# 2929 BROADWAY MIXED USE PROJECT

## CEQA Analysis

Prepared for
City of Oakland

April 2022

# 2929 BROADWAY MIXED USE PROJECT

## CEQA Analysis

Prepared for
City of Oakland

April 2022

180 Grand Avenue
Suite 1050
Oakland, CA 94612
510.839.5066
esassoc.com

Bend
Camarillo
Delray Beach
Destin
Irvine
Los Angeles
Oakland
Orlando
Pasadena
Petaluma
Portland
Sacramento
San Diego
San Francisco
San Jose
Santa Monica
Sarasota
Seattle
Tampa

202100336

# TABLE OF CONTENTS

# 2929 Broadway Mixed Use Project
# CEQA Checklist

Page

**1. General Project Information .......... 1**
- 1.1 Project Title .......... 1
- 1.2 Lead Agency Name and Address .......... 1
- 1.3 Project Case File Number .......... 1
- 1.4 Contact Person and Phone Number .......... 1
- 1.5 Project Location .......... 1
- 1.6 Project Applicant's Name and Address .......... 1
- 1.7 Existing General Plan Designations .......... 1
- 1.8 Existing Zoning .......... 2
- 1.9 Requested Permits .......... 2

**2. Executive Summary .......... 3**

**3. Background .......... 4**
- 3.1 Planning Context .......... 4
- 3.2 CEQA Context .......... 6

**4. Project Description .......... 9**
- 4.1 2929 Broadway Mixed Use Project Site .......... 9
- 4.2 Project Characteristics .......... 12

**5. Summary of Findings .......... 20**

**6. CEQA Checklist .......... 22**
- 6.1 Overview .......... 22
- 6.2 Aesthetics, Shadow, and Wind .......... 24
- 6.3 Air Quality .......... 29
- 6.4 Biological Resources .......... 38
- 6.5 Cultural Resources .......... 41
- 6.6 Geology, Soils, and Geohazards .......... 46
- 6.7 Greenhouse Gas and Climate Change .......... 49
- 6.8 Hazards and Hazardous Materials .......... 53
- 6.9 Hydrology and Water Quality .......... 60
- 6.10 Land Use, Plans, and Policies .......... 63
- 6.11 Noise .......... 65
- 6.12 Population and Housing .......... 71
- 6.13 Public Services, Parks and Recreation Facilities .......... 73
- 6.14 Transportation and Circulation .......... 75
- 6.15 Utilities and Service Systems .......... 87

Page

**7. References ... 90**
- 7.1 Broadway Valdez District Specific Plan EIR ... 90
- 7.2 Oakland Planning Code ... 90

## Attachments

A. Standard Conditions of Approval and Mitigation Monitoring and Reporting Program ... A-1
B. Project Consistency with the Broadway Valdez Specific Plan, per CEQA Guidelines Section 15182 ... B-1
C. Project Consistency with Community Plan or Zoning, per CEQA Guidelines Section 15183 ... C-1
D. In-fill Performance Standards, Per CEQA Guidelines Section 15183.3 ... D-1
E. Criteria for Use of Addendum, Pursuant to CEQA Guidelines Section 15164 ... E-1
F. Criteria for Use of Other Applicable Previous CEQA Documents, per CEQA Guidelines Section 15168 ... F-1

## Appendices

A. Air Quality Tables ... Appendix A-1
B. Geotechnical Investigation and Design Report, 2929 Broadway ... Appendix B-1
C. ECAP Consistency Review Checklist ... Appendix C-1
D. Construction Noise Management Plan ... Appendix D-1
E. Non-CEQA Transportation Analysis/Transportation Tables ... Appendix E-1
F. Transportation and Parking Demand Management Plan ... Appendix F-1

## List of Figures

Figure 1 Project Location ... 10
Figure 2 Site Context ... 11
Figure 3 First Floor Plan ... 14
Figure 4 Second Floor Plan ... 15
Figure 5 Seventh Floor Plan ... 16
Figure 6 Southeast and South Elevations ... 17
Figure 7 North and West Elevations ... 18

## List of Tables

Table 1 Comparison of 2014 BVDSP Development Program, Subdistrict 4 Development Program, and the Project ... 5
Table 2 Project Characteristics ... 13
Table AIR-1 Project Construction Emissions ... 32
Table AIR-2 Project Emissions from Operation ... 33
Table AIR-3 Maximum Health Risks from Project Construction ... 35
Table AIR-4 Cumulative Health Impacts to Project Residential Receptors ... 37
Table NOI-1 Traffic Noise Levels Along Roadways Affected By Project Traffic ... 69
Table TRA-1 Daily Vehicle Miles Traveled Summary ... 78
Table TRA-2 2929 Broadway Automobile Trip Generation ... 80
Table TRA-3 Developments in the Broadway Valdez District Specific Plan ... 81
Table TRA-4 Development Comparison within the Plan Area, North End, and Subdistrict 4 ... 83
Table TRA-5 Trip Generation Comparison ... 84

# 2929 BROADWAY MIXED USE PROJECT

# CEQA Checklist

## 1. General Project Information

### 1.1 Project Title

2929 Broadway Mixed Use Project

### 1.2 Lead Agency Name and Address

City of Oakland
Bureau of Planning
250 Frank H. Ogawa Plaza, Suite 2114
Oakland, CA 94612

### 1.3 Project Case File Number

PLN21-041

### 1.4 Contact Person and Phone Number

Peterson Z. Vollmann, Planner IV
Bureau of Planning
pvollmann@oaklandca.gov
(510) 238-6167

### 1.5 Project Location

2929 Broadway (parcel addresses: 2901, 2919, 2927, and 2937 Broadway; 340 29th Street; and 2924 and 2930 Webster Street)
Assessor's Parcel Nos. 009-0701-00500 through 009-0701-01200

### 1.6 Project Applicant's Name and Address

MB Oak Developer, LLC
1970 Broadway, Suite 745
Oakland, CA 94612

### 1.7 Existing General Plan Designations

Community Commercial

## 1.8 Existing Zoning

D-BV-3 (Broadway Valdez District Mixed-Use Boulevard Zone)
D-BV-4 (Broadway Valdez District Mixed-Use Zone)

## 1.9 Requested Permits

The Project would require a number of discretionary actions and approvals, including without limitation:

### 1.9.1 Actions by the City of Oakland

- Bureau of Planning—Regular Design Review (including application of State Affordable Housing Density Bonus), CEQA determination, Tentative Parcel Map.

- Building Department—demolition permit, grading permit, approval of Post-Construction Stormwater Control Plan demonstrating compliance with Provision C.3 of the National Pollutant Discharge Elimination System (NPDES) Municipal Regional Permit (MRP).

- Department of Transportation: other related off-site work permits (e.g., public right-of-way improvements, and tie backs) as well as encroachment permits.

### 1.9.2 Actions by Other Agencies

- Bay Area Air Quality Management District (BAAQMD) – Issuance of permits for asbestos abatement activities, if any.

- Alameda County Department of Environmental Health (ACDEH) – Acceptance of a Corrective Action Implementation Plan and granting of required clearances to confirm that all applicable standards, regulations, and conditions for all previous contamination at the site have been met.

- East Bay Municipal Utility District (EBMUD) – Grant a Special Discharge Permit to discharge construction dewatering to the sanitary sewer and/or approval of new service requests and new water meter installations.

# 2. Executive Summary

The Project Applicant, MB Oak Developer, LLC, proposes the 2929 Broadway Mixed Use Project (Project) involving demolition of existing structures and development of a mixed-use residential building on a project site on the northwest corner of Broadway and 29th Street. The project site is approximately 0.93 acres bounded by Webster, Broadway, 30th, and 29th Streets consisting of Assessor's Parcel Numbers (APNs) 009-0701-00500 through 009-0701-01200. The proposed building would be seven stories (approximately 81-feet-tall) with a floor area of approximately 222,823 square feet, including a ground floor parking garage. The ground floor would also include a residential lobby and lounge space, a fitness room, and an approximately 1,961 square foot retail space fronting on Broadway. The proposed 220 residential units, consisting of a mix of studios, one-, and two-bedroom units, would be developed in approximately 147,398 square feet on levels two through seven. The Project would include approximately 19,261 square feet of open space consisting of two courtyards on the second level, a roof deck on the seventh level, and private group community open space on levels one, two, and seven.

This California Environmental Quality Act (CEQA) Analysis evaluates the proposed project. The Project is eligible for CEQA streamlining provisions under CEQA Guidelines Section 15182, which provides for streamlined review for certain residential, commercial, and mixed-use projects that are consistent with an adopted specific plan. The Project is also eligible for CEQA streamlining and/or tiering provisions under CEQA Guidelines Section 15183, which provides for streamlined review when a project is consistent with a Community or General Plan and its development density, and the impacts of the project have been analyzed in a certified EIR. The Project is also eligible for CEQA streamlining and/or tiering provisions under CEQA Guidelines Section 15183.3 that are applicable to certain qualified infill projects and limit the topics that are subject to review at the project level, provided the effects of infill development have been addressed in a planning level decision, or by uniformly applying development policies or standards.

This analysis uses these CEQA streamlining and/or tiering provisions under CEQA Guidelines Section 15182, 15183 and 15183.3 to tier from the analyses completed in the City of Oakland's (City's) Broadway Valdez District Specific Plan (BVDSP) and its Environmental Impact Report (2014 BVDSP EIR), which analyzed environmental impacts associated with adoption and implementation of the BVDSP.[1,2] The Project is consistent with the reasonably foreseeable maximum development program analyzed by the 2014 BVDSP EIR, providing the basis for concluding that the Project is within the scope of the EIR such that no new environmental document would be required per State CEQA Guidelines Section 15162.[3] As such, this Project is

---

[1] City of Oakland. 2013. *Broadway Valdez District Specific Plan, Draft Environmental Impact Report*. SCH No. 2012052008. September. City of Oakland. 2014. *Broadway Valdez District Specific Plan, Responses to Comments and Final*. May. (These documents can be obtained at the Bureau of Planning at 250 Frank Ogawa Plaza, #3115, or online at http://www2.oaklandnet.com/Government/o/PBN/OurServices/Plans/OWD008194.)

[2] Throughout this document, except where necessary for clarity, "2014 BVDSP EIR" encompasses the Draft EIR and Final EIR for the Broadway Valdez District Specific Plan.

[3] State CEQA Guidelines Section 15164 state that an Addendum to a certified EIR is allowed if some changes or additions are necessary but none of the conditions calling for preparation of a subsequent EIR or negative declaration, per Section 15162, have occurred.

eligible for CEQA streamlining provisions under CEQA Guidelines Section 15164, for the use of an Addendum to the BVDSP EIR, and CEQA Guidelines Section 15168 by tiering from the program-level analyses completed in the 2014 BVDSP EIR.

This analysis also assumes the implementation of the City's Standard Conditions of Approval (SCAs) included as **Attachment A**, as the Project would be required to implement the uniformly applied SCAs to avoid or reduce potential impacts.

The 2014 BVDSP EIR serves as the previous CEQA document considered in this CEQA Analysis. The document is hereby incorporated by reference and can be obtained from the City of Oakland Bureau of Planning at 250 Frank H. Ogawa Plaza, Suite 2114, Oakland, California, 94612, and on the City of Oakland Broadway Valdez District Specific Plan Documents webpage at: https://www.oaklandca.gov/topics/broadway-valdez-district-specific-plan-environmentalimpact-report

# 3. Background

## 3.1 Planning Context

The project site is located within the Broadway Valdez District Specific Plan (BVDSP, or Plan), for which the City of Oakland certified an Environmental Impact Report (EIR) in May 2014, pursuant to the California Environmental Quality Act (CEQA). The BVDSP provides a framework for future growth and development in an approximately 95.5-acre area along Oakland's Broadway corridor between Grand Avenue and I-580. Although it does not propose specific private developments, the BVDSP establishes a Development Program to project the maximum level of feasible development that can reasonably be expected during the 25 year planning period (i.e., approximately 3.7 million square feet, including approximately 695,000 square feet of office space, 1,114,000 square feet of restaurant/retail space, 1,800 residential units, a new 180 room hotel, approximately 6,500 parking spaces, and approximately 4,500 new jobs). As described below, the 2014 BVDSP EIR analyzed the environmental impacts of adoption and implementation of the BVDSP, and where the level of detail available was adequate for analyzing potential environmental effects, the 2014 BVDSP EIR provided project-level CEQA review for foreseeable and anticipated development.

The project site is included in the BVDSP Plan area, and the level of development currently proposed for the site is within the broader development assumptions and thus within the impact envelope of the reasonably foreseeable maximum Development Program analyzed in the EIR.

The BVDSP EIR relied on assumptions about land use development and generation of new automobile trips associated with the Development Program within five subdistricts of the Plan area (see BVDSP EIR Table 4.13-7). As the Plan area develops, the City will track (1) the total number of residential units, hotel rooms, and non-residential square footage for which entitlements have been granted and building permits issued, (2) the total number of residential units, hotel rooms, and non-residential square footage removed due to building demolition, and

(3) the estimated net trip generation from entitled development under the BVDSP per subdistrict and for the Plan area relative to the amounts estimated and analyzed in this EIR.

The Development Program is conceptual only and illustrates one of many possible development scenarios under the BVDSP; a plan that specifically did not prescribe or assume exact land uses on a site-by-site basis. The 2014 BVDSP EIR allows for flexibility in location, amount, and type of future development in terms of the precise mix of newly developed land uses and their location within the Planning area. Thus, as long as the trip generation for the overall Plan area remains below the levels estimated in the EIR, the impact analysis presented in the EIR continues to remain valid and the Project is considered within the parameters of the Development Program and BVDSP EIR. Further, as long as the actual Plan area buildout stays within the impact envelope analyzed in the 2014 BVDSP EIR, individual development projects need not adhere to the specific site-by-site assumptions in the Development Program.

The Project is within Subdistrict 4 of the North End subarea of the Plan. As shown in **Table 1**, when combined with other constructed, approved, proposed, and under construction projects, the Project's 1,961 square feet of retail use would be well below the 111,100 square feet contemplated in the Development Program for Subdistrict 4 and the Project's 220 residential units would exceed the residential land use maximum identified in the Development Program for Subdistrict 4 and analyzed in the BVDSP EIR.

**TABLE 1**
**COMPARISON OF 2014 BVDSP DEVELOPMENT PROGRAM,**
**SUBDISTRICT 4 DEVELOPMENT PROGRAM, AND THE PROJECT**

| Development Characteristics | Total BVDSP Development Program | Total BVDSP Constructed, Approved, Proposed, or Under Construction | Subdistrict 4 Development Program | Subdistrict 4 Constructed, Approved, Proposed, or Under Construction | Project |
|---|---|---|---|---|---|
| Residential Units (net) | 1,797 | 3,808 | 387 | 529 | 220 |
| Retail Square Footage (net) | 1,114,100 | 111,300 | 111,100 | -46,600 | 1,961 |

NOTE:
a. Information from City of Oakland, July 2021. Accounts for existing active uses that would be eliminated.
b. Based on Table 4.13-7 on page 4.13-37 of BVDSP Draft EIR.

SOURCE: Fehr & Peers, 2021; City of Oakland. 2014. *Broadway Valdez District Specific Plan*. Adopted June.

As noted above, the Development Program analyzed in the BVDSP EIR is conceptual only and specifically states that as long as the actual build-out stays within the impact envelope, there can be a mix and match between various land uses (e.g., there can be more retail if less office, as built, or vice versa). Although the amount of residential development in the Plan area, North End, and Subdistrict 4 is currently more than what was assumed under the Development Program buildout in the BVDSP EIR, retail, office, and hotel uses are less than what was assumed in the BVDSP EIR. These variations in land use types result in varying trip generation, which is analyzed in Section 6.14, *Transportation and Circulation*, of this CEQA Checklist. The Project is estimated to generate 48 AM and 59 PM net new peak-hour vehicle trips. Together with trips generated by other projects that are currently under construction, approved, or proposed for development in the Plan area (see Table TRA-5 in Section 6.14, *Transportation and Circulation*), this would represent approximately 62 percent of the AM and 55 percent of the PM peak-hour trips anticipated in the 2014 BVDSP EIR for the Plan area, 35 percent of the AM and 40 percent of the PM peak-hour trips anticipated in the 2014 BVDSP EIR for the North End subarea, and 45 percent of both the AM and PM peak-hour trips anticipated in the 2014 BVDSP EIR for Subdistrict 4. The AM and PM peak hour trip generation numbers are below the 2014 BVDSP EIR estimates for the Development Program Buildout.

In summary, the amount of residential development in the Plan area is currently more than what was assumed under the Development Program Buildout in the 2014 BVDSP EIR, but the amount of retail and office uses currently proposed are well below the 2014 BVDSP EIR assumptions for the Plan area and thus the trip generation estimated and analyzed in the 2014 BVDSP EIR.

## 3.2 CEQA Context

### 3.2.1 2014 BVDSP EIR

The BVDSP EIR, a program EIR, anticipated that the environmental review of specific development projects assumed as part of the BVDSP would be streamlined in accordance with CEQA. This CEQA Checklist is an addendum to the 2014 BVDSP EIR which provides the planning level analysis evaluating the potential significant environmental impacts that could result from the reasonably foreseeable maximum development under the BVDSP. Specifically, it evaluates the physical and land use changes from potential development that could occur with adoption and implementation of the BVDSP. Preparation of a planning-level document in the Plan area simplifies the task of preparing subsequent project-level environmental documents for future projects under the BVDSP for which the details are currently unknown. Further, where feasible, and where an adequate level of detail was available such that the potential environmental effects may be understood and analyzed, the 2014 BVDSP EIR provides a project-level analysis to eliminate or minimize the need for subsequent CEQA review of projects that could occur under the BVDSP.

#### *Environmental Effects Summary –2014 BVDSP EIR*

The 2014 BVDSP EIR determined that development consistent with the BVDSP would result in the following impacts that would be **reduced to a less-than-significant level with the implementation of mitigation measures and/or standard conditions of approval** (described in Section 3.2.4 through 3.2.6): aesthetics (new light or glare); air quality (conflicts with the Bay Area Clean Air Plan (CAP), exposure of sensitive receptors to Toxic Air Contaminants (TACs) and other TAC impacts); biological resources (riparian habitat, wetlands, trees, creeks); cultural resources (archaeological, human remains, paleontological); geology and soils; greenhouse gases and climate change (conflict with an applicable plan); hazards and hazardous materials (transport, use, storage, and release of hazardous materials, exposure to hazardous materials); hydrology and water quality (runoff in excess of existing capacity, flooding hazards, sea level rise); noise (violation of noise ordinance, in excess of applicable standards, interior noise levels);

transportation/circulation (intersection operations); and utilities and service systems (stormwater, solid waste, wastewater, energy).

**Less-than-significant impacts** were identified for the following resources in the 2014 BVDSP EIR: aesthetics (degradation of existing visual character, adversely affect scenic vistas), air quality (carbon monoxide CO concentrations exceeding the California Ambient Air Quality Standards, odors); biological resources (fish or wildlife species); greenhouse gases and climate change (generation of greenhouse gas emissions); hazards and hazardous materials (emergency access routes); hydrology and water quality (flooding hazard related to dam or reservoir failure, groundwater supplies, mudflow-, seiche- or tsunami-related hazards); land use (adjacent land uses, land use policy, habitat conservation plan); population and housing; public services; parks and recreation; utilities and service systems (water supplies). **No impacts** were identified for agricultural or forestry resources, and mineral resources.

**Significant unavoidable impacts** were identified for the following environmental resources in the 2014 BVDSP EIR: aesthetics (shadow, wind); air quality (emissions of criteria air pollutants during construction and operation, generation of substantial levels of TACs); cultural resources (changes to historic resources); noise (noise from traffic, noise from rooftop mechanical equipment in combination with traffic noise); transportation/circulation (intersection operations, roadway segment operations). Due to the potential for significant unavoidable impacts, a Statement of Overriding Considerations was adopted as part of the City's certification of the 2014 BVDSP EIR.

### 3.2.2 Previous Mitigation Measures and Current Standard Conditions of Approval (SCAs)

The CEQA Checklist provided in Section 6 of this document evaluates the potential project-specific environmental effects of the Project and evaluates whether such impacts were adequately covered by the 2014 BVDSP EIR to allow the provisions afforded by Guidelines Sections 15182, 15183, 15183.3, 15162, 15164, and 15168 to apply. The analysis conducted incorporates by reference the information contained in the previous CEQA document. The Project is legally required to incorporate and/or comply with the applicable requirements of the mitigation measures identified in the 2014 BVDSP EIR. Therefore, the mitigation measures are herein assumed to be included as part of the Project, including those that have been modified to reflect the City's current standard language and requirements, as discussed below.

### 3.2.3 SCA Application in General

The City established its *Standard Conditions of Approval and Uniformly Applied Development Standards* (SCAs) in 2008, and they have since been amended and revised several times.[4] The City's SCAs are incorporated into new and changed projects as conditions of approval regardless of a project's environmental determination. The SCAs incorporate policies and standards from various adopted plans, policies, and ordinances (such as the Oakland Planning and Municipal Codes, Oakland Creek Protection Ordinance, Stormwater Water Management and Discharge Control

---

[4] A revised set of SCAs was recently published by the City of Oakland on December 16, 2020.

Ordinance, Oakland Protected Trees Ordinance, Oakland Grading Regulations, National Pollutant Discharge Elimination System (NPDES) permit requirements, Housing Element-related mitigation measures, California Building Code and Uniform Fire Code, among others), which have been found to substantially mitigate environmental effects. When a project is approved by the City, all applicable SCAs are adopted as conditions of approval and required, as applicable, to be implemented during project construction and operation. The SCAs are adopted as enforceable conditions of approval and are incorporated and required as part of a project, so they are not listed as mitigation measures.

### 3.2.4 Prior Mitigations and SCA Application in this CEQA Checklist

Mitigation measures identified in the 2014 BVDSP EIR that would apply to the Project are listed in Attachment A to this document, which is incorporated by reference into this CEQA Checklist. In addition, SCAs identified in the 2014 BVDSP EIR, as updated, that would apply to the Project are listed in Attachment A to this document (see Sections 3.2.2 and 3.2.3 above). Because the SCAs are mandatory City requirements, the impact analysis for the Project assumes that they will be imposed and implemented, which the Project Applicant has agreed to do or ensure as part of the Project. If this CEQA Checklist or its attachments inaccurately identifies or fails to list a mitigation measure or SCA, the applicability of that mitigation measure or SCA to the Project is not affected as each independently applies to the Project.

Most of the SCAs that are identified for the Project were also identified in the 2014 BVDSP EIR. As discussed specifically in Attachment A to this document, since certification of the 2014 BVDSP EIR, the City of Oakland has revised its SCAs, and the most current SCAs are identified in this CEQA Checklist. All mitigation measures identified in the 2014 BVDSP EIR that would apply to the Project are also identified in Attachment A to this document.

# 4. Project Description

## 4.1 2929 Broadway Mixed Use Project Site

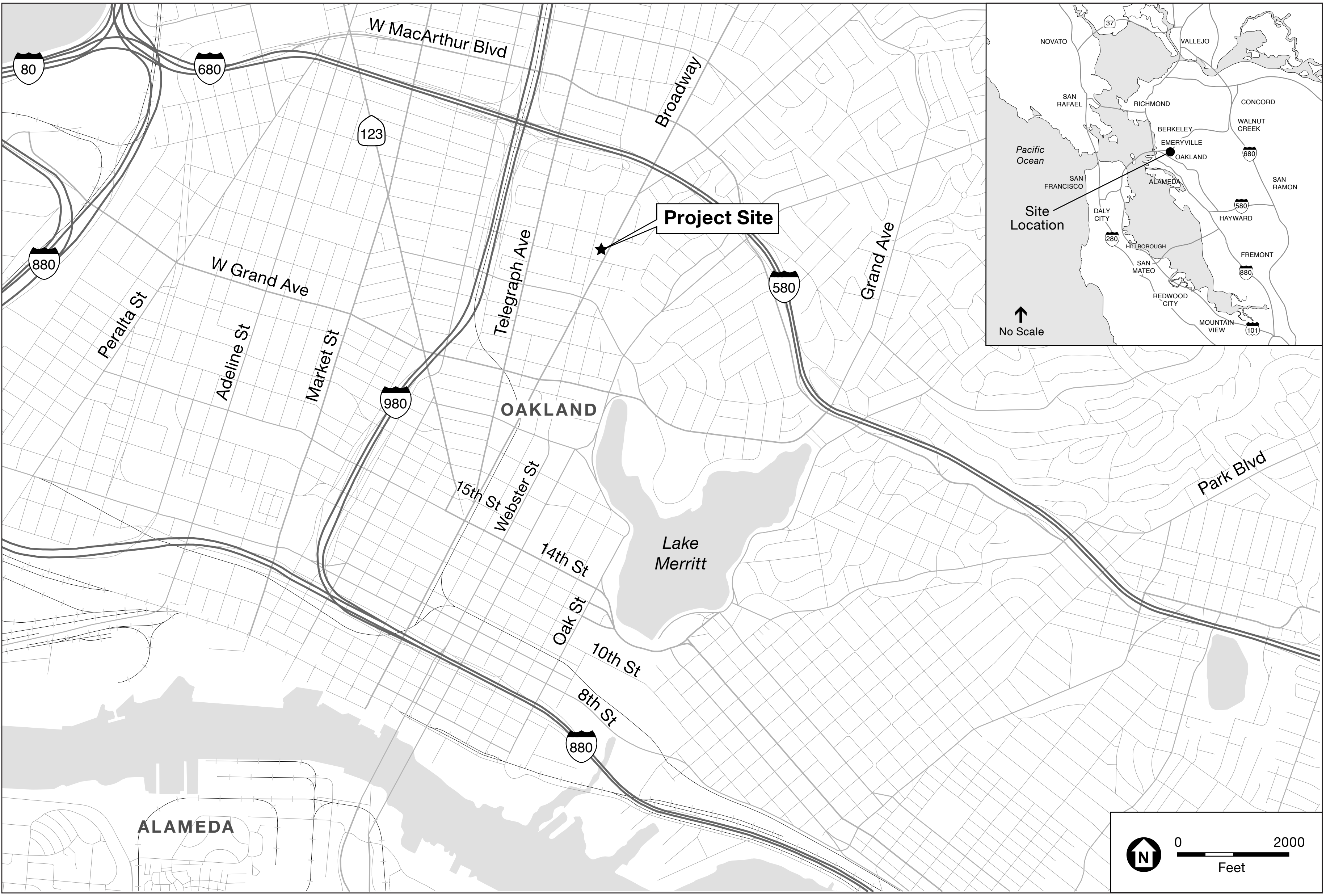
### 4.1.1 Project Location

The 2929 Broadway project site is on the northwest corner of Broadway and 29th Street. It is bounded by Webster, Broadway, 30th, and 29th Streets (see **Figure 1**). The project site is approximately 0.93 acres and consists of eight parcels with Assessor's Parcel Numbers (APNs) 009 070100500 through 009 070101200. The project site is accessible from Interstate 580 (I-580) to the north, and Interstate 980 (I-980) /State Route 24 (SR-24) to the west. Multiple transit routes serve the project site, including Alameda-Contra Costa County Transit District (AC Transit) Routes 51A and 6. The nearest bus stops to the Project site are located on Broadway at 30th Street on the far side of the intersection in both directions. The 19th Street Bay Area Rapid Transit District (BART) station is approximately 0.7-mile south of the site.

### 4.1.2 Existing Site Conditions and Surrounding Context

The 0.93-acre site is predominantly flat with an incline near Webster Street. The southern five parcels are occupied by single-story buildings making up the Mercedes-Benz of Oakland service center and showroom. The automobile dealership occupies the eastern portion of these parcels and commercial repair garages occupy the western portion with bays on 29th and Webster Streets. The main entrance to the dealership faces the surface parking lot that occupies the northern portion of the project site.

Existing uses in the project vicinity are primarily medical and commercial (including auto dealerships/service centers, retail, and restaurants.) Other uses include entertainment, places of worship, as well as multi-family and single-family residential. Medical offices and automotive repair shops are the predominant uses immediately surrounding the project site. To the north and within the project block, the Broadway Automotive and Transmission fronts on Broadway, Summit Bank occupies the corner of Broadway and 30th Street, and several health clinics front on Webster Street. There is also a surface parking lot midblock on 30th Street. The recently developed Sprouts Farmers Market and commercial building occupies the block across 30th Street. A drug store, the Grocery Outlet, and associated surface parking occupy the block across Broadway to the east. Office and medical buildings occupy the block across Webster Street to the west and a combination of office, automotive, and other services occupy the block across 29th Street to the south. A six-story mixed use residential building is also located on the southern portion of the block across 29th Street from the project site. Existing building heights in the surrounding blocks range from surface parking lots and single-story buildings to approximately seven stories. The Project's location with respect to adjacent properties is shown in **Figure 1** and **Figure 2**. The project site is within the Broadway Valdez District Mixed Use Boulevard Commercial Zones 3 and 4 (D-BV-3 and D-BV-4) and has a Community Commercial General Plan land use designation.



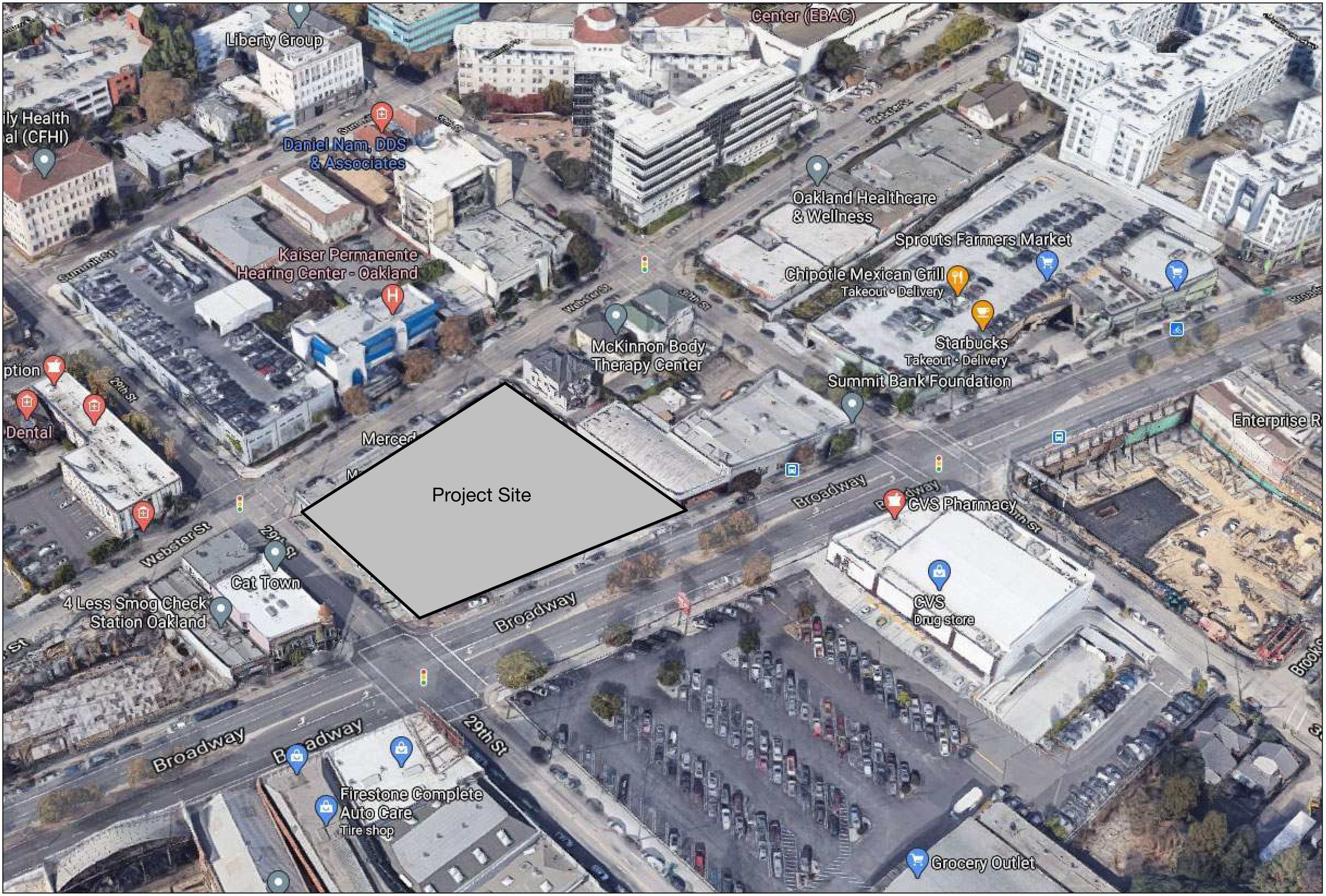
2021\D202100336.00 - 2929 Broadway\05 Graphics\Illustrator

SOURCE: ESA, 2021

2929 Broadway

**Figure 1**
Project Location

ESA



SOURCE: Martin BDE Arechitecture, 2021

2929 Broadway

**Figure 2**
Site Context

2021\D202100336.00 - 2929 Broadway\05 Graphics\Illustrator

The project site is located within the Upper Broadway Auto Row Area of Secondary Importance (ASI) and contains four Potentially Designated Historic Properties (PDHP), which are also contributors to the ASI. Nearby local historic resources include the Temple Sinai at 2808 Summit Street (one block southwest and across Webster and 29th streets); the Scherman Building at 2865 Broadway (across 29th Street); the Arnstein-Field & Lee Star Showroom at 2819 Broadway (one block south); Tire & Rubber service station/Mercedes Benz of Oakland at 2964 Broadway (across Broadway); and the First Presbyterian Church at 2601 Broadway (three blocks to the south).

The project site is located within the BVDSP Plan area zoned D-BV-3 (Mixed Use Boulevard Zone) and D-BV-4 (Mixed Use Zone). The intent of the D-BV-3 zone is to "create, maintain, and enhance areas with direct frontage and access along Broadway …" Ground-floor office and other commercial activities are allowed while upper stories are reserved for residential, office, or commercial activities. The intent of the D-BV-4 zone is to "create, maintain, and enhance areas that do not front Broadway …" It allows the widest range of uses on the ground floor while upper stories are intended for either residential or commercial activities.

## 4.2 Project Characteristics

### 4.2.1 Project Components

The Project Applicant for the 2929 Broadway Mixed Use Project (Project) proposes a development that would apply the Affordable Housing State Density Bonus, which would demolish the existing buildings on the project site and construct a seven-story residential building with a gross floor area of approximately 199,935 square feet (excluding parking and loading per Oakland Planning Code). The maximum height of the proposed project building would be approximately 81 feet tall and thus comply with the 85-foot height limit identified for the project site in the BVDSP.

The ground floor would include a residential lobby, residential amenity space, and approximately 1,961 square feet of retail space fronting on Broadway. Vehicle parking, bike storage, and utilities would occupy the remainder of the first floor. Two courtyards (approximately 6,892 and 2,295 square feet) would be provided on the second level. A roof deck on the seventh level and additional private group community opens space on levels one, two, and seven would also be provided for a total of approximately 19,261 square feet of open space.

The Project would provide 110 vehicle parking spaces on the ground floor. The parking would consist of 10 surface parking spaces and 100 stacker spaces accommodated in two-level mechanical lifts. The surface parking spaces would also include seven ADA-accessible spaces. A ground level loading space would be located on 29th Street, just west of the garage driveway. Access to 132 long-term bicycle parking spaces would be provided on the first floor within the parking garage. Bicycle racks along the sidewalk on street frontages would accommodate 15 short-term bike stalls. The Project characteristics are shown below in **Table 2**. The Project site plan, typical floor plans, typical building section, and building renderings are shown in **Figures 3 through 7**.

**TABLE 2**
**PROJECT CHARACTERISTICS**

| Lot | Dimensions |
|---|---|
| Size | 40,401 square feet (0.93 acres) |
| **Proposed Uses** | **Area (gsf)** |
| Residential | 147,398 (220 units) |
| Retail | 1,961 |
| Open Space / Amenities / Lobby | 19,261 |
| **Total Uses** | **168,850** |
| **Proposed Parking** | **Number of Spaces** |
| Vehicle Parking Spaces | 110 |
| Bicycle Parking Spaces | 147 |
| **Open Space** | **Area (sf)** |
| Courtyard 1 (2nd floor) | 6,892 |
| Courtyard 2 (2nd floor) | 2,295 |
| Private Group Community Space (1st floor) (lobby, fitness room, dog wash) | 6,033 |
| Private Group Community Space (2nd floor) | 1,826 |
| Roof Deck (7th floor) | 1,737 |
| Private Group Community Space (7th floor) | 478 |
| **Total Open Space** | 19,261 |

SOURCE: DBE Architecture, 2021.

## 4.2.2 Open Space

The Planning Code requires a minimum of 16,500 square feet of open space for the Project with private group community space contributing a maximum of 5,500 square feet to this requirement. The Project Applicant is seeking an affordable housing density bonus concession (see section 4.2.6 below). The Project would provide approximately 19,261 square feet of open space including approximately 10,924 square feet in courtyards and a roof-deck, and approximately 8,337 square feet of private group community space. Amenities would include a fitness room, dog wash, lounge, and club.

## 4.2.3 Streetscape Improvements

The Project would include additional street lighting on either end of the proposed building on Broadway and 11 new street trees on Broadway, 29th Street, and Webster Street. Bicycle racks would be provided along the Broadway, 29th, and Webster Street frontages to accommodate 15 short-term visitors. No other streetscape improvements are proposed as a part of the Project at this time.

SOURCE: Martin BDE Arechitecture, 2021

2929 Broadway

**Figure 3**
First Floor Plan

2021\D202100336.00 - 2929 Broadway\05 Graphics\Illustrator

SOURCE: Martin BDE Arechitecture, 2021

2929 Broadway

**Figure 4**
Second Floor Plan

ESA

2021\D202100336.00 - 2929 Broadway\05 Graphics\Illustrator

SOURCE: Martin BDE Arechitecture, 2021

2929 Broadway

**Figure 5**
Seventh Floor Plan

BUILDING ELEVATION - SOUTHEAST ELEVATION 1

BUILDING ELEVATION - SOUTH ELEVATION 2

2021\D202100336.00 - 2929 Broadway\05 Graphics\Illustrator

SOURCE: Martin BDE Arechitecture, 2021

2929 Broadway

**Figure 6**
Southeast and South Elevations

BUILDING ELEVATION - NORTH ELEVATION 3

BUILDING ELEVATION - WEST ELEVATION 4

2021\D202100336.00 - 2929 Broadway\05 Graphics\Illustrator

SOURCE: Martin BDE Arechitecture, 2021

2929 Broadway

**Figure 7**
North and West Elevations

### 4.2.4 Project Construction

Construction activities would consist of demolition of the existing buildings, carport, and paved areas; grading and site preparation; foundation and below-grade construction; and construction of the building and interiors. Project construction is expected to occur over approximately 24 months, with construction scheduled to commence in the second quarter 2022 and be completed in 2024.

Site preparation is anticipated to require excavation of approximately 7,046 cubic yards of soil. All of the excavated material would be exported. Groundwater in the vicinity of the project site is not expected to be encountered as the measured groundwater table is assumed to be approximately 12 feet below ground surface (bgs). However previous investigations have encountered perched groundwater as shallow as 3.5 feet bgs. Grading activities are anticipated to potentially reach a depth of 18 feet; therefore, dewatering during construction may be required. The Project is anticipated to include reinforced concrete mat slab foundations approximately 3 feet deep (6 feet deep at the stacker pits and 10 feet deep at the elevator core).

### 4.2.5 Sustainability and Efficiency

The Project classifies as a New Home Multifamily in the Build it Green's *GreenPoint Rated Checklist*. The Project Applicant would meet the compliance targets for the New Home Rating System, Version 8.2. The Project would optimize the efficiency of its building envelope, and, through the use of efficient lighting and HVAC systems, it would reduce domestic energy use. The Project Applicant intends to meet the City's Green Building ordinances and requirements. The Project also would be required to comply with the City of Oakland Building Electrification Ordinance, adopted December 15, 2020.

### 4.2.6 Affordable Housing

The Project would include 197 residential units with an additional 23 residential units (220 units in total) available to very low income, which is 16 percent of the 147 baseline project units prior to the application of the density bonus.[5] The Project Applicant is seeking to utilize the State's density bonus law to allow for a 50 percent density bonus by right for an additional 73 units as well as the allowed concessions and waivers. The Project Applicant requests two waivers for the open space and rear yard setback (along Webster Street) requirements, and a concession to the limitation of ground floor residential facilities along Broadway to allow the fitness room for residents.

---

[5] Although the additional density permitted through the State Affordable Housing Density Bonus Law (Gov't Code Section 65915) does not require discretionary approval and thus is not subject to CEQA review, the additional units are considered here to provide a conservative analysis and to evaluate consistency with the BVDSP EIR.

# 5. Summary of Findings

An evaluation of the Project is provided in the CEQA Checklist in Section 6 that follows. This evaluation provides substantial evidence that the project qualifies for an exemption/addendum from additional environmental review. The proposed project was found to be consistent with the development density and land use characteristics established by the BVDSP. The BVDSP EIR allows for the distribution of density and development types between categories and sub-areas, and accounts for the construction and operational impacts from the development proposed within the Plan area. Any potential environmental impacts associated with the Project's development were adequately analyzed and covered by the analysis in the BVDSP EIR.

The Project would be required to comply with the applicable mitigation measures and City of Oakland SCAs identified in the 2014 BVDSP EIR and presented in Attachment A to this document. With implementation of the applicable mitigation measures and SCAs, the Project would not result in a substantial increase in the severity of previously identified significant impacts in the 2014 BVDSP EIR or result in any new significant impacts that were not previously identified in the BVDSP EIR. In particular:

(1) Although the proposed project adds project-level details to a site identified in the BVDSP for development and leverages the State Density Bonus Law to allow for increased density, these project changes would not result in new significant environmental effects or a substantial increase in the severity of impacts identified in the BVDSP EIR.

(2) There would be no new significant environmental effect or a substantial increase in the severity of impacts identified in the BVDSP EIR due to changes in circumstances.

(3) There would be no new significant environmental effect or a substantial increase in the severity of impacts identified in the BVDSP EIR due to new information.

In accordance with Public Resources Code Sections 21083.3, 21094.5, 21155.4, and 21166 and CEQA Guidelines Sections 15162, 15164, 15168, 15182, 15183, 15183.3, and as set forth in the CEQA Checklist below, the project qualifies for an exemption/addendum because the following findings can be made:

- The proposed project is an eligible mixed-use residential project within a transit priority area as described in Public Resources Code Section 21099(a)(7), is consistent with the BVDSP and its EIR, and with Plan Bay Area, the applicable sustainable communities strategy. None of the conditions requiring subsequent analysis per CEQA Guidelines Section 15162 apply as noted in the bullets above. Therefore, the project is exempt from further environmental review in accordance with Public Resources Code Section 21155.4 and CEQA Guidelines Section 15182.

- The proposed project would not result in significant impacts that (1) would be peculiar to the project or project site; (2) were not previously identified as significant project-level, cumulative, or off-site effects in the BVDSP EIR; or (3) were previously identified as significant but—as a result of substantial new information that was not known at the time the BVDSP EIR was certified—would increase in severity above the level described in the EIR. Therefore, the project is exempt from further environmental review in accordance with Public Resources Code Section 21083.3 and CEQA Guidelines Section 15183.

- The proposed project is an eligible infill project that would not cause any new significant impacts on the environment that were not already analyzed in the BVDSP EIR or result in more significant impacts than those that were previously analyzed in the BVDSP EIR. The effects of the project have been addressed in the BVDSP EIR, and no further environmental documents are required, in accordance with Public Resources Code Section 21094.5 and CEQA Guidelines Section 15183.3.

- The analyses conducted and the conclusions reached in the BVDSP EIR that was certified by the City Council on June 17, 2014, remain valid, and no supplemental environmental review is required for the proposed project modifications. The project would not cause new significant impacts that were not previously identified in the EIR or result in a substantial increase in the severity of previously identified significant impacts. No new mitigation measures would be necessary to reduce significant impacts. No changes have occurred with respect to the circumstances surrounding the original project that would cause significant environmental impacts to which the project would contribute considerably, and no new information has been put forward that shows that the project would cause significant environmental impacts. Therefore, no supplemental environmental review is required beyond this addendum, in accordance with Public Resources Code Section 21166 and CEQA Guidelines Section 15162 and the project eligible for CEQA streamlining provisions in accordance with CEQA Guidelines Section 15164, for the use of an Addendum to the BVDSP EIR, and CEQA Guidelines Section 15168, by tiering from the program-level analyses completed in the 2014 BVDSP EIR.

Each of the above findings provides a separate and independent basis for CEQA compliance.

# 6. CEQA Checklist

## 6.1 Overview

The analysis in this CEQA Checklist provides a summary of the potential environmental impacts that may result from the Project. The analysis in this CEQA Checklist also summarizes the impacts and findings of the certified 2014 BVDSP EIR that covered the environmental effects of various projects encompassing the project site and that is still applicable for the Project. Given the timespan between the preparation of the 2014 BVDSP EIR and today, there are variations in the specific environmental topics addressed and significance criteria; however, as discussed above in Section 3 and throughout this Checklist, the overall environmental effects identified in the 2014 BVDSP EIR are largely the same; any significant differences are noted.

Several SCAs would apply to the Project because of the Project's characteristics. All SCAs identified in the 2014 BVDSP EIR that would apply to the Project are listed in Attachment A to this document, which is incorporated by reference into this CEQA Checklist. Because the SCAs are mandatory City requirements, the impact analysis for the Project assumes that they will be imposed and implemented, which the Project Applicant has agreed to do or ensure as part of the Project. If this CEQA Checklist or its attachments inaccurately identifies or fails to list a mitigation measure or SCA, the applicability of that mitigation measure or SCA to the Project is not affected.

Most of the SCAs that are identified for the Project were also identified in the 2014 BVDSP EIR. As discussed specifically in Attachment A to this document, since certification of the 2014 BVDSP EIR, the City of Oakland has revised its SCAs, and the most current SCAs are identified in this CEQA Checklist. All mitigation measures identified in the 2014 BVDSP EIR that would apply to the Project are also identified in Attachment A to this document.

This CEQA Checklist hereby incorporates by reference the discussion and analysis of all potential environmental impact topics as presented in the certified 2014 BVDSP EIR. This CEQA Checklist provides a determination of whether the Project would result in:

- Equal or Less Severity of Impact Previously Identified in the 2014 BVDSP EIR;
- Substantial Increase in Severity of Previously Identified Significant Impact in the 2014 BVDSP EIR; and/or
- New Significant Impact.

Where the severity of the impacts of the Project would be the same as or less than the severity of the impacts described in the 2014 BVDSP EIR, the checkbox for "Equal or Less Severity of Impact Previously Identified in the 2014 BVDSP EIR" is checked.

Where the checkbox for "Substantial Increase in Severity of Previously Identified Significant Impact in the 2014 BVDSP EIR" or "New Significant Impact" checked, there would be significant impacts that are:

- Peculiar to project or project site (per CEQA Guidelines Section 15183);
- Not identified in the 2014 BVDSP including offsite and cumulative impacts (per CEQA Guidelines Section 15162, 15168, and 15183);
- Due to substantial changes in the Project (per CEQA Guidelines Section 15162 and 15168);
- Due to substantial changes in circumstances under which the Project will be undertaken (per CEQA Guidelines Sections 15162 and 15168); and/or
- Due to substantial new information not known at the time the 2014 BVDSP EIR was certified (per CEQA Guidelines Sections 15162, 15168, or 15183).

However, none of the aforementioned conditions were found for the Project, as demonstrated throughout the following CEQA Checklist and in its supporting attachments (Attachments A through D) that specifically describe how the Project meets the criteria and standards specified in the CEQA Guidelines Sections 15162 through 15164, 15168, 15182, 15183, and 15183.3.

## 6.2 Aesthetics, Shadow, and Wind

| Would the project: | Equal or Less Severity of Impact Previously Identified in the 2014 BVDSP EIR | Substantial Increase in Severity of Previously Identified Significant Impact in the 2014 BVDSP EIR | New Significant Impact |
|---|---|---|---|
| a. Have a substantial adverse effect on a public scenic vista; substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings, located within a state or locally designated scenic highway; substantially degrade the existing visual character or quality of the site and its surroundings; or create a new source of substantial light or glare which would substantially and adversely affect day or nighttime views in the area; | ☒ | ☐ | ☐ |
| b. Introduce landscape that would now or in the future cast substantial shadows on existing solar collectors (in conflict with California Public Resource Code sections 25980-25986); or cast shadow that substantially impairs the function of a building using passive solar heat collection, solar collectors for hot water heating, or photovoltaic solar collectors; | ☒ | ☐ | ☐ |
| c. Cast shadow that substantially impairs the beneficial use of any public or quasi-public park, lawn, garden, or open space; or, cast shadow on an historical resource, as defined by CEQA Guidelines Section 15064.5(a), such that the shadow would materially impair the resource's historic significance; | ☒ | ☐ | ☐ |
| d. Require an exception (variance) to the policies and regulations in the General Plan, Planning Code, or Uniform Building Code, and the exception causes a fundamental conflict with policies and regulations in the General Plan, Planning Code, and Uniform Building Code addressing the provision of adequate light related to appropriate uses; or | ☒ | ☐ | ☐ |
| e. Create winds that exceed 36 mph for more than one hour during daylight hours during the year. The wind analysis only needs to be done if the project's height is 100 feet or greater (measured to the roof) and one of the following conditions exist: (a) the project is located adjacent to a substantial water body (i.e., Oakland Estuary, Lake Merritt or San Francisco Bay); or (b) the project is located in Downtown. | ☒ | ☐ | ☐ |

Since certification of the 2014 BVDSP EIR, the CEQA statutes have been amended related to the assessment of impacts for aesthetics. Under CEQA Section 21099(d), "Aesthetic and parking impacts of a residential, mixed-use residential, or employment center project on an infill site located within a transit priority area shall not be considered significant impacts on the environment."[6] Accordingly, aesthetics is no longer considered in determining if a project has the potential to result in significant environmental effects for projects that meet all three of the following criteria:

---

[6] CEQA Section 21099(d)(1).

- The project is in a transit priority area.[7]
- The project is on an infill site.[8]
- The project is residential, mixed-use residential, or an employment center.

The Project meets all three of the above criteria because the Project (1) is in a transit priority area, and is situated approximately 0.7-mile north of the 19th Street BART Station; (2) is on an infill site that has been previously developed within an urban area of Oakland; and (3) is a mixed-use residential project that includes residential and retail uses.[9] Thus, this document does not consider aesthetics, including the aesthetic impacts of light and glare, in determining the significance of Project impacts under CEQA.[10] Nevertheless, the City recognizes that the public and decision makers may be interested in information about the aesthetic effects of a proposed project; therefore, the information contained in this section related to aesthetics, light, and glare is provided solely for informational purposes, and is not used to determine the significance of environmental impacts pursuant to CEQA.

## 6.2.1 2014 BVDSP EIR Findings

### *Scenic Vistas, Scenic Resources, and Visual Character (Criterion 6.2a)*

The 2014 BVDSP EIR determined that potential impacts to scenic vistas and resources, visual character, and lighting and glare from development under the BVDSP would be less than significant with implementation of SCAs, and that no mitigation measures were necessary. The Physical Height Model analyzed in the 2014 BVDSP EIR represents the conceptual massing for projects to be developed under the BVDSP, and served as the basis for massing, view corridor, shadow, and wind analysis

performed in the 2014 BVDSP EIR.[11] The 2014 BVDSP EIR found that new structures would partially obstruct views of the sky, but that such changes would not represent a substantial adverse effect on views, because no views considered scenic or unique (as defined by CEQA) and no visual access to protected scenic resources (as defined by the General Plan) would be obstructed. Changes anticipated under the BVDSP would generally create a more pedestrian-oriented aesthetic in the Plan area, and the Design Guidelines would ensure that development under the BVDSP would be compatible with the existing built form and architectural character of the Plan area as a whole, and

---

[7] CEQA Section 21099(a)(7) defines a “transit priority area” as an area within one-half mile of an existing or planned major transit stop. A “major transit stop” is defined in CEQA Section 21064.3 as a 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 a.m. and p.m. peak commute periods.

[8] CEQA Section 21099(a)(4) defines an “infill site” as either (1) a lot within an urban area that was previously developed; or (2) a vacant site where at least 75 percent of the site perimeter adjoins (or is separated by only an improved public right-of-way from) parcels that are developed with qualified urban uses.

[9] https://opendata.mtc.ca.gov/datasets/transit-priority-areas-2017.

[10] CEQA Appendix G includes light and glare under the topic of aesthetics. Therefore, light and glare, in addition to aesthetics, is not a CEQA consideration.

[11] The Broadway Valdez Development Program represents the maximum feasible development that the City has projected can reasonably be expected to occur in the Plan area over the next 25 years, and is therefore the level of development envisioned by the BVDSP and analyzed in the 2014 BVDSP EIR. The Broadway Valdez Development Program, together with the BVDSP height limits, maximum base heights, and step-back requirements inform the Physical Height Model, which provides the basis for analysis in the 2014 BVDSP EIR.

compatible with the distinctive visual character of individual areas. Development in the Plan area will be required to comply with SCAs related to landscaping, street frontages, landscape maintenance, utility undergrounding, public right-of-way improvements, and lighting plans.

### *Shadow (Criteria 6.2b through 6.2d)*

The 2014 BVDSP EIR determined that development under the BVDSP would result in less-than-significant impacts from shading, with the exception of potential shading on Temple Sinai, which is considered a historical resource. Temple Sinai is at 356 28th Street near the intersection with Webster Street. Under the 2014 BVDSP EIR, Mitigation Measure AES-4: Shadow Analysis, applies to the area bounded by Webster Street, 29th Street, Broadway, and 28th Street to reduce shadow impacts. Even with implementation of Mitigation Measure AES-4, the 2014 BVDSP EIR conservatively determined that impacts may remain significant and unavoidable. Development outside this area under the BVDSP was determined to result in less-than-significant shadow impacts. To address potential cumulative impacts, under the 2014 BVDSP EIR, Mitigation Measure AES-6, which requires implementation of Mitigation Measures AES-4 and AES-5, applies to projects bounded by the streets listed above to address significant cumulative aesthetics and wind impacts. The 2014 BVDSP EIR conservatively concluded that, even with implementation of Mitigation Measure AES-6, cumulative shadow impacts may remain significant and unavoidable for some projects.

### *Wind (Criterion 6.2e)*

The 2014 BVDSP EIR determined that development under the BVDSP that has a height of 100 feet or greater, and is in the portion of the Plan area designated as Central Business District (which extends north from downtown to 27th Street), could result in adverse wind conditions. Under the 2014 BVDSP EIR, Mitigation Measure AES-5: Wind Analysis, applies to those projects in the Central Business District that are over 100 feet in height. Even with implementation of Mitigation Measure AES-5, the 2014 BVDSP EIR conservatively determined that impacts may remain significant and unavoidable. To address potential cumulative impacts, under the 2014 BVDSP EIR, Mitigation Measure AES-6, which requires implementation of Mitigation Measures AES-4 and AES-5, applies to those same projects and addresses significant cumulative wind and aesthetics impacts.

## 6.2.2 Project Analysis

### *Scenic Vistas, Scenic Resources, and Visual Character (Criterion 6.2a)*

Consistent with the findings of the 2014 BVDSP EIR, the Project's potential impacts to scenic vistas, scenic resources, visual character, and light and glare would be less than significant with implementation of the SCAs, as the Project is consistent with the 2014 BVDSP EIR.

Pursuant to the Design Guidelines, development within the Plan area should contribute to the creation of a coherent, well-defined and active public realm that supports pedestrian activity and social interaction, and to the creation of a well-organized and functional private realm that supports the needs of tenant businesses. The Project requires design review approval, pursuant to Section 17.101C.020 of the City's Planning Code. The design review process will ensure the

Project is consistent with the BVDSP standards and guidelines related to aesthetics, compatible with the existing built form and architectural character of the Plan area as a whole, and compatible with the distinctive visual character of individual areas.

Development of the Project also would be required to comply with the City of Oakland SCAs. SCA AES-1, Trash and Blight Removal, would require the Project site to be maintained free of blight, and trash receptacles near public entryways to be installed and maintained, as needed, to provide sufficient capacity for building users. SCA AES-2, Graffiti Control, would require landscaping, approved anti-graffiti coating, and ongoing graffiti removal using the gentlest means possible in order to protect the aesthetics and physical integrity of the building. SCA AES-3, Landscape Plans, would require review and approval of detailed landscape plans in addition to implementation and ongoing landscape maintenance. SCA UTIL-2, Underground Utilities, requires any new utilities to be placed underground and SCA AES-4, Lighting, would ensure new exterior lighting is properly shielded. SCA AES-5, Public Art for Private Development, would require a public art contribution of one percent of the building development costs in accordance with City of Oakland Ordinance No. 13275 C.M.S. Together, these SCAs would protect the visual character of the project site and BVDSP Area. Therefore, the visual impacts of the Project would be less than significant.

