 13. Website: https://msc.fema.gov/portal/search?AddressQuery=5180%20Sonoma%20Boulevard%2C%20Vallejo%2C%20CA#searchresultsanchor (accessed February 9, 2023).

19 California Department of Conservation (DOC). 2022. Solano County Tsunami Hazard Areas. Website: https://www.conservation.ca.gov/cgs/ tsunami/maps/solano (accessed February 9, 2023).

lower elevation than the project site and would not inundate the project site in the event of a seiche. No project-related impacts associated with flood flows or release of pollutants from inundation would occur.

3.5 CRITERION SECTION 15332(E): UTILITIES AND PUBLIC SERVICES

***Criterion**: The site can be adequately served by all required utilities and public services.*

The project site is located in an urban area already served by all necessary municipal utilities (i.e., stormwater, water, wastewater, solid waste) and public services (i.e., police and fire). The following analysis reviews whether the project can, as required by *CEQA Guidelines* Section 15332(e), be "adequately served by all required utilities and public services." As discussed, the site can be adequately served by all required utilities and public services.

3.5.1 Stormwater

The City of Vallejo Public Works Department is responsible for the engineering and maintenance of the stormwater drainage system for the project site and the surrounding area. Stormwater runoff from the project site is channeled into storm drains along Yolano Drive, south of the project site, which ultimately discharges into San Pablo Bay.

Construction of the proposed project would increase impervious surfaces by approximately 19,411 square feet. Approximately 32,468 square feet (45 percent) of the project site would be covered by impervious surfaces, and approximately 35,886 square feet (52 percent) would be covered by pervious surfaces after construction. The proposed project would include approximately 2,895 square feet of bioretention planters that would be used for treatment and storage of stormwater. The proposed stormwater infrastructure would be limited to the project site and would be constructed in accordance with all City regulations and requirements and be designed consistent with the MRP Program requirements for LID. Therefore, there would be no significant increase in contributions to the municipal stormwater system once the proposed project is in operation.

3.5.2 Water

The project site is served by existing water supply and distribution systems operated and managed by the City of Vallejo. The Vallejo Water Division collects water from the Sacramento River watershed; the Solano Project from the Putah Creek Watershed, which includes Lake Berryessa; the Wild Horse Creek Watershed through Lake Madigan, Lake Frey, and the Green Valley Diversion; and the Upper Suisun Creek Watershed through Lake Curry.[20] The City of Vallejo updated its Urban Water Management Plan (UWMP) in 2020, and it was adopted in 2021.[21] According to the UWMP, the average water use for the City's service area is projected to be 30,331-acre feet per year (AFY) in 2035 and 31,892 AFY in 2045.

The proposed project would install four 1.5-inch water lines south of the project site, which would connect to the existing 8-inch main line located within Yolano Drive to provide water service to the

[20] City of Vallejo. 2021. 2020 Urban Water Management Plan. October 12.

[21] Ibid.

project site. Water service would be provided by the City of Vallejo. Additionally, a 1.5-inch water meter and backflow preventer would be installed south of the project site along the private utility easement adjacent to Yolano Drive.

The project site would be served by the existing 8-inch water line within Yolano Drive, and four 1.5-inch water lines would be installed south of the project site. It is estimated that the proposed project would result in a slight increase in water usage due to the development of a new restaurant building and new landscaped areas, totaling 2,761 gallons per day (gpd), or 3.09 AFY. As stated above, the average water use for the City's service area is projected to be 30,331 AFY in 2035 and 31,892 AFY in 2045. This accounts for approximately 0.01 percent of the City's projected service-wide annual water demand for both 2035 and 2045. Therefore, the proposed project would only result in a marginal increase in water use, and there is sufficient water to serve the proposed project.

3.5.3 Wastewater

The Vallejo Flood and Wastewater District (VFWD) provides wastewater, stormwater, and flood control protection services for Vallejo and service to the project site. VFWD serves over 120,000 residents in the greater Vallejo area. On average, VFWD conveys 10 million gallons of wastewater daily through its 30 pump stations to the customers via the Ryder Street treatment plant. During large storm events, the Ryder Street treatment plant capacity would increase to allow flows of up to 60 million gpd.

The project site would be served by the existing 6-inch sanitary sewer line located south of the project site (along the existing driveway), connected via a new 4-inch tie-in and a new 4-inch point of connection to the proposed building. It is estimated that the proposed project would result in a slight increase in wastewater generation due to the development of a new restaurant building, to a total of 2,244 gpd. This increase would not substantially change VFWD's wastewater treatment demand projections or require the expansion of wastewater facilities. The proposed project would represent an increase of VFWD's available capacity of 10 million gpd by less than 0.02 percent. Therefore, operation of the proposed project would not contribute to a substantial amount of new demand for wastewater treatment, and such demand would be within the anticipated projected demand for wastewater treatment.

3.5.4 Solid Waste

Solid waste, recycling, and yard waste collection services in Vallejo, including the project site, are provided by Recology Vallejo. Solid waste collected by Recology is transported to the Devlin Road Transfer Station, a regional facility operated by the Napa-Vallejo Waste Management Authority. Green waste and recyclables are sorted and sent to various facilities and solid waste that cannot be recycled is sent to the Keller Canyon Landfill, located at 901 Bailey Road in Pittsburg, Contra Costa County. The landfill has a maximum permitted capacity of 75,018,280 cubic yards and a remaining capacity of 63,408,410 cubic yards as of November 2004. The landfill accepts a maximum of 3,500 tons per day and has an expected closure date of December 2050. [22] According to the California

[22] California Department of Resources Recycling and Recovery (CalRecycle). 2023. Solid Waste Information System (SWIS), Keller Canyon Landfill (07-AA-0032). Website: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/4407?siteID-228 (accessed January 10, 2024).

Department of Resources Recycling and Recovery (CalRecycle), fast-food restaurants typically generate an average of 6,528 pounds of waste material per employee per year.[23] The proposed project would generate an average of 169.86 pounds per day. This increase in solid waste would account for less than 0.02 percent of Keller Canyon Landfill's maximum allowable capacity per day. With this minimal increase in solid waste disposal demand, the Keller Canyon Landfill has adequate capacity to serve the proposed project and would not require the expansion or construction of new solid waste facilities.

3.5.5 Police Services

The Vallejo Police Department (VPD) provides law enforcement services to Vallejo. The proposed project would result in an increase in the daytime population at the project site but would not result in an increase in the residential population within the city. The project site is in an area already served by the VPD. The VPD has one station within the city limits, located at 111 Amador Street approximately 2.4 miles southeast of the project site. It is not anticipated that the proposed project would result in the need for any new physical facilities to maintain acceptable service ratios, response times, or other performance objectives. Therefore, police service is adequate to serve the proposed project.

3.5.6 Fire Protection Services

Fire suppression, emergency medical and rescue services, and other life safety services are provided to the project area and the site by the Vallejo Fire Department. In addition, the City of Vallejo and the County of Solano coordinate for response in emergency situations. The City and the County have adopted separate but consistent Emergency Operations Plans used for pre-emergency planning and emergency response to natural and human-made disasters. There are six fire stations within Vallejo, consisting of 108 employees, 99 of which are firefighters, paramedics, engineers, captains, and battalion chiefs. The closest fire station to the project site is Vallejo Fire Station 23, at 900 Redwood Street, approximately 0.75 mile south of the project site. The project site is in an area already served by the VFD and would not impact the VFD's response time standard of responding within 8 minutes.[24] The proposed project would not require the development of new or physically altered facilities. Therefore, fire protection service would be adequate to serve the proposed project.

3.5.7 Schools

The proposed project would include the construction of a new restaurant building, drive-through, and associated surface parking; however, it is not expected that the proposed project would result in a substantial increase in the school-age population in the area. Therefore, the proposed project would not have an impact on school capacity.

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23 Cascadia Consulting Group. 2006. *Contractor's Report to the Board: Targeted Statewide Waste Characterization Study – Waste Disposal and Diversion Findings for Selected Industry Groups.* June.

24 City of Vallejo. Fire Department. Website: https://vallejo.hosted.civiclive.com/city_hall/departments___divisions/fire (accessed September 12, 2023).

4.0 EXCEPTONS TO CATEGORICAL EXEMPTIONS

In addition to analyzing the applicability of *CEQA Guidelines* Section 15332 (Class 32), this technical report assesses whether any of the exceptions to Categorical Exemptions identified in *CEQA Guidelines* Section 15300.2 (Exceptions) apply to the proposed project. The following analysis compares the criteria in *CEQA Guidelines* Section 15300.2 (Exceptions) to the project and concludes, based on substantial evidence, that none of the exceptions is applicable to the project, and that the project is categorically exempt from CEQA pursuant to *CEQA Guidelines* Sections 15300 and 15332.

4.1 CRITERION SECTION 15300.2(A): LOCATION

a. Location. Classes 3,4,5,6, and 11 are qualified by consideration of where the project is to be located – a project that is ordinarily insignificant in its impact on the environment may in a particularly sensitive environment be significant. Therefore, these classes are considered to apply in all instances, except where the project may impact on an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies.

The proposed project does not qualify for an exemption under Classes 3, 4, 5, 6, or 11. The project site is located in an urban area and situated between SR-37 and SR-29. Within the project vicinity, the Napa River and White Slough are situated east of the project site, with their confluence with San Pablo Bay located to the southwest of the project site; however, the property is not in itself located within a sensitive environment. The site contains a 0.102-acre wetland swale along the eastern boundary of the project site; however, the proposed project would not include any grading or earth disturbance within the wetlands on the eastern portion of the site. Therefore, the proposed project would not result in any impacts on an environmental resource of hazardous or critical concern, and the exception under *CEQA Guidelines* Section 15300.2(a) does not apply to the proposed project.

4.2 CRITERION SECTION 15300.2(B): CUMULATIVE IMPACT

b. Cumulative Impact. All exemptions for these classes are inapplicable when the cumulative impact of successive projects of the same type in the same place, over time is significant.

The proposed project would not result in significant environmental impacts, and there are no other successive projects of the same type or scale planned for the surrounding area or nearby vacant parcels. Lands to the north, south, and east of the project site are fully developed with existing commercial, light industrial, and residential uses. There are no major reasonably foreseeable future projects in the vicinity that would result in significant cumulative impacts. Therefore, no significant cumulative impact would result from successive projects of the same type in the same place over time. Therefore, the exception under *CEQA Guidelines* Section 15300.2(b) does not apply to the proposed project.

4.3 CRITERION SECTION 15300.2(C): SIGNIFICANT EFFECT

c. Significant Effect. A categorical exemption shall not be used for an activity where there is a reasonable possibility that the activity will have a significant effect on the environment due to unusual circumstances.

There are no known unusual circumstances that apply to the project which may result in a significant effect on the environment. The proposed project consists of the construction of a restaurant building, dual drive-through, and associated surface parking lot. The proposed project would not result in a change in the existing use or introduce a new activity to the area that could result in a significant effect on the environment. Therefore, the exception under *CEQA Guidelines* Section 15003.2(b) does not apply to the proposed project.

4.4 CRITERION SECTION 15300.2(D): SCENIC HIGHWAY

d. A categorical exemption shall not be used for a project which may result in damage to scenic resources, including but not limited to, trees, historic buildings, rock outcroppings, or similar resources, within a highway officially designated as a State Scenic Highway. This criterion does not apply to improvements required as mitigation by an adopted Negative Declaration or certified EIR.

The proposed project would not affect a resource within a State Scenic Highway. The nearest scenic highways are SR-29 and SR-37, located approximately 0.20 mile west and 0.29 mile north of the project site, respectively.[25] The project site would not be visible from either SR-29 or SR-37; therefore, no scenic resources within view of a State Scenic Highway would be altered as part of the project.

4.5 CRITERION SECTION 15300.2(E): HAZARDOUS WASTE SITES

e. A categorical exemption shall not be used for a project located on a site which is included on any list compiled pursuant to Section 65962.5 of the Government Code.

The project site is not on any list pursuant to Section 65962.5 of the Government Code or any other list compiled for purposes related to identifying the prior release of hazardous materials.[26,27] However, seven Leaking Underground Storage Tank (LUST) Cleanup sites are within 1,000 feet of the project site, and one of these sites is within the western boundary of the project site. as described below.

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25 California, State of. 2018. *California Scenic Highway Mapping System.* Website: https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa (accessed January 30, 2024).

26 California State Water Resources Control Board. 2019. EnviroStor. Website: www.envirostor.dtsc.ca.gov/public (accessed January 30, 2024).

27 Department of Toxic Substances Control. 2015. GeoTracker. Website: geotracker.waterboards.ca.gov (accessed January 30, 2024).

Table 4.A: LUST Sites

Site name	Address	Distance from site	Media of Concern	Status
Bill Lang Pontiac Cadillac	4301 Sonoma Boulevard	Within the western boundary of the project site	Soil	Case closed—5/13/1997
Bill Lang Pontiac	4301 Sonoma Boulevard	90 feet (south)	Soil	Case closed—5/13/1997
Connoly Development	4300 Sonoma Boulevard	690 feet (south)	Under investigation	Case closed—7/23/1999
ACME Transfer Storage Inc.	163 Yolano Drive	626 feet (south)	Under investigation	Case closed—5/20/1996
Auto Outlet	140 Yolano Drive	750 feet (southwest)	Soil	Case closed—7/2/2001
Sharp Van and Storage	1133 Enterprise	646 feet (northwest)	Under investigation	Case closed—6/8/2000
Beacon #3711 (Former)	1295 Marine World Parkway	880 feet (west)	Other groundwater (uses other than drinking water)	Case closed—5/28/1996

Source: State Water Resources Boards. Geo Tracker. 2024. Website: https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=4301+Sonoma+Blvd+Vallejo%2C+CA+94589 (accessed February 12, 2024).
LUST = Leaking Underground Storage Tank

The project site is currently undeveloped. Therefore, the exception under *CEQA Guidelines* Section 15300.2(e) does not apply to the project.

4.6 CRITERION SECTION 15300.2(F): HISTORIC RESOURCES

f. A categorical exemption shall not be used for a project which may cause a substantial adverse change in the significance of a historical resource.

No historic resources exist in the vicinity of the project site. There is also no known sensitivity for archaeological or paleontological resources on the site. However, the site may contain previously unknown subsurface archaeological deposits. The proposed project would comply with Cultural Resources and Historic Properties Policy NBE 1.9 and 1.10 in the General Plan, which would require compliance with City, State, and federal historic preservation laws, regulations, and codes, including laws related to archaeological and cultural resources. In particular, the proposed project would be required to comply with *CEQA Guidelines* Section 15064.5(e), which specifies procedures to be used in the event of a discovery of Native American human remains on nonfederal land. Adherence to *CEQA Guidelines* Section 15064.5(e) would ensure that impacts to cultural resources would not occur.

4.7 CONCLUSION

On the basis of substantial evidence, as discussed above, the project is eligible for a Class 32 Categorical Exemption in accordance with *CEQA Guidelines* Section 15332, In-Fill Development Projects. Because the proposed project meets the criteria for categorically exempt in-fill development projects in *CEQA Guidelines* Section 15332, none of the exceptions to the categorical exemptions in *CEQA Guidelines* Section 15300.2 apply, and the project would not have a significant effect on the environment, this analysis finds that a Notice of Exemption may be prepared for the project.

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5.0 STREAMLINING UNDER CEQA GUIDELINES SECTION 15183

5.1 CEQA GUIDELINES SECITON 15183

Section 15183(c) of the *CEQA Guidelines* specifies that "if an impact is not peculiar to the parcel or to the proposed project, has been addressed as a significant effect in the prior EIR, or can be substantially mitigated by the imposition of uniformly applied development policies or standards,… then an additional EIR need not be prepared for the project solely on the basis of that impact."

Section 15183(b) of the *CEQA Guidelines* states that "in approving a project meeting the requirements of this section, a public agency shall limit its examination of environmental effects to those which the agency determines, in an initial study or other analysis: (1) are peculiar to the project or the parcel on which the project would be located; (2) were not analyzed as significant effects in a prior EIR on the zoning action, general plan, or community plan, with which the project is consistent; (3) are potentially significant off-site impacts and cumulative impacts which were not discussed in the prior EIR prepared for the general plan, community plan or zoning action; or (4) are previously identified significant effects which, as a result of substantial new information which was not known at the time the EIR was certified, are determined to have a more severe adverse impact than discussed in the prior EIR."

Section 15183(d) of the *CEQA Guidelines* further states that the streamlining provisions of this section "shall apply only to projects that meet the following conditions: (1) the project is consistent with a community plan adopted as part of a general plan, a zoning action which zoned or designated the parcel on which the project would be located to accommodate a particular density of development, or a general plan of a local agency; and (2) an EIR was certified by the lead agency for the zoning action, the community plan, or the general plan."

5.2 APPLICABILITY OF SECTION 15183 TO THE PROPOSED PROJECT

As stated in Sections 3.1.1 and 3.1.2, above, the proposed project would be consistent with the General Plan designations and zoning for the site described in the General Plan and would meet the requirements for streamlining under *CEQA Guidelines* Section 15183(d).

As stated in Sections 3.0 and 4.0, above, potential impacts as a result of the proposed project would be substantially mitigated by the imposition of uniformly applied standard conditions of approval.

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APPENDIX A

TRIP GENERATION ANALYSIS

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October 18, 2022

Mr. Luis Guzman
GWA ARCHITECTURE, INC.
1000 Corporate Center Drive, Suite 550
Monterey Park, CA 91754

Subject: Sonoma Boulevard & Yolano Drive Panda Express Project Trip Generation & Vehicle Miles Traveled (VMT) Screening Assessment, City of Vallejo, CA

Dear Mr. Guzman:

A. Introduction

RK ENGINEERING GROUP, INC. (RK) is pleased to provide this Trip Generation Analysis and Vehicle Miles Traveled (VMT) Screening Assessment for the proposed Sonoma Boulevard & Yolano Drive Panda Express Project.

B. Project Description

The project site is currently vacant and located at 4301 Sonoma Boulevard in the City of Vallejo, CA.

The proposed project, based on the most recent site plan, will consist of constructing a 2,700 square-foot (SF) Panda Express fast-food restaurant with dual drive-through lanes proposed to provide queuing for up to 13 vehicles.

The project site is currently designated as Business/Limited Residential in the *City of Vallejo General Plan 2040 Land Use Map*.

Exhibit A shows the location of the proposed project. Exhibit B shows the proposed site plan.

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W rkengineer.com

C. Project Trip Generation

Trip generation represents the amount of traffic that is attracted and produced by a development.

Trip generation is typically estimated based on the trip generation rates from the latest *Institute of Transportation Engineers (ITE) Trip Generation Manual.* The latest and most recent version (11th Edition, 2021) of the ITE Manual has been utilized for this trip generation analysis. This publication provides a comprehensive evaluation of trip generation rates for a variety of land uses.

The project is proposing to construct a Panda Express fast-food restaurant with dual drive-through lanes. As such, ITE Land Use 934: Fast-Food Restaurant with Drive-Through Window trip rates are the most appropriate for this land use. However, Panda Express restaurants do not serve breakfast and is anticipated to open daily after the AM peak period (i.e., after 9 AM). Thus, utilizing the ITE Land Use 934 AM peak hour trip rates will significantly overstate the projected AM peak hour conditions of the project. As a result, ITE Land Use 930: Fast Causal Restaurant trip rates have been utilized for the AM peak hour to provide a more realistic trip generation forecast. ITE Land Use 934 trip rates were utilized for the daily and PM peak hour periods.

The ITE trip generation rates (11th Edition) for the proposed project are shown in Table 1.

Table 1
ITE Trip Generation Rates

Land Use	ITE Code	Units[1]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Fast Casual Restaurant	930	TSF	0.714	0.715	1.43	--	--	--	--
Fast-Food Restaurant with Drive-Through Window	934	TSF	--	--	--	17.18	15.85	33.03	467.48

Source: *2021 ITE Trip Generation Manual, 11th Edition*.
[1]TSF = Thousand Square Feet.

Utilizing the ITE trip generation rates in Table 1, Table 2 shows the ITE peak hour and daily trip generation for the proposed project.

Table 2
Proposed Project Trip Generation

Land Use	Quantity	Units[1]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Panda Express with Drive-Through	2.7	TSF	2	2	4	46	43	89	1,262
Pass-by[2] (0% AM, 55% PM, 10% Daily)			0	0	0	-25	-24	-49	-126
Total Net Trip Generation Forecast			**2**	**2**	**4**	**21**	**19**	**40**	**1,136**

Source: *2021 ITE Trip Generation Manual, 11th Edition*.
[1] TSF = Thousand Square Feet.
[2] *ITE Trip Generation Manual* (11th Edition) provides the following pass-by rates for ITE Land Use 934: Fast—Food Restaurant with Drive Through Window land use: 0% AM (assumed), 55% PM, and 10% daily (estimated).

It should be noted that the total net trip generation includes adjustments for pass-by per the *ITE Trip Generation Manual* (11th Edition). These pass-by reductions account for trips that are already present in everyday traffic on the adjacent streets (i.e. Sonoma Boulevard, etc.) and will stop by the project site as they pass by on their way to another destination. The pass-by reduction factors used for the project land use are summarized in footnote 2 of Table 2 above.

As shown in Table 2, the proposed project is forecast to generate approximately 1,136 net daily trips, approximately 4 net AM peak hour trips and approximately 40 net PM peak hour trips.

As specified in the *Preliminary Review of Multi-Tenant Commercial Building PR21-0007*, dated December 3, 2021, prepared by the City of Vallejo Planning Department, a traffic safety study would be required if the project is expected to generate 100 or more peak hour trips. Based on the net trip generation (i.e., 1,136 net daily trips, 4 net AM peak hour trips, and 40 net PM peak hour trips), the proposed project is not required to prepare a traffic safety study and is not expected to result in any significant adverse impacts on the operations of the roadway network and intersections.

D. VMT Screening Criteria

The California Governor's Office of Planning and Research (OPR) issued a Technical Advisory in December 2018 which described their recommended procedures and methodology for

VMT analysis. A key element of SB 743, signed in 2013, is the elimination of automobile delay and LOS as the sole basis of determining California Environmental Quality Act (CEQA) impacts. Pursuant to CEQA guidelines, Section 15064.3, VMT is the most appropriate measure of transportation impacts.

Consistent with the recommendations of the *City of Vallejo CEQA Transportation Impact Analysis Guidelines*, dated October 2020, prepared by Fehr & Peers, screening thresholds may quickly identify whether or not a project should be expected to have a less than significant impact without conducting a detailed project-level assessment.

The following three types of screening criteria can be applied to effectively screen projects from project-level assessment: Step 1: Transit Priority Area (TPA) Screening; Step 2: Low VMT Area Screening; and Step 3: Project Type Screening. Any of these three criteria can be utilized to screen out from a project-level VMT assessment. Specifically, Step 3: Project Type Screening (TPA) Screening criteria and is most applicable for this project.

Step 3: Project Type Screening

The Technical Advisory states that local-serving retail projects less than 50,000 square feet may be presumed to have a less than significant impact absent substantial evidence to the contrary. Local-serving retail generally improves the convenience of shopping and other activities close to home and has the effect of reducing vehicle travel.

As previously stated, the proposed project will consist of constructing a 2,700 square-foot (SF) Panda Express fast-food restaurant. As a result, the proposed project is screened out based on Step 3: Project Type Screening (local-serving retail projects less than 50,000 square feet) and may be presumed to have a less than significant impact on VMT under CEQA. Therefore, no further VMT analysis is required.

The *City of Vallejo CEQA Transportation Impact Analysis Guidelines*, dated October 2020, prepared by Fehr & Peers, is provided in Appendix A.

E. Conclusions

RK Engineering Group, Inc. has completed this Trip Generation and Vehicle Miles Traveled (VMT) Screening Assessment for the proposed Sonoma Boulevard & Yolano Drive Panda Express Project.

As specified in the *Preliminary Review of Multi-Tenant Commercial Building PR21-0007*, dated December 3, 2021, prepared by the City of Vallejo Planning Department, a traffic safety study will be required if the project is expected to generate 100 or more peak hour trips. Based on the net trip generation (i.e., 1,136 net daily trips, 4 net AM peak hour trips, and 40 net PM peak hour trips), the proposed project is not required to prepare a traffic safety study and is not expected to result in any significant adverse impacts on the operations of the roadway network and intersections.

Furthermore, based on the *City of Vallejo CEQA Transportation Impact Analysis Guidelines*, dated October 2020, prepared by Fehr & Peers, the proposed project will consist of constructing a 2,700 square-foot (SF) Panda Express fast-food restaurant. As a result, the proposed project is screened out based on Step 3: Project Type Screening (local-serving retail projects less than 50,000 square feet) and may be presumed to have a less than significant impact on VMT under CEQA. Therefore, no further VMT analysis is required.

RK Engineering Group, Inc. appreciates this opportunity to assist with this project. If you have any questions regarding this study, please do not hesitate to contact us at (949) 474-0809.

Sincerely,

RK ENGINEERING GROUP, INC.

LICENSED PROFESSIONAL ENGINEER
JUSTIN J. TUCKER
C 92866
Exp: 12/31/23
CIVIL
STATE OF CALIFORNIA

Justin Tucker, P.E
Principal Engineer

Michael Torres, E.I.T.
Engineer II

Exhibits

Exhibit A

Location Map

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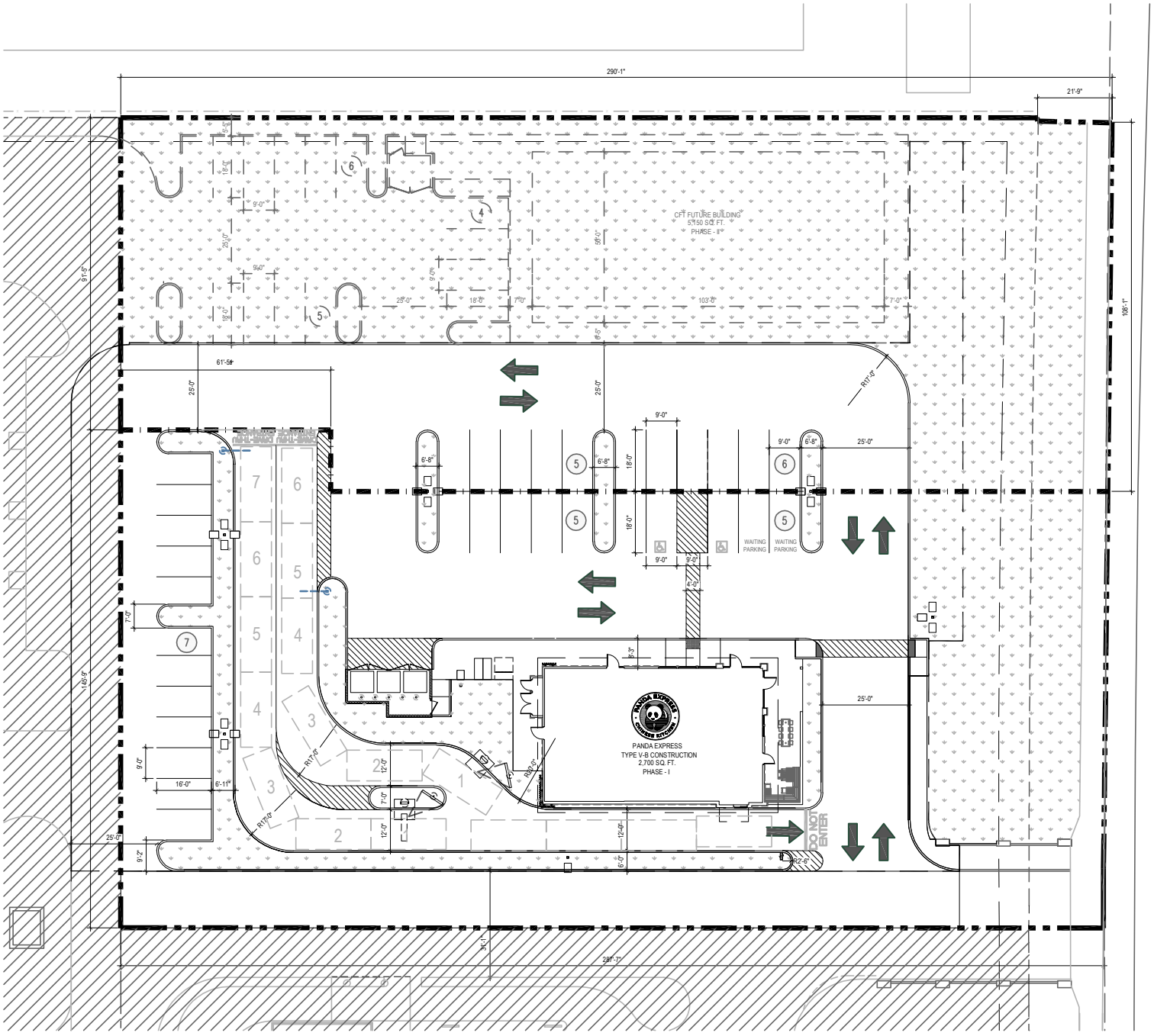
Exhibit B

Site Plan



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RK engineering group, inc.

Appendices

Appendix A

City of Vallejo CEQA Transportation
Impact Analysis Guidelines

City of Vallejo
CEQA Transportation Impact Analysis Guidelines

Prepared for:
City of Vallejo

July 2020
Revised October 2020

WC19-3631

FEHR PEERS

Table of Contents

Attachments

Introduction

SB 743 and the Updated CEQA Guidelines

SB 743, signed by the Governor in 2013, is changing the way transportation impacts are identified. Specifically, the legislation directed the Office of Planning and Research (OPR) to consider different metrics for identifying transportation impacts under the California Environmental Quality Act (CEQA). The OPR finalized updates to the CEQA Guidelines in December 2018; the updated Guidelines identify vehicle miles of travel (VMT) as the preferred transportation impact metric. The updated Guidelines state that, by July 2020, all lead agencies must use VMT as the new transportation metric for identifying impacts of land use projects.

The updated Guidelines include revised Appendix G Checklist questions for transportation impact evaluation. The four questions are:

Would the project:

1. *Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?*
2. *Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?*
3. *Substantially increase hazards due to a geometric design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?*
4. *Result in inadequate emergency access?*

Criteria 2 is the implementation of the SB 743 requirement. CEQA Guidelines section 15064.3(b) reads, in part, as follows:

(1) Land Use Projects. Vehicle-miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.

(2) Transportation Projects. Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.

(3) Qualitative Analysis. If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the

availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.

(4) Methodology. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

City of Vallejo SB 743 Implementation Process

In anticipation of the change to the VMT metric, the City of Vallejo initiated and is nearing completion of a SB 743 Implementation Study. The study included the following steps.

- Review of relevant policies related to greenhouse gas reduction, multimodal transportation, and VMT (memorandum dated October 28, 2019).
- Review of potential travel demand models for use in VMT analysis (memorandum dated October 28, 2019).
- Presentation to City Planning Commission on SB 743 background and implementation guidance from OPR and other sources (presentation on January 6, 2020).
- Preparation of methodology and threshold options based on guidance in the Office of Planning and Research's *Technical Advisory on Evaluating Transportation Impacts in CEQA* (December 2018) and other research regarding VMT reductions needed to achieve the state's greenhouse gas reduction goals (memorandum dated January 31, 2020).
- Preparation of City staff methodology and threshold recommendations for Planning Commission consideration (memorandum dated April 6, 2020).
- Presentation of City staff-recommended methodology and thresholds (presentation on April 20, 2020).

The Planning Commission expressed support for the City staff-recommended methodology and thresholds, and the recommendation will be considered at the June 23, 2020 City Council Meeting.

As noted in CEQA Guidelines Section 15064.7(b) below, lead agencies are encouraged to formally adopt their significance thresholds and this is key part of the SB 743 implementation process.

> *(b) Each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects. Thresholds of significance to be adopted for general use as part of the lead agency's environmental review process must be adopted by ordinance, resolution, rule, or regulation, and developed through a public review process and be supported by substantial evidence. Lead agencies may also use thresholds on a case-by-case basis as provided in Section 15064(b)(2).*

CEQA Transportation Impact Analysis and City Development Review

One of the fundamental roles of government agencies is the construction and maintenance of public infrastructure facilities including roadways, rail and bus facilities, bicycle and pedestrian infrastructure, water lines, sanitary sewer lines, stormwater treatment facilities, parks, and other public facilities. When private development occurs, it is the responsibility of government to ensure that there are adequate public facilities to serve incremental population and employment growth. For the transportation system, one way to address this issue has been the preparation of a Transportation Impact Analysis (TIA).

For the past several decades, the preparation of a TIA was integrated into the CEQA process, in which the TIA was used primarily to analyze a project's impacts under CEQA. However, with the passage of SB 743, changes to this process are necessary. Specifically, a *Transportation Assessment (TA)* may need to be prepared as a stand-alone document, as part of the project approval process, including information for the decision makers that is not required as part of the CEQA process. A separate *Transportation Impact Analysis (TIA)* would contain the information specifically needed for the CEQA document.

The purpose of this *TIA Guidelines* document is to provide instructions for analyzing the potential transportation impacts of proposed development projects, for purposes of the CEQA evaluation. These guidelines present the recommended methodology that should generally be utilized in the preparation of TIAs. These recommendations are general guidelines and the City of Vallejo may modify the TIA requirements based on the unique characteristics of a particular project.

Can LOS Analysis Still be Conducted as Part of Development Review?

SB 743 does not prevent a city or county from continuing to analyze delay or LOS outside of CEQA review for other transportation planning or analysis purposes (i.e., general plans, impact fee programs, corridor studies, congestion mitigation, or ongoing network monitoring); but these metrics may no longer constitute the sole basis for CEQA impacts.

The City's General Plan 2040 has an advisory standard of LOS E or better, to be considered along with, but not to override, metrics for pedestrian, bicycle, transit and emergency access performance (General Plan Policy MTC-2.5). LOS can continue to be assessed relative to this standard during development review, to promote the City's interest in maintaining and operating a functional roadway network. However, assessment of a development project's effect on intersection level of service must be conducted outside

the CEQA process. The assessment can be performed as part of a General Plan consistency assessment, within a separate Transportation Assessment document. City planning and traffic engineering staff will define the scope and methodology for project-level of service analysis as part of the development review process.

Congestion Management Program Compliance Changes

A key element of SB 743 is the elimination of auto delay, level of service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts. This change is intended to assist in balancing the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions.

SB 743 contains amendments to current congestion management law that allows cities and counties to effectively opt-out of the LOS standards that would otherwise apply in areas where Congestion Management Programs (CMPs) are still used (see Government Code Sections 65088.1 and 65088.4). Solano County's Congestion Management Program was recently updated in October 2019. The CMP network in Vallejo includes I-80, SR 37, SR 29 (Sonoma Boulevard), Curtola Parkway, Mare Island Way, and Tennessee Street west of I-80. Three intersections are monitored in the CMP: Tennessee Street/Sonoma Boulevard, Tennessee Street/Mare Island Way, and Curtola Parkway/Sonoma Boulevard. The LOS standard for these intersections in LOS E. The 2019 monitoring indicated all three intersections operated at LOS D or better. However, as noted here, the City of Vallejo may choose to opt out of compliance with the LOS E standard.

VMT Analysis

A key element of SB 743, signed in 2013, is the elimination of automobile delay and LOS as the sole basis of determining CEQA impacts. The most recent CEQA guidelines, released in December 2018, recommend VMT as the most appropriate measure of project transportation impacts. However, SB 743 does not prevent a city or county from continuing to analyze delay or LOS as part of other plans (i.e., the general plan), studies, or ongoing network monitoring.

The following methodology should be used to determine VMT impact thresholds and mitigation requirements for land use project TIAs. These recommendations were developed by City of Vallejo staff with guidance from Fehr & Peers, and are based on the updated *CEQA Guidelines* (December 2018) and the Office of Planning and Research guidance document *Technical Advisory on Analyzing Transportation Impacts in CEQA* (December 2018) (*Technical Advisory*).

Analysis Methodology

For purposes of SB 743 compliance, a VMT analysis should be conducted for land use projects as deemed necessary by the City Planning Manager and Traffic Engineer, and would apply to projects that have the potential to increase the average VMT per service population, resident, or employee, depending on the project type. (Service population is residents plus employees.) Normalizing VMT per service population, resident, or employee essentially provides a transportation efficiency metric. Using this efficiency metric allows the analyst to compare the project to the city as a whole, for purposes of identifying transportation impacts.

In addition to assessing the project's VMT efficiency, the project's effect on total citywide VMT is also calculated, to assess how the project may change VMT within the city as it interacts with other city land uses.

Attachment A provides a flowchart outlining the process described below.

Consistency with the Regional Transportation Plan/Sustainable Communities Strategy

The first step in assessing project impacts is to determine if the project land use is contained within the City of Vallejo residential and non-residential land use allocations in the current Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), and if the project is consistent with the City of Vallejo General Plan. As of June 2020, the current RTP/SCS is *Plan Bay Area 2040*, adopted in 2017. If the project is not consistent with the RTP/SCS and/or the General Plan, amendments to those documents would be needed prior to proceeding with the project review.

Project Screening

There are three types of screening that lead agencies can apply to effectively screen projects from project-level assessment. These screening steps are summarized below:

Step 1: Transit Priority Area (TPA) Screening

Projects located within a TPA[1] may be presumed to have a less than significant impact absent substantial evidence to the contrary. This presumption may ***NOT*** be appropriate if the project:

1. Has a Floor Area Ratio (FAR) of less than 0.75;
2. Includes more parking for use by residents, customers, or employees of the project than required by the City (if the City requires the project to supply parking);
3. Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the City, with input from the Metropolitan Transportation Commission); or
4. Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

Step 2: Low VMT Area Screening

Citywide, Countywide and Regional VMT Averages

Table 1 shows the citywide average VMT metrics as reported by the Solano-Napa Activity Based Travel Demand Model (SNABM). The metrics increase by about 2 percent between 2015 and 2040.

Table 1: City of Vallejo VMT Metrics

Land Use	City of Vallejo Baseline Year (2015)	City of Vallejo Cumulative Year (2040)[1]
Residential (All trips made by resident traced back to residence)	26.0 VMT/resident	26.6 VMT/resident
Office/Employment (All trips part of home-work tours traced back to workplace)	31.5 VMT/employee	32.4 VMT/employee

Source: Solano-Napa Activity Based Travel Demand Model (September 2018 version); Fehr & Peers, October 2020.

[1] A TPA is defined as a half mile area around an existing major transit stop or an existing stop along a high quality transit corridor per the definitions below. The City has discretion to measure the half-mile based on a straight radius or walking routes. The straight radius method will maximize the footprint of the TPA and allow for the greatest amount of potential project screening. Using the walking route method will decrease the land area subject to potential TPA screening but will increase the likelihood that development projects located in this area have a less than 1/2 mile walking distance to the transit station. Academic research has demonstrated that walking distance is an important factor that influences the choice to take transit and thereby reduce VMT. For more background on this, see the following article: http://www.reconnectingamerica.org/assets/Uploads/20111018UCB-ITS-VWP-2011-5.pdf).

Pub. Resources Code, § 21064.3 - 'Major transit stop' means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.' Note that this requirement means that both intersecting routes must have the 15-minute or less frequency of service interval.

Pub. Resources Code, § 21155 - For purposes of this section, a 'high-quality transit corridor' means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

For information, the City of Vallejo metrics are compared to countywide and nine-county Bay Area metrics in **Table 2.** In both the 2015 and 2040 model results, Vallejo's residential tour VMT per resident is lower than the Solano County average (10 percent lower in 2015 and 8 percent lower in 2040), but higher than the Bay Area average (11 percent higher in 2015 and 18 percent higher in 2040). Vallejo's employment home-work tour VMT per employee is higher than both the Solano County and Bay Area averages in both 2015 and 2040 (2 percent higher than the Countywide average in 2015 and 5 percent higher in 2040; 31 percent higher than the Bay Area average in 2015 and 41 percent higher in 2040).

The Solano County average residential tour VMT per resident increases by 1 percent between 2015 and 2040, and the employment home-work tour VMT per employee is unchanged.

The Bay Area average residential tour VMT per resident decreases by 3 percent between 2015 and 2040, and the employment home-work tour VMT per employee decreases by 4 percent.

In summary, the SNABM indicates that residential and employment VMT metrics are expected to increase slightly in 2040, relative to baseline conditions, in both Vallejo and Solano County, but that Bay Area VMT metrics will drop. The model further indicates that Vallejo's residential VMT metric is lower than the countywide average, but higher than the Bay Area average; and that Vallejo's employment VMT metric is higher than both the countywide average and the Bay Area average.

Table 2: City of Vallejo VMT Metrics Compared to County and Region

Land Use	Baseline (2015) City of Vallejo	Baseline (2015) Solano County	Baseline (2015) Bay Area	Cumulative (2040) City of Vallejo[1]	Cumulative (2040) Solano County[1]	Cumulative (2040) Bay Area[1]
Residential (All trips made by resident traced back to residence)	26.0 VMT/resident	28.8 VMT/resident	23.4 VMT/resident	26.6 VMT/resident	29.0 VMT/resident	22.6 VMT/resident
Office/Employment (All trips part of home-work tours traced back to workplace)	31.5 VMT/employee	30.9 VMT/employee	24.0 VMT/employee	32.4 VMT/employee	30.9 VMT/employee	23.0 VMT/employee

Source: Solano-Napa Activity Based Travel Demand Model (September 2018 version); Fehr & Peers, October 2020.

Project VMT Screening Based on Low-VMT Area

Residential and office projects located within a low-VMT generating area of the city (i.e., lower than citywide average levels, based on the significance thresholds in this document) may be presumed to have a less than significant impact absent substantial evidence to the contrary. In addition, other employment-related and mixed-use land use projects may qualify for the use of screening if the project can reasonably be expected to generate VMT per resident, per worker, or per service population that is similar to the existing land uses in the low-VMT area.

The SNABM was reviewed and found to not provide reasonable traffic analysis zone (TAZ)-level results for purposes of identifying low-VMT areas of the city. Therefore, a project applicant and their analyst may present other data, if feasible, to identify if the project is in a low-VMT generating area. One potential data source would be trip generation and trip length information from a location-based services data vendor, demonstrating that similar uses near the project site generate VMT per service population, per resident, or per employee that is no higher than the citywide average. The analyst should use professional judgement to ensure that there is nothing unique about the project that would otherwise be mis-represented utilizing the vendor data.

Other methods for identifying low-VMT areas of the city may become available in the months and years ahead. Therefore, the City may consider other screening methods, supported by substantial evidence for their use.

For low VMT area screening to be satisfied, the analyst must verify that the project land uses would not alter the existing built environment in such a way as to increase the rate or length of vehicle trips (e.g. the proposed project is consistent with existing land use in the area, the project would be expected to contribute VMT consistent with existing land use in the area, and the project would not significantly alter travel patterns in the area).

Step 3: Project Type Screening

The *Technical Advisory* states that local-serving retail projects less than 50,000 square feet may be presumed to have a less than significant impact absent substantial evidence to the contrary. Local-serving retail generally improves the convenience of shopping and other activities close to home and has the effect of reducing vehicle travel.

The following uses can also be presumed to have a less than significant impact absent substantial evidence to the contrary, as their uses are local serving in nature; however, note that it is recommended that as much substantial evidence as possible be provided for the local-serving nature of a given project:

- Local-serving K-12 public schools
- Local parks
- Day care centers
- Local-serving retail uses less than 50,000 square feet, including:
    - Gas stations
    - Banks
    - Restaurants
    - Shopping centers
- Local-serving hotels (e.g. non-destination hotels)
- Student housing projects on or adjacent to college campuses
- Local-serving assembly uses (places of worship, community organizations)

- Community institutions (public libraries, fire stations, local government facilities)
- Local serving community colleges that are consistent with the assumptions noted in the RTP/SCS
- Affordable or supportive housing[2]
- Assisted living facilities
- Senior housing (as defined by HUD)
- Projects generating less than 110 daily vehicle trips[3]
    - This generally corresponds to the following "typical" development potentials:
        - 11 single family housing units
        - 16 multi-family, condominiums, or townhouse housing units
        - 10,000 sq. ft. of office
        - 15,000 sq. ft. of light industrial[4]
        - 63,000 sq. ft. of warehousing
        - 79,000 sq. ft. of high cube transload and short-term storage warehouse[7]

Any project that uses the designation of "local-serving" should be able to demonstrate that its users (employees, customers, visitors) would come primarily from within the city limits. The project would therefore not generate new "demand" for the project land uses, but would meet at existing demand that would shorten the distance existing residents, employees, customers, or visitors would need to travel.

VMT Assessment for Non-Screened Development

Projects not screened through the steps above should complete a VMT analysis using the version of the Solano travel demand model available at the time of the project analysis to determine if they have a significant VMT impact. This analysis should include 'project generated VMT' and 'project effect on VMT' estimates for the project as follows. Thresholds of significance are discussed in the next section. **Attachment B** provides more detailed direction on the steps below. Note that the model version used for this guidelines document is the September 2018 version. Future analysis should use the version available from the Solano Transportation Authority at the time of the analysis, as the STA periodically updates its travel demand model. In addition, the STA is developing a Solano County-validated version of the model, and when it is ready for use, it should be reviewed by the City of Vallejo and used for project impact analysis, rather than the Solano-Napa Activity Based Model. Project analysis using updated

[2] The project must provide 100% of residential units as affordable or supportive housing.

[3] This threshold ties directly to the OPR technical advisory and notes that CEQA provides a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development and the project is not in an environmentally sensitive area. (CEQA Guidelines, § 15301, subd. (e)(2).) Typical project types for which trip generation increases relatively linearly with building footprint (i.e., general office building, single tenant office building, office park, and business park) generate or attract an additional 110-124 trips per 10,000 square feet. Therefore, absent substantial evidence otherwise, it is reasonable to conclude that the addition of 110 or fewer trips could be considered not to lead to a significant impact.

[4] Threshold may be higher depending on the tenant and the use of the site. This number was estimated using rates from ITE's *Trip Generation Manual*.

versions of the model should include citywide metrics extracted from the updated model as opposed to those presented in Table 1.

- Baseline Conditions – Conditions in the baseline year for the CEQA analysis, which is most often chosen as the time of notice of preparation (NOP) of an environmental document, but may be chosen as the baseline year of the SNABM, if land use and transportation network conditions can be considered largely unchanged between the model baseline year and the date of the NOP. VMT for the project TAZ and citywide total should be calculated.
- Baseline Plus Project - The project land use is added to the project TAZ or a separate TAZ may be created to contain the project land uses. A full model run is performed and VMT changes (by metric of choice) is isolated for the project TAZ and across the full model network. The model output must include reasonableness checks of the production and attraction balancing to ensure the project effect is accurately captured. If this scenario results in a less-than-significant impact, then additional cumulative scenario analysis may not be required (more information about this outcome can be found in the Thresholds Evaluation discussion later in this section).
- Cumulative No Project– Conditions in the future year travel demand model (current future year is 2040).
- Cumulative Plus Project - The project land use is added to the project TAZ or a separate TAZ is created to contain the project land uses. The addition of project land uses may be accompanied by a reallocation of a similar amount of land use from other TAZs throughout the model area (focusing on Solano and Napa Counties), especially if the proposed project is significant in size such that it would potentially reduce the potential for development throughout the rest of the model area. Land use projects will generally not change the cumulative no project control totals for population and employment growth within the model area. Instead, they will influence the land use supply through changes in general plan land use designations and zoning. If project land uses are simply added to the cumulative no project scenario, then the analysis should reflect this limitation in the methodology and acknowledge that the analysis may overestimate the project's effect on VMT. A full model run is performed and VMT changes (by metric of choice) would be isolated for the project TAZ and across the full model network. The model output must include reasonableness checks of the production and attraction balancing to ensure the project effect is accurately captured.