### *Shadow (Criteria 6.2b through 6.2d)*

The project site is outside of the area identified in the 2014 BVDSP EIR as having potential shading impacts on Temple Sinai and therefore, 2014 BVDSP EIR Mitigation Measure AES-4 would not apply. While the height of the Project (a maximum height of up to 81 feet, 86.5 feet including parapet) was not included in the 2014 BVDSP EIR physical height model or shadow studies (see 2014 BVDSP EIR Figure 3-11), development up to the permitted height of 85 feet was anticipated for the site (see 2014 BVDSP EIR Figure 3-8). A close review of the 2014 BVDSP EIR shadow diagrams shows new Project shadow would not approach public open spaces, solar collectors, or historic resources. The angle and extent of new Project shadow can clearly be extrapolated from the shadow studies conducted for buildings up to 65 feet on sites north, south, and east of the project site (see 2014 BVDSP EIR Figures 4.1-5 through 4.1-16). Using modeled shadow from nearby parcels as a guide, it is clear Project shadow would not extend to the solar facilities identified in the City's inventory within the Plan area vicinity including solar collectors closest to the project site at 411 28th Street. Although a project-specific shadow study was not conducted, the Project shadow could potentially reach the southern portion of newly identified solar facilities at 3020 Broadway. If it were to reach this facility, it would do so briefly at sunset on winter evenings when generally lower levels of solar panel efficiency are present due to the lower solar angles. As such because shading on solar collectors would occur only later in the day and evening, the presence of new shading would not substantially impair the functioning of the building and would not be a significant impact. The Project shadow would not approach Mosswood Park, Glen Oak Park, Lake Merritt, or the public plaza on the northwest side of 27th and Broadway. The Project shadow would not approach the closest historic resource, with light sensitive features which is the Temple Sinai. Therefore, the Project would not result in a project-specific impact nor contribute to a potential cumulative shading impact.

### *Wind (Criterion 6.2e)*

According to the City's CEQA Thresholds of Significance, wind analysis only needs to be done if a project's height is 100 feet or greater (measured to the roof) and one of the following conditions exist: (a) the project is located adjacent to a substantial water body (i.e., Oakland Estuary, Lake Merritt or San Francisco Bay); or (b) the project is located in Downtown. The Project would be 81 feet in height, which is below the 100-foot threshold that triggers an analysis of wind. Therefore, the Project is not subject to 2014 BVDSP EIR Mitigation Measure AES-5 requiring a wind analysis.

## 6.2.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2014 BVDSP EIR, implementation of the Project would not substantially increase the severity of significant impacts identified in the 2014 BVDSP EIR, nor would it result in new significant impacts related to aesthetics, shadow, or wind that were not identified in the 2014 BVDSP EIR. **SCAs AES-1**, **Trash and Blight Removal**; **AES-2**, **Graffiti Control**; **AES-3**, **Landscape Plan**; **AES-4 Lighting**; **AES-5**, **Public Art for Private Development**; and **SCA UTIL-2**, **Underground Utilities** (see Attachment A) would be applicable to and would be implemented by the Project and would further ensure that aesthetics-related impacts would be less than significant. No mitigation measures are required.

# 6.3 Air Quality

| Would the project: | Equal or Less Severity of Impact Previously Identified in the 2014 BVDSP EIR | Substantial Increase in Severity of Previously Identified Significant Impact in the 2014 BVDSP EIR | New Significant Impact |
|---|---|---|---|
| a. (1) During project construction result in average daily emissions of 54 pounds per day of ROG, $NO_X$, or $PM_{2.5}$ or 82 pounds per day of $PM_{10}$; (2) during project operation result in average daily emissions of 54 pounds per day of ROG, $NO_X$, or $PM_{2.5}$, or 82 pounds per day of $PM_{10}$; or (3) result in maximum annual emissions of 10 tons per year of ROG, $NO_X$, or $PM_{2.5}$, or 15 tons per year of $PM_{10}$; or | ☒ | ☐ | ☐ |
| b. For new sources of Toxic Air Contaminants (TACs), during either project construction or project operation expose sensitive receptors to substantial levels of TACs under project conditions resulting in: | ☒ | ☐ | ☐ |
| (1) (a) an increase in cancer risk level greater than 10 in one million, (b) a noncancer risk (chronic or acute) hazard index greater than 1.0, or (c) an increase of annual average $PM_{2.5}$ of greater than 0.3 microgram per cubic meter; or, | | | |
| (2) under cumulative conditions, resulting in (a) a cancer risk level greater than 100 in a million, (b) a noncancer risk (chronic or acute) hazard index greater than 10.0, or (c) annual average $PM_{2.5}$ of greater than 0.8 microgram per cubic meter; or | | | |
| (3) expose new sensitive receptors to substantial ambient levels of Toxic Air Contaminants (TACs) resulting in (a) a cancer risk level greater than 100 in a million, (b) a noncancer risk (chronic or acute) hazard index greater than 10.0, or (c) annual average $PM_{2.5}$ of greater than 0.8 microgram per cubic meter. | | | |

## 6.3.1 2014 BVDSP EIR Findings

### *Construction and Operational Emissions (Criterion 6.3a)*

The 2014 BVDSP EIR determined that construction activities associated with development of projects under the BVDSP would generate air emissions from the use of heavy construction equipment, vehicle trips hauling materials, construction workers traveling to and from the project sites, and application of architectural coatings, such as paints; and would result in significant impacts. Implementation of SCAs related to construction air pollution controls, along with BVDSP Recommended Mitigation Measure AIR-1, would reduce emissions from construction equipment, control fugitive dust, and reduce emissions from architectural coatings. However, even with implementation of the SCA and BVDSP Recommended Measure AIR-1, the EIR conservatively estimated construction emissions would exceed the Bay Area Air Quality Management District's (BAAQMD) daily significance thresholds for reactive organic gases (ROG), resulting in a significant and unavoidable impact.

The 2014 BVDSP EIR also determined operational activities associated with development in the Plan area would result in an increase in criteria air pollutant and precursor emissions from mobile on-road sources and on-site area sources, such as natural gas combustion for space and water heating and landscape maintenance, which would have a significant impact. Operational emissions of ROG, oxides of nitrogen (NOX), and particulate matter less than or equal to 10 microns in diameter ($PM_{10}$) would exceed significance thresholds. An SCA that requires the implementation of Parking and Transportation Demand Management (TDM) would reduce vehicular trips and operational emissions. BVDSP Recommended Measure AIR-2 includes additional measures that should be considered for larger projects that would also reduce emissions of criteria air pollutants. Even with implementation of the SCA and BVDSP Recommended Measure AIR-2, the EIR concluded this impact would conservatively remain significant and unavoidable for emissions of ROG, $NO_X$, and $PM_{10}$.

### *Toxic Air Contaminants (Criterion 6.3b)*

The 2014 BVDSP EIR determined that development under the BVDSP could generate substantial levels of TACs, resulting in significant impacts from construction activities and project operations. Implementation of the City's SCA for construction-related air pollution controls would reduce health risks to sensitive receptors from temporary construction emissions of diesel particulate matter in accordance with recommendations from the BAAQMD's *CEQA Air Quality Guidelines*.[12] Even with implementation of the SCA for construction-related air pollution controls, the 2014 BVDSP EIR conservatively determined that impacts from TAC emissions during construction would remain significant and unavoidable.

The 2014 BVDSP EIR determined that new operational sources, such as backup diesel generators, could result in significant impacts on new and existing receptors. SCAs would reduce potential air quality impacts related to TACs by reducing operational source impacts on new and existing receptors, and requiring a Health Risk Assessment of surrounding off-site sources on new on-site sensitive receptors. The EIR also identified BVDSP Mitigation Measure AIR-4: *Risk Reduction Plan*, which would reduce the impacts associated with new operational sources on existing sensitive receptors. Even with the SCA and Mitigation Measure AIR-4, the EIR conservatively determined that these impacts would remain significant and unavoidable.

## 6.3.2 Project Analysis

The Project would result in the demolition of existing buildings at the Project site and construction of an approximately 222,823 square foot mixed use building containing 220 dwelling units and 1,961 square feet of retail uses within the North End Subdistrict 4 of the BVDSP. As detailed in Section 4, *Project Description*, the Project's retail use would be well below the planned retail development envisioned for North End and Subdistrict 4 in the BVDSP and the Project's residential units, combined with other previously approved and currently approved projects, would exceed the planned residential land use envisioned for North End and Subdistrict 4 in the BVDSP.

---

[12] BAAQMD, 2012. *CEQA Air Quality Guidelines*. Updated May 2017.

The 2014 BVDSP EIR allows for the distribution of density and development type between categories and sub-areas as long as such development conforms to the general traffic generation parameters established by the Plan. The Project conforms to the traffic generation parameters analyzed in the 2014 BVDSP EIR, as described below in Section 6.14, *Transportation and Circulation*; therefore, the 2014 BVDSP EIR accounted for the construction and operational emissions from the development proposed on the project site within its analysis. The Project would be required to comply with applicable SCAs related to parking and transportation demand and construction and operation source emissions. The Project's construction and operational impacts are detailed below.

## *Construction and Operational Emissions (Criterion 6.3a)*

### Construction Air Emissions

#### Methodology and Assumptions

The analysis presented below used the following methodology and assumptions to calculate the average daily construction emissions associated with the Project:

- Construction emissions were estimated using the most recent version of CalEEMod (version 2020.4.0);
- Construction was assumed to begin in March 2022, and last for approximately 24 months. The durations of the various construction phases (e.g., demolition, grading, building construction) were provided by the Project Applicant;[13]
- The number and types of construction equipment used for each phase, their activity level as well as the number of on-road vehicle trips (worker and vendor trips) during each phase were also provided by the Project Applicant;
- Demolition of 24,105 square feet of existing building area, 3,560 square feet of carport and 15,807 square feet of paved area on the Project site;
- Off-haul of 7,047 cubic yards of material after accounting for infill;
- Hauling trips were estimated by CalEEMod based on the demolition area and off-haul volume provided by the Project Applicant;
- The Project would construct a total of 222,823 square feet including 220 residential dwelling units, 1,696 square feet of retail space and 24,436 square feet of parking garage;[14] and
- Default CalEEMod inputs where Project-specific information was not available.
- For the evaluation of cumulative health risks to existing and Project receptors, health risk screening values were obtained from the BAAQMD's Permitted Stationary Sources Risk and Hazards web tool and the BAAQMD GIS database for health risks from mobile sources. Sources within the 1,000-foot zone of influence were included.

---

[13] This analysis conservatively assumes the earliest possible project construction start-date. A later construction start-date means the default feet mix would be the same or cleaner and the overall effect will be the same.

[14] Considering project emissions are well below the thresholds, the incremental increase of 265 square feet of retail space from the assumed 1,696 square feet in this analysis to 1,961 square feet as proposed at the time of publication, would not result in a meaningful change to the significance of the impact.

- Screening values for stationary sources were adjusted based on distance to the Project site using the BAAQMD's distance multiplier.
- In addition, proposed projects within 1,000 feet of the maximum exposed offsite receptor and future Project receptors were considered based on the Major Projects List from the City of Oakland Planning Bureau.
- When health risk data from proposed projects was not available, the analysis conservatively assumes a diesel-fueled emergency generator generating the maximum risk of 10 in one million allowed by the BAAQMD. Actual risks will be lower.

### Analysis

The average daily construction-related emissions for the Project, as estimated using CalEEMod based on the assumptions above, are presented in **Table AIR-1**. As shown in the table, annual average daily construction emissions for the Project would not exceed the City's thresholds for ROG, $NO_X$, $PM_{10}$, or $PM_{2.5}$. These thresholds were developed to represent a cumulatively considerable contribution to regional air quality, and, as such, represent not only a project level threshold, but a cumulative threshold as well. As shown in Table AIR-1, the Project would result in less-than-significant project-level impacts with respect to criteria pollutant emissions during construction. While the City does not have quantitative standards for fugitive dust emissions from construction activities, the Project would be required to implement SCA AIR-1, Dust Controls – Construction-Related which would reduce fugitive dust emissions to less than significant levels. Further, implementation of SCA AIR-2, Criteria Air Pollutant Controls – Construction Related and SCA AIR-3, Diesel Particulate Matter Controls – Construction Related (discussed under Toxic Air Contaminants below) would further reduce emissions from criteria air pollutants beyond levels shown in Table AIR-1. Therefore, the Project would not result in a new or more severe significant construction impact compared to that identified in the 2014 BVDSP EIR.

**TABLE AIR-1**
**PROJECT CONSTRUCTION EMISSIONS (AVERAGE LBS PER DAY)[a]**

| Construction Year (phase) | ROG | $NO_x$ | Exhaust $PM_{10}$ | Exhaust $PM_{2.5}$ |
|---|---|---|---|---|
| **Project** | | | | |
| Average Daily Construction Exhaust Emissions | 8.9 | 24.8 | 1.3 | 1.2 |
| City of Oakland Thresholds | 54 | 54 | 82 | 54 |
| **Significant (Yes or No)?** | **No** | **No** | **No** | **No** |

NOTE:

a. Project construction emissions estimates were made using CalEEMod, version 2020.4.0. Emissions are average daily pounds per day and are estimated by dividing the total construction emissions generated by the Project with the total number of construction workdays.

SOURCE: Appendix A.

## Operational Air Emissions

### Methodology and Assumptions

The analysis presented below used the following assumptions to calculate the daily operational emissions associated with the Project:

- The vehicle trip generation rates for existing conditions and the Project were obtained from the traffic analysis prepared for the Project and include a reduction of 36.7 percent based on the City of Oakland's *Transportation Impact Review Guidelines* for development in an urban environment within 0.5 to 1.0 miles of a BART station.
- Default energy consumption rates in CalEEMod reflecting the 2019 update to Title 24, which became effective on January 1, 2020.
- All wastewater generated were assumed to be aerobically processed at the EBMUD plant. Septic and lagoons contributions were set to a zero percentage.
- All other inputs in CalEEMod were based on model defaults.

### Analysis

The daily operational emissions for the Project, based on the assumptions above, are presented in **Table AIR-2**. As shown in the table, annual average daily regional emissions for the Project would not exceed the City's thresholds for ROG, NOx, $PM_{10}$, or $PM_{2.5}$. As with the construction thresholds, these thresholds were developed to represent a cumulatively considerable contribution to regional air quality and, as such, represent not only a project-level threshold, but a cumulative threshold as well. As shown in Table AIR-2, the Project would have less-than-significant project-level impacts with respect to operational emissions. It would not result in a new or more severe significant impact compared with the 2014 BVDSP EIR.

**TABLE AIR-2**
**PROJECT EMISSIONS FROM OPERATION**[a]

| | ROG | $NO_x$ | $PM_{10}$ | $PM_{2.5}$ |
|---|---|---|---|---|
| Area Source Emissions (lbs/day) | 5.3 | 0.1 | <0.1 | <0.1 |
| Energy Emissions[b] (lbs/day) | 0.0 | 0.0 | 0.0 | 0.0 |
| Project Mobile Source Emissions[c] (lbs/day) | 1.7 | 2.1 | 3.5 | 1.0 |
| Average Daily Project Emissions (lbs/day) | 7.0 | 2.2 | 3.6 | 1.0 |
| Existing Emissions | 0.9 | 0.4 | 0.4 | 0.1 |
| **Net Increase in Average Daily Emissions (lbs/day)** | **6.1** | **1.8** | **3.2** | **0.9** |
| City of Oakland Thresholds | 54 | 54 | 82 | 54 |
| **Significant (Yes or No)?** | **No** | **No** | **No** | **No** |
| **Annual Emissions (tons/year)** | **1.1** | **0.3** | **0.6** | **0.2** |
| City of Oakland Thresholds | 10 | 10 | 15 | 10 |
| **Significant (Yes or No)?** | **No** | **No** | **No** | **No** |

NOTE: Totals may not add up due to rounding.

a. Project operational emissions estimates were made using CalEEMod, version 2020.4.0.
b. Consistent with Ordinance 13632 adopted by the City Council in December 2020, project buildings would be constructed as all electric buildings. Therefore, there would be no direct air pollutant emissions generated.
c. The vehicle trip rates used to calculate the emissions accounts for mode split and internal capture as recommended by the City of Oakland for projects located in dense, urban environments such as the Project site.

SOURCE: Appendix A.

## *Toxic Air Contaminants (Criterion 6.3b)*

### Assumptions and Methodology

Toxic Air Contaminants (TACs) are air pollutants that can cause health risks. TACs do not have ambient air quality standards but are regulated using a risk-based approach. This approach uses a health risk assessment to determine what sources and pollutants to control as well as the degree of control. Such an assessment evaluates chronic, long-term effects, calculating the increased lifetime risk of cancer as a result of exposure to one or more TACs. Health risks from TACs generated during project construction and operation are evaluated below. In addition, consistent with the City's CEQA significance thresholds, the analysis also evaluates cumulative health risks from the Project and nearby sources of TACs to existing receptors in the vicinity as well the cumulative health risks to the new sensitive receptors introduced by the Project.

### Analysis

#### Construction TAC Emissions

Project construction activities would produce TACs primarily in the form of diesel particulate matter (DPM) and $PM_{2.5}$ emissions from the exhaust of diesel fueled construction equipment such as loaders, backhoes, cranes, etc., as well as heavy duty truck trips. These emissions could result in elevated concentrations of DPM and $PM_{2.5}$ at existing receptors in the project vicinity. Exposure of receptors in the vicinity of the Project site to these elevated concentrations could lead to an increase in cancer risk or other health impacts.

The Project's construction-related activities over the 24-month construction period would result in the generation of DPM from on-road heavy-duty trucks and off-road equipment. The generation of TACs from construction would be temporary and due to the variable nature of construction activity, exposure would also vary based on the time equipment would operate within an influential distance that would result in the exposure of sensitive receptors to substantial concentrations.

Regarding construction TACs emissions, BAAQMD recommends that a Health Risk Assessment (HRA) be conducted when sensitive receptors are located within 1,000 feet of project construction activities.[15] Closest sensitive receptors to the project site are the residential receptors at 2867 Broadway approximately 40 feet to the south of the project boundary across 29th Street. Residential receptors are also located in the Broadstone Axis apartment complex located at 2855 Broadway approximately 135 feet south of the project site. The Street Academy Alternative School is a high school located at 417 29th Street approximately 480 feet east of the project site. Consequently, an HRA was conducted to determine the level of risk generated by construction-related TACs to nearby residential and school receptors and to satisfy the requirements of SCA AIR-3a(i). The methods and results of the HRA are described below. Specific calculation tables and model outputs are included in **Appendix A**.

In accordance with the Office of Environmental Health and Hazard Assessment's (OEHHA) 2015 *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments,*[16]

---

[15] BAAQMD, 2017. California Environmental Quality Act – Air Quality Guidelines, May 2017.

[16] OEHHA, 2015. Air Toxics Hotspots Program – Risk Assessment Guidelines, February 2015.

the HRA applied the highest estimated concentrations of DPM at the receptors analyzed to established cancer potency factors and acceptable reference concentrations for non-cancer health effects. The maximum DPM concentration as modeled using USEPA's AERMOD dispersion model occurred at the residential receptors at 2867 Broadway located to the south of the project site and represent the Maximum Exposed Individual Receptor (MEIR). Increased cancer risks were calculated using the modeled maximum DPM concentrations and OEHHA-recommended methodologies for infants (third trimester through two years of age), the most sensitive age group. Child and adult exposure at this location would be less than the risk assessed for infants. Risks were also assessed for child receptors at the Street Academy Alternative school.

**Table AIR-3** shows that the cancer risk, chronic Hazard Index (HI), and $PM_{2.5}$ concentrations at the residential MEIR and at the school from project-related construction activities. As shown in Table AIR-3, uncontrolled risks would exceed the City's threshold for cancer risk at the MEIR. Health risks at the school would be below the City's health risk thresholds. Consistent with SCA AIR-3a(i), this analysis identifies the use of all off-road diesel equipment equipped with Tier 4 Final engines as the DPM reduction measure to reduce risks below the thresholds. Currently, Tier 4 Final engines represent best available control technology for control of DPM from construction equipment and are expected to reduce emissions by approximately 85 percent.[17]

**TABLE AIR-3**
**MAXIMUM HEALTH RISKS FROM PROJECT CONSTRUCTION**

| Health Risk at MEIR | Maximum Cancer Risk (in a million) | Chronic Risk (Hazard Index) | Maximum $PM_{2.5}$ concentration |
|---|---|---|---|
| **Uncontrolled Scenario** | | | |
| Residential Receptor - Infant | **65.8** | 0.06 | 0.1 |
| School Receptor - Child | 0.07 | 0.002 | 0.004 |
| **Project-level Threshold** | 10 | 1.0 | 0.3 |
| **With Tier 4 Final Construction Equipment (required SCA)** | | | |
| Residential Receptor - Infant | 4.3 | 0.004 | 0.01 |
| School Receptor - Child | 0.005 | 0.0001 | 0.0002 |
| **Project-level Threshold** | 10 | 1.0 | 0.3 |
| **Significant?** | No | No | No |

SOURCE: Appendix A.

Table AIR-3 shows that with the use of Tier 4 Final engines in construction equipment, health risk at the MEIR would be less than the City's significance thresholds. Therefore, with the implementation of SCA AIR-3a(i), health risks from project construction to nearby residential and school receptors would not exceed the City's CEQA significance thresholds. The potential impact of the Project regarding exposure of existing receptors to construction related health risks would be less than significant and no additional mitigation measures would be required.

---

[17] http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm

The Project would include demolition of existing structures on the site which may contain Asbestos Containing Materials (ACM) that could pose a health risk to workers and nearby receptors during demolition. Consistent with SCA AIR-4, Asbestos in Structures, the Project would comply with all applicable laws and regulations regarding demolition and renovation of ACM.

#### Operational TAC Emissions

Pacific Gas and Electric (PG&E) is the gas and electricity service provider for the project site and is considered as a reliable source of power for the Project. Thus, the Project would not require an emergency back-up generator. The Project would include an electric fire pump, rather than a diesel-powered pump, to ensure water pressure is maintained in the fire suppression system. The Project would not include any stationary source of TAC emissions and would not contribute to any potential cumulative health risks to sensitive receptors from existing and reasonably foreseeable future sources of TACs. The Project is primarily a residential development project with a retail component approximately 1,696 square feet in area. Diesel vehicle traffic associated with the retail uses would be limited to a small number of delivery and service vehicle trips which would not meaningfully add to the health risk exposure, especially since only a fraction of the total emissions will take place within the zone of influence (defined by the BAAQMD as a 1,000-foot radius) and influence health risks at the Project and offsite receptors. The Project would result in a less-than-significant impact with respect to operational TAC emissions and City SCA 24, Stationary Sources of Air Pollution (Toxic Air Contaminants), requiring an operational HRA, would not be required.

#### Impact to Project Receptors

The Project proposes residential uses and would therefore introduce sensitive receptors to the area. In addition, several stationary pollutant sources requiring a permit from BAAQMD are located within 1,000 feet of the project site. Therefore, a screening analysis was conducted in accordance with the BAAQMD CEQA Guidelines to determine if the Project exceeds the health risk screening criteria. **Table AIR-4** summarizes the results of the screening analysis and summarizes cumulative health risks to project receptors from existing and reasonably foreseeable sources within 1,000 feet of the Project vicinity. The screening analysis shows that health risks to the Project receptors would also be less than the City's cumulative thresholds and hence, less than significant. Therefore, City SCA 23, Exposure to Air Pollution (Toxic Air Contaminants) would not apply to the Project.

### 6.3.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2014 BVDSP EIR considered throughout this analysis, implementation of the Project would not substantially increase the severity of significant impacts identified in the 2014 BVDSP EIR, nor would it result in new significant impacts related to air quality that were not identified in the 2014 BVDSP EIR**.** Based on the analysis, with implementation of the applicable SCAs, the Project would not exceed any of the City's applicable significance thresholds related to air quality. Therefore, Project construction and operation would result in less-than-significant impacts relating to air quality, including health risk. **SCA AIR-1**, **Dust Controls – Construction-Related**; **SCA AIR-2**, **Criteria Air Pollutant Controls - Construction Related**; **SCA AIR-3**, **Diesel Particulate Matter Controls-Construction Related**; **SCA AIR-4**, **Asbestos in Structures**; and **SCA AIR-5**, **Stationary Sources of Air Pollution (Toxic Air Contaminants)** (see Attachment A) would be applicable to and would be implemented by the Project to ensure that air quality impacts would be less than significant. No mitigation measures are required.

### TABLE AIR-4
### CUMULATIVE HEALTH IMPACTS TO PROJECT RESIDENTIAL RECEPTORS

| Source | Source Type | Distance to Project Receptors (feet) | Cancer Risk (persons per million) | Chronic Hazard Impact | $PM_{2.5}$ Concentration ($\mu g/m^3$) |
|---|---|---|---|---|---|
| **Existing Permitted Stationary Sources (BAAQMD Plant Number) within 1,000 feet** | | | | | |
| Autotrends (15483) | Auto body coating operation | 280 | 0.0 | <0.01 | 0.0 |
| West Lake Christian Terrace (19269) | Diesel generator | 650 | 0.02 | <0.01 | <0.01 |
| Valdez Plaza (22103) | Diesel generator | 490 | 0.06 | <0.01 | <0.01 |
| Sutter Bay Hospitals Alta Bates Summit Medical Center (24268) | Boiler (1), diesel generator (1) | 950 | 0.14 | <0.01 | <0.01 |
| Sutter Bay Hospitals Alta Bates Summit Medical Center (24269) | Boilers (2), diesel generators (2) | 800 | 0.96 | <0.01 | 0.016 |
| 3093 Broadway[a] | Diesel generator | 1,000 | 0.11 | <0.01 | <0.01 |
| 27th and Broadway[a] | Diesel generator | 805 | 0.14 | <0.01 | <0.01 |
| 424 28th Street[a] | Diesel generator | 730 | 0.16 | <0.01 | <0.01 |
| **Mobile Sources** | | | | | |
| | | Highways | 18.2 | -- | 0.44 |
| | | Major Roadways | 2.8 | -- | 0.04 |
| | | **Cumulative Impacts[b]** | **22.6** | **0.002** | **0.5** |
| | | City of Oakland Cumulative Significance Criteria | 100 | 10 | 0.8 |
| | | Potentially Significant Impact? | No | No | No |

NOTES:

a. Risks posed by the generators are conservatively assumed to be at the maximum permitted value but will likely be less.

b. Cumulative totals may not add up due to rounding.

SOURCE: Appendix A.

# 6.4 Biological Resources

| Would the project: | Equal or Less Severity of Impact Previously Identified in the 2014 BVDSP EIR | Substantial Increase in Severity of Previously Identified Significant Impact in the 2014 BVDSP EIR | New Significant Impact |
|---|---|---|---|
| a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;<br>Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;<br>Have a substantial adverse effect on federally protected wetlands (as defined by Section 404 of the Clean Water Act) or state protected wetlands, through direct removal, filling, hydrological interruption, or other means;<br>Substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites; | ☒ | ☐ | ☐ |
| b. Fundamentally conflict with the City of Oakland Tree Protection Ordinance (Oakland Municipal Code [OMC] Chapter 12.36) by removal of protected trees under certain circumstances; or<br>Fundamentally conflict with the City of Oakland Creek Protection Ordinance (OMC Chapter 13.16) intended to protect biological resources. | ☒ | ☐ | ☐ |

## 6.4.1 2014 BVDSP EIR Findings

### *Special-Status Species, Wildlife Corridors, Riparian and Sensitive Habitat, Wetlands, Tree and Creek Protection (Criteria 6.4a and 6.4b)*

As described in the 2014 BVDSP EIR, the Plan area is in and is surrounded by a fully developed urban environment, and impacts of development on biological resources under the BVDSP would be less than significant. Few special-status animals are present in the Plan area, and no aquatic habitats that could support migratory fish or birds are present. In addition, very little natural vegetation exists; and because this vegetation is not connected to other nearby natural habitats, it would not constitute a wildlife corridor. There are no natural sensitive communities in the Plan area. The nearest riparian habitat is Glen Echo Creek, a channelized stream with mature riparian trees and vegetated banks, which runs north to south along the eastern boundary of the Plan area between 28th and 30th Streets, as well as beneath the Plan area. Potential increases in transmittal of hazardous materials from construction activities via runoff from the impermeable surfaces of the site could result in adverse impacts to Glen Echo Creek. The 2014 BVDSP EIR identified landscape trees in the Plan area as potential nursery sites for nesting birds. In addition, projects developed under the BVDSP could cause harm to birds by increasing bird collisions with buildings.

Development in the Plan area will be required to comply with SCAs related to removal and replacement of trees, including trees on creekside properties tree protection during construction and protection of nesting birds during the breeding season, which would protect natural resources from potential degradation that could result from construction of development projects under the Plan area. Additionally, certain development in the Plan area will be required to comply with an SCA pertaining to reducing bird collisions with buildings, which will reduce potential impacts to birds by constructing features in compliance with Best Management Practice strategies to limit bird strikes. SCAs pertaining to landscaping and vegetation management on creekside properties; protection of creeks from construction vibration and dewatering; hazardous materials management; stormwater and erosion control, and construction measures to reduce bird collisions will ensure that development under the BVDSP is in compliance with all aspects of the Creek Protection Ordinance and reduce the potential impacts on water quality, reduce the potential for bird collisions, and minimize potential indirect impacts from pollution in Glen Echo Creek.

## 6.4.2 Project Analysis

### *Special-Status Species, Wildlife Corridors, Riparian and Sensitive Habitat, Wetlands, Tree and Creek Protection (Criteria 6.4a and 6.4b)*

The approximately 0.93-acre project site is located in an urban setting on a site that is fully developed with existing buildings; the project site is covered entirely by impervious surfaces. Aside from a shrub that is planted in front of the north parcel at 2937 Broadway, there is no vegetation on the project site. The project site is not located adjacent to a creek. Implementation of the Project would not increase the amount of impervious surface on the project site.

There are no existing street trees surrounding the project site and project site preparation would not require removal of any existing trees. In addition to landscaping on the 2nd level courtyard, the Project would add new street trees on Webster and 29th Streets and Broadway for a total of approximately 11 new street trees.

Although glass is a part of the Project's exterior, the Project is not located immediately adjacent to a substantially vegetated park larger than one acre or a substantial body or water. The Project would include rooftop open space potentially with vegetation in containers which would not be considered a substantial vegetated green roof or substantial vegetated area. Therefore, the SCA related to bird collision reduction measures would not be required for the Project.

The Project would comply with SCAs relating to stormwater runoff from construction and operation including SCA HYD-1, Erosion and Sedimentation Control Plan for Construction and SCA HYD-2, NPDES C.3 Stormwater Requirements for Regulated Projects (see Section 6.9, *Hydrology and Water Quality* below). Additionally, the Project would comply with SCA UTIL-7, Water Efficient Landscape Ordinance (WELO), in order to reduce landscape water usage, which would further reduce stormwater runoff. Each of these measures contributes to protection and health of creeks and waterways downstream of the project site.

### 6.4.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2014 BVDSP EIR, implementation of the Project would not substantially increase the severity of significant impacts identified in the 2014 BVDSP EIR, nor would it result in new significant impacts related to biological resources that were not identified in the 2014 BVDSP EIR. 2014 The BVDSP EIR did not identify any mitigation measures related to biological resources, and none would be needed for the Project. Because the project site does not possess any potential sensitive habitat or protected vegetation, certain SCAs identified in the 2014 BVDSP EIR would not pertain to the Project, such as those pertaining to tree removal, creek protection or the Creek Protection Ordinance, or Alameda whipsnake protection measures. **SCA HYD-1, Erosion and Sedimentation Control Plan for Construction**; **SCA HYD-2**, **NPDES C.3 Stormwater Requirements for Regulated Projects**; and **SCA UTIL-7**, **Water Efficient Landscape Ordinance (WELO)** (see Attachment A) would be applicable to and would be implemented by the Project and would further ensure that impacts related to biological resources would be less than significant. No mitigation measures are required.

# 6.5 Cultural Resources

| Would the project: | Equal or Less Severity of Impact Previously Identified in the 2014 BVDSP EIR | Substantial Increase in Severity of Previously Identified Significant Impact in the 2014 BVDSP EIR | New Significant Impact |
|---|---|---|---|
| a. Cause a substantial adverse change in the significance of an historical resource as defined in CEQA Guidelines Section 15064.5. Specifically, a substantial adverse change includes physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be "materially impaired." The significance of an historical resource is "materially impaired" when a project demolishes or materially alters, in an adverse manner, those physical characteristics of the resource that convey its historical significance **and** that justify its inclusion on, or eligibility for inclusion on an historical resource list (including the California Register of Historical Resources, the National Register of Historic Places, Local Register, or historical resources survey form (DPR Form 523) with a rating of 1-5); | ☒ | ☐ | ☐ |
| b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5; | ☒ | ☐ | ☐ |
| c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or | ☒ | ☐ | ☐ |
| d. Disturb any human remains, including those interred outside of formal cemeteries. | ☒ | ☐ | ☐ |

## 6.5.1 2014 BVDSP EIR Findings

### *Historical Resources (Criterion 6.5a)*

As part of the 2014 BVDSP EIR, all properties previously identified as historic or potentially historic resources, as well as all properties in the plan area 45-years or greater in age, were evaluated/revaluated for consideration as historic resources for the purposes of CEQA. The 2014 BVDSP EIR found that development under the BVDSP could result in the physical demolition, destruction, relocation, or alteration of this updated group of historical resources that are listed in or may be eligible for listing in the federal, state, or local registers of historical resources, which would be considered a significant impact. The Plan area contains 20 individual properties, including two in an Area of Primary Importance (API), that are considered historical resources for CEQA purposes.[18] There are also many older buildings that possess architectural merit, either in Areas of Secondary Importance (ASI) or individually, that contribute to the variety and texture of the Plan area.[19]

---

[18] An Area of Primary Importance is an area or district that appears eligible for the National Register of Historic Places and is considered a historical resource under CEQA.

[19] An Area of Secondary Importance is an area or district that is of local interest but is not eligible for the National Register of Historic Places and is not considered a historical resource under CEQA.

The 2014 BVDSP EIR identified Mitigation Measure CUL-1 to reduce the impacts to historical resources throughout the Plan area, as well as the site-specific impacts associated with the demolition of individual historical resources. In addition, the 2014 BVDSP EIR concluded that incompatible new construction immediately adjacent to historical resources, as well as inappropriate reuse of such resources, could result in significant impacts in the Plan area. Specifically, development on parcels across Webster Street to the northeast of Temple Sinai (i.e., the block bounded by Webster Street, 29th Street, Broadway, and 28th Street) could extend shadows far enough south to shade the temple's stained-glass windows during the early morning hours, resulting in significant impacts. Even with implementation of Mitigation Measure AES-4, *Shadow Analysis*, described in Section 2 above, *Aesthetics, Shadow and Wind*, the 2014 BVDSP EIR conservatively determined shadow impacts may remain significant and unavoidable.

The 2014 BVDSP EIR determined that significant cumulative impacts to historical resources could result from development of projects under the BVDSP, and identified Mitigation Measure CUL-5, which would require implementation of Mitigation Measure CUL-1. However, even with implementation of Mitigation Measure CUL-5, the 2014 BVDSP EIR determined that cumulative impacts would remain significant and unavoidable.

In addition to the mitigation measures described above, the 2014 BVDSP EIR identified Oakland Municipal Code Section 17.136.075, Regulations for Demolition or Removal of Designated Historic Properties and Potentially Designated Historic Properties (PDHP), as well as SCAs related to property relocation instead of demolition and protection of historic structures from vibration impacts during adjacent construction projects, which will also address impacts to historical resources.

Even with the above mitigation measures and SCAs, impacts to historical resources would remain significant and unavoidable.

### Archaeological and Paleontological Resources (Criteria 6.5b and 6.5c)

No known archaeological resources have been recorded in the Plan area; however, the 2014 BVDSP EIR indicated that the Plan area is potentially sensitive for pre-contact and historic-era archaeological resources that are not visible due to urban development. The 2014 BVDSP EIR determined that implementation of an SCA, which would ensure that resources are recovered and that appropriate procedures are followed in the event of accidental discovery, would minimize potential risk of impact to archaeological resources to a less-than-significant level.

The Plan area was also identified as having low to moderate paleontological sensitivity and it is possible that fossils could be discovered during excavation in the Plan area. Implementation of an SCA, which would require a qualified paleontologist to document a discovery and follow appropriate procedures, would ensure that the potential impact to paleontological resources would be less than significant.

### Human Remains (Criterion 6.5d)

Although the 2014 BVDSP EIR did not identify any locations of buried human remains in the Plan area, the inadvertent discovery of human remains during ground-disturbing activities cannot be entirely discounted. In the event that human remains are discovered during excavation, implementation of an SCA, which would ensure that the appropriate procedures for handling and identifying the remains are followed, would reduce impacts to a less-than-significant level.

## 6.5.2 Project Analysis

### *Historic Architectural Resources*

The project site is located within the Upper Broadway Auto Row ASI, which was first documented in 1986 as part of the Oakland Cultural Heritage Survey (OCHS). The ASI, which is not a designated historic district, is a distinctive early 20th-century commercial district that includes buildings that were originally constructed for automobile-related uses: auto and auto accessory factories, showrooms, repair and parking garages, and service stations.[20] Automobile-related buildings constructed on Broadway in the early 20th century are not set back from the sidewalk and provide a "window wall of storefronts" to display the vehicles.[21] Storefront windows were large, often reaching from floor to ceiling, and afforded open views of showrooms from the street and sidewalk. The ASI contains approximately 49 buildings on 53 assessor's parcels. Approximately 34 properties contribute to the district's significance, including four of the eight parcels within the project site. Most buildings date from the 1910s through 1940s, and prevalent property types are Beaux Arts- and Moderne-style automobile showrooms, early 20th-century utilitarian service garages, and 1920s-era decorative brick commercial buildings. Within the ASI, four buildings are rated B (Major Importance), nine are rated C (Secondary Importance), 25 are rated D (Minor Importance), seven are rated E (Of No Particular Interest), three are rated F or * (less than 45 years old at the time of the survey), and one was not assigned a rating.[22]

Characteristics of the ASI include:

- Generally level lots with zero setbacks;
- Range of architectural styles including Beaux Arts and Moderne;
- Predominance of one- and two-story buildings with rectangular footprints;
- Flat, bow truss, and gabled roofs;
- Shaped and stepped parapets;
- Large retail and display windows;
- Reinforced concrete and brick masonry construction;
- Stucco cladding; and
- Terra cotta, plaster, stucco, and ceramic tile decorative features.[23]

---

[20] City of Oakland, "AU2 – Upper Broadway Auto Row District Primary Record," 1986, on file at City of Oakland Planning and Building Department.

[21] Architectural Resources Group, *Draft Oakland Broadway Auto Row Historic Context Report*, September 2006, p. 5.

[22] City of Oakland, "AU2 – Upper Broadway Auto Row District Primary Record."

[23] Ibid.

Nearby historic resources include the Temple Sinai, a designated local landmark, at 2808 Summit Street (one block southwest and across Webster and 29th streets); 2865 Broadway (across 29th Street); 2819 Broadway (one block south); and 2964 Broadway (across Broadway).

The Project would demolish four buildings that are contributors to the ASI as well as PDHPs.[24] Three of the buildings (2901 Broadway, 2924 Webster Street, and 340 29th Street) have OCHS ratings of Dc2+, indicating that when the properties were first surveyed, they were considered to be of Minor Importance (D) but contributed to the surrounding district (2+). If rehabilitated, the buildings could potentially be given a rating of Secondary Importance (c). The fourth building, 2919 Broadway, has an OCHS rating of C2+, indicating that when it was first surveyed, it was considered to be of Secondary Importance (C) and contributed to the surrounding district (2+).[25]

The Upper Broadway Auto Row ASI is not a designated historic district, and the existing buildings on the project site are not considered to be historical resources under CEQA. Only APIs, contributors to APIs, individual properties with OCHS ratings of A or B, City of Oakland Landmarks, and properties listed in or eligible for the National Register or California Register are considered to be historical resources under CEQA. However, because the existing buildings are PDHPs, SCA CUL-4, Property Relocation, would be required for the Project. In addition to CEQA-required consideration, which are discussed in this document, additional consideration of these replacement buildings regarding their contribution to the Oakland environment would be evaluated during the City's Regular Design Review process and in light of the "replacement project." Based on the City's OCHS ratings for the existing buildings within the project site, demolition would not result in a significant impact on historic resources. Mitigation Measures CUL-1 and CUL-5, as outlined in the 2014 BVDSP EIR, would not apply.

### *Archaeological and Paleontological Resources and Human Remains*

The project would excavate approximately 3405 cubic yards of soil with a maximum depth of 18 feet below ground surface (bgs). The project site is underlain by 4.5 to 7 feet of undocumented fill consisting of sandy clay, clayey sand, and silty sand with gravel. Immediately underlying the fill is a layer of native alluvium consisting of loose to medium dense clayey sand and medium stiff sandy clay.[26] Geologic maps indicate that the project site is in an area of Pleistocene-age alluvium. Pre-contact Native American archaeological sites in this geologic framework would be at or very near to the surface and because the upper 4.5 to 7 feet consists of fill, the sensitivity for pre-contact archaeological resources to be in the project site is significantly lessened.

Prior to the existing parking lot, two residential buildings were located on the west side of the project site facing Webster Street.[27] There is the potential that artifact-filled deposits such as privies

---

[24] 2937 Broadway (APN 009 070100500) is noted as a contributor to the Upper Broadway Auto Row ASI in the interactive City of Oakland Planning and Zoning Map (https://oakgis.maps.arcgis.com/apps/webappviewer/index.html?id= 3676148ea4924fc7b75e7350903c7224). However, the lot is currently empty and used as a surface parking lot. It is not included in the building totals provided here.

[25] City of Oakland, "AU2 – Upper Broadway Auto Row District Primary Record."

[26] Terraphase Engineering Inc., Geotechnical Investigation and Design Report 2929 Broadway, Oakland, California. Prepared for MBO Developer, LLC. March 2021.

[27] Sanborn Map Company, Fire Insurance Maps for Oakland, 1902. Accessed June 2, 2021 at https://digitalsanbornmaps-proquest-com.

or wells associated with these dwellings could be exposed during excavation. Implementation of SCA CUL-1, Archaeological and Paleontological Resources – Discovery During Construction; SCA CUL-2, Archaeologically Sensitive Areas – Pre-Construction Measures; and SCA CUL-3, Human Remains – Discovery During Construction would be required for the Project and, as outlined in the 2014 BVDSP EIR, would reduce any potential impacts to a less-than-significant level by ensuring that if any archaeological resources and/or paleontological resources are uncovered during construction appropriate actions are taken including notified a qualified archaeologist/paleontologist to inspect the find and provide additional recommendations.

### 6.5.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2014 BVDSP EIR considered throughout this analysis, the Project would not result in any more severe significant impacts than those identified in the 2014 BVDSP EIR, nor would it result in new significant impacts related to cultural resources that were not identified in the 2014 BVDSP EIR. **Implementation of SCAs CUL-1**, **Archaeological and Paleontological Resources – Discovery During Construction**; **CUL-2**, **Archaeologically Sensitive Areas – Pre-Construction Measures**; **CUL-3**, **Human Remains – Discovery During Construction**; and **CUL-4, Property Relocation** (see Attachment A) would further ensure that potential impacts associated with cultural resources would be less than significant. No mitigation measures are required.

# 6.6 Geology, Soils, and Geohazards

| Would the project: | Equal or Less Severity of Impact Previously Identified in the 2014 BVDSP EIR | Substantial Increase in Severity of Previously Identified Significant Impact in the 2014 BVDSP EIR | New Significant Impact |
|---|---|---|---|
| a. Expose people or structures to substantial risk of loss, injury, or death involving:<br>• Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map or Seismic Hazards Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;<br>• Strong seismic ground shaking;<br>• Seismic-related ground failure, including liquefaction, lateral spreading, subsidence, collapse; or<br>• Landslides; | ☒ | ☐ | ☐ |
| b. Be located on expansive soil, as defined in Section 1802.3.2 of the California Building Code (2007, as it may be revised), creating substantial risks to life or property; result in substantial soil erosion or loss of topsoil, creating substantial risks to life, property, or creeks/waterways. | ☒ | ☐ | ☐ |

## 6.6.1 2014 BVDSP EIR Findings

### *Seismic Hazards, Expansive Soils, and Soil Erosion (Criteria 6.6a and 6.6b)*

The 2014 BVDSP EIR determined that very strong ground shaking and associated liquefaction in certain soils could expose people to injury or harm during earthquakes. In addition, the soils in the Plan area are largely composed of artificial fill material overlying natural deposits of Bay Mud. The northern half of the Plan area is primarily underlain by streambed deposits. The BVDSP identified the artificial fills and expansive soils underlying the Plan area as presenting a potential hazard, due to the possibility of shrink-swell behavior and soil compression.

Development proposed under the BVDSP would avoid and minimize potential geologic impacts through compliance with local and state regulations governing design and construction practices, such as the Seismic Hazards Mapping Act (in liquefaction hazard zones) and the California Building Code. Implementation of SCAs related to geology, soils, and geohazards identified in the 2014 BVDSP EIR require the preparation of soils and geotechnical reports specifying generally accepted and appropriate engineering techniques, would reduce potential impacts to less-than-significant levels.

The 2014 BVDSP EIR identified no impacts related to substantial soil erosion or loss of topsoil, because the Plan area is in a developed urban area that is paved or landscaped and served by a storm drain system. In addition, implementation of SCA related to seismic hazard zones would minimize erosion and sedimentation.

## 6.6.2 Project Analysis

The project site is not within a hazard zone for earthquake-induced landslides. Although the Association of Bay Area Governments (ABAG) Hazard Viewer Map shows the project site had moderate earthquake liquefaction susceptibility, according to the geotechnical investigations prepared for the Project (Geotech Report, see **Appendix B**), it is not within a liquefaction hazard zone.[28] The Geotech Report indicates the main geotechnical concerns include presence of loose to medium dense sandy fill and native soil, undocumented fill and heterogeneous subsurface conditions, the potential presence of buried structures including abandoned utilities; potential presence of shallow groundwater; and the corrosion potential of site soils. Although the proposed building would not include a basement level, Project construction would require grading to address the slight slope (up to an 11-foot grade change), an existing partial basement, and other potential voids such as abandoned utilities. Further, to address the presence of heterogeneous soil conditions, the Geotech Report recommends over-excavation below the bottom of the building pad and filling with compacted, moisture-conditioned fill. Project construction would require the excavation of approximately 7,046 cubic yards of soil with a maximum depth of 18 feet below ground surface (bgs). All of the excavated material would be exported. Projects within the City that propose to excavate more than 500 cubic yards of soil are required to obtain a grading permit. Therefore, the Project would be required to obtain a grading permit.

The Geotech Report includes recommendations for foundation design and construction including the need for temporary and permanent shoring systems to protect the excavation walls, adjacent buildings, streets, facilities and other improvements, and to limit the potential flow of groundwater into the site; and the selection of a reinforced mat foundation system. The report includes recommendation for final grading, shoring, and foundation plan review and construction monitoring to ensure the recommendations are implemented and to make modifications as needed. SCA GEO-2, Soils Report, is applicable to the Project and requires implementation of the Geotech Report recommendations.

The Project would be required to comply with the requirements of California Building Code and the Seismic Hazards Mapping Act, which would prevent exposure of people or structures to substantial risk of loss, injury, or death during a large regional earthquake. The Project would also be required to comply with SCA GEO-1, Construction-Related Permit(s); SCA GEO-2, Soils Report; and SCA HYD-1, Erosion and Sedimentation Control Plan for Construction (see Section 6.9, *Hydrology and Water Quality*).

The 2014 BVDSP EIR determined that the potential risks related to geology, soils, and geohazards would be less than significant with implementation of SCAs and other existing regulatory requirements. Therefore, consistent with the findings and conclusions of the 2014 BVDSP EIR, potential impacts of the Project would be less than significant.

---

[28] MTC/ABAG, 2021. Hazard Viewer Map, MTC/ABAG Hazard Viewer Map (arcgis.com), accessed August 30, 2021.

### 6.6.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2014 BVDSP EIR considered in this analysis, the Project would not result in any new or more significant impacts related to geology, soils, and geohazards than those identified in the 2014 BVDSP EIR. Furthermore, implementation of **SCA GEO-1**, **Construction-Related Permit(s)**; **SCA GEO-2**, **Soils Report**; and **SCA HYD-1**, **Erosion and Sedimentation Control Plan for Construction** (see Section 6.9, *Hydrology and Water Quality*) (see Attachment A), would ensure that potential impacts associated with hazardous geologic and soils conditions would be less than significant. No mitigation measures are required.

# 6.7 Greenhouse Gas and Climate Change

| Would the project: | Equal or Less Severity of Impact Previously Identified in the 2014 BVDSP EIR | Substantial Increase in Severity of Previously Identified Significant Impact in the 2014 BVDSP EIR | New Significant Impact |
|---|---|---|---|
| a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, specifically:<br>1) For a project involving a stationary source, produce total emissions of more than 10,000 metric tons of CO2e annually. [NOTE: Stationary sources are projects that require a BAAQMD permit to operate.]<br>2) For a project involving a land use development,[29] fail to demonstrate consistency with the 2030 Equitable Climate Action Plan (ECAP) adopted by the City Council on July 28, 2020. [NOTE: Land use developments are projects that do not require a BAAQMD permit to operate.] Consistency with the 2030 ECAP can be shown by either:<br>(a) committing to all of the GHG emissions reductions strategies described on the ECAP Consistency Checklist,[30] or<br>(b) complying with the GHG Reduction Standard Condition of Approval that requires a project-level GHG Reduction Plan quantifying how alternative reduction measures will achieve the same or greater emissions than would be achieved by meeting the ECAP Consistency Checklist. | ☒ | ☐ | ☐ |
| b. Fundamentally conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing greenhouse gas emissions. | ☒ | ☐ | ☐ |

## 6.7.1 2014 BVDSP EIR Findings

### *Greenhouse Gas Emissions (Criterion 6.7a)*

The 2014 BVDSP EIR evaluated impacts related to GHG emissions from construction and operation anticipated under the Development Program. The EIR identified motor vehicle use, water, gas, electricity use, loss of vegetation, and construction activities as contributing to generation of GHG emissions. Future projects and development implemented under the BVDSP would be required to be consistent with the City of Oakland Energy and Climate Action Plan, and with SCAs that would reduce GHG emissions during construction and operation of projects. Even

---

[29] For projects that involve both a stationary source and a land use development, calculate each component separately and compare to the applicable threshold.

[30] The ECAP Consistency Checklist includes all of the project-level GHG emissions reduction strategies that are either regulatory requirements or are necessary at a project level to meet the adopted city-wide GHG emissions reduction targets of 56% reduction from 2005 levels by 2030 and 83% reduction by 2050. As new strategies are adopted to align with the 2030 ECAP, the Checklist will be updated and new projects will be expected to achieve the revised strategies or comply with GHG Reduction Standard Condition of Approval.

with implementation of SCAs, the 2014 BVDSP EIR conservatively determined that GHG impacts would remain significant and unavoidable.

### *Consistency with Applicable GHG Plans (Criterion 6.7b)*

The 2014 BVDSP EIR determined that development under the Broadway Valdez Development Program would not conflict with any applicable plan, policy or regulation adopted with the intent to reduce GHG emissions. Therefore, the 2014 BVDSP EIR determined that the impact related to consistency with applicable plans, policies or regulations to reduce GHG emissions would be less than significant.

## 6.7.2 Project Analysis

### *Greenhouse Gas Emissions (Criterion 6.7a)*

Both BAAQMD and the California Air Pollution Control Officers Association (“CAPCOA”) consider GHG impacts to be exclusively cumulative impacts in that no single project could, by itself, result in a substantial change in climate. Therefore, the evaluation of GHG emissions impacts evaluates whether the Project would make a considerable contribution to cumulative climate change effects. The analysis in the BVDSP EIR relied on the BAAQMD thresholds adopted by the City to address the GHG reduction goals for 2020 established by Assembly Bill (AB) 32. Senate Bill (SB) 32 expanded upon AB 32 establishing a target to reduce GHG emissions to 40 percent below 1990 levels by 2030. To address SB 32 goals, the City of Oakland adopted the 2030 Equitable Climate Action Plan (ECAP) in July 2020. The City’s current adopted thresholds for GHG emissions rely upon the technical and scientific basis for the 2030 ECAP, which provide substantial evidence that adherence to the 2030 ECAP action items will achieve GHG emissions reduction targets of 56 percent below 2005 levels by 2030 and 83 percent below 2005 levels by 2050. These reduction targets are more aggressive than the State's adopted 2030 reduction target of 40 percent below 1990 levels (per SB 32). Therefore, reductions below the City of Oakland's efficiency metric also meet the State's adopted 2030 goals.

An ECAP Consistency Review Checklist was prepared for the Project (see **Appendix C**). The purpose of the ECAP Consistency Review Checklist is to determine, for purposes of compliance with CEQA, whether a development project complies with the ECAP and the City’s GHG emissions reduction targets. If a development project completes this Checklist and can qualitatively demonstrate compliance with all the measures included in the Checklist items as part of the project’s design, or alternatively, demonstrate to the City’s satisfaction why the measure is not applicable, then the project will be considered in compliance with the City’s ECAP. If a development project cannot meet all of the Checklist items, the project will alternatively need to demonstrate consistency with the ECAP by preparing and implementing a project-specific GHG Reduction Plan consistent with City SCA 42 (Greenhouse Gas Reduction Plan). If the project cannot demonstrate consistency with the ECAP in either of those two ways, the City will consider the project to have a significant effect on the environment related to GHG emissions.

According to the Project’s ECAP Consistency Review Checklist, the Project has committed to all applicable GHG emissions reduction strategies, and would, therefore, be in compliance with the

ECAP. Therefore, the Project would be required to implement SCA GHG-1, Project Compliance with the ECAP Consistency Checklist, which would ensure that all ECAP Checklist items are incorporated into the Project. Since the Project has committed to all applicable GHG emissions reductions strategies described on the ECAP Consistency Checklist, Project GHG emissions associated with land use development would be less than significant.

As noted above in Section 6.3, *Air Quality,* Pacific Gas and Electric (PG&E) is the electricity service provider for the project site and is considered as a reliable source of power for the Project. Thus, the Project would not require an emergency back-up generator. The Project would include an electric fire pump, rather than a diesel-powered pump, to ensure water pressure is maintained in the fire suppression system. Therefore, Project operations would not include GHG emissions associated with an emergency generator or fire pump.

Although not required to mitigate a significant impact related to GHG emissions, the Project would be required to implement several other City of Oakland SCAs that would contribute to minimizing potential GHG emissions from Project construction and operations. These include SCA AES-3, Landscape Plan; SCA AIR-2, Criteria Air Pollutant Controls - Construction Related; SCA AIR-3, Diesel Particulate Matter Controls - Construction Related; SCA TRA-2, Bicycle Parking; SCA TRA-4, Transportation and Parking Demand Management; SCA TRA-6, Plug-In Electric Vehicle (PEV) Charging Infrastructure; SCA UTIL-1, Construction and Demolition Waste Reduction and Recycling; SCA UTIL-4, Green Building Requirements; and SCA UTIL-7, Water Efficient Landscape Ordinance (WELO).

### *Consistency with GHG Emissions Plans and Policies (Criterion 6.7b)*

The Project would comply with the City of Oakland's ECAP, current City Sustainability Programs, and General Plan policies and regulations regarding GHG reductions and other local, regional and statewide plans, policies and regulations that are related to the reduction of GHG emissions and relevant to the Project. Specifically, the Project would be consistent with the State's Updated Climate Change Scoping Plan and the City of Oakland's ECAP (as indicated by the attached ECAP Checklist in Appendix C) in that it has committed to all applicable GHG emissions reductions strategies and would include a number of sustainability design features.

On December 15, 2020, the Oakland City Council adopted an Ordinance, adding to the Oakland Municipal Code Chapter 15.37, "All-Electric Construction In Newly Constructed Buildings." These new regulations require all newly constructed buildings to meet the definition of an All-Electric Building, as defined therein. As a result, the Project will be required to be designed to use a permanent supply of electricity as the source of energy for all space heating, water heating, cooking appliances, and clothes drying appliances, and will be prohibited from having natural gas or propane plumbing installed in the building. Designing the building to use a permanent supply of electricity will reduce the estimated annual operational greenhouse gas emissions from energy emission sources of the Project.