The model output should include total network-based boundary VMT by speed bin, which includes all vehicle trips and trip purposes in a defined boundary[5] to measure the project effect on VMT. The model output should include the following project-generated VMT: Total Project VMT (all trip purposes) per service population (population plus employment); Residential Tour VMT per resident (for residential projects) and Home-Based-Work Tour VMT per employee (for office/employment uses). The network-

[5] Network-based VMT is also referred to as boundary method VMT. For most projects, boundary method for the City should be adequate. For projects located near the City limit, an alternative boundary should be considered that captures the true effect the project has on local traffic. This could be determined using average trip length to/from the site or other approach to completely capture changes in VMT.

based boundary VMT is needed as an input for air quality, greenhouse gas (GHG), and energy impact analysis, while the project-generated VMT metrics are used for the transportation impact analysis.

Both "plus project" scenarios noted above will summarize two types of VMT: (1) the project effect on VMT, comparing how the project changes VMT on the boundary network looking at citywide VMT in absolute terms and also per service population, comparing these to the No Project condition, and (2) project-generated VMT per service population, per resident, or per employee, with a comparison to the appropriate benchmark noted in the thresholds of significance.

Project-generated VMT should be extracted from the travel demand forecasting model by combining either the origin-destination (for total VMT) or production-attraction (for the other metrics) trip matrices and congested skims from final assignment. The VMT should be adjusted to reflect trips that extend beyond the model boundary (this is described in more detail in Attachment B). The project's effect on VMT should be estimated using the regional boundary (recommended region is Solano County) and extracting the total link-level VMT for both the No Project and With Project condition.

If a project is mixed-use (i.e. composed of both residential and retail/office uses) project-generated VMT should be extracted for both the total VMT and VMT per service population (residents and employees).

Significance Thresholds

The City has adopted the following thresholds of significance. These thresholds are intended to hold new development VMT generation at or below citywide VMT generation levels, for the baseline and cumulative scenarios. This is expected to result in declining VMT over time, as compared to a business as usual condition with no VMT limits. The thresholds balance the City's priorities with respect to competing objectives including Vallejo's geographic and transportation context, greenhouse gas reduction goals, interest in achieving the state's greenhouse gas reduction goals, and General Plan 2040 goals and policies related to land use mix, economic development, and housing provision.

Threshold 1: Project Generated VMT (Residential and Office/Industrial Projects) - Baseline

Project-generated Residential Tour VMT per resident (for residential projects), Home-Based-Work Tour VMT per employee (for office/industrial projects) or Total VMT per service population (for mixed-use projects) is no higher than the baseline citywide Residential Tour VMT per resident, Home-Based-Work Tour VMT per employee, or Total VMT per service population.

Threshold 2: Project Generated VMT (Residential and Office/Industrial Projects) - Cumulative

Project-generated Residential Tour VMT per resident (for residential projects), Home-Based-Work Tour VMT per employee (for office/industrial projects), or Total VMT per service population (for mixed-use projects) is no higher than the cumulative citywide Residential Tour VMT per resident, Home-Based-Work Tour VMT per employee, or Total VMT per service population. This threshold does not apply if it can be demonstrated that VMT rates are declining at the time of the analysis.

Threshold 3: Project's Effect on VMT (Residential and Office/Industrial Projects) -- Cumulative

The Project reduces or has no effect on the citywide total VMT under cumulative conditions.

Threshold 4: Project-Generated VMT and Project's Effect on VMT (Other Project Types)

VMT thresholds for other project types (for example, institutional, destination hotel, or cultural projects) would be developed using considerations unique to the individual project. The thresholds will incorporate the principles of Thresholds 1 – 3, i.e., projects that are not expected to generate VMT above a relevant baseline level and/or are not expected to increase VMT in the cumulative condition would be considered to have a less than significant impact with respect to VMT.

VMT Mitigation Measures

To mitigate VMT impacts, the following choices are available to the applicant:

1. Modify the project's built environment characteristics to reduce VMT generated by the project
2. Implement transportation Demand Management (TDM) measures to reduce VMT generated by the project.
3. Participate in a VMT fee program and/or VMT mitigation exchange/banking program (if they exist) to reduce VMT from the project or other land uses to achieve acceptable levels

As part of the Vallejo SB 743 Implementation Study, key VMT reduction measures that are appropriate to the Vallejo land use, urban form and transportation context were identified. These measures are summarized below, with additional effectiveness estimates and background information provided in **Attachment C.**

Potential VMT Reduction Measures

- Increase transit accessibility: provide transit stops, fund or contribute to shuttle service, provide transit subsidies to project residents or employees, or other actions that increase the ability of residents or employees to use transit
- Provide pedestrian network improvements: eliminate sidewalk gaps which create barriers to off-site activity centers, or enhance the width or design of existing off-site sidewalks or paths
- Provide bicycle network improvements: eliminate bike facility gaps, add new bike lanes, protected bike lanes, or off-street multi-use paths connecting to key off-site activity centers
- Provide traffic calming measures: construct off-site traffic calming measures which slow auto traffic and create a more comfortable walking and bicycling environment
- Implement a car-sharing program: provide car sharing within a project, or contribute funding to an off-site car sharing site, reducing the need for site employees to commute by car or the need for site residents to own a car
- "Un-bundle" private parking: lease parking separately from office space or residential units within a project site, thus encouraging site users to consider the independent value of the parking and potentially reducing car use
- Implement market-rate public parking: price all public parking within a particular area (downtown, for example) to encourage "park once" behavior, reducing automobile circulation

- Increase transit service frequency: contribute funding to allow transit agencies to provide shorter headways and improve transit trip speed and reliability
- Encourage telecommuting and alternative work schedules: provide telecommuting incentives to reduce employee commuting by automobile

Evaluation of VMT reductions should be conducted using state-of-the-practice methodologies recognizing that many of the TDM strategies are dependent on building occupant performance over time. As such, actual VMT reduction cannot be reliably predicted and monitoring may be necessary to gauge performance related to mitigation expectations.

Potential Future Changes to City VMT Evaluation Methodology

An alternative approach to assessing VMT impacts is to conduct a CEQA analysis of the VMT associated with the City's General Plan, and use that evaluation to support analysis of individual projects subsequent to the General Plan-level evaluation. This approach acknowledges that the City of Vallejo General Plan land use allocations and associated VMT have already been planned for and determined to be acceptable by the City. It also allows the City to set a citywide VMT reduction target and threshold of significance, and plan VMT reduction strategies and programs in a more holistic, effective, and equitable manner than would be possible using project-by-project impact evaluations. It would also provide opportunities for streamlined review of projects under CEQA Guidelines section 15183.

The City of Vallejo intends to prepare an updated General Plan and EIR as described above. When that process is complete, this guideline document will be revised to reflect the new citywide VMT thresholds of significance, VMT reduction targets, VMT reduction policies and TDM measures, and analysis methodology for individual project level reviews

Analysis for Other Appendix G Checklist Criteria

As noted in the Introduction, the updated CEQA Guidelines Appendix G Checklist contains three additional criteria beyond the VMT evaluation criteria discussed in the preceding section. They are listed below.

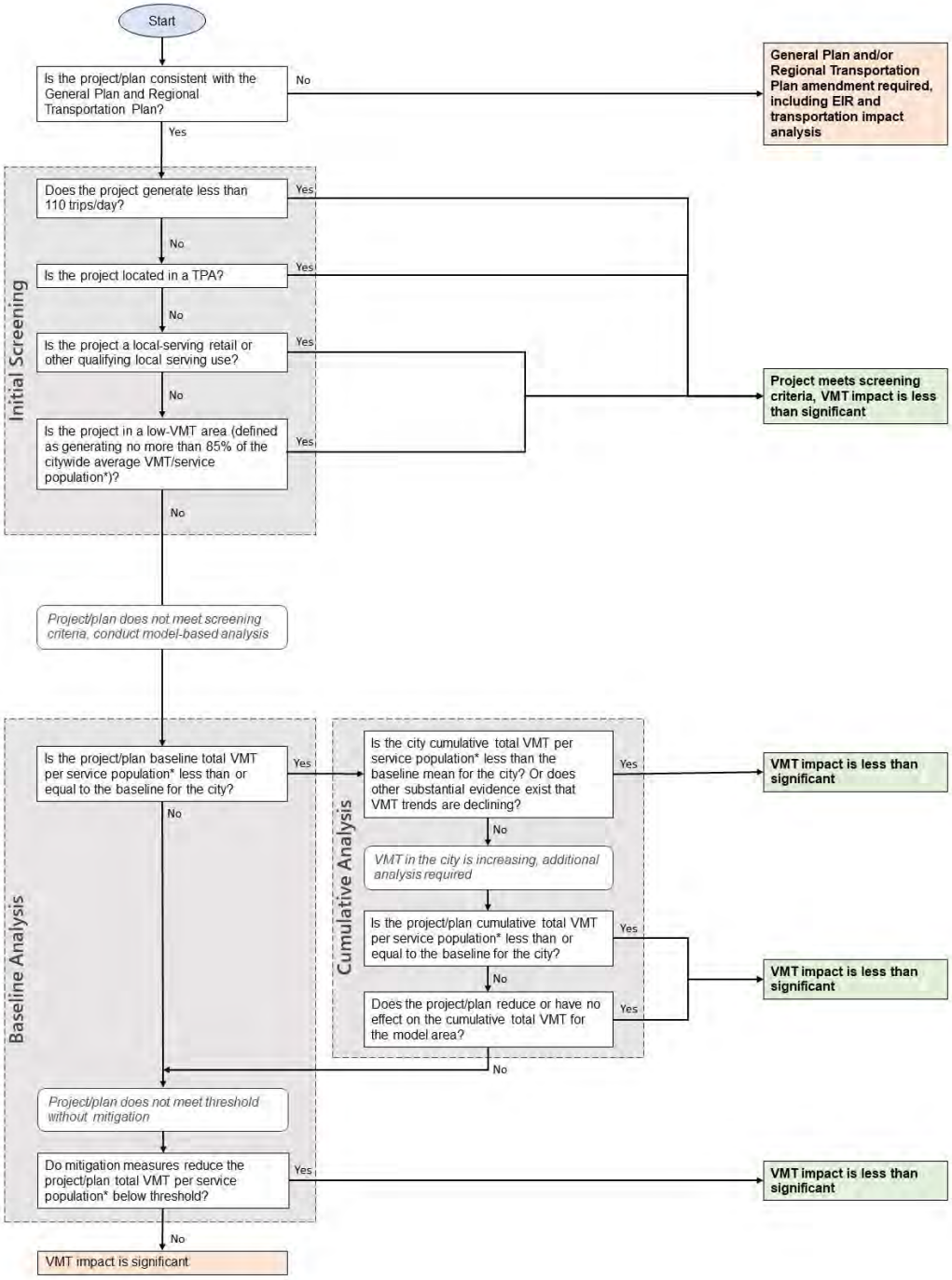
Would the project:

1. *Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?*
3. *Substantially increase hazards due to a geometric design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?*
4. *Result in inadequate emergency access?*

TIAs should address these three questions, considering the unique characteristics of the project, including its location, size, design, use mix, transportation and urban form context, and other relevant details.

Attachments

A. VMT Analysis Process Flowchart



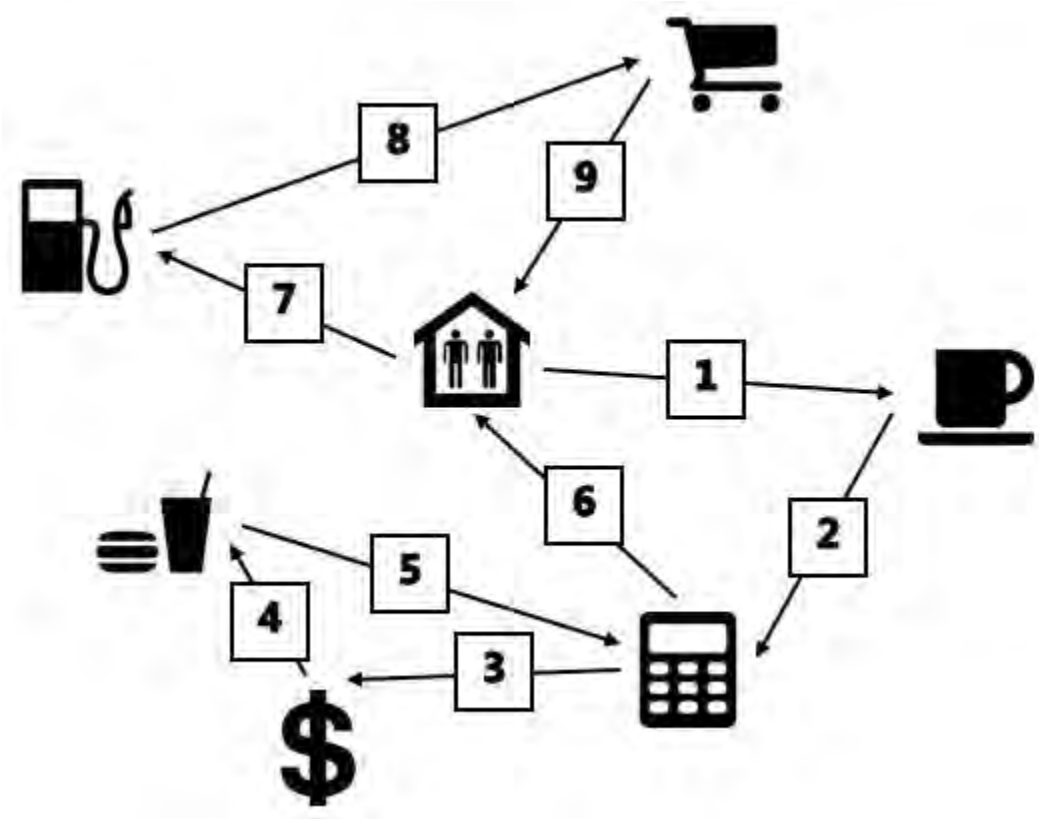
* "Service population" = employees + residents. For single-use residential projects, the service population is residents; for single-use employment projects (such as office uses), the service population is employees.

B. Detailed VMT Forecasting Information

Overview

Travel demand models generate daily person trip-ends for each TAZ across various trip purposes (Home-Based-Work, Home-Based-Other, and Non-Home-Based, for example) based on population, household, and employment variables. Travel demand models are simplifications of reality and as such, TAZs often contain a large amount of population, households, and employment. Travel models do not tie trip generation to individual land uses but instead aggregate all up to the TAZ level. This can create challenges for complying with the SB743 guidance because the thresholds are tied to specific land use categories and their behavior. The following methodology addresses this particular challenge among others.

To better understand the trips used in each metric, consider the following daily vehicle trip tour for an individual residential worker in TAZ. Note that each TAZ would have many individual residential workers and thus the calculations would be a sum of these individual calculations:



These nine daily vehicle trips include a variety of trip purposes: home-based work (HBW), home-based other (HBO), work-based other (WBO), and other-based other (OBO). WBO and OBO trips are often grouped into a non-home based (NHB) category. The table below categorizes the nine daily trips into trip purposes.

Trip	Tour	Origin	Destination	Purpose	Distance
1	Work	Residence	Coffee Shop	HBO	2 miles
2	Work	Coffee Shop	Work	WBO (NHB)	10 miles
3	Work	Work	ATM	WBO (NHB)	1 mile
4	Work	ATM	Sandwich Shop	OBO (NHB)	1 mile
5	Work	Sandwich Shop	Work	WBO (NHB)	1 mile
6	Work	Work	Residence	HBW	11 miles
7	Home	Residence	Grocery Store	HBO	3 miles
8	Home	Grocery Store	Gas Station	OBO (NHB)	1 mile
9	Home	Gas Station	Residence	HBO	2 miles

The SNABM is an activity-based model that uses links an individual's trips into "tours." Therefore it is straightforward to calculated VMT associated with residential or work locations based on the type of "tour." The table below describes the calculation for the partial VMT metrics.

Description	Trips	VMT	Comments
Residential Tour	1-9	32 miles	Includes all trips by a resident
Home-Work Tour	1, 2, 6	23 miles	Includes all trips part of a home-work tour

The Total VMT calculation (all trip purposes for both resident and worker) is more easily calculated using the final origin-destination vehicle matrices and summing all origin and destination trip ends for each TAZ. The Total VMT calculation is includes all trips, all trip purposes, for any interaction with the TAZ regardless of whether they are a resident or worker of the TAZ.

Each of these metrics need to be adjusted to account for the length of trips that get truncated at the travel model boundary. Adjusting the length of trips leaving a model boundary requires appending extra distance at the model gateway zone (or external centroid) connector based on calculations from a parent travel demand model, such as the California Statewide Travel Demand Model (CSTDM). This process results in new gateway distances that are weighted based on the amount and location of external travel origins and destinations. The calculations would need to address the distance of trips outside of travel model boundary; in the case of the SNABM this is the nine county Bay Area.

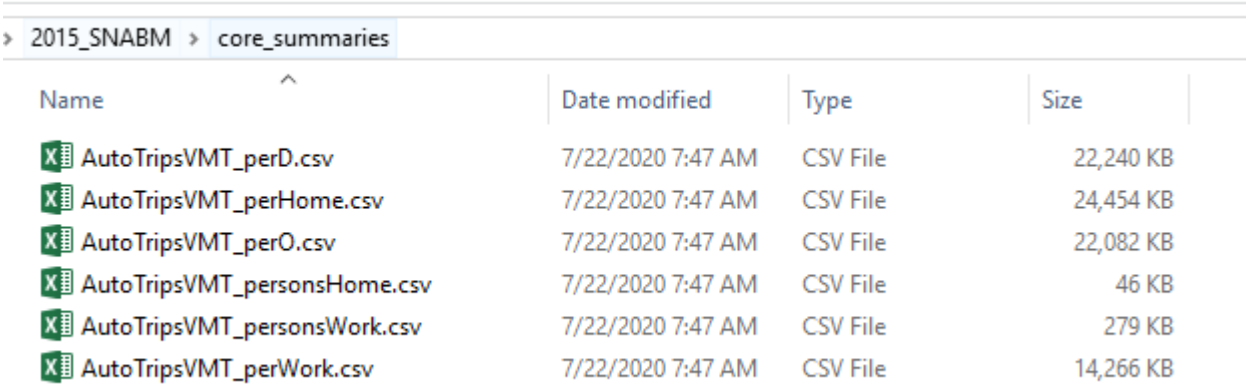
Detailed VMT Calculation Instructions

The following outlines the process used to estimate City of Vallejo VMT Metrics via the Solano-Napa Activity-Based Model (SNABM).

1. Adapted MTC's "Core Summaries" R script that was used for MTC Travel Model 1 to work for SNABM (script available upon request). The script takes approximately 5-15 minutes to run after a

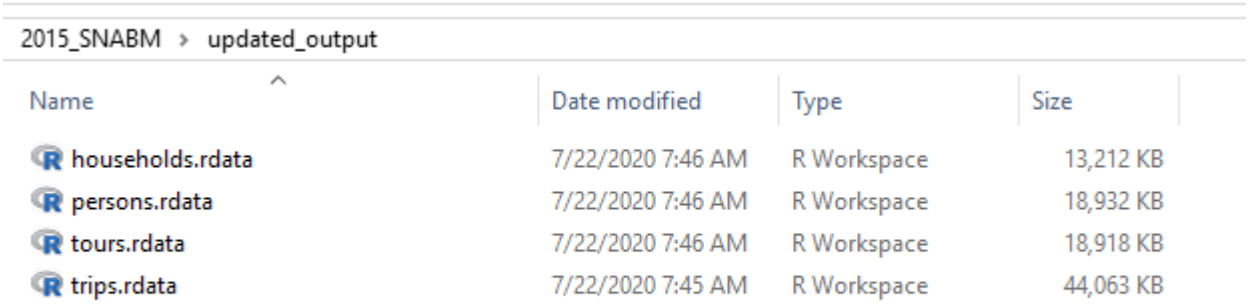
complete SNABM model run and summarizes the large trip and tour list files used in SNABM for use in further VMT summaries

2. Output of script is collection of files in new "core_summaries" and "updated_output" folders within model scenario folder (see below)



2015_SNABM › core_summaries

Name	Date modified	Type	Size
AutoTripsVMT_perD.csv	7/22/2020 7:47 AM	CSV File	22,240 KB
AutoTripsVMT_perHome.csv	7/22/2020 7:47 AM	CSV File	24,454 KB
AutoTripsVMT_perO.csv	7/22/2020 7:47 AM	CSV File	22,082 KB
AutoTripsVMT_personsHome.csv	7/22/2020 7:47 AM	CSV File	46 KB
AutoTripsVMT_personsWork.csv	7/22/2020 7:47 AM	CSV File	279 KB
AutoTripsVMT_perWork.csv	7/22/2020 7:47 AM	CSV File	14,266 KB



2015_SNABM › updated_output

Name	Date modified	Type	Size
households.rdata	7/22/2020 7:46 AM	R Workspace	13,212 KB
persons.rdata	7/22/2020 7:46 AM	R Workspace	18,932 KB
tours.rdata	7/22/2020 7:46 AM	R Workspace	18,918 KB
trips.rdata	7/22/2020 7:45 AM	R Workspace	44,063 KB

3. The files needed to calculate Residential and Office/Employment VMT metrics are the following:
    a. AutoTripsVMT_personHome.csv – summarizes population for each TAZ as output from the population synthesizer
    b. AutoTripsVMT_perHome.csv – summarizes all VMT made by resident tied back to residence TAZ, sorted by tour purpose and trip purpose
    c. AutoTripsVMT_personsWork.csv – summarizes workers/employees for each TAZ as output from the population synthesizer
    d. AutoTripsVMT_perwork.csv – summarizes all VMT made by workers tied back to workplace TAZ, sorted by tour purpose and trip purpose. Note that WorkLocation = 0 means VMT made by non-workers

4. Summarizing Residential VMT Metric
    a. Defined as all trips/VMT by resident traced back to the residence location
    b. To summarize by TAZ: sum of all VMT records on 'AutoTripsVMT_perHome.csv' by TAZ divided by sum of all population records on 'AutoTripsVMT_personsHome.csv' by TAZ
    c. To summarize by jurisdiction (place/county/etc): sum of all VMT records on 'AutoTripsVMT_perHome.csv' by TAZs corresponding to jurisdiction divided by sum of all population records on 'AutoTripsVMT_personHome.csv' by TAZs corresponding to jurisdiction
    d. To summarize by region: same process as jurisdiction describe above, except including all TAZs in Bay Area counties

5. Summarizing Office/Employment VMT Metric
    a. Defined as all trips part of home-work tour traced back to the workplace location
    b. To summarize by TAZ: sum of VMT records with home-work tour purposes (see below) on 'AutoTripsVMT_perWork.csv' by TAZ divided by sum of all worker records on 'AutoTrips_VMT_personsWork.csv' by TAZ
        i. Home-work tour purposes defined as 'work_low', 'work_med', 'work_high', and 'work_very high'
    c. To summarize by jurisdiction (place/county/etc): sum of VMT records with home-work tour purposes (see below) on 'AutoTripsVMT_perWork.csv' by TAZs corresponding to jurisdiction divided by sum of all worker records on 'AutoTrips_VMT_personsWork.csv' by TAZs corresponding to jurisdiction
    d. To summarize by region: same process as jurisdiction describe above, except including all TAZs in Bay Area counties

6. Adjust VMT metrics to account for length of trips that get truncated at travel model boundary
    a. Ran the California Statewide Travel Demand Model (CSTDM) to estimate amount of extra distance to append to trips leaving the SNABM model area
    b. Select zone of SNABM model area zones within CSTDM and calculation of trip lengths outside of SNABM model area for IX/XI trips by gateway.
    c. Apply this average extra distance by gateway to SNABM model estimate of IX/XI trips and summarize "extra" VMT per TAZ (on top of the VMT already summarized within the model boundaries)
        i. Thus the TAZs with more IX/XI trips (e.g. near a model boundary) would get more extra distance than a TAZ with fewer IX/XI trips (e.g. within the core Bay Area)
    d. End product is "extra" VMT to add to the VMT metrics calculated in previous steps

C. Mitigation Measures

A list of mitigation measures which are considered appropriate for Vallejo's geographic and transportation context is provided in the following pages. Potential effectiveness in reducing VMT, along with the basis for the effectiveness finding, is also given. More information on the effectiveness estimates is provided in the Technical Memorandum *VMT Analysis Methodology and Significance Thresholds for City of Vallejo Transportation Impact Assessment: Summary and Next Steps* (April 6, 2020).

For each project mitigation evaluation, the analyst should consider the potential effectiveness for the specific project being evaluated, including its location within Vallejo, multi-modal transportation network and services available to the project, project transportation amenities and proposed improvements to the surrounding network, and other relevant characteristics.

Attachment C

Mitigation Measures:

FEHR & PEERS

VMT Reduction Strategies Based on Vallejo's Land Use and Transportation Context

					New Information Since CAPCOA Was Published in 2010		
CAPCOA Category	CAPCOA #	CAPCOA Strategy	CAPCOA Reduction	Strength of Substantial Evidence for CEQA Impact Analysis?	New information	Change in VMT reduction compared to CAPCOA(1)	Literature or Evidence Cited
Land Use/Location	3.1.1	LUT-1 Increase Density	0.8% - 30% VMT reduction due to increase in density	Adequate	Increasing residential density is associated with lower VMT per capita. Increased residential density in areas with high jobs access may have a greater VMT change than increases in regions with lower jobs access. The range of reductions is based on a range of elasticities from -0.04 to -0.22. The low end of the reductions represents a -0.04 elasticity of demand in response to a 10% increase in residential units or employment density and a -0.22 elasticity in response to 50% increase to residential/employment density.	0.4% -10.75%	Primary sources: Boarnet, M. and Handy, S. (2014). Impacts of Residential Density on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm Secondary source: Stevens, M. (2017). Does Compact Development Make People Drive Less? Journal of the American Planning Association, 83(1), 7-18.
Land Use/ Location	3.1.3	LUT-3 Increase Diversity of Urban and Suburban Developments	9%-30% VMT reduction due to mixing land uses within a single development	Adequate	1] VMT reduction due to mix of land uses within a single development; 2] Reduction in VMT due to regional change in entropy index of diversity.	1] 0%-12% 2] 0.3%-4%	1] Ewing, R. and Cervero, R. (2010). Travel and the Built Environment - A Meta-Analysis. Journal of the American Planning Association,76(3),265-294. Cited in California Air Pollution Control Officers Association. (2010).Quantifying Greenhouse Gas Mitigation Measures. Retrieved from: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf Frank, L., Greenwald, M., Kavage, S. and Devlin, A. (2011). An Assessment of Urban Form and Pedestrian and Transit Improvements as an Integrated GHG Reduction Strategy. WSDOT Research Report WA-RD 765.1. Washington State Department of Transportation. Retrieved from: http://www.wsdot.wa.gov/research/reports/fullreports/765.1.pdf Nasri, A. and Zhang, L. (2012). Impact of Metropolitan-Level Built Environment on Travel Behavior. Transportation Research Record: Journal of the Transportation Research Board, 2323(1), 75-79. Sadek, A. et al. (2011). Reducing VMT through Smart Land-Use Design. New York State Energy Research and Development Authority. Retrieved from: https://www.dot.ny.gov/divisions/engineering/technical-services/trans-r-and-d-repository/C-08-29%20Final%20Report_December%202011%20%282%29.pdf Spears, S.et al. (2014). Impacts of Land-Use Mix on Passenger Vehicle Use and Greenhouse Gas Emissions- Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm 2] Zhang, Wengia et al. "Short- and Long-Term Effects of Land Use on Reducing Personal Vehicle Miles of Travel."

TDM STRATEGY EVALUATION

FEHR & PEERS

Relevant Strategies for Implementation in Vallejo Due to Land Use Context

					New Information Since CAPCOA Was Published in 2010		
CAPCOA Category	CAPCOA #	CAPCOA Strategy	CAPCOA Reduction	Strength of Substantial Evidence for CEQA Impact Analysis?	New information	Change in VMT reduction compared to CAPCOA(1)	Literature or Evidence Cited
Land Use/ Location	3.1.5	LUT-5 Increase Transit Accessibility	0.5%-24.6% reduce in VMT due to locating a project near high-quality transit	Adequate	1] VMT reduction when transit station is provided within 1/2 mile of development (compared to VMT for sites located outside 1/2 mile radius of transit). Locating high density development within 1/2 mile of transit will facilitate the use of transit by people traveling to or from the Project site. The use of transit results in a mode shift and therefore reduced VMT. 2] Reduction in vehicle trips due to implementing TOD. A project with a residential/commercial center designed around a rail or bus station, is called a transit-oriented development (TOD). The project description should include, at a minimum, the following design features: • A transit station/stop with high-quality, high-frequency bus service located within a 5-10 minute walk (or roughly ¼ mile from stop to edge of development), and/or • A rail station located within a 20 minute walk (or roughly ½ mile from station to edge of development) • Fast, frequent, and reliable transit service connecting to a high percentage of regional destinations • Neighborhood designed for walking and cycling	1] 0%-5.8% 2] 0%-7.3%	1] Lund, H. et al. (2004). Travel Characteristics of Transit-Oriented Development in California. Oakland, CA: Bay Area Rapid Transit District, Metropolitan Transportation Commission, and Caltrans. Tal, G. et al. (2013). Policy Brief on the Impacts of Transit Access (Distance to Transit) Based on a Review of the Empirical Literature. California Air Resources Board. Retrieved from: https://www.arb.ca.gov/cc/sb375/policies/transitaccess/transit_access_brief120313.pdf 2] Zamir, K. R. et al. (2014). Effects of Transit-Oriented Development on Trip Generation, Distribution, and Mode Share in Washington, D.C., and Baltimore, Maryland. Transportation Research Record: Journal of the Transportation Research Board. 2413, 45–53. DOI: 10.3141/2413-05
Neighborhood Site Enhancements	3.2.1	SDT-1 Provide Pedestrian Network Improvements	0%-2% reduction in VMT for creating a connected pedestrian network within the development and connecting to nearby destinations	Adequate	VMT reduction due to provision of complete pedestrian networks.	0.5%-5.7%	Handy, S. et al. (2014). Impacts of Pedestrian Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
Neighborhood Site Enhancements	3.2.2	SDT-2 Provide Traffic Calming Measures	0.25%-1% VMT reduction due to traffic calming on streets within and around the development	Adequate	Reduction in VMT due to building out a low-stress bike network; reduction in VMT due to expansion of bike networks in urban areas.	0%-1.7%	1] California Air Resources Board. (2016). Greenhouse Gas Quantification Methodology for the California Transportation Commission Active Transportation Program Greenhouse Gas Reduction Fund Fiscal Year 2016-17. Retrieved from: https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/ctc_atp_finalqm_16-17.pdf. 2] Zahabi, S. et al. (2016). Exploring the link between the neighborhood typologies, bicycle infrastructure and commuting cycling over time and the potential impact on commuter GHG emissions. Transportation Research Part D: Transport and Environment. 47, 89-103.
Neighborhood Site Enhancements	3.4.9	TRT-9 Implement Car-Sharing Program	0.4% - 0.7% VMT reduction due to lower vehicle ownership rates and general shift to non-driving modes	Adequate	Vehicle trip reduction due to car-sharing programs; reduction assumes 1%-5% penetration rate. Car sharing effect on VMT is still evolving due to TNC effects. UCD research showed less effect on car ownership due to car sharing participation and an uncertain effect on VMT.	0.3%-1.6%	Lovejoy, K. et al. (2013). Impacts of Carsharing on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm Clewlow, Regina R. and Mishra, Gouri Shankar, (2017). Disruptive Transportation: The Adoption, Utilization, and Impacts of Ride-Hailing in the United States. UC Davis, Institute of Transportation Studies. Research Report - UCD-ITS-RR-17-07.

TDM STRATEGY EVALUATION

FEHR & PEERS

Relevant Strategies for Implementation in Vallejo Due to Land Use Context

					New Information Since CAPCOA Was Published in 2010		
CAPCOA Category	CAPCOA #	CAPCOA Strategy	CAPCOA Reduction	Strength of Substantial Evidence for CEQA Impact Analysis?	New information	Change in VMT reduction compared to CAPCOA(1)	Literature or Evidence Cited
Parking Pricing	3.3.3	PDT-3 Implement Market Price Public Parking	2.8%-5.5% VMT reduction due to "park once" behavior and disincentive to driving	Adequate	Implement a pricing strategy for parking by pricing all central business district/employment center/retail center on-street parking. It will be priced to encourage park once" behavior. The benefit of this measure above that of paid parking at the project only is that it deters parking spillover from project supplied parking to other public parking nearby, which undermine the vehicle miles traveled (VMT) benefits of project pricing. It may also generate sufficient area-wide mode shifts to justify increased transit service to the area. VMT reduction applies to VMT from visitor/customer trips only. Reductions higher than top end of range from CAPCOA report apply only in conditions with highly constrained on-street parking supply and lack of comparably-priced off-street	2.8%-14.5%	Clinch, J.P. and Kelly, J.A. (2003). Temporal Variance Of Revealed Preference On-Street Parking Price Elasticity. Dublin: Department of Environmental Studies, University College Dublin. Retrieved from: http://www.ucd.ie/gpep/research/workingpapers/2004/04-02.pdf. Cited in Victoria Transport Policy Institute (2017). Transportation Elasticities: How Prices and Other Factors Affect Travel Behavior. Retrieved from: http://www.vtpi.org/tdm/tdm11.htm Hensher, D. and King, J. (2001). Parking Demand and Responsiveness to Supply, Price and Location in Sydney Central Business District. Transportation Research A. 35(3), 177-196. Millard-Ball, A. et al. (2013). Is the curb 80% full or 20% empty? Assessing the impacts of San Francisco's parking pricing experiment. Transportation Research Part A. 63(2014), 76-92. Shoup, D. (2011). The High Cost of Free Parking. APA Planners Press. p. 290. Cited in Pierce, G. and Shoup, D. (2013). Getting the Prices Right. Journal of the American Planning Association. 79(1), 67-81.
Transit System	3.5.4	TST-4 Increase Transit Service Frequency/Speed	0.02%-2.5% VMT reduction due to reduced headways and increased speed and reliability	Adequate	Reduction in vehicle trips due to increased transit frequency/decreased headway.	0.3%-6.3%	Handy, S. et al. (2013). Impacts of Transit Service Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions - Policy Brief and Technical Background Document. California Air Resources Board. Retrieved from: https://arb.ca.gov/cc/sb375/policies/policies.htm
Commute Trip Reduction	3.4.6	TRT-6 Encourage Telecommuting and Alternative Work Schedules	0.07%-5.5% commute VMT reduction due to reduced commute trips	Adequate - Effectiveness is building/tenant specific. Do not use with "TRT-1 Implement CTR Program - Voluntary" or "TRT-2 Implement CTR Program - Required Implementation/Monitoring."	VMT reduction due to adoption of telecommuting	0.2%-4.5%	Handy, S. et al. (2013). Policy Brief on the Impacts of Telecommuting Based on a Review of the Empirical Literature. California Air Resources Board. Retrieved from: https://www.arb.ca.gov/cc/sb375/policies/telecommuting/telecommuting_brief120313.pdf

NOTES:

(1) For specific VMT reduction ranges, refer to the cited literature.

APPENDIX B

NOISE ANALYSIS

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CARLSBAD
CLOVIS
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

MEMORANDUM

DATE: February 2, 2024

TO: John Dacey, AICP, Senior Planner, City of Vallejo

FROM: J.T. Stephens, Principal
Moe Abushanab, Noise Engineer

SUBJECT: Noise and Vibration Impact Analysis: Proposed Vallejo Panda Express Project in the City of Vallejo, California

INTRODUCTION AND PROJECT DESCRIPTION

This noise and vibration impact analysis has been prepared to evaluate any potential impacts associated with the proposed Vallejo Panda Express Project (project) in Vallejo, California. This report is intended to satisfy the City of Vallejo's (City) requirement for a project-specific noise and vibration impact analysis and examines if there would be impacts from the proposed project to the existing noise-sensitive uses adjacent to the project site. To properly assess the existing noise environment at surrounding receptors, existing noise levels are assessed based on noise measurement data gathered in the vicinity of the project site (from August 24 to August 25, 2023). Project-related noise and vibration levels generated during construction are based on the estimated construction equipment list. Traffic volumes from the Sonoma Boulevard & Yolano Drive Panda Express Project Trip Generation & Vehicle Miles Traveled (VMT) Screening Assessment[1] and additional stationary sources on the project site were also evaluated.

Location and Description

The 1.57-acre (68,354-square-foot) project site is located at 4301 Sonoma Boulevard in Vallejo (Assessor's Parcel Number [APN] 0051-250-680), Solano County, California. The project site is currently undeveloped and is bounded by a self-storage facility to the north, a gas station and restaurant to the south, a vacant undeveloped parcel to the west, and State Route 29 (Sonoma Boulevard) to the east. Figure 1 shows the project location, and Figure 2 provides an overview of the proposed site plan (all figures are provided in Attachment A).

The proposed project would include the construction of an approximately 2,700-square-foot, one-story restaurant building with a drive-through feature. The proposed building would be located in the southwest corner of the project site adjacent to the existing El Pollo Loco restaurant to the south. Additionally, the proposed building would include a 363-square-foot patio area, and 306-square-foot trash enclosure area. A total of 33 automobile parking spaces would be provided throughout the project site. The proposed project would also include pavement and utility

[1] RK Engineering Group, Inc. 2022. *Sonoma Boulevard & Yolano Drive Panda Express Project Trip Generation & Vehicle Miles Traveled (VMT) Screening Assessment, City of Vallejo, CA.* October 18.

improvements to the access roadway to the south of the project site and would include a total of 15,484 square feet of landscaping on the project site. The proposed project would be all-electric, and would generate approximately 1,136 average daily trips.

To prepare the project site for construction, remnants from previous developments and existing vegetation would be removed, requiring the demolition of 20,130 square feet of building area. In addition, approximately, 1,010 cubic yards of soil would be excavated from the project site, 995 cubic yards of which would be kept on site and 15 cubic yards of which would be off-hauled. Project construction is estimated to begin July 8, 2024, and would occur over a 288-day period.

METHODOLOGY

The evaluation of potential noise and vibration impacts associated with the proposed project includes the following:

- A determination of the short-term construction noise and vibration levels at off-site noise-sensitive uses and comparison to the City's General Plan and Municipal Code Ordinance requirements;
- A determination of the long-term noise levels at off-site noise-sensitive uses and comparison of those levels to the City's pertinent noise standards; and
- If necessary, a determination of required mitigation measures, such as noise barriers, to reduce long-term noise impacts from all sources.

CHARACTERISTICS OF SOUND

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep.

To the human ear, sound has two significant characteristics: pitch and loudness. Pitch is generally an annoyance, while loudness can affect the ability to hear. Pitch is the number of complete vibrations, or cycles per second, of a wave, resulting in the tone's range from high to low. Loudness is the strength of a sound that describes a noisy or quiet environment and is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves combined with the reception characteristics of the human ear. Sound intensity refers to how hard the sound wave strikes an object, which in turn produces the sound's effect. This characteristic of sound can be precisely measured with instruments. The analysis of a project defines the noise environment of the project area in terms of sound intensity and its effect on adjacent sensitive land uses.

Measurement of Sound

Sound intensity is measured through the A-weighted scale to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the human ear's de-emphasis of these frequencies. Unlike linear units (e.g., inches or pounds), decibels are measured on a logarithmic scale representing points on a sharply rising curve.

For example, 10 decibels (dB) is 10 times more intense than 1 dB, 20 dB is 100 times more intense than 1 dB, and 30 dB is 1,000 times more intense than 1 dB. Thirty decibels (30 dB) represent 1,000 times as much acoustic energy as 1 dB. The decibel scale increases as the square of the change, representing the sound pressure energy. A sound as soft as human breathing is about 10 times greater than 0 dB. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10 dB increase in sound level is perceived by the human ear as only a doubling of the loudness of the sound. Ambient sounds generally range from 30 dB (very quiet) to 100 dB (very loud).

Sound levels are generated from a source, and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. For a single-point source, sound levels decrease approximately 6 dB for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source (e.g., highway traffic or railroad operations), the sound decreases 3 dB for each doubling of distance in a hard site environment. Similarly, line sources with intervening absorptive vegetation or line sources that are located at a great distance to the receptor would decrease 4.5 dB for each doubling of distance.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. The equivalent continuous sound level (L_{eq}) is the total sound energy of time-varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq} and Community Noise Equivalent Level (CNEL) or the day-night average noise level (L_{dn}) based on A-weighted decibels (dBA). CNEL is the time-varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noises occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale but without the adjustment for events occurring during the evening hours. CNEL and L_{dn} are within 1 dBA of each other and are normally interchangeable. The City uses the L_{dn} noise scale for long-term noise impact assessment.

Other noise rating scales of importance when assessing the annoyance factor include the maximum instantaneous noise level (L_{max}), which is the highest exponential time-averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis for short-term noise impacts are specified in terms of maximum levels denoted by L_{max}, which reflects peak operating conditions and addresses the annoying aspects of intermittent noise. L_{max} is often used together with another noise scale or noise standards in terms of percentile noise levels in noise ordinances for enforcement purposes. For example, the L_{10} noise level represents the noise level exceeded 10 percent of the time during a stated period. The L_{50} noise level represents the median noise level (i.e., half the time the noise level exceeds this level, and half the time it is less than this level). The L_{90} noise level represents the noise level exceeded 90 percent of the time and is considered the background noise level during a monitoring period. For a relatively constant noise source, the L_{eq} and L_{50} are approximately the same.

Noise impacts can be described in three categories. The first category is audible impacts, which refers to increases in noise levels noticeable to humans. Audible increases in noise levels generally

refer to a change of 3 dB or greater because this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1 and 3 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise levels of less than 1 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant.

Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by the feeling of pain in the ear. This is called the threshold of pain. A sound level of 160–165 dBA will result in dizziness or loss of equilibrium. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying, less developed areas.

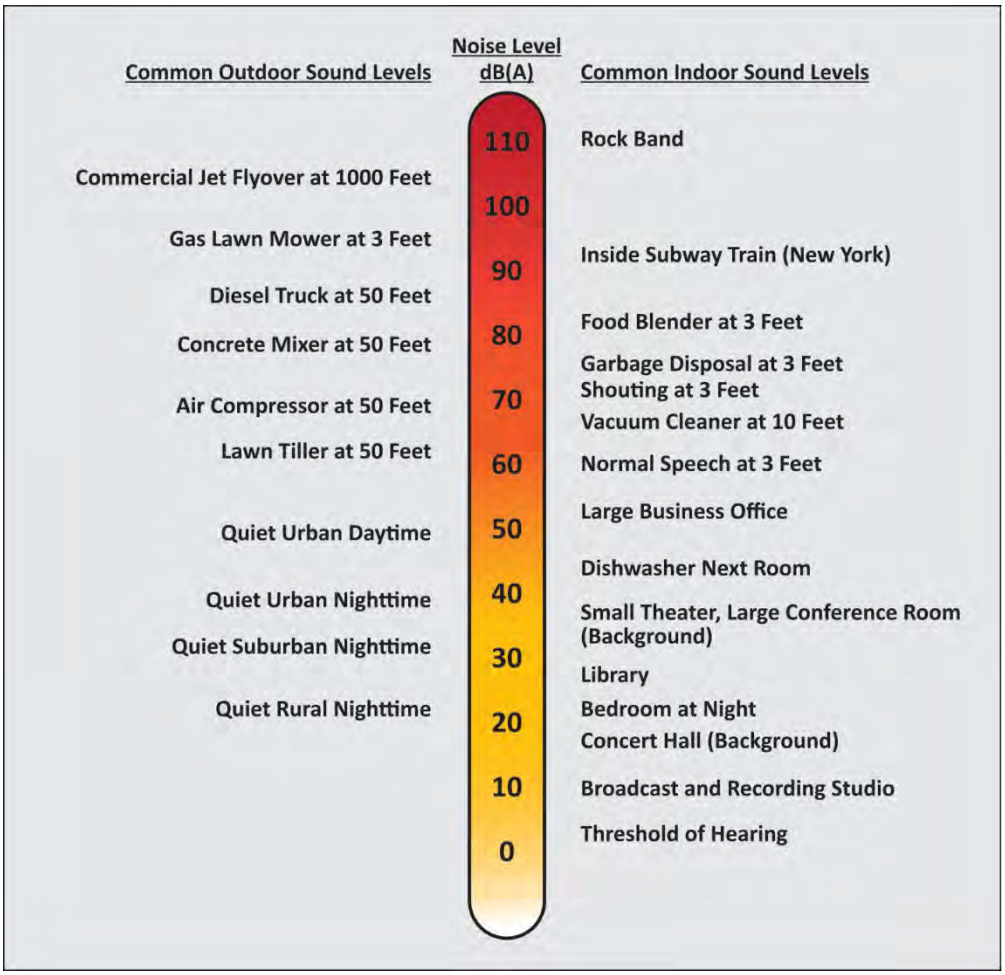
Table A lists full definitions of acoustical terms, and Table B shows common sound levels and their sources.

Table A: Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit of level that denotes the ratio between two quantities proportional to power; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in 1 second (i.e., number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter deemphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this assessment are A-weighted, unless reported otherwise.
L_{01}, L_{10}, L_{50}, L_{90}	The fast A-weighted noise levels equaled or exceeded by a fluctuating sound level for 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period.
Equivalent Continuous Noise Level, L_{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 dB to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 dB to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L_{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 dB to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.
Ambient Noise Level	The all-encompassing noise associated with a given environment at a specified time, usually a composite of sound from many sources at many directions, near and far; no particular sound is dominant.
Intrusive	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content, as well as the prevailing ambient noise level.

Sources: California Department of Transportation (Caltrans) *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (2013), Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (2018).

Table B: Common Sound Levels and Noise Sources



Source: LSA (2016).

CHARACTERISTICS OF VIBRATION

Vibration refers to ground-borne noise and perceptible motion. Ground-borne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may not be discernible. Typically, there is more adverse reaction to effects associated with the shaking of a building. Vibration energy propagates from a source through intervening soil and rock layers to the foundations of nearby buildings. The vibration then propagates from the foundation throughout the remainder of the structure. Building vibration may be perceived by occupants as the motion of building surfaces, the rattling of items on shelves or hanging on walls, or a low-frequency rumbling noise. The rumbling noise is caused by the vibration of walls, floors, and ceilings that radiate sound waves.

Typical sources of ground-borne vibration are construction activities (e.g., blasting, pile driving, and operating heavy-duty earthmoving equipment), steel-wheeled trains, and occasional traffic on rough

roads. Problems with both ground-borne vibration and noise from these sources are usually localized to areas within approximately 100 feet (ft) of the vibration source, although there are examples of ground-borne vibration causing interference out to distances greater than 200 ft (FTA 2018).[2] When roadways are smooth, vibration from traffic, even heavy trucks, is rarely perceptible. It is assumed for most projects that the roadway surface will be smooth enough that ground-borne vibration from street traffic will not exceed the impact criteria; however, the construction of the project could result in ground-borne vibration that may be perceptible.