The Project Applicant intends to meet Build it Green's *GreenPoint Rated Checklist*, City Green Building ordinances and requirements. The Project would optimize the efficiency of its building envelope, and it would reduce the building's energy use through the use of efficient lighting and

HVAC systems. Also, the Project would meet the most recently implemented Building Energy Efficiency Standards. Additionally, the Project would be located in area with diverse land uses and in proximity to transit services, which would reduce the number of vehicle trips and the associated GHG emissions generated. Therefore, the Project would be considered to be consistent with all applicable goals, policies and regulations adopted to reduce GHG emissions and this impact would be less than significant.

### 6.7.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2014 BVDSP EIR considered throughout this analysis, implementation of the Project would not substantially increase the severity of significant impacts identified in the 2014 BVDSP EIR, nor would it result in new significant impacts related to GHG emissions or compliance with applicable plans, policies, or regulations adopted for the purposes of reducing GHG emissions that were not identified in the 2014 BVDSP EIR. Implementation of **SCA GHG-1, Project Compliance with the ECAP Consistency Checklist** (see Attachment A) would be applicable to and would ensure that impacts related to GHG emissions associated with the Project are less than significant. In addition, implementation of SCAs relating to Aesthetics, Air Quality, Transportation, and Utilities (see Sections 62, 6.3, 6.14, 6.15 and Attachment A) including **SCA AES-3, Landscape Plan**; **SCA AIR-2, Criteria Air Pollutant Controls - Construction Related**; **SCA AIR-3, Diesel Particulate Matter Controls - Construction Related**; **SCA TRA-2, Bicycle Parking**; **SCA TRA-4, Transportation and Parking Demand Management**; **SCA TRA-6**, **Plug-In Electric Vehicle (PEV) Charging Infrastructure; SCA UTIL-1, Construction and Demolition Waste Reduction and Recycling**; **SCA UTIL-4, Green Building Requirements**; and **SCA UTIL-7, Water Efficient Landscape Ordinance (WELO)**, would further ensure that impacts associated with GHG emissions would be less than significant. No mitigation measures are required.

# 6.8 Hazards and Hazardous Materials

| Would the project: | Equal or Less Severity of Impact Previously Identified in the 2014 BVDSP EIR | Substantial Increase in Severity of Previously Identified Significant Impact in the 2014 BVDSP EIR | New Significant Impact |
|---|---|---|---|
| a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;<br>Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;<br>Create a significant hazard to the public through the storage or use of acutely hazardous materials near sensitive receptors;<br>Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 (i.e., the “Cortese List”) and, as a result, would create a significant hazard to the public or the environment; | ☒ | ☐ | ☐ |
| b. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; | ☒ | ☐ | ☐ |
| c. Result in less than two emergency access routes for streets exceeding 600 feet in length unless otherwise determined to be acceptable by the Fire Chief, or his/her designee, in specific instances due to climatic, geographic, topographic, or other conditions; or<br>Fundamentally impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. | ☒ | ☐ | ☐ |

## 6.8.1 2014 BVDSP EIR Findings

### *Hazardous Materials Use, Storage and Disposal and Hazardous Building Materials (Criterion 6.8a)*

The 2014 BVDSP EIR determined that development under the BVDSP could result in construction activities that use hazardous materials, as well as ongoing commercial activities that involve the use of chemicals that are considered hazardous materials. Adoption and development under the BVDSP could therefore require the transportation, use, and storage of additional quantities of hazardous materials to new businesses and entities. In addition, the 2014 BVDSP EIR determined that demolition under the BVDSP could result in disturbance of hazardous building materials, such as lead-based paint, asbestos, and polychlorinated biphenyls (PCBs). The transportation, use, and storage of all hazardous materials would be required to follow the applicable laws and regulations adopted to safeguard workers and the general public. In addition, development under the BVDSP would be subject to the City of Oakland’s SCAs pertaining to best management practices for hazardous materials and removal of asbestos and lead-based paint.

### *Exposure to Hazardous Materials in the Subsurface (Criterion 6.8a)*

The 2014 BVDSP EIR determined that development under the BVDSP could require excavation for installation of building foundations and underground utilities and that some of the development sites could have had past documented or undocumented releases of hazardous materials that have contaminated subsurface soils and groundwater or previously unknown releases that may be discovered during excavation activities. Disturbed contaminated soils could expose construction workers and the public to contaminants potentially causing significant adverse health effects. Development sites listed on a regulatory database for a documented release of hazardous materials are subject to site cleanup regulations as required by a designated regulatory agency such as Alameda County Department of Environmental Health (ACDEH), the State Water Resources Control Board (SWRCB), or the Department of Toxic Substances Control (DTSC). All development under the BVDSP would be subject to the City of Oakland's SCAs pertaining to hazardous materials in the subsurface, including conducting a Phase I Environmental Site Assessment (ESA) and a Phase II ESA, if warranted based on the results of the Phase I ESA; approval of remedial activities and site clearance by the appropriate regulatory agencies for the specific development; procedures for managing suspected contamination that is encountered unexpectedly during construction activities; preparation of a construction worker health and safety plan; and implementation of best management practices related to hazardous materials management. The 2014 BVDSP EIR determined that compliance with these SCAs would reduce the potential impacts related to hazardous materials in the subsurface to a less-than-significant level.

### *Hazardous Materials within a Quarter Mile of a School (Criterion 6.8b)*

There are no schools in the Plan area; however, there are five schools or daycare facilities within 0.25 mile of the Plan area. Development under the BVDSP would be required to comply with the City of Oakland's Ordinances and General Plan Policies, which require hazardous material handlers within 1,000 feet of a school or other sensitive receptor to prepare a Hazardous Materials Assessment Report and Remediation Plan. Additionally, those handling or storing hazardous materials would be required to prepare a Hazardous Materials Management Plan and Hazardous Materials Business Plan, as required by Alameda County and a City of Oakland SCA; preparation of these plans would reduce impacts to less-than-significant levels.

### *Emergency Access Routes (Criteria 6.8c)*

The 2014 BVDSP EIR determined that construction under the BVDSP that would result in temporary road closures, which would require traffic control plans to ensure at least two emergency access routes are available for streets exceeding 600 feet in length, per City of Oakland's Ordinances and General Plan Policies. Compliance with all applicable requirements would reduce potential impacts to a less-than-significant level.

## 6.8.2 Project Analysis

### *Exposure to Hazards, Hazardous Materials Use, Storage and Disposal (Criterion 6.8a)*

At the time of the 2014 BVDSP EIR, SWRCB GeoTracker Maps showed only one closed permanently underground storage tank (UST) on the project site. However, as stated in the 2014

BVDSP EIR, the reporting and statuses of these sites change as identification, monitoring and clean-up of hazardous sites progress and these databases would need to be revisited prior to construction of individual development projects under the Specific Plan. Therefore, a preliminary review of the project site on the State's GeoTracker database was conducted and revealed an open leaking underground storage tank (LUST) case with the ACDEH classifying the project site as a "Cortese List" site.[31] Two cleanup program site cases are also listed on GeoTracker for the project site; these cases were opened to investigate and remediate the potential release of non-petroleum constituents from the underground storage tank.[32]

As of the publication of this Checklist, ACDEH is the responsible regulatory agency overseeing cleanup of the project site and is managing the two cleanup program site cases and the LUST case under Case No. RO0003480 to complete site investigation and cleanup activities for the proposed project. To evaluate the environmental quality of the soil, soil vapor, and groundwater that could be encountered during Project construction and to assess potential contamination of the project site, a Phase II Investigation Work Plan was developed and conducted for the project site, the results of which are summarized below.[33] The Phase II is comparable to a preliminary endangerment assessment report because it evaluated if hazardous materials are present on the site, the extent of contamination, the potential risk to public health and the environment, and recommends next steps for remediation.

The Phase II identified fine-grained subsurface material with low permeability which likely inhibits chemicals from being transported within the subsurface. Chloroform was the sole VOC in

---

[31] ACDEH Case No. RO000322.

[32] ACDEH Case Nos. RO0003360 and RO0003480.

[33] The documents collectively referred to as Phase II in this document include the following parts all available through the GeoTracker website:

- PES Environmental, Inc., August 13, 2020. *Phase II Investigation Workplan Mercedes Benz of Oakland 340 29th Street Oakland, CA,* available: https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/8665815055/SWI_2020-08-13.pdf, accessed April 18, 2022.
- PES Environmental, Inc., December 4, 2020. *Results of Phase II Investigation Mercedes Benz of Oakland 340 29th Street Oakland, CA,* available: https://documents.geotracker.waterboards.ca.gov/esi/uploads/geo_report/5011226952/T10000016845.PDF, accessed April 18, 2022.
- PES Environmental, Inc., March 28, 2022. *Draft Corrective Action Plan 2929 Broadway Redevelopment 340 29th Street Oakland, CA,* available: https://documents.geotracker.waterboards.ca.gov/esi/uploads/geo_report/7652453422/T10000016845.PDF, accessed April 18, 2022.
- Alameda County Health Care Services Agency, April 8, 2022. *Conditional Approval of the Remedial Design Data Gap Investigation Work Plan Cleanup Program Site Case No. RO0003480 and GeoTracker Global ID T10000016845 2929 Broadway Redevelopment 340 29th Street, Oakland, CA,* available: https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/1234388053/RO3480_DIR_L_2022-04-08_1.pdf, accessed April 18, 2022.
- Alameda County Health Care Services Agency, February 18, 2021. *Voluntary Remedial Action Agreement # RO0003480-2021-01-25,* available: https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/3804639518/RO0003480_VRAA_2021-02-18.pdf, accessed April 18, 2022.
- PES Environmental, Inc., March 28, 2022. Revised Work Plan for Additional Subsurface Investigation 2929 Broadway Redevelopment 340 29th Street, available: https://documents.geotracker.waterboards.ca.gov/esi/uploads/geo_report/6133348941/T10000016845.PDF, accessed April 18, 2022.

groundwater samples reported above the laboratory reporting limit although the levels were still less than the San Francisco Regional Water Quality Control Board (RWQCB) Environmental Screening Levels (ESLs) for potential vapor intrusion in a residential setting.

Soil vapor samples contained VOCs including chloroform concentrations slightly above the ESL for commercial use and benzene concentrations well above the ESL for commercial use. VOC concentrations exceeding ESLs for residential use included benzene, chloroform, vinyl chloride, tetrachloroethene, and naphthalene. The elevated levels of VOCs are located below both the future retail space and indoor parking areas proposed for the ground floor. Benzene levels indicate a High Vapor Intrusion Risk while the other VOCs indicate a Low to Moderate Vapor Intrusion Risk. The Phase II also notes that previous investigations and laboratory analytical data identified total petroleum hydrocarbons (TPH) and VOCs in soil and groundwater samples and determined these chemicals to be the primary contaminants of potential concern.[34]

The Phase II report recommended discussing these findings with ACDEH and the Project Applicant impmented this recommendation. The Project Applicant has entered into a Voluntary Remedial Action Agreement (VRAA) with ACDEH as a first step to address potential vapor intrusion risks on the project site. The Project Applicant has prepared a Corrective Action Plan (CAP) which identifies chemicals of concern for remediation or mitigation based on the Phase II, past site investigations and subsequent additional investigation as required by ACDEH, and their respective laboratory data. Chemicals of concern identified include total petroleum hydrocarbons, benzene, naphthalene, and chlorobenzene. The CAP also proposes a number of options for remediating the project site, including excavating the contaminated source area, cleaning utility corridors and landscaping areas, installing trench dams, installing a vapor barrier, and installing a passive soil vapor extraction system which would allow any residual vapors to escape. As recommended by the Phase II, the Project Applicant has also submitted a draft work plan for additional subsurface investigations which ACDEH conditionally approved on April 8, 2022. The purpose of the work plan is to further evaluate site conditions, including vapor intrusion risks, and to recommend additional remediation measures, if appropriate. Following CAP approval, the Project Applicant anticipates preparing a remediation plan to identify the specific remediation activities appropriate for the project site and submitting it to ACDEH for review and approval. As discussed below, evidence of clearance for residential and commercial use from ACDEH, the responsible regulatory agency managing the site cleanup, must be presented to the City for verification prior to City approval of any demolition, grading, or building permits.

Project construction activities would include excavation of approximately 7,046 cubic yards of soil. All of the excavated material would be exported. Groundwater in the vicinity of the project site is not expected to be encountered as the measured groundwater table is assumed to be approximately 12 feet bgs. However as reported in the Geotech Report (see Section 6.6, *Geology Soils, and Geohazards*), perched groundwater could be encountered at approximately 3.5 feet bgs at the site. Grading activities are anticipated to potentially reach a depth of 18 feet; therefore, dewatering during construction may be required. Additional soil and groundwater

---

[34] Detected TPH includes gasoline, diesel, and oil. Detected VOCs include chlorobenzene, benzene, and trichloroethene.

characterization would be required prior to off-site disposal of excess soil and groundwater resulting from excavation and grading activities.

During the demolition and construction phases, construction equipment and materials would include fuels, oils and lubricants, solvents and cleaners, cements and adhesives, paints and thinners, degreasers, cement and concrete, and asphalt mixtures, which are all commonly used in construction. The routine use or an accidental spill of hazardous materials used in construction could result in inadvertent releases, which could adversely affect construction workers, the public, and the environment.

As described in Section 4, *Project Description*, implementation of the Project would involve demolition and removal of existing structures that could release hazardous building materials. Numerous existing regulations require that demolition and construction activities that may disturb or require the removal of hazardous materials must be inspected and/or tested for the presence of hazardous materials. If present, the hazardous materials must be managed and disposed of in accordance with applicable laws and regulations, as further described below.

As described in detail in the 2014 BVDSP EIR, various federal, State, and regional regulations govern the proper storage, handling, and transport of hazardous materials. In addition, developers wishing to develop “Cortese list” sites would have to apply for permits and perform cleanup and remediation actions required by the appropriate overseeing agency—ACDEH, the RWQCB or the DTSC. DTSC has authority to implement hazardous waste and hazardous substance laws in the California Code of Regulations, as well as the federal equivalents of these laws. RWQCB has authority under the Porter-Cologne Water Quality Control Act to require groundwater investigations and remediation as necessary.

Construction activities would be required to comply with numerous hazardous materials regulations designed to ensure that hazardous materials are transported, used, stored, and disposed of in a safe manner to protect worker safety, and to reduce the potential for a release of construction-related fuels or other hazardous materials into the environment, including stormwater and downstream receiving water bodies. As discussed in Section 6.9, *Hydrology and Water Quality*, in compliance with SCA HYD-1, the Project Applicant would be required to implement best management practices to reduce water quality impacts during construction to the maximum extent practicable.

SCA HAZ-1, Hazardous Materials During Construction, would require contractors to use hazardous materials used for construction properly and store them in appropriate containers with secondary containment, as needed, to contain a potential release. The California Fire Code would also require measures for the safe storage and handling of hazardous materials. In addition, the transport of hazardous materials is regulated by the U.S. Department of Transportation (USDOT), Caltrans, and the California Highway Patrol (CHP). Together, federal and State agencies determine driver-training requirements, load labeling procedures, and container specifications designed to minimize the risk of an accidental release.

Compliance with regulations described above are reinforced in the City’s SCAs specific to hazardous materials. SCA AIR-4, Asbestos in Structures, pertaining to the removal of asbestos-containing materials (ACM) from structures, requires compliance with laws and regulations regarding demolition of ACMs. SCA HAZ-1 identifies Best Management Practices during construction including practices for use, storage and disposal of chemical products and containers; management of fuel gas tanks, grease, and oils from construction equipment; compliance with local, regional, state and federal regulations concerning lead; and compliance with City and applicable regulatory agencies' required steps and actions if suspected contamination is encountered during construction.

SCA HAZ-2, Hazardous Building Materials and Site Contamination, requires the Project Applicant to document the presence or lack thereof of hazardous building or stored materials and specifications for the stabilization and/or removal of the identified materials in accordance with applicable laws and regulations. It requires a Phase I and, as needed a Phase II along with evidence of approved remedial action and required clearances by applicable local, state, or federal regulatory agency. As discussed above, a Phase II was prepared for the project site. The Project Applicant has executed a VRAA with ACDEH and has prepared a work plan and a draft CAP to remediate the site contamination identified by the Phase II and previous site investigations.  Per the VRAA, the Project Applicant must complete all remediation activities to ACDEH's satisfaction before a closure letter can be issued. This is consistent with SCA HAZ-2's requirement that the Project Applicant implement all approved remediation activities and submit evidence to the City of approval of the remediation activities and the required clearances by the applicable regulatory agencies prior to approval of demolition, grading, or building permits. Compliance with this SCA includes implementation of a City-approved Health and Safety Plan and construction Best Management Practices related to potential soil and groundwater hazards. The transportation, use, and storage of all hazardous materials involved with the Project (construction and operation) would be required to follow the applicable laws and regulations adopted to safeguard workers and the general public, including preparation of a Health and Safety Plan

Finally, in the event of a spill that releases hazardous materials at the project site, a coordinated response would occur at the federal, state, and local levels, including the City of Oakland. The Oakland Fire Department is the local hazardous materials response team. In the event of a hazardous materials spill, the Oakland Police and Fire departments would be simultaneously notified and sent to the scene to respond and assess the situation.

The required compliance with the numerous laws and regulations discussed above that govern the transportation, use, handling, and disposal of hazardous materials would limit the potential for creation of hazardous conditions due to the use or accidental release of hazardous materials. Since development of the Project would be subject to the SCAs pertaining to the handling of hazardous materials related to construction activities and the remedial actions required when site contamination is encountered, consistent with the findings and conclusions of the 2014 BVDSP EIR, the potential impacts would be reduced to less-than-significant levels.

### *Hazardous Materials within a Quarter Mile of a School (Criterion 6.8b)*

The project site is located within 0.25 mile of Emiliano Zapata Street Academy and Samuel Merritt University; however, during construction, the Project would be required to comply with existing local regulations that require hazardous material handlers within 1,000 feet of a school or other sensitive receptor to prepare a Hazardous Materials Assessment Report and Remediation

Plan. The 2014 BVDSP EIR determined that the potential risks related to hazardous materials use in the vicinity of schools would be less than significant given incorporation of SCAs and other existing regulatory requirements. Therefore, potential impacts of the Project would be less than significant, consistent with the findings and conclusions of the 2014 BVDSP EIR.

#### *Emergency Access Routes (Criterion 6.8c)*

The Project would not change the surrounding streets or roadways, or limit emergency access or plans. The Project Applicant would comply with SCA TRA-1, Construction Activity in the Public Right-of-Way, which requires an obstruction permit from the City prior to approval of the construction-related permit. Any temporary roadway closures required during construction of the Project would be subject to City of Oakland review and approval, to ensure consistency with City of Oakland requirements. The Project would also be reviewed by the Oakland Fire Department to ensure the provision of adequate emergency access ways to the project site for emergency vehicles. Therefore, consistent with the findings and conclusions of the 2014 BVDSP EIR, the potential impacts would be reduced to less-than-significant levels.

### 6.8.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2014 BVDSP EIR, the Project would not result in any new or more severe significant impacts related to hazards and hazardous materials than those identified in the 2014 BVDSP EIR. Implementation of **SCA HAZ-1**, **Hazards Materials Related to Construction**; **SCA HAZ-2**, **Hazardous Building Materials and Site Contamination**; **SCA AIR-4**, **Asbestos in Structures**; and **SCA TRA-1**, **Construction Activity in the Public Right-of-Way** (see Attachment A) would further ensure that potential impacts associated with hazardous conditions would be less than significant.

# 6.9 Hydrology and Water Quality

| Would the project: | Equal or Less Severity of Impact Previously Identified in the 2014 BVDSP EIR | Substantial Increase in Severity of Previously Identified Significant Impact in the 2014 BVDSP EIR | New Significant Impact |
|---|---|---|---|
| a. Violate any water quality standards or waste discharge requirements;<br>Result in substantial erosion or siltation on- or off-site that would affect the quality of receiving waters;<br>Create or contribute substantial runoff which would be an additional source of polluted runoff;<br>Otherwise substantially degrade water quality;<br>Fundamentally conflict with the City of Oakland Creek Protection Ordinance (OMC Chapter 13.16) intended to protect hydrologic resources. | ☒ | ☐ | ☐ |
| b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or proposed uses for which permits have been granted); | ☒ | ☐ | ☐ |
| c. Create or contribute substantial runoff which would exceed the capacity of existing or planned stormwater drainage systems;<br>Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course, or increasing the rate or amount of flow, of a creek, river, or stream in a manner that would result in substantial erosion, siltation, or flooding, both on- or off-site | ☒ | ☐ | ☐ |
| d. Result in substantial flooding on- or off-site;<br>Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, that would impede or redirect flood flows;<br>Place within a 100-year flood hazard area structures which would impede or redirect flood flows; or<br>Expose people or structures to a substantial risk of loss, injury, or death involving flooding. | ☒ | ☐ | ☐ |

## 6.9.1 2014 BVDSP EIR Findings

### *Water Quality, Stormwater, and Drainages and Drainage Patterns (Criteria 6.9a and 6.9c)*

The 2014 BVDSP EIR determined that development in the Plan area would result in construction activities that would require ground disturbance, resulting in impacts to hydrology and water quality. The 2014 BVDSP EIR identified several SCAs that would reduce impacts to a less-than-significant level by minimizing runoff and erosion, as well as sedimentation and contamination to stormwater and surface water during construction activities.

### *Use of Groundwater (Criterion 6.9b)*

Potable water is supplied to the Plan area through imported surface water by EBMUD, and groundwater is generally not used in the Plan area. The Plan area is primarily developed and covered in impervious surfaces, and the amount of water able to infiltrate the aquifer in the East Bay Plain groundwater basin would not substantially decrease with development under the BVDSP. Additionally, compliance with the C.3 provisions of the National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit for the Alameda County Clean Water Program would require that recharge rates at a project site be equivalent to the recharge rate at the site prior to development.

### *Flooding and Substantial Risks from Flooding (Criterion 6.9d)*

The 2014 BVDSP EIR identified the easternmost part of the Plan area along Glen Echo Creek as being situated in the 100-year flood zone, with the rest of the Plan area lying outside of the 100-year flood zone. SCAs that require regulatory permits prior to construction in a floodway or floodplain, along with preparation of hydrological calculations that ensure that structures will not interfere with the flow of water or increase flooding, would reduce impacts to less-than-significant levels.

## 6.9.2 Project Analysis

### *Water Quality, Stormwater, and Drainages and Drainage Patterns (Criteria 6.9a and 6.9c)*

The project site is currently developed with buildings and paved surface parking lots; impervious surfaces generally cover the entire site, totaling 40,401 square feet (approximately 0.93 acres). The Project would result in approximately 38,341 square feet of impervious surface area and 2,060 square feet of new pervious surface area on the project site. Implementation of SCA HYD-1, Erosion and Sedimentation Control Plan for Construction, would reduce potential erosion and sedimentation impacts to less-than-significant levels. Implementation of SCA GEO-1, Construction-Related Permit(s); and SCA UTIL-6, Storm Drain System would further reduce potential impacts related to sedimentation and erosion. Therefore, the potential for the Project to substantially or adversely alter drainage patterns or increase the flow of runoff is less than significant.

Implementation of SCA HYD-2, NPDES C.3 Stormwater Requirements for Regulated Projects, which requires the Project's Stormwater Control Plan to comply with Provision C.3 of the Municipal Regional Stormwater Permit issued under the National Pollutant Discharge Elimination System (NPDES), would reduce the potential impact of polluted runoff to a less-than significant level.

### *Use of Groundwater (Criterion 6.9b)*

Groundwater in the vicinity of the project site is not expected to be encountered as the measured groundwater table is assumed to be approximately 12 feet bgs. However as reported in the Geotech Report (see Section 6.6, *Geology, Soils, and Geohazards*), perched groundwater could be encountered at approximately 3.5 feet bgs at the site. Grading activities are anticipated to potentially reach a depth of 18 feet; therefore, dewatering during construction may be required. Dewatering during construction would be temporary and have only a localized and short-term effect on groundwater levels. Post-construction dewatering would not be required because any portion of the foundation and wall system below the groundwater table would be waterproofed to prevent infiltration.

As described in the 2014 BVDSP EIR, any groundwater dewatering would be limited in duration and would be subject to permits from EBMUD or the RWQCB, depending on if the discharge were to the sanitary or storm sewer system. If the water is not suitable for discharge to the storm drain (receiving water), dewatering effluent may be discharged to EBMUD's sanitary sewer system if special discharge criteria are met. These include, but are not limited to, application of treatment technologies or Best Management Practices (BMPs) which result in achieving compliance with the wastewater discharge limits. Discharges to EBMUD's facilities must occur under a Special Discharge Permit. In addition, per the EBMUD Wastewater Ordinance, "all dischargers, other than residential, whose wastewater requires special regulation or contains industrial wastes requiring source control shall secure a wastewater discharge permit" (Title IV, Section 1). EBMUD also operates its wastewater treatment facilities in accordance with Waste Discharge Requirements issued by the RWQCB, which require rigorous monitoring of effluent to ensure discharges do not adversely impact receiving water quality. Since proper management of dewatering effluent is covered by existing State and local regulations, and implementation of these regulations would protect receiving water quality, and the Project would be consistent with the 2014 BVDSP EIR.

#### *Flooding and Substantial Risks from Flooding (Criterion 6.9d)*

The project site is located outside of the 100-year flood hazard zone and therefore would not result in substantial flooding on- or off-site.[35]

### 6.9.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2014 BVDSP EIR, implementation of the Project would not result in any new or more severe significant impacts related to hydrology and water quality, groundwater, or flooding than those identified in the 2014 BVDSP EIR. The 2014 BVDSP EIR identified no mitigation measures related to hydrology and water quality, and none would be required for the Project. Implementation of **SCA HYD-1**, **Erosion and Sedimentation Control Plan for Construction**; **SCA HYD-2**, **NPDES C.3 Stormwater Requirements for Regulated Projects**; **SCA GEO-1**, **Construction-Related Permit(s)**; and **SCA UTIL-6**, **Storm Drain System** (see Attachment A) would ensure that potential impacts to hydrology and water quality would be less than significant. No mitigation measures are required.

---

[35] Federal Emergency Management Agency, 2009. Flood Insurance Rate Map, Alameda County, California and Incorporated Areas, Panel 59 of 725, Map Number 06001C0059G. Effective August 3.

## 6.10 Land Use, Plans, and Policies

| Would the project: | Equal or Less Severity of Impact Previously Identified in the 2014 BVDSP EIR | Substantial Increase in Severity of Previously Identified Significant Impact in the 2014 BVDSP EIR | New Significant Impact |
|---|---|---|---|
| a. Physically divide an established community; | ☒ | ☐ | ☐ |
| b. Result in a fundamental conflict between adjacent or nearby land uses; or | ☒ | ☐ | ☐ |
| c. Fundamentally conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect and actually result in a physical change in the environment. | ☒ | ☐ | ☐ |

### 6.10.1 2014 BVDSP EIR Findings

#### *Division of Existing Community, Conflict with Land Uses, or Land Use Plans (Criteria 6.10a through 6.10c)*

The 2014 BVDSP EIR determined that adoption and implementation of the BVDSP would have less than significant land use impacts related to the division of an established community, potential conflicts with nearby land uses, or applicable land use plans, policies, and regulations. The Plan area is in Oakland's Community Commercial District, an area intended to create, maintain and enhance areas suitable for a wide variety of commercial and institutional operations along the City's major corridors and in shopping districts or centers.

### 6.10.2 Project Analysis

The project site is within the Broadway Valdez District Mixed Use Commercial Zones 3 and 4 (D-BV-3 and D-BV-4) and has a Community Commercial General Plan land use designation. As described in the Project Description above, the intent of the D-BV-3 zone (Mixed Use Boulevard Zone) is to "create, maintain, and enhance areas with direct frontage and access along Broadway …" The ground-floor office and other commercial activities are allowed while upper stories are reserved for residential, office, or commercial activities. The intent of the D-BV-4 zone is to "create, maintain, and enhance areas that do not front Broadway …" It allows the widest range of uses on the ground floor while upper stories are intended either residential or commercial activities. The Project provides residential use along with retail space fronting Broadway and is therefore consistent with the intent of the zoning classifications.

The project site's General Plan land use classification is Community Commercial District which is intended to "create, maintain, and enhance areas with a wide range of commercial and institutional operations along the City's major corridors and in shopping districts or centers." Combined with the Project's retail component on the ground floor, new project residents will activate the area during both day and night and on weekdays and weekends and thereby enhance Broadway as a major commercial corridor.

The Project is located within the 85-foot height area of the BVDSP Plan area, which allows a density of one dwelling unit per 275 square feet of lot area. The Project is utilizing the State Affordable Housing Density Bonus and will include 23 residential units affordable to very low-income residents and which allows for a 50 percent density bonus by right. The application under the State Density Bonus law also includes a request for two development waivers for the open space and rear yard setback (along Webster Street), and a concession to the limitation of ground floor residential facilities along Broadway to allow the fitness room for residents.

The Oakland density bonus regulations, Planning Code Chapter 17.107, are a component of Oakland's zoning regulations; therefore, a project that receives a density bonus and otherwise complies with the applicable zoning requirements is consistent with the density provided in the applicable zoning designation. The density bonus regulations state that the granting of a density bonus shall not be interpreted in and of itself to require a General Plan amendment, zoning change, or other discretionary approval (Planning Code Section 17.107.040.F). This is consistent with the State density bonus law, which states that the granting of a density bonus "shall not require, or be interpreted, in and of itself, to require a general plan amendment, local coastal plan amendment, zoning change, or other discretionary approval" (Gov. Code Sec 65915(f)(5)). Further, the State Housing Accountability Act, Government Code Section 65589.5, clearly states that a city cannot use the receipt of a density bonus as a basis on which to find that a proposed housing development project is inconsistent with an applicable development standard. In other words, a project that is otherwise consistent with the applicable general plan and zoning requirements is eligible to receive a qualifying density bonus without also seeking a general plan amendment or rezoning. Based on the above, the Project would be consistent with the land use regulations in the General Plan and BVDSP.

### 6.10.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2014 BVDSP EIR, the Project would not result in any new or more severe significant impacts related to land use and planning than those identified in the 2014 BVDSP EIR. The 2014 BVDSP EIR did not identify any mitigation measures related to land use, and no City of Oakland SCAs directly addressing land use and planning apply to the Project.

## 6.11 Noise

| Would the project: | Equal or Less Severity of Impact Previously Identified in the 2014 BVDSP EIR | Substantial Increase in Severity of Previously Identified Significant Impact in the 2014 BVDSP EIR | New Significant Impact |
|---|---|---|---|
| a. Generate noise in violation of the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding construction noise, except if an acoustical analysis is performed that identifies recommend measures to reduce potential impacts. During the hours of 7 p.m. to 7 a.m. on weekdays and 8 p.m. to 9 a.m. on weekends and federal holidays, noise levels received by any land use from construction or demolition shall not exceed the applicable nighttime operational noise level standard; | ☒ | ☐ | ☐ |
| b. Generate noise in violation of the City of Oakland nuisance standards (Oakland Municipal Code Section 8.18.020) regarding persistent construction-related noise; | | | |
| c. Generate noise in violation of the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding operational noise; | ☒ | ☐ | ☐ |
| d. Generate noise resulting in a 5 dBA permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or, if under a cumulative scenario where the cumulative increase results in a 5 dBA permanent increase in ambient noise levels in the project vicinity without the project (i.e., the cumulative condition including the project compared to the existing conditions) and a 3-dBA permanent increase is attributable to the project (i.e., the cumulative condition including the project compared to the cumulative baseline condition without the project); | ☒ | ☐ | ☐ |
| e. Expose persons to interior $L_{dn}$ or CNEL greater than 45 dBA for multi-family dwellings, hotels, motels, dormitories and long-term care facilities (and may be extended by local legislative action to include single-family dwellings) per California Noise Insulation Standards (CCR Part 2, Title 24); | ☒ | ☐ | ☐ |
| Expose the project to community noise in conflict with the land use compatibility guidelines of the Oakland General Plan after incorporation of all applicable Standard Conditions of Approval (see Figure 1); | | | |
| Expose persons to or generate noise levels in excess of applicable standards established by a regulatory agency (e.g., occupational noise standards of the Occupational Safety and Health Administration [OSHA]); or | | | |
| f. During either project construction or project operation expose persons to or generate groundborne vibration that exceeds the criteria established by the Federal Transit Administration (FTA). | ☒ | ☐ | ☐ |

## 6.11.1 2014 BVDSP EIR Findings

### *Construction and Operational Noise and Vibration, Exposure of Receptors to Noise (Criteria 6.11a, 6.11b, 6.11d, and 6.11e)*

Overall, the 2014 BVDSP EIR determined that impacts related to construction and operations of development under the BVDSP would be less than significant. Construction-related activities associated with development under the BVDSP would temporarily increase ambient noise levels and vibration in the vicinity of construction sites. Implementation of City SCAs would minimize construction noise impacts by limiting hours of construction activities; require best available noise control technology on construction equipment; require vibration monitoring when construction activities take place adjacent to historic structures; and require project applicants and/or their contractors to notify residents in the project vicinity of construction activities and hours, and to track and respond to any noise complaints. The 2014 BVDSP EIR determined implementation of these measures would reduce construction impacts associated with extreme noise actions and vibration to less than significant levels.

During operation, mechanical equipment used in projects developed under the BVDSP would generate noise; however, equipment would be standardized and would be required to comply with the City of Oakland Noise Ordinance. Potential impacts would be reduced with implementation of SCAs that would require project design to achieve acceptable interior noise levels for buildings; limit ground-borne vibration at the project site; and require mechanical equipment to comply with applicable noise performance standards.

As described in the 2014 BVDSP EIR, noise measurements taken at various locations in the Plan area indicate that the ambient noise environment in the Plan area would be in the conditionally acceptable category for residential uses, and in the normally acceptable category for commercial uses—except for 24th Street, 25th Street, and Brooks Street in the Plan area. At these three locations, the noise environment would be in the normally acceptable category for residential uses. The 2014 BVDSP EIR identified an SCA that would ensure that project components are appropriately sound-rated to meet land use compatibility requirements throughout the Plan area.

### *Traffic Noise (Criterion 6.11c)*

The 2014 BVDSP EIR determined that development under the BVDSP would increase noise levels adjacent to nearby roads due to additional vehicles traveling throughout the Plan area. The EIR found that the increase in traffic from the Existing Plus Project scenario as compared to existing conditions would increase peak-hour noise levels by less than 5 A-weighted decibels (dBA) at all studied roadway segments, with the exception of 24th Street east of Broadway and 26th Street east of Broadway, where the increase in roadside noise would be 6.4 and 5.1 dBA, respectively. In addition, the increase in traffic noise between the Cumulative No Project (2035) and Cumulative Plus Project (2035) scenarios would be 5.3 dBA along 24th Street east of Broadway, and 4.9 dBA along 26th Street east of Broadway. The cumulative increases in traffic-generated noise could also combine with stationary noise sources, such as rooftop mechanical equipment, to result in significant cumulative impacts. The EIR determined that no feasible mitigation measures are available, and that these impacts would remain significant and unavoidable.

## 6.11.2 Project Analysis

The Project would result in the construction of 220 residential units and 1,961 square feet of retail uses within Subdistrict 4 of the North End subarea of the BVDSP. The project site is included in the BVDSP Plan area and the level of development currently proposed for the Project is within the broader development assumptions and thus within the impact envelope of the reasonably foreseeable maximum Development Program analyzed in the EIR.

The 2014 BVDSP EIR allows for the distribution of density and development type between categories and sub-areas as long as such development conforms to the general traffic generation parameters established by the Plan. Therefore, the Project was accounted for in the 2014 BVDSP EIR and is within the impact envelope of the reasonably foreseeable maximum development program analyzed by the 2014 BVDSP EIR.

### *Construction Noise and Vibration (Criteria 6.11a, 6.11b, and 6.11f)*

#### Construction Noise

Construction activities for the Project would be expected to occur over approximately 24 months and would entail demolition of the existing structures at the site, site preparation, grading and excavation, building construction, paving and finishing interiors and exteriors. Required implementation of applicable City of Oakland SCAs would minimize construction noise by limiting hours of construction activities, requiring best available noise control technology and notification of any local residents of construction activities, and by tracking and responding to noise complaints. Specifically, Project construction would comply with the following SCAs: SCA NOI-1, Construction Days/Hours which limits construction hours mirroring the City’s Noise Ordinance requirements; SCA NOI-2, Construction Noise which requires projects to implement construction noise reduction measures; SCA NOI-3, Extreme Construction Noise which requires the preparation of a Construction Noise Management Plan with site-specific noise attenuation measures to reduce impacts to specific receptors and notification to property owners and occupants located within 300 feet of the construction activities; and SCA NOI-4, Construction Noise Complaints which sets a protocol for receiving and addressing construction noise complaints from the public. Though the Project would not include any construction activities that generate noise levels above 90 dBA, a Construction Noise Management Plan has been prepared for the Project and is included as **Appendix D**. Construction activities proposed as part of the project would be similar to those analyzed in the BVDSP EIR resulting in similar impacts. Consistent with the findings of the BVDSP EIR, implementation of identified SCAs would reduce construction noise impacts to nearby receptors to a less than significant level.

#### Construction Vibration

The Project proposes residential uses, but the project site is not located adjacent to any active rail lines. Therefore, City SCA 69, Exposure to Vibration, would not apply to the Project. The Project would involve construction that includes the use of heavy off-road equipment to perform earthwork in proximity to 2943 Broadway, the property to the north that contains an auto and transmission repair shop in a building near the adjoining property line. Therefore, City SCA NOI-7, Vibration Impacts on Adjacent Structures or Vibration-Sensitive Activities, requiring a Vibration Analysis, would be required for the Project and would reduce potential impacts to a less than significant level.

### *Operational Noise (Criteria 6.11c and 6.11d)*

#### Noise from Project Stationary Sources

Once operational, the Project would include stationary sources such as heating, ventilating, and air conditioning (HVAC) mechanical equipment. Such equipment would be operated within the restrictions of the City's Noise Ordinance. Chapter 17.120.050 of the City of Oakland Planning Code specifies the maximum sound level received at residential, public open spaces and commercial land uses. Development of the Project would be required to comply with SCA NOI-5, Operational Noise, which ensures compliance with operational noise limits in the City's Noise Ordinance and would result in a less-than-significant impact with respect to noise from stationary sources on the project site. This would be consistent with the findings of the 2014 BVDSP EIR.

#### Traffic Noise

Based on the traffic analysis prepared by Fehr & Peers and as described below in Section 6.14, *Transportation and Circulation*, the Project conforms to the traffic generation parameters for the Plan area analyzed in the 2014 BVDSP EIR. Therefore, the 2014 BVDSP EIR accounted for traffic generated by development such as the Project within its analysis. Nevertheless, increase in operational traffic noise due to the Project was analyzed based on existing and projected traffic volumes at the two intersections that would receive a significant increase in vehicular traffic from the Project:

- Broadway and 29th Street
- Webster Street and 29th Street

**Table NOI-1** summarizes the results of this analysis. As shown in the table, Project traffic would not generate noise resulting in a 5 dBA permanent increase in ambient noise levels in the project vicinity above levels existing without the Project.

In the 2014 BVDSP EIR, modeled Existing Plus Project traffic noise levels and cumulative plus project noise levels were compared with modeled existing traffic noise levels (2012) as the baseline. This method of analysis is conservative because the actual existing noise environment includes other, non-vehicle sources that may result in higher ambient noise levels. Using this conservative methodology, the impact from increased traffic noise and cumulative traffic noise in the Plan area along 24th and 26th Streets *east* of Broadway were identified as significant and unavoidable in the 2014 BVDSP EIR. Increase in traffic noise was found to be less than significant at other intersections analyzed including intersections in the vicinity of the proposed Project. Consistent with the finding of the 2014 BVDSP EIR, Table NOI-1 shows that under the cumulative scenario, increase in traffic with the Project would not result in a 5 dBA permanent increase in ambient noise levels in the project vicinity without the Project (i.e., the cumulative condition including the project compared to the existing conditions) at both intersections impacted by Project traffic.[36]

**TABLE NOI-1**
**TRAFFIC NOISE LEVELS ALONG ROADWAYS AFFECTED BY PROJECT TRAFFIC**

| | Traffic Noise Level from a distance of 50 feet from Center of Roadway, dBA, DNL[a, b] | | | | | |
|---|---|---|---|---|---|---|
| **Roadway Segment** | **Existing (A)** | **Existing + P (B)** | **Project Increase over Existing (B-A)** | **2040 NP (C)** | **2040 + P (D)** | **Cumulative Project Increase over Existing (D-A)** |
| **Weekday P.M. Peak-Hour Noise Levels** | | | | | | |
| 29th Street east of Broadway | 63.7 | 63.7 | 0.0 | 65.3 | 65.3 | +1.6 |
| 29th Street between Broadway and Webster Street | 63.2 | 63.4 | +0.2 | 64.8 | 64.9 | +1.7 |
| 29th Street west of Webster Street | 61.6 | 61.7 | +0.1 | 63.1 | 63.2 | +1.6 |

NOTES:
dBA = A-weighted decibels

a. Noise levels were determined using algorithms from the FHWA's *Traffic Noise Model Technical Manual*.
b. Projected traffic volumes used in this noise analysis assumed the Project would include 1,696 square feet of retail space. Since this analysis was prepared, the proposed area of retail space increased by approximately 265 square feet to 1,961 square feet which would not increase estimated daily project trips. Any associated change in traffic volumes at the specific study intersections would not make a meaningful difference in associated traffic noise levels and both project and cumulative traffic noise levels along roadways affected by project traffic would remain well below the significance thresholds.

SOURCES: Modeling performed by Environmental Science Associates in 2021 based on traffic data provided by Fehr & Peers.

Therefore, the Project is not anticipated to substantially increase the severity of significant impacts identified in the 2014 BVDSP EIR or result in new significant impacts. The Project is consistent with the anticipated Plan area development and trip generation estimates.

### *Exposure to Project receptors (Criterion 6.11e)*

The Project proposes sensitive land uses in the form of residential uses that would be subject to the 45 dBA interior noise standard per California Noise Insulation Standards (CCR Part 2, Title 24). Oakland's land use compatibility guidelines specify the community ambient noise level that would be considered "normally acceptable", "conditionally acceptable", "normally unacceptable" and "clearly unacceptable" for various uses. The Land Use Compatibility standards of the City's General Plan are exterior noise standards which allow for an assessment of exterior noise levels to determine whether standard construction techniques would be sufficient to achieve appropriate noise levels for each land use. For multifamily dwellings, hotels, motels, dormitories and long-term care facilities, the land use compatibility standard of 60 dBA for normally acceptable environments assumes that standard construction techniques would achieve 15 dBA of attenuation and provide for an interior environment of 45 dBA. Traffic is the primary source of noise at the project site. Based on results of the traffic noise modeling shown in Table NOI-1 above, existing noise levels at the

---

[36] This analysis relied on an earlier project proposal including 1,696 square feet rather than the 1,961 square feet currently proposed. Considering the increase in traffic noise with the Project would be below the 5 dBA permanent increase threshold, the incremental increase of 265 square feet of retail space associated vehicle traffic and traffic noise would not result in a meaningful change to the significance of the impact.

project site are above 60 dBA. Therefore, SCA NOI-6, Exposure to Community Noise, would apply to the Project to ensure that appropriate sound-rated assemblies, and/or other features/measures would be implemented to ensure that interior noise levels are reduced to 45 dBA. Consequently, the Project would not be anticipated to substantially increase the severity of significant impacts identified in the 2014 BVDSP EIR or result in new significant impacts with respect to exposure of Project receptors to excessive noise levels. This would be consistent with the findings of the 2014 BVDSP EIR.

### 6.11.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2014 BVDSP EIR and considered throughout this analysis, implementation of the Project would not substantially increase the severity of impacts identified in the 2014 BVDSP EIR, nor would it result in new significant impacts related to noise that were not identified in the 2014 BVDSP EIR. Therefore, Project construction and operation would result in less-than-significant impacts relating to noise. **SCA NOI-1**, **Construction Days/Hours**; **SCA NOI-2**, **Construction Noise**; **SCA NOI-3**, **Extreme Construction Noise**; **SCA NOI-4**, **Construction Noise Complaints**; **SCA NOI-5**, **Operational Noise**; **SCA NOI-6, Exposure to Community Noise**; and **SCA NOI-7, Vibration Impacts on Adjacent Structures of Vibration-Sensitive Activities** (see Attachment A) would be applicable and would be implemented with the Project to ensure that noise-related impacts would be less than significant. No mitigation measures are required.

# 6.12 Population and Housing

| Would the project: | Equal or Less Severity of Impact Previously Identified in the 2014 BVDSP EIR | Substantial Increase in Severity of Previously Identified Significant Impact in the 2014 BVDSP EIR | New Significant Impact |
|---|---|---|---|
| a. Induce substantial population growth in a manner not contemplated in the General Plan, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extensions of roads or other infrastructure), such that additional infrastructure is required but the impacts of such were not previously considered or analyzed; | ☒ | ☐ | ☐ |
| b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere in excess of that contained in the City's Housing Element; or<br>Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere in excess of that contained in the City's Housing Element. | ☒ | ☐ | ☐ |

## 6.12.1 2014 BVDSP EIR Findings

### *Population Growth and Displacement of Housing and People (Criteria 6.12a and 6.12b)*

The 2014 BVDSP EIR determined that impacts related to population growth and displacement of housing and people would be less than significant. Development under the BVDSP would add up to 1,800 housing units and 3,230 residents to the Plan area.[37] This would represent approximately two percent of the total population growth projected for Oakland through 2035 and would not be considered substantial. The Development Program also includes approximately 1.9 million square feet of commercial space. Businesses and other activities in the developments would support employment of approximately 4,500 jobs at full occupancy. This increase in employment would contribute to employment growth expected in Oakland in the future. The amount of employment growth anticipated from development of the BVDSP would account for about five percent of total employment growth projected for Oakland between 2010 and 2035 and nearly 2 percent to the total employment anticipated for Oakland in 2035. Employment growth resulting from development under the BVDSP would support the growth of households and population to provide the additional workers. Although adoption and development under the BVDSP could require the demolition of existing housing units, existing regulations such as Housing Element policies, the Ellis Act (Government Code Sections 7060 through 7060.7), and the City of Oakland's Ellis Act Ordinance (Oakland Municipal Code Sections 8.22.400 through 8.22.480) would prevent significant impacts.

---

[37] As shown in Table TRA-3, there are 3,821 net new housing units, approximately 295,400 gross square feet of net new commercial uses, and 159 net new hotel rooms constructed and/or proposed for development under the BVDSP to date. The 2014 BVDSP EIR allows for the distribution of density and development type between categories and sub-areas as long as such development conforms to the general traffic generation parameters established by the Plan.

## 6.12.2 Project Analysis

The Project would demolish the existing buildings on the project site and would construct a 220-unit, seven-story residential building with approximately 1,961 square feet of retail space. The Project would not demolish or displace any existing housing units and therefore would not necessitate the construction of replacement housing. The Project would provide a mix of studio, one-, and two-bedroom units for a total of 220 units (23 of which are to be designated as affordable to very low-income residents). Based on population generation rates used in the 2014 BVDSP EIR, the new units would result in result in a net increase of approximately 395 residents.[38] The retail component is anticipated to provide approximately 4 new retail employees.[39]

The Project site is currently occupied by the Mercedes-Benz of Oakland customer service center and showroom. The business applied and was approved to relocate the existing on-site business activities to the ground floor of 3093 Broadway, and the auto service center will remain across Webster Street at its current location. No change in employment numbers is anticipated.

As discussed in Section 6.10, *Land Use, Plans, and Policies* above, the Project would be consistent with the land use designations and regulations in the General Plan and BVDSP. Population growth in the Plan Area through new housing is a key component of the vision for downtown in the General Plan. Specifically, the General Plan Land Use and Housing policies and City zoning regulations encourage higher-density infill housing in areas well-served by regional transportation/transit facilities and close to downtown employment, such as the BVDSP Plan Area. According to the *Plan Bay Area 2050*, north Alameda County is projected to have an increase of approximately 107,000 housholds between 2015 and 2050. The Project would contribute a small percentage to the estimated increase in households and associated population growth. Thus, the Project would not result in "substantial" population growth in comparison to the amount of population growth anticipated for north Alameda County and Oakland in the future. As such, the Project would not result in substantial population growth in a manner not contemplated in the Plan Bay Area 2050, the General Plan or BVDSP due to the proposed new residential and retail uses.

## 6.12.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2014 BVDSP EIR, the Project would not result in any new or more severe significant impacts related to population and housing than those identified in the 2014 BVDSP EIR. The BVDSP did not identify any mitigation measures related to population and housing, and none would be required for the Project. Nonetheless, the City's required **SCA POP-1**, **Affordable Housing Impact Fee** (see Attachment A) would further reduce less-than-significant effects. Overall, the Project's potential impacts to population and housing would be less than significant. No mitigation measures are required.

---

[38] The BVDSP EIR assumed an average four percent vacancy rate and approximately 1.87 residents per household.

[39] Net jobs are calculated using a standard retail generation rate of 500 square feet per employee and does not account for jobs eliminated due to the removal of existing uses (1,961 retail square feet ÷ 500 square feet per employee = approximately 4 new retail employees).

# 6.13 Public Services, Parks and Recreation Facilities

| Would the project: | Equal or Less Severity of Impact Previously Identified in the 2014 BVDSP EIR | Substantial Increase in Severity of Previously Identified Significant Impact in the 2014 BVDSP EIR | New Significant Impact |
|---|---|---|---|
| a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:<br>• Fire protection;<br>• Police protection;<br>• Schools; or<br>• Other public facilities. | ☒ | ☐ | ☐ |
| b. Increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or<br>Include recreational facilities or require the construction or expansion of recreational facilities which might have a substantial adverse physical effect on the environment. | ☒ | ☐ | ☐ |

## 6.13.1 2014 BVDSP EIR Findings

### *Public Services and Parks and Recreation (Criteria 6.13a and 6.13b)*

The 2014 BVDSP EIR determined that impacts related to fire and police protection, schools, and other public facilities would be less than significant. The 2014 BVDSP EIR determined that the increased density and population in the Plan area would not result in an increased demand for police and fire services such that new or physically altered facilities would be required for either, the construction of which could have significant environmental effects. Adherence to the General Plan's Open Space, Conservation and Recreation Element policies 3.1, 3.3, and 3.10 would reduce potential impacts to recreational facilities. In addition, any increases in need for police protection, fire protection, schools, or other public facilities would be mitigated by adherence to General Plan policies N.12.1, N.12.2, N.12.5, FI-1, and FI-2. No new parks or recreational facilities, or expansion of existing parks or recreational facilities, were determined to be required as a result of adoption and development under the BVDSP.

## 6.13.2 Project Analysis

The Project would add approximately 1,961 square feet of retail space and up to 220 residential units along with associated residential amenities, open space, and off-street parking. The Project is consistent with the BVDSP, which did not prescribe or assume exact land uses on a site-by-site basis and instead established a maximum density based on trip generation and traffic capacity. The Project is within that trip generation and traffic capacity (see Section 6.14, *Transportation* *and Circulation*, below) and the Project uses and intensity were analyzed in the 2014 BVDSP EIR. As noted in the BVDSP EIR, the projected growth in the plan area could cause a minor increase in demand for police and fire protection services; however, as described in the 2014 BVDSP EIR, adherence to General Plan policies N.12.1, N.12.2, N.12.5, FI-1, and FI-2 would reduce the potential for deficiencies. The Project's increase in demand for public services was considered in the 2014 BVDSP EIR analysis, which did not identify a need for any additional facilities for police or fire services as a result of the projected growth under the Plan.

As described above, no new parks or recreational facilities, nor expansion of existing parks or recreational facilities, would be required as a result of adoption and development under the BVDSP. The Project would provide approximately 19,261 square feet of private and shared open space comprised of courtyards on the second floor; a roof deck on the seventh level; and additional private group community opens space on levels one, two, and seven. Amenities would include a fitness room, lounge, and club.

SCA PUB-1, Capital Improvement Fee, requiring the payment of the appropriate development impact fees, would also be applicable to the Project and would further reduce potential impacts.

The Project would increase student enrollment at OUSD schools. Pursuant to Senate Bill 50, the project applicant would be required to pay school impact fees, which are established to offset potential impacts from new development on school facilities. This would be deemed full and complete mitigation.

## 6.13.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2014 BVDSP EIR, the Project would not result in any new or more severe significant impacts related to public services and parks and recreation than those identified in the 2014 BVDSP EIR. The BVDSP did not identify any mitigation measures related to public services and parks and recreation, and none would be required for the Project. Nonetheless, the City's required **SCA PUB-1**, **Capital Improvements Impact Fee** (see Attachment A) applies the Project and would further reduce less-than-significant effects. No mitigation measures are required.

# 6.14 Transportation and Circulation

| Would the project: | Equal or Less Severity of Impact Previously Identified in the 2014 BVDSP EIR | Substantial Increase in Severity of Previously Identified Significant Impact in the 2014 BVDSP EIR | New Significant Impact |
|---|---|---|---|
| a. Conflict with a plan, ordinance, or policy addressing the safety or performance of the circulation system, including transit, roadways, bicycle lanes, and pedestrian paths (except for automobile level of service or other measures of vehicle delay) | ☒ | ☐ | ☐ |
| b. Cause substantial additional vehicle miles traveled (VMT) per capita, per service population, or other appropriate efficiency measure | ☒ | ☐ | ☐ |
| c. Substantially induce additional automobile travel by increasing physical roadway capacity in congested areas (i.e., by adding new mixed-flow lanes) or by adding new roadways to the network. | ☒ | ☐ | ☐ |

## 6.14.1 2014 BVDSP EIR Findings

The 2014 BVDSP EIR analyzed transportation and circulation conditions in and around the Plan area under six different scenarios, which represent three time periods (existing conditions, Year 2020, and Year 2035) with and without the BVDSP Development Program and associated transportation improvements. For the purposes of this analysis, these scenarios are referred to as: 1) existing conditions; 2) existing conditions plus full Development Program (full buildout of the Broadway Valdez Development Program); 3) Year 2020 no Project; 4) Year 2020 plus Phase 1 of Development Program (partial buildout of the Development Program); 5) Year 2035 no Project; and 6) Year 2035 plus full Development Program (full buildout of the Development Program).

The 2014 BVDSP EIR determined that no significant impacts to transit, pedestrian, bicycle, and other related topics would occur under any of the scenarios; therefore, these topics are not further discussed herein.

The EIR identified 28 significant impacts on level of service (LOS) at intersections serving the Plan area. For each impact and associated mitigation measure(s), the EIR identified specific triggers based on the level of development in the entire Plan area or specific subdistrict(s). Several of these impacts and mitigation measures would be triggered by the Project combined with other planned developments. These impacts and mitigation measures are further described below.

The 2014 BVDSP EIR identified SCAs that require city review and approval of all improvements in the public right-of-way, reduction of vehicle traffic and parking demand generated by development projects, and construction traffic and parking management, which will also address transportation and circulation impacts.

## 6.14.2 Project Analysis

On September 21, 2016, the City of Oakland's Planning Commission directed staff to update the City of Oakland's California Environmental Quality Act (CEQA) Thresholds of Significance Guidelines related to transportation impacts in order to implement the directive from Senate

Bill 743 (Steinberg 2013) to modify local environmental review processes by removing automobile delay, as described solely by LOS or similar measures of vehicular capacity or traffic congestion, as a significant impact on the environment pursuant to CEQA. The Planning Commission direction aligns with the final guidance from the Governor's Office of Planning and Research and the City's approach to transportation impact analysis with adopted plans and polices related to transportation, which promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.

Thus, this Section evaluates the impacts of the Project with respect to VMT. In addition, consistent with previous developments proposed under the BVDSP, this Section also evaluates the consistency of the Project, combined with the other developments currently approved, proposed, or under construction in the Plan area, with the approved 2014 BVDSP EIR.[40]

### *Conflicts with Plans, Ordinances, or Policies Relating to Safety, or Performance of the Circulation System (Criteria 14.a and 14.b)*

While the City now relies on VMT under its current CEQA Thresholds of Significance; the threshold used for the 2014 BVDSP EIR was based on transportation and circulation assumptions that analyzed LOS. For this reason, this section of the CEQA Checklist summarizes the findings of the transportation analysis completed for the Project in comparison to what was provided under the 2014 BVDSP EIR, in addition to the required VMT analysis. After presenting the VMT impacts of the Project, the analysis describes the 2014 BVDSP EIR analysis related to transportation and circulation impacts and then compares the Project's impacts, combined with the other developments currently approved, proposed, or under construction in the Plan area, to those analyzed in the EIR.