Ground-borne vibration has the potential to damage buildings. Although it is very rare for typical construction activities to cause even cosmetic building damage, it is not uncommon for construction processes such as blasting and pile driving to cause vibration of sufficient amplitudes to damage nearby buildings (FTA 2018).[2] Ground-borne vibration that may resulting in damage is usually measured in terms of peak particle velocity (PPV).

APPLICABLE NOISE STANDARDS

The applicable noise standards governing the project site include the criteria in the City's General Plan and the City of Vallejo Municipal Code (VMC).

City of Vallejo

Propel Vallejo General Plan 2040

The Noise Element provides the City's goals and policies related to noise. The City has identified the following policies and actions in the Noise Element that are applicable to the project:

Policy NBE-5.13 Noise Control. Ensure that noise does not affect quality of life in the community.

Action NBE-5.13A Continue to require that new noise-producing uses are located sufficiently far away from noise-sensitive receptors and/or include adequate noise mitigation, such as screening, barriers, sound enclosures, noise insulation, and/or restrictions on hours of operation.

Action NBE-5.13B Update City regulations to require that parking, loading, and shipping facilities and all associated mechanical equipment be located and designed to minimize potential noise and vibration impacts on residential neighborhoods.

Action NBE-5.13C Update City regulations to restrict the allowable hours to between 7 a.m. and 7 p.m. on weekdays for construction, demolition, maintenance, and loading/unloading activities that may impact noise-sensitive land use.

Policy NBE-5.13 Vibration Control. Ensure that vibration does not affect quality of life in the community.

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[2] Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment Manual – FTA Report No. .0123*. September.

Action NBE-5.14A Update City regulations to establish quantified vibration level limits similar to commonly used guidelines found in the Federal Transit Administration document "Transit Noise and Vibration Impact Assessment" (2006).

Policy NBE-5.15 Noise Compatibility Standards. Apply the General Plan noise and land use compatibility standards to all new residential, commercial, and mixed-use development and redevelopment.

Action NBE-5.15E When approving new development, limit project-related noise increases to the following for permanent stationary and transportation-related noise sources:

- no more than 10 dB in non-residential areas;
- no more than 5 dB in residential areas where the with-project noise level is less than the maximum "normally acceptable" level in the Noise and Land Use Compatibility figure; and
- no more than 3 dB where the with-project noise level exceeds the "normally acceptable" level in Noise and Land Use Compatibility figure.

Action NBE-5.15F Require acoustical studies with appropriate mitigation measures for projects that are likely to be exposed to noise levels that exceed the 'normally acceptable' standard and for any other projects that are likely to generate noise in excess of these standards.

City of Vallejo Municipal Code

This project utilizes the City's noise control guidelines for determining and mitigating non-transportation or stationary noise source impacts from operations found in 16.502.09[3]. Table 16.502-C of the municipal code, maximum noise level by noise zone, classifies uses and facilities and establishes the maximum noise level to be generated by daily operations as measured at the property line or at any boundary of a residential zone. For single-unit residential and multiple-unit residential, the maximum noise level is 60 dBA L_{eq} and 65 dBA L_{eq}, respectively. For commercial uses, the maximum noise level is 70 dBA L_{eq}.

Construction, demolition, and related loading/unloading activities that may generate noise exceeding levels in Table C shall be limited to hours between 7 a.m. and 7 p.m. in residential zoning districts and in any mixed-use district.

[3] City of Vallejo. 2023. *Municipal Code Section 16.502.09*. September 7.
Website: https://library.municode.com/ca/vallejo/codes/municipal_code

Table C: Maximum Noise Level For Temporary Construction Activity (Mobile Construction Equipment)

Time	RR , RLD	RMD , RHD , NMX , NC	Commercial (including medical and office) and industrial
Weekdays 7 a.m. to 6 p.m.	75 dBA	80 dBA	85 dBA
Saturdays 9 a.m. to 6 p.m.	60 dBA	65 dBA	70 dBA
Sundays and legal holidays	None	None	None

Source: Section 16.502.09 of the City of Vallejo Code of Ordinance.
RR = Rural Residential
RLD = Residential Low Density
RMD = Residential Medium Density
RHD = Residential High Density
NMX = Neighborhood Mixed Use
NC = Neighborhood Commercial
dBA = A-weighted decibels

State of California Green Building Standards Code

The State of California's Green Building Standards Code (CALGreen) contains mandatory measures for nonresidential building construction in Section 5.507 on Environmental Comfort. These noise standards are applied to new construction in California for controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when nonresidential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within a noise contour of an airport, freeway, railroad, or other noise source. If the development falls within an airport or freeway 65 dBA CNEL noise contour, buildings shall be constructed to provide an interior noise level environment attributable to exterior sources that does not exceed an hourly equivalent level of 50 dBA L_{eq} in occupied areas during any hour of operation.

APPLICABLE VIBRATION STANDARDS

The following information provides standards to which potential vibration impacts will be compared.

Federal Transit Administration

Vibration standards included in the FTA Manual (2018) are used in this analysis for ground-borne vibration impacts on surrounding buildings.

The criteria for environmental impacts resulting from ground-borne vibration are based on the maximum levels for a single event. The City's Municipal Code does not include specific criteria for assessing vibration impacts associated with damage. Therefore, for the purpose of determining the significance of vibration impacts experienced at sensitive uses surrounding the project site, the guidelines within the FTA Manual have been used to determine vibration impacts (refer to Table D, below).

Table D: Construction Vibration Damage Criteria

Building Category	PPV (in/sec)
Reinforced concrete, steel, or timber (no plaster)	0.50
Engineered concrete and masonry (no plaster)	0.30
Non-engineered timber and masonry buildings	0.20
Buildings extremely susceptible to vibration damage	0.12

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
in/sec = inches per second PPV = peak particle velocity

The FTA Manual guidelines show that a vibration level of up to 0.2 inches per second (in/sec) in PPV is considered safe for non-engineered timber and masonry buildings, which are the types of buildings located on properties adjacent to the project site. Accordingly, the 0.2 in/sec PPV threshold was used to evaluate vibration impacts at the nearest structures to the site.

THRESHOLDS OF SIGNIFICANCE

Based on *Guidelines for the Implementation of the California Environmental Quality Act* (CEQA), Appendix G, Public Resources Code, Sections 15000–15387, a project will normally have a significant effect on the environment related to noise if it will substantially increase the ambient noise levels for adjoining areas or conflict with adopted environmental plans and the goals of the community in which it is located.

The *State CEQA Guidelines* indicate that a project would have a significant impact on noise if it would result in:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Generation of excessive ground-borne vibration or ground-borne noise levels; or
- 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 2 miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

OVERVIEW OF THE EXISTING NOISE ENVIRONMENT

The primary existing noise sources in the project area are transportation facilities, including Sonoma Boulevard and Yolano Drive. In addition, commercial uses operations such as car wash operations and parking lot activities are audible at the project site.

In order to assess the existing noise conditions in the area, long-term noise measurements were conducted at the project site. Two long-term, 24-hour measurements were taken from August 24, 2023, to August 25, 2023. The locations of the noise measurements are shown on Figure 3, and the results are summarized in Table E. Noise measurement data are provided in Attachment B of this analysis.

Table E: Existing Noise Level Measurements

Location Number	Location Description	Daytime Noise Levels[1] (dBA L_{eq})	Nighttime Noise Levels[3] (dBA L_{eq})	Average Daily Noise Levels (dBA L_{dn})	Primary Noise Sources
LT-1	East of Sonoma Boulevard, on a tree by gate at Vallejo Mobile Home Community and RV Park, approximately 100 ft away from the Sonomo Boulevard centerline	69.4-73.9	63.1-69.2	74.0	Traffic on Sonoma Boulevard. Occasional community activity noise.
LT-2	On a tree east of parking lot at MTS Training Academy, approximately 70 ft away from the Yolano Drive centerline.	58.4-63.7	50.0-61.6	64.3	Traffic on Yolano Drive and Sonoma Boulevard. Car Wash operations. Occasional parking lot activities.

Source: Compiled by LSA (2024).
[1] Daytime Noise Levels = noise levels during the hours of 7:00 a.m. to 10:00 p.m.
[3] Nighttime Noise Levels = noise levels during the hours of 10:00 p.m. to 7:00 a.m.
CNEL = Community Noise Equivalent Level
dBA = A-weighted decibel(s)
ft = foot/feet
L_{eq} = equivalent continuous sound level

AIRCRAFT NOISE

The closest airport to the project site is the Napa County Airport, located approximately 5.4 miles north of the project site. The project site is not located within the 65 dBA CNEL noise contour for the airport and is not located within the vicinity of a private airstrip. Although aircraft-related noise may be audible on the project site, the proposed project would not expose people working in the project area to excessive noise levels due to the proximity of a public airport. This impact would be less than significant. Additionally, there are no helipads or private airstrips within 2 miles from the project area.

Sensitive Land Uses in the Project Vicinity

Certain land uses are considered more sensitive to noise than others are. Examples of these include residential areas, educational facilities, hospitals, childcare facilities, and senior housing. Land uses adjacent to the project site include the following:

- **North:** Existing Extra Space Storage.
- **East:** Existing Vallejo Mobile Home Community & RV Park opposite Sonoma Boulevard.
- **South:** Existing commercial uses.
- **West:** Existing MTS Training Academy – Truck driving school.

The nearest sensitive receptors are:

- **East**: Existing Vallejo Mobile Home Community & RV Park opposite Sonoma Boulevard approximately 150 ft from the project site property line.

PROJECT IMPACT ANALYSIS

The proposed project has the potential to result in short-term construction noise and vibration impacts and long-term mobile-source noise and vibration impacts. Each topic is further discussed below.

Short-Term Construction-Related Analysis

Project construction would result in short-term noise and vibration. Maximum construction noise would be short-term, generally intermittent depending on the construction phase, and variable depending on receiver distance from the active construction zone. The duration of various types of construction noise and vibration would vary from 1 day to several weeks, depending on the phase of construction. The levels and types of noise and vibration that may occur during construction are described below.

Construction Noise Analysis

Two types of short-term noise would occur during project construction, including: (1) equipment delivery and construction worker commutes; and (2) project construction operations.

The first type of short-term construction noise would result from the transport of construction equipment and materials to the project site and construction worker commutes. These transportation activities would incrementally raise noise levels on access roads leading to the site. It is expected that larger trucks used in equipment delivery would generate higher noise impacts than trucks associated with worker commutes. The single-event noise from equipment trucks passing at a distance of 50 ft from a sensitive noise receptor would reach a maximum level of 84 dBA L_{max}. However, the pieces of heavy equipment for construction activities would be moved on site just once and would remain on site for the duration of each construction phase. This one-time trip, when heavy construction equipment is moved on and off site, would not add to the daily traffic noise in the project vicinity. The total number of daily vehicle trips would be minimal when compared to existing traffic volumes on the affected streets, and the long-term noise level changes associated with these trips would not be perceptible. Therefore, equipment transport noise and construction-related worker commute impacts would be short term and would not result in a significant off-site noise impact. No mitigation is required.

The second type of short-term noise impact is related to noise generated during demolition, site preparation, grading, building construction, architectural coating, and paving on the project site. Construction is undertaken in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the project site. Therefore, the noise levels would vary as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table F lists the maximum noise levels recommended for noise impact assessments for typical construction equipment based on a distance of 50 ft between the construction equipment and a noise receptor. Typical operating cycles for these types of construction equipment may involve 1–2 minutes of full-power operation followed by 3–4 minutes at lower power settings.

Table F: Typical Construction Equipment Noise Levels

Equipment Description	Acoustical Usage Factor (%)	Maximum Noise Level (L_{max}) at 50 ft
Compressor	100	81
Concrete Mixer	40	85
Concrete Pump	40	85
Crane	16	83
Dozer	40	80
Forklift	20	75
Front [End] Loader	40	79
Generator	100	78
Grader	8	85
Scraper	40	88
Welder	40	74

Sources: *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances* (USEPA 1971); Roadway Construction Noise Model (FHWA 2006).
ft = foot/feet
L_{max} = maximum instantaneous sound level

In addition to the reference maximum noise level, the usage factor provided in Table F is utilized to calculate the hourly noise level impact for each piece of equipment based on the following equation:

$$L_{eq}(equip) = E.L. + 10\log(U.F.) - 20\log\left(\frac{D}{50}\right)$$

where: $L_{eq}(equip)$ = L_{eq} at a receiver resulting from the operation of a single piece of equipment over a specified time period

E.L. = Noise emission level of the particular piece of equipment at a reference distance of 50 ft

U.F. = Usage factor that accounts for the fraction of time that the equipment is in use over the specified period of time

D = Distance from the receiver to the piece of equipment

Each piece of construction equipment operates as an individual point source. Utilizing the following equation, a composite noise level can be calculated when multiple sources of noise operate simultaneously:

$$Leq\ (composite) = 10 * \log_{10}\left(\sum_{1}^{n} 10^{\frac{Ln}{10}}\right)$$

Table G shows the composite noise levels of one piece of equipment type for each construction phase at a distance of 50 ft from the construction area. Once composite noise levels are calculated, reference noise levels can then be adjusted for distance using the following equation:

$$Leq\ (at\ distance\ X) = Leq\ (at\ 50\ feet) - 20 * \log_{10}\left(\frac{X}{50}\right)$$

In general, this equation shows that doubling the distance would decrease noise levels by 6 dBA, while halving the distance would increase noise levels by 6 dBA.

Table G: Construction Noise Levels by Phase

Phase	Duration (days)	Equipment	Composite Noise Level at 50 ft (dBA L_{eq})	Distance to Sensitive Receptor (ft)[1]	Noise Level at Receptor (dBA L_{eq})
Demolition	15	1 concrete/industrial saw, 1 dozer, and 3 tractors	88	310	72
Site Preparation	2	1 grader, 1 dozer, and 1 tractor	85	310	69
Grading	10	1 grader, 1 dozer, and 2 tractors	86	310	70
Building Construction	160	1 crane, 1 forklift, 1 generator set, 1 tractor, and 3 welders	83	310	68
Paving	10	1 cement and mortar mixer, 1 paver,1 paving equipment, 1 roller, and 1 tractor	85	310	70
Architectural Coating	10	1 air compressor	74	310	58

Source: Compiled by LSA (2024).

[1] Distances are from the average location of construction activity for each phase, assumed to be the center of the project site.

dBA L_{eq} = average A-weighted hourly noise level

ft = foot/feet

As presented above, Table G shows the construction phases, the expected duration of each phase, the equipment expected to be used during each phase, the composite noise levels of the equipment at 50 ft, the distance of the nearest sensitive receptor, the Vallejo Mobile Home Community & RV Park to the east, from the average location of construction activities (a distance of 310 ft from the center of the project site), and noise levels expected during each phase of construction. These noise level projections do not take into account intervening topography or barriers. Attachment C provides construction noise calculations.

It is expected that average noise levels during construction at the nearest sensitive receptor, the Vallejo Mobile Home Community & RV Park to the east, would approach 72 dBA L_{eq} during the demolition phase, which would occur for a duration of approximately 15 days. Average noise levels during other construction phases would range from 58 dBA L_{eq} to 70 dBA L_{eq}. Noise levels at the nearest off-site commercial uses to the south would reach an average noise level of 79 dBA L_{eq} during the daytime hours. These predicted noise levels would only occur when all construction equipment is operating simultaneously; therefore, these noise levels are assumed to be conservative in nature.

Although the project construction-related short-term noise levels have the potential to be higher than the ambient noise in the project vicinity, construction noise would cease to occur once the project construction is completed. Furthermore, the construction-related noise levels would be below the 75 dBA L_{eq} and 85 dBA L_{eq} criteria established by the City's Municipal Code for residential

and commercial uses, respectively. Although the short-term construction noise level exceeds the Saturdays (9 a.m. to 6 p.m.) standard of 60 dBA L_{eq} at residential zoned areas, the construction noise levels would remain below the existing ambient noise level of approximately 69 dBA L_{eq} measured for the same time period, and therefore, would be considered less than significant.

The project would be constructed in compliance with the requirements of the City's Noise Ordinance, which states that construction activities are allowed between the hours of 7 a.m. and 7 p.m. on weekdays and between 9 a.m. and 6 p.m. on Saturdays.

Construction Vibration Building Damage Potential

Ground-borne noise and vibration from construction activity would be low. Table H provides reference PPV values and vibration levels (in terms of VdB) from typical construction vibration sources at 25 ft. While there is currently limited information regarding vibration source levels specific to the equipment that would be used for the project, to provide a comparison of vibration levels expected for a project of this size, a large bulldozer would generate 0.089 PPV (in/sec) of ground-borne vibration when measured at 25 ft, based on the FTA Manual. As shown previously in Table D, it would take a minimum of 0.2 PPV (in/sec) to cause any potential building damage to non-engineered timber and masonry buildings.

Table H: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L_V at 25 ft	
	PPV (in/sec)	L_V (VdB)[1]
Hoe Ram	0.089	87
Large Bulldozer	0.089	87
Caisson Drilling	0.089	87
Loaded Trucks	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).

[1] RMS VdB re 1 µin/sec.

µin/sec = micro-inches per second
ft = foot/feet
FTA = Federal Transit Administration
in/sec = inches per second
L_V = velocity in decibels
PPV = peak particle velocity
RMS = root-mean-square
VdB = vibration velocity in decibels

The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the project construction boundary (assuming the construction equipment would only be used at or near the project setback line). The formula for vibration transmission is provided below:

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

The closest structures to the construction activities are the commercial uses to the south, which are approximately 30 ft from the project's southern construction boundary. Using the reference data from Table H and the equation above, it is expected that vibration levels generated by dump trucks and other large equipment would generate ground-borne vibration levels of 0.068 PV (in/sec) at the

closest structures to the project site. This vibration level would not exceed the 0.2 in/sec PPV threshold considered safe for non-engineered timber and masonry buildings. Vibration levels at all other buildings would be lower. Therefore, construction would not result in any vibration damage, and impacts would be less than significant.

Long-Term Off-Site Traffic Noise Impact Analysis

In order to assess the potential traffic impacts related to the proposed project, RK engineering group, inc. estimates that the proposed project would result in a net increase of 1,136 ADT based on the proposed increase in square footage. Based on the ADTs provided in the City of Vallejo General Plan, the ADT along Sonoma Boulevard in the project vicinity is approximately 27,100 based on the existing (2014) traffic volumes[4]. While the existing ADT is likely higher, using 27,100 ADT as the existing count would be a conservative approach. The following equation was used to determine the potential impacts of the project:

$$\text{Change in } L_{dn} = 10 \log_{10} [V_{e+p}/V_{existing}]$$

Where: $V_{existing}$ = the existing daily volume

V_{e+p} = existing daily volumes plus project

Change in L_{dn} = the increase in noise level due to the project

The results of the calculations show that an increase of less than 0.2 dBA L_{dn} is expected along Sonoma Boulevard. A noise level increase of less than 3 dBA would not be perceptible to the human ear; therefore, the traffic noise increase along Sonoma Boulevard resulting from the proposed project would be less than significant. No mitigation is required.

Long-Term Operational Noise Impact Analysis

Adjacent off-site land uses would be potentially exposed to stationary-source noise impacts from the proposed on-site uses such as drive-through speakers, heating, ventilation, and air conditioning (HVAC) equipment, and trash emptying activities. It is assumed in this analysis that the hours of operation of the proposed use would remain between the hours of 7:00 a.m. and 10:00 p.m. Therefore, noise impacts associated with the long-term operation of the project must comply with the City's standard of 60 dBA L_{eq} at surrounding sensitive residential uses and 70 dBA L_{eq} for surrounding commercial uses.

To determine the future noise impacts from project operations to the noise sensitive uses, a 3-D noise model, SoundPLAN, was used to incorporate the site topography as well as the shielding from the proposed building on site. A graphic representation of the operational noise impacts is presented in Attachment D.

The initial analysis of typical operations assumed in this analysis are conservative in nature (i.e., with all operations occurring simultaneously and for the entirety of each applicable hour). A description

[4] City of Vallejo. 2017. *General Plan 2040 – Table MTC-1 Vallejo General Plan Mitigated Update: Traffic Volume Forecasting*. August 29.

of the sources and their respective sound levels, from reference materials as well as measurements gathered by LSA for other projects, included in the analysis is as follows:

- Drive-thru speakers (2) that have a sound pressure noise level of 60 dBA L_{eq} at a distance of 55 feet[5].Drive-thru speakers are expected to operate continuously during daytime hours.

- Rooftop HVAC equipment (2) on the restaurant could operate 24 hours per day and would generate sound power levels (SPL) of up to 87 dBA SPL or 72 dBA L_{eq} at 5 feet, based on manufacturer data[6].All HVAC equipment are expected to operate continuously during daytime hours.

- Parking lot operations are expected to result in maximum noise levels of 83.4 dBA L_{max} at a distance of 5 ft. For each parking lot area, noise impacts are expected to occur for a period of 30 minutes or less in a given hour. Parking lot activities are expected to operate during daytime hours.

- The trash emptying activities would take place for a period of less than 1 minute and would generate SPLs of up to 118.6 dBA SPL or 84 dBA L_{eq} at 50 feet, based on reference information within SoundPLAN. Trash bin emptying activities would only occur during daytime hours.

The results on Sheet 1, presented in Attachment D, show that the noise levels at the existing residential uses to the east would experience noise level impacts that would remain below the exterior noise level standard of 60 dBA L_{eq}. Additionally, noise levels would not exceed 70 dBA L_{eq} at the project property lines, therefore, there would be no impact to surrounding commercial uses as well, resulting in a less than significant impact.

Long-Term Ground-Borne Noise and Vibration from Vehicular Traffic

The proposed project would not generate vibration levels related to on-site operations. In addition, vibration levels generated from project-related traffic on the adjacent roadways are unusual for on-road vehicles because the rubber tires and suspension systems of on-road vehicles provide vibration isolation. Based on a reference vibration level of 0.076 in/sec PPV, structures more than 20 ft from the roadways that contain project trips would experience vibration levels below the most conservative standard of 0.12 in/sec PPV; therefore, vibration levels generated from project-related traffic on the adjacent roadways would be less than significant, and no mitigation measures are required.

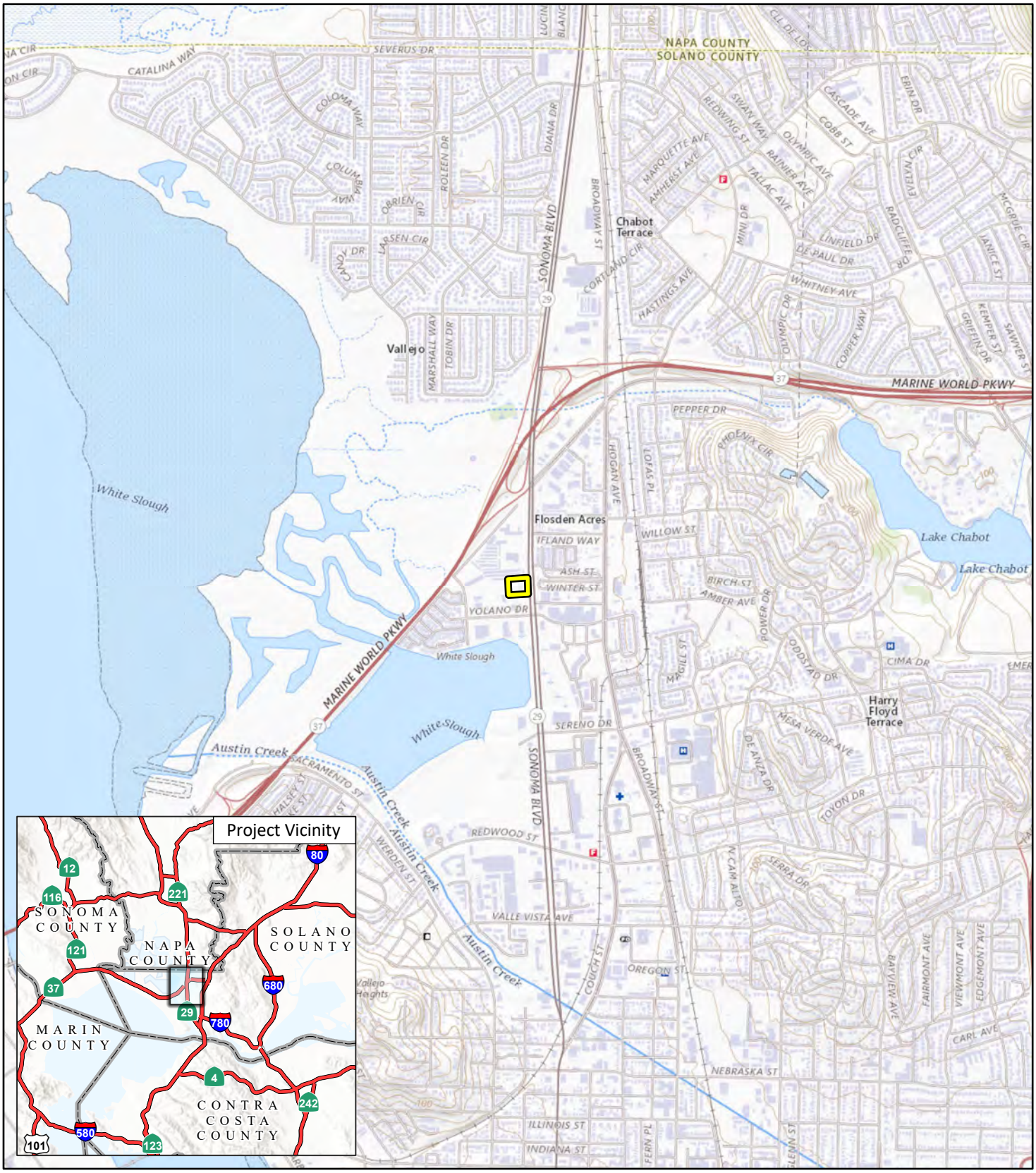
Attachments:
A: Figures
B: Noise Measurement Data
C: Construction Noise Calculations
D: SoundPLAN Noise Model Printouts

[5] HM Electronics. 1998. *Drive-Thru Sound Pressure Levels From the Menu Board or Speaker Post*. December.

[6] Trane. *Fan Performance - Product Specifications RT-PRC023AU-EN.*

ATTACHMENT A

FIGURES



LSA

Project Location

FIGURE 1

N

0 1000 2000
FEET

SOURCE: USGS The National Map (2017)

Vallejo Panda Express Project

Project Location and Regional Vicinity

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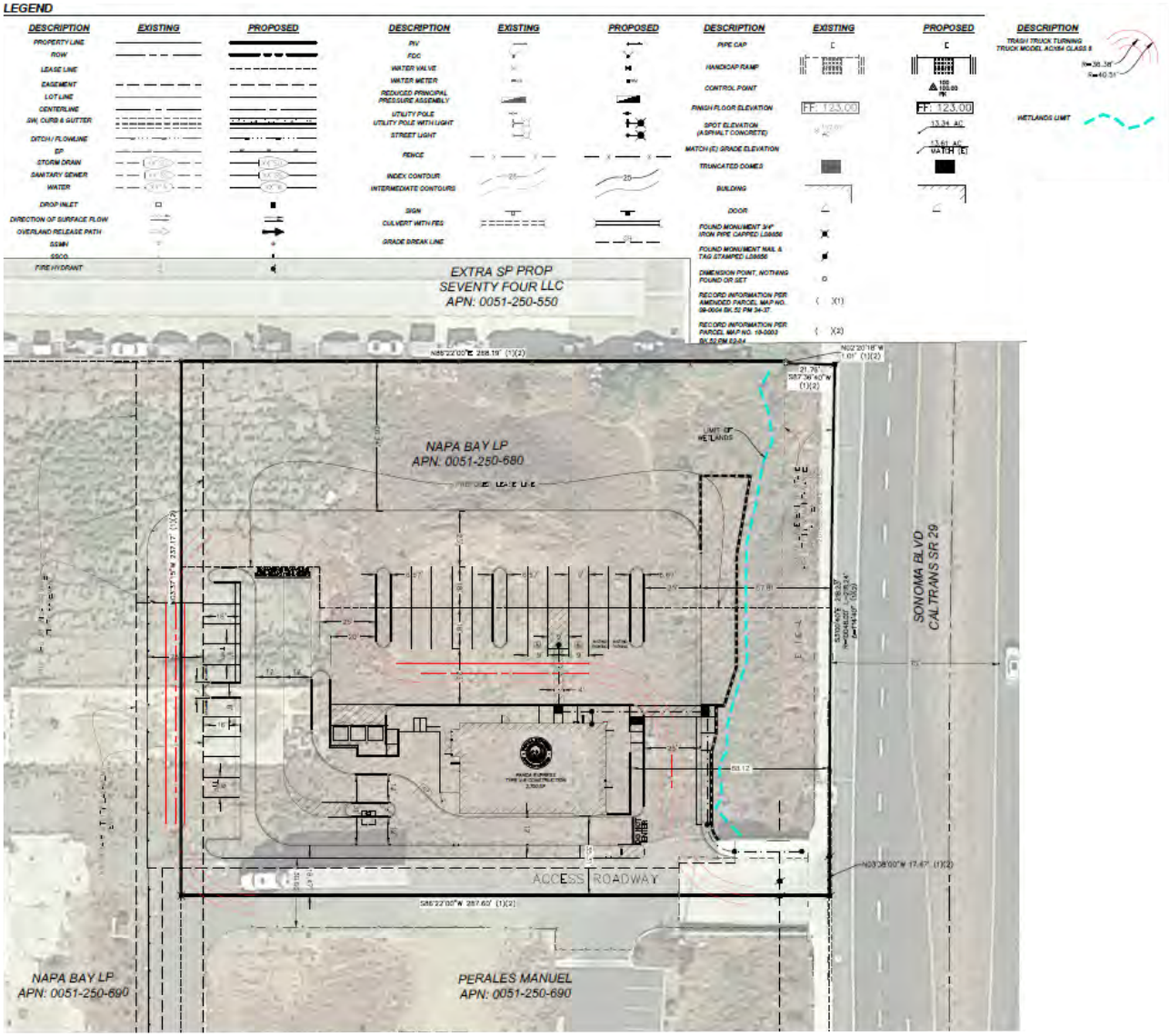

LSA

FIGURE 2

0 40 80

FEET

SOURCE: CWE

Vallejo Panda Express Project

Site Plan

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LSA

LEGEND

Project Site Boundary

LT-1 Long-term Noise Monitoring Location

0 140 280

FEET

SOURCE: Google Earth (2024)

I:\20230952\G\Noise_Locs.ai (1/31/2024)

FIGURE 3

Panda Express

Noise Monitoring Locations

ATTACHMENT B

NOISE MEASUREMENT DATA

Noise Measurement Survey – 24 HR

Project Number: 20230952
Project Name: Panda Express Vallejo

Test Personnel: Moe Abushanab
Equipment: Spark 706RC (SN:17815)

Site Number: LT-1 Date: 8/24/23

Time: From 1:00 p.m. To 1:00 p.m.

Site Location: Located east of Sonoma Boulevard, on a tree by gate at Vallejo Mobile Home Community & RV Park, approximately 100 ft from the Sonoma Boulevard centerline.

Primary Noise Sources: Vehicle traffic noise on Sonoma Boulevard
Occasional community activity noise

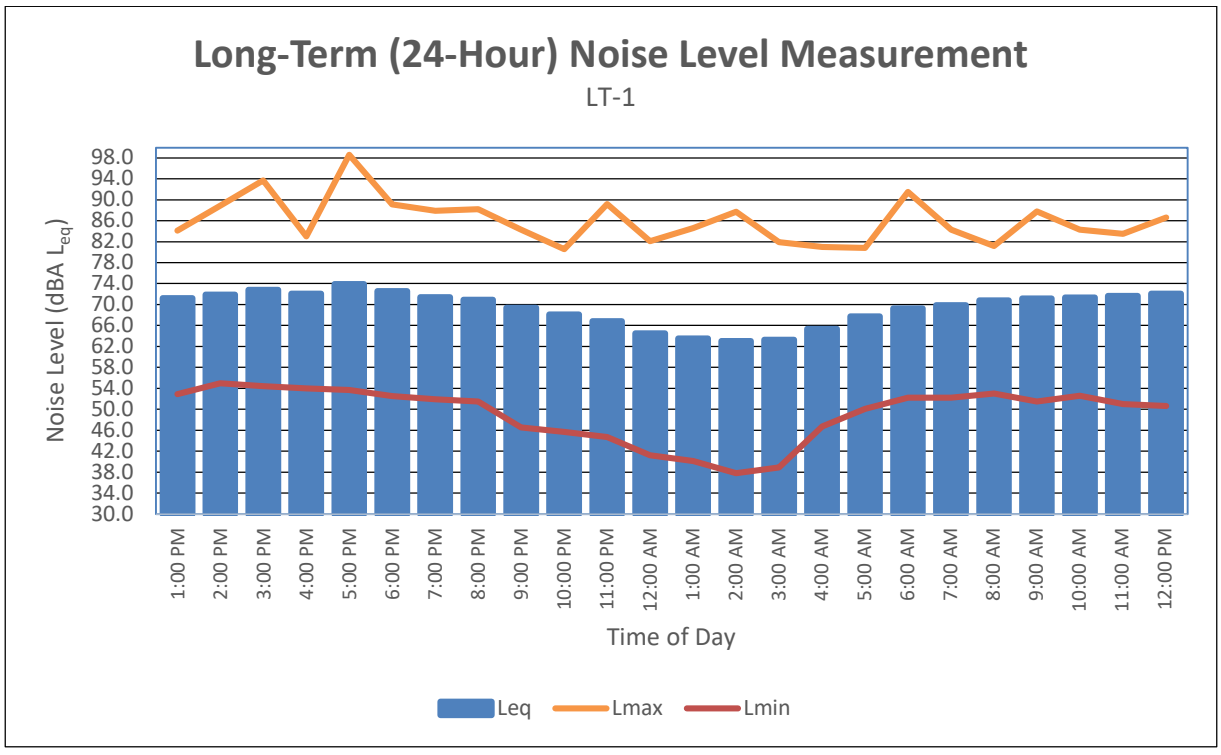
Comments:

Photo:

Long-Term (24-Hour) Noise Level Measurement Results at LT-1

Start Time	Date	Noise Level (dBA)		
		L_{eq}	L_{max}	L_{min}
1:00 PM	8/24/23	71.3	84.1	52.9
2:00 PM	8/24/23	71.9	88.9	55.0
3:00 PM	8/24/23	72.8	93.7	54.4
4:00 PM	8/24/23	72.1	83.0	54.0
5:00 PM	8/24/23	73.9	98.6	53.7
6:00 PM	8/24/23	72.6	89.1	52.5
7:00 PM	8/24/23	71.4	87.9	51.9
8:00 PM	8/24/23	70.9	88.2	51.5
9:00 PM	8/24/23	69.4	84.3	46.5
10:00 PM	8/24/23	68.1	80.6	45.7
11:00 PM	8/24/23	66.8	89.2	44.7
12:00 AM	8/25/23	64.5	82.1	41.2
1:00 AM	8/25/23	63.5	84.6	40.1
2:00 AM	8/25/23	63.1	87.7	37.8
3:00 AM	8/25/23	63.3	81.9	38.9
4:00 AM	8/25/23	65.4	81.0	46.7
5:00 AM	8/25/23	67.7	80.8	50.1
6:00 AM	8/25/23	69.2	91.5	52.2
7:00 AM	8/25/23	69.9	84.3	52.2
8:00 AM	8/25/23	70.8	81.2	53.0
9:00 AM	8/25/23	71.1	87.8	51.5
10:00 AM	8/25/23	71.3	84.3	52.6
11:00 AM	8/25/23	71.7	83.5	51.0
12:00 PM	8/25/23	72.1	86.6	50.6

Source: Compiled by LSA Associates, Inc. (2023).
dBA = A-weighted decibel
L_{eq} = equivalent continuous sound level
L_{max} = maximum instantaneous noise level
L_{min} = minimum measured sound level



Noise Measurement Survey – 24 HR

Project Number: 20230952
Project Name: Panda Express Vallejo

Test Personnel: Moe Abushanab
Equipment: Spark 706RC (SN:18572)

Site Number: LT-2 Date: 8/24/23

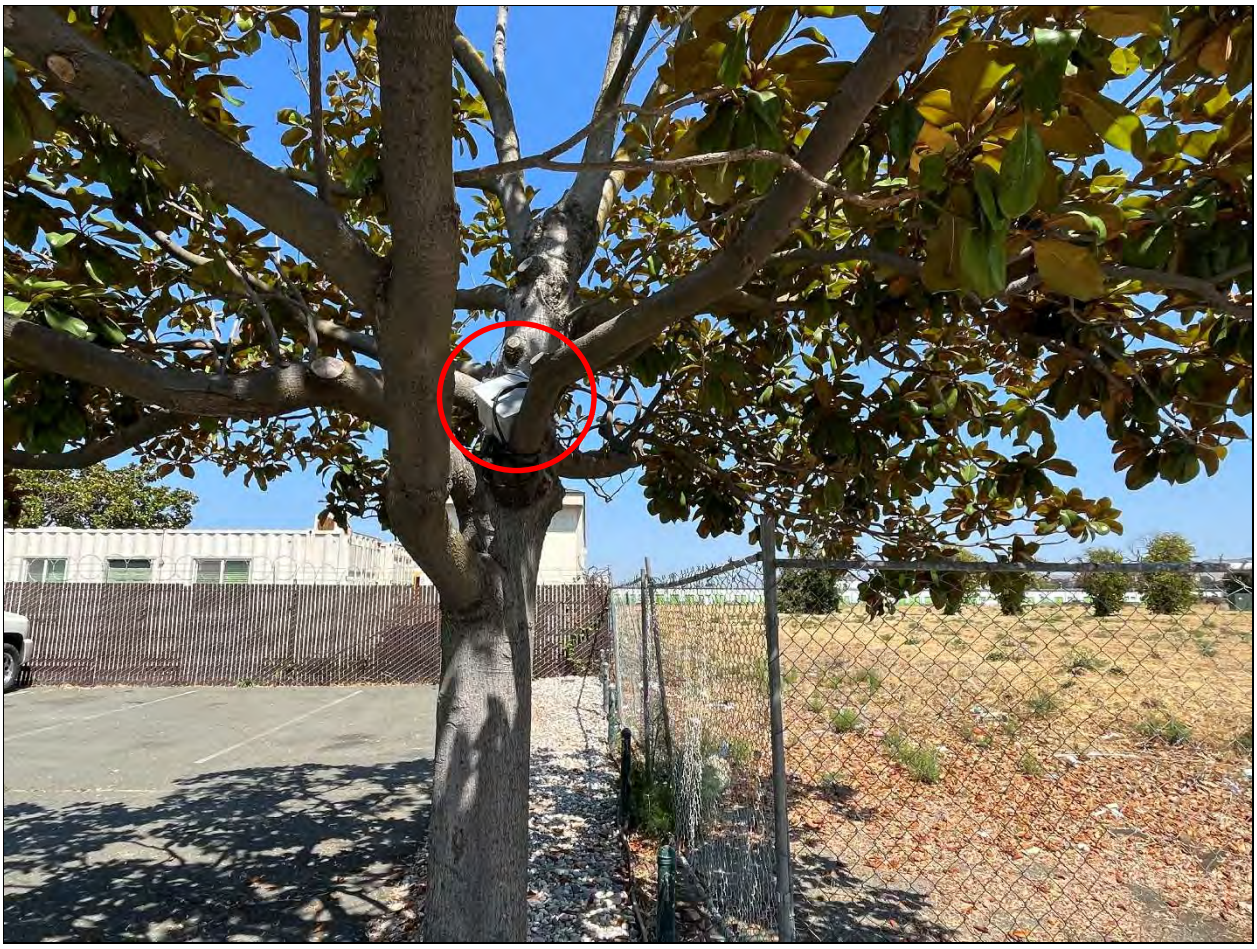
Time: From 1:00 p.m. To 1:00 p.m.

Site Location: Located on a tree east of parking lot at MTS Training Academy, approximately 70 ft from Yolano Drive centerline.

Primary Noise Sources: Vehicle traffic noise on Yolano Drive and Sonoma Boulevard, Background Car Wash operations
Occasional parking lot activities

Comments:

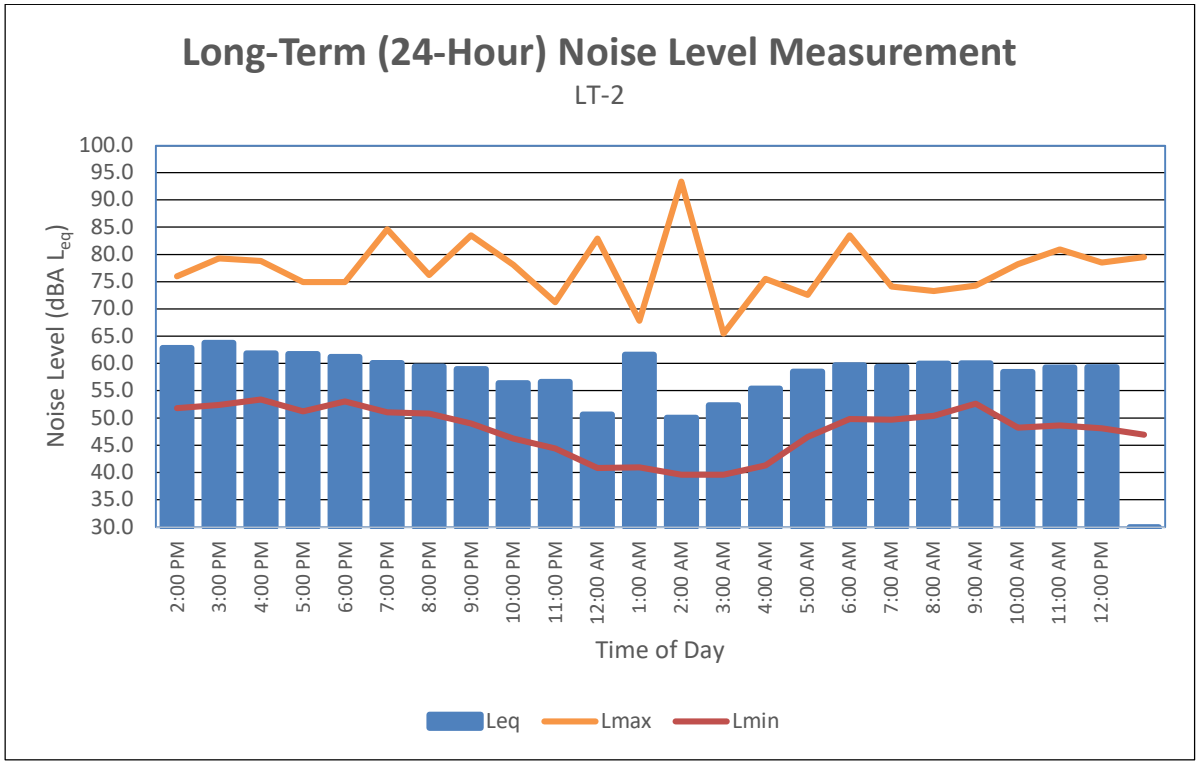
Photo:



Long-Term (24-Hour) Noise Level Measurement Results at LT-2

Start Time	Date	Noise Level (dBA)		
		L_{eq}	L_{max}	L_{min}
1:00 PM	8/24/23	61.7	76.0	51.8
2:00 PM	8/24/23	62.9	79.3	52.4
3:00 PM	8/24/23	63.7	78.8	53.4
4:00 PM	8/24/23	61.8	74.9	51.2
5:00 PM	8/24/23	61.7	74.9	53.0
6:00 PM	8/24/23	61.2	84.6	51.0
7:00 PM	8/24/23	60.1	76.2	50.8
8:00 PM	8/24/23	59.4	83.5	49.0
9:00 PM	8/24/23	59.0	78.1	46.2
10:00 PM	8/24/23	56.4	71.2	44.4
11:00 PM	8/24/23	56.6	82.9	40.8
12:00 AM	8/25/23	50.6	67.8	40.9
1:00 AM	8/25/23	61.6	93.4	39.6
2:00 AM	8/25/23	50.0	65.5	39.6
3:00 AM	8/25/23	52.3	75.5	41.3
4:00 AM	8/25/23	55.4	72.6	46.5
5:00 AM	8/25/23	58.5	83.5	49.8
6:00 AM	8/25/23	59.7	74.1	49.7
7:00 AM	8/25/23	59.4	73.3	50.4
8:00 AM	8/25/23	60.0	74.3	52.6
9:00 AM	8/25/23	60.0	78.2	48.2
10:00 AM	8/25/23	58.4	80.9	48.6
11:00 AM	8/25/23	59.2	78.5	48.1
12:00 PM	8/25/23	59.3	79.5	46.9

Source: Compiled by LSA Associates, Inc. (2023).
dBA = A-weighted decibel
L_{eq} = equivalent continuous sound level
L_{max} = maximum instantaneous noise level
L_{min} = minimum measured sound level



ATTACHMENT C

CONSTRUCTION NOISE CALCULATIONS

Construction Calculations

Phase: Demolition

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA) Lmax	Noise Level (dBA) Leq
Concrete Saw	1	90	20	50	0.5	90	83
Dozer	1	82	40	50	0.5	82	78
Tractor	3	84	40	50	0.5	84	85
					Combined at 50 feet	**91**	**88**
					Combined at Receptor 140 feet	**83**	**79**
					Combined at Receptor 170 feet	**81**	**77**
					Combined at Receptor 310 feet	**76**	**72**
					Combined at Receptor 450 feet	**72**	**68**

Phase: Site Preparation

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA) Lmax	Noise Level (dBA) Leq
Grader	1	85	40	50	0.5	85	81
Dozer	1	82	40	50	0.5	82	78
Tractor	1	84	40	50	0.5	84	80
					Combined at 50 feet	**89**	**85**
					Combined at Receptor 140 feet	**80**	**76**
					Combined at Receptor 310 feet	**73**	**69**

Phase: Grading

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA) Lmax	Noise Level (dBA) Leq
Grader	1	85	40	50	0.5	85	81
Dozer	1	82	40	50	0.5	82	78
Tractor	2	84	40	50	0.5	84	83
					Combined at 50 feet	**89**	**86**
					Combined at Receptor 140 feet	**80**	**77**
					Combined at Receptor 310 feet	**73**	**70**

Phase:Building Construstion

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA) Lmax	Noise Level (dBA) Leq
Crane	1	81	16	50	0.5	81	73
Man Lift	1	75	20	50	0.5	75	68
Generator	1	81	50	50	0.5	81	78
Tractor	1	84	40	50	0.5	84	80
Welder / Torch	3	74	40	50	0.5	74	75
					Combined at 50 feet	**87**	**83**
					Combined at Receptor 140 feet	**79**	**74**
					Combined at Receptor 310 feet	**72**	**68**

Phase:Paving

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA) Lmax	Noise Level (dBA) Leq
Drum Mixer	1	80	50	50	0.5	80	77
Paver	1	77	50	50	0.5	77	74
All Other Equipment > 5 HP	1	85	50	50	0.5	85	82
Tractor	1	84	40	50	0.5	84	80
Roller	1	80	20	50	0.5	80	73
					Combined at 50 feet	**89**	**85**
					Combined at Receptor 140 feet	**80**	**77**
					Combined at Receptor 310 feet	**73**	**70**

Phase:Architectural Coating

Equipment	Quantity	Reference (dBA) 50 ft Lmax	Usage Factor[1]	Distance to Receptor (ft)	Ground Effects	Noise Level (dBA) Lmax	Noise Level (dBA) Leq
Compressor (air)	1	78	40	50	0.5	78	74
					Combined at 50 feet	**78**	**74**
					Combined at Receptor 140 feet	**69**	**65**
					Combined at Receptor 310 feet	**62**	**58**

Sources: RCNM

[1]- Percentage of time that a piece of equipment is operating at full power.
dBA – A-weighted Decibels
Lmax- Maximum Level
Leq- Equivalent Level

ATTACHMENT D

SOUNDPLAN NOISE MODEL PRINTOUT

Vallejo Panda Express

Project No. 20230952

Project Operational Noise Levels

APPENDIX C

AIR QUALITY AND GREENHOUSE GAS EMISSIONS ANALYSIS

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CARLSBAD
CLOVIS
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

MEMORANDUM

DATE: January 26, 2024

TO: John Dacey, AICP, Senior Planner, City of Vallejo

FROM: Cara Cunningham, Associate

SUBJECT: Air Quality Analysis for the Vallejo Panda Express Project, Vallejo, California

This Air Quality Analysis for the proposed Vallejo Panda Express Project (project), as prepared for the City of Vallejo, has been conducted using methods and assumptions recommended by the Bay Area Air Quality Management District (BAAQMD). This analysis includes a description of existing regulatory framework, an assessment of project construction and operation-period air quality emissions, and an evaluation of the project's compliance with adopted plans related to the reduction of emissions in order to achieve clean air.