#### Vehicle Miles Traveled (VMT)

Many factors affect travel behavior, including density of development, diversity of land uses, design of the transportation network, access to regional destinations, distance to high-quality transit, development scale, demographics, and transportation demand management. Typically, low-density development that is located at a great distance from other land uses, in areas with poor access to non-single occupancy vehicle travel modes, generate more automobile travel compared to development located in urban areas, where a higher density of development, a mix of land uses, and travel options other than private vehicles are available.

Considering these travel behavior factors, most of Oakland has a lower VMT per capita and VMT per employee ratios than the nine-county San Francisco Bay Area region. In addition, some neighborhoods of the City have lower VMT ratios than other areas of the City.

#### Estimating VMT

Neighborhoods within Oakland are expressed geographically in transportation analysis zones, or TAZs. The Metropolitan Transportation Commission (MTC) Travel Model includes 116 TAZs within Oakland that vary in size from a few city blocks in the downtown core, to multiple blocks in

---

[40] The City still uses LOS analysis to determine project-specific impacts on intersections, crosswalks, neighborhood noise, and other impacts, but does not use this analysis for CEQA purposes.

outer neighborhoods, to even larger geographic areas in lower density areas in the hills. TAZs are used in transportation planning models for transportation analysis and other planning purposes.

The MTC Travel Model is a model that assigns all predicted trips within, across, or to or from the nine-county San Francisco Bay Area region onto the roadway network and the transit system, by mode (single-driver and carpool vehicle, biking, walking, or transit) and transit carrier (bus, rail) for a particular scenario.

The travel behavior from MTC Travel Model is modeled based on the following inputs:

- Socioeconomic data developed by the Association of Bay Area Governments (ABAG);
- Population data created using 2000 US Census and modified using the open source PopSyn software;
- Zonal accessibility measurements for destinations of interest;
- Travel characteristics and automobile ownership rates derived from the 2000 Bay Area Travel Survey; and
- Observed vehicle counts and transit boardings.

The daily VMT output from the MTC Travel Model for residential and office uses comes from a tour-based analysis. The tour-based analysis examines the entire chain of trips over the course of a day, not just trips to and from the project site. In this way, all of the VMT for an individual resident or employee is included; not just trips into and out of the person's home or workplace. For example: a resident leaves her apartment in the morning, stops for coffee, and then goes to the office. In the afternoon she heads out to lunch, and then returns to the office, with a stop at the drycleaners on the way. After work she goes to the gym to work out, and then joins some friends at a restaurant for dinner before returning home. The tour-based approach would add up the total amount driven and assign the daily VMT to this resident for the total number of miles driven on the entire "tour".

Based on the MTC Travel Model, the regional average daily household VMT per resident is 15.0 under 2020 conditions and 13.8 under 2040 conditions.

### Thresholds of Significance

According to the *City of Oakland Transportation Impact Review Guidelines* dated April 14, 2017, the following are thresholds of significance related to substantial additional VMT:

- For residential projects, a project would cause substantial additional VMT if it exceeds existing regional household VMT per capita minus 15 percent.
- For office projects, a project would cause substantial additional VMT if it exceeds the existing regional VMT per employee minus 15 percent.
- For retail projects, a project would cause substantial additional VMT if it exceeds the existing regional VMT per employee minus 15 percent.

VMT impacts would be less than significant for a project if any of the identified screening criteria are met:

1. **Small Projects:** The project generates fewer than 100 vehicle trips per day;
2. **Low-VMT Areas:** The project meets map-based screening criteria by being located in an area that exhibits below threshold VMT, or 15 percent or more below the regional average; or
3. **Near Transit Stations:** The project is located in a Transit Priority Area or within a one-half mile of a Major Transit Corridor or Stop and satisfies the following:[41]
    - Has a Floor Area Ratio (FAR) of more than 0.75;
    - Includes less parking for use by residents, customers, or employees of the project than other typical nearby uses, or more than required by the City (if parking minimums pertain to the site) or allowed without a conditional use permit (if minimums and/or maximums pertain to the site); and
    - Is consistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Metropolitan Transportation Commission).

### VMT Screening Analysis

The Project satisfies the Low-VMT Area (number 2) and Near Transit Station (number 3) screening criteria, as detailed below.

#### Criterion Number 1: Small Projects

The Project would generate more than 100 trips per day and therefore does not meet criterion number 1.

#### Criterion Number 2: Low-VMT Area

**Table TRA-1** shows the 2020 and 2040 VMT for TAZ 979, the TAZ in which the Project is located as well as applicable VMT thresholds of 15 percent below the regional average. Considering that the 1,700 square feet of retail provided by the Project is less than 80,000 square feet, the retail is considered to be local serving and is presumed to not generate substantial additional VMT.

**TABLE TRA-1**
**DAILY VEHICLE MILES TRAVELED SUMMARY**

| | Bay Area | | | | TAZ 979 | |
|---|---|---|---|---|---|---|
| | 2020 | | 2040 | | | |
| **Land Use** | **Regional Average** | **Regional Average minus 15%** | **Regional Average** | **Regional Average minus 15%** | **2020** | **2040** |
| Residential (VMT per capita)[a] | 15.0 | 12.8 | 13.8 | 11.7 | 5.3 | 5.0 |

NOTE:

a. MTC Model results at mtc.maps.arcgis.com/apps/webappviewer/index.html?id=5dac76d69b3d41e583882e146491568b, accessed June 2021.

SOURCE: Fehr & Peers, 2021

---

[41] Major transit stop is defined in CEQA Section 21064.3 as a 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.

As shown in Table TRA-1, the 2020 and 2040 estimated averages of daily VMT per capita in the Project TAZ are less than the regional averages minus 15 percent, satisfying criterion number 2.

### Criterion Number 3: Near Transit Stations

The Project would be located more than 0.5 miles walking distance from the 19th Street BART station but is served by several frequent bus routes. The project site is on Broadway which is served by Route 51A with 10-minute peak headways, and about 0.25 miles from Telegraph Avenue which is served by Route 6 with 12-minute peak headways. These routes are considered high-quality transit corridors because they each provide fixed route bus services with service intervals no longer than 15 minutes during peak commute hours.[42]The Project would satisfy criterion number 3 because it would also meet the following three conditions:

- The Project would have a FAR of 4.9, which is greater than 0.75.
- The Project would include 110 parking spaces, corresponding to 0.5 spaces per residential unit. Typical motor vehicle ownership for residential uses in the Project area is estimated to be 0.76 spaces per unit.[43] The City of Oakland Municipal Code Section 17.116.060 requires a minimum of 0.75 spaces per unit for multi-family residential developments in the BV-3 and BV-4 zones with no maximum requirements.[44] The Municipal Code Section 17.116.080 does not require any parking for the retail component of the Project. Therefore, the Project would not provide more parking than other typical nearby uses, nor would it provide more parking than required by the Municipal Code.
- The Project is located within the Downtown Oakland & Jack London Square Priority Development Area (PDA) as defined by Plan Bay Area and is therefore consistent with the region's Sustainable Communities Strategy

### VMT Screening Conclusion

The Project would satisfy the Low-VMT Area (number 2) and the Near Transit Stations (number 3) criteria and is therefore presumed to have a less–than-significant impact on VMT. Furthermore, implementation of SCA TRA-4, which requires the Project to develop and implement a Transportation and Parking Demand Management (TDM) Plan (provided in **Appendix F**), would further reduce the VMT effects of the Project.

### Project Consistency Analysis

**Table TRA-2** summarizes the trip generation for the Project. The trip generation accounts for the trips generated by the existing automobile showroom at the site that would be eliminated. The Project is estimated to generate approximately 48 net new vehicle trips during the weekday AM peak hour (11 inbound and 37 outbound) and approximately 59 net new vehicle trips during the weekday PM peak hour (36 inbound and 23 outbound).

---

[42] See PRC Section 21155 and CEQA Guidelines, Appendix M

[43] Based on US Census data from the 2019 American Community Survey (ACS) 5-Year Estimates for average vehicle ownership of renter households (Table B25044) in Alameda County Census Tracts 4013.

[44] The Municipal Code Section 17.116.110 allows up to 50 percent reduction in the minimum parking requirement in transit accessible areas with implementation of TDM measures.

### TABLE TRA-2
### 2929 BROADWAY AUTOMOBILE TRIP GENERATION

| Land Use | Units [a] | ITE Code | Daily | Weekday AM Peak Hour | | | Weekday PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | In | Out | Total | In | Out | Total |
| **Project** | | | | | | | | | |
| Residential | 220 DU | 221 [b] | 1,200 | 21 | 58 | 79 | 59 | 38 | 97 |
| Retail | 2.0 KSF | 820 [c] | 70 | 1 | 1 | 2 | 3 | 4 | 7 |
| Subtotal | | | 1,270 | 22 | 59 | 81 | 62 | 42 | 104 |
| Non-Auto Reduction (-37%) [d] | | | -470 | -8 | -22 | -30 | -23 | -15 | -38 |
| *Total New Project Trips* | | | *800* | *14* | *37* | *51* | *39* | *27* | *66* |
| **Existing Uses** | | | | | | | | | |
| Auto Showroom | 24.1 KSF | 840/ 943 [e] | -280 | -4 | -1 | -5 | -4 | -7 | -11 |
| Subtotal | | | -280 | -4 | -1 | -5 | -4 | -7 | -11 |
| Non-Auto Reduction (-37%) [d] | | | 100 | 1 | 1 | 2 | 1 | 3 | 4 |
| *Total Existing Trips* | | | -180 | -3 | 0 | -3 | -3 | -4 | -7 |
| **Net New Project Trips** | | | **620** | **11** | **37** | **48** | **36** | **23** | **59** |

NOTES:

a. DU = Dwelling units, KSF = 1,000 square feet.

b. ITE *Trip Generation* (10th Edition) land use category 221 (Multi-Family [Mid-Rise]):
Daily: T = 5.44*(X)
AM Peak Hour: T = 0.36*(X) (26% in, 74% out)
PM Peak Hour: T = 0.44*(X) (61% in, 39% out)

c. ITE *Trip Generation* (10th Edition) land use category 820 (Shopping Center):
Daily: T = 37.75*(X)
AM Peak Hour: T = 0.94*(X) (62% in, 38% out)
PM Peak Hour: T = 3.81*(X) (48% in, 52% out)

d. The 36.7% reduction is based on the City of Oakland's *Transportation Impact Review Guidelines* for development in an urban environment between 0.5 and 1.0 miles of a BART Station.

e. ITE does not provide trip generation rates for an automobile showroom. Since an auto dealership includes both a showroom and a service center and ITE provides data for both uses, the trip generation for the showroom is estimated by subtracting the estimated ITE-based trips for a service center from the estimated ITE-based trips for an auto dealership based on the following:

ITE *Trip Generation* (10th Edition) land use category 840 (Automobile Sales [New]):
Daily: T = 27.84*(X)
AM Peak Hour: T = 2.15*(X) (73% in, 27% out)
PM Peak Hour: T = 1.80*(X)+21.6 (40% in, 60% out)
ITE *Trip Generation* (10th Edition) land use category 943 (Automobile Parts and Service Center):
Daily: T = 16.28*(X)
AM Peak Hour: T = 1.96*(X) (73% in, 27% out)
PM Peak Hour: T = 2.26*(X) (40% in, 60% out)

SOURCE: Fehr & Peers, 2021.

## Project and Development Program Analyzed in the 2014 BVDSP EIR

**Table TRA-3** lists the development projects within BVDSP Plan area that have been constructed, are currently under construction, approved, and/or proposed, including the Project. Table TRA-3 also accounts for the existing uses on each site that would be demolished.

## Table TRA-3
## Developments in the Broadway Valdez District Specific Plan

| Development | BVDSP Subdistrict | Status | Proposed Development[a] | | | | Active Existing Uses[b] | Net Development[a,c] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Residential (DU) | Retail (KSF) | Office (KSF) | Hotel (Room) | | Residential (DU) | Retail (KSF) | Office (KSF) | Hotel (Room) | Other (KSF) |
| 3001 Broadway (Sprouts) | 5 | Constructed | 0 | 36.0 | 0 | 0 | Parking Lot | 0 | 36.0 | 0 | 0 | 0 |
| 2345 Broadway (HIVE) | 1 | Constructed | 105 | 30.3 | 64.0 | 0 | 11.4 KSF Auto Repair and 30.2 KSF Warehouse | 105 | 30.3 | 64.0 | 0 | -41.6 |
| 2425 Valdez St. | 3 | Constructed | 71 | 1.5 | 0 | 0 | Parking Lot | 71 | 1.5 | 0 | 0 | 0 |
| 3093 Broadway | 5 | Constructed | 423 | 20.0 | 0 | 0 | 40.2 KSF Auto Dealership | 423 | -20.2 | 0 | 0 | 0 |
| 2302 Valdez St. | 2 | Constructed | 196 | 31.5 | 0 | 0 | 3.6 KSF Auto Repair | 196 | 31.5 | 0 | 0 | -3.6 |
| 2315 Valdez/2330 Webster St. | 1 | Constructed | 235 | 16.0 | 0 | 0 | Parking Lot | 235 | 16.0 | 0 | 0 | 0 |
| 2630 Broadway | 3 | Constructed | 255 | 37.5 | 0 | 0 | Parking Lot/ Vacant | 255 | 37.5 | 0 | 0 | 0 |
| 3416 Piedmont Ave. | 5 | Constructed | 9 | 1.5 | 0 | 0 | Vacant Lot | 9 | 1.5 | 0 | 0 | 0 |
| 2400 Valdez St. | 2 | Constructed | 224 | 23.5 | 0 | 0 | Parking Lot | 224 | 23.5 | 0 | 0 | 0 |
| 3000 Broadway | 5 | Constructed | 127 | 8.0 | 0 | 0 | 3 Dwelling Units, 8.8 KSF Restaurant, and 10.2 KSF Auto Repair | 124 | -0.8 | 0 | 0 | -10.2 |
| 2820 Broadway | 4 | Constructed | 218 | 18.0 | 0 | 0 | 42.2 KSF Auto Dealership | 218 | -24.2 | 0 | 0 | 0 |
| 24th and Harrison | 2 | Under Construction | 437 | 65.0 | 0 | 0 | 55.2 KSF Auto Dealership, 5.3 KSF Auto Repair, and 3.25 KSF Fitness Center | 437 | 6.6 | 0 | 0 | -5.3 |
| 2401 Broadway | 3 | Constructed | 72 | 17.5 | 0 | 159 | 15.5 KSF Auto Dealership, and 7.1 KSF Retail | 72 | -5.1 | 0 | 159 | 0 |
| 2500 Webster | 3 | Constructed | 30 | 6.4 | 0 | 0 | 6.3 KSF Auto Dealership | 30 | 0.1 | 0 | 0 | 0 |
| 3300 Broadway | 5 | Approved | 45 | 3.0 | 0 | 0 | 5.5 KSF Retail | 45 | -2.5 | 0 | 0 | 0 |
| 2305 Webster St | 1 | Proposed | 176 | 3.0 | 0 | 0 | Parking Lot | 176 | 3.0 | 0 | 0 | 0 |
| 295 29th St | 4 | Constructed | 91 | 0 | 0 | 0 | 13.9 KSF Auto Repair | 91 | 0 | 0 | 0 | -13.9 |

### TABLE TRA-3 (CONTINUED)
### DEVELOPMENTS IN THE BROADWAY VALDEZ DISTRICT SPECIFIC PLAN

| Development | BVDSP Subdistrict | Status | Proposed Development[a] | | | | Active Existing Uses[b] | Net Development[a,c] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Residential (DU) | Retail (KSF) | Office (KSF) | Hotel (Room) | | Residential (DU) | Retail (KSF) | Office (KSF) | Hotel (Room) | Other (KSF) |
| 2415 Valdez | 3 | Constructed | 89 | 0.9 | 0 | 0 | Parking Lot | 89 | 0.9 | 0 | 0 | 0 |
| 88 Grand Av | 1 | Approved | 275 | 1 | 0 | 0 | Parking Lot | 275 | 1 | 0 | 0 | 0 |
| 290 27th Street | 2 | Proposed | 198 | 3.7 | 0 | 0 | 1.0 KSF Retail, and 22.3 KSF Office | 198 | -7.3 | -22.3 | 0 | 0 |
| 24th & Waverly | 2 | Under Construction | 330 | 13.0 | 0 | 0 | 15 DU and 11.1 KSF Auto Repair | 315 | 13.0 | 0 | 0 | -11.1 |
| 2424 Webster St | 3 | Approved | 0 | 11.3 | 150.2 | 0 | 12.5 KSF Auto Dealership, 7.7 KSF Retail, and 9.5 KSF Office | 0 | -8.9 | 140.7 | 0 | 0 |
| 2929 Broadway | 4 | Proposed | 220 | 1.7 | 0 | 0 | 24.1 KSF Auto Showroom | 220 | -22.4 | 0 | 0 | 0 |
| **Total** | | | **3,826** | **350.6** | **214.2** | **159** | | **3,808** | **111.3** | **182.4** | **159** | **-85.7** |

NOTES:

a. DU = dwelling units, ksf = 1,000 square feet, RM = room
b. Consists of active uses at the time the 2014 BVDSP EIR was prepared.
c. Retail and non-retail uses (such as auto repair and warehouses) are presented separately because the non-retail uses generate fewer trips than typical retail uses.

SOURCE: City of Oakland, 2021.

**Table TRA-4** compares the total amount of development constructed, currently under construction, approved, and/or proposed with the Development Program Buildout assumptions used in the 2014 BVDSP EIR for the Plan area (Subdistricts 1 through 5), the North End subarea (Subdistricts 4 and 5) and Subdistrict 4, where the Project is located.

### TABLE TRA-4
### DEVELOPMENT COMPARISON WITHIN THE PLAN AREA, NORTH END, AND SUBDISTRICT 4

| | Residential (DU) | Retail (KSF) | Office (KSF) | Hotel (Rooms) |
|---|---|---|---|---|
| **Plan Area (Subdistricts 1 through 5)** | | | | |
| Constructed, Under Construction, Approved, and Proposed Development Projects[a] | 3,808 | 111.3 | 182.4 | 159 |
| Development Program Buildout [b] | 1,797 | 1,114.1 | 694.9 | 180 |
| Percent Completed | 212% | 10% | 26% | 88% |
| **North End (Subdistricts 4 and 5)** | | | | |
| Constructed, Under Construction, Approved, and Proposed Development Projects | 1,130 | -32.6 | 0 | 0 |
| Development Program Buildout | 832 | 320.6 | 578.8 | 0 |
| Percent Completed | 136% | <0% | 0% | 0% |
| **Subdistrict 4** | | | | |
| Constructed, Under Construction, Approved, and Proposed Development Projects[a] | 529 | -46.6 | 0 | 0 |
| Development Program Buildout [b] | 387 | 111.1 | 40.5 | 0 |
| Percent Completed | 137% | <0% | 0% | 0% |

NOTES: DU = dwelling units, KSF = 1,000 square feet.

a. Information from City of Oakland, July 2021. Accounts for existing active uses that would be eliminated.
b. Based on Table 4.13-7 on page 4.13-37 of BVDSP Draft EIR.

SOURCE: Fehr & Peers, 2021.

**Table TRA-5** compares the trip generation associated with the total amount of development constructed, currently under construction, approved, and/or proposed with the Development Program Buildout assumptions used in the 2014 BVDSP EIR for the Plan area (Subdistricts 1 through 5), the North End subarea (Subdistricts 4 and 5), and Subdistrict 4.

Trips generated by the Project, together with trips generated by other projects that are constructed, currently under construction, approved, or proposed for development in the Plan area, would represent approximately 62 percent of the AM and 55 percent of the PM peak-hour trips anticipated in the 2014 BVDSP EIR for the Plan area, 35 percent of the AM and 40 percent of the PM peak-hour trips anticipated in the 2014 BVDSP EIR for the North End subarea, and 45 percent of both the AM and PM peak-hour trips anticipated in the 2014 BVDSP EIR for Subdistrict 4.

### TABLE TRA-5
### TRIP GENERATION COMPARISON

| | AM Peak Hour | PM Peak Hour |
|---|---|---|
| **Plan Area (Subdistricts 1 through 5)** | | |
| Constructed, Development Projects Approved, Proposed, or Under Construction[a] | 1,227 | 2,031 |
| Development Program Buildout[b] | 1,981 | 3,709 |
| Percent Completed | 62% | 55% |
| **North End (Subdistricts 4 and 5)** | | |
| Constructed, Development Projects Approved, Proposed, or Under Construction[a] | 379 | 683 |
| Development Program Buildout[b] | 1,082 | 1,703 |
| Percent Completed | 35% | 40% |
| **Subdistrict 4** | | |
| Constructed, Development Projects Under Construction, Approved, or Proposed | 96 | 166 |
| Development Program Buildout[b] | 211 | 372 |
| Percent Completed | 45% | 45% |

NOTES:

a. Based on application of the BVDSP trip generation model with the developments shown in Table TRA-4, and accounting for the trips generated by existing uses that would be eliminated.

b. Based on Table 4.13-10 on page 4.13-43 of the 2014 BVDSP EIR.

SOURCE: Fehr & Peers, 2021.

Although the amount of residential development in the Plan area, North End, and Subdistrict 4 are currently more than what was assumed under the Development Program Buildout in the 2014 BVDSP EIR, the AM and PM peak hour trip generation numbers are below the 2014 BVDSP EIR estimates for the Development Program Buildout. This is because the amount of retail and office uses currently proposed are below the 2014 BVDSP EIR assumptions. Given that the 2014 BVDSP EIR analyzed the impacts of the Development Program Buildout at signalized intersections in the immediate vicinity of the project site, the Project would not cause additional impacts beyond those analyzed in the 2014 BVDSP EIR, nor would it increase the magnitude of the impacts identified in the 2014 BVDSP EIR as described below.[45]

## Traffic Impacts at 2014 BVDSP EIR Intersections

The 2014 BVDSP EIR identifies 28 significant impacts at intersections that serve the Plan area. It also identifies the specific level of development in the Plan area and/or each Subdistrict that would trigger each impact and its associated mitigation measure(s). According to the 2014 BVDSP EIR, the Project applicant would fund the cost of preparing and funding mitigation measures identified in the 2014 BVDSP EIR. However, because the City of Oakland adopted the citywide Transportation Impact Fee (TIF) program, the applicant would pay the applicable TIF,

---

[45] Although the additional density permitted through the State Affordable Housing Density Bonus Law (Gov't Code Section 65915) does not require discretionary approval and thus is not subject to CEQA review, the additional units are considered here to provide a conservative analysis and to evaluate consistency with the BVDSP EIR.

as required by SCA TRA-5, to mitigate Project impacts. Payment to the TIF would be deemed full and complete mitigation.

### Additional Study Intersections

The current City of Oakland Transportation Impact Review Guidelines (dated April 14, 2017) require analysis of project impacts at intersections adjacent to the project site, signalized and all-way stop-controlled intersections where the project would add 50 or more peak hour trips, and side-street stop-controlled intersections where the project would add ten or more trips to the stop-controlled approach. According to the Guidelines, this traffic impact analysis would be completed as a non-CEQA analysis because intersection LOS, or other metrics based on vehicular delay or congestion, cannot be used to identify impacts in CEQA documents.

Based on the City's current criteria, the following two signalized intersections would need to be evaluated because they are adjacent to the project site:

1. Broadway/29th Street
2. Webster Street/29th Street

The 2014 BVDSP EIR analyzed the Broadway/29th Street intersection but not the Webster Street/29th Street intersection. The Transportation Impact Review (Non-CEQA) Memorandum provided as **Appendix E**, evaluates the effects of the Project on the two intersections listed above. As described in the memorandum, the Project would not affect traffic operations at the Broadway/29th Street intersection, which was previously evaluated, beyond the levels identified in the 2014 BVDSP EIR.

Furthermore, the Project would not add 50 or more peak hour trips to any additional signalized or all-way stop-controlled intersections; the Project would also not add ten or more peak hour trips to the stop-controlled approach of side-street stop-controlled intersections in the vicinity that were not analyzed in 2014 BVDSP EIR or the Transportation Impact Review (Non-CEQA) Memorandum. Therefore, analysis of additional intersections beyond the ones analyzed in the 2014 BVDSP EIR or the Transportation Impact Review (Non-CEQA) Memorandum is not needed. Overall, the Project would not result in impacts on traffic operations at the intersections beyond the ones identified in the 2014 BVDSP EIR. In addition, the Project would not increase the magnitude of the impacts identified in the 2014 BVDSP EIR.

In addition, the Project is required to implement SCA TRA-1 which addresses construction activity by the Project in the public right-of-way, SCA TRA-2 which requires the Project to provide adequate bicycle parking, SCA TRA-3, which addresses off-site Transportation Improvements required by the Project, and SCA TRA-6 which requires the Project to provide adequate Plug-In Electric Vehicle (PEV) Charging Infrastructure. The implementation of these SCAs would ensure the Project's consistency with the City's plans, ordinances, and policies addressing the safety and performance of the circulation system and would further reduce the less-than-significant effects of the Project.

### *Substantially induce additional automobile travel by increasing physical roadway capacity in congested areas or by adding new roadways to the network (Criterion 14.c)*

The Project would not modify the roadway network surrounding the project site. Therefore, the Project would not substantially induce additional automobile travel by increasing the physical roadway capacity in congested areas (i.e., by adding new mixed-flow lanes) and would not add new roadways to the network and would have a less-than-significant impact on inducing additional automobile traffic.

## 6.14.3 Conclusion

The combined trip generation for projects that are currently approved, proposed, or under construction in the Plan area including the Project, the North End and Subdistrict 4 remains lower than the estimated trip generation in the 2014 BVDSP EIR under the Development Program for the Plan area. The Project would also have a less than significant impact with regard to VMT by meeting the screening criteria number 2, Low-VMT Area and number 3, Near Transit Stations.

Additionally, the Project would not result in significant impacts to the intersections not analyzed in the 2014 BVDSP EIR (see Appendix E). Therefore, the Project would not cause additional impacts beyond the locations analyzed in the EIR; nor would the Project increase the magnitude of the impacts identified in the EIR. In addition, the transportation analysis presented in Appendix E determined that the Project would not result in any significant impacts to vehicle access and circulation, bicycle access and bicycle parking, pedestrian access and circulation, and transit access, consistent with the findings of the 2014 BVDSP EIR.

Based on an examination of the analysis, findings, and conclusions of the 2014 BVDSP EIR, implementation of the Project would not result in any new or more severe significant impacts related to transportation and circulation than those identified in the 2014 BVDSP EIR**SCA TRA-1**, **Construction Activity in the Public Right-of-Way; SCA TRA-2**, **Bicycle Parking; SCA TRA-3**, **Transportation Improvements; SCA TRA-4**, **Transportation and Parking Demand Management; SCA TRA-5**, **Transportation Impact Fee;** and **SCA TRA-6**, **Plug-In Electric Vehicle (PEV) Charging Infrastructure** (see Attachment A) apply to the Project and would further reduce transportation-related effects.

## 6.15 Utilities and Service Systems

| Would the project: | Equal or Less Severity of Impact Previously Identified in the 2014 BVDSP EIR | Substantial Increase in Severity of Previously Identified Significant Impact in the 2014 BVDSP EIR | New Significant Impact |
|---|---|---|---|
| a. Exceed wastewater treatment requirements of the San Francisco Bay Regional Water Quality Control Board;<br>Require or result in construction of new storm water drainage facilities or expansion of existing facilities, construction of which could cause significant environmental effects;<br>Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the providers' existing commitments and require or result in construction of new wastewater treatment facilities or expansion of existing facilities, construction of which could cause significant environmental effects; | ☒ | ☐ | ☐ |
| b. Exceed water supplies available to serve the project from existing entitlements and resources, and require or result in construction of water facilities or expansion of existing facilities, construction of which could cause significant environmental effects; | ☒ | ☐ | ☐ |
| c. Be served by a landfill with insufficient permitted capacity to accommodate the project’s solid waste disposal needs and require or result in construction of landfill facilities or expansion of existing facilities, construction of which could cause significant environmental effects;<br>Violate applicable federal, state, and local statutes and regulations related to solid waste; | ☒ | ☐ | ☐ |
| d. Violate applicable federal, state and local statutes and regulations relating to energy standards; or<br>Result in a determination by the energy provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the providers' existing commitments and require or result in construction of new energy facilities or expansion of existing facilities, construction of which could cause significant environmental effects. | ☒ | ☐ | ☐ |

### 6.15.1 2014 BVDSP EIR Findings

#### *Water, Wastewater, and Stormwater (Criteria 6.15a and 6.15b)*

As described in the 2014 BVDSP EIR, EBMUD has accounted for the water demand projections associated with development under the BVDSP; and the 2014 BVDSP EIR determined that development under the BVDSP would not require new water supply entitlements, resources, facilities, or expansion of existing facilities beyond those already planned, and that impacts related to water supplies would be less than significant.

The 2014 BVDSP EIR also determined that development under the BVDSP would have less-than-significant impacts related to stormwater and wastewater facilities. Much of the Plan area is composed of impervious surfaces, and new development would likely decrease storm-drain runoff, because proposed projects would be required to incorporate additional pervious areas through landscaping, in compliance with City of Oakland requirements.

On the other hand, development projects may increase sewer capacity demand. Implementation of SCA related to stormwater control during and after construction, would address potential impacts on stormwater treatment and sanitary sewer infrastructure.

### *Solid Waste Services (Criterion 6.15c)*

As described in the 2014 BVDSP EIR, impacts associated with solid waste would be less than significant. Nonhazardous solid waste in the Plan area is ultimately hauled to the Altamont Landfill and Resource Facility. The Altamont Landfill would have sufficient capacity to accept waste generated by development under the BVDSP. In addition, implementation of SCAs pertaining to waste reduction, recycling, storage, and collection, would reduce waste through compliance with the City of Oakland's Recycling Space Allocation Ordinance (Oakland Municipal Code, Chapter 17.118).

### *Energy (Criterion 6.15d)*

Development under the BVDSP would result in less-than-significant impacts related to energy standards and use. Developments would be required to comply with the standards of Title 24 of the California Code of Regulations. The City's SCA pertaining to compliance with the green building ordinance, would require construction projects to incorporate energy-conserving design measures.

## 6.15.2 Project Analysis

The BVDSP allows for flexibility with respect to the quantity and profile of future development within each subarea and between subareas as long as such development conforms to the general traffic generation parameters established by the Plan. The Development Program is not intended to be a cap that restricts development. As shown in Table 1, the Project, combined with other constructed, approved, proposed, and under construction projects, would provide less retail (1,961 square foot) than the 111,100 square feet of retail space contemplated in the Development Program for North End Subdistrict 4. The Project's 220 residential units, combined with other constructed, approved, proposed, and under construction projects, would exceed the residential land use maximum identified in the Development Program for Subdistrict 4 and analyzed in the 2014 BVDSP EIR. However, the Project conforms to the traffic generation parameters analyzed in the 2014 BVDSP EIR, as described in Section 6.14, *Transportation and Circulation*, above. As such, the Project is within the envelope of the Development Program analyzed in the 2014 BVDSP EIR. Therefore, water and sanitary sewer demand and stormwater facilities, as well as solid waste and energy associated with the Project, are consistent with the Development Program analyzed in the 2014 BVDSP EIR.

All on-site utilities would be designed in accordance with applicable codes and current engineering practices including SCA UTIL-1, Construction and Demolition Waste Reduction and Recycling; SCA UTIL-2, Underground Utilities; SCA UTIL-3, Recycling Collection and Storage Space; SCA UTIL-4, Green Building Requirements; SCA UTIL-5, Sanitary Sewer System; SCA UTIL-6, Storm Drain System; SCA UTIL-7, Water Efficient Landscape Ordinance (WELO); SCA HYD-1, Erosion and Sedimentation Control Plan for Construction; and SCA HYD-2, NPDES C.3 Stormwater Requirements for Regulated Projects. These SCAs would further reduce potential impacts to utilities and service systems. The Project would pay a sewer mitigation fee, which would either contribute to the cost of replacing pipes for the local collection system to increase capacity or be used to perform inflow and infiltration rehabilitation projects outside of the Plan area, as described in the 2014 BVDSP EIR. Additionally, the Project would comply with SCA-UTIL-7, Water Efficient Landscape Ordinance (WELO), in order to reduce landscape water usage, which would further reduce impacts to stormwater facilities. Implementation of SCA AIR-2 would reduce the wasteful, inefficient, or unnecessary consumption of fuel during Project construction by requiring limiting idling from some diesel-fueled off-road vehicles and portable equipment to be powered by grid electricity if available (see Section 6.3, *Air Quality*). The Project would constitute higher density transit-oriented development by locating housing in immediate proximity to major transit options which would reduce the need for vehicle use and associated fuel, and would reduce the wasteful, inefficient, or unnecessary consumption of fuel during Project operation. Additionally, SCA TRA-2, Bicycle Parking, and SCA TRA-6, Plug-In Electric Vehicle (PEV) Charging Infrastructure would further reduce the need for vehicle use and associated fuel (see Section 6.14, *Transportation and Circulation*).

### 6.15.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the 2014 BVDSP EIR, implementation of the Project would not substantially increase the severity of significant impacts identified in the 2014 BVDSP EIR, nor would it result in new significant impacts related to utilities and service systems that were not identified in the 2014 BVDSP EIR. The 2014 BVDSP EIR did not identify any mitigation measures related to utilities and service systems, and none would be required for the Project. Implementation of **SCA UTIL-1**, **Construction and Demolition Waste Reduction and Recycling**; **SCA UTIL-2**, **Underground Utilities**; **SCA UTIL-3**, **Recycling Collection and Storage Space**; **SCA UTIL-4**, **Green Building Requirements**; **SCA UTIL-5**, **Sanitary Sewer System**; **SCA UTIL-6**, **Storm Drain System**; **SCA UTIL-7**, **Water Efficient Landscape Ordinance (WELO)**; **SCA HYD-1**, **Erosion and Sedimentation Control Plan for Construction**; **SCA HYD-2**, **NPDES C.3 Stormwater Requirements for Regulated Projects**; **SCA AIR-2, Criteria Air Pollutant Controls – Construction Related**; **SCA TRA-2**, **Bicycle Parking**; and **SCA TRA-6**, **Plug-In Electric Vehicle (PEV) Charging Infrastructure** (see Attachment A), as well as compliance with Title 24 and CALGreen requirements, would ensure that impacts to sewer capacity, stormwater drainage facilities, solid waste services, and energy would be less than significant.

# 7. References

(References for the Broadway Valdez Distrit Specific Plan EIR and Oakland Planning Code cited below are available at the Oakland Bureau of Planning, Agency, 250 Frank Ogawa Plaza, Suite 3330, Oakland, California)

## 7.1 Broadway Valdez District Specific Plan EIR

City of Oakland, Draft EIR, 2014.

City of Oakland, Final EIR, 2014.

## 7.2 Oakland Planning Code

City of Oakland, 2020. City of Oakland Planning Code. https://cao-94612.s3.amazonaws.com/documents/Planning-Code-after-7-28-20-RV-Parking_Living-Amendments.pdf, accessed August 8, 2021.

## 7.3 Project Phase II Documents

PES Environmental, Inc., August 13, 2020. Phase II Investigation Workplan Mercedes Benz of Oakland 340 29th Street Oakland, CA, available: https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/8665815055/SWI_2020-08-13.pdf, accessed April 18, 2022.

PES Environmental, Inc., December 4, 2020. Results of Phase II Investigation Mercedes Benz of Oakland 340 29th Street Oakland, CA, available: https://documents.geotracker.waterboards.ca.gov/esi/uploads/geo_report/5011226952/T10000016845.PDF, accessed April 18, 2022.

PES Environmental, Inc., March 28, 2022. Draft Corrective Action Plan 2929 Broadway Redevelopment 340 29th Street Oakland, CA, available: https://documents.geotracker.waterboards.ca.gov/esi/uploads/geo_report/7652453422/T10000016845.PDF, accessed April 18, 2022.

Alameda County Health Care Services Agency, April 8, 2022. Conditional Approval of the Remedial Design Data Gap Investigation Work Plan Cleanup Program Site Case No. RO0003480 and GeoTracker Global ID T10000016845 2929 Broadway Redevelopment 340 29th Street, Oakland, CA, available: https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/1234388053/RO3480_DIR_L_2022-04-08_1.pdf, accessed April 18, 2022.

Alameda County Health Care Services Agency, February 18, 2021. Voluntary Remedial Action Agreement # RO0003480-2021-01-25, available: https://documents.geotracker.waterboards.ca.gov/regulators/deliverable_documents/3804639518/RO0003480_VRAA_2021-02-18.pdf, accessed April 18, 2022.

PES Environmental, Inc., March 28, 2022. Revised Work Plan for Additional Subsurface Investigation 2929 Broadway Redevelopment 340 29th Street, available:

https://documents.geotracker.waterboards.ca.gov/esi/uploads/geo_report/6133348941/T10000016845.PDF, accessed April 18, 2022.

## Attachments

A. Standard Conditions of Approval and Mitigation Monitoring and Reporting Program
B. Project Consistency with the Broadway Valdez Specific Plan, per CEQA Guidelines Section 15182
C. Project Consistency with Community Plan or Zoning, per CEQA Guidelines Section 15183
D. In-fill Performance Standards, Per CEQA Guidelines Section 15183.3
E. Criteria for Use of Addendum, Pursuant to CEQA Guidelines Section 15164
F. Criteria for Use of Other Applicable Previous CEQA Documents, per CEQA Guidelines Section 15168

## Appendices

A. Air Quality Tables
B. Geotechnical Investigation and Design Report, 2929 Broadway
C. ECAP Consistency Review Checklist
D. Construction Noise Management Plan
E. Non-CEQA Transportation Analysis/Transportation Tables
F. Transportation and Parking Demand Management Plan

This page intentionally left blank

# ATTACHMENT A

# Standard Conditions of Approval and Mitigation Monitoring and Reporting Program

This Standard Conditions of Approval (SCAs) and Mitigation Monitoring and Reporting Program (SCAMMRP) is based on the CEQA Checklist prepared for the 2929 Mixed Use Project.

This SCAMMRP is in compliance with Section 15097 of the CEQA Guidelines, which requires that the Lead Agency "adopt a program for monitoring or reporting on the revisions which it has required in the project and the measures it has imposed to mitigate or avoid significant environmental effects." The SCAMMRP lists mitigation measures and SCAs from the 2014 BVDSP EIR that apply to the Project. The SCAMMRP also lists other SCAs that apply to the Project that have been updated or otherwise modified by the City since publication of the 2014 BVDSP EIR. Specifically, on December 16, 2020, the City of Oakland released a revised set of all City of Oakland SCAs, which largely still include SCAs adopted by the City in 2008, along with supplemental, modified, and new SCAs. SCAs are measures that would minimize potential adverse effects that could result from implementation of the Project, to ensure the conditions are implemented and monitored. The revised set of the City of Oakland SCAs includes new, modified, and reorganized SCAs; however, none of the revisions diminish or negate the ability of the SCAs considered "environmental protection measures" to minimize potential adverse environmental effects. As such, the SCAs identified in the SCAMMRP reflect the current SCAs only. Although the SCA numbers listed below may not correspond to the SCA numbers in the 2014 BVDSP EIR, all of the environmental topics and potential effects addressed by the SCAs in the 2014 BVDSP EIR are included in this SCAMMRP (as applicable to the Project). This SCAMMRP also identifies the mitigation monitoring requirements for each mitigation measure and SCA.

To the extent that there is any inconsistency between any mitigation measures and/or SCAs, the more restrictive conditions shall govern; to the extent any mitigation measure and/or SCA identified in the CEQA Checklist were inadvertently omitted, they are automatically incorporated herein by reference.

- The first column of the SCAMMRP table identifies the mitigation measure or SCA applicable to that topic in the CEQA Checklist. While a mitigation measure or SCA can apply to more than one topic, it is listed in its entirety only under its primary topic (as indicated in the mitigation or SCA designator). The SCAs are numbered to specifically apply to the Project and this CEQA Checklist; however, the SCAs as presented in the City's *Standard Conditions* *of Approval and Uniformly Applied Development Standards* document are included in parenthesis for cross-reference purposes.[46]

- The second column identifies the monitoring schedule or timing applicable to the Project.
- The third column names the party responsible for monitoring the required action for the Project.

The Project Applicant is responsible for compliance with any recommendations identified in City-approved technical reports, all applicable mitigation measures adopted, and with all SCAs set forth herein at its sole cost and expense, unless otherwise expressly provided in a specific mitigation measure or condition of approval, and subject to the review and approval of the City of Oakland. Overall monitoring and compliance with the mitigation measures will be the responsibility of the Bureau of Planning, and Zoning Inspections Division. Prior to the issuance of a demolition, grading, and/or construction permit, the Project Applicant shall pay the applicable mitigation and monitoring fee to the City in accordance with the City's Master Fee Schedule.

---

[46] Dated December 16, 2020 as amended.

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |
| **General** | | |
| **SCA GEN-1 (Standard Condition Approval 15)** *Regulatory Permits and Authorizations from Other Agencies*<br>Requirement: The project applicant shall obtain all necessary regulatory permits and authorizations from applicable resource/regulatory agencies including, but not limited to, the Regional Water Quality Control Board, Bay Area Air Quality Management District, Bay Conservation and Development Commission, California Department of Fish and Wildlife, U. S. Fish and Wildlife Service, and Army Corps of Engineers and shall comply with all requirements and conditions of the permits/authorizations. The project applicant shall submit evidence of the approved permits/authorizations to the City, along with evidence demonstrating compliance with any regulatory permit/authorization conditions of approval. | Prior to activity requiring permit/ authorization from regulatory agency. | City of Oakland Bureau of Planning and applicable regulatory agency with jurisdiction |
| **Aesthetics, Shadow, and Wind** | | |
| **SCA AES-1 (Standard Condition of Approval 16)** *Trash and Blight Removal*<br>The project applicant and his/her successors shall maintain the property free of blight, as defined in chapter 8.24 of the Oakland Municipal Code. For nonresidential and multi-family residential projects, the project applicant shall install and maintain trash receptacles near public entryways as needed to provide sufficient capacity for building users. | Ongoing. | City of Oakland Bureau of Building |
| **SCA AES-2 (Standard Condition of Approval 17)** *Graffiti Control*<br>a. During construction and operation of the project, the project applicant shall incorporate best management practices reasonably related to the control of graffiti and/or the mitigation of the impacts of graffiti. Such best management practices may include, without limitation:<br>i. Installation and maintenance of landscaping to discourage defacement of and/or protect likely graffiti-attracting surfaces.<br>ii. Installation and maintenance of lighting to protect likely graffiti-attracting surfaces.<br>iii. Use of paint with anti-graffiti coating.<br>iv. Incorporation of architectural or design elements or features to discourage graffiti defacement in accordance with the principles of Crime Prevention Through Environmental Design (CPTED).<br>v. Other practices approved by the City to deter, protect, or reduce the potential for graffiti defacement.<br>b. The project applicant shall remove graffiti by appropriate means within seventy-two (72) hours. Appropriate means include the following:<br>i. Removal through scrubbing, washing, sanding, and/or scraping (or similar method) without damaging the surface and without discharging wash water or cleaning detergents into the City storm drain system.<br>ii. Covering with new paint to match the color of the surrounding surface.<br>iii. Replacing with new surfacing (with City permits if required). | Ongoing. | City of Oakland Bureau of Building |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |
| **Aesthetics, Shadow, and Wind (cont.)** | | |
| **SCA AES-3 (Standard Condition of Approval 18)** *Landscape Plan*<br>***a. Landscape Plan Required***<br>The project applicant shall submit a final Landscape Plan for City review and approval that is consistent with the approved Landscape Plan. The Landscape Plan shall be included with the set of drawings submitted for the construction-related permit and shall comply with the landscape requirements of chapter 17.124 of the Planning Code. Proposed plants shall be predominantly drought-tolerant. Specification of any street trees shall comply with the Master Street Tree List and Tree Planting Guidelines (which can be viewed at http://www2.oaklandnet.com/oakca1/groups/pwa/documents/report/oak042662.pdf and http://www2.oaklandnet.com/oakca1/groups/pwa/documents/form/oak025595.pdf, respectively), and with any applicable streetscape plan.<br>***b. Landscape Installation***<br>The project applicant shall implement the approved Landscape Plan unless a bond, cash deposit, letter of credit, or other equivalent instrument acceptable to the Director of City Planning, is provided. The financial instrument shall equal the greater of $2,500 or the estimated cost of implementing the Landscape Plan based on a licensed contractor's bid.<br>***c. Landscape Maintenance***<br>All required planting shall be permanently maintained in good growing condition and, whenever necessary, replaced with new plant materials to ensure continued compliance with applicable landscaping requirements. The property owner shall be responsible for maintaining planting in adjacent public rights-of-way. All required fences, walls, and irrigation systems shall be permanently maintained in good condition and, whenever necessary, repaired or replaced. | a. Prior to approval of construction-related permit.<br>b. Prior to building permit final.<br>c. Ongoing | a. City of Oakland Bureau of Planning<br>b. City of Oakland Bureau of Building<br>c. City of Oakland Bureau of Building |
| **SCA AES-4 (Standard Condition of Approval 19):** *Lighting*<br>Proposed new exterior lighting fixtures shall be adequately shielded to a point below the light bulb and reflector to prevent unnecessary glare onto adjacent properties. | Prior to building permit final. | City of Oakland Bureau of Building |
| **SCA AES-5 (Standard Condition of Approval 93):** *Public Art for Private Development*<br>Requirement: The project is subject to the City's Public Art Requirements for Private Development, adopted by Ordinance No. 13275 C.M.S. ("Ordinance"). The public art contribution requirements are equivalent to one-half percent (0.5%) for the "residential" building development costs, and one percent (1.0%) for the "non-residential" building development costs.<br>The contribution requirement can be met through: 1) the installation of freely accessible art at the site; 2) the installation of freely accessible art within one-quarter mile of the site; or 3) satisfaction of alternative compliance methods described in the Ordinance, including, but not limited to, payment of an in-lieu fee contribution. The applicant shall provide proof of full payment of the in-lieu contribution and/or provide plans, for review and approval by the Planning Director, showing the installation or improvements required by the Ordinance prior to issuance of a building permit.<br>Proof of installation of artwork, or other alternative requirement, is required prior to the City's issuance of a final certificate of occupancy for each phase of a project unless a separate, legal binding instrument is executed ensuring compliance within a timely manner subject to City approval. | Payment of in-lieu fees and/or plans showing fulfillment of public art requirement – Prior to Issuance of Building permit<br>Installation of art/cultural space – Prior to Issuance of a Certificate of Occupancy. | City of Oakland Bureau of Planning and Bureau of Building |
| See **SCA UTIL-2**, **Underground Utilities.** See *Utilities and Service Systems,* below. | | |

| | Mitigation Implementation/Monitoring | |
|---|---|---|
| **Standard Conditions of Approval/Mitigation Measures** | **Schedule** | **Responsibility** |
| **Air Quality** | | |
| **SCA AIR-1 (Standard Condition of Approval 20)** *Dust Controls – Construction-Related*<br>The Project applicant shall implement all of the following applicable dust control measures during construction of the Project:<br>a. Water all exposed surfaces of active construction areas at least twice daily. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever feasible.<br>b. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).<br>c. All visible mud or dirt track-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.<br>d. Limit vehicle speeds on unpaved roads to 15 miles per hour.<br>e. All demolition activities (if any) shall be suspended when average wind speeds exceed 20 mph.<br>f. All trucks and equipment, including tires, shall be washed off prior to leaving the site.<br>g. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12 inch compacted layer of wood chips, mulch, or gravel. | During construction. | City of Oakland Bureau of Building |
| **SCA AIR-2 (Standard Condition of Approval 21)** *Criteria Air Pollutant Controls – Construction Related*<br>Requirement: The project applicant shall implement all of the following applicable basic control measures for criteria air pollutants during construction of the project as applicable:<br>a. Idling times on all diesel-fueled commercial vehicles over 10,000 lbs. shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to two minutes (as required by the California airborne toxics control measure Title 13, Section 2485, of the California Code of Regulations). Clear signage to this effect shall be provided for construction workers at all access points.<br>b. Idling times on all diesel-fueled off-road vehicles over 25 horsepower shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to two minutes and fleet operators must develop a written policy as required by Title 23, Section 2449, of the California Code of Regulations ("California Air Resources Board Off-Road Diesel Regulations").<br>c. All construction equipment shall be maintained and properly tuned in accordance with the manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. Equipment check documentation should be kept at the construction site and be available for review by the City and the Bay Area Air Quality District as needed.<br>d. Portable equipment shall be powered by grid electricity if available. If electricity is not available, propane or natural gas generators shall be used if feasible. Diesel engines shall only be used if grid electricity is not available and use propane or natural gas generators cannot meet the electrical demand.<br>e. Low VOC (i.e., ROG) coatings shall be used that comply with BAAQMD Regulation 8, Rule 3: Architectural Coatings. | During construction. | City of Oakland Bureau of Building |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |
| **Air Quality (cont.)** | | |
| f. All equipment to be used on the construction site and subject to the requirements of Title 13, Section 2449, of the California Code of Regulations ("California Air Resources Board Off-Road Diesel Regulations") and upon request by the City, the project applicant shall provide written documentation that fleet requirements have been met. | | |
| **SCA AIR-3 (Standard Condition of Approval 22)** *Diesel Particulate Matter Controls-Construction Related*<br>***a. Diesel Particulate Matter Reduction Measures***<br>Requirement: The project applicant shall implement appropriate measures during construction to reduce potential health risks to sensitive receptors due to exposure to diesel particulate matter (DPM) from construction emissions. The project applicant shall choose one of the following methods:<br>i. The project applicant shall retain a qualified air quality consultant to prepare a Health Risk Assessment (HRA) in accordance with current guidance from the California Air Resources Board (CARB) and Office of Environmental Health and Hazard Assessment to determine the health risk to sensitive receptors exposed to DPM from project construction emissions. The HRA shall be submitted to the City (and the Air District if specifically requested) for review and approval. If the HRA concludes that the health risk is at or below acceptable levels, then DPM reduction measures are not required. If the HRA concludes that the health risk exceeds acceptable levels, DPM reduction measures shall be identified to reduce the health risk to acceptable levels as set forth under subsection b below. Identified DPM reduction measures shall be submitted to the City for review and approval prior to the issuance of building permits and the approved DPM reduction measures shall be implemented during construction.<br>- or -<br>ii. All off-road diesel equipment shall be equipped with the most effective Verified Diesel Emission Control Strategies (VDECS) available for the engine type (Tier 4 engines automatically meet this requirement) as certified by CARB. The equipment shall be properly maintained and tuned in accordance with manufacturer specifications. This shall be verified through an equipment inventory submittal and Certification Statement that the Contractor agrees to compliance and acknowledges that a significant violation of this requirement shall constitute a material breach of contract.<br>***b. Construction Emissions Minimization Plan (if required by a above)***<br>Requirement: The project applicant shall prepare a Construction Emissions Minimization Plan (Emissions Plan) for all identified DPM reduction measures (if any). The Emissions Plan shall be submitted to the City (and the Bay Area Air Quality District if specifically requested) for review and approval prior to the issuance of building permits. The Emissions Plan shall include the following:<br>i. An equipment inventory summarizing the type of off-road equipment required for each phase of construction, including the equipment manufacturer, equipment identification number, engine model year, engine certification (tier rating), horsepower, and engine serial number. For all VDECS, the equipment inventory shall also include the technology type, serial number, make, model, manufacturer, CARB verification number level, and installation date.<br>ii. A Certification Statement that the Contractor agrees to comply fully with the Emissions Plan and acknowledges that a significant violation of the Emissions Plan shall constitute a material breach of contract. | a. Prior to issuance of a construction related permit (i), during construction (ii).<br>b. Prior to issuance of a construction related permit. | a. City of Oakland Bureau of Planning and Bureau of Building.<br>b. City of Oakland Bureau of Planning and Bureau of Building. |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |
| **Air Quality (cont.)** | | |
| **SCA AIR-4 (Standard Condition of Approval 26)** *Asbestos in Structures*<br>Requirement: The project applicant shall comply with all applicable laws and regulations regarding demolition and renovation of Asbestos Containing Materials (ACM), including but not limited to California Code of Regulations, Title 8; California Business and Professions Code, Division 3; California Health and Safety Code sections 25915-25919.7; and Bay Area Air Quality Management District, Regulation 11, Rule 2, as may be amended. Evidence of compliance shall be submitted to the City upon request. | Prior to approval of construction-related permit | Applicable regulatory agency with jurisdiction |
| **Biological Resources** | | |
| See **SCA HYD-1, Erosion and Sedimentation Control Plan for Construction**. See *Hydrology and Water Quality*, below. | | |
| See **SCA HYD-2, NPDES C.3 Stormwater Requirements for Regulated Projects**. See *Hydrology and Water Quality*, below. | | |
| See **SCA UTIL-7, Water Efficient Landscape Ordinance (WELO)**. See *Utilities and Service Systems*, below. | | |
| **Cultural Resources** | | |
| **SCA CUL-1 (Standard Condition of Approval 32):** *Archaeological and Paleontological Resources – Discovery During Construction*<br>Requirement: Pursuant to CEQA Guidelines section 15064.5(f), in the event that any historic or prehistoric subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted and the Project applicant shall notify the City and consult with a qualified archaeologist or paleontologist, as applicable, to assess the significance of the find. In the case of discovery of paleontological resources, the assessment shall be done in accordance with the Society of Vertebrate Paleontology standards. If any find is determined to be significant, appropriate avoidance measures recommended by the consultant and approved by the City must be followed unless avoidance is determined unnecessary or infeasible by the City. Feasibility of avoidance shall be determined with consideration of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery, excavation) shall be instituted. Work may proceed on other parts of the project site while measures for the cultural resources are implemented.<br>In the event of data recovery of archaeological resources, the Project applicant shall submit an Archaeological Research Design and Treatment Plan (ARDTP) prepared by a qualified archaeologist for review and approval by the City. The ARDTP is required to identify how the proposed data recovery program would preserve the significant information the archaeological resource is expected to contain. The ARDTP shall identify the scientific/historic research questions applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. The ARDTP shall include the analysis and specify the curation and storage methods. Data recovery, in general, shall be limited to the portions of the archaeological resource that could be impacted by the proposed project. Destructive data recovery methods shall not be applied to portions of the archaeological resources if nondestructive methods are practicable. Because the intent of the ARDTP is to save as much of the archaeological resource as possible, including moving the resource, if feasible, preparation and implementation of the ARDTP would reduce the potential adverse impact to less than significant. The Project applicant shall implement the ARDTP at his/her expense. | During construction. | City of Oakland Bureau of Building |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |
| **Cultural Resources (cont.)** | | |
| In the event of excavation of paleontological resources, the Project applicant shall submit an excavation plan prepared by a qualified paleontologist to the City for review and approval. All significant cultural materials recovered shall be subject to scientific analysis, professional museum curation, and/or a report prepared by a qualified paleontologist, as appropriate, according to current professional standards and at the expense of the Project applicant. | | |
| **SCA CUL-2 (Standard Condition of Approval 33)**: *Archaeologically Sensitive Areas – Pre-Construction Measures*<br>Requirement: The project applicant shall implement either Provision A (Intensive Pre-Construction Study) or Provision B (Construction ALERT Sheet) concerning archaeological resources.<br>**Provision A: Intensive Pre-Construction Study.**<br>The project applicant shall retain a qualified archaeologist to conduct a site-specific, intensive archaeological resources study for review and approval by the City prior to soil-disturbing activities occurring on the project site. The purpose of the site-specific, intensive archaeological resources study is to identify early the potential presence of history-period archaeological resources on the project site. At a minimum, the study shall include:<br>a. Subsurface presence/absence studies of the project site. Field studies may include, but are not limited to, auguring and other common methods used to identify the presence of archaeological resources.<br>b. A report disseminating the results of this research.<br>c. Recommendations for any additional measures that could be necessary to mitigate any adverse impacts to recorded and/or inadvertently discovered cultural resources.<br>If the results of the study indicate a high potential presence of historic-period archaeological resources on the project site, or a potential resource is discovered, the project applicant shall hire a qualified archaeologist to monitor any ground disturbing activities on the project site during construction and prepare an ALERT sheet pursuant to Provision B below that details what could potentially be found at the project site. Archaeological monitoring would include briefing construction personnel about the type of artifacts that may be present (as referenced in the ALERT sheet, required per Provision B below) and the procedures to follow if any artifacts are encountered, field recording and sampling in accordance with the Secretary of Interior's Standards and Guidelines for Archaeological Documentation, notifying the appropriate officials if human remains or cultural resources are discovered, and preparing a report to document negative findings after construction is completed if no archaeological resources are discovered during construction.<br>**Provision B: Construction ALERT Sheet.**<br>The project applicant shall prepare a construction "ALERT" sheet developed by a qualified archaeologist for review and approval by the City prior to soil-disturbing activities occurring on the project site. The ALERT sheet shall contain, at a minimum, visuals that depict each type of artifact that could be encountered on the project site. Training by the qualified archaeologist shall be provided to the project's prime contractor, any project subcontractor firms (including demolition, excavation, grading, foundation, and pile driving), and utility firms involved in soil-disturbing activities within the project site.<br>The ALERT sheet shall state, in addition to the basic archaeological resource protection measures contained in other standard conditions of approval, all work must stop and the City's Environmental Review Officer contacted in the event of discovery of the following cultural materials: concentrations of shellfish remains; evidence of fire (ashes, charcoal, burnt earth, fire-cracked rocks); | Prior to approval of construction-related permit; During construction | City of Oakland Bureau of Planning and Bureau of Building. |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |
| **Cultural Resources (cont.)** | | |
| concentrations of bones; recognizable Native American artifacts (arrowheads, shell beads, stone mortars [bowls], humanly shaped rock); building foundation remains; trash pits, privies (outhouse holes); floor remains; wells; concentrations of bottles, broken dishes, shoes, buttons, cut animal bones, hardware, household items, barrels, etc.; thick layers of burned building debris (charcoal, nails, fused glass, burned plaster, burned dishes); wood structural remains (building, ship, wharf); clay roof/floor tiles; stone walls or footings; or gravestones. Prior to any soil-disturbing activities, each contractor shall be responsible for ensuring that the ALERT sheet is circulated to all field personnel, including machine operators, field crew, pile drivers, and supervisory personnel. The ALERT sheet shall also be posted in a visible location at the project site. | | |
| **SCA CUL-3 (Standard Condition of Approval SCA 34):** *Human Remains – Discovery During Construction*<br>Requirement: Pursuant to CEQA Guidelines section 15064.5(e)(1), in the event that human skeletal remains are uncovered at the project site during construction activities, all work shall immediately halt and the Project applicant shall notify the City and the Alameda County Coroner. If the County Coroner determines that an investigation of the cause of death is required or that the remains are Native American, all work shall cease within 50 feet of the remains until appropriate arrangements are made. In the event that the remains are Native American, the City shall contact the California Native American Heritage Commission (NAHC), pursuant to subdivision (c) of section 7050.5 of the California Health and Safety Code. If the agencies determine that avoidance is not feasible, then an alternative plan shall be prepared with specific steps and timeframe required to resume construction activities. Monitoring, data recovery, determination of significance, and avoidance measures (if applicable) shall be completed expeditiously and at the expense of the Project applicant. | During construction. | City of Oakland Bureau of Building |
| **SCA CUL-4 (Standard Condition of Approval SCA 35):** *Property Relocation*<br>Requirement: Pursuant to Policy 3.7 of the Historic Preservation Element of the Oakland General Plan, the project applicant shall make a good faith effort to relocate the historic resource to a site acceptable to the City. A good faith effort includes, at a minimum, all of the following:<br>a. Advertising the availability of the building by: (1) posting of large visible signs (such as banners, at a minimum of 3’ x 6’ size or larger) at the site; (2) placement of advertisements in Bay Area news media acceptable to the City; and (3) contacting neighborhood associations and for-profit and not-for-profit housing and preservation organizations;<br>b. Maintaining a log of all the good faith efforts and submitting that along with photos of the subject building showing the large signs (banners) to the City;<br>c. Maintaining the signs and advertising in place for a minimum of 90 days; and<br>d. Making the building available at no or nominal cost (the amount to be reviewed by the Oakland Cultural Heritage Survey) until removal is necessary for construction of a replacement project, but in no case for less than a period of 90 days after such advertisement. | Prior to approval of construction-related permit. | City of Oakland Bureau of Planning (including Oakland Cultural Resource Survey) |
| **Geology, Soils, and Geohazards** | | |
| **SCA GEO-1 (Standard Condition of Approval 36):** *Construction-Related Permit(s)*<br>Requirement: The Project applicant shall obtain all required construction-related permits/approvals from the City. The Project shall comply with all standards, requirements and conditions contained in construction-related codes, including but not limited to the Oakland Building Code and the Oakland Grading Regulations, to ensure structural integrity and safe construction. | Prior to approval of construction-related permit. | City of Oakland Bureau of Building |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | **Schedule** | **Responsibility** |
| **Geology, Soils, and Geohazards (cont.)** | | |
| **SCA GEO-2 (Standard Condition of Approval 37):** *Soils Report*<br>Requirement: The project applicant shall submit a soils report prepared by a registered geotechnical engineer for City review and approval. The soils report shall contain, at a minimum, field test results and observations regarding the nature, distribution and strength of existing soils, and recommendations for appropriate grading practices and project design. The project applicant shall implement the recommendations contained in the approved report during project design and construction. | Prior to approval of construction-related permit. | City of Oakland Bureau of Building |
| See **SCA HYD-1, Erosion and Sedimentation Control Plan for Construction**. See *Hydrology and Water Quality*, below. | | |
| **Greenhouse Gases and Climate Change** | | |
| **SCA GHG-1 (Standard Condition of Approval 41):** *Project Compliance with the Equitable Climate Action Plan (ECAP) Consistency Checklist*<br>Requirement: The project applicant shall implement all the measures in the Equitable Climate Action Plan (ECAP) Consistency Checklist that was submitted during the Planning entitlement phase.<br>a. For physical ECAP Consistency Checklist measures to be incorporated into the design of the project, the measures shall be included on the drawings submitted for construction-related permits.<br>b. For physical ECAP Consistency Checklist measures to be incorporated into the design of the project, the measures shall be implemented during construction.<br>c. For ECAP Consistency Checklist measures that are operational but not otherwise covered by these SCAs, including but not limited to the requirement for transit passes or additional Transportation Demand Management measures, the applicant shall provide notice of these measures to employees and/or residents and post these requirements in a public place such as a lobby or work area accessible to the employees and/or residents. | a. Prior to approval of construction-related permit<br>b. During construction<br>c. Ongoing | a. City of Oakland Bureau of Planning<br>b. City of Oakland Bureau of Planning and Bureau of Building<br>c. City of Oakland Bureau of Planning |
| See **SCA AES-3, Landscape Plan**. See *Aesthetics, Wind, and Shadow*, above. | | |
| See **SCAs AIR-2, Criteria Air Pollutant Controls - Construction Related**. See *Air Quality*, above. | | |
| See **SCA AIR-3, Diesel Particulate Matter Controls - Construction Related**. See *Air Quality*, above. | | |
| See **SCA TRA-2, Bicycle Parking**. See *Transportation and Circulation*, below. | | |
| See **SCA TRA-4, Transportation and Parking Demand Management**. See *Transportation and Circulation*, below. | | |
| See **SCA TRA-6, Plug-In Electric Vehicle (PEV) Charging Infrastructure**. See *Transportation and Circulation*, below. | | |
| See **SCA UTIL-1, Construction and Demolition Waste Reduction and Recycling**. See *Utilities and Service Systems*, below. | | |
| See **SCA UTIL-4**, **Green Building Requirements.** See *Utilities and Service Systems*, below. | | |
| See **SCA UTIL-7**, **Water Efficient Landscape Ordinance (WELO).** See *Utilities and Service Systems*, below. | | |