PROJECT DESCRIPTION

The 1.57-acre (68,354-square-foot) project site is located at 4301 Sonoma Boulevard in Vallejo (Assessor's Parcel Number [APN] 0051-250-680), Solano County, California. The project site is currently undeveloped and is bounded by a self-storage facility to the north, a gas station and restaurant to the south, a vacant undeveloped parcel to the west, and State Route 29 (Sonoma Boulevard) to the east.

The proposed project would include the construction of an approximately 2,700-square-foot, one-story restaurant building with a drive-through feature. The proposed building would be located in the southwest corner of the project site adjacent to the existing El Pollo Loco restaurant to the south. Additionally, the proposed building would include a 363-square-foot patio area, and 306-square-foot trash enclosure area. A total of 33 automobile parking spaces would be provided throughout the project site. The proposed project would also include pavement and utility improvements to the access roadway to the south of the project site and would include a total of 15,484 square feet of landscaping on the project site. The proposed project would be all-electric, and would generate approximately 1,136 average daily trips.[1]

To prepare the project site for construction, remnants from previous developments and existing vegetation would be removed, requiring the demolition of 20,130 square feet of building area. In addition, approximately, 1,010 cubic yards of soil would be excavated from the project site, 995

[1] RK Engineering Group, Inc. 2022. *Sonoma Boulevard & Yolano Drive Panda Express Project Trip Generation & Vehicle Miles Traveled (VMT) Screening Assessment, City of Vallejo, CA.* October 18.

cubic yards of which would be kept on site and 15 cubic yards of which would be off-hauled. Project construction is estimated to begin July 8, 2024 and would occur over a 288-day period.

ENVIRONMENTAL SETTING

Air quality is primarily a function of both local climate, local sources of air pollution and regional pollution transport. The amount of a given pollutant in the atmosphere is determined by the amount of the pollutant released and the atmosphere's ability to transport and dilute the pollutant. The major determinants of transport and dilution are wind, atmospheric stability, terrain, and for photochemical pollutants, sunshine.

A region's topographic features have a direct correlation with air pollution flow and, therefore, are used to determine the boundary of air basins. Vallejo is located within the San Francisco Bay Area Air Basin (Air Basin), a large shallow air basin ringed by hills that taper into a number of sheltered valleys around the perimeter. Two primary atmospheric outlets exist. One is through the strait known as the Golden Gate, a direct outlet to the Pacific Ocean. The second extends to the northeast, along the west delta region of the Sacramento and San Joaquin Rivers.

Vallejo is within the jurisdiction of the BAAQMD, which regulates air quality in the Bay Area. Air quality conditions in the Bay Area have improved significantly since the BAAQMD was created in 1955. Ambient concentrations of air pollutants and the number of days during which the region exceeds air quality standards have fallen dramatically. Neither State nor national ambient air quality standards of the following chemicals have been violated in recent decades: nitrogen dioxide, sulfur dioxide, sulfates, lead, hydrogen sulfide, and vinyl chloride. Those exceedances of air quality standards that do occur primarily happen during meteorological conditions conducive to high pollution levels, such as cold, windless nights or hot, sunny summer afternoons.

Both State and federal governments have established health-based Ambient Air Quality Standards (AAQS) for six criteria air pollutants: carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and suspended particulate matter. In addition, the State has set standards for sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. Two criteria pollutants, O_3 and NO_2, are considered regional pollutants because they (or their precursors) affect air quality on a regional scale. Pollutants such as CO, SO_2, and Pb are considered local pollutants that tend to accumulate in the air locally. The BAAQMD is under State nonattainment status for ozone and particulate matter standards. The BAAQMD is classified as nonattainment for the federal ozone 8-hour standard and nonattainment for the federal particulate matter less than 2.5 microns in size ($PM_{2.5}$) 24-hour standard. As such, the primary pollutants of concern in the project area are O_3, CO, and $PM_{2.5}$.

Because of the conservative nature of the significance thresholds, and the basin-wide context of individual development project emissions, there is no direct correlation between a single project and localized air quality-related health effects. One individual project that generates emissions exceeding a threshold does not necessarily result in adverse health effects for residents in the project vicinity. This condition is especially true when the criteria pollutants exceeding thresholds

are those with regional effects, such as ozone precursors like nitrogen oxides (NO_x) and reactive organic gases (ROG).

Further, by its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to by itself result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant. In developing thresholds of significance for air pollutants, the air districts have considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions.

Occupants of facilities such as schools, daycare centers, parks and playgrounds, hospitals, and nursing and convalescent homes are considered to be more sensitive than the general public to air pollutants because these population groups have increased susceptibility to respiratory disease. Persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality. 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 greater associated exposure to ambient air quality conditions. Recreational uses are also considered sensitive compared to commercial and industrial uses due to greater exposure to ambient air quality conditions associated with exercise. These populations are referred to as sensitive receptors.

REGULATORY FRAMEWORK

This section provides regulatory background information for air quality.

Federal Regulations

The 1970 Federal Clean Air Act (CAA) authorized the establishment of national health-based air quality standards and set deadlines for their attainment. The CAA Amendments of 1990 changed deadlines for attaining national standards as well as the remedial actions required for areas of the nation that exceed the standards. Under the CAA, State and local agencies in areas that exceed the national standards are required to develop State Implementation Plans to demonstrate how they will achieve the national standards by specified dates.

State Regulations

In 1988, the California Clean Air Act (CCAA) required that all air districts in the State endeavor to achieve and maintain California Ambient Air Quality Standards (CAAQS) for CO, O_3, sulfur dioxide (SO_2), and nitrogen dioxide ($NO_{2)}$ by the earliest practical date. The CCAA provides districts with authority to regulate indirect sources and mandates that air quality districts focus particular attention on reducing emissions from transportation and area-wide emission sources. Each nonattainment district is required to adopt a plan to achieve a 5 percent annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each nonattainment pollutant or its precursors. A Clean Air Plan shows how a district would reduce emissions to achieve air quality

standards. Generally, the State standards for these pollutants are more stringent than the national standards.

The California Air Resources Board (CARB) is the State's "clean air agency." The CARB's goals are to attain and maintain healthy air quality, protect the public from exposure to toxic air contaminants, and oversee compliance with air pollution rules and regulations.

Regional Regulations

The BAAQMD seeks to attain and maintain air quality conditions in the San Francisco Bay Area Air Basin through a comprehensive program of planning, regulation, enforcement, technical innovation, and education. The clean air strategy includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. The BAAQMD also inspects stationary sources and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by law.

Clean Air Plan

The Clean Air Plan guides the region's air quality planning efforts to attain the CAAQS.[2] The BAAQMD 2017 Clean Air Plan, which was adopted on April 19, 2017, by the BAAQMD Board of Directors, is the current Clean Air Plan which contains district-wide control measures to reduce ozone precursor emissions (e.g., ROG and NO_x), particulate matter and greenhouse gas (GHG) emissions.

The Bay Area 2017 Clean Air Plan:

- Describes the BAAQMD plan towards attaining all State and federal air quality standards and eliminating health risk disparities from exposure to air pollution among Bay Area communities;
- Defines a vision for transitioning the region to a post-carbon economy needed to achieve ambitious GHG reduction targets for 2030 and 2050;
- Provides a regional climate protection strategy that will put the Bay Area on a pathway to achieve GHG reduction targets; and
- Includes a wide range of control measures designed to decrease emissions of air pollutants that are most harmful to Bay Area residents, such as particulate matter, ozone, and toxic air contaminants; to reduce emissions of methane and other "Super-GHGs" that are potent climate pollutants in the near term; and to decrease emissions of carbon dioxide by reducing fossil fuel combustion.

[2] Bay Area Air Quality Management District (BAAQMD). 2017. *Final 2017 Clean Air Plan*. April 19. Website: www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en (accessed January 2024).

BAAQMD CEQA Air Quality Guidelines

The BAAQMD CEQA Air Quality Guidelines were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. They also include recommended assessment methodologies for air toxics, odors, and GHG emissions.

In 2023, the BAAQMD published an updated version of the CEQA Guidelines.[3] The BAAQMD CEQA Guidelines include thresholds to evaluate project impacts to protectively evaluate the potential effects of the project on air quality. These protective thresholds are appropriate in the context of the size, scale, and location of the proposed project.

Local Regulations

The Community Health Element of the *City of Vallejo General Plan*[4] includes air quality policies and actions intended to protect the community from harmful levels of air pollution. The following actions are applicable to the project:

- **Action CP-1.12B:** Update City regulations to set BAAQMD-recommended limits for particulate emissions from construction, demolition, debris hauling, and utility maintenance.
- **Action CP-1.12C:** Provide information regarding advances in air-quality protection measures to schools, homeowners, and operators of "sensitive receptors" such as senior and child care facilities.
- **Action CP-1.12D:** Periodically review and update City regulations to comply with changes in State law and BAAQMD Guidelines pertaining to coal or wood-burning devices.
- **Action CP-1.12E:** Periodically review the Building Code for consistency with the latest California Green Building Standards Code, and assess the need for updates to require new construction and remodels to employ best practices and materials to reduce emissions, both during and after construction.
- **Action CP-1.12F:** Update City regulations to prohibit grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour, or require the use of water trucks to wet soil.

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3 Bay Area Air Quality Management District (BAAQMD). 2023. *2022 California Environmental Quality Act Air Quality Guidelines*. April 20.

4 City of Vallejo. 2018. *Propel Vallejo General Plan 2040*. July 24. Website: https://www.cityofvallejo.net/common/pages/DisplayFile.aspx?itemId=17961496 (accessed January 2024).

METHODOLOGY

Construction Emissions

Construction activities can generate a substantial amount of air pollution. Construction activities are considered temporary; however, short-term impacts can contribute to exceedances of air quality standards. Construction activities include site preparation, earthmoving, and general construction. The emissions generated from these common construction activities include fugitive dust from soil disturbance, fuel combustion from mobile heavy-duty diesel- and gasoline-powered equipment, portable auxiliary equipment, and worker commute trips. The California Emissions Estimator Model (CalEEMod) version 2022.1 computer program was used to calculate emissions from on-site construction equipment and emissions from worker and vehicle trips to the site. As identified in the Project Description, construction activities for the project would begin July 8, 2024 and would occur over a 288-day period. In addition, the proposed project would include the demolition of 20,130 square feet of building area and the export of 15 cubic yards of soil, which were included in CalEEMod. This analysis also assumes use of Tier 2 construction equipment. Other detailed construction information is currently unavailable; therefore, this analysis utilizes CalEEMod default assumptions.

Operational Emissions

This air quality analysis includes estimating emissions associated with long-term operation of the project. Indirect emissions of criteria pollutants with regional impacts would be emitted by project-generated vehicle trips. In addition, localized air quality impacts (i.e., higher carbon monoxide concentrations or "hot-spots") near intersections or roadway segments in the project vicinity would also potentially occur due to project-generated vehicle trips.

Consistent with BAAQMD's guidance for estimating emissions, CalEEMod was used to calculate the long-term operational emissions associated with the project. As described in the Project Description, the proposed project would develop an approximately 2,700-square-foot restaurant with a drive-through feature and 33 parking spaces. The analysis was conducted using land use codes *Fast Food Restaurant with Drive Thru* and *Parking Lot*. The proposed project would also include a total of 15,484 square feet of landscaping on the project site, which was included in CalEEMod. This analysis assumes the proposed project would generate approximately 1,136 average daily trips.[5] The proposed project would be all-electric, which was also included in CalEEMod. Where project-specific data were not available, default assumptions (e.g., energy usage, water usage, and solid waste generation) from CalEEMod were used to estimate project emissions. CalEEMod output sheets are attached.

THRESHOLDS OF SIGNIFICANCE

The *State CEQA Guidelines* indicate that a project would normally have a significant adverse air quality impact if project-generated pollutant emissions would:

[5] RK Engineering Group, Inc. 2022. op. cit.

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

According to the BAAQMD CEQA Guidelines, to meet air quality standards for criteria air pollutant and air precursor impacts, the proposed project must not:

- Contribute to CO concentrations exceeding the State ambient air quality standards;
- Generate average daily construction emissions of ROG, NO_x or $PM_{2.5}$ (exhaust) greater than 54 pounds per day or PM_{10} exhaust emissions greater than 82 pounds per day;
- Generate operational emissions of ROG, NO_x or $PM_{2.5}$ of greater than 10 tons per year or 54 pounds per day or PM_{10} emissions greater than 15 tons per year or 82 pounds per day; or
- Exceed a cancer risk level of more than 10 in one million, a non-cancer risk (i.e., chronic or acute) hazard index greater than 1.0, or result in incremental increase of greater than 0.3 micrograms per cubic meter annual average $PM_{2.5}$.

PROJECT IMPACTS

Air pollutant emissions associated with the project would occur over the short term from construction activities and over the long term from operational activities associated with the proposed use.

Consistency with Applicable Air Quality Plans

The applicable air quality plan is the BAAQMD 2017 Clean Air Plan (Clean Air Plan), which defines control strategies to reduce emissions and ambient concentrations of air pollutants; safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, with an emphasis on protecting the communities most heavily affected by air pollution; and reduce GHG emissions to protect the climate. Consistency with the Clean Air Plan can be determined if the project: (1) supports the goals of the Clean Air Plan; (2) includes applicable control measures from the Clean Air Plan; and (3) would not disrupt or hinder implementation of any control measures from the Clean Air Plan.

Clean Air Plan Goals

The primary goals of the Bay Area Clean Air Plan are to: attain air quality standards; reduce population exposure and protect public health in the Bay Area; and reduce GHG emissions and protect climate.

The BAAQMD has established significance thresholds for project construction and operational impacts at a level at which the cumulative impact of exceeding these thresholds would have an adverse impact on the region's attainment of air quality standards. The health and hazards thresholds were established to help protect public health. As discussed below, construction and operation of the proposed project would not result in the generation of criteria air pollutants that would exceed BAAQMD thresholds of significance. Therefore, the proposed project would not conflict with the Clean Air Plan goals.

Clean Air Plan Control Measures

The control strategies of the Clean Air Plan include measures in the following categories: Stationary Source Measures, Transportation Measures, Energy Measures, Building Measures, Agriculture Measures, Natural and Working Lands Measures, Waste Management Measures, Water Measures, and Super-GHG Pollutants Measures. The proposed project's compliance with each of these control measures is discussed below.

Stationary Source Control Measures. The Stationary Source Control Measures, which are designed to reduce emissions from stationary sources such as metal melting facilities, cement kilns, refineries, and glass furnaces, are incorporated into rules adopted by the BAAQMD and then enforced by the BAAQMD Permit and Inspection programs. Since the proposed project would not include any of these stationary sources, the Stationary Source Control Measures of the Clean Air Plan are not applicable to the proposed project.

Transportation Control Measures. The BAAQMD identifies Transportation Control Measures as part of the Clean Air Plan to decrease emissions of criteria pollutants, TACs, and GHGs by reducing demand for motor vehicle travel, promoting efficient vehicles and transit service, decarbonizing transportation fuels, and electrifying motor vehicles and equipment. The proposed project would result in the redevelopment of the site with a 2,700-square-foot fast-food restaurant on an infill site located near existing commercial and residential uses, reducing the demand for travel by single occupancy vehicles. In addition, since the proposed project would consist of a local-serving retail project less than 50,000 square feet, the proposed project may be presumed to have a less than significant impact on vehicle miles traveled (VMT).[6] Therefore, the proposed project would not conflict with the identified Transportation Control Measures of the Clean Air Plan.

Energy Control Measures. The Clean Air Plan also includes Energy Control Measures, which are designed to reduce emissions of criteria air pollutants, TACs, and GHGs by decreasing the amount of electricity consumed in the Bay Area, as well as decreasing the carbon intensity of the electricity used by switching to less GHG-intensive fuel sources for electricity generation. Since these measures apply to electrical utility providers and local government agencies (and not individual projects), the Energy Control Measures of the Clean Air Plan are not applicable to the proposed project.

Building Control Measures. The BAAQMD has authority to regulate emissions from certain sources in buildings such as boilers and water heaters but has limited authority to regulate buildings themselves. Therefore, the strategies in the control measures for this sector focus on working with

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6 RK Engineering Group, Inc. 2022. op. cit.

local governments that do have authority over local building codes, to facilitate adoption of best GHG control practices and policies. The proposed project would be required to comply with the latest Title 24 standards of the California Code of Regulations, regarding energy conservation and green building standards. Therefore, the proposed project would not conflict with any of the Building Control Measures.

Agriculture Control Measures. The Agriculture Control Measures are designed to primarily reduce emissions of methane. Since the project does not include any agricultural activities, the Agriculture Control Measures of the Clean Air Plan are not applicable to the proposed project.

Natural and Working Lands Control Measures. The Natural and Working Lands Control Measures focus on increasing carbon sequestration on rangelands and wetlands, as well as encouraging local governments to adopt ordinances that promote urban-tree plantings. Since the proposed project does not include the disturbance of any rangelands or wetlands, the Natural and Working Lands Control Measures of the Clean Air Plan are not applicable to the proposed project.

Waste Management Control Measures. The Waste Management Control Measures focus on reducing or capturing methane emissions from landfills and composting facilities, diverting organic materials away from landfills, and increasing waste diversion rates through efforts to reduce, reuse, and recycle. The proposed project would comply with local requirements for waste management (e.g., recycling and composting services). Therefore, the proposed project would be consistent with the Waste Management Control Measures of the Clean Air Plan.

Water Control Measures. The Water Control Measures focus on reducing emissions of criteria pollutants, TACs, and GHGs by encouraging water conservation, limiting GHG emissions from publicly owned treatment works (POTWs), and promoting the use of biogas recovery systems. Since these measures apply to POTWs and local government agencies (and not individual projects), the Water Control Measures are not applicable to the proposed project.

Super GHG Control Measures. The Super-GHG Control Measures are designed to facilitate the adoption of best GHG control practices and policies through the BAAQMD and local government agencies. Since these measures do not apply to individual projects, the Super-GHG Control Measures are not applicable to the proposed project.

Clean Air Plan Implementation

As discussed above, the proposed project would generally implement the applicable measures outlined in the Clean Air Plan, including Transportation Control Measures. Therefore, the project would not disrupt or hinder implementation of a control measure from the Clean Air Plan.

Criteria Pollutant Analysis

The BAAQMD is currently designated as a nonattainment area for State and national ozone standards and national particulate matter AAQS. The BAAQMD's nonattainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in

nonattainment of AAQS. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant.

In developing thresholds of significance for air pollutants, the BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, additional analysis to assess cumulative impacts is unnecessary. The following analysis assesses the potential project-level construction- and operation-related air quality impacts.

Short-Term Construction Emissions

During construction, short-term degradation of air quality may occur due to the release of particulate emissions generated by demolition, grading, paving, building, and other activities. Emissions from construction equipment are also anticipated and would include CO, NO_x, ROG, directly emitted particulate matter ($PM_{2.5}$ and PM_{10}), and TACs such as diesel exhaust particulate matter.

Project construction activities would include demolition, site preparation, grading, building, paving, and architectural coating (painting). Construction-related effects on air quality from the proposed project would be greatest during the site preparation phase due to the disturbance of soils. If not properly controlled, these activities would temporarily generate particulate emissions. Sources of fugitive dust would include disturbed soils at the construction site. Unless properly controlled, vehicles leaving the site would deposit dirt and mud on local streets, which could be an additional source of airborne dust after it dries. PM_{10} emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of operating equipment. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Water or other soil stabilizers can be used to control dust, resulting in emission reductions of 50 percent or more. The BAAQMD has established standard measures for reducing fugitive dust emissions (PM_{10}). With the implementation of these Basic Construction Mitigation Measures, fugitive dust emissions from construction activities would not result in adverse air quality impacts.

In addition to dust-related PM_{10} emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO_2, NO_x, ROG, and some soot particulate ($PM_{2.5}$ and PM_{10}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles idle in traffic. These emissions would be temporary in nature and limited to the immediate area surrounding the construction site.

As discussed above, CalEEMod was used to calculate emissions from on-site construction equipment and emissions from worker and vehicle trips to the site. Construction-related emissions are presented in Table A, below.

Table A: Project Construction Emissions (in Pounds Per Day)

Project Construction	ROG	NO_X	Exhaust PM_{10}	Fugitive Dust PM_{10}	Exhaust $PM_{2.5}$	Fugitive Dust $PM_{2.5}$
Average Daily Emissions	0.5	9.6	0.8	0.7	0.7	0.4
BAAQMD Thresholds	54.0	54.0	82.0	BMP	54.0	BMP
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: LSA (January 2024).
BAAQMD = Bay Area Air Quality Management District
BMP = Best Management Practices
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROG = reactive organic gases

As shown in Table A, construction emissions associated with the project would not exceed the BAAQMD's thresholds for ROG, NO_X, exhaust PM_{10}, and exhaust $PM_{2.5}$ emissions. The BAAQMD requires the implementation of the BAAQMD's basic best management practices (BMPs) to reduce construction fugitive dust impacts to a less-than-significant level. Therefore, implementation of Regulatory Compliance Measure (RCM) AIR-1 would be required.

RCM AIR-1: In order to meet the BAAQMD fugitive dust threshold, the following BAAQMD Basic Best Management Practices shall be implemented by the project applicant during the project construction period:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt tracked-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
- Unpaved roads proving access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted wood chips, mulch, or gravel.

- A publicly-visible sign shall be posted with the telephone number and person to contact at City of Vallejo regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's General Air Pollution Complaints phone number shall also be visible to ensure compliance with applicable regulations.

With RCM-1, construction of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or State AAQS.

Long-Term Operational Emissions

Long-term air pollutant emission impacts considered for projects in the BAAQMD include those associated with mobile sources (e.g., vehicle trips), energy sources (e.g., natural gas), and area sources (e.g., architectural coatings and the use of landscape maintenance equipment).

Mobile source emissions include ROG and NOx emissions that contribute to the formation of ozone. Additionally, PM_{10} emissions result from running exhaust, tire and brake wear, and the entrainment of dust into the atmosphere from vehicles traveling on paved roadways.

Energy source emissions would typically result from activities in buildings for which natural gas is used. As identified above, the proposed project would be all-electric; therefore, the proposed project would not generate energy source emissions.

Typically, area source emissions consist of direct sources of air emissions located at the project site, including architectural coatings, consumer products, and the use of landscape maintenance equipment.

Emission estimates for operation of the project were calculated using CalEEMod. The primary emissions associated with the project are regional in nature, meaning that air pollutants are rapidly dispersed on release or, in the case of vehicle emissions associated with the project, emissions are released in other areas of the Air Basin. The daily and annual emissions associated with project operational trip generation, energy, and area sources are identified in Table B for ROG, NO_x, PM_{10}, and $PM_{2.5}$.

Table B: Project Operational Emissions

	ROG	NO_x	PM_{10}	$PM_{2.5}$
Pounds Per Day				
Mobile Source Emissions	4.5	3.9	5.8	1.5
Area Source Emissions	0.1	<0.1	<0.1	<0.1
Energy Source Emissions	0.0	0.0	0.0	0.0
Total Emissions	**4.6**	**3.9**	**5.8**	**1.5**
BAAQMD Thresholds	54.0	54.0	82.0	54.0
Exceed Threshold?	**No**	**No**	**No**	**No**
Tons Per Year				
Mobile Source Emissions	0.8	0.7	1.1	0.3
Area Source Emissions	<0.1	<0.1	<0.1	<0.1
Energy Source Emissions	0.0	0.0	0.0	0.0
Total Emissions	**0.8**	**0.7**	**1.1**	**0.3**
BAAQMD Thresholds	10.0	10.0	15.0	10.0
Exceed Threshold?	**No**	**No**	**No**	**No**

Source: LSA (January 2024).
BAAQMD = Bay Area Air Quality Management District
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROG = reactive organic gases

The results shown in Table B indicate the project would not exceed the significance criteria for daily or annual ROG, NO_x, PM_{10}, and $PM_{2.5}$ emissions; therefore, operation of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or State AAQS.

Localized CO Impacts

Emissions and ambient concentrations of CO have decreased dramatically in the Bay Area with the introduction of the catalytic converter in 1975. No exceedances of the State or federal CO standards have been recorded at Bay Area monitoring stations since 1991. The BAAQMD CEQA Guidelines include recommended methodologies for quantifying concentrations of localized CO levels for proposed transportation projects. A screening level analysis using guidance from the BAAQMD CEQA Guidelines was performed to determine the impacts of the project. The screening methodology provides a conservative indication of whether the implementation of a proposed project would result in significant CO emissions. According to the BAAQMD CEQA Guidelines, a proposed project would result in a less-than-significant impact to localized CO concentrations if the following screening criteria are met:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, and the regional transportation plan and local congestion management agency plans.

- Project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

- The project would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, or below-grade roadway).

Implementation of the proposed project would not conflict with the policies or programs of the Solano Transportation Authority. The proposed project would generate approximately 4 AM peak hour trips and 40 PM peak hour trips[7]; therefore, the project's contribution to peak hour traffic volumes at intersections in the vicinity of the project site would be well below 44,000 vehicles per hour. As such, the proposed project would not result in localized CO concentrations that exceed State or federal standards.

Sensitive Receptors

Sensitive receptors are defined as people that have an increased sensitivity to air pollution or environmental contaminants. Sensitive receptor locations include schools, parks and playgrounds, day care centers, nursing homes, hospitals, and residential dwelling units. The closest sensitive receptors to the project site include the residential uses located approximately 150 feet east of the project site across Sonoma Boulevard.

Construction of the proposed project may expose surrounding sensitive receptors to airborne particulates, as well as a small quantity of construction equipment pollutants (i.e., usually diesel-fueled vehicles and equipment). However, construction contractors would be required to implement RCM AIR-1 described above. With implementation of this regulatory measure, project construction pollutant emissions would be below the BAAQMD significance thresholds. Once the project is constructed, the project would not be a source of substantial emissions, as demonstrated through the CalEEMod evaluation, which shows that the proposed project would be below the BAAQMD thresholds of significance for criteria pollutants. Additionally, the proposed project would not be expected to be a significant source of toxic air contaminants (TACs). Therefore, sensitive receptors are not expected to be exposed to substantial pollutant concentrations during project construction or operation.

Objectionable Odors

During construction, the various diesel-powered vehicles and equipment in use on site would create localized odors. These odors would be temporary and are not likely to be noticeable for extended periods of time beyond the project site. Additionally, the proposed uses that would be developed within the project site are not expected to produce any offensive odors that would result in frequent odor complaints. Therefore, the proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

CONCLUSION

Based on the analysis presented above, construction and operation of the proposed project would not result in the generation of criteria air pollutants that would exceed BAAQMD thresholds of significance. In addition, the proposed project is not expected to produce significant emissions that

[7] RK Engineering Group, Inc. 2022. op. cit.

would affect nearby sensitive receptors. The proposed project would also not result in objectionable odors affecting a substantial number of people.

Attachment: CalEEMod Output Sheets

Vallejo Panda Express Project Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Vallejo Panda Express Project
Construction Start Date	7/8/2024
Operational Year	2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.60
Precipitation (days)	34.8
Location	4301 Sonoma Blvd, Vallejo, CA 94589, USA
County	Solano-San Francisco
City	Vallejo
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	824
EDFZ	4
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.21

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

Fast Food Restaurant with Drive Thru	2.70	1000sqft	1.00	2,700	15,484	—	—	—
Parking Lot	33.0	Space	0.57	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.56	21.0	15.6	0.03	0.68	2.85	3.40	0.63	1.36	1.86	—	3,717	3,717	0.15	0.20	3,783
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.51	13.4	10.5	0.02	0.55	0.10	0.57	0.51	0.02	0.51	—	1,823	1,823	0.07	0.02	1,830
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.19	5.14	3.99	0.01	0.20	0.15	0.34	0.18	0.05	0.24	—	733	733	0.03	0.01	738
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.03	0.94	0.73	< 0.005	0.04	0.03	0.06	0.03	0.01	0.04	—	121	121	< 0.005	< 0.005	122

2.2. Construction Emissions by Year, Unmitigated

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

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.68	21.0	15.6	0.03	0.68	2.85	3.40	0.63	1.36	1.86	—	3,717	3,717	0.15	0.20	3,783
2025	3.56	8.43	7.16	0.01	0.36	0.10	0.46	0.34	0.02	0.36	—	1,104	1,104	0.04	0.01	1,109
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.48	13.4	10.5	0.02	0.55	0.01	0.57	0.51	< 0.005	0.51	—	1,823	1,823	0.07	0.02	1,830
2025	0.51	13.4	10.5	0.02	0.55	0.10	0.57	0.51	0.02	0.51	—	1,822	1,822	0.07	0.02	1,829
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.18	5.14	3.99	0.01	0.20	0.15	0.34	0.18	0.05	0.24	—	733	733	0.03	0.01	738
2025	0.19	2.47	1.95	< 0.005	0.10	< 0.005	0.11	0.09	< 0.005	0.10	—	333	333	0.01	< 0.005	335
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.03	0.94	0.73	< 0.005	0.04	0.03	0.06	0.03	0.01	0.04	—	121	121	< 0.005	< 0.005	122
2025	0.03	0.45	0.36	< 0.005	0.02	< 0.005	0.02	0.02	< 0.005	0.02	—	55.2	55.2	< 0.005	< 0.005	55.4

2.4. Operations Emissions Compared Against Thresholds

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

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.94	3.55	31.3	0.07	0.05	5.89	5.94	0.05	1.49	1.54	18.3	7,215	7,234	2.20	0.34	7,421
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.62	4.17	31.2	0.07	0.05	5.89	5.94	0.05	1.49	1.54	18.3	6,802	6,820	2.26	0.37	6,992

Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.59	3.89	29.3	0.07	0.05	5.76	5.81	0.05	1.46	1.51	18.3	6,862	6,880	2.23	0.35	7,058
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.84	0.71	5.35	0.01	0.01	1.05	1.06	0.01	0.27	0.28	3.04	1,136	1,139	0.37	0.06	1,168

2.5. Operations Emissions by Sector, Unmitigated

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

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.85	3.55	31.2	0.07	0.05	5.89	5.94	0.05	1.49	1.54	—	7,139	7,139	0.35	0.33	7,274
Area	0.09	< 0.005	0.12	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.48	0.48	< 0.005	< 0.005	0.48
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	72.7	72.7	0.01	< 0.005	73.5
Water	—	—	—	—	—	—	—	—	—	—	1.57	3.49	5.06	0.16	< 0.005	10.3
Waste	—	—	—	—	—	—	—	—	—	—	16.8	0.00	16.8	1.68	0.00	58.6
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.22
Total	4.94	3.55	31.3	0.07	0.05	5.89	5.94	0.05	1.49	1.54	18.3	7,215	7,234	2.20	0.34	7,421
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.55	4.17	31.2	0.07	0.05	5.89	5.94	0.05	1.49	1.54	—	6,726	6,726	0.41	0.37	6,845
Area	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	72.7	72.7	0.01	< 0.005	73.5
Water	—	—	—	—	—	—	—	—	—	—	1.57	3.49	5.06	0.16	< 0.005	10.3
Waste	—	—	—	—	—	—	—	—	—	—	16.8	0.00	16.8	1.68	0.00	58.6
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.22

Total	4.62	4.17	31.2	0.07	0.05	5.89	5.94	0.05	1.49	1.54	18.3	6,802	6,820	2.26	0.37	6,992
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.51	3.89	29.3	0.07	0.05	5.76	5.81	0.05	1.46	1.51	—	6,785	6,785	0.38	0.35	6,911
Area	0.08	< 0.005	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.24	0.24	< 0.005	< 0.005	0.24
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	72.7	72.7	0.01	< 0.005	73.5
Water	—	—	—	—	—	—	—	—	—	—	1.57	3.49	5.06	0.16	< 0.005	10.3
Waste	—	—	—	—	—	—	—	—	—	—	16.8	0.00	16.8	1.68	0.00	58.6
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.22
Total	4.59	3.89	29.3	0.07	0.05	5.76	5.81	0.05	1.46	1.51	18.3	6,862	6,880	2.23	0.35	7,058
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.82	0.71	5.34	0.01	0.01	1.05	1.06	0.01	0.27	0.28	—	1,123	1,123	0.06	0.06	1,144
Area	0.01	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.04	0.04	< 0.005	< 0.005	0.04
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	12.0	12.0	< 0.005	< 0.005	12.2
Water	—	—	—	—	—	—	—	—	—	—	0.26	0.58	0.84	0.03	< 0.005	1.70
Waste	—	—	—	—	—	—	—	—	—	—	2.78	0.00	2.78	0.28	0.00	9.71
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.70
Total	0.84	0.71	5.35	0.01	0.01	1.05	1.06	0.01	0.27	0.28	3.04	1,136	1,139	0.37	0.06	1,168

3. Construction Emissions Details

3.1. Demolition (2024) - Unmitigated

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

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

Off-Road Equipment	0.61	19.6	14.6	0.02	0.66	—	0.66	0.61	—	0.61	—	2,494	2,494	0.10	0.02	2,502
Demolition	—	—	—	—	—	0.88	0.88	—	0.13	0.13	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.81	0.60	< 0.005	0.03	—	0.03	0.03	—	0.03	—	102	102	< 0.005	< 0.005	103
Demolition	—	—	—	—	—	0.04	0.04	—	0.01	0.01	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.15	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	17.0	17.0	< 0.005	< 0.005	17.0
Demolition	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.55	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	114	114	< 0.005	< 0.005	116
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	1.39	0.49	0.01	0.02	0.29	0.31	0.02	0.08	0.10	—	1,109	1,109	0.05	0.17	1,165
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.39	4.39	< 0.005	< 0.005	4.45
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	45.6	45.6	< 0.005	0.01	47.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.73	0.73	< 0.005	< 0.005	0.74
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.55	7.55	< 0.005	< 0.005	7.92

3.3. Site Preparation (2024) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.46	15.6	11.9	0.02	0.45	—	0.45	0.41	—	0.41	—	2,064	2,064	0.08	0.02	2,071
Dust From Material Movement	—	—	—	—	—	2.44	2.44	—	1.17	1.17	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.09	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.3	11.3	< 0.005	< 0.005	11.3
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	0.01	0.01	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.87	1.87	< 0.005	< 0.005	1.88
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.33	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	68.5	68.5	< 0.005	< 0.005	69.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.35	0.35	< 0.005	< 0.005	0.36
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	0.06
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.5. Grading (2024) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.56	18.8	14.2	0.02	0.55	—	0.55	0.51	—	0.51	—	2,454	2,454	0.10	0.02	2,462
Dust From Material Movement	—	—	—	—	—	2.76	2.76	—	1.34	1.34	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.52	0.39	< 0.005	0.02	—	0.02	0.01	—	0.01	—	67.2	67.2	< 0.005	< 0.005	67.5
Dust From Material Movement	—	—	—	—	—	0.08	0.08	—	0.04	0.04	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.09	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.1	11.1	< 0.005	< 0.005	11.2
Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	0.01	0.01	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.44	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	91.3	91.3	< 0.005	< 0.005	92.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	14.3	14.3	< 0.005	< 0.005	15.1
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.34	2.34	< 0.005	< 0.005	2.37
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.39	0.39	< 0.005	< 0.005	0.41
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.39	0.39	< 0.005	< 0.005	0.39
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.07	0.07	< 0.005	< 0.005	0.07

3.7. Building Construction (2024) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	13.4	10.5	0.02	0.55	—	0.55	0.51	—	0.51	—	1,801	1,801	0.07	0.01	1,807
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	13.4	10.5	0.02	0.55	—	0.55	0.51	—	0.51	—	1,801	1,801	0.07	0.01	1,807
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	3.67	2.87	0.01	0.15	—	0.15	0.14	—	0.14	—	493	493	0.02	< 0.005	495
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.67	0.52	< 0.005	0.03	—	0.03	0.03	—	0.03	—	81.7	81.7	< 0.005	< 0.005	82.0
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.4	10.4	< 0.005	< 0.005	10.5
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.0	12.0	< 0.005	< 0.005	12.6
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.57	9.57	< 0.005	< 0.005	9.69
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	12.0	12.0	< 0.005	< 0.005	12.6
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.65	2.65	< 0.005	< 0.005	2.69
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.29	3.29	< 0.005	< 0.005	3.44
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.44	0.44	< 0.005	< 0.005	0.45
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.54	0.54	< 0.005	< 0.005	0.57
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2025) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	13.4	10.5	0.02	0.55	—	0.55	0.51	—	0.51	—	1,801	1,801	0.07	0.01	1,807
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	2.20	1.72	< 0.005	0.09	—	0.09	0.08	—	0.08	—	296	296	0.01	< 0.005	297
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.40	0.31	< 0.005	0.02	—	0.02	0.02	—	0.02	—	49.0	49.0	< 0.005	< 0.005	49.2

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.39	9.39	< 0.005	< 0.005	9.51
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	11.8	11.8	< 0.005	< 0.005	12.4
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.56	1.56	< 0.005	< 0.005	1.58
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.94	1.94	< 0.005	< 0.005	2.03
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.26	0.26	< 0.005	< 0.005	0.26
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.32	0.32	< 0.005	< 0.005	0.34
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.11. Paving (2025) - Unmitigated

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

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

Off-Road Equipment	0.31	8.40	6.65	0.01	0.36	—	0.36	0.34	—	0.34	—	992	992	0.04	0.01	995
Paving	0.15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	8.40	6.65	0.01	0.36	—	0.36	0.34	—	0.34	—	992	992	0.04	0.01	995
Paving	0.15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.23	0.18	< 0.005	0.01	—	0.01	0.01	—	0.01	—	27.2	27.2	< 0.005	< 0.005	27.3
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.50	4.50	< 0.005	< 0.005	4.51
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.03	0.51	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	112	112	< 0.005	< 0.005	114
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.45	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	103	103	< 0.005	< 0.005	105
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.87	2.87	< 0.005	< 0.005	2.91
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.47	0.47	< 0.005	< 0.005	0.48
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

3.13. Architectural Coating (2025) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	1.09	0.96	< 0.005	0.07	—	0.07	0.06	—	0.06	—	134	134	0.01	< 0.005	134
Architectural Coatings	3.51	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.03	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.66	3.66	< 0.005	< 0.005	3.67
Architectural Coatings	0.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.61	0.61	< 0.005	< 0.005	0.61
Architectural Coatings	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.03	2.03	< 0.005	< 0.005	2.06
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.05	0.05	< 0.005	< 0.005	0.05
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.01	0.01	< 0.005	< 0.005	0.01
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	4.85	3.55	31.2	0.07	0.05	5.89	5.94	0.05	1.49	1.54	—	7,139	7,139	0.35	0.33	7,274
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Total	4.85	3.55	31.2	0.07	0.05	5.89	5.94	0.05	1.49	1.54	—	7,139	7,139	0.35	0.33	7,274
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	4.55	4.17	31.2	0.07	0.05	5.89	5.94	0.05	1.49	1.54	—	6,726	6,726	0.41	0.37	6,845

Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Total	4.55	4.17	31.2	0.07	0.05	5.89	5.94	0.05	1.49	1.54	—	6,726	6,726	0.41	0.37	6,845
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	0.82	0.71	5.34	0.01	0.01	1.05	1.06	0.01	0.27	0.28	—	1,123	1,123	0.06	0.06	1,144
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00
Total	0.82	0.71	5.34	0.01	0.01	1.05	1.06	0.01	0.27	0.28	—	1,123	1,123	0.06	0.06	1,144

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	60.6	60.6	0.01	< 0.005	61.2
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	12.2	12.2	< 0.005	< 0.005	12.3
Total	—	—	—	—	—	—	—	—	—	—	—	72.7	72.7	0.01	< 0.005	73.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	60.6	60.6	0.01	< 0.005	61.2
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	12.2	12.2	< 0.005	< 0.005	12.3
Total	—	—	—	—	—	—	—	—	—	—	—	72.7	72.7	0.01	< 0.005	73.5
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	10.0	10.0	< 0.005	< 0.005	10.1
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	2.01	2.01	< 0.005	< 0.005	2.03
Total	—	—	—	—	—	—	—	—	—	—	—	12.0	12.0	< 0.005	< 0.005	12.2

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Fast Food Restaurant with Drive Thru	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	0.00
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	0.00

4.3. Area Emissions by Source

4.3.1. Unmitigated

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

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.02	< 0.005	0.12	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.48	0.48	< 0.005	< 0.005	0.48

Total	0.09	< 0.005	0.12	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.48	0.48	< 0.005	< 0.005	0.48
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.04	0.04	< 0.005	< 0.005	0.04
Total	0.01	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.04	0.04	< 0.005	< 0.005	0.04

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

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

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

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	1.57	3.49	5.06	0.16	< 0.005	10.3
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	1.57	3.49	5.06	0.16	< 0.005	10.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	1.57	3.49	5.06	0.16	< 0.005	10.3
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	1.57	3.49	5.06	0.16	< 0.005	10.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	0.26	0.58	0.84	0.03	< 0.005	1.70
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.26	0.58	0.84	0.03	< 0.005	1.70

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

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

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

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	16.8	0.00	16.8	1.68	0.00	58.6
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	16.8	0.00	16.8	1.68	0.00	58.6
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	16.8	0.00	16.8	1.68	0.00	58.6
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	16.8	0.00	16.8	1.68	0.00	58.6
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	2.78	0.00	2.78	0.28	0.00	9.71
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	2.78	0.00	2.78	0.28	0.00	9.71

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.22
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.22
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.22
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.22
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.70
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.70

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

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

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

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

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

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

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

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

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

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

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

Sequester	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	7/8/2024	7/26/2024	5.00	15.0	—
Site Preparation	Site Preparation	7/29/2024	7/30/2024	5.00	2.00	—
Grading	Grading	7/31/2024	8/13/2024	5.00	10.0	—
Building Construction	Building Construction	8/14/2024	3/25/2025	5.00	160	—
Paving	Paving	3/26/2025	4/8/2025	5.00	10.0	—
Architectural Coating	Architectural Coating	4/9/2025	4/22/2025	5.00	10.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Tractors/Loaders/Backhoes	Diesel	Tier 2	3.00	8.00	84.0	0.37
Demolition	Rubber Tired Dozers	Diesel	Tier 2	1.00	8.00	367	0.40
Demolition	Concrete/Industrial Saws	Diesel	Tier 2	1.00	8.00	33.0	0.73
Site Preparation	Graders	Diesel	Tier 2	1.00	8.00	148	0.41
Site Preparation	Rubber Tired Dozers	Diesel	Tier 2	1.00	7.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Tier 2	1.00	8.00	84.0	0.37
Grading	Graders	Diesel	Tier 2	1.00	8.00	148	0.41
Grading	Tractors/Loaders/Backhoes	Diesel	Tier 2	2.00	7.00	84.0	0.37
Grading	Rubber Tired Dozers	Diesel	Tier 2	1.00	8.00	367	0.40
Building Construction	Cranes	Diesel	Tier 2	1.00	6.00	367	0.29
Building Construction	Forklifts	Diesel	Tier 2	1.00	6.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Tier 2	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Tier 2	1.00	6.00	84.0	0.37
Building Construction	Welders	Diesel	Tier 2	3.00	8.00	46.0	0.45
Paving	Tractors/Loaders/Backhoes	Diesel	Tier 2	1.00	8.00	84.0	0.37
Paving	Pavers	Diesel	Tier 2	1.00	6.00	81.0	0.42
Paving	Paving Equipment	Diesel	Tier 2	1.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Tier 2	1.00	7.00	36.0	0.38
Paving	Cement and Mortar Mixers	Diesel	Tier 2	1.00	6.00	10.0	0.56
Architectural Coating	Air Compressors	Diesel	Tier 2	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	12.5	11.7	LDA,LDT1,LDT2
Demolition	Vendor	—	8.40	HHDT,MHDT
Demolition	Hauling	15.5	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	7.50	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	10.0	11.7	LDA,LDT1,LDT2
Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	0.20	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	1.13	11.7	LDA,LDT1,LDT2
Building Construction	Vendor	0.44	8.40	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	12.5	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT

Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.23	11.7	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	8.40	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%
Sweep paved roads once per month	9%	9%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	4,050	1,350	1,490

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	20,130	—

Site Preparation	—	—	1.88	0.00	—
Grading	—	15.0	10.0	0.00	—
Paving	0.00	0.00	0.00	0.00	0.57

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Fast Food Restaurant with Drive Thru	0.00	0%
Parking Lot	0.57	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	204	0.03	< 0.005
2025	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Fast Food Restaurant with Drive Thru	1,136	1,136	1,136	414,634	8,365	8,365	8,365	3,053,364

Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	4,050	1,350	1,490

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

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

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Fast Food Restaurant with Drive Thru	108,415	204	0.0330	0.0040	0.00
Parking Lot	21,750	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Fast Food Restaurant with Drive Thru	819,541	189,342
Parking Lot	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Fast Food Restaurant with Drive Thru	31.1	—
Parking Lot	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Fast Food Restaurant with Drive Thru	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Fast Food Restaurant with Drive Thru	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Fast Food Restaurant with Drive Thru	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

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

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

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

5.16.2. Process Boilers

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

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

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

8. User Changes to Default Data

Screen	Justification
Land Use	The project site is 1.57 acres. The proposed project would included a 2,700-square-foot, one-story restaurant building with a drive-through feature, 33 automobile parking spaces, and a total of 15,484 square feet of landscaping on the project site.
Construction: Construction Phases	Project construction is estimated to begin July 8, 2024 and would occur over a 288-day period.
Construction: Off-Road Equipment	Assuming the use of Tier 2 construction equipment.
Operations: Vehicle Data	The proposed project would generate approximately 1,136 average daily trips.
Operations: Energy Use	The proposed project would be all-electric.

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