<table>
<tr><th rowspan="2">Standard Conditions of Approval/Mitigation Measures</th><th colspan="2">Mitigation Implementation/Monitoring</th></tr>
<tr><th>Schedule</th><th>Responsibility</th></tr>
<tr><td colspan="3"><b>Hazards and Hazardous Materials</b></td></tr>
<tr><td><b>SCA HAZ-1 (Standard Condition of Approval 43):</b> <i>Hazards Materials Related to Construction</i><br><u>Requirement</u>: The Project applicant shall ensure that Best Management Practices (BMPs) are implemented by the contractor during construction to minimize potential negative effects on groundwater, soils, and human health. These shall include, at a minimum, the following:<br>a. Follow manufacture’s recommendations for use, storage, and disposal of chemical products used in construction;<br>b. Avoid overtopping construction equipment fuel gas tanks;<br>c. During routine maintenance of construction equipment, properly contain and remove grease and oils;<br>d. Properly dispose of discarded containers of fuels and other chemicals;<br>e. Implement lead-safe work practices and comply with all local, regional, state, and federal requirements concerning lead (for more information refer to the Alameda County Lead Poisoning Prevention Program); and<br>f. If soil, groundwater, or other environmental medium with suspected contamination is encountered unexpectedly during construction activities (e.g., identified by odor or visual staining, or if any underground storage tanks, abandoned drums or other hazardous materials or wastes are encountered), the project applicant shall cease work in the vicinity of the suspect material, the area shall be secured as necessary, and the applicant shall take all appropriate measures to protect human health and the environment. Appropriate measures shall include notifying the City and applicable regulatory agency(ies) and implementation of the actions described in the City’s Standard Conditions of Approval, as necessary, to identify the nature and extent of contamination. Work shall not resume in the area(s) affected until the measures have been implemented under the oversight of the City or regulatory agency, as appropriate.</td><td>During construction.</td><td>City of Oakland Bureau of Building</td></tr>
<tr><td><b>SCA HAZ-2 (Standard Condition of Approval 44):</b> <b><i>Hazardous Building Materials and Site Contamination</i></b><br><b><i>a. Hazardous Building Materials and Site Contamination</i></b><br><u>Requirement</u>: The project applicant shall submit a comprehensive assessment report to the Bureau of Building, signed by a qualified environmental professional, documenting the presence or lack thereof of asbestos-containing materials (ACMs), lead-based paint, polychlorinated biphenyls (PCBs), and any other building materials or stored materials classified as hazardous materials by State or federal law. If lead-based paint, ACMs, PCBs, or any other building materials or stored materials classified as hazardous materials are present, the project applicant shall submit specifications prepared and signed by a qualified environmental professional, for the stabilization and/or removal of the identified hazardous materials in accordance with all applicable laws and regulations. The project applicant shall implement the approved recommendations and submit to the City evidence of approval for any proposed remedial action and required clearances by the applicable local, state, or federal regulatory agency.<br><b><i>b. Environmental Site Assessment Required</i></b><br><u>Requirement</u>: The project applicant shall submit a Phase I Environmental Site Assessment report, and Phase II Environmental Site Assessment report if warranted by the Phase I report, for the project site for review and approval by the City. The report(s) shall be prepared by a qualified environmental assessment professional and include recommendations for remedial action, as appropriate, for hazardous materials. The project applicant shall implement the approved recommendations and submit to the City evidence of approval for any proposed remedial action and required clearances by the applicable local, state, or federal regulatory agency.</td><td>a. Prior to approval of demolition, grading, or building permits<br>b. Prior to approval of construction-related permit<br>c. Prior to approval of construction-related permit<br>d. During Construction</td><td>a. City of Oakland Bureau of Building<br>b. Applicable regulatory agency with jurisdiction<br>c. City of Oakland Bureau of Building<br>d. City of Oakland Bureau of Building</td></tr>
</table>

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |
| **Hazards and Hazardous Materials (cont.)** | | |
| ***c. Health and Safety Plan Required***<br>Requirement: The Project applicant shall submit a Health and Safety Plan for the review and approval by the City in order to protect project construction workers from risks associated with hazardous materials. The Project applicant shall implement the approved Plan.<br>***d. Best Management Practices (BMPs) Required for Contaminated Sites***<br>Requirement: The Project applicant shall ensure that Best Management Practices (BMPs) are implemented by the contractor during construction to minimize potential soil and groundwater hazards. These shall include the following:<br>i. Soil generated by construction activities shall be stockpiled on-site in a secure and safe manner. All contaminated soils determined to be hazardous or non-hazardous waste must be adequately profiled (sampled) prior to acceptable reuse or disposal at an appropriate off-site facility. Specific sampling and handling and transport procedures for reuse or disposal shall be in accordance with applicable local, state, and federal requirements.<br>ii Groundwater pumped from the subsurface shall be contained on-site in a secure and safe manner, prior to treatment and disposal, to ensure environmental and health issues are resolved pursuant to applicable laws and policies. Engineering controls shall be utilized, which include impermeable barriers to prohibit groundwater and vapor intrusion into the building. | | |
| See **SCA AIR-4, Asbestos in Structures.** See *Air Quality, above.* | | |
| See **SCA TRA-1, Construction Activity in the Public Right-of-Way**. See *Transportation and Traffic*, below. | | |
| **Hydrology and Water Quality** | | |
| **SCA HYD-1 (Standard Condition of Approval 49):** *Erosion and Sedimentation Control Plan for Construction*<br>***a. Erosion and Sedimentation Control Plan Required***<br>Requirement: The Project applicant shall submit an Erosion and Sedimentation Control Plan to the City for review and approval. The Erosion and Sedimentation Control Plan shall include all necessary measures to be taken to prevent excessive stormwater runoff or carrying by stormwater runoff of solid materials on to lands of adjacent property owners, public streets, or to creeks as a result of conditions created by grading and/or construction operations. The Plan shall include, but not be limited to, such measures as short-term erosion control planting, waterproof slope covering, check dams, interceptor ditches, benches, storm drains, dissipation structures, diversion dikes, retarding berms and barriers, devices to trap, store and filter out sediment, and stormwater retention basins. Off-site work by the project applicant may be necessary. The project applicant shall obtain permission or easements necessary for off-site work. There shall be a clear notation that the plan is subject to changes as changing conditions occur. Calculations of anticipated stormwater runoff and sediment volumes shall be included, if required by the City. The Plan shall specify that, after construction is complete, the project applicant shall ensure that the storm drain system shall be inspected and that the Project applicant shall clear the system of any debris or sediment. | a. Prior to approval of construction-related permit.<br>b. During construction. | City of Oakland Bureau of Building |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |
| **Hydrology and Water Quality (cont.)** | | |
| ***b. Erosion and Sedimentation Control During Construction***<br>Requirement: The Project applicant shall implement the approved Erosion and Sedimentation Control Plan. No grading shall occur during the wet weather season (October 15 through April 15) unless specifically authorized in writing by the Bureau of Building. | | |
| **SCA HYD-2 (Standard Condition of Approval 54):** *NPDES C.3 Stormwater Requirements for Regulated Projects*<br>***a. Post-Construction Stormwater Management Plan Required***<br>Requirement: The Project applicant shall comply with the requirements of Provision C.3 of the Municipal Regional Stormwater Permit issued under the National Pollutant Discharge Elimination System (NPDES). The project applicant shall submit a Post-Construction Stormwater Management Plan to the City for review and approval with the project drawings submitted for site improvements, and shall implement the approved Plan during construction. The Post-Construction Stormwater Management Plan shall include and identify the following:<br>i. Location and size of new and replaced impervious surface;<br>ii. Directional surface flow of stormwater runoff;<br>iii. Location of proposed on-site storm drain lines;<br>iv. Site design measures to reduce the amount of impervious surface area;<br>v. Source control measures to limit stormwater pollution;<br>vi. Stormwater treatment measures to remove pollutants from stormwater runoff, including the method used to hydraulically size the treatment measures; and<br>vii. Hydromodification management measures, if required by Provision C.3, so that post-Project stormwater runoff flow and duration match pre-Project runoff.<br>***b. Maintenance Agreement Required***<br>Requirement: The project applicant shall enter into a maintenance agreement with the City, based on the Standard City of Oakland Stormwater Treatment Measures Maintenance Agreement, in accordance with Provision C.3, which provides, in part, for the following:<br>i. The Project applicant accepting responsibility for the adequate installation/construction, operation, maintenance, inspection, and reporting of any on-site stormwater treatment measures being incorporated into the Project until the responsibility is legally transferred to another entity; and<br>ii. Legal access to the on-site stormwater treatment measures for representatives of the City, the local vector control district, and staff of the Regional Water Quality Control Board, San Francisco Region, for the purpose of verifying the implementation, operation, and maintenance of the on-site stormwater treatment measures and to take corrective action if necessary.<br>The maintenance agreement shall be recorded at the County Recorder's Office at the applicant's expense. | a. Prior to approval of construction-related permit.<br>b. Prior to building permit final. | a. City of Oakland Bureau of Building<br>b. City of Oakland Bureau of Building |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | **Schedule** | **Responsibility** |
| **Hydrology and Water Quality (cont.)** | | |
| See **SCA GEO-1, Construction-Related Permit(s).** See *Geology, Soils, and Geohazards*, above. | | |
| See **SCA UTIL-6, Storm Drain System**. See *Utilities and Service Systems*, below. | | |
| **Noise** | | |
| **SCA NOI-1 (Standard Condition of Approval 62)** *Construction Days/Hours*<br>Requirement: The project applicant shall comply with the following restrictions concerning construction days and hours:<br>a. Construction activities are limited to between 7:00 a.m. and 7:00 p.m. Monday through Friday, except that pier drilling and/or other extreme noise generating activities greater than 90 dBA shall be limited to between 8:00 a.m. and 4:00 p.m.<br>b. Construction activities are limited to between 9:00 a.m. and 5:00 p.m. on Saturday. In residential zones and within 300 feet of a residential zone, construction activities are allowed from 9:00 a.m. to 5:00 p.m. only within the interior of the building with the doors and windows closed. No pier drilling or other extreme noise generating activities greater than 90 dBA are allowed on Saturday.<br>c. No construction is allowed on Sunday or federal holidays.<br>Construction activities include, but are not limited to, truck idling, moving equipment (including trucks, elevators, etc.) or materials, deliveries, and construction meetings held on-site in a non-enclosed area.<br>Any construction activity proposed outside of the above days and hours for special activities (such as concrete pouring which may require more continuous amounts of time) shall be evaluated on a case-by-case basis by the City, with criteria including the urgency/emergency nature of the work, the proximity of residential or other sensitive uses, and a consideration of nearby residents'/occupants' preferences. The project applicant shall notify property owners and occupants located within 300 feet at least 14 calendar days prior to construction activity proposed outside of the above days/hours. When submitting a request to the City to allow construction activity outside of the above days/hours, the project applicant shall submit information concerning the type and duration of proposed construction activity and the draft public notice for City review and approval prior to distribution of the public notice. | During construction. | City of Oakland Bureau of Building |
| **SCA NOI-2: (Standard Condition of Approval 63)** *Construction Noise*<br>Requirement: The project applicant shall implement noise reduction measures to reduce noise impacts due to construction. Noise reduction measures include, but are not limited to, the following**:**<br>a. Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds) wherever feasible.<br>b. Except as provided herein, impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used, if such jackets are commercially available, and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures. | During construction. | City of Oakland Bureau of Building |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |
| **Noise (cont.)** | | |
| c. Applicant shall use temporary power poles instead of generators where feasible.<br>d. Stationary noise sources shall be located as far from adjacent properties as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or use other measures as determined by the City to provide equivalent noise reduction.<br>e. The noisiest phases of construction shall be limited to less than 10 days at a time. Exceptions may be allowed if the City determines an extension is necessary and all available noise reduction controls are implemented. | | |
| **SCA NOI-3 (Standard Condition of Approval 64)** *Extreme Construction Noise*<br>***a. Construction Noise Management Plan Required***<br>Requirement: Prior to any extreme noise generating construction activities (e.g., pier drilling, pile driving and other activities generating greater than 90dBA), the project applicant shall submit a Construction Noise Management Plan prepared by a qualified acoustical consultant for City review and approval that contains a set of site-specific noise attenuation measures to further reduce construction impacts associated with extreme noise generating activities. The project applicant shall implement the approved Plan during construction. Potential attenuation measures **include, but are not limited to, the following**:<br>i. Erect temporary plywood noise barriers around the construction site, particularly along on sites adjacent to residential buildings;<br>ii. Implement “quiet” pile driving technology (such as pre-drilling of piles, the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;<br>iii. Utilize noise control blankets on the building structure as the building is erected to reduce noise emission from the site;<br>iv. Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example **and implement such measure if such measures are feasible and would noticeably reduce noise impacts;** and<br>v. Monitor the effectiveness of noise attenuation measures by taking noise measurements.<br>***b. Public Notification Required***<br>Requirement: The project applicant shall notify property owners and occupants located within 300 feet of the construction activities at least 14 calendar days prior to commencing extreme noise generating activities. Prior to providing the notice, the project applicant shall submit to the City for review and approval the proposed type and duration of extreme noise generating activities and the proposed public notice. The public notice shall provide the estimated start and end dates of the extreme noise generating activities and describe noise attenuation measures to be implemented. | a. Prior to approval of construction-related permit.<br>b. During construction. | City of Oakland Bureau of Building |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | **Schedule** | **Responsibility** |
| **Noise (cont.)** | | |
| **SCA NOI-4 (Standard Condition of Approval 66)** *Construction Noise Complaints*<br>Requirement: The project applicant shall submit to the City for review and approval a set of procedures for responding to and tracking complaints received pertaining to construction noise, and shall implement the procedures during construction. At a minimum, the procedures shall include**:**<br>a. Designation of an on-site construction complaint and enforcement manager for the project;<br>b. A large on-site sign near the public right-of-way containing permitted construction days/hours, complaint procedures, and phone numbers for the project complaint manager and City Code Enforcement unit;<br>c. Protocols for receiving, responding to, and tracking received complaints; and<br>d. Maintenance of a complaint log that records received complaints and how complaints were addressed, which shall be submitted to the City for review upon the City's request. | Prior to approval of construction-related permit. | City of Oakland Bureau of Building |
| **SCA NOI-5 (Standard Condition of Approval 68)** *Operational Noise*<br>Requirement: Noise levels from the project site after completion of the project (i.e., during project operation) shall comply with the performance standards of chapter 17.120 of the Oakland Planning Code and chapter 8.18 of the Oakland Municipal Code. If noise levels exceed these standards, the activity causing the noise shall be abated until appropriate noise reduction measures have been installed and compliance verified by the City. | Ongoing. | City of Oakland Bureau of Building |
| **SCA NOI-6 (Standard Condition of Approval 67)** *Exposure to Community Noise*<br>Requirement: The project applicant shall submit a Noise Reduction Plan prepared by a qualified acoustical engineer for City review and approval that contains noise reduction measures (e.g., sound-rated window, wall, and door assemblies) to achieve an acceptable interior noise level in accordance with the land use compatibility guidelines of the Noise Element of the Oakland General Plan. The applicant shall implement the approved Plan during construction. To the maximum extent practicable, interior noise levels shall not exceed the following**:**<br>a. 45 dBA: Residential activities, civic activities, hotels<br>b. 50 dBA: Administrative offices; group assembly activities<br>c. 55 dBA: Commercial activities<br>d. 65 dBA: Industrial activities | Prior to approval of construction-related permit. | City of Oakland Bureau of Planning and Bureau of Building |
| **SCA NOI-7 (Standard Condition of Approval 70)** *Vibration Impacts on Adjacent Structures or Vibration-Sensitive Activities*<br>Requirement: The project applicant shall submit a Vibration Analysis prepared by an acoustical and/or structural engineer or other appropriate qualified professional for City review and approval that establishes pre-construction baseline conditions and threshold levels of vibration that could damage the structure and/or substantially interfere with activities located at 2943 Broadway. The Vibration Analysis shall identify design means and methods of construction that shall be utilized in order to not exceed the thresholds. The applicant shall implement the recommendations during construction. | Prior to construction. | City of Oakland Bureau of Planning and Bureau of Building |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |
| **Population and Housing** | | |
| **SCA POP-1 (Standard Condition of Approval 72)** *Affordable Housing Impact Fee*<br>Requirement: The project applicant shall comply with the requirements of the City of Oakland Affordable Housing Impact Fee Ordinance (chapter 15.72 of the Oakland Municipal Code).<br>***This SCA is complied with by including on-site affordable housing units as part of the Affordable Housing Density Bonus Application.*** | Prior to issuance of building permit; subsequent milestones pursuant to ordinance. | City of Oakland Bureau of Building |
| **Public Services, Parks, and Recreation Facilities** | | |
| **SCA PUB-1 (Standard Condition of Approval 73)** *Capital Improvements Impact Fee*<br>Requirement: The project applicant shall comply with the requirements of the City of Oakland Capital Improvements Fee Ordinance (chapter 15.74 of the Oakland Municipal Code). | Prior to issuance of building permit | City of Oakland Bureau of Building |
| **Transportation and Circulation** | | |
| **SCA TRA-1 (Standard Condition of Approval 75)** *Construction Activity in the Public Right-of-Way*<br>***a. Obstruction Permit Required***<br>Requirement: The project applicant shall obtain an obstruction permit from the City prior to placing any temporary construction-related obstruction in the public right-of-way, including City streets, sidewalks, bicycle facilities, and bus stops.<br>***b. Traffic Control Plan Required***<br>Requirement: In the event of obstructions to vehicle or bicycle travel lanes, bus stops, or sidewalks, the project applicant shall submit a Traffic Control Plan to the City for review and approval prior to obtaining an obstruction permit. The project applicant shall submit evidence of City approval of the Traffic Control Plan with the application for an obstruction permit. The Traffic Control Plan shall contain a set of comprehensive traffic control measures for auto, transit, bicycle, and pedestrian accommodations (or Detours, if accommodations are not feasible), including detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes. The Traffic Control Plan shall be in conformance with the City's Supplemental Design Guidance for Accommodating Pedestrians, Bicyclists, and Bus Facilities in Construction Zones. The project applicant shall implement the approved Plan during construction.<br>***c. Repair of City Streets***<br>Requirement: The project applicant shall repair any damage to the public right-of way, including streets and sidewalks caused by project construction at his/her expense within one week of the occurrence of the damage (or excessive wear), unless further damage/excessive wear may continue; in such case, repair shall occur prior to approval of the final inspection of the construction-related permit. All damage that is a threat to public health or safety shall be repaired immediately. | a. Prior to approval of construction-related permit.<br>b. Prior to approval of construction-related permit.<br>c. Prior to building permit final. | City of Oakland Department of Transportation |
| **SCA TRA-2 (Standard Condition of Approval 76)** *Bicycle Parking*<br>Requirement: The project applicant shall comply with the City of Oakland Bicycle Parking Requirements (chapter 17.118 of the Oakland Planning Code). The project drawings submitted for construction-related permits shall demonstrate compliance with the requirements. | Prior to approval of construction-related permit. | City of Oakland Bureau of Planning and Bureau of Building |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |
| **Transportation and Circulation (cont.)** | | |
| **SCA TRA-3 (Standard Condition of Approval 77):** *Transportation Improvements.*<br>The project applicant shall implement the recommended on- and off-site transportation-related improvements contained within the Transportation Impact Review for the project (e.g., signal timing adjustments, restriping, signalization, traffic control devices, roadway reconfigurations, transportation demand management measures, and transit, pedestrian, and bicyclist amenities). The project applicant is responsible for funding and installing the improvements, and shall obtain all necessary permits and approvals from the City and/or other applicable regulatory agencies such as, but not limited to, Caltrans (for improvements related to Caltrans facilities) and the California Public Utilities Commission (for improvements related to railroad crossings), prior to installing the improvements. To implement this measure for intersection modifications, the project applicant shall submit Plans, Specifications, and Estimates (PS&E) to the City for review and approval. All elements shall be designed to applicable City standards in effect at the time of construction and all new or upgraded signals shall include these enhancements as required by the City. All other facilities supporting vehicle travel and alternative modes through the intersection shall be brought up to both City standards and ADA standards (according to Federal and State Access Board guidelines) at the time of construction. Current City Standards call for, among other items, the elements listed below:<br>a. 2070L Type Controller with cabinet accessory<br>b. GPS communication (clock)<br>c. Accessible pedestrian crosswalks according to Federal and State Access Board guidelines with signals (audible and tactile)<br>d. Countdown pedestrian head module switch out<br>e. City Standard ADA wheelchair ramps<br>f. Video detection on existing (or new, if required)<br>g. Mast arm poles, full activation (where applicable)<br>h. Polara Push buttons (full activation)<br>i. Bicycle detection (full activation)<br>j. Pull boxes<br>k. Signal interconnect and communication with trenching (where applicable), or through existing conduit (where applicable), 600 feet maximum<br>l. Conduit replacement contingency<br>m. Fiber switch<br>n. PTZ camera (where applicable)<br>o. Transit Signal Priority (TSP) equipment consistent with other signals along corridor<br>p. Signal timing plans for the signals in the coordination group<br>q. Bi-directional curb ramps (where feasible, and if project is on a street corner)<br>r. Upgrade ramps on receiving curb (where feasible, and if project is on a street corner) | Prior to building permit final or as otherwise specified | City of Oakland Bureau of Building and City of Oakland Department of Transportation |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |
| **Transportation and Circulation (cont.)** | | |

**SCA TRA-4 (Standard Condition of Approval 78)** *Transportation and Parking Demand Management*

***a. Transportation and Parking Demand Management (TDM) Plan Required***

Requirement: The project applicant shall submit a Transportation and Parking Demand Management (TDM) Plan for review and approval by the City.

i. The goals of the TDM Plan shall be the following:

- Reduce vehicle traffic and parking demand generated by the project to the maximum extent practicable.
- Achieve the following project vehicle trip reductions (VTR):
  - Projects generating 50-99 net new a.m. or p.m. peak hour vehicle trips: 10 percent VTR
  - Projects generating 100 or more net new a.m. or p.m. peak hour vehicle trips: 20 percent VTR
- Increase pedestrian, bicycle, transit, and carpool/vanpool modes of travel. All four modes of travel shall be considered, as appropriate
- Enhance the City's transportation system, consistent with City policies and programs.

ii. The TDM Plan should include the following:

- Baseline existing conditions of parking and curbside regulations within the surrounding neighborhood that could affect the effectiveness of TDM strategies, including inventory of parking spaces and occupancy if applicable.
- Proposed TDM strategies to achieve VTR goals (see below).

iii. For employers with 100 or more employees at the subject site, the TDM Plan shall also comply with the requirements of Oakland Municipal Code Chapter 10.68 Employer-Based Trip Reduction Program.

iv. The following TDM strategies **must** be incorporated into a TDM Plan based on a project location or other characteristics. When required, these mandatory strategies should be identified as a credit toward a project's VTR

| Improvement | Required by code or when… |
|---|---|
| **Bus boarding bulbs or islands** | • A bus boarding bulb or island does not already exist and a bus stop is located along the project frontage; and/or<br>• A bus stop along the project frontage serves a route with 15 minutes or better peak hour service and has a shared bus-bike lane curb |

| Schedule | Responsibility |
|---|---|
| a. Prior to approval of planning application. | a. City of Oakland Bureau of Planning |
| b. Prior to building permit final | b. City of Oakland Bureau of Building |
| c. Ongoing | c. City of Oakland Department of Transportation |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | **Schedule** | **Responsibility** |
| **Transportation and Circulation (cont.)** | | |

| Improvement | Required by code or when… |
|---|---|
| **Bus shelter** | • A stop with no shelter is located within the project frontage, or<br>• The project is located within 0.10 miles of a flag stop with 25 or more boardings per day |
| **Concrete bus pad** | • A bus stop is located along the project frontage and a concrete bus pad does not already exist |
| **Curb extensions or bulb-outs** | • Identified as an improvement within site analysis |
| **Implementation of a corridor-level bikeway improvement** | • A buffered Class II or Class IV bikeway facility is in a local or county adopted plan within 0.10 miles of the project location; and<br>• The project would generate 500 or more daily bicycle trips |
| **Implementation of a corridor-level transit capital improvement** | • A high-quality transit facility is in a local or county adopted plan within 0.25 miles of the project location; and<br>• The project would generate 400 or more peak period transit trips |
| **Installation of amenities such as lighting; pedestrian-oriented green infrastructure, trees, or other greening landscape; and trash receptacles per the Pedestrian Master Plan and any applicable streetscape plan.** | • Always required |
| **In-street bicycle corral** | • A project includes more than 10,000 square feet of ground floor retail, is located along a Tier 1 bikeway, and on-street vehicle parking is provided along the project frontages. |
| **Intersection improvements**[47] | • Identified as an improvement within site analysis |
| **New sidewalk, curb ramps, curb and gutter meeting current City and ADA standards** | • Always required |

---

[47] Including but not limited to visibility improvements, shortening corner radii, pedestrian safety islands, accounting for pedestrian desire lines.

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |
| **Transportation and Circulation (cont.)** | | |

| Improvement | Required by code or when… |
|---|---|
| **No monthly permits and establish minimum price floor for public parking**[48] | • If proposed parking ratio exceeds 1:1000 sf. (commercial) |
| **Parking garage is designed with retrofit capability** | • Optional if proposed parking ratio exceeds 1:1.25 (residential) or 1:1000 sf. (commercial) |
| **Parking space reserved for car share** | • If a project is providing parking and a project is located within downtown. One car share space reserved for buildings between 50 – 200 units, then one car share space per 200 units. |
| **Paving, lane striping or restriping (vehicle and bicycle), and signs to midpoint of street section** | • Typically required |
| **Pedestrian crossing improvements** | • Identified as an improvement within site analysis |
| **Pedestrian-supportive signal changes**[49] | • Identified as an improvement within operations analysis |
| **Real-time transit information system** | • A project frontage block includes a bus stop or BART station and is along a Tier 1 transit route with 2 or more routes or peak period frequency of 15 minutes or better |
| **Relocating bus stops to far side** | • A project is located within 0.10 mile of any active bus stop that is currently near-side |
| **Signal upgrades**[50] | • Project size exceeds 100 residential units, 80,000 sf. of retail, or 100,000 sf. of commercial; and<br>• Project frontage abuts an intersection with signal infrastructure older than 15 years |
| **Transit queue jumps** | • Identified as a needed improvement within operations analysis of a project with frontage along a Tier 1 transit route with 2 or more routes or peak period frequency of 15 minutes or better |

---

[48] May also provide a cash incentive or transit pass alternative to a free parking space in commercial properties.

[49] Including but not limited to reducing signal cycle lengths to less than 90 seconds to avoid pedestrian crossings against the signal, providing a leading pedestrian interval, provide a “scramble” signal phase where appropriate.

[50] Including typical traffic lights, pedestrian signals, bike actuated signals, transit-only signals

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |

## Transportation and Circulation (cont.)

| Improvement | Required by code or when… |
|---|---|
| **Trenching and placement of conduit for providing traffic signal interconnect** | • Project size exceeds 100 units, 80,000 sf. of retail, or 100,000 sf. of commercial; and<br>• Project frontage block is identified for signal interconnect improvements as part of a planned ITS improvement; and<br>• A major transit improvement is identified within operations analysis requiring traffic signal interconnect |
| **Unbundled parking** | • If proposed parking ratio exceeds 1:1.25 (residential) |

v. Other TDM strategies to consider include, but are not limited to, the following:

- Inclusion of additional long-term and short-term bicycle parking that meets the design standards set forth in chapter five of the Bicycle Master Plan and the Bicycle Parking Ordinance (chapter 17.117 of the Oakland Planning Code), and shower and locker facilities in commercial developments that exceed the requirement.
- Construction of and/or access to bikeways per the Bicycle Master Plan; construction of priority bikeways, on-site signage and bike lane striping.
- Installation of safety elements per the Pedestrian Master Plan (such as crosswalk striping, curb ramps, count down signals, bulb outs, etc.) to encourage convenient and safe crossing at arterials, in addition to safety elements required to address safety impacts of the project.
- Installation of amenities such as lighting, street trees, and trash receptacles per the Pedestrian Master Plan, the Master Street Tree List, Tree Planting Guidelines (which can be viewed at http://www2.oaklandnet.com/oakca1/groups/pwa/documents/report/oak042662.pdf and http://www2.oaklandnet.com/oakca1/groups/pwa/documents/form/oak025595.pdf, respectively), and any applicable streetscape plan.
- Construction and development of transit stops/shelters, pedestrian access, way finding signage, and lighting around transit stops per transit agency plans or negotiated improvements.
- Direct on-site sales of transit passes purchased and sold at a bulk group rate (through programs such as AC Transit Easy Pass or a similar program through another transit agency).
- Provision of a transit subsidy to employees or residents, determined by the project applicant and subject to review by the City, if employees or residents use transit or commute by other alternative modes.
- Provision of an ongoing contribution to transit service to the area between the project and nearest mass transit station prioritized as follows: 1) Contribution to AC Transit bus service; 2) Contribution to an existing area shuttle service; and 3) Establishment of new shuttle service. The amount of contribution (for any of the above scenarios) would be based upon the cost of establishing new shuttle service (Scenario 3).
- Guaranteed ride home program for employees, either through 511.org or through separate program.

| | Mitigation Implementation/Monitoring | |
|---|---|---|
| **Standard Conditions of Approval/Mitigation Measures** | **Schedule** | **Responsibility** |
| **Transportation and Circulation (cont.)** | | |
| • Pre-tax commuter benefits (commuter checks) for employees.<br>• Free designated parking spaces for on-site car-sharing program (such as City Car Share, Zip Car, etc.) and/or car-share membership for employees or tenants.<br>• On-site carpooling and/or vanpool program that includes preferential (discounted or free) parking for carpools and vanpools.<br>• Distribution of information concerning alternative transportation options.<br>• Parking spaces sold/leased separately for residential units. Charge employees for parking, or provide a cash incentive or transit pass alternative to a free parking space in commercial properties.<br>• Parking management strategies including attendant/valet parking and shared parking spaces.<br>• Requiring tenants to provide opportunities and the ability to work off-site.<br>• Allow employees or residents to adjust their work schedule in order to complete the basic work requirement of five eight-hour workdays by adjusting their schedule to reduce vehicle trips to the worksite (e.g., working four, ten-hour days; allowing employees to work from home two days per week).<br>• Provide or require tenants to provide employees with staggered work hours involving a shift in the set work hours of all employees at the workplace or flexible work hours involving individually determined work hours.<br>The TDM Plan shall indicate the estimated VTR for each strategy, based on published research or guidelines where feasible. For TDM Plans containing ongoing operational VTR strategies, the Plan shall include an ongoing monitoring and enforcement program to ensure the Plan is implemented on an ongoing basis during project operation. If an annual compliance report is required, as explained below, the TDM Plan shall also specify the topics to be addressed in the annual report.<br>***b. TDM Implementation – Physical Improvements***<br>Requirement: For VTR strategies involving physical improvements, the project applicant shall obtain the necessary permits/ approvals from the City and install the improvements prior to the completion of the project.<br>***c. TDM Implementation – Operational Strategies***<br>Requirement: For projects that generate 100 or more net new a.m. or p.m. peak hour vehicle trips and contain ongoing operational VTR strategies, the project applicant shall submit an annual compliance report for the first five years following completion of the project (or completion of each phase for phased projects) for review and approval by the City. The annual report shall document the status and effectiveness of the TDM program, including the actual VTR achieved by the project during operation. If deemed necessary, the City may elect to have a peer review consultant, paid for by the project applicant, review the annual report. If timely reports are not submitted and/or the annual reports indicate that the project applicant has failed to implement the TDM Plan, the project will be considered in violation of the Conditions of Approval and the City may initiate enforcement action as provided for in these Conditions of Approval. The project shall not be considered in violation of this Condition if the TDM Plan is implemented but the VTR goal is not achieved.<br>**NOTE: This measure has been implemented by the project applicant and no further action is required.** | | |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |
| **Transportation and Circulation (cont.)** | | |
| **SCA TRA-5 (Standard Condition of Approval 79)** *Transportation Impact Fee*<br>Requirement: The project applicant shall comply with the requirements of the City of Oakland Transportation Impact Fee Ordinance (chapter 15.74 of the Oakland Municipal Code). | Prior to issuance of building permit | City of Oakland Bureau of Building |
| **SCA TRA-6 (Standard Condition of Approval 81)** *Plug-In Electric Vehicle (PEV) Charging Infrastructure*<br>Requirement: The applicant shall submit, for review and approval of the Building Official and the Zoning Manager, plans that show the location of parking spaces equipped with full electrical circuits designated for future PEV charging (i.e. "PEV-Ready) per the requirements of Chapter 15.04 of the Oakland Municipal Code. Building electrical plans shall indicate sufficient electrical capacity to supply the required PEV-Ready parking spaces. | Prior to issuance of building permit | City of Oakland Bureau of Building |
| **Utilities and Service Systems** | | |
| **SCA UTIL-1 (Standard Condition of Approval 82)** *Construction and Demolition Waste Reduction and Recycling*<br>Requirement: The Project applicant shall comply with the City of Oakland Construction and Demolition Waste Reduction and Recycling Ordinance (chapter 15.34 of the Oakland Municipal Code) by submitting a Construction and Demolition Waste Reduction and Recycling Plan (WRRP) for City review and approval, and shall implement the approved WRRP. Projects subject to these requirements include all new construction, renovations/alterations/modifications with construction values of $50,000 or more (except R-3 type construction), and all demolition (including soft demolition) except demolition of type R-3 construction. The WRRP must specify the methods by which the Project will divert construction and demolition debris waste from landfill disposal in accordance with current City requirements. The WRRP may be submitted electronically at www.greenhalosystems.com or manually at the City's Green Building Resource Center. Current standards, FAQs, and forms are available on the City's website and in the Green Building Resource Center. | Prior to approval of construction-related permit | City of Oakland Public Works Department, Environmental Services Division |
| **SCA UTIL-2 (Standard Condition of Approval 83)** *Underground Utilities*<br>Requirement: The Project applicant shall place underground all new utilities serving the Project and under the control of the Project applicant and the City, including all new gas, electric, cable, and telephone facilities, fire alarm conduits, street light wiring, and other wiring, conduits, and similar facilities. The new facilities shall be placed underground along the Project's street frontage and from the Project structures to the point of service. Utilities under the control of other agencies, such as PG&E, shall be placed underground if feasible. All utilities shall be installed in accordance with standard specifications of the serving utilities. | During construction | City of Oakland Bureau of Building |
| **SCA UTIL-3 (Standard Condition of Approval 84)** *Recycling Collection and Storage Space*<br>Requirement: The Project applicant shall comply with the City of Oakland Recycling Space Allocation Ordinance (chapter 17.118 of the Oakland Planning Code). The Project drawings submitted for construction-related permits shall contain recycling collection and storage areas in compliance with the Ordinance. For residential projects, at least two cubic feet of storage and collection space per residential unit is required, with a minimum of ten cubic feet. For nonresidential projects, at least two cubic feet of storage and collection space per 1,000 square feet of building floor area is required, with a minimum of ten cubic feet. | Prior to approval of construction-related permit. | City of Oakland Bureau of Planning and Bureau of Building |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |
| **Utilities and Service Systems (cont.)** | | |
| **SCA UTIL-4 (Standard Condition of Approval 85)** *Green Building Requirements*<br>***a. Compliance with Green Building Requirements During Plan-Check***<br>Requirement: The Project applicant shall comply with the requirements of the California Green Building Standards (CALGreen) mandatory measures and the applicable requirements of the City of Oakland Green Building Ordinance (chapter 18.02 of the Oakland Municipal Code).<br>i. The following information shall be submitted to the City for review and approval with the application for a building permit:<br>• Documentation showing compliance with Title 24 of the current version of the California Building Energy Efficiency Standards.<br>• Completed copy of the final green building checklist approved during the review of the Planning and Zoning permit.<br>• Copy of the Unreasonable Hardship Exemption, if granted, during the review of the Planning and Zoning permit.<br>• Permit plans that show, in general notes, detailed design drawings, and specifications as necessary, compliance with the items listed in subsection (ii) below.<br>• Copy of the signed statement by the Green Building Certifier approved during the review of the Planning and Zoning permit that the project complied with the requirements of the Green Building Ordinance.<br>• Signed statement by the Green Building Certifier that the project still complies with the requirements of the Green Building Ordinance, unless an Unreasonable Hardship Exemption was granted during the review of the Planning and Zoning permit.<br>• Other documentation as deemed necessary by the City to demonstrate compliance with the Green Building Ordinance.<br>ii. The set of plans in subsection (i) shall demonstrate compliance with the following:<br>• CALGreen mandatory measures.<br>• Compliance with the appropriate and applicable checklist approved during the Planning entitlement process.<br>• All green building points identified on the checklist approved during review of the Planning and Zoning permit, unless a Request for Revision Plan-check application is submitted and approved by the Bureau of Planning that shows the previously approved points that will be eliminated or substituted.<br>The required green building point minimums in the appropriate credit categories.<br>***b. Compliance with Green Building Requirements During Construction***<br>Requirement: The Project applicant shall comply with the applicable requirements of CALGreen and the Oakland Green Building Ordinance during construction of the Project.<br>The following information shall be submitted to the City for review and approval:<br>i. Completed copies of the green building checklists approved during the review of the Planning and Zoning permit and during the review of the building permit.<br>ii. Signed statement(s) by the Green Building Certifier during all relevant phases of construction that the project complies with the requirements of the Green Building Ordinance. | a. Prior to approval of construction-related permit.<br>b. During construction.<br>c. Prior to Final Approval. | a. City of Oakland Bureau of Building<br>b. City of Oakland Bureau of Building<br>c. City of Oakland Bureau of Planning and Bureau of Building |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | **Schedule** | **Responsibility** |
| **Utilities and Service Systems (cont.)** | | |
| iii. Other documentation as deemed necessary by the City to demonstrate compliance with the Green Building Ordinance.<br>***c. Compliance with Green Building Requirements After Construction***<br>Requirement: Prior to the finalizing the Building Permit, the Green Building Certifier shall submit the appropriate documentation to City staff and attain the minimum required point level. | | |
| **SCA UTIL-5 (Standard Condition of Approval 87)** *Sanitary Sewer System*<br>Requirement: The Project applicant shall prepare and submit a Sanitary Sewer Impact Analysis to the City for review and approval in accordance with the City of Oakland Sanitary Sewer Design Guidelines. The Impact Analysis shall include an estimate of pre-Project and post-Project wastewater flow from the Project site. In the event that the Impact Analysis indicates that the net increase in Project wastewater flow exceeds City-projected increases in wastewater flow in the sanitary sewer system, the Project applicant shall pay the Sanitary Sewer Impact Fee in accordance with the City's Master Fee Schedule for funding improvements to the sanitary sewer system. | Prior to approval of construction-related permit. | City of Oakland Public Works Department, Department of Engineering and Construction |
| **SCA UTIL-6 (Standard Condition of Approval 88)** *Storm Drain System*<br>Requirement: The Project storm drainage system shall be designed in accordance with the City of Oakland's Storm Drainage Design Guidelines. To the maximum extent practicable, peak stormwater runoff from the project site shall be reduced by at least 25 percent compared to the pre-Project condition. | Prior to approval of construction-related permit. | City of Oakland Bureau of Building |
| **SCA UTIL-7 (Standard Condition of Approval 90)** *Water Efficient Landscape Ordinance (WELO)*<br>Requirement: The project applicant shall comply with California's Water Efficient Landscape Ordinance (WELO) in order to reduce landscape water usage. For any landscape project with an aggregate (total noncontiguous) landscape area equal to 2,500 sq. ft. or less. The project applicant may implement either the Prescriptive Measures or the Performance Measures, of, and in accordance with the California's Model Water Efficient Landscape Ordinance. For any landscape project with an aggregate (total noncontiguous) landscape area over 2,500 sq. ft., the project applicant shall implement the Performance Measures in accordance with the WELO.<br>*Prescriptive Measures:* Prior to construction, the project applicant shall submit documentation showing compliance with Appendix D of California's Model Water Efficient Landscape Ordinance (see website below starting on page 23): http://www.water.ca.gov/wateruseefficiency/landscapeordinance/docs/Title%2023%20extract%20-%20Official%20CCR%20pages.pdf | Prior to approval of construction-related permit. | City of Oakland Bureau of Planning |
| *Performance Measures*: Prior to construction, the project applicant shall prepare and submit a Landscape Documentation Package for review and approval, which includes the following:<br>a. Project Information:<br>i. Date,<br>ii. Applicant and property owner name,<br>iii. Project address,<br>iv. Total landscape area, | | |

| Standard Conditions of Approval/Mitigation Measures | Mitigation Implementation/Monitoring | |
|---|---|---|
| | Schedule | Responsibility |
| **Utilities and Service Systems (cont.)** | | |
| v. Project type (new, rehabilitated, cemetery, or home owner installed),<br>vi. Water supply type and water purveyor,<br>vii. Checklist of documents in the package, and<br>viii. Applicant signature and date with the statement: "I agree to comply with the requirements of the water efficient landscape ordinance and submit a complete Landscape Documentation Package.<br>b. Water Efficient Landscape Worksheet<br>i. Hydrozone Information Table<br>ii. Water Budget Calculations with Maximum Applied Water Allowance (MAWA) and Estimated Total Water Use<br>c. Soil Management Report<br>d. Landscape Design Plan<br>e. Irrigation Design Plan, and<br>f. Grading Plan<br>Upon installation of the landscaping and irrigation systems, the Project applicant shall submit a Certificate of Completion and landscape and irrigation maintenance schedule for review and approval by the City. The Certificate of Compliance shall also be submitted to the local water purveyor and property owner or his or her designee.<br>For the specific requirements within the Water Efficient Landscape Worksheet, Soil Management Report, Landscape Design Plan, Irrigation Design Plan and Grading Plan, see the link below. Effective May 1, 2018 Page 77 http://www.water.ca.gov/wateruseefficiency/landscapeordinance/docs/Title%2023%20extract%20-%20Official%20CCR%20pages.pdf | | |
| See **SCA AIR-2, Criteria Air Pollutant Controls – Construction-Related***,* See *Air Quality,* above. | | |
| See **SCA HYD-1, Erosion and Sedimentation Control Plan for Construction**. See *Hydrology and Water Quality*, above. | | |
| See **SCA HYD-2 NPDES C.3 Stormwater Requirements for Regulated Projects.** See *Hydrology and Water Quality*, above. | | |
| See **SCA TRA-2, Bicycle Parking**. See *Transportation and Circulation*, above. | | |
| See **SCA TRA-6, Plug-In Electric Vehicle (PEV) Charging Infrastructure.** See *Transportation and Circulation*, above. | | |

This page intentionally left blank

# ATTACHMENT B

# Project Consistency with the Broadway Valdez Specific Plan, per CEQA Guidelines Section 15182

Section 15182 of the California Environmental Quality Act (CEQA) Guidelines states that "Certain residential, commercial and mixed-use projects that are consistent with a specific plan adopted pursuant to Title 7, Division 1, Chapter 3, Article 8 of the Government Code are exempt from CEQA as described in subdivisions (b) and (c) of this section." Table B-1, below, shows how the Project satisfies the eligibility criteria for an exemption under Section 15182.

TABLE B-1
SECTION 15182 ELIGIBILITY

| CEQA Eligibility Criteria | | Eligible?/Notes for Proposed Project |
|---|---|---|
| 15182 (b) | **Eligibility.**<br>A residential or mixed-use project, or a project with a floor area ratio of at least 0.75 on commercially-zoned property, including any required subdivision or zoning approvals, is exempt if the project satisfies the following criteria: (CEQA Guidelines Section 15182[b]) | **Yes.** The Project is a mixed-use residential project, as described in the Project Description, above (Section 4). |
| | (A) It is located within a transit priority area as defined in Public Resources Code Section 21099(a)(7). | **Yes.** CEQA Section 21099(a)(7) defines a "transit priority area" as an area within one-half mile of an existing or planned major transit stop. A "major transit stop" is defined in CEQA Section 21064.3 as a 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. As described in Section 4.14, *Transportation and Circulation*, the Project is within a transit priority area as it is served by several frequent bus routes. The project site is on Broadway which is served by Route 51A with 10-minute peak headways, and about 0.25 miles from Telegraph Avenue which is served by Route 6 with 12-minute peak headways. |
| | (B) It is consistent with a specific plan for which an environmental impact report was certified. | **Yes.** See Attachment C below. As determined by the City of Oakland Bureau of Planning, the Project is permitted in the zoning district in which it is located, and is consistent with the bulk, density, and land uses envisioned in the BVDSP Plan area. |

### TABLE B-1 (CONTINUED)
### SECTION 15182 ELIGIBILITY

| CEQA Eligibility Criteria | | Eligible?/Notes for Proposed Project |
|---|---|---|
| 15182 (b) (cont.) | (C) It is consistent with the general use designation, density, building intensity, and applicable policies specified for the project area in either a sustainable communities strategy or an alternative planning strategy for which the State Air Resources Board has accepted the determination that the sustainable communities strategy or the alternative planning strategy would achieve the applicable greenhouse gas emissions reduction targets. | **Yes.** The adopted Plan Bay Area (2021) serves as the Sustainable Communities' Strategy for the Bay Area, per Senate Bill 375. As described in Section 4.14, the Project is located within the Downtown Oakland & Jack London Square Priority Development Area (PDA) as defined by Plan Bay Area. A core strategy of Plan Bay Area is focused growth within PDAs which are generally areas served by public transit and near existing job centers and are locally identified for housing and job growth. The project site is within the Broadway Valdez District Specific Plan, an area the City has identified for housing, commercial, and office redevelopment. The Project would support many of Plan Bay Area's goals and strategies, such as building affordable housing and reducing GHG by locating development near transit. As such, the Project is consistent with the region's Sustainable communities Strategy. As described in Section 4.7, *Greenhouse Gas and Climate Change*, the Project would comply with the City of Oakland's ECAP, current City Sustainability Programs, and General Plan policies and regulations regarding GHG reductions and other local, regional and statewide plans, policies and regulations that are related to the reduction of GHG emissions and relevant to the Project. Specifically, the Project would be consistent with the State's Updated Climate Change Scoping Plan and the City of Oakland's ECAP in that it has committed to all applicable GHG emissions reductions strategies and would include a number of sustainability design features. |
| 15182 (c) | **Eligibility.**<br>Where a public agency has prepared an EIR on a specific plan after January 1, 1980, a residential project undertaken pursuant to and in conformity to that specific plan is exempt from CEQA if the project meets the requirements of this section. Residential projects covered by this section include but are not limited to land subdivisions, zoning changes, and residential planned unit developments. | **Yes.** The 20104 BVDSP EIR was certified by the City Council on June 17, 2014. See Section 3, *Background*, above. |

The information presented in this environmental review document and attachments supports that the Project is within the scope of the project described in the 2014 BVDSP EIR and meets all eligibility criteria under CEQA Guidelines Section 15182(b) and (c), including the conclusion that none of the events in CEQA Guidelines Section 15162 have occurred with respect to the Project, as documented by Section 6, *CEQA Checklist*. As such, the Project satisfies the requirements of CEQA under CEQA Guidelines Section 15182 and no supplemental environmental review is required.

# ATTACHMENT C

## Project Consistency with Community Plan or Zoning, per CEQA Guidelines Section 15183

Section 15183 (a) of the California Environmental Quality Act (CEQA) Guidelines states that "…projects which are consistent with the development density established by the existing zoning, community plan, or general plan policies for which an Environmental Impact Report (EIR) was certified shall not require additional environmental review, except as may be necessary to examine whether there are project-specific significant effects which are peculiar to the project or its site."

Further, Section 15183 states,

(1) 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.

(2) If an impact is not peculiar to the parcel or to the 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, as contemplated by subdivision (e) below, then an additional EIR need not be prepared for the project solely on the basis of that impact.

Section 15183 (f) states, "An effect of a project on the environment shall not be considered peculiar to the project or the parcel for the purposes of this section if uniformly applied development policies or standards have been previously adopted by the city or county with a finding that the development policies or standards will substantially mitigate that environmental effect when applied to future projects, unless substantial new information shows that the policies or standards will not substantially mitigate the environmental effect."

**Project Consistency**. In accordance with State CEQA Guidelines 15183, the Project qualifies for a Community Plan Exemption because the following findings can be made:

- The project site is within the boundaries of the Plan area's Mixed Use Commercial Zones 3 and 4 (D-BV-3 and D-BV-4). The intent of the D-BV-3 zone (Mixed Use Boulevard Zone) is to "create, maintain, and enhance areas with direct frontage and access along Broadway, 27th Street, Piedmont Avenue, and Harrison Street." Ground-floor office and other commercial activities are allowed while upper stories are reserved for residential, office, or commercial activities. The intent of the D-BV-4 zone is to "create, maintain, and enhance areas that do not front Broadway, 27th Street, Piedmont Avenue, and Harrison Street." It allows the widest range of uses on the ground floor while upper stories are intended either residential or commercial activities. The Project would be consistent with the regulatory framework of D-BV-3 and D-BV-4, as it would provide a residential lobby, fitness center, and approximately 1,961 square feet of retail space fronting Broadway. The Project would provide residential use in the upper stories and is therefore consistent with both zoning classifications.
- The project site is within the Plan area's 85-foot height area. Projects in this area may develop up to one residential unit per 275 square feet of lot area. The project site lot area is approximately 40,401 square feet allowing 147 residential units. As noted above, the Project would include 23 residential units affordable to very low-income residents and the Project Applicant is seeking an affordable housing density bonus and an associated 50 percent density increase, or 220 units on the project site. Plan area's 85-foot height area permits a maximum of eight stories and maximum height limit of 85 feet with no maximum building base height. The permitted floor area ratio (FAR) for nonresidential use is 4.5. The project site lot area is approximately 40,401 square feet allowing 147 residential units. The Project would provide 220 units and approximately 1,961 square feet of retail space in a seven-story, approximately 81-foot-tall building on an 0.93-acre lot. Based on the above, the Project would be consistent with the land use regulations in the General Plan and BVDSP. Therefore, with the affordable housing density bonus, the Project would comply with the height, density, and non-residential FAR allowed under the Planning Code.
- The Project is consistent with the development density established by existing zoning and General Plan policies for the site, and there are no peculiar aspects that would increase the severity of any of the previously identified significant cumulative effects in the 2014 BVDSP EIR.

**Project-specific impacts peculiar to the project or site, or those not analyzed in a prior EIR.** Because the Project is consistent with the policies, land use designation, and development parameters in the Broadway Valdez District Specific Plan (BVDSP), the Project's potential contribution to cumulatively significant effects has already been addressed in the prior EIR. Therefore, consistent with CEQA Guidelines Section 15183 which allows for streamlined environmental review, this document needs only to consider whether there are project-specific effects peculiar to the project or its site and relies on the streamlining provisions of CEQA Guidelines Section 15183 to not re-consider cumulative effects.

# New Significant Effects

The Project would not cause new specific effects that were not addressed in the 2014 BVDSP EIR. The analysis of the Project in the CEQA Checklist includes all the resource topics identified as potentially incurring significant unavoidable impacts and concludes that there would be no impacts that were not analyzed in the prior EIR.

Specifically, the CEQA Checklist analysis includes the resource topics that the 2014 BVDSP EIR determined could have significant unavoidable impacts:

- Aesthetics, Shadow, and Wind
- Air Quality
- Cultural Resources
- Noise
- Transportation/Circulation

As these analyses demonstrate, the Project would not substantially increase the severity of the significant impacts identified in the 2014 BVDSP EIR nor would it result in new significant impacts that were not identified in the EIR. Further, there have been no substantial changes in circumstances following certification of the 2014 BVDSP EIR that would result in any new specific significant effects of the Project.

# Substantial New Information

There is no new information that was not known at the time the 2014 BVDSP EIR was certified that would cause more severe adverse impacts than discussed in the prior EIR. There have been no significant changes in the underlying development assumptions, nor in the applicability or feasibility of mitigation measures or SCAs included in the prior EIR.

# Standard Conditions of Approval

SCAs incorporate policies and standards from various adopted plans, policies, and ordinances, which have been found to substantially mitigate environmental effects. The SCAs are adopted as requirements of an individual project when it is approved by the City and are designed to, and will, substantially mitigate environmental effects, thus meeting the provision of Section 15183 (f), which states that impacts that are addressed by uniformly applied development standards (in this case, City of Oakland SCAs) are not considered peculiar to the parcel for the purpose of requiring further environmental review. Therefore, the Project requires no additional environmental review under California Public Resources Code Section 21083.3 and Section 15183 of the CEQA Guidelines.

This page intentionally left blank

# ATTACHMENT D

# In-fill Performance Standards, Per CEQA Guidelines Section 15183.3

Based on CEQA Guidelines Section 15183.3(d)(1), the Lead Agency must examine an eligible infill project in light of the prior EIR to determine whether the infill project will cause any effects that require additional review under CEQA. This evaluation shall:

A. Document whether the infill project satisfies the applicable performance standards in Appendix M.

B. Explain whether the effects of the infill project were analyzed in a prior EIR

C. Explain whether the infill project will cause new specific effects (defined as "an effect that was not addressed in the prior EIR and that is specific to the infill project or the infill project site").

D. Explain whether substantial new information shows that the adverse environmental effects of the infill project are more significant (defined as "substantially more severe") than described in the prior EIR.

If the infill project will cause new specific effects or more significant effects, the evaluation should indicate whether uniformly applicable development policies or standards will substantially mitigate those effects.

**Table D-1** below shows how the Project satisfies each of the applicable requirements.

Consistent with CEQA Guidelines Section 15183.3(a), which allows streamlining for qualified infill Projects, this environmental document is limited to topics applicable to Project-level review where the effects of infill development have been addressed in other planning level decisions of the 2014 BVDSP EIR, or by uniformly applicable development policies (Standard Conditions of Approval or SCA) which mitigate such impacts. As the analysis in Section 6 demonstrates, the Project would not substantially increase the severity of the significant impacts identified in the 2014 BVDSP EIR, nor would it result in new significant impacts that were not identified in the prior 2014 BVDSP EIR. Further, there have been no substantial changes in circumstances following certification of the 2014 BVDSP EIR that would result in any new specific effects. Therefore, this document fulfills the review requirements for the Project pursuant to Section 15183.3.

## TABLE D-1
## PROJECT INFILL ELIGIBILITY

| CEQA Eligibility Criteria | | Eligible?/Notes for Proposed Project |
|---|---|---|
| 1. | Be located in an urban area on a site that either has been previously developed or that adjoins existing qualified urban uses on at least seventy-five percent of the site's perimeter. For the purpose of this subdivision "adjoin" means the infill project is immediately adjacent to qualified urban uses or is only separated from such uses by an improved right-of-way. (CEQA Guidelines Section 15183.3[b][1]) | Yes.<br>The project site has been previously developed with commercial uses and surface parking lots, and adjoins existing urban uses, as described in the Project Description, above (Section 6). |
| 2. | Satisfy the performance Standards provided in Appendix M (CEQA Guidelines Section 15183.3[b][2]) as presented in 2a and 2b below: | — |
| | 2a. *Performance Standards Related to Project Design.* All projects must implement **all** of the following: | — |
| | **Renewable Energy.**<br>*Non-Residential Projects.* All nonresidential projects shall include onsite renewable power generation, such as solar photovoltaic, solar thermal, and wind power generation, or clean back-up power supplies, where feasible.<br>*Residential Projects.* Residential projects are also encouraged to include such on site renewable power generation. | The Project would not include renewable power generation. According to Section IV (G) of CEQA Appendix M, for mixed-use projects "…the performance standards in this section that apply to the predominant use shall govern the entire project." Because the predominant use is residential, the Project is not required to include on-site renewable power generation. |
| | **Soil and Water Remediation.**<br>If the project site is included on any list compiled pursuant to Section 65962.5 of the Government Code, the project shall document how it has remediated the site, if remediation is completed. Alternatively, the project shall implement the recommendations provided in a preliminary endangerment assessment or comparable document that identifies remediation appropriate for the site. | As discussed in Section 6.8, Hazards and Hazardous Materials, above, a preliminary review of the project site on the State's GeoTracker database was conducted and revealed an open case with the Alameda County Department of Environmental Health (ACDEH) classifying the project site as a "Cortese List" site and two cleanup program sites. The open Cortese List site is for a leaking underground storage tank (LUST).<br>The Project Applicant has entered into a Voluntary Remedial Action Agreement (VRAA) with ACDEH to remediate the site. To evaluate the environmental quality of the soil, soil vapor, and groundwater that could be encountered during Project construction and to assess potential contamination that could cause vapor intrusion concerns, a Phase II site investigation (Phase II) was developed and conducted for the project site. A Phase II site investigation is comparable to the DTSC's preliminary endangerment assessment (PEA) report and includes recommendations for next steps. Following the recommendations presented in the Phase II site investigation and based on prior site investigations, the Project Applicant has prepared a draft Corrective Action Plan (CAP) which proposes remediation measures including excavating at the source area, cleaning utility corridors and landscaping areas, installing trench dams, installing a vapor barrier, and installing a passive soil vapor extraction system which would allow any residual vapors to escape. As recommended by the Phase II, the Project Applicant has also submitted a draft work plan for additional subsurface investigations which ACDEH conditionally approved on April 8, 2022. A final remediation plan would identify the specific remediation measures appropriate for the site and would be submitted to ACDEH for review and approval. No development on the site may occur until the site is cleared by ACDEH.This process is also enforceable throught the City's SCA HAZ-2, Hazardous Building Materials and Site Contamination |

### TABLE D-1 (CONTINUED)
### PROJECT INFILL ELIGIBILITY

| CEQA Eligibility Criteria | | Eligible?/Notes for Proposed Project |
|---|---|---|
| 2.<br>cont. | **Residential Units Near High-Volume Roadways and Stationary Sources.**<br>If a project includes residential units located within 500 feet, or other distance determined to be appropriate by the local agency or air district based on local conditions, of a high volume roadway or other significant sources of air pollution, the project shall comply with any policies and standards identified in the local general plan, specific plan, zoning code, or community risk reduction plan for the protection of public health from such sources of air pollution.<br>If the local government has not adopted such plans or policies, the project shall include measures, such as enhanced air filtration and project design, that the lead | Yes.<br>As discussed in Section 6.3, Air Quality, above, the Project would not include any stationary source of TAC emissions and would not contribute to any potential cumulative health risks to sensitive receptors from existing and reasonably foreseeable future sources of TACs. The Project would result in a less-than-significant impact with respect to operational TAC emissions. The Project would not result in new significant impacts related to air quality that were not identified in the 2014 BVDSP EIR |
| | agency finds, based on substantial evidence, will promote the protection of public health from sources of air pollution. Those measures may include, among others, the recommendations of the California Air Resources Board, air districts, and the California Air Pollution Control Officers Association. | The project site is within 1,000 feet of eight permitted stationary sources of TACs. These sources along with background health risks from freeways and major roadways were included in a screening analysis conducted in accordance with the BAAQMD CEQA Guidelines to determine if the Project exceeds the health risk screening criteria (see Section 6.3 above). The screening analysis shows that future residents of the Project would not be exposed to cumulative cancer risks exceeding 100 in one million, health risks to the Project receptors would be less than the City's cumulative thresholds and hence, less than significant. |
| | 2b. *Additional Performance Standards by Project Type.* In addition to implementing all the features described in 2a above, the project must meet eligibility requirements provided below by project type. | |
| | **Residential.** A residential project must meet **one** of the following:<br>A. *Projects achieving below average regional per capita vehicle miles traveled (VMT).* A residential project is eligible if it is located in a "low vehicle travel area" within the region;<br>B. *Projects located within ½ mile of an Existing Major Transit Stop or High Quality Transit Corridor.* A residential project is eligible if it is located within ½ mile of an existing major transit stop or an existing stop along a high quality transit corridor; **or**<br>C. *Low - Income Housing.* A residential or mixed-use project consisting of 300 or fewer residential units all of which are affordable to low income households is eligible if the developer of the development project provides sufficient legal commitments to the lead agency to ensure the continued availability and use of the housing units for lower income households, as defined in Section 50079.5 of the Health and Safety Code, for a period of at least 30 years, at monthly housing costs, as determined pursuant to Section 50053 of the Health and Safety Code. | Yes.<br>The Project is eligible under Sections (A) and (B).<br>(A) As summarized in Section 6.14, Transportation and Circulation, 2020 and 2040 estimated averages of daily VMT per capita in TAZ 979, the TAZ in which the Project is located, are less than the regional averages minus 15 percent.<br>(B) The Project site is well-served by multiple transit providers. CEQA Section 21099(a)(7) defines a "transit priority area" as an area within one-half mile of an existing or planned major transit stop. A "major transit stop" is defined in CEQA Section 21064.3 as a 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. As described in Section 4.14, Transportation and Circulation, the Project is within a transit priority area, and also withing a high quality transit corridor as it is served by several frequent bus routes. The project site is on Broadway which is served by Route 51A with 10-minute peak headways, and about 0.25 miles from Telegraph Avenue which is served by Route 6 with 12-minute peak headways. |

### TABLE D-1 (CONTINUED)
### PROJECT INFILL ELIGIBILITY

| | CEQA Eligibility Criteria | Eligible?/Notes for Proposed Project |
|---|---|---|
| 2. cont. | **Commercial/Retail.** A commercial/retail project must meet **one** of the following:<br>A. *Regional Location.* A commercial project with no single-building floor-plate greater than 50,000 square feet is eligible if it locates in a "low vehicle travel area"; **or**<br>B. B. *Proximity to Households.* A project with no single-building floor-plate greater than 50,000 square feet located within ½ mile of 1,800 households is eligible. | Not Applicable.<br>According to Section IV (G) of CEQA Appendix M, for mixed-use projects "…the performance standards in this Section that apply to the predominant use shall govern the entire project." Because the predominant use is residential, the requirements for commercial/retail projects do not apply. |
| | **Office Building.** An office building project must meeting **one** of the following:<br>A. *Regional Location.* Office buildings, both commercial and public, are eligible if they locate in a low vehicle travel area; **or**<br>B. *Proximity to a Major Transit Stop.* Office buildings, both commercial and public, within ½ mile of an existing major transit stop, or ¼ mile of an existing stop along a high quality transit corridor, are eligible. | Not Applicable. |
| | **Schools.**<br>Elementary schools within 1 mile of 50 percent of the projected student population are eligible. Middle schools and high schools within 2 miles of 50 percent of the projected student population are eligible. Alternatively, any school within ½ mile of an existing major transit stop or an existing stop along a high quality transit corridor is eligible.<br>Additionally, to be eligible, all schools shall provide parking and storage for bicycles and scooters, and shall comply with the requirements of Sections 17213, 17213.1, and 17213.2 of the California Education Code. | Not Applicable. |
| | **Transit.**<br>Transit stations, as defined in Section 15183.3(f)(1), are eligible. | Not Applicable. |
| | **Small Walkable Community Projects.**<br>Small walkable community projects, as defined in Section 15183.3, subdivision (f)(5), that implement the project features in 2a above are eligible. | Not Applicable. |
| 3. | Be consistent with the general use designation, density, building intensity, and applicable policies specified for the project area in either a sustainable communities strategy or an alternative planning strategy, **except** as provided in CEQA Guidelines Sections 15183.3(b)(3)(A) or (b)(3)(B) below: | Yes<br>(see explanation below table) |
| | (b)(3)(A). Only where an infill project is proposed within the boundaries of a metropolitan planning organization for which a sustainable communities strategy or an alternative planning strategy will be, but is not yet in effect, a residential infill project must have a density of at least 20 units per acre, and a retail or commercial infill project must have a floor area ratio of at least 0.75; **or** | |

**TABLE D-1 (CONTINUED)**
**PROJECT INFILL ELIGIBILITY**

| CEQA Eligibility Criteria | | Eligible?/Notes for Proposed Project |
|---|---|---|
| 3. cont. | (b)(3)(B). Where an infill project is proposed outside of the boundaries of a metropolitan planning organization, the infill project must meet the definition of a "small walkable community project" in CEQA Guidelines §15183.3(f)(5).<br>(CEQA Guidelines Section 15183.3[b][3]) | |

NOTE:

[a] Where a project includes some combination of residential, commercial and retail, office building, transit station, and/or schools, the performance standards in this section that apply to the predominant use shall govern the entire project.

## Explanation for Eligibility Criterion 3 (from Table C-1 above)

The adopted Plan Bay Area (2021) serves as the sustainable communities strategy for the Bay Area, per Senate Bill 375. As defined by the Plan, Priority Development Areas (PDAs) are areas where new development will support the needs of residents and workers in a pedestrian-friendly environment served by transit. The 2929 Broadway Mixed Use Project is located within a PDA that includes all of Downtown Oakland and the Jack London District. A core strategy of Plan Bay Area is focused growth within PDAs which are generally areas served by public transit and near existing job centers and are locally identified for housing and job growth. The project site is within the Broadway Valdez District Specific Plan Area, an area the City has identified for housing, commercial, and office redevelopment. The Project would support many of Plan Bay Area's goals and strategies, such as building affordable housing and reducing GHG emissions by locating development near transit. As such, the Project is consistent with the region's Sustainable Communities Strategy. The Project is consistent with the Oakland General Plan and the Planning Code, as discussed in Attachment C and noted below.

- The General Plan land use designation for the site is Community Commercial. which is intended to "create, maintain, and enhance areas with a wide range of commercial and institutional operations along the City's major corridors and in shopping districts or centers." Combined with the Project's retail component, the new project residents will activate the area during both day and night and on weekdays and weekends and thereby enhance Broadway as a major commercial corridor.

- The project site is within the boundaries of the Plan area's Mixed Use Commercial Zones 3 and 4 (D-BV-3 and D-BV-4). The intent of the D-BV-3 zone (Mixed Use Boulevard Zone) is to "create, maintain, and enhance areas with direct frontage and access along Broadway, 27th Street, Piedmont Avenue, and Harrison Street." Ground-floor office and other commercial activities are allowed while upper stories are reserved for residential, office, or commercial activities. The intent of the D-BV-4 zone is to "create, maintain, and enhance areas that do not front Broadway, 27th Street, Piedmont Avenue, and Harrison Street." It allows the widest range of uses on the ground floor while upper stories are intended either residential or commercial activities. The Project would be consistent with the regulatory framework of D-BV-3 and D-BV-4, as it would provide a residential lobby, fitness center, and approximately 1,961 square feet of retail space fronting Broadway. The Project would provide residential use in the upper stories and is therefore consistent with both zoning classifications.

This page intentionally left blank

# ATTACHMENT E

# Criteria for Use of Addendum, Pursuant to CEQA Guidelines Section 15164

Section 15164(a) of the California Environmental Quality Act (CEQA) Guidelines states that "a lead agency or responsible agency shall prepare an addendum to a previously certified EIR [Environmental Impact Report] if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred." Section 15164(e) states that "a brief explanation of the decision not to prepare a subsequent EIR pursuant to Section 15162 should be included in an addendum to an EIR."

As discussed in detail in Section 6 of this document, the analysis in the 2014 BVDSP EIR is considered for this assessment under Section and 15164.

## Project Modifications

The Broadway Valdez District Specific Plan (BVDSP) EIR analyzed the Broadway Valdez District Development Program (Development Program), which represents the maximum feasible development that the City of Oakland has projected can reasonably be expected to occur in the BVDSP area (Plan area) over a 25-year planning period.[51]

The EIR indicates that the CEQA analysis was based on the maximum development quantities set forth in the Development Program. The intent of the BVDSP is to provide as much flexibility as is feasible in terms of precise mix of newly developed land uses and their location in the Plan area, while conforming to the CEQA analysis and thresholds established in the EIR. Traffic capacity was identified in the 2014 BVDSP EIR as the key environmental factor constraining development. The City of Oakland is tracking and measuring vehicle trip generation created by projects proposed under the BVDSP, not land uses, to monitor when thresholds established have been met. Thus, it is traffic capacity that caps development under the BVDSP, not uses, which were contemplated to evolve and, as long as impacts fall within the maximum development analyzed in the 2014 BVDSP EIR, additional CEQA analysis is unnecessary.

As shown in Table 1 of this CEQA Checklist, the Project's 1,961 square feet of retail use, combined with other constructed, approved, proposed, and under construction projects, would be well below the 111,100 square feet contemplated in the Development Program for Subdistrict 4.

---

[51] In total, the Broadway Valdez Development Program includes approximately 3.7 million square feet of development, including approximately 695,000 square feet of office space, 1,114,000 square feet of restaurant/ retail space, 1,800 residential units, a new 180-room hotel, approximately 6,500 parking spaces provided by the development program, and approximately 4,500 new jobs.

The Project's 220 residential units, combined with other constructed, approved, proposed, and under construction projects, would exceed the residential land use maximum identified in the Development Program for Subdistrict 4 and analyzed in the 2014 BVDSP EIR. However, the Project conforms to the traffic generation parameters analyzed in the 2014 BVDSP EIR, as described in Section 6.14, *Transportation and Circulation*, of this CEQA Checklist. As such, the Project is within the envelope of the Development Program analyzed in the 2014 BVDSP EIR.

As described in Section 6.14, *Transportation and Circulation*, of this CEQA Checklist, the Project would generate approximately 48 net new vehicle trips during the weekday AM peak hour and approximately 59 net new vehicle trips during the weekday PM peak hour. Together with trips generated by other projects that are currently under construction, approved, or proposed for development in the Plan area (see Table TRA-5 in Section 6.14, *Transportation and Circulation*), this would represent approximately 62 percent of the AM and 55 percent of the PM peak-hour trips anticipated in the 2014 BVDSP EIR for the Plan area, 35 percent of the AM and 40 percent of the PM peak-hour trips anticipated in the 2014 BVDSP EIR for the North End subarea, and 45 percent of both the AM and PM peak-hour trips anticipated in the 2014 BVDSP EIR for Subdistrict 4. The AM and PM peak hour trip generation numbers are below the 2014 BVDSP EIR estimates for the Development Program Buildout. The traffic impact analysis presented in the EIR continues to remain valid, and the trip generation from the Project combined with other projects currently being developed under the BVDSP would be within the program analyzed under the 2014 BVDSP EIR for the Plan area.

Therefore, the Project would represent a minor change in the Development Program, and such changes are anticipated in the EIR.

# Conditions for Addendum

As demonstrated in the CEQA Checklist, none of the following conditions for preparation of a subsequent EIR per Sections 15162(a) apply to the Project:

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:

    (A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

# Project Consistency with Section 15162 of the CEQA Guidelines

Since certification of the 2014 BVDSP EIR, no changes have occurred in the circumstances under which the Project would be implemented that would change the severity of the Project's physical impacts, as explained in the CEQA Checklist in Section 6 of this document. No new information has emerged that would substantially change the analyses or conclusions set forth in the 2014 BVDSP EIR.

Furthermore, as demonstrated in the CEQA Checklist, the Project would not result in any new significant environmental impacts, result in any substantial increases in the significance of previously identified effects, or necessitate implementation of additional or considerably different mitigation measures than those identified in 2014 BVDSP EIR, nor render any mitigation measures or alternatives found not to be feasible, feasible. The effects of the Project would be substantially the same as those reported in the 2014 BVDSP EIR. No major revisions to the 2014 BVDSP EIR are required.

The analysis presented in this CEQA Checklist, combined with the prior 2014 BVDSP EIR analysis, demonstrates that the Project would not result in significant impacts that were not previously identified in the 2014 BVDSP EIR. The Project would not result in a substantial increase in the significance of impacts, nor would the Project contribute considerably to cumulative effects that were not already accounted for in the certified 2014 BVDSP EIR. Overall, the Project's impacts are similar to those identified and discussed in the 2014 BVDSP EIR, as described in the CEQA Checklist, and the findings reached in the 2014 BVDSP EIR are applicable.

This page intentionally left blank

# ATTACHMENT F

## Criteria for Use of Other Applicable Previous CEQA Documents, per CEQA Guidelines Section 15168

Section 15168(a) of the California Environmental Quality Act (CEQA) Guidelines states that "A program EIR is an EIR which may be prepared on a series of actions that can be characterized as one large project and are related either:

1. Geographically,
2. As logical parts in the chain of contemplated actions,
3. In connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program, or
4. As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.

Further, Section 15168(c) states that "Later activities in the program must be examined in the light of the program EIR to determine whether an additional environmental document must be prepared." Specifically,

(1) If a later activity would have effects that were not examined in the program EIR, a new initial study would need to be prepared leading to either an EIR or a negative declaration. That later analysis may tier from the program EIR as provided in Section 15152.

(2) If the [lead] agency finds that pursuant to Section 15162, no subsequent EIR would be required, the agency can approve the activity as being within the scope of the project covered by the program EIR, and no new environmental document would be required. Whether a later activity is within the scope of a program EIR is a factual question that the lead agency determines based on substantial evidence in the record. Factors that an agency may consider in making that determination include, but are not limited to, consistency of the later activity with the type of allowable land use, overall planned density and building intensity, geographic area analyzed for environmental impacts, and covered infrastructure, as described in the program EIR.

(3) An agency shall incorporate feasible mitigation measures and alternatives developed in the program EIR into later activities in the program.

(4) Where the later activities involve site specific operations, the agency should use a written checklist or similar device to document the evaluation of the site and the activity to determine whether the environmental effects of the operation were within the scope of the program EIR.

(5) A program EIR will be most helpful in dealing with later activities if it provides a description of planned activities that would implement the program and deals with the effects of the program as specifically and comprehensively as possible. With a good and detailed project description and analysis of the program, many later activities could be found to be within the scope of the project described in the program EIR, and no further environmental documents would be required.

As discussed in Section 5 of this document, the program-level analyses completed in the 2014 BVDSP EIR is considered for this assessment under Sections 15162 and 15168.

**New Significant Effects.** As demonstrated in Section 6 of the CEQA Checklist and Attachment C to this CEQA Checklist, the Project would not cause new specific effects that were not addressed in, the 2014 BVDSP EIR. Therefore, an initial study is not required for the Project.

**Project Consistency**. Attachment C to this CEQA Checklist demonstrates the Project's consistency with the development density established by the existing zoning, community plan, and general plan policies previously analyzed in the 2014 BVDSP EIR. Attachment E to this CEQA Checklist establishes that the Project would represent a minor change in the BVDSP Development Program, and such changes are anticipated and analyzed in the 2014 BVDSP EIR. Pursuant to Section 15162, no subsequent EIR would be required as the Project is within the scope of the project covered by the 2014 BVDSP EIR.

**Mitigation Incorporation**. The analysis conducted incorporates by reference the information contained in the 2014 BVDSP EIR. The Project is legally required to incorporate and/or comply with the applicable requirements of the mitigation measures identified in the 2014 BVDSP EIR. Therefore, the mitigation measures are herein assumed to be included as part of the Project, including those that have been modified to reflect the City's current standard language and requirements.

**CEQA Checklist**. Section 6 of this CEQA Checklist evaluates the potential project-specific environmental effects of the Project, and evaluates whether such impacts were adequately covered by the 2014 BVDSP EIR, to allow the provisions afforded by Guidelines Section 5168 to apply.

The information presented in this environmental review document and attachments supports that the Project is within the scope of the project described in the 2014 BVDSP EIR and meets all requirements under CEQA Guidelines Section 15168. As such, the Project qualifies for the tiering provisions afforded under CEQA Guidelines Section 15168 and no supplemental environmental review is required.

# Appendix A

## Air Quality Tables

This page intentionally left blank

# 2929 Broadway - Construction data for AQ/HRA

| Data provided by applicant | Calculated by CalEEMod | Calculated by ESA |
|---|---|---|

| Proposed Land Uses | Size | Units | Area | Units |
|---|---|---|---|---|
| Residential | 220 | dwelling units (DU) | 196,691 | sqft |
| Retail | 1696 | sqft | 1696 | sqft |
| Parking garage | 24436 | sqft | 24436 | sqft |

| | | | |
|---|---|---|---|
| Project Site Area | 0.93 | acres | |
| Building area to be demolished | 24,105 | sqft | |
| Carport area to be demolished | 3,560 | sqft | |
| Paved area to be demolished | 15,807 | sqft | |
| Total demo volume = | 1,483 | tons | |
| Total proposed building area | 222,823 | sqft | |
| Volume of earthwork (cut) | 7,020 | cubic yards | |
| Volume of fill (100% from cut) | 0 | cubic yards | Revised numbers as of Feb 22 |
| Volume of material to be exported | 7,046 | cubic yards | |

## Construction schedule

| | |
|---|---|
| Start date of construction | 3/1/2022 |
| First year of operation | 2024 |

| Construction Phase | From | To | # of days |
|---|---|---|---|
| Demolition | 3/1/2022 | 4/15/2022 | 34 |
| Site Preparation | 4/18/2022 | 4/22/2022 | 5 |
| Grading | 4/25/2022 | 5/13/2022 | 15 |
| Building Construction | 5/16/2022 | 2/13/2024 | 457 |
| Paving | 2/14/2024 | 2/21/2024 | 6 |
| Architectural Coating | 2/22/2024 | 2/28/2024 | 5 |
| | | | 522 |

## Construction Equipment

| Equipment | Number | No. of Days used | Hrs/day used | Adjusted hrs/day |
|---|---|---|---|---|

|  |  |  |  |  |
|---|---|---|---|---|
| **Demolition** |  |  |  |  |
| Crushing/Proc. Equipment | 1 | 10 | 8 | 2.4 |
| Excavators | 1 | 30 | 8 | 7.1 |
| Dumpers/Tenders | 10 | 30 | 6 | 5.3 |
| Tractors/Loaders/Backhoes | 3 | 30 | 8 | 7.1 |
| **Site Preparation** |  |  |  |  |
| Graders | 1 | 1 | 2 | 0.4 |
| Rollers | 1 | 1 | 2 | 0.4 |
| Scrapers | 1 | 1 | 2 | 0.4 |
| **Grading** |  |  |  |  |
| Graders | 2 | 15 | 8 | 8.0 |
| Scrapers | 2 | 15 | 8 | 8.0 |
| Rollers | 2 | 15 | 8 | 8.0 |
| Building Construction |  |  |  |  |
| Concrete/Industrial Saws | 10 | 100 | 6 | 1.3 |
| Cranes | 1 | 100 | 8 | 1.8 |
| Air Compressors | 10 | 400 | 8 | 7.0 |
| Cement and Mortar Mixers | 2 | 100 | 8 | 1.8 |
| Forklifts | 3 | 400 | 8 | 7.0 |
| Pumps | 1 | 100 | 8 | 1.8 |
| Welders | 1 | 60 | 8 | 1.1 |
| Paving |  |  |  |  |
| Pavers | 1 | 5 | 8 | 6.7 |
| Paving Equipment | 1 | 5 | 8 | 6.7 |
| Rollers | 2 | 5 | 8 | 6.7 |
| **Architectural Coating** |  |  |  |  |
| Surfacing Equipment | 1 | 5 | 8 | 8.0 |

## Construction Vehicle Trips

Number of 1-way trips as estimated by CalEEMod

| Construction Phase | worker trips/day | Vendor Truck | Hauling Truck |
|---|---|---|---|
| Demolition | 38 | 0 | 147 |

| | | | |
|---|---|---|---|
| Site Preparation | 8 | 0 | 0 |
| Grading | 15 | 0 | 881 |
| Building Construction | 169 | 28 | 4 |
| Paving | 10 | 0 | 0 |
| Architectural Coating | 34 | 0 | 0 |

## Estimation of Demolition Waste tonnage

From CalEEMod Users Guide:

| | | | |
|---|---|---|---|
| 1 | sqft floor space = | 10 | cuft original building volume |
| 1 | cuft building volume = | 0.25 | cuft waste volume |
| 1 | cuyd building waste = | 0.5 | ton weight |
| 1 | haul truck = | 20 | cuyd haul volume |
| 1 | sqft = | 0.046 | ton of waste material |

| | | | | | |
|---|---|---|---|---|---|
| 24,105 | sqft floor space of building area = | 241050 | cuft original building volume | | |
| | | 60262.5 | cuft waste volume | | |
| | | 1108.83 | ton of waste material | | |
| 3,560 | sqft floor space of carport = | 4450 | cuft waste volume | | |
| | | 81.88 | ton of waste material | | |
| 15,807 | sqft paved area x | 6 | inches thick = | 292.7 | cuyd |
| | | | | 292.7 | tons |

| | | |
|---|---|---|
| Total demo tons = | 1483.41 | tons of waste material |

# EMISSION SUMMARIES - 2929 Broadway

**UNCONTROLLED CONSTRUCTION EMISSIONS - Criteria Air Pollutants**

| Year | No. of Construction Wokdays | Tons over Construction Period | | | | Average Pounds per day | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | ROG | NOx | Exhaust PM-10 | Exhaust PM-2.5 | ROG | NOx | Exhaust PM-10 | Exhaust PM-2.5 |
| 2022 | 219 | 0.38 | 2.78 | 0.14 | 0.14 | 3.5 | 25.4 | 1.3 | 1.3 |
| 2023 | 260 | 0.49 | 3.29 | 0.17 | 0.16 | 3.7 | 25.3 | 1.3 | 1.3 |
| 2024 | 43 | 1.46 | 0.40 | 0.02 | 0.02 | 67.8 | 18.6 | 0.9 | 0.9 |
| PROJECT TOTAL | 522 | 2.32 | 6.46 | 0.33 | 0.32 | **8.9** | **24.8** | **1.3** | **1.2** |

**CONSTRUCTION EMISSIONS - Criteria Air Pollutants - Tier 4 Final for all equipment**

| Year | No. of Construction Wokdays[1] | Tons over Construction Period | | | | Average Pounds per day | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | ROG | NOx | Exhaust PM-10 | Exhaust PM-2.5 | ROG | NOx | Exhaust PM-10 | Exhaust PM-2.5 |
| 2022 | 219 | 0.10 | 0.48 | 0.010 | 0.009 | 0.9 | 4.3 | 0.1 | 0.1 |
| 2023 | 260 | 0.13 | 0.51 | 0.011 | 0.011 | 1.0 | 4.0 | 0.1 | 0.1 |
| 2024 | 43 | 1.42 | 0.07 | 0.001 | 0.001 | 65.8 | 3.1 | 0.1 | 0.1 |
| PROJECT TOTAL | 522 | 1.65 | 1.06 | 0.022 | 0.022 | **6.3** | **4.0** | **0.1** | **0.1** |

**OPERATIONAL EMISSIONS - Criteria Air Pollutants**

| Source | Tons per year | | | | Pounds per day | | | |
|---|---|---|---|---|---|---|---|---|
| | ROG | NOx | Total PM-10 | Total PM-2.5 | ROG | NOx | Total PM-10 | Total PM-2.5 |
| **Proposed Uses** | | | | | | | | |
| Area | 0.97 | 1.88E-02 | 9.05E-03 | 9.05E-03 | 5.3 | 0.1 | 0.05 | 0.05 |
| Energy | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 |
| Mobile | 0.31 | 0.38 | 0.64 | 0.17 | 1.7 | 2.1 | 3.5 | 1.0 |
| TOTAL | 1.27 | 0.40 | 0.65 | 0.18 | 7.0 | 2.2 | 3.6 | 1.0 |
| **Existing Uses** | | | | | | | | |
| Area | 0.107 | 0.0 | 0.0 | 0.0 | 0.6 | 0.0 | 0.0 | 0.0 |
| Energy | 0.004 | 0.03 | 0.002 | 0.002 | 0.02 | 0.2 | 0.01 | 0.01 |
| Mobile | 0.052 | 0.050 | 0.06 | 0.017 | 0.3 | 0.3 | 0.34 | 0.09 |
| TOTAL | 0.16 | 0.08 | 0.06 | 0.02 | 0.9 | 0.4 | 0.35 | 0.11 |
| Net Increase in Operational Emissions | 1.11 | 0.32 | 0.58 | 0.16 | **6.1** | **1.7** | **3.2** | **0.9** |

## 2929 Broadway - Proposed Uses

### Alameda County, Annual

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Enclosed Parking Structure | 24.44 | 1000sqft | 0.00 | 24,436.00 | 0 |
| Apartments Mid Rise | 220.00 | Dwelling Unit | 0.93 | 196,691.00 | 629 |
| Strip Mall | 1.70 | 1000sqft | 0.00 | 1,696.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 63 |
| **Climate Zone** | 5 | | | **Operational Year** | 2024 |
| **Utility Company** | Pacific Gas and Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 203.98 | **CH4 Intensity (lb/MWhr)** | 0.033 | **N2O Intensity (lb/MWhr)** | 0.004 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics - .

Land Use - Site area and proposed buil area

Construction Phase - From applicant

Off-road Equipment - From applicant

Off-road Equipment - From applicant

Off-road Equipment - From applicant

Off-road Equipment - From applicant

Off-road Equipment - From applicant

Off-road Equipment - From applicant

Demolition -

Grading - From aplicant

Vehicle Trips - Trip rate adjusted based on project transportation analysis

Woodstoves - No woodstoves or fireplaces

Energy Use - Electricity use adjusted to account for no natural gas

Water And Wastewater - 100 percent aerobic digestion assumed

Construction Off-road Equipment Mitigation - Tier 4 Final used as BACT for construction equipment

Trips and VMT -

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblArchitecturalCoating | ConstArea_Parking | 0.00 | 1,466.00 |
| tblArchitecturalCoating | EF_Parking | 0.00 | 150.00 |
| tblAreaCoating | Area_Parking | 0 | 1466 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 10.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 2.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 10.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 1.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 1.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 10.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 1.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 3.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 3.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 1.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 1.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 1.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 5.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 3.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 1.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 3.00 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00 | 1.00 |

| | | | |
|---|---|---|---|
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstEquipMitigation | Tier | No Change | Tier 4 Final |
| tblConstructionPhase | NumDays | 100.00 | 457.00 |
| tblConstructionPhase | NumDays | 10.00 | 34.00 |
| tblConstructionPhase | NumDays | 2.00 | 15.00 |
| tblConstructionPhase | NumDays | 5.00 | 6.00 |
| tblConstructionPhase | NumDays | 1.00 | 5.00 |
| tblEnergyUse | NT24E | 3,054.10 | 3,820.48 |
| tblEnergyUse | NT24E | 3.36 | 3.57 |
| tblEnergyUse | NT24NG | 2,615.00 | 0.00 |
| tblEnergyUse | NT24NG | 0.70 | 0.00 |
| tblEnergyUse | T24E | 90.83 | 1,798.95 |
| tblEnergyUse | T24E | 2.00 | 3.13 |
| tblEnergyUse | T24NG | 5,828.01 | 0.00 |
| tblEnergyUse | T24NG | 3.86 | 0.00 |
| tblFireplaces | FireplaceHourDay | 3.50 | 0.00 |
| tblFireplaces | NumberGas | 33.00 | 0.00 |
| tblFireplaces | NumberNoFireplace | 8.80 | 220.00 |
| tblFireplaces | NumberWood | 37.40 | 0.00 |
| tblFleetMix | HHD | 0.00 | 0.01 |
| tblFleetMix | HHD | 0.00 | 0.01 |
| tblFleetMix | HHD | 0.00 | 0.01 |
| tblFleetMix | LDA | 0.00 | 0.57 |
| tblFleetMix | LDA | 0.00 | 0.57 |
| tblFleetMix | LDA | 0.00 | 0.57 |
| tblFleetMix | LDT1 | 0.00 | 0.06 |
| tblFleetMix | LDT1 | 0.00 | 0.06 |
| tblFleetMix | LDT1 | 0.00 | 0.06 |
| tblFleetMix | LDT2 | 0.00 | 0.18 |
| tblFleetMix | LDT2 | 0.00 | 0.18 |
| tblFleetMix | LDT2 | 0.00 | 0.18 |
| tblFleetMix | LHD1 | 0.00 | 0.02 |
| tblFleetMix | LHD1 | 0.00 | 0.02 |
| tblFleetMix | LHD1 | 0.00 | 0.02 |
| tblFleetMix | LHD2 | 0.00 | 5.1690e-003 |
| tblFleetMix | LHD2 | 0.00 | 5.1690e-003 |
| tblFleetMix | LHD2 | 0.00 | 5.1690e-003 |
| tblFleetMix | MCY | 0.00 | 0.02 |
| tblFleetMix | MCY | 0.00 | 0.02 |
| tblFleetMix | MCY | 0.00 | 0.02 |
| tblFleetMix | MDV | 0.00 | 0.11 |
| tblFleetMix | MDV | 0.00 | 0.11 |
| tblFleetMix | MDV | 0.00 | 0.11 |
| tblFleetMix | MH | 0.00 | 2.4510e-003 |
| tblFleetMix | MH | 0.00 | 2.4510e-003 |
| tblFleetMix | MH | 0.00 | 2.4510e-003 |

|  |  |  |  |
|---|---|---|---|
| tblFleetMix | MHD | 0.00 | 0.01 |
| tblFleetMix | MHD | 0.00 | 0.01 |
| tblFleetMix | MHD | 0.00 | 0.01 |
| tblFleetMix | OBUS | 0.00 | 7.9200e-004 |
| tblFleetMix | OBUS | 0.00 | 7.9200e-004 |
| tblFleetMix | OBUS | 0.00 | 7.9200e-004 |
| tblFleetMix | SBUS | 0.00 | 3.3700e-004 |
| tblFleetMix | SBUS | 0.00 | 3.3700e-004 |
| tblFleetMix | SBUS | 0.00 | 3.3700e-004 |
| tblFleetMix | UBUS | 0.00 | 5.7000e-004 |
| tblFleetMix | UBUS | 0.00 | 5.7000e-004 |
| tblFleetMix | UBUS | 0.00 | 5.7000e-004 |
| tblGrading | MaterialExported | 0.00 | 7,046.00 |
| tblOffRoadEquipment | HorsePower | 78.00 | 263.00 |
| tblOffRoadEquipment | HorsePower | 81.00 | 85.00 |
| tblOffRoadEquipment | LoadFactor | 0.48 | 0.30 |
| tblOffRoadEquipment | LoadFactor | 0.73 | 0.78 |
| tblProjectCharacteristics | CH4IntensityFactor | 0 | 0.033 |
| tblProjectCharacteristics | CO2IntensityFactor | 0 | 203.98 |
| tblProjectCharacteristics | N2OIntensityFactor | 0 | 0.004 |
| tblProjectCharacteristics | PrecipitationFrequency | 0 | 63 |
| tblProjectCharacteristics | WindSpeed | 0 | 2.2 |
| tblVehicleTrips | ST_TR | 4.91 | 3.12 |
| tblVehicleTrips | ST_TR | 42.04 | 21.24 |
| tblVehicleTrips | SU_TR | 4.09 | 2.60 |
| tblVehicleTrips | SU_TR | 20.43 | 10.32 |
| tblVehicleTrips | WD_TR | 5.44 | 3.45 |
| tblVehicleTrips | WD_TR | 44.32 | 22.39 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |
| tblWoodstoves | NumberCatalytic | 4.40 | 0.00 |
| tblWoodstoves | NumberNoncatalytic | 4.40 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction

**Unmitigated Construction**

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| 2022 | 0.3791 | 2.7773 | 3.3805 | 6.85E-03 | 0.1806 | 0.1416 | 0.3222 | 0.0428 | 0.1388 | 0.1816 | 0 | 603.8917 | 603.8917 | 0.0553 | 0.0147 | 609.6567 |
| 2023 | 0.4852 | 3.2873 | 4.6588 | 9.00E-03 | 0.1976 | 0.167 | 0.3647 | 0.0531 | 0.1649 | 0.2181 | 0 | 791.4214 | 791.4214 | 0.0548 | 0.0143 | 797.0651 |
| 2024 | 1.457 | 0.4001 | 0.5979 | 1.16E-03 | 0.0252 | 0.0188 | 0.044 | 6.78E-03 | 0.0185 | 0.0252 | 0 | 102.1347 | 102.1347 | 8.00E-03 | 1.73E-03 | 102.8511 |
| **Maximum** | **1.457** | **3.2873** | **4.6588** | **9.00E-03** | **0.1976** | **0.167** | **0.3647** | **0.0531** | **0.1649** | **0.2181** | **0** | **791.4214** | **791.4214** | **0.0553** | **0.0147** | **797.0651** |

**Mitigated Construction**

|  | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr |  |  |  |  |  |  |  |  |  | MT/yr |  |  |  |  |  |
| 2022 | 0.1001 | 0.4754 | 3.4459 | 6.85E-03 | 0.1806 | 9.57E-03 | 0.1902 | 0.0428 | 9.43E-03 | 0.0522 | 0 | 603.8912 | 603.8912 | 0.0553 | 0.0147 | 609.6562 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2023 | 0.1307 | 0.5143 | 4.7501 | 9.00E-03 | 0.1976 | 0.0111 | 0.2087 | 0.0531 | 0.011 | 0.0641 | 0 | 791.4207 | 791.4207 | 0.0548 | 0.0143 | 797.0644 |
| 2024 | 1.4151 | 0.0658 | 0.6173 | 1.16E-03 | 0.0252 | 1.45E-03 | 0.0267 | 6.78E-03 | 1.44E-03 | 8.22E-03 | 0 | 102.1346 | 102.1346 | 8.00E-03 | 1.73E-03 | 102.851 |
| **Maximum** | **1.4151** | **0.5143** | **4.7501** | **9.00E-03** | **0.1976** | **0.0111** | **0.2087** | **0.0531** | **0.011** | **0.0641** | **0** | **791.4207** | **791.4207** | **0.0553** | **0.0147** | **797.0644** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **29.10** | **83.67** | **-2.04** | **0.00** | **0.00** | **93.25** | **41.77** | **0.00** | **93.22** | **70.69** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

| Quarter | Start Date | End Date | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---|---|---|---|---|
| 1 | **3-1-2022** | **5-31-2022** | 0.6853 | 0.1499 |
| 2 | **6-1-2022** | **8-31-2022** | 1.0372 | 0.1744 |
| 3 | **9-1-2022** | **11-30-2022** | 1.0295 | 0.1760 |
| 4 | **12-1-2022** | **2-28-2023** | 0.9647 | 0.1670 |
| 5 | **3-1-2023** | **5-31-2023** | 0.9534 | 0.1629 |
| 6 | **6-1-2023** | **8-31-2023** | 0.9518 | 0.1613 |
| 7 | **9-1-2023** | **11-30-2023** | 0.9445 | 0.1627 |
| 8 | **12-1-2023** | **2-29-2024** | 2.1722 | 1.5367 |
| | | **Highest** | 2.1722 | 1.5367 |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 0.9654 | 0.0188 | 1.6331 | 9.00E-05 | | 9.05E-03 | 9.05E-03 | | 9.05E-03 | 9.05E-03 | 0 | 2.6688 | 2.6688 | 2.56E-03 | 0 | 2.7328 |
| Energy | 0.0000 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | 0 | 143.1639 | 143.1639 | 0.0232 | 2.81E-03 | 144.5795 |
| Mobile | 0.3062 | 0.3796 | 2.8257 | 6.03E-03 | 0.635 | 4.55E-03 | 0.6395 | 0.1696 | 4.24E-03 | 0.1739 | 0 | 566.6222 | 566.6222 | 0.0361 | 0.0294 | 576.2726 |
| Waste | | | | | | 0 | 0 | | 0 | 0 | 20.904 | 0 | 20.904 | 1.2354 | 0 | 51.7888 |
| Water | | | | | | 0 | 0 | | 0 | 0 | 5.1159 | 10.1906 | 15.3065 | 0.0193 | 0.0113 | 19.1628 |
| **Total** | **1.2715** | **0.3984** | **4.4588** | **6.12E-03** | **0.635** | **0.0136** | **0.6486** | **0.1696** | **0.0133** | **0.1829** | **26.0199** | **722.6455** | **748.6654** | **1.3165** | **0.0435** | **794.5366** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 0.9654 | 0.0188 | 1.6331 | 9.00E-05 | | 9.05E-03 | 9.05E-03 | | 9.05E-03 | 9.05E-03 | 0 | 2.6688 | 2.6688 | 2.56E-03 | 0 | 2.7328 |
| Energy | 0.0000 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | 0 | 143.1639 | 143.1639 | 0.0232 | 2.81E-03 | 144.5795 |
| Mobile | 0.3062 | 0.3796 | 2.8257 | 6.03E-03 | 0.635 | 4.55E-03 | 0.6395 | 0.1696 | 4.24E-03 | 0.1739 | 0 | 566.6222 | 566.6222 | 0.0361 | 0.0294 | 576.2726 |
| Waste | | | | | | 0 | 0 | | 0 | 0 | 20.904 | 0 | 20.904 | 1.2354 | 0 | 51.7888 |
| Water | | | | | | 0 | 0 | | 0 | 0 | 5.1159 | 10.1906 | 15.3065 | 0.0193 | 0.0113 | 19.1628 |
| **Total** | **1.2715** | **0.3984** | **4.4588** | **6.12E-03** | **0.635** | **0.0136** | **0.6486** | **0.1696** | **0.0133** | **0.1829** | **26.0199** | **722.6455** | **748.6654** | **1.3165** | **0.0435** | **794.5366** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 3/1/2022 | 4/15/2022 | 5 | 34 | |
| 2 | Site Preparation | Site Preparation | 4/18/2022 | 4/22/2022 | 5 | 5 | |
| 3 | Grading | Grading | 4/25/2022 | 5/13/2022 | 5 | 15 | |
| 4 | Building Construction | Building Construction | 5/16/2022 | 2/13/2024 | 5 | 457 | |
| 5 | Paving | Paving | 2/14/2024 | 2/21/2024 | 5 | 6 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6 | Architectural Coating | Architectural Coating | 2/22/2024 | 2/28/2024 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 0.38**

**Acres of Grading (Grading Phase): 45**

**Acres of Paving: 0**

**Residential Indoor: 398,299; Residential Outdoor: 132,766; Non-Residential Indoor: 2,544; Non-Residential Outdoor: 848; Striped Parking Area: 1,466**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Demolition | Concrete/Industrial Saws | 0 | 0.00 | 85 | 0.78 |
| Demolition | Crushing/Proc. Equipment | 1 | 2.40 | 85 | 0.78 |
| Demolition | Dumpers/Tenders | 10 | 5.30 | 16 | 0.38 |
| Demolition | Excavators | 1 | 7.10 | 158 | 0.38 |
| Demolition | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Demolition | Tractors/Loaders/Backhoes | 3 | 7.10 | 97 | 0.37 |
| Site Preparation | Graders | 1 | 0.40 | 187 | 0.41 |
| Site Preparation | Rollers | 1 | 0.40 | 80 | 0.38 |
| Site Preparation | Scrapers | 1 | 0.40 | 367 | 0.48 |
| Site Preparation | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Grading | Graders | 2 | 8.00 | 187 | 0.41 |
| Grading | Rollers | 2 | 8.00 | 80 | 0.38 |
| Grading | Rubber Tired Dozers | 0 | 0.00 | 247 | 0.40 |
| Grading | Scrapers | 2 | 8.00 | 367 | 0.48 |
| Grading | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Building Construction | Air Compressors | 10 | 7.00 | 78 | 0.48 |
| Building Construction | Cement and Mortar Mixers | 2 | 1.80 | 9 | 0.56 |
| Building Construction | Concrete/Industrial Saws | 10 | 1.30 | 81 | 0.73 |
| Building Construction | Cranes | 1 | 1.80 | 231 | 0.29 |
| Building Construction | Forklifts | 3 | 7.00 | 89 | 0.20 |
| Building Construction | Pumps | 1 | 1.80 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Building Construction | Welders | 1 | 1.10 | 46 | 0.45 |
| Paving | Cement and Mortar Mixers | 0 | 0.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 6.70 | 130 | 0.42 |
| Paving | Paving Equipment | 1 | 6.70 | 132 | 0.36 |
| Paving | Rollers | 2 | 6.70 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | 0 | 0.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | 0 | 0.00 | 263 | 0.30 |
| Architectural Coating | Surfacing Equipment | 1 | 8.00 | 263 | 0.30 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Demolition | 15 | 38.00 | 0.00 | 147.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 3 | 8.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 6 | 15.00 | 0.00 | 881.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 28 | 169.00 | 28.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 4 | 10.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 34.00 | 0.00 | 0.00 | 10.80 | 7.30 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

## 3.2 Demolition - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0159 | 0.0000 | 0.0159 | 2.4000e-003 | 0.0000 | 2.4000e-003 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0212 | 0.1714 | 0.2007 | 3.4000e-004 | | 8.2500e-003 | 8.2500e-003 | | 7.8200e-003 | 7.8200e-003 | 0.0000 | 28.5140 | 28.5140 | 7.0800e-003 | 0.0000 | 28.6911 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.0212** | **0.1714** | **0.2007** | **3.4000e-004** | **0.0159** | **8.2500e-003** | **0.0241** | **2.4000e-003** | **7.8200e-003** | **0.0102** | **0.0000** | **28.5140** | **28.5140** | **7.0800e-003** | **0.0000** | **28.6911** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 3.4000e-004 | 0.0123 | 2.5300e-003 | 5.0000e-005 | 1.2500e-003 | 1.1000e-004 | 1.3600e-003 | 3.4000e-004 | 1.1000e-004 | 4.5000e-004 | 0.0000 | 4.4999 | 4.4999 | 1.0000e-004 | 7.1000e-004 | 4.7141 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 1.8200e-003 | 1.3100e-003 | 0.0155 | 4.0000e-005 | 5.1100e-003 | 3.0000e-005 | 5.1400e-003 | 1.3600e-003 | 3.0000e-005 | 1.3800e-003 | 0.0000 | 4.1319 | 4.1319 | 1.3000e-004 | 1.2000e-004 | 4.1711 |
| **Total** | **2.1600e-003** | **0.0136** | **0.0181** | **9.0000e-005** | **6.3600e-003** | **1.4000e-004** | **6.5000e-003** | **1.7000e-003** | **1.4000e-004** | **1.8300e-003** | **0.0000** | **8.6319** | **8.6319** | **2.3000e-004** | **8.3000e-004** | **8.8853** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0159 | 0.0000 | 0.0159 | 2.4000e-003 | 0.0000 | 2.4000e-003 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 3.0400e-003 | 0.0132 | 0.1872 | 3.4000e-004 | | 4.0000e-004 | 4.0000e-004 | | 4.0000e-004 | 4.0000e-004 | 0.0000 | 28.5140 | 28.5140 | 7.0800e-003 | 0.0000 | 28.6910 |
| **Total** | **3.0400e-003** | **0.0132** | **0.1872** | **3.4000e-004** | **0.0159** | **4.0000e-004** | **0.0163** | **2.4000e-003** | **4.0000e-004** | **2.8000e-003** | **0.0000** | **28.5140** | **28.5140** | **7.0800e-003** | **0.0000** | **28.6910** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 3.4000e-004 | 0.0123 | 2.5300e-003 | 5.0000e-005 | 1.2500e-003 | 1.1000e-004 | 1.3600e-003 | 3.4000e-004 | 1.1000e-004 | 4.5000e-004 | 0.0000 | 4.4999 | 4.4999 | 1.0000e-004 | 7.1000e-004 | 4.7141 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 1.8200e-003 | 1.3100e-003 | 0.0155 | 4.0000e-005 | 5.1100e-003 | 3.0000e-005 | 5.1400e-003 | 1.3600e-003 | 3.0000e-005 | 1.3800e-003 | 0.0000 | 4.1319 | 4.1319 | 1.3000e-004 | 1.2000e-004 | 4.1711 |
| **Total** | **2.1600e-003** | **0.0136** | **0.0181** | **9.0000e-005** | **6.3600e-003** | **1.4000e-004** | **6.5000e-003** | **1.7000e-003** | **1.4000e-004** | **1.8300e-003** | **0.0000** | **8.6319** | **8.6319** | **2.3000e-004** | **8.3000e-004** | **8.8853** |

## 3.3 Site Preparation - 2022

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 2.0000e-004 | 0.0000 | 2.0000e-004 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.8000e-004 | 1.9900e-003 | 1.2400e-003 | 0.0000 | | 8.0000e-005 | 8.0000e-005 | | 7.0000e-005 | 7.0000e-005 | 0.0000 | 0.2683 | 0.2683 | 9.0000e-005 | 0.0000 | 0.2704 |
| **Total** | **1.8000e-004** | **1.9900e-003** | **1.2400e-003** | **0.0000** | **2.0000e-004** | **8.0000e-005** | **2.8000e-004** | **2.0000e-005** | **7.0000e-005** | **9.0000e-005** | **0.0000** | **0.2683** | **0.2683** | **9.0000e-005** | **0.0000** | **0.2704** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 6.0000e-005 | 4.0000e-005 | 4.8000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1279 | 0.1279 | 0.0000 | 0.0000 | 0.1291 |
| **Total** | **6.0000e-005** | **4.0000e-005** | **4.8000e-004** | **0.0000** | **1.6000e-004** | **0.0000** | **1.6000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.1279** | **0.1279** | **0.0000** | **0.0000** | **0.1291** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 2.0000e-004 | 0.0000 | 2.0000e-004 | 2.0000e-005 | 0.0000 | 2.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 4.0000e-005 | 1.6000e-004 | 1.4700e-003 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.2683 | 0.2683 | 9.0000e-005 | 0.0000 | 0.2704 |
| **Total** | **4.0000e-005** | **1.6000e-004** | **1.4700e-003** | **0.0000** | **2.0000e-004** | **0.0000** | **2.0000e-004** | **2.0000e-005** | **0.0000** | **2.0000e-005** | **0.0000** | **0.2683** | **0.2683** | **9.0000e-005** | **0.0000** | **0.2704** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 6.0000e-005 | 4.0000e-005 | 4.8000e-004 | 0.0000 | 1.6000e-004 | 0.0000 | 1.6000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1279 | 0.1279 | 0.0000 | 0.0000 | 0.1291 |
| **Total** | **6.0000e-005** | **4.0000e-005** | **4.8000e-004** | **0.0000** | **1.6000e-004** | **0.0000** | **1.6000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.1279** | **0.1279** | **0.0000** | **0.0000** | **0.1291** |

## 3.4 Grading - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0243 | 0.0000 | 0.0243 | 2.6400e-003 | 0.0000 | 2.6400e-003 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0210 | 0.2389 | 0.1494 | 3.7000e-004 | | 9.2400e-003 | 9.2400e-003 | | 8.5000e-003 | 8.5000e-003 | 0.0000 | 32.1916 | 32.1916 | 0.0104 | 0.0000 | 32.4519 |
| **Total** | **0.0210** | **0.2389** | **0.1494** | **3.7000e-004** | **0.0243** | **9.2400e-003** | **0.0335** | **2.6400e-003** | **8.5000e-003** | **0.0111** | **0.0000** | **32.1916** | **32.1916** | **0.0104** | **0.0000** | **32.4519** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 2.0200e-003 | 0.0737 | 0.0152 | 2.8000e-004 | 7.4600e-003 | 6.8000e-004 | 8.1400e-003 | 2.0500e-003 | 6.5000e-004 | 2.7000e-003 | 0.0000 | 26.9689 | 26.9689 | 5.8000e-004 | 4.2600e-003 | 28.2528 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 3.2000e-004 | 2.3000e-004 | 2.7100e-003 | 1.0000e-005 | 8.9000e-004 | 0.0000 | 8.9000e-004 | 2.4000e-004 | 0.0000 | 2.4000e-004 | 0.0000 | 0.7196 | 0.7196 | 2.0000e-005 | 2.0000e-005 | 0.7264 |
| **Total** | **2.3400e-003** | **0.0739** | **0.0179** | **2.9000e-004** | **8.3500e-003** | **6.8000e-004** | **9.0300e-003** | **2.2900e-003** | **6.5000e-004** | **2.9400e-003** | **0.0000** | **27.6884** | **27.6884** | **6.0000e-004** | **4.2800e-003** | **28.9792** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0243 | 0.0000 | 0.0243 | 2.6400e-003 | 0.0000 | 2.6400e-003 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 4.5000e-003 | 0.0195 | 0.1769 | 3.7000e-004 | | 6.0000e-004 | 6.0000e-004 | | 6.0000e-004 | 6.0000e-004 | 0.0000 | 32.1916 | 32.1916 | 0.0104 | 0.0000 | 32.4518 |
| **Total** | **4.5000e-003** | **0.0195** | **0.1769** | **3.7000e-004** | **0.0243** | **6.0000e-004** | **0.0249** | **2.6400e-003** | **6.0000e-004** | **3.2400e-003** | **0.0000** | **32.1916** | **32.1916** | **0.0104** | **0.0000** | **32.4518** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 2.0200e-003 | 0.0737 | 0.0152 | 2.8000e-004 | 7.4600e-003 | 6.8000e-004 | 8.1400e-003 | 2.0500e-003 | 6.5000e-004 | 2.7000e-003 | 0.0000 | 26.9689 | 26.9689 | 5.8000e-004 | 4.2600e-003 | 28.2528 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 3.2000e-004 | 2.3000e-004 | 2.7100e-003 | 1.0000e-005 | 8.9000e-004 | 0.0000 | 8.9000e-004 | 2.4000e-004 | 0.0000 | 2.4000e-004 | 0.0000 | 0.7196 | 0.7196 | 2.0000e-005 | 2.0000e-005 | 0.7264 |
| **Total** | **2.3400e-003** | **0.0739** | **0.0179** | **2.9000e-004** | **8.3500e-003** | **6.8000e-004** | **9.0300e-003** | **2.2900e-003** | **6.5000e-004** | **2.9400e-003** | **0.0000** | **27.6884** | **27.6884** | **6.0000e-004** | **4.2800e-003** | **28.9792** |

## 3.5 Building Construction - 2022

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-Road | 0.2882 | 2.1227 | 2.6218 | 4.3100e-003 | | 0.1213 | 0.1213 | | 0.1198 | 0.1198 | 0.0000 | 370.6513 | 370.6513 | 0.0334 | 0.0000 | 371.4850 |
| **Total** | **0.2882** | **2.1227** | **2.6218** | **4.3100e-003** | | **0.1213** | **0.1213** | | **0.1198** | **0.1198** | **0.0000** | **370.6513** | **370.6513** | **0.0334** | **0.0000** | **371.4850** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 4.7000e-003 | 0.1265 | 0.0355 | 4.8000e-004 | 0.0152 | 1.2800e-003 | 0.0165 | 4.3900e-003 | 1.2300e-003 | 5.6200e-003 | 0.0000 | 46.6394 | 46.6394 | 7.0000e-004 | 6.9900e-003 | 48.7403 |
| Worker | 0.0392 | 0.0282 | 0.3354 | 9.7000e-004 | 0.1102 | 6.1000e-004 | 0.1108 | 0.0293 | 5.6000e-004 | 0.0299 | 0.0000 | 89.1788 | 89.1788 | 2.8300e-003 | 2.6000e-003 | 90.0244 |
| **Total** | **0.0439** | **0.1548** | **0.3709** | **1.4500e-003** | **0.1254** | **1.8900e-003** | **0.1273** | **0.0337** | **1.7900e-003** | **0.0355** | **0.0000** | **135.8183** | **135.8183** | **3.5300e-003** | **9.5900e-003** | **138.7647** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0441 | 0.2003 | 2.6731 | 4.3100e-003 | | 5.8500e-003 | 5.8500e-003 | | 5.8500e-003 | 5.8500e-003 | 0.0000 | 370.6509 | 370.6509 | 0.0334 | 0.0000 | 371.4846 |
| **Total** | **0.0441** | **0.2003** | **2.6731** | **4.3100e-003** | | **5.8500e-003** | **5.8500e-003** | | **5.8500e-003** | **5.8500e-003** | **0.0000** | **370.6509** | **370.6509** | **0.0334** | **0.0000** | **371.4846** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 4.7000e-003 | 0.1265 | 0.0355 | 4.8000e-004 | 0.0152 | 1.2800e-003 | 0.0165 | 4.3900e-003 | 1.2300e-003 | 5.6200e-003 | 0.0000 | 46.6394 | 46.6394 | 7.0000e-004 | 6.9900e-003 | 48.7403 |
| Worker | 0.0392 | 0.0282 | 0.3354 | 9.7000e-004 | 0.1102 | 6.1000e-004 | 0.1108 | 0.0293 | 5.6000e-004 | 0.0299 | 0.0000 | 89.1788 | 89.1788 | 2.8300e-003 | 2.6000e-003 | 90.0244 |
| **Total** | **0.0439** | **0.1548** | **0.3709** | **1.4500e-003** | **0.1254** | **1.8900e-003** | **0.1273** | **0.0337** | **1.7900e-003** | **0.0355** | **0.0000** | **135.8183** | **135.8183** | **3.5300e-003** | **9.5900e-003** | **138.7647** |

## 3.5 Building Construction - 2023

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.4240 | 3.0887 | 4.1208 | 6.8000e-003 | | 0.1652 | 0.1652 | | 0.1632 | 0.1632 | 0.0000 | 584.0565 | 584.0565 | 0.0498 | 0.0000 | 585.3011 |
| **Total** | **0.4240** | **3.0887** | **4.1208** | **6.8000e-003** | | **0.1652** | **0.1652** | | **0.1632** | **0.1632** | **0.0000** | **584.0565** | **584.0565** | **0.0498** | **0.0000** | **585.3011** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 3.6800e-003 | 0.1592 | 0.0481 | 7.3000e-004 | 0.0239 | 9.6000e-004 | 0.0249 | 6.9200e-003 | 9.2000e-004 | 7.8400e-003 | 0.0000 | 70.4131 | 70.4131 | 9.6000e-004 | 0.0105 | 73.5790 |
| Worker | 0.0575 | 0.0394 | 0.4898 | 1.4800e-003 | 0.1737 | 9.1000e-004 | 0.1746 | 0.0462 | 8.3000e-004 | 0.0470 | 0.0000 | 136.9518 | 136.9518 | 4.0300e-003 | 3.8000e-003 | 138.1850 |
| **Total** | **0.0612** | **0.1986** | **0.5380** | **2.2100e-003** | **0.1976** | **1.8700e-003** | **0.1995** | **0.0531** | **1.7500e-003** | **0.0549** | **0.0000** | **207.3648** | **207.3648** | **4.9900e-003** | **0.0143** | **211.7640** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0695 | 0.3157 | 4.2121 | 6.8000e-003 | | 9.2100e-003 | 9.2100e-003 | | 9.2100e-003 | 9.2100e-003 | 0.0000 | 584.0558 | 584.0558 | 0.0498 | 0.0000 | 585.3004 |
| **Total** | **0.0695** | **0.3157** | **4.2121** | **6.8000e-003** | | **9.2100e-003** | **9.2100e-003** | | **9.2100e-003** | **9.2100e-003** | **0.0000** | **584.0558** | **584.0558** | **0.0498** | **0.0000** | **585.3004** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 3.6800e-003 | 0.1592 | 0.0481 | 7.3000e-004 | 0.0239 | 9.6000e-004 | 0.0249 | 6.9200e-003 | 9.2000e-004 | 7.8400e-003 | 0.0000 | 70.4131 | 70.4131 | 9.6000e-004 | 0.0105 | 73.5790 |
| Worker | 0.0575 | 0.0394 | 0.4898 | 1.4800e-003 | 0.1737 | 9.1000e-004 | 0.1746 | 0.0462 | 8.3000e-004 | 0.0470 | 0.0000 | 136.9518 | 136.9518 | 4.0300e-003 | 3.8000e-003 | 138.1850 |
| **Total** | **0.0612** | **0.1986** | **0.5380** | **2.2100e-003** | **0.1976** | **1.8700e-003** | **0.1995** | **0.0531** | **1.7500e-003** | **0.0549** | **0.0000** | **207.3648** | **207.3648** | **4.9900e-003** | **0.0143** | **211.7640** |

## 3.5 Building Construction - 2024

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0491 | 0.3550 | 0.5063 | 8.4000e-004 | | 0.0175 | 0.0175 | | 0.0173 | 0.0173 | 0.0000 | 71.8838 | 71.8838 | 5.9300e-003 | 0.0000 | 72.0320 |
| **Total** | **0.0491** | **0.3550** | **0.5063** | **8.4000e-004** | | **0.0175** | **0.0175** | | **0.0173** | **0.0173** | **0.0000** | **71.8838** | **71.8838** | **5.9300e-003** | **0.0000** | **72.0320** |

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 4.4000e-004 | 0.0197 | 5.8100e-003 | 9.0000e-005 | 2.9400e-003 | 1.2000e-004 | 3.0600e-003 | 8.5000e-004 | 1.1000e-004 | 9.7000e-004 | 0.0000 | 8.5325 | 8.5325 | 1.2000e-004 | 1.2800e-003 | 8.9165 |
| Worker | 6.6100e-003 | 4.3300e-003 | 0.0563 | 1.8000e-004 | 0.0214 | 1.1000e-004 | 0.0215 | 5.6900e-003 | 1.0000e-004 | 5.7900e-003 | 0.0000 | 16.4400 | 16.4400 | 4.5000e-004 | 4.4000e-004 | 16.5812 |
| **Total** | **7.0500e-003** | **0.0240** | **0.0621** | **2.7000e-004** | **0.0243** | **2.3000e-004** | **0.0246** | **6.5400e-003** | **2.1000e-004** | **6.7600e-003** | **0.0000** | **24.9725** | **24.9725** | **5.7000e-004** | **1.7200e-003** | **25.4976** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 8.5500e-003 | 0.0389 | 0.5184 | 8.4000e-004 | | 1.1300e-003 | 1.1300e-003 | | 1.1300e-003 | 1.1300e-003 | 0.0000 | 71.8837 | 71.8837 | 5.9300e-003 | 0.0000 | 72.0319 |
| **Total** | **8.5500e-003** | **0.0389** | **0.5184** | **8.4000e-004** | | **1.1300e-003** | **1.1300e-003** | | **1.1300e-003** | **1.1300e-003** | **0.0000** | **71.8837** | **71.8837** | **5.9300e-003** | **0.0000** | **72.0319** |

### Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 4.4000e-004 | 0.0197 | 5.8100e-003 | 9.0000e-005 | 2.9400e-003 | 1.2000e-004 | 3.0600e-003 | 8.5000e-004 | 1.1000e-004 | 9.7000e-004 | 0.0000 | 8.5325 | 8.5325 | 1.2000e-004 | 1.2800e-003 | 8.9165 |
| Worker | 6.6100e-003 | 4.3300e-003 | 0.0563 | 1.8000e-004 | 0.0214 | 1.1000e-004 | 0.0215 | 5.6900e-003 | 1.0000e-004 | 5.7900e-003 | 0.0000 | 16.4400 | 16.4400 | 4.5000e-004 | 4.4000e-004 | 16.5812 |
| **Total** | **7.0500e-003** | **0.0240** | **0.0621** | **2.7000e-004** | **0.0243** | **2.3000e-004** | **0.0246** | **6.5400e-003** | **2.1000e-004** | **6.7600e-003** | **0.0000** | **24.9725** | **24.9725** | **5.7000e-004** | **1.7200e-003** | **25.4976** |

## 3.6 Paving - 2024

### Unmitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 1.6100e-003 | 0.0158 | 0.0230 | 4.0000e-005 | | 7.9000e-004 | 7.9000e-004 | | 7.3000e-004 | 7.3000e-004 | 0.0000 | 3.0951 | 3.0951 | 1.0000e-003 | 0.0000 | 3.1201 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **1.6100e-003** | **0.0158** | **0.0230** | **4.0000e-005** | | **7.9000e-004** | **7.9000e-004** | | **7.3000e-004** | **7.3000e-004** | **0.0000** | **3.0951** | **3.0951** | **1.0000e-003** | **0.0000** | **3.1201** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 7.0000e-005 | 5.0000e-005 | 6.2000e-004 | 0.0000 | 2.4000e-004 | 0.0000 | 2.4000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.1824 | 0.1824 | 0.0000 | 0.0000 | 0.1840 |
| **Total** | **7.0000e-005** | **5.0000e-005** | **6.2000e-004** | **0.0000** | **2.4000e-004** | **0.0000** | **2.4000e-004** | **6.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.1824** | **0.1824** | **0.0000** | **0.0000** | **0.1840** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 4.3000e-004 | 1.8800e-003 | 0.0267 | 4.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | 0.0000 | 3.0951 | 3.0951 | 1.0000e-003 | 0.0000 | 3.1201 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **4.3000e-004** | **1.8800e-003** | **0.0267** | **4.0000e-005** | | **6.0000e-005** | **6.0000e-005** | | **6.0000e-005** | **6.0000e-005** | **0.0000** | **3.0951** | **3.0951** | **1.0000e-003** | **0.0000** | **3.1201** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 7.0000e-005 | 5.0000e-005 | 6.2000e-004 | 0.0000 | 2.4000e-004 | 0.0000 | 2.4000e-004 | 6.0000e-005 | 0.0000 | 6.0000e-005 | 0.0000 | 0.1824 | 0.1824 | 0.0000 | 0.0000 | 0.1840 |
| **Total** | **7.0000e-005** | **5.0000e-005** | **6.2000e-004** | **0.0000** | **2.4000e-004** | **0.0000** | **2.4000e-004** | **6.0000e-005** | **0.0000** | **6.0000e-005** | **0.0000** | **0.1824** | **0.1824** | **0.0000** | **0.0000** | **0.1840** |

## 3.7 Architectural Coating - 2024

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 1.3985 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 4.7000e-004 | 5.1400e-003 | 4.0600e-003 | 2.0000e-005 | | 1.9000e-004 | 1.9000e-004 | | 1.8000e-004 | 1.8000e-004 | 0.0000 | 1.4841 | 1.4841 | 4.8000e-004 | 0.0000 | 1.4961 |
| **Total** | **1.3990** | **5.1400e-003** | **4.0600e-003** | **2.0000e-005** | | **1.9000e-004** | **1.9000e-004** | | **1.8000e-004** | **1.8000e-004** | **0.0000** | **1.4841** | **1.4841** | **4.8000e-004** | **0.0000** | **1.4961** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 2.1000e-004 | 1.4000e-004 | 1.7700e-003 | 1.0000e-005 | 6.7000e-004 | 0.0000 | 6.8000e-004 | 1.8000e-004 | 0.0000 | 1.8000e-004 | 0.0000 | 0.5168 | 0.5168 | 1.0000e-005 | 1.0000e-005 | 0.5212 |
| **Total** | **2.1000e-004** | **1.4000e-004** | **1.7700e-003** | **1.0000e-005** | **6.7000e-004** | **0.0000** | **6.8000e-004** | **1.8000e-004** | **0.0000** | **1.8000e-004** | **0.0000** | **0.5168** | **0.5168** | **1.0000e-005** | **1.0000e-005** | **0.5212** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 1.3985 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.1000e-004 | 9.0000e-004 | 7.6500e-003 | 2.0000e-005 | | 3.0000e-005 | 3.0000e-005 | | 3.0000e-005 | 3.0000e-005 | 0.0000 | 1.4841 | 1.4841 | 4.8000e-004 | 0.0000 | 1.4961 |
| **Total** | **1.3987** | **9.0000e-004** | **7.6500e-003** | **2.0000e-005** | | **3.0000e-005** | **3.0000e-005** | | **3.0000e-005** | **3.0000e-005** | **0.0000** | **1.4841** | **1.4841** | **4.8000e-004** | **0.0000** | **1.4961** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 2.1000e-004 | 1.4000e-004 | 1.7700e-003 | 1.0000e-005 | 6.7000e-004 | 0.0000 | 6.8000e-004 | 1.8000e-004 | 0.0000 | 1.8000e-004 | 0.0000 | 0.5168 | 0.5168 | 1.0000e-005 | 1.0000e-005 | 0.5212 |
| **Total** | **2.1000e-004** | **1.4000e-004** | **1.7700e-003** | **1.0000e-005** | **6.7000e-004** | **0.0000** | **6.8000e-004** | **1.8000e-004** | **0.0000** | **1.8000e-004** | **0.0000** | **0.5168** | **0.5168** | **1.0000e-005** | **1.0000e-005** | **0.5212** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.3062 | 0.3796 | 2.8257 | 6.0300e-003 | 0.6350 | 4.5500e-003 | 0.6395 | 0.1696 | 4.2400e-003 | 0.1739 | 0.0000 | 566.6222 | 566.6222 | 0.0361 | 0.0294 | 576.2726 |
| Unmitigated | 0.3062 | 0.3796 | 2.8257 | 6.0300e-003 | 0.6350 | 4.5500e-003 | 0.6395 | 0.1696 | 4.2400e-003 | 0.1739 | 0.0000 | 566.6222 | 566.6222 | 0.0361 | 0.0294 | 576.2726 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Apartments Mid Rise | 759.00 | 686.40 | 572.00 | 1,667,339 | 1,667,339 |
| Enclosed Parking Structure | 0.00 | 0.00 | 0.00 | | |
| Strip Mall | 38.06 | 36.11 | 17.54 | 53,674 | 53,674 |
| Total | 797.06 | 722.51 | 589.54 | 1,721,012 | 1,721,012 |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Apartments Mid Rise | 10.80 | 4.80 | 5.70 | 31.00 | 15.00 | 54.00 | 86 | 11 | 3 |
| Enclosed Parking Structure | 9.50 | 7.30 | 7.30 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |
| Strip Mall | 9.50 | 7.30 | 7.30 | 16.60 | 64.40 | 19.00 | 45 | 40 | 15 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Apartments Mid Rise | 0.569946 | 0.056495 | 0.180011 | 0.112201 | 0.020944 | 0.005169 | 0.013608 | 0.012941 | 0.000792 | 0.000570 | 0.024535 | 0.000337 | 0.002451 |
| Enclosed Parking Structure | 0.569946 | 0.056495 | 0.180011 | 0.112201 | 0.020944 | 0.005169 | 0.013608 | 0.012941 | 0.000792 | 0.000570 | 0.024535 | 0.000337 | 0.002451 |
| Strip Mall | 0.569946 | 0.056495 | 0.180011 | 0.112201 | 0.020944 | 0.005169 | 0.013608 | 0.012941 | 0.000792 | 0.000570 | 0.024535 | 0.000337 | 0.002451 |

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 143.1639 | 143.1639 | 0.0232 | 2.8100e-003 | 144.5795 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 143.1639 | 143.1639 | 0.0232 | 2.8100e-003 | 144.5795 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments Mid Rise | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Enclosed Parking Structure | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Strip Mall | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Apartments Mid Rise | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Enclosed Parking Structure | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Strip Mall | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments Mid Rise | 1.39939e+006 | 129.4770 | 0.0210 | 2.5400e-003 | 130.7573 |
| Enclosed Parking Structure | 128289 | 11.8698 | 1.9200e-003 | 2.3000e-004 | 11.9872 |
| Strip Mall | 19639.7 | 1.8171 | 2.9000e-004 | 4.0000e-005 | 1.8351 |
| **Total** | | **143.1639** | **0.0232** | **2.8100e-003** | **144.5795** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Apartments Mid Rise | 1.39939e+006 | 129.4770 | 0.0210 | 2.5400e-003 | 130.7573 |
| Enclosed Parking Structure | 128289 | 11.8698 | 1.9200e-003 | 2.3000e-004 | 11.9872 |
| Strip Mall | 19639.7 | 1.8171 | 2.9000e-004 | 4.0000e-005 | 1.8351 |
| **Total** | | **143.1639** | **0.0232** | **2.8100e-003** | **144.5795** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.9654 | 0.0188 | 1.6331 | 9.0000e-005 | | 9.0500e-003 | 9.0500e-003 | | 9.0500e-003 | 9.0500e-003 | 0.0000 | 2.6688 | 2.6688 | 2.5600e-003 | 0.0000 | 2.7328 |
| Unmitigated | 0.9654 | 0.0188 | 1.6331 | 9.0000e-005 | | 9.0500e-003 | 9.0500e-003 | | 9.0500e-003 | 9.0500e-003 | 0.0000 | 2.6688 | 2.6688 | 2.5600e-003 | 0.0000 | 2.7328 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.1399 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.7764 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Hearth | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0491 | 0.0188 | 1.6331 | 9.0000e-005 | | 9.0500e-003 | 9.0500e-003 | | 9.0500e-003 | 9.0500e-003 | 0.0000 | 2.6688 | 2.6688 | 2.5600e-003 | 0.0000 | 2.7328 |
| **Total** | **0.9654** | **0.0188** | **1.6331** | **9.0000e-005** | | **9.0500e-003** | **9.0500e-003** | | **9.0500e-003** | **9.0500e-003** | **0.0000** | **2.6688** | **2.6688** | **2.5600e-003** | **0.0000** | **2.7328** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.1399 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.7764 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Hearth | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0491 | 0.0188 | 1.6331 | 9.0000e-005 | | 9.0500e-003 | 9.0500e-003 | | 9.0500e-003 | 9.0500e-003 | 0.0000 | 2.6688 | 2.6688 | 2.5600e-003 | 0.0000 | 2.7328 |
| **Total** | **0.9654** | **0.0188** | **1.6331** | **9.0000e-005** | | **9.0500e-003** | **9.0500e-003** | | **9.0500e-003** | **9.0500e-003** | **0.0000** | **2.6688** | **2.6688** | **2.5600e-003** | **0.0000** | **2.7328** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 15.3065 | 0.0193 | 0.0113 | 19.1628 |
| Unmitigated | 15.3065 | 0.0193 | 0.0113 | 19.1628 |

### 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments Mid Rise | 14.3339 / 9.03658 | 15.1739 | 0.0191 | 0.0112 | 18.9967 |
| Enclosed Parking Structure | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Strip Mall | 0.125923 / 0.0771788 | 0.1326 | 1.7000e-004 | 1.0000e-004 | 0.1662 |
| **Total** | | **15.3065** | **0.0193** | **0.0113** | **19.1628** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Apartments Mid Rise | 14.3339 / 9.03658 | 15.1739 | 0.0191 | 0.0112 | 18.9967 |
| Enclosed Parking Structure | 0 / 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Strip Mall | 0.125923 / 0.0771788 | 0.1326 | 1.7000e-004 | 1.0000e-004 | 0.1662 |
| **Total** | | **15.3065** | **0.0193** | **0.0113** | **19.1628** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 20.9040 | 1.2354 | 0.0000 | 51.7888 |
| Unmitigated | 20.9040 | 1.2354 | 0.0000 | 51.7888 |

### 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments Mid Rise | 101.2 | 20.5427 | 1.2140 | 0.0000 | 50.8936 |

| | | | | | |
|---|---|---|---|---|---|
| Enclosed Parking Structure | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Strip Mall | 1.78 | 0.3613 | 0.0214 | 0.0000 | 0.8952 |
| **Total** | | **20.9040** | **1.2354** | **0.0000** | **51.7888** |

### Mitigated

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Apartments Mid Rise | 101.2 | 20.5427 | 1.2140 | 0.0000 | 50.8936 |
| Enclosed Parking Structure | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Strip Mall | 1.78 | 0.3613 | 0.0214 | 0.0000 | 0.8952 |
| **Total** | | **20.9040** | **1.2354** | **0.0000** | **51.7888** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

### Fire Pumps and Emergency Generators

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

### Boilers

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

### User Defined Equipment

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# 2929 Broadway - Existing Uses

**Alameda County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Automobile Care Center | 24.10 | 1000sqft | 0.93 | 24,100.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 63 |
| **Climate Zone** | 5 | | | **Operational Year** | 2024 |
| **Utility Company** | Pacific Gas and Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 203.98 | **CH4 Intensity (lb/MWhr)** | 0.033 | **N2O Intensity (lb/MWhr)** | 0.004 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project site area

Construction Phase - Construction emissions not estimated in this run

Grading -

Vehicle Trips - Trip generation rate for existing uses adjusted based on transportation analysis for the project

Energy Use -

Water And Wastewater - 100 percent aerobic treatment assumed

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 5.00 | 0.00 |
| tblConstructionPhase | NumDays | 100.00 | 0.00 |
| tblConstructionPhase | NumDays | 10.00 | 0.00 |
| tblConstructionPhase | NumDays | 2.00 | 0.00 |
| tblConstructionPhase | NumDays | 5.00 | 0.00 |
| tblConstructionPhase | NumDays | 1.00 | 0.00 |
| tblConstructionPhase | PhaseEndDate | 8/18/2022 | 8/11/2022 |
| tblConstructionPhase | PhaseEndDate | 8/4/2022 | 3/17/2022 |
| tblConstructionPhase | PhaseEndDate | 3/14/2022 | 2/28/2022 |
| tblConstructionPhase | PhaseEndDate | 3/17/2022 | 3/15/2022 |
| tblConstructionPhase | PhaseEndDate | 8/11/2022 | 8/4/2022 |
| tblConstructionPhase | PhaseEndDate | 3/15/2022 | 3/14/2022 |
| tblLandUse | LotAcreage | 0.55 | 0.93 |
| tblVehicleTrips | ST_TR | 23.72 | 7.47 |
| tblVehicleTrips | SU_TR | 11.88 | 3.74 |
| tblVehicleTrips | WD_TR | 23.72 | 7.47 |
| tblWater | AerobicPercent | 87.46 | 100.00 |
| tblWater | AnaerobicandFacultativeLagoonsPercent | 2.21 | 0.00 |
| tblWater | SepticTankPercent | 10.33 | 0.00 |

## 2.0 Emissions Summary

### 2.1 Overall Construction

Construction emissions not estimated in this run

### 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 0.1067 | 0 | 2.20E-04 | 0 | | 0 | 0 | | 0 | 0 | 0 | 4.30E-04 | 4.30E-04 | 0 | 0 | 4.60E-04 |
| Energy | 3.5000e-003 | 0.0319 | 0.0268 | 1.90E-04 | | 2.42E-03 | 2.42E-03 | | 2.42E-03 | 2.42E-03 | 0 | 53.9604 | 53.9604 | 3.78E-03 | 1.01E-03 | 54.3571 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mobile | 0.0515 | 0.0497 | 0.3706 | 6.10E-04 | 0.0615 | 5.10E-04 | 0.062 | 0.0164 | 4.70E-04 | 0.0169 | 0 | 57.2813 | 57.2813 | 5.46E-03 | 3.80E-03 | 58.5498 |
| Waste | | | | | | 0 | 0 | | 0 | 0 | 18.6874 | 0 | 18.6874 | 1.1044 | 0 | 46.2971 |
| Water | | | | | | 0 | 0 | | 0 | 0 | 0.8022 | 1.5852 | 2.3874 | 3.02E-03 | 1.78E-03 | 2.9919 |
| **Total** | **0.1617** | **0.0816** | **0.3976** | **8.00E-04** | **0.0615** | **2.93E-03** | **0.0644** | **0.0164** | **2.89E-03** | **0.0193** | **19.4895** | **112.8273** | **132.3168** | **1.1167** | **6.59E-03** | **162.1964** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 0.1067 | 0 | 2.20E-04 | 0 | | 0 | 0 | | 0 | 0 | 0 | 4.30E-04 | 4.30E-04 | 0 | 0 | 4.60E-04 |
| Energy | 3.5000e-003 | 0.0319 | 0.0268 | 1.90E-04 | | 2.42E-03 | 2.42E-03 | | 2.42E-03 | 2.42E-03 | 0 | 53.9604 | 53.9604 | 3.78E-03 | 1.01E-03 | 54.3571 |
| Mobile | 0.0515 | 0.0497 | 0.3706 | 6.10E-04 | 0.0615 | 5.10E-04 | 0.062 | 0.0164 | 4.70E-04 | 0.0169 | 0 | 57.2813 | 57.2813 | 5.46E-03 | 3.80E-03 | 58.5498 |
| Waste | | | | | | 0 | 0 | | 0 | 0 | 18.6874 | 0 | 18.6874 | 1.1044 | 0 | 46.2971 |
| Water | | | | | | 0 | 0 | | 0 | 0 | 0.8022 | 1.5852 | 2.3874 | 3.02E-03 | 1.78E-03 | 2.9919 |
| **Total** | **0.1617** | **0.0816** | **0.3976** | **8.00E-04** | **0.0615** | **2.93E-03** | **0.0644** | **0.0164** | **2.89E-03** | **0.0193** | **19.4895** | **112.8273** | **132.3168** | **1.1167** | **6.59E-03** | **162.1964** |

| | **ROG** | **NOx** | **CO** | **SO2** | **Fugitive PM10** | **Exhaust PM10** | **PM10 Total** | **Fugitive PM2.5** | **Exhaust PM2.5** | **PM2.5 Total** | **Bio- CO2** | **NBio-CO2** | **Total CO2** | **CH4** | **N20** | **CO2e** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

Construction emissions not estimated for existing uses

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.0515 | 0.0497 | 0.3706 | 6.1000e-004 | 0.0615 | 5.1000e-004 | 0.0620 | 0.0164 | 4.7000e-004 | 0.0169 | 0.0000 | 57.2813 | 57.2813 | 5.4600e-003 | 3.8000e-003 | 58.5498 |
| Unmitigated | 0.0515 | 0.0497 | 0.3706 | 6.1000e-004 | 0.0615 | 5.1000e-004 | 0.0620 | 0.0164 | 4.7000e-004 | 0.0169 | 0.0000 | 57.2813 | 57.2813 | 5.4600e-003 | 3.8000e-003 | 58.5498 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Automobile Care Center | 180.03 | 180.03 | 90.13 | 166,548 | 166,548 |
| Total | 180.03 | 180.03 | 90.13 | 166,548 | 166,548 |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Automobile Care Center | 9.50 | 7.30 | 7.30 | 33.00 | 48.00 | 19.00 | 21 | 51 | 28 |

### 4.4 Fleet Mix

| Land Use | LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Automobile Care Center | 0.569946 | 0.056495 | 0.180011 | 0.112201 | 0.020944 | 0.005169 | 0.013608 | 0.012941 | 0.000792 | 0.000570 | 0.024535 | 0.000337 | 0.002451 |

## 5.0 Energy Detail

Historical Energy Use: Y

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 19.2880 | 19.2880 | 3.1200e-003 | 3.8000e-004 | 19.4787 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 19.2880 | 19.2880 | 3.1200e-003 | 3.8000e-004 | 19.4787 |
| NaturalGas Mitigated | 3.5000e-003 | 0.0319 | 0.0268 | 1.9000e-004 | | 2.4200e-003 | 2.4200e-003 | | 2.4200e-003 | 2.4200e-003 | 0.0000 | 34.6724 | 34.6724 | 6.6000e-004 | 6.4000e-004 | 34.8784 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NaturalGas Unmitigated | 3.5000e-003 | 0.0319 | 0.0268 | 1.9000e-004 | | 2.4200e-003 | 2.4200e-003 | | 2.4200e-003 | 2.4200e-003 | 0.0000 | 34.6724 | 34.6724 | 6.6000e-004 | 6.4000e-004 | 34.8784 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Automobile Care Center | 649736 | 3.5000e-003 | 0.0319 | 0.0268 | 1.9000e-004 | | 2.4200e-003 | 2.4200e-003 | | 2.4200e-003 | 2.4200e-003 | 0.0000 | 34.6724 | 34.6724 | 6.6000e-004 | 6.4000e-004 | 34.8784 |
| **Total** | | **3.5000e-003** | **0.0319** | **0.0268** | **1.9000e-004** | | **2.4200e-003** | **2.4200e-003** | | **2.4200e-003** | **2.4200e-003** | **0.0000** | **34.6724** | **34.6724** | **6.6000e-004** | **6.4000e-004** | **34.8784** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Automobile Care Center | 649736 | 3.5000e-003 | 0.0319 | 0.0268 | 1.9000e-004 | | 2.4200e-003 | 2.4200e-003 | | 2.4200e-003 | 2.4200e-003 | 0.0000 | 34.6724 | 34.6724 | 6.6000e-004 | 6.4000e-004 | 34.8784 |
| **Total** | | **3.5000e-003** | **0.0319** | **0.0268** | **1.9000e-004** | | **2.4200e-003** | **2.4200e-003** | | **2.4200e-003** | **2.4200e-003** | **0.0000** | **34.6724** | **34.6724** | **6.6000e-004** | **6.4000e-004** | **34.8784** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Automobile Care Center | 208465 | 19.2880 | 3.1200e-003 | 3.8000e-004 | 19.4787 |
| **Total** | | **19.2880** | **3.1200e-003** | **3.8000e-004** | **19.4787** |

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Automobile Care Center | 208465 | 19.2880 | 3.1200e-003 | 3.8000e-004 | 19.4787 |
| **Total** | | **19.2880** | **3.1200e-003** | **3.8000e-004** | **19.4787** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.1067 | 0.0000 | 2.2000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 4.3000e-004 | 4.3000e-004 | 0.0000 | 0.0000 | 4.6000e-004 |
| Unmitigated | 0.1067 | 0.0000 | 2.2000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 4.3000e-004 | 4.3000e-004 | 0.0000 | 0.0000 | 4.6000e-004 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.0126 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.0941 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.2000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 4.3000e-004 | 4.3000e-004 | 0.0000 | 0.0000 | 4.6000e-004 |
| **Total** | **0.1067** | **0.0000** | **2.2000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **4.3000e-004** | **4.3000e-004** | **0.0000** | **0.0000** | **4.6000e-004** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Architectural Coating | 0.0126 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.0941 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.2000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 4.3000e-004 | 4.3000e-004 | 0.0000 | 0.0000 | 4.6000e-004 |
| **Total** | **0.1067** | **0.0000** | **2.2000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **4.3000e-004** | **4.3000e-004** | **0.0000** | **0.0000** | **4.6000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 2.3874 | 3.0200e-003 | 1.7800e-003 | 2.9919 |
| Unmitigated | 2.3874 | 3.0200e-003 | 1.7800e-003 | 2.9919 |

### 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Automobile Care Center | 2.26735 / 1.38967 | 2.3874 | 3.0200e-003 | 1.7800e-003 | 2.9919 |
| **Total** | | **2.3874** | **3.0200e-003** | **1.7800e-003** | **2.9919** |

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Automobile Care Center | 2.26735 / 1.38967 | 2.3874 | 3.0200e-003 | 1.7800e-003 | 2.9919 |
| **Total** | | **2.3874** | **3.0200e-003** | **1.7800e-003** | **2.9919** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 18.6874 | 1.1044 | 0.0000 | 46.2971 |
| Unmitigated | 18.6874 | 1.1044 | 0.0000 | 46.2971 |

### 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Automobile Care Center | 92.06 | 18.6874 | 1.1044 | 0.0000 | 46.2971 |
| **Total** | | **18.6874** | **1.1044** | **0.0000** | **46.2971** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Automobile Care Center | 92.06 | 18.6874 | 1.1044 | 0.0000 | 46.2971 |
| **Total** | | **18.6874** | **1.1044** | **0.0000** | **46.2971** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Stationary Equipment

### Fire Pumps and Emergency Generators

| Equipment Type | Number | Hours/Day | Hours/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

### Boilers

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|---|---|---|---|---|---|

### User Defined Equipment

| Equipment Type | Number |
|---|---|

## 11.0 Vegetation

# 2929 Broadway Construction - Health Risk Assessment

## Residential Risk

### Onsite DPM Emissions per Year (tons)

| Year | Uncontrolled | Tier 4 |
|---|---|---|
| 2022 | 0.14 | 9.57E-03 |
| 2023 | 0.17 | 1.11E-02 |
| 2024 | 0.02 | 1.45E-03 |

### $PM_{2.5}$ Concentration

| Total tons/year | Emission Rate (g/s) | $PM_{2.5}$ Conc. (μg/m$^3$) | |
|---|---|---|---|
| 0.16 | 0.005 | 0.10 | Uncontrolled |
| 0.011 | 0.0003 | 0.01 | Tier 4 |

### Emission Rates - Scaling Factors (g/s)

| Year | Uncontrolled | Tier 4 |
|---|---|---|
| 2022 | 0.0114 | 0.0008 |
| 2023 | 0.0135 | 0.0009 |
| 2024 | 0.0015 | 0.0001 |

Exposure Duration in seconds

52*(12*5)*60*60 = 11232000

### AERMOD Output [μg/m$^3$]/[g/s]

| | | | | UTM X | UTM Y |
|---|---|---|---|---|---|
| Annual Average | Resident | 22.09926 | μg/m$^3$ | 564831.97 | 4185816.11 |

6 story residential building south of project site across 29th Street

### Emission Impact - (μg/m$^3$)

| Year | Uncontrolled | Tier 4 |
|---|---|---|
| 2022 | 2.53E-01 | 1.71E-02 |
| 2023 | 2.98E-01 | 1.98E-02 |
| 2024 | 3.36E-02 | 2.59E-03 |

| Age Group | 3rd Trimester | Age 0<2 | Age 2<16 |
|---|---|---|---|
| Exposure Duration | 91 | 639 | 5110 |
| 2022 | 0.25 | 0.58 | 0.00 |
| 2023 | 0.00 | 1.00 | 0.00 |
| 2024 | 0.00 | 0.17 | 0.00 |

**Cancer Risk = Dose inhalation × Inhalation CPF × ASF × ED/AT × FAH** **(Equation 8.2.4 A)**

Where:

Cancer Risk = residential inhalation cancer risk

**Dose inhalation (mg/kg-day) = $C_{AIR}$ × DBR × A × EF × $10^{-6}$** **(Equation 2)**

Inhalation CPF = inhalation cancer potency factor ($[mg/kg/day]^{-1}$)

ASF = age sensitivity factor for a specified age group (unitless)

ED = exposure duration for a specified age group (years)

AT = averaging time period over which exposure is averaged in days (years)

FAH = fraction of time at home (unitless)

Where:

$C_{AIR}$ = concentration of compound in air in micrograms per cubic meter (μg/m$^3$)

DBR = daily breathing rate in liter per kilogram of body weight per day (L/kg-body weight/day)

A = inhalation absorption factor (1 for DPM, unitless)
EF = exposure frequency in days per year (unitless, days/365 days)
$10^{-6}$ = micrograms to milligrams conversion, liters to cubic meters conversion

## Dose Inhalation Inputs

| | | | Uncontrolled | Tier 4 | | | |
|---|---|---|---|---|---|---|---|
| **Receptor Type** | **Exposure Scenario** | **Receptor Group Age** | **$C_{AIR}$ (µg/m$^3$)** | | **DBR (L/kg-day)** | **A (unitless)** | **EF (days/year)** |
| Off-Site Child Resident | Construction | 3rd Trimester | 2.53E-01 | 1.71E-02 | 361 | 1 | 0.96 |
| | | Age 0<2 | 2.58E-01 | 1.73E-02 | 1090 | 1 | 0.96 |
| | | Age 2<16 | 0.00E+00 | 0.00E+00 | 745 | 1 | 0.96 |

## Dose Inhalation Outputs

| | | | Uncontrolled | Tier 4 |
|---|---|---|---|---|
| **Receptor Type** | **Exposure Scenario** | **Receptor Group Age** | **Dose inhalation (mg/kg-day)** | |
| Off-Site Child Resident | Construction | 3rd Trimester | 8.75E-05 | 5.91E-06 |
| | | Age 0<2 | 2.69E-04 | 1.80E-05 |
| | | Age 2<16 | 0.00E+00 | 0.00E+00 |

## Risk Inputs

| **Receptor Type** | **Exposure Scenario** | **Receptor Group Age** | **CPF (mg/kg-day$^{-1}$)** | **ASF (unitless)** | **ED (years)** | **AT (years)** | **FAH (unitless)** | **REL (µg/m$^3$)** |
|---|---|---|---|---|---|---|---|---|
| Off-Site Child Resident | Construction | 3rd Trimester | 1.1 | 10 | 0.25 | 70.00 | 0.85 | 5 |
| | | Age 0<2 | 1.1 | 10 | 1.75 | 70.00 | 0.85 | 5 |
| | | Age 2<16 | 1.1 | 3 | 0.00 | 70.00 | 0.72 | 5 |

## Risk Outputs

| | | | Uncontrolled | Tier 4 | Uncontrolled | Tier 4 |
|---|---|---|---|---|---|---|
| **Receptor Type** | **Exposure Scenario** | **Receptor Group Age** | **Cancer Risk** | | **Chronic Non-Cancer Risk** | |
| Off-Site Child Resident | Construction | 3rd Trimester | 2.92E-06 | 1.97E-07 | | |
| | | Age 0<2 | 6.30E-05 | 4.22E-06 | | |
| | | Age 2<16 | 0.00E+00 | 0.00E+00 | | |
| | | **Total Risk** | 6.59E-05 | 4.41E-06 | 0.060 | 0.004 |
| | | **Risk per Million** | 65.90 | 4.41 | NA | NA |

SOURCE: Office of Environmental Health Hazard Assessment, 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments* . February.
Daily breathing rate for residential receptor is based on the OEHHA 95th percentile moderate intensity breathing rates (OEHHA Table 5.7).
Fraction of time at home is set to values per OEHHA Table 8.4 for residential since the nearest school has an unmitigated cancer risk of <1 per million.

Inhalation cancer potency factor from OEHHA Table 7.1

# 2929 Broadway Construction - Health Risk Assessment

## Onsite DPM Emissions per Year (tons)

### School Risk

| Year | Uncontrolled | Tier 4 |
|---|---|---|
| 2022 | 0.14 | 9.57E-03 |
| 2023 | 0.17 | 1.11E-02 |
| 2024 | 0.02 | 1.45E-03 |

### PM$_{2.5}$ Concentration

| Total tons/year | Emission Rate (g/s) | PM$_{2.5}$ Conc. (μg/m$^3$) - Street Academy | |
|---|---|---|---|
| 0.16 | 0.005 | 0.004 | Uncontrolled |
| 0.011 | 0.0003 | 0.0002 | Tier 4 |

### Emission Rates - Scaling Factors (g/s)

| Year | Uncontrolled | Tier 4 |
|---|---|---|
| 2022 | 0.0114 | 0.0008 |
| 2023 | 0.0135 | 0.0009 |
| 2024 | 0.0015 | 0.0001 |

Exposure Duration in seconds

52*(12*5)*60*60 = 11232000

### AERMOD Output [μg/m$^3$]/[g/s]

| | | | |
|---|---|---|---|
| Annual Average** | Street Academy Alternative School | 0.78 | μg/m$^3$ |

**spacial averaging applied

| Exposure Range (age x < y) | | Total Years |
|---|---|---|
| 14.00 | 16.00 | 2.00 |

### Emission Impact - (μg/m$^3$)

Uncontrolled

| Year | Street Academy Alternative School |
|---|---|
| 2022 | 8.88E-03 |
| 2023 | 1.05E-02 |
| 2024 | 1.18E-03 |

Tier 4

| Year | Street Academy Alternative School |
|---|---|
| 2022 | 6.00E-04 |
| 2023 | 6.96E-04 |
| 2024 | 9.10E-05 |

| | Street Academy Alternative School |
|---|---|
| Age Group | Age 2<16 |
| Exposure Duration | 730 |
| 2022 | 0.83 |
| 2023 | 1.00 |
| 2024 | 0.17 |
| | 2.00 |

**Cancer Risk = Dose inhalation × Inhalation CPF × ASF × ED/AT × FAH** **(Equation 8.2.4 A)**

Where:

Cancer Risk = residential inhalation cancer risk

**Dose inhalation (mg/kg-day) = $C_{AIR}$ × DBR × A × EF × 10$^{-6}$** **(Equation 2)**

Inhalation CPF = inhalation cancer potency factor ([mg/kg/day]$^{-1}$)

ASF = age sensitivity factor for a specified age group (unitless)

ED = exposure duration for a specified age group (years)

AT = averaging time period over which exposure is averaged in days (years)

FAH = fraction of time at home (unitless)

Where:

$C_{AIR}$ = concentration of compound in air in micrograms per cubic meter (μg/m$^3$)

DBR = daily breathing rate in liter per kilogram of body weight per day (L/kg-body weight/day)

A = inhalation absorption factor (1 for DPM, unitless)

EF = exposure frequency in days per year (unitless, days/365 days)

10$^{-6}$ = micrograms to milligrams conversion, liters to cubic meters conversion

### Dose Inhalation Inputs

| | | | Uncontrolled | Tier 4 | | | |
|---|---|---|---|---|---|---|---|
| **Receptor Type** | **Exposure Scenario** | **Receptor Group Age** | $C_{AIR}$ (μg/m$^3$) | | **8hr-DBR (L/kg-day)** | **A (unitless)** | **EF (days/year)** |
| Street Academy Alternative School | Construction | Age 2<16 | 9.04E-03 | 6.06E-04 | 520 | 1 | 0.49 |

### Dose Inhalation Outputs

| Uncontrolled | Tier 4 |
|---|---|

| Receptor Type | Exposure Scenario | Receptor Group Age | Dose inhalation (mg/kg-day) | |
|---|---|---|---|---|
| Street Academy Alternative School | Construction | Age 2<16 | 2.30E-06 | 1.54E-07 |

## Risk Inputs

| Receptor Type | Exposure Scenario | Receptor Group Age | CPF (mg/kg-day$^{-1}$) | ASF (unitless) | ED (years) | AT (years) | FAH (unitless) | REL (µg/m$^3$) |
|---|---|---|---|---|---|---|---|---|
| Street Academy Alternative School | Construction | Age 2<16 | 1.1 | 3 | 2.00 | 70.00 | 0.33 | 5 |

## Risk Outputs

| | | | Uncontrolled | Tier 4 | Uncontrolled | Tier 4 |
|---|---|---|---|---|---|---|
| **Receptor Type** | **Exposure Scenario** | **Receptor Group Age** | **Cancer Risk** | | **Chronic Non-Cancer Risk** | |
| Street Academy Alternative School | Construction | Age 2<16 | 7.17E-08 | 4.80E-09 | 1.81E-03 | 1.21E-04 |
| | | **Total Risk** | | | | |
| | | Street Academy Alternative School | 7.17E-08 | 4.80E-09 | 0.002 | 0.0001 |
| | | **Risk per Million** | | | | |
| | | Street Academy Alternative School | 0.07 | 0.005 | -- | -- |

SOURCE: Office of Environmental Health Hazard Assessment, 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments* . February.

Daily breathing rate for school receptor is based on the OEHHA 95th percentile 8-hour moderate intensity breathing rates (Table 5.8).

Inhalation cancer potency factor from Table 7.1

### AERMOD Output for Street Academy Alternative School

| Discrete Receptor ID (Group Name) | X | Y | Concentration (A\ | Elevation (ZELEV) | Hill Heights (ZHILL) | Flagpole (ZFLAG) | Averagin Period (AVE | Source Group (GRP) | Num Years (NUM YR | Net ID |
|---|---|---|---|---|---|---|---|---|---|---|
| UCART1 | 564631.97 | 4185816.11 | 0.69521 | 20.2 | 20.2 | 1.5 | ANNUAL | ALL | 5 | |
| UCART1 | 564651.97 | 4185816.11 | 0.81008 | 20.5 | 20.5 | 1.5 | ANNUAL | ALL | 5 | |
| UCART1 | 564651.97 | 4185836.11 | 0.82485 | 20.87 | 20.87 | 1.5 | ANNUAL | ALL | 5 | |

AERMOD ( 91): C:\Lakes\A ERMOD View\29 29 Broadwa y\2929 Bro adway.i sc 8/12/2021
AERMET ( 134): 8:18:11
MODELING IONS USED: Re gDFAULT CONC ELEV FL GPOL URBA N

PLOT FILE OF ANNUAL VALUES AVERA GED ACROSS 5 YEARS FOR SO URCE GRO UP: ALL
FOR A TOTAL OF 69 8 RECEPTORS.
FORM AT: (3(1X,F13.5 ),3(1X,F8.2), 2X,A6,2X,A 8,2X,I8.8, 2X,A8)

| X | Y | AVERAGE CONC | ZELEV | ZHILL | ZFLAG | AVE | GRP | NUM YRS | NET ID |
|---|---|---|---|---|---|---|---|---|---|
| 564492 | 4185536.11 | 0.18521 | 9.34 | 9.34 | 1.5 | ANNUAL | ALL | 5 | |
| 564512 | 4185536.11 | 0.1949 | 9.18 | 9.18 | 1.5 | ANNUAL | ALL | 5 | |
| 564532 | 4185536.11 | 0.20489 | 9.07 | 9.07 | 1.5 | ANNUAL | ALL | 5 | |
| 564552 | 4185536.11 | 0.21516 | 9.04 | 9.04 | 1.5 | ANNUAL | ALL | 5 | |
| 564572 | 4185536.11 | 0.22552 | 9 | 9 | 1.5 | ANNUAL | ALL | 5 | |
| 564592 | 4185536.11 | 0.23595 | 9.01 | 9.01 | 1.5 | ANNUAL | ALL | 5 | |
| 564612 | 4185536.11 | 0.24606 | 8.82 | 8.82 | 1.5 | ANNUAL | ALL | 5 | |
| 564632 | 4185536.11 | 0.25604 | 8.66 | 8.66 | 1.5 | ANNUAL | ALL | 5 | |
| 564652 | 4185536.11 | 0.26574 | 8.38 | 8.38 | 1.5 | ANNUAL | ALL | 5 | |
| 564672 | 4185536.11 | 0.27585 | 8.35 | 8.35 | 1.5 | ANNUAL | ALL | 5 | |
| 564692 | 4185536.11 | 0.2862 | 8.22 | 8.22 | 1.5 | ANNUAL | ALL | 5 | |
| 564712 | 4185536.11 | 0.29804 | 8.35 | 8.35 | 1.5 | ANNUAL | ALL | 5 | |
| 564752 | 4185536.11 | 0.32678 | 8.07 | 8.07 | 1.5 | ANNUAL | ALL | 5 | |
| 564772 | 4185536.11 | 0.34486 | 7.43 | 7.43 | 1.5 | ANNUAL | ALL | 5 | |
| 564792 | 4185536.11 | 0.36769 | 6.96 | 6.96 | 1.5 | ANNUAL | ALL | 5 | |
| 564812 | 4185536.11 | 0.39513 | 6.4 | 6.4 | 1.5 | ANNUAL | ALL | 5 | |
| 564832 | 4185536.11 | 0.42557 | 5.39 | 5.39 | 1.5 | ANNUAL | ALL | 5 | |
| 564892 | 4185536.11 | 0.54665 | 5.08 | 20 | 1.5 | ANNUAL | ALL | 5 | |
| 564932 | 4185536.11 | 0.65891 | 11.42 | 12.54 | 1.5 | ANNUAL | ALL | 5 | |
| 564952 | 4185536.11 | 0.7051 | 12.84 | 12.84 | 1.5 | ANNUAL | ALL | 5 | |
| 564972 | 4185536.11 | 0.74629 | 13.24 | 13.24 | 1.5 | ANNUAL | ALL | 5 | |
| 564992 | 4185536.11 | 0.7845 | 13.57 | 13.57 | 1.5 | ANNUAL | ALL | 5 | |
| 565012 | 4185536.11 | 0.81854 | 13.5 | 19.98 | 1.5 | ANNUAL | ALL | 5 | |
| 565032 | 4185536.11 | 0.84721 | 12.74 | 20.88 | 1.5 | ANNUAL | ALL | 5 | |
| 565052 | 4185536.11 | 0.87189 | 12.14 | 21.48 | 1.5 | ANNUAL | ALL | 5 | |
| 565072 | 4185536.11 | 0.8922 | 11.62 | 22.61 | 1.5 | ANNUAL | ALL | 5 | |
| 565092 | 4185536.11 | 0.91185 | 12.66 | 28.89 | 1.5 | ANNUAL | ALL | 5 | |
| 565112 | 4185536.11 | 0.9254 | 13.29 | 30.64 | 1.5 | ANNUAL | ALL | 5 | |
| 565132 | 4185536.11 | 0.92986 | 11.85 | 32.02 | 1.5 | ANNUAL | ALL | 5 | |
| 564492 | 4185556.11 | 0.1944 | 9.14 | 9.14 | 1.5 | ANNUAL | ALL | 5 | |
| 564512 | 4185556.11 | 0.2055 | 9.04 | 9.04 | 1.5 | ANNUAL | ALL | 5 | |
| 564532 | 4185556.11 | 0.21717 | 9.06 | 9.06 | 1.5 | ANNUAL | ALL | 5 | |
| 564552 | 4185556.11 | 0.22888 | 8.73 | 8.73 | 1.5 | ANNUAL | ALL | 5 | |
| 564652 | 4185556.11 | 0.29075 | 8.65 | 8.65 | 1.5 | ANNUAL | ALL | 5 | |
| 564672 | 4185556.11 | 0.30412 | 9.19 | 9.19 | 1.5 | ANNUAL | ALL | 5 | |
| 564692 | 4185556.11 | 0.31712 | 9.29 | 9.29 | 1.5 | ANNUAL | ALL | 5 | |
| 564712 | 4185556.11 | 0.33035 | 9.03 | 9.03 | 1.5 | ANNUAL | ALL | 5 | |
| 564772 | 4185556.11 | 0.38491 | 8.16 | 8.16 | 1.5 | ANNUAL | ALL | 5 | |
| 564792 | 4185556.11 | 0.41289 | 8.01 | 8.01 | 1.5 | ANNUAL | ALL | 5 | |
| 564812 | 4185556.11 | 0.44465 | 7.19 | 7.19 | 1.5 | ANNUAL | ALL | 5 | |
| 564832 | 4185556.11 | 0.48061 | 6.02 | 6.02 | 1.5 | ANNUAL | ALL | 5 | |
| 564892 | 4185556.11 | 0.62829 | 5.98 | 20 | 1.5 | ANNUAL | ALL | 5 | |
| 564972 | 4185556.11 | 0.86164 | 13.44 | 13.44 | 1.5 | ANNUAL | ALL | 5 | |
| 564992 | 4185556.11 | 0.90561 | 13.81 | 20.79 | 1.5 | ANNUAL | ALL | 5 | |
| 565012 | 4185556.11 | 0.94499 | 14.25 | 20.88 | 1.5 | ANNUAL | ALL | 5 | |
| 565032 | 4185556.11 | 0.97551 | 13.14 | 21.76 | 1.5 | ANNUAL | ALL | 5 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 565052 | 4185556.11 | 1.00226 | 12.85 | 22.61 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185556.11 | 1.02826 | 15.77 | 19.56 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185556.11 | 1.04238 | 15.92 | 16.64 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4185556.11 | 1.05342 | 15.49 | 15.49 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185556.11 | 1.05244 | 13.41 | 31.02 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185556.11 | 1.04115 | 11.36 | 36.07 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4185576.11 | 0.20366 | 8.97 | 8.97 | 1.5 | ANNUAL | ALL | 5 |
| 564532 | 4185576.11 | 0.22974 | 8.98 | 8.98 | 1.5 | ANNUAL | ALL | 5 |
| 564652 | 4185576.11 | 0.32027 | 9.65 | 9.65 | 1.5 | ANNUAL | ALL | 5 |
| 564672 | 4185576.11 | 0.33577 | 9.7 | 9.7 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4185576.11 | 0.351 | 9.49 | 9.49 | 1.5 | ANNUAL | ALL | 5 |
| 564712 | 4185576.11 | 0.36672 | 9.19 | 9.19 | 1.5 | ANNUAL | ALL | 5 |
| 564732 | 4185576.11 | 0.3841 | 8.86 | 8.86 | 1.5 | ANNUAL | ALL | 5 |
| 564772 | 4185576.11 | 0.43118 | 8.5 | 8.5 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4185576.11 | 0.46314 | 8.09 | 8.09 | 1.5 | ANNUAL | ALL | 5 |
| 564812 | 4185576.11 | 0.50068 | 7.2 | 7.2 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4185576.11 | 1.00096 | 12.55 | 21.05 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4185576.11 | 1.05508 | 13.98 | 21.05 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4185576.11 | 1.09902 | 14.43 | 21.69 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4185576.11 | 1.12943 | 16.23 | 21.05 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185576.11 | 1.1653 | 18.05 | 18.05 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185576.11 | 1.18334 | 17.49 | 17.49 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4185576.11 | 1.19195 | 16.82 | 19 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185576.11 | 1.1887 | 15.79 | 19 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185576.11 | 1.14702 | 11.18 | 36.07 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4185596.11 | 0.21338 | 9.39 | 9.39 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4185596.11 | 0.22789 | 9.56 | 9.56 | 1.5 | ANNUAL | ALL | 5 |
| 564532 | 4185596.11 | 0.24298 | 9.3 | 9.3 | 1.5 | ANNUAL | ALL | 5 |
| 564652 | 4185596.11 | 0.35008 | 9.04 | 9.87 | 1.5 | ANNUAL | ALL | 5 |
| 564672 | 4185596.11 | 0.36629 | 7.96 | 9.97 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4185596.11 | 0.39047 | 9.83 | 9.83 | 1.5 | ANNUAL | ALL | 5 |
| 564712 | 4185596.11 | 0.40979 | 9.51 | 9.51 | 1.5 | ANNUAL | ALL | 5 |
| 564732 | 4185596.11 | 0.43079 | 9.2 | 9.2 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4185596.11 | 1.15296 | 8.46 | 22.61 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4185596.11 | 1.23834 | 13.2 | 22.08 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4185596.11 | 1.26924 | 17.23 | 20.88 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4185596.11 | 1.28309 | 20.07 | 20.07 | 1.5 | ANNUAL | ALL | 5 |
| 565052 | 4185596.11 | 1.31682 | 19.94 | 19.94 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185596.11 | 1.35702 | 18.67 | 18.67 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4185596.11 | 1.35611 | 18.95 | 18.95 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4185596.11 | 1.34947 | 18.52 | 18.52 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185596.11 | 1.33201 | 18.89 | 18.89 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185596.11 | 1.31684 | 15.36 | 30.64 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185596.11 | 1.28134 | 12.51 | 35.55 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4185616.11 | 0.27502 | 9.53 | 9.53 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4185616.11 | 1.10605 | 7.1 | 21.75 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4185616.11 | 1.19988 | 7.21 | 22.61 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4185616.11 | 1.28356 | 7.07 | 22.61 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4185616.11 | 1.35851 | 7.03 | 22.61 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4185616.11 | 1.44632 | 9.51 | 22.61 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4185616.11 | 1.50816 | 10.9 | 22.61 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185616.11 | 1.61202 | 20.48 | 20.48 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185616.11 | 1.56339 | 20 | 20 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4185616.11 | 1.55495 | 19.61 | 19.61 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4185616.11 | 1.53661 | 18.92 | 18.92 | 1.5 | ANNUAL | ALL | 5 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 565152 | 4185616.11 | 1.50908 | 17.93 | 18.67 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4185636.11 | 1.33694 | 7.29 | 21.75 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4185636.11 | 1.44906 | 7.09 | 22.61 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4185636.11 | 1.71423 | 7.43 | 23 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4185636.11 | 1.81333 | 11.83 | 22.61 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4185636.11 | 1.82007 | 19.06 | 21.75 | 1.5 | ANNUAL | ALL | 5 |
| 565052 | 4185636.11 | 1.8745 | 21.44 | 21.44 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185636.11 | 1.87864 | 21.78 | 21.78 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185636.11 | 1.87303 | 21.18 | 21.18 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4185636.11 | 1.78774 | 20.07 | 20.07 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4185636.11 | 1.74985 | 19.53 | 19.53 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185636.11 | 1.64914 | 16.96 | 16.96 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185636.11 | 1.58869 | 15.39 | 16.56 | 1.5 | ANNUAL | ALL | 5 |
| 564652 | 4185656.11 | 0.46901 | 10.64 | 10.64 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4185656.11 | 1.65386 | 7.9 | 21.05 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4185656.11 | 1.78565 | 7.22 | 22.61 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185656.11 | 2.20763 | 22.05 | 22.05 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185656.11 | 2.16887 | 22.2 | 22.2 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4185656.11 | 2.12614 | 20.82 | 20.82 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185656.11 | 1.91779 | 19.39 | 19.39 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185656.11 | 1.84011 | 17.87 | 19.44 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185656.11 | 1.75637 | 16.89 | 19.44 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4185676.11 | 0.27061 | 10.07 | 10.07 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4185676.11 | 0.32217 | 10.2 | 10.2 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4185676.11 | 0.38659 | 10.12 | 10.12 | 1.5 | ANNUAL | ALL | 5 |
| 564612 | 4185676.11 | 0.42524 | 10.39 | 20.6 | 1.5 | ANNUAL | ALL | 5 |
| 564672 | 4185676.11 | 0.57123 | 12.51 | 12.51 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4185676.11 | 2.4867 | 6.62 | 23 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185676.11 | 2.6144 | 21.25 | 21.25 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185676.11 | 2.52807 | 21.79 | 21.79 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4185676.11 | 2.33088 | 21.12 | 21.12 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185676.11 | 2.22074 | 20.35 | 22.52 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185676.11 | 2.03922 | 19.72 | 19.72 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185676.11 | 1.93201 | 17.97 | 20.5 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4185696.11 | 0.28054 | 10.58 | 10.58 | 1.5 | ANNUAL | ALL | 5 |
| 564532 | 4185696.11 | 0.30671 | 10.34 | 10.34 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4185696.11 | 0.33721 | 10.58 | 10.58 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4185696.11 | 0.37105 | 10.33 | 20.6 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4185696.11 | 0.41121 | 10.83 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564612 | 4185696.11 | 0.45749 | 11.5 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4185696.11 | 1.15843 | 10.31 | 10.31 | 1.5 | ANNUAL | ALL | 5 |
| 564832 | 4185696.11 | 1.57193 | 10.18 | 10.18 | 1.5 | ANNUAL | ALL | 5 |
| 564852 | 4185696.11 | 1.86149 | 10.11 | 10.11 | 1.5 | ANNUAL | ALL | 5 |
| 564872 | 4185696.11 | 2.16328 | 9.66 | 9.66 | 1.5 | ANNUAL | ALL | 5 |
| 564892 | 4185696.11 | 2.47115 | 9.76 | 9.76 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4185696.11 | 2.75417 | 10.08 | 10.08 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4185696.11 | 2.98517 | 10.25 | 10.25 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4185696.11 | 3.13375 | 9.62 | 22.08 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4185696.11 | 3.19646 | 8.25 | 22.67 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4185696.11 | 3.22081 | 7.65 | 23 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4185696.11 | 2.76503 | 22.67 | 22.67 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4185696.11 | 2.60488 | 22.92 | 22.92 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185696.11 | 2.47038 | 20.68 | 22.84 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185696.11 | 2.31585 | 20.35 | 20.35 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185696.11 | 2.10984 | 18.42 | 20.26 | 1.5 | ANNUAL | ALL | 5 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 564512 | 4185716.11 | 0.28908 | 10.54 | 10.54 | 1.5 | ANNUAL | ALL | 5 |
| 564532 | 4185716.11 | 0.31797 | 10.72 | 10.72 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4185716.11 | 0.35092 | 10.7 | 20.6 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4185716.11 | 0.38931 | 10.86 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564652 | 4185716.11 | 0.62341 | 13.81 | 20.6 | 1.5 | ANNUAL | ALL | 5 |
| 564672 | 4185716.11 | 0.70535 | 13.97 | 20.49 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4185716.11 | 0.79847 | 14 | 20.21 | 1.5 | ANNUAL | ALL | 5 |
| 564712 | 4185716.11 | 0.90422 | 14.2 | 14.2 | 1.5 | ANNUAL | ALL | 5 |
| 564732 | 4185716.11 | 1.01043 | 12.89 | 16.93 | 1.5 | ANNUAL | ALL | 5 |
| 564752 | 4185716.11 | 1.12669 | 12.04 | 16.91 | 1.5 | ANNUAL | ALL | 5 |
| 564772 | 4185716.11 | 1.25915 | 11.4 | 11.4 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4185716.11 | 1.43152 | 11.06 | 11.06 | 1.5 | ANNUAL | ALL | 5 |
| 564832 | 4185716.11 | 2.02908 | 10.94 | 10.94 | 1.5 | ANNUAL | ALL | 5 |
| 564852 | 4185716.11 | 2.4782 | 11.41 | 11.41 | 1.5 | ANNUAL | ALL | 5 |
| 564872 | 4185716.11 | 2.91828 | 10.83 | 10.83 | 1.5 | ANNUAL | ALL | 5 |
| 564892 | 4185716.11 | 3.3583 | 10.99 | 10.99 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4185716.11 | 3.73931 | 11.33 | 11.33 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4185716.11 | 4.00692 | 11.18 | 11.18 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4185716.11 | 4.16053 | 10.87 | 10.87 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4185716.11 | 4.2058 | 10.51 | 21.75 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4185716.11 | 4.16798 | 10.43 | 22.67 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4185716.11 | 4.05902 | 10.45 | 23 | 1.5 | ANNUAL | ALL | 5 |
| 565052 | 4185716.11 | 3.762 | 17.39 | 22.3 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185716.11 | 3.5272 | 19.62 | 19.62 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185716.11 | 3.3945 | 20.27 | 22.54 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4185716.11 | 3.14057 | 22.14 | 22.14 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4185716.11 | 2.93192 | 21.19 | 22.8 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185716.11 | 2.72121 | 20.91 | 20.91 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185716.11 | 2.457 | 20.22 | 20.22 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4185736.11 | 0.40583 | 11.14 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4185736.11 | 0.45603 | 11.59 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564612 | 4185736.11 | 0.51858 | 13.2 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564632 | 4185736.11 | 0.59219 | 14.59 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564652 | 4185736.11 | 0.67784 | 15.95 | 20.6 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4185736.11 | 0.89896 | 15.74 | 20.05 | 1.5 | ANNUAL | ALL | 5 |
| 564712 | 4185736.11 | 1.04014 | 15.49 | 15.49 | 1.5 | ANNUAL | ALL | 5 |
| 564732 | 4185736.11 | 1.19674 | 14.27 | 16.93 | 1.5 | ANNUAL | ALL | 5 |
| 564752 | 4185736.11 | 1.36537 | 12.99 | 17 | 1.5 | ANNUAL | ALL | 5 |
| 564772 | 4185736.11 | 1.55978 | 12.19 | 16.52 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4185736.11 | 1.81131 | 11.78 | 11.78 | 1.5 | ANNUAL | ALL | 5 |
| 564812 | 4185736.11 | 2.17207 | 11.35 | 11.35 | 1.5 | ANNUAL | ALL | 5 |
| 564852 | 4185736.11 | 3.40703 | 11.71 | 11.71 | 1.5 | ANNUAL | ALL | 5 |
| 564872 | 4185736.11 | 4.12113 | 11.68 | 11.68 | 1.5 | ANNUAL | ALL | 5 |
| 564892 | 4185736.11 | 4.76108 | 11.73 | 11.73 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4185736.11 | 5.22602 | 11.4 | 11.4 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4185736.11 | 5.52187 | 11.42 | 11.42 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4185736.11 | 5.59731 | 11.04 | 11.04 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4185736.11 | 5.51709 | 10.84 | 18.26 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4185736.11 | 5.31115 | 10.58 | 22.59 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4185736.11 | 5.05336 | 11.02 | 22.9 | 1.5 | ANNUAL | ALL | 5 |
| 565052 | 4185736.11 | 4.46773 | 15.59 | 22.59 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185736.11 | 4.11279 | 18.54 | 18.54 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4185736.11 | 3.53351 | 20.95 | 21.79 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4185736.11 | 3.22457 | 21.7 | 21.7 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185736.11 | 2.96065 | 21 | 26.38 | 1.5 | ANNUAL | ALL | 5 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 565192 | 4185736.11 | 2.49081 | 20.25 | 26.89 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4185756.11 | 0.30424 | 10.79 | 10.79 | 1.5 | ANNUAL | ALL | 5 |
| 564532 | 4185756.11 | 0.33658 | 10.75 | 20.57 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4185756.11 | 0.37576 | 11.4 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4185756.11 | 0.42094 | 11.44 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4185756.11 | 0.47756 | 12.6 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564612 | 4185756.11 | 0.54797 | 14.88 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564632 | 4185756.11 | 0.62615 | 16.96 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564652 | 4185756.11 | 0.71942 | 18.88 | 20.21 | 1.5 | ANNUAL | ALL | 5 |
| 564672 | 4185756.11 | 0.84047 | 18.8 | 20.05 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4185756.11 | 0.99366 | 17.76 | 19.39 | 1.5 | ANNUAL | ALL | 5 |
| 564732 | 4185756.11 | 1.4078 | 16.76 | 16.76 | 1.5 | ANNUAL | ALL | 5 |
| 564752 | 4185756.11 | 1.65971 | 13.5 | 17.41 | 1.5 | ANNUAL | ALL | 5 |
| 564772 | 4185756.11 | 1.97024 | 13.06 | 16.75 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4185756.11 | 2.35568 | 12.44 | 12.44 | 1.5 | ANNUAL | ALL | 5 |
| 564812 | 4185756.11 | 2.9227 | 11.79 | 11.79 | 1.5 | ANNUAL | ALL | 5 |
| 564872 | 4185756.11 | 6.20243 | 12.2 | 12.2 | 1.5 | ANNUAL | ALL | 5 |
| 564892 | 4185756.11 | 7.16233 | 12.21 | 12.21 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4185756.11 | 7.72164 | 11.99 | 11.99 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4185756.11 | 7.89156 | 11.93 | 11.93 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4185756.11 | 7.70414 | 11.61 | 11.61 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4185756.11 | 7.30666 | 11.4 | 11.4 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4185756.11 | 6.76573 | 10.81 | 20.81 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4185756.11 | 6.22957 | 11.13 | 22.59 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4185756.11 | 5.71471 | 12.39 | 22.8 | 1.5 | ANNUAL | ALL | 5 |
| 565052 | 4185756.11 | 5.19873 | 13.59 | 26.56 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185756.11 | 4.71223 | 15.83 | 26.08 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4185756.11 | 3.82424 | 19.66 | 25.8 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185756.11 | 2.82289 | 23.92 | 26.38 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185756.11 | 2.57504 | 23.42 | 26.38 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4185776.11 | 0.28237 | 11.49 | 11.49 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4185776.11 | 0.31135 | 11.32 | 11.32 | 1.5 | ANNUAL | ALL | 5 |
| 564532 | 4185776.11 | 0.34429 | 10.61 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4185776.11 | 0.38597 | 11.45 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4185776.11 | 0.43508 | 11.93 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4185776.11 | 0.49751 | 13.81 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564672 | 4185776.11 | 0.89806 | 19.56 | 19.56 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4185776.11 | 1.08133 | 18.92 | 18.92 | 1.5 | ANNUAL | ALL | 5 |
| 564812 | 4185776.11 | 4.14336 | 12.2 | 12.2 | 1.5 | ANNUAL | ALL | 5 |
| 564832 | 4185776.11 | 5.83704 | 12.38 | 12.38 | 1.5 | ANNUAL | ALL | 5 |
| 564892 | 4185776.11 | 11.69313 | 12.75 | 12.75 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4185776.11 | 11.99306 | 12.43 | 12.43 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4185776.11 | 11.53064 | 12.16 | 12.16 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4185776.11 | 10.63343 | 11.78 | 11.78 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4185776.11 | 9.56506 | 11.27 | 11.27 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4185776.11 | 8.53352 | 11.26 | 11.26 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4185776.11 | 7.5525 | 11.18 | 19.62 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4185776.11 | 3.74663 | 20.37 | 26.97 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185776.11 | 3.28047 | 23.57 | 26.44 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185776.11 | 2.88486 | 25.84 | 26.38 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185776.11 | 2.6337 | 24.61 | 26.38 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4185796.11 | 0.28741 | 11.72 | 11.72 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4185796.11 | 0.31814 | 12.05 | 12.05 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4185796.11 | 0.39695 | 12.42 | 20.62 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4185796.11 | 0.45067 | 13.86 | 20.62 | 1.5 | ANNUAL | ALL | 5 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 564672 | 4185796.11 | 0.95012 | 19.81 | 19.81 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4185796.11 | 1.16238 | 19.23 | 19.23 | 1.5 | ANNUAL | ALL | 5 |
| 564732 | 4185796.11 | 1.8767 | 16.76 | 17.21 | 1.5 | ANNUAL | ALL | 5 |
| 564812 | 4185796.11 | 6.52585 | 13.54 | 13.54 | 1.5 | ANNUAL | ALL | 5 |
| 564832 | 4185796.11 | 10.01696 | 12.59 | 12.59 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4185796.11 | 19.21405 | 12.62 | 12.62 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185796.11 | 5.76705 | 13.68 | 30.96 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185796.11 | 5.05531 | 16.87 | 28.24 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4185796.11 | 3.86839 | 21.74 | 26.97 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185796.11 | 3.36485 | 23.96 | 26.56 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185796.11 | 2.93203 | 26.24 | 26.24 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185796.11 | 2.62025 | 26.6 | 26.6 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4185816.11 | 0.29227 | 12.15 | 12.15 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4185816.11 | 0.32377 | 12.22 | 12.22 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4185816.11 | 0.40699 | 13.39 | 20.57 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4185816.11 | 0.4626 | 14.5 | 20.57 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4185816.11 | 0.52771 | 16.29 | 20.57 | 1.5 | ANNUAL | ALL | 5 |
| 564632 | 4185816.11 | 0.69521 | 20.2 | 20.2 | 1.5 | ANNUAL | ALL | 5 |
| 564652 | 4185816.11 | 0.81008 | 20.5 | 20.5 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4185816.11 | 1.23276 | 19.48 | 19.48 | 1.5 | ANNUAL | ALL | 5 |
| 564712 | 4185816.11 | 1.58404 | 17.97 | 17.97 | 1.5 | ANNUAL | ALL | 5 |
| 564732 | 4185816.11 | 2.0959 | 17.18 | 17.18 | 1.5 | ANNUAL | ALL | 5 |
| 564752 | 4185816.11 | 2.92167 | 15.71 | 15.71 | 1.5 | ANNUAL | ALL | 5 |
| 564772 | 4185816.11 | 4.22742 | 15.18 | 15.18 | 1.5 | ANNUAL | ALL | 5 |
| 564812 | 4185816.11 | 11.20906 | 14.23 | 14.23 | 1.5 | ANNUAL | ALL | 5 |
| 564832 | 4185816.11 | 22.09926 | 13.64 | 13.64 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185816.11 | 6.04694 | 11.09 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185816.11 | 5.28699 | 15.4 | 30.96 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4185816.11 | 4.57047 | 18.6 | 30.96 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4185816.11 | 3.91475 | 22.13 | 27.21 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185816.11 | 3.3507 | 25.04 | 25.04 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185816.11 | 2.92129 | 26.66 | 26.66 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185816.11 | 2.59881 | 27.07 | 27.07 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4185836.11 | 0.29638 | 12.22 | 12.22 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4185836.11 | 0.32892 | 12.38 | 12.38 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4185836.11 | 0.41546 | 13.86 | 20.47 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4185836.11 | 0.47314 | 14.89 | 20.47 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4185836.11 | 0.53641 | 17.31 | 20.47 | 1.5 | ANNUAL | ALL | 5 |
| 564652 | 4185836.11 | 0.82485 | 20.87 | 20.87 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4185836.11 | 1.29635 | 19.45 | 19.45 | 1.5 | ANNUAL | ALL | 5 |
| 564712 | 4185836.11 | 1.68678 | 18.25 | 18.25 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185836.11 | 5.3055 | 11.7 | 34.33 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4185836.11 | 4.6097 | 17.83 | 30.96 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4185836.11 | 3.85567 | 22.61 | 27.42 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185836.11 | 3.31618 | 24.58 | 27.42 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185836.11 | 2.85837 | 26.95 | 26.95 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185836.11 | 2.53983 | 27.31 | 27.31 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4185856.11 | 0.30029 | 12.5 | 12.5 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4185856.11 | 0.3338 | 12.74 | 12.74 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4185856.11 | 0.42355 | 14.76 | 21.13 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4185856.11 | 0.48141 | 15.97 | 20.79 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4185856.11 | 0.54443 | 18.06 | 20.02 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185856.11 | 5.19459 | 11.11 | 34.33 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4185856.11 | 4.52314 | 16.7 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4185856.11 | 3.74242 | 21.98 | 30.96 | 1.5 | ANNUAL | ALL | 5 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 565152 | 4185856.11 | 3.17763 | 25.06 | 28.04 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185856.11 | 2.74773 | 27.13 | 27.13 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185856.11 | 2.42074 | 28.24 | 28.24 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4185876.11 | 0.30354 | 12.64 | 12.64 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4185876.11 | 0.33818 | 13.26 | 13.26 | 1.5 | ANNUAL | ALL | 5 |
| 564672 | 4185876.11 | 1.0348 | 20.9 | 20.9 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4185876.11 | 1.37885 | 20.13 | 20.13 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4185876.11 | 11.03313 | 17.44 | 24.55 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185876.11 | 4.90106 | 10.08 | 34.52 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4185876.11 | 4.30623 | 14.84 | 34.33 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4185876.11 | 3.58249 | 20.28 | 30.96 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185876.11 | 3.00023 | 25 | 30.96 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185876.11 | 2.58721 | 27.53 | 27.53 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185876.11 | 2.28398 | 28.69 | 30.96 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4185896.11 | 0.34117 | 13.28 | 21.13 | 1.5 | ANNUAL | ALL | 5 |
| 564532 | 4185896.11 | 0.38371 | 14.55 | 23.08 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4185896.11 | 0.43225 | 16.24 | 23.08 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4185896.11 | 0.48824 | 17.36 | 23.65 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4185896.11 | 0.53355 | 20.31 | 20.31 | 1.5 | ANNUAL | ALL | 5 |
| 564672 | 4185896.11 | 1.03342 | 21.48 | 21.48 | 1.5 | ANNUAL | ALL | 5 |
| 564712 | 4185896.11 | 1.68347 | 20.99 | 20.99 | 1.5 | ANNUAL | ALL | 5 |
| 564732 | 4185896.11 | 2.21999 | 21.52 | 21.52 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4185896.11 | 9.74209 | 17.47 | 24.66 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4185896.11 | 11.31742 | 12.42 | 12.42 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4185896.11 | 9.04757 | 11.61 | 30.65 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4185896.11 | 7.32275 | 9.65 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 565052 | 4185896.11 | 6.09683 | 8.8 | 34.37 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185896.11 | 5.15705 | 8.05 | 35.66 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185896.11 | 4.46682 | 8.87 | 36.12 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4185896.11 | 3.95224 | 12.38 | 34.52 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4185896.11 | 3.43033 | 18.86 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185896.11 | 2.45518 | 25.83 | 30.96 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185896.11 | 2.11394 | 29.49 | 30.65 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4185916.11 | 0.34305 | 13.27 | 23.65 | 1.5 | ANNUAL | ALL | 5 |
| 564532 | 4185916.11 | 0.38632 | 15.14 | 23.65 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4185916.11 | 0.43125 | 17.23 | 23.08 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4185916.11 | 0.53092 | 20.89 | 20.89 | 1.5 | ANNUAL | ALL | 5 |
| 564672 | 4185916.11 | 1.00593 | 22.69 | 23.14 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4185916.11 | 1.26724 | 22.2 | 22.2 | 1.5 | ANNUAL | ALL | 5 |
| 564712 | 4185916.11 | 1.63264 | 21.95 | 21.95 | 1.5 | ANNUAL | ALL | 5 |
| 564732 | 4185916.11 | 2.10197 | 22.76 | 22.76 | 1.5 | ANNUAL | ALL | 5 |
| 564752 | 4185916.11 | 2.893 | 22.73 | 22.73 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4185916.11 | 7.57634 | 18.86 | 25.06 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4185916.11 | 7.47657 | 11.39 | 30.65 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4185916.11 | 6.23329 | 9.85 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 565052 | 4185916.11 | 5.29077 | 8.94 | 34.37 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185916.11 | 4.54511 | 8.16 | 36.12 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185916.11 | 2.62523 | 21.31 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185916.11 | 1.96936 | 28.58 | 29.56 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4185936.11 | 0.34376 | 13.37 | 23.99 | 1.5 | ANNUAL | ALL | 5 |
| 564532 | 4185936.11 | 0.38558 | 13.85 | 25.36 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4185936.11 | 0.43278 | 16.77 | 24.62 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4185936.11 | 0.52783 | 21.26 | 23.65 | 1.5 | ANNUAL | ALL | 5 |
| 564672 | 4185936.11 | 0.97763 | 23.62 | 23.62 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4185936.11 | 1.22265 | 23.1 | 23.1 | 1.5 | ANNUAL | ALL | 5 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 564712 | 4185936.11 | 1.55281 | 22.87 | 22.87 | 1.5 | ANNUAL | ALL | 5 |
| 564732 | 4185936.11 | 1.97328 | 23.45 | 23.45 | 1.5 | ANNUAL | ALL | 5 |
| 564772 | 4185936.11 | 3.49165 | 23.75 | 24.55 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4185936.11 | 5.27358 | 20.53 | 24.55 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4185936.11 | 5.9516 | 11.65 | 14.14 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4185936.11 | 5.12867 | 10.37 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 565052 | 4185936.11 | 4.47192 | 9.85 | 34.37 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185936.11 | 3.9173 | 9.1 | 36.12 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185936.11 | 2.49011 | 18.29 | 34.52 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185936.11 | 2.10405 | 22.33 | 34.33 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185936.11 | 1.85044 | 25.65 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4185956.11 | 0.34313 | 13.61 | 24.62 | 1.5 | ANNUAL | ALL | 5 |
| 564532 | 4185956.11 | 0.38451 | 14.26 | 25.54 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4185956.11 | 0.43192 | 16.34 | 25.54 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4185956.11 | 0.52312 | 21.57 | 23.06 | 1.5 | ANNUAL | ALL | 5 |
| 564612 | 4185956.11 | 0.58142 | 23.56 | 23.56 | 1.5 | ANNUAL | ALL | 5 |
| 564652 | 4185956.11 | 0.78162 | 24.72 | 24.72 | 1.5 | ANNUAL | ALL | 5 |
| 564672 | 4185956.11 | 0.94337 | 24.48 | 24.48 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4185956.11 | 1.15943 | 24.14 | 24.14 | 1.5 | ANNUAL | ALL | 5 |
| 564712 | 4185956.11 | 1.4501 | 23.73 | 23.73 | 1.5 | ANNUAL | ALL | 5 |
| 564732 | 4185956.11 | 1.78642 | 24.45 | 24.45 | 1.5 | ANNUAL | ALL | 5 |
| 564752 | 4185956.11 | 2.23493 | 24.87 | 24.87 | 1.5 | ANNUAL | ALL | 5 |
| 564772 | 4185956.11 | 2.92966 | 23.57 | 23.57 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4185956.11 | 3.80662 | 21.94 | 23.18 | 1.5 | ANNUAL | ALL | 5 |
| 564812 | 4185956.11 | 5.10148 | 19.23 | 24.67 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4185956.11 | 6.381 | 16.09 | 16.09 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4185956.11 | 5.84958 | 15.31 | 15.31 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4185956.11 | 5.24215 | 14.51 | 14.51 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4185956.11 | 4.66425 | 13.1 | 14.22 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4185956.11 | 4.13379 | 11.31 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 565052 | 4185956.11 | 3.69755 | 10.96 | 34.33 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185956.11 | 3.30846 | 10.3 | 34.52 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185956.11 | 2.97919 | 10.31 | 36.16 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185956.11 | 2.23784 | 14.01 | 37.09 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185956.11 | 1.99512 | 19.32 | 35.85 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4185976.11 | 0.34087 | 13.83 | 24.78 | 1.5 | ANNUAL | ALL | 5 |
| 564532 | 4185976.11 | 0.38105 | 14.33 | 26.1 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4185976.11 | 0.42751 | 16.16 | 26.1 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4185976.11 | 0.47595 | 18.52 | 25.54 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4185976.11 | 0.52116 | 21.25 | 25.3 | 1.5 | ANNUAL | ALL | 5 |
| 564612 | 4185976.11 | 0.57223 | 23.95 | 23.95 | 1.5 | ANNUAL | ALL | 5 |
| 564632 | 4185976.11 | 0.64875 | 25.13 | 25.13 | 1.5 | ANNUAL | ALL | 5 |
| 564652 | 4185976.11 | 0.75614 | 25.46 | 25.46 | 1.5 | ANNUAL | ALL | 5 |
| 564672 | 4185976.11 | 0.90339 | 25.18 | 25.18 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4185976.11 | 1.0918 | 24.84 | 24.84 | 1.5 | ANNUAL | ALL | 5 |
| 564712 | 4185976.11 | 1.33091 | 24.48 | 24.48 | 1.5 | ANNUAL | ALL | 5 |
| 564732 | 4185976.11 | 1.60468 | 24.78 | 24.78 | 1.5 | ANNUAL | ALL | 5 |
| 564852 | 4185976.11 | 4.40941 | 18.3 | 27.26 | 1.5 | ANNUAL | ALL | 5 |
| 564872 | 4185976.11 | 4.65937 | 17.72 | 20.85 | 1.5 | ANNUAL | ALL | 5 |
| 564892 | 4185976.11 | 4.77748 | 17.18 | 17.18 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4185976.11 | 4.76966 | 16.72 | 16.72 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4185976.11 | 4.18832 | 16.13 | 16.13 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4185976.11 | 3.93221 | 15.47 | 15.47 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4185976.11 | 3.61832 | 14.58 | 14.58 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4185976.11 | 3.29611 | 12.45 | 34.31 | 1.5 | ANNUAL | ALL | 5 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 565052 | 4185976.11 | 3.01348 | 11.95 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185976.11 | 2.75245 | 11.42 | 34.52 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185976.11 | 2.49906 | 9.58 | 36.47 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4185976.11 | 1.95432 | 12.89 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185976.11 | 1.61962 | 19.89 | 36.3 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4185996.11 | 0.33699 | 14.01 | 24.41 | 1.5 | ANNUAL | ALL | 5 |
| 564532 | 4185996.11 | 0.37587 | 14.91 | 26.1 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4185996.11 | 0.42004 | 16.09 | 26.12 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4185996.11 | 0.46733 | 18.05 | 26.12 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4185996.11 | 0.51082 | 21.58 | 25.3 | 1.5 | ANNUAL | ALL | 5 |
| 564612 | 4185996.11 | 0.56037 | 24.29 | 24.29 | 1.5 | ANNUAL | ALL | 5 |
| 564632 | 4185996.11 | 0.63466 | 25.29 | 25.29 | 1.5 | ANNUAL | ALL | 5 |
| 564752 | 4185996.11 | 1.63537 | 25.23 | 25.23 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4185996.11 | 2.13332 | 23.94 | 23.94 | 1.5 | ANNUAL | ALL | 5 |
| 564812 | 4185996.11 | 2.44159 | 21.73 | 27.33 | 1.5 | ANNUAL | ALL | 5 |
| 564852 | 4185996.11 | 2.8253 | 20.8 | 20.8 | 1.5 | ANNUAL | ALL | 5 |
| 564872 | 4185996.11 | 3.19266 | 18.77 | 27.15 | 1.5 | ANNUAL | ALL | 5 |
| 564892 | 4185996.11 | 3.30774 | 17.67 | 17.67 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4185996.11 | 3.32397 | 17.21 | 17.21 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4185996.11 | 3.28599 | 16.82 | 16.82 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4185996.11 | 3.05709 | 16.77 | 16.77 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4185996.11 | 2.91938 | 16.57 | 16.57 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4185996.11 | 2.80326 | 15.79 | 15.79 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4185996.11 | 2.62001 | 13.39 | 17.41 | 1.5 | ANNUAL | ALL | 5 |
| 565052 | 4185996.11 | 2.44403 | 13.06 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4185996.11 | 2.26968 | 12.17 | 34.52 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4185996.11 | 2.09274 | 9.97 | 36.47 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4185996.11 | 1.94572 | 9.96 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4185996.11 | 1.57597 | 12.62 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4185996.11 | 1.4677 | 16.04 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4186016.11 | 0.33145 | 14.2 | 24.41 | 1.5 | ANNUAL | ALL | 5 |
| 564532 | 4186016.11 | 0.36844 | 15.63 | 26.1 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4186016.11 | 0.40835 | 16.7 | 26.12 | 1.5 | ANNUAL | ALL | 5 |
| 564672 | 4186016.11 | 0.80049 | 26.26 | 27.24 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4186016.11 | 0.91658 | 26.57 | 26.57 | 1.5 | ANNUAL | ALL | 5 |
| 564712 | 4186016.11 | 1.06215 | 26.11 | 27.77 | 1.5 | ANNUAL | ALL | 5 |
| 564752 | 4186016.11 | 1.33829 | 26.77 | 26.77 | 1.5 | ANNUAL | ALL | 5 |
| 564772 | 4186016.11 | 1.51949 | 25.35 | 27.36 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4186016.11 | 1.66489 | 24.63 | 27.11 | 1.5 | ANNUAL | ALL | 5 |
| 564812 | 4186016.11 | 1.81977 | 23.26 | 27.33 | 1.5 | ANNUAL | ALL | 5 |
| 564832 | 4186016.11 | 2.02413 | 20.72 | 27.59 | 1.5 | ANNUAL | ALL | 5 |
| 564852 | 4186016.11 | 2.10943 | 20.84 | 27.26 | 1.5 | ANNUAL | ALL | 5 |
| 564872 | 4186016.11 | 2.33196 | 19.6 | 27.26 | 1.5 | ANNUAL | ALL | 5 |
| 564892 | 4186016.11 | 2.42143 | 18.13 | 27.15 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4186016.11 | 2.44083 | 17.69 | 17.69 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4186016.11 | 2.42997 | 17.25 | 17.25 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4186016.11 | 2.22817 | 17.23 | 17.23 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4186016.11 | 2.14711 | 16.93 | 16.93 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4186016.11 | 2.09371 | 14.54 | 17.08 | 1.5 | ANNUAL | ALL | 5 |
| 565052 | 4186016.11 | 1.98165 | 13.65 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4186016.11 | 1.86848 | 12.74 | 34.52 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4186016.11 | 1.752 | 11.01 | 36.16 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4186016.11 | 1.64802 | 10.79 | 38.12 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4186016.11 | 1.55353 | 11.64 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4186016.11 | 1.28835 | 12.06 | 38.52 | 1.5 | ANNUAL | ALL | 5 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 564592 | 4186036.11 | 0.48311 | 21.97 | 25.78 | 1.5 | ANNUAL | ALL | 5 |
| 564612 | 4186036.11 | 0.53626 | 23.39 | 26.05 | 1.5 | ANNUAL | ALL | 5 |
| 564632 | 4186036.11 | 0.58855 | 25.53 | 25.53 | 1.5 | ANNUAL | ALL | 5 |
| 564652 | 4186036.11 | 0.66159 | 26.02 | 26.02 | 1.5 | ANNUAL | ALL | 5 |
| 564772 | 4186036.11 | 1.20489 | 27.28 | 27.28 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4186036.11 | 1.30014 | 26.28 | 27.22 | 1.5 | ANNUAL | ALL | 5 |
| 564812 | 4186036.11 | 1.41757 | 24.23 | 27.34 | 1.5 | ANNUAL | ALL | 5 |
| 564832 | 4186036.11 | 1.53901 | 22.1 | 27.4 | 1.5 | ANNUAL | ALL | 5 |
| 564852 | 4186036.11 | 1.61729 | 21.4 | 27.3 | 1.5 | ANNUAL | ALL | 5 |
| 564872 | 4186036.11 | 1.70243 | 20.33 | 27.26 | 1.5 | ANNUAL | ALL | 5 |
| 564892 | 4186036.11 | 1.84526 | 18.64 | 27.15 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4186036.11 | 1.86522 | 18.13 | 18.13 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4186036.11 | 1.86441 | 17.68 | 17.68 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4186036.11 | 1.84425 | 17.36 | 17.36 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4186036.11 | 1.75754 | 17.27 | 17.27 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4186036.11 | 1.70595 | 17.12 | 17.12 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4186036.11 | 1.68739 | 15.53 | 15.53 | 1.5 | ANNUAL | ALL | 5 |
| 565052 | 4186036.11 | 1.61675 | 14.19 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4186036.11 | 1.54427 | 13.6 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4186036.11 | 1.46112 | 10.74 | 36.3 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4186036.11 | 1.39359 | 11.43 | 38.12 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4186036.11 | 1.32634 | 12.21 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4186036.11 | 1.25595 | 11.53 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4186036.11 | 1.12416 | 10.42 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4186056.11 | 0.28823 | 14.4 | 14.4 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4186056.11 | 0.38314 | 16.26 | 26.13 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4186056.11 | 0.42234 | 17.42 | 26.13 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4186056.11 | 0.47054 | 20.6 | 26.13 | 1.5 | ANNUAL | ALL | 5 |
| 564612 | 4186056.11 | 0.51332 | 23.38 | 23.38 | 1.5 | ANNUAL | ALL | 5 |
| 564632 | 4186056.11 | 0.56113 | 25.23 | 25.23 | 1.5 | ANNUAL | ALL | 5 |
| 564752 | 4186056.11 | 0.94594 | 27.8 | 27.8 | 1.5 | ANNUAL | ALL | 5 |
| 564772 | 4186056.11 | 1.00029 | 27.66 | 27.66 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4186056.11 | 1.04924 | 27.31 | 27.31 | 1.5 | ANNUAL | ALL | 5 |
| 564812 | 4186056.11 | 1.08918 | 27.07 | 27.07 | 1.5 | ANNUAL | ALL | 5 |
| 564852 | 4186056.11 | 1.25644 | 22.83 | 27.15 | 1.5 | ANNUAL | ALL | 5 |
| 564872 | 4186056.11 | 1.34372 | 20.68 | 27.3 | 1.5 | ANNUAL | ALL | 5 |
| 564892 | 4186056.11 | 1.45205 | 19.13 | 27.15 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4186056.11 | 1.46817 | 18.64 | 18.64 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4186056.11 | 1.47179 | 18.16 | 18.16 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4186056.11 | 1.46421 | 17.69 | 17.69 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4186056.11 | 1.38222 | 17.16 | 17.16 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4186056.11 | 1.35019 | 16.78 | 17.41 | 1.5 | ANNUAL | ALL | 5 |
| 565052 | 4186056.11 | 1.3312 | 14.73 | 17.41 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4186056.11 | 1.28381 | 14.37 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4186056.11 | 1.13302 | 12.75 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4186056.11 | 1.0829 | 12.36 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4186056.11 | 1.03302 | 11.68 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4186076.11 | 0.2809 | 15.04 | 15.04 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4186076.11 | 0.44297 | 18.68 | 28.44 | 1.5 | ANNUAL | ALL | 5 |
| 564612 | 4186076.11 | 0.49546 | 21.27 | 26.13 | 1.5 | ANNUAL | ALL | 5 |
| 564632 | 4186076.11 | 0.52815 | 25.15 | 25.15 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4186076.11 | 0.66017 | 28.52 | 28.52 | 1.5 | ANNUAL | ALL | 5 |
| 564712 | 4186076.11 | 0.70179 | 29.3 | 29.3 | 1.5 | ANNUAL | ALL | 5 |
| 564772 | 4186076.11 | 0.84484 | 27.75 | 27.75 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4186076.11 | 0.88211 | 27.13 | 27.41 | 1.5 | ANNUAL | ALL | 5 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 564812 | 4186076.11 | 0.95325 | 24.38 | 27.52 | 1.5 | ANNUAL | ALL | 5 |
| 564872 | 4186076.11 | 1.0844 | 21.15 | 25.27 | 1.5 | ANNUAL | ALL | 5 |
| 564892 | 4186076.11 | 1.16722 | 19.96 | 23.43 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4186076.11 | 1.18492 | 19.12 | 19.12 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4186076.11 | 1.18956 | 18.65 | 18.65 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4186076.11 | 1.18755 | 18.1 | 18.1 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4186076.11 | 1.17853 | 17.59 | 17.59 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4186076.11 | 1.13549 | 17.43 | 17.43 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4186076.11 | 1.12467 | 16.38 | 16.38 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4186076.11 | 1.07598 | 15.22 | 15.22 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4186076.11 | 1.04133 | 14.02 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4186076.11 | 0.97021 | 13.06 | 38.12 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4186076.11 | 0.93516 | 13.44 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4186076.11 | 0.8993 | 13.27 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4186096.11 | 0.42006 | 16.33 | 29.49 | 1.5 | ANNUAL | ALL | 5 |
| 564612 | 4186096.11 | 0.45938 | 16.89 | 29.49 | 1.5 | ANNUAL | ALL | 5 |
| 564632 | 4186096.11 | 0.50068 | 19.47 | 29.49 | 1.5 | ANNUAL | ALL | 5 |
| 564652 | 4186096.11 | 0.55008 | 22.74 | 29.46 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4186096.11 | 0.59332 | 28.52 | 28.84 | 1.5 | ANNUAL | ALL | 5 |
| 564712 | 4186096.11 | 0.62433 | 29.1 | 29.1 | 1.5 | ANNUAL | ALL | 5 |
| 564772 | 4186096.11 | 0.72454 | 27.58 | 27.58 | 1.5 | ANNUAL | ALL | 5 |
| 564812 | 4186096.11 | 0.7763 | 26.28 | 26.28 | 1.5 | ANNUAL | ALL | 5 |
| 564872 | 4186096.11 | 0.87608 | 22.74 | 22.74 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4186096.11 | 0.97668 | 19.5 | 19.5 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4186096.11 | 0.98123 | 19.06 | 19.06 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4186096.11 | 0.98078 | 18.56 | 18.56 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4186096.11 | 0.97639 | 17.97 | 17.97 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4186096.11 | 0.93763 | 16.83 | 16.83 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4186096.11 | 0.90977 | 15.66 | 15.66 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4186096.11 | 0.88561 | 14.49 | 34.31 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4186096.11 | 0.83488 | 13.65 | 36.44 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4186096.11 | 0.80969 | 14.56 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4186096.11 | 0.78316 | 14.18 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4186116.11 | 0.26353 | 15.45 | 15.45 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4186116.11 | 0.36374 | 15.73 | 28.87 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4186116.11 | 0.3948 | 16.01 | 29.49 | 1.5 | ANNUAL | ALL | 5 |
| 564772 | 4186116.11 | 0.62388 | 27.72 | 27.72 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4186116.11 | 0.64203 | 27.19 | 27.19 | 1.5 | ANNUAL | ALL | 5 |
| 564812 | 4186116.11 | 0.66155 | 26.45 | 26.45 | 1.5 | ANNUAL | ALL | 5 |
| 564832 | 4186116.11 | 0.68406 | 25.46 | 25.46 | 1.5 | ANNUAL | ALL | 5 |
| 564872 | 4186116.11 | 0.74659 | 22.16 | 25.43 | 1.5 | ANNUAL | ALL | 5 |
| 564892 | 4186116.11 | 0.77493 | 20.72 | 25.31 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4186116.11 | 0.81764 | 19.96 | 24.46 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4186116.11 | 0.82255 | 19.47 | 19.47 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4186116.11 | 0.82314 | 18.99 | 18.99 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4186116.11 | 0.82063 | 18.43 | 18.43 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4186116.11 | 0.81483 | 17.89 | 17.89 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4186116.11 | 0.79167 | 17.44 | 17.44 | 1.5 | ANNUAL | ALL | 5 |
| 565052 | 4186116.11 | 0.78578 | 16.39 | 16.39 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4186116.11 | 0.72245 | 14.37 | 36.04 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4186116.11 | 0.70365 | 15.32 | 36.44 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4186116.11 | 0.68396 | 14.83 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4186136.11 | 0.25393 | 15.91 | 15.91 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4186136.11 | 0.27366 | 15.68 | 15.68 | 1.5 | ANNUAL | ALL | 5 |
| 564532 | 4186136.11 | 0.29503 | 15.73 | 15.73 | 1.5 | ANNUAL | ALL | 5 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 564552 | 4186136.11 | 0.31818 | 15.83 | 15.83 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4186136.11 | 0.34322 | 15.81 | 28.84 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4186136.11 | 0.37005 | 15.76 | 29.46 | 1.5 | ANNUAL | ALL | 5 |
| 564772 | 4186136.11 | 0.54376 | 27.68 | 27.68 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4186136.11 | 0.55506 | 27.39 | 27.39 | 1.5 | ANNUAL | ALL | 5 |
| 564812 | 4186136.11 | 0.56867 | 26.79 | 26.79 | 1.5 | ANNUAL | ALL | 5 |
| 564832 | 4186136.11 | 0.58337 | 26.09 | 26.09 | 1.5 | ANNUAL | ALL | 5 |
| 564872 | 4186136.11 | 0.61626 | 24.47 | 24.47 | 1.5 | ANNUAL | ALL | 5 |
| 564892 | 4186136.11 | 0.6572 | 21.11 | 26.4 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4186136.11 | 0.67062 | 20.41 | 24.58 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4186136.11 | 0.69879 | 19.9 | 19.9 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4186136.11 | 0.70004 | 19.44 | 19.44 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4186136.11 | 0.69945 | 18.79 | 18.79 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4186136.11 | 0.69637 | 18.14 | 18.14 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4186136.11 | 0.66459 | 16.32 | 16.32 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4186136.11 | 0.65684 | 15.31 | 15.31 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4186136.11 | 0.61456 | 15.41 | 36.34 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4186156.11 | 0.24426 | 15.68 | 15.68 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4186156.11 | 0.26194 | 15.76 | 15.76 | 1.5 | ANNUAL | ALL | 5 |
| 564532 | 4186156.11 | 0.28097 | 15.94 | 15.94 | 1.5 | ANNUAL | ALL | 5 |
| 564832 | 4186156.11 | 0.49814 | 27.33 | 27.33 | 1.5 | ANNUAL | ALL | 5 |
| 564852 | 4186156.11 | 0.51475 | 26.04 | 26.04 | 1.5 | ANNUAL | ALL | 5 |
| 564892 | 4186156.11 | 0.56292 | 21.65 | 26.4 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4186156.11 | 0.57435 | 20.91 | 25.64 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4186156.11 | 0.57921 | 20.75 | 20.75 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4186156.11 | 0.60051 | 20.22 | 20.22 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4186156.11 | 0.60414 | 18.89 | 18.89 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4186156.11 | 0.60244 | 18.23 | 18.23 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4186156.11 | 0.59577 | 18.17 | 18.17 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4186156.11 | 0.57358 | 17.19 | 17.19 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4186156.11 | 0.57283 | 15.47 | 17.88 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4186156.11 | 0.55102 | 14.79 | 14.79 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4186156.11 | 0.51682 | 15.72 | 38.52 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4186176.11 | 0.23434 | 15.6 | 15.6 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4186176.11 | 0.25016 | 16.04 | 16.04 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4186176.11 | 0.28508 | 16.03 | 16.03 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4186176.11 | 0.30407 | 16.62 | 16.62 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4186176.11 | 0.32391 | 16.76 | 16.76 | 1.5 | ANNUAL | ALL | 5 |
| 564612 | 4186176.11 | 0.34442 | 16.72 | 28.84 | 1.5 | ANNUAL | ALL | 5 |
| 564832 | 4186176.11 | 0.43908 | 27.19 | 27.19 | 1.5 | ANNUAL | ALL | 5 |
| 564852 | 4186176.11 | 0.4507 | 26.17 | 26.17 | 1.5 | ANNUAL | ALL | 5 |
| 564892 | 4186176.11 | 0.48782 | 22.11 | 26.12 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4186176.11 | 0.4946 | 21.78 | 25.41 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4186176.11 | 0.50159 | 21.22 | 21.22 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4186176.11 | 0.50735 | 20.52 | 20.52 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4186176.11 | 0.52449 | 19.54 | 19.54 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4186176.11 | 0.52288 | 19.04 | 19.04 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4186176.11 | 0.52049 | 18.38 | 18.38 | 1.5 | ANNUAL | ALL | 5 |
| 565072 | 4186176.11 | 0.50193 | 17.7 | 17.7 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4186176.11 | 0.49105 | 16.4 | 17.88 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4186176.11 | 0.48617 | 15.68 | 16.01 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4186176.11 | 0.46344 | 16.63 | 37.76 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4186196.11 | 0.22438 | 15.85 | 15.85 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4186196.11 | 0.23854 | 16.16 | 16.16 | 1.5 | ANNUAL | ALL | 5 |
| 564552 | 4186196.11 | 0.26925 | 15.99 | 15.99 | 1.5 | ANNUAL | ALL | 5 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 564572 | 4186196.11 | 0.28571 | 16.72 | 16.72 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4186196.11 | 0.30267 | 16.88 | 16.88 | 1.5 | ANNUAL | ALL | 5 |
| 564912 | 4186196.11 | 0.42752 | 23.08 | 23.08 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4186196.11 | 0.45793 | 18.72 | 18.72 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4186196.11 | 0.45537 | 18.05 | 18.05 | 1.5 | ANNUAL | ALL | 5 |
| 565092 | 4186196.11 | 0.43752 | 17.79 | 17.79 | 1.5 | ANNUAL | ALL | 5 |
| 565112 | 4186196.11 | 0.43131 | 17.57 | 17.57 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4186196.11 | 0.42146 | 16.36 | 16.36 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4186196.11 | 0.41185 | 16.96 | 16.96 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4186196.11 | 0.40463 | 16.94 | 37.77 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4186216.11 | 0.21453 | 15.9 | 15.9 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4186216.11 | 0.22715 | 16.19 | 16.19 | 1.5 | ANNUAL | ALL | 5 |
| 564572 | 4186216.11 | 0.26827 | 16.7 | 16.7 | 1.5 | ANNUAL | ALL | 5 |
| 564592 | 4186216.11 | 0.28272 | 16.97 | 16.97 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4186216.11 | 0.34661 | 26.21 | 26.21 | 1.5 | ANNUAL | ALL | 5 |
| 564812 | 4186216.11 | 0.35492 | 25.01 | 27.41 | 1.5 | ANNUAL | ALL | 5 |
| 564832 | 4186216.11 | 0.35493 | 25.62 | 26.89 | 1.5 | ANNUAL | ALL | 5 |
| 564852 | 4186216.11 | 0.35747 | 25.69 | 26.75 | 1.5 | ANNUAL | ALL | 5 |
| 564872 | 4186216.11 | 0.36326 | 25.1 | 25.1 | 1.5 | ANNUAL | ALL | 5 |
| 564932 | 4186216.11 | 0.38492 | 22.37 | 28.23 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4186216.11 | 0.38957 | 21.74 | 28.03 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4186216.11 | 0.39551 | 20.48 | 28.03 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4186216.11 | 0.40766 | 19.43 | 19.43 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4186216.11 | 0.40664 | 18.78 | 18.78 | 1.5 | ANNUAL | ALL | 5 |
| 565032 | 4186216.11 | 0.40431 | 18.28 | 18.28 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4186216.11 | 0.3815 | 16.88 | 16.88 | 1.5 | ANNUAL | ALL | 5 |
| 565152 | 4186216.11 | 0.37505 | 17.02 | 17.02 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4186216.11 | 0.36858 | 17.17 | 17.17 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4186216.11 | 0.36208 | 17.34 | 37.55 | 1.5 | ANNUAL | ALL | 5 |
| 564492 | 4186236.11 | 0.20484 | 16.3 | 16.3 | 1.5 | ANNUAL | ALL | 5 |
| 564512 | 4186236.11 | 0.21605 | 16.22 | 16.22 | 1.5 | ANNUAL | ALL | 5 |
| 564692 | 4186236.11 | 0.32038 | 17.72 | 29.38 | 1.5 | ANNUAL | ALL | 5 |
| 564732 | 4186236.11 | 0.33459 | 20.05 | 29.38 | 1.5 | ANNUAL | ALL | 5 |
| 564772 | 4186236.11 | 0.32797 | 21.19 | 29.38 | 1.5 | ANNUAL | ALL | 5 |
| 564792 | 4186236.11 | 0.32836 | 21.85 | 27.41 | 1.5 | ANNUAL | ALL | 5 |
| 564812 | 4186236.11 | 0.32802 | 22.6 | 27.41 | 1.5 | ANNUAL | ALL | 5 |
| 564832 | 4186236.11 | 0.32642 | 23.62 | 26.89 | 1.5 | ANNUAL | ALL | 5 |
| 564852 | 4186236.11 | 0.32504 | 24.56 | 24.56 | 1.5 | ANNUAL | ALL | 5 |
| 564872 | 4186236.11 | 0.32547 | 25.03 | 27.95 | 1.5 | ANNUAL | ALL | 5 |
| 564892 | 4186236.11 | 0.32512 | 25.67 | 28 | 1.5 | ANNUAL | ALL | 5 |
| 564952 | 4186236.11 | 0.34327 | 22.79 | 28.23 | 1.5 | ANNUAL | ALL | 5 |
| 564972 | 4186236.11 | 0.35195 | 20.73 | 28.43 | 1.5 | ANNUAL | ALL | 5 |
| 564992 | 4186236.11 | 0.3637 | 19.59 | 28.12 | 1.5 | ANNUAL | ALL | 5 |
| 565012 | 4186236.11 | 0.36308 | 18.96 | 18.96 | 1.5 | ANNUAL | ALL | 5 |
| 565132 | 4186236.11 | 0.34106 | 17.72 | 17.72 | 1.5 | ANNUAL | ALL | 5 |
| 565172 | 4186236.11 | 0.33123 | 17.58 | 17.58 | 1.5 | ANNUAL | ALL | 5 |
| 565192 | 4186236.11 | 0.32611 | 17.59 | 17.59 | 1.5 | ANNUAL | ALL | 5 |

CONCUNIT /m^3

DEPUNIT g,^2

5131.97

5171.97

5191.97

NCUNIT ug

PUNIT g/m

## CUMULATIVE SCREENING ANALYSIS - Existing Off-site MEIR

| | | | | Screening Risk | | | Exposure to MEIR | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **BAAQMD Plant #** | **Name of Source** | **Address** | **Source Type** | **Cancer Risk** | **HI** | **$PM_{2.5}$** | **Distance to MEIR (feet)** | **Adjusted Cancer Risk** | **Adjusted HI** | **Adjusted $PM_{2.5}$** |
| **BAAQMD Permitted Stationary Sources within 1,000 feet[1,2]** | | | | | | | | | | |
| 15483 | Autotrends | 2840 Broadway | Auto Body Coating Operation | 0 | 0.00458 | 0 | 220 | 0.00 | 1.2E-04 | 0.0E+00 |
| 19269 | West Lake Christian Terrace | 275 28th Street | Generators | 0.917988506 | 0.001747 | 0.0011614 | 585 | 0.02 | 3.7E-05 | 2.4E-05 |
| 21819 | City of Oakland | 455 27th St, Fire Station 15 | Generators | 13.51995705 | 0.02092 | 0.0350216 | 1000 | 0.15 | 2.3E-04 | 3.8E-04 |
| 22103 | Valdez Plaza | 280 28th Street | Generators | 2.355554575 | 0.001893 | 0.0030646 | 445 | 0.07 | 5.6E-05 | 9.0E-05 |
| 24269 | Sutter Bay Hospitals dba Alta Bates Summit Med Ctr | 3100 Summit Street | (2) Boilers, (2) Generators | 67.58389547 | 0.106412 | 1.0958604 | 975 | 0.75 | 1.2E-03 | 1.2E-02 |
| | | | | | | | | | | |
| **Project Sources[3]** | | | | | | | | | | |
| | 2929 Broadway | Construction | | | | | | 4.4 | 0.0040 | 0.007 |
| | | | | | | | | | | |
| **Proposed Projects within 1,000 feet[4,5]** | | | | | | | | | | |
| | 3000 Broadway | 3000 Broadway | No generator | 0 | 0 | 0 | 445 | 0.00 | 0.0E+00 | 0.0E+00 |
| | Oakland 29 | 295 29th Street | No generator assumed | 0 | 0 | 0 | 250 | 0.00 | 0.0E+00 | 0.0E+00 |
| | 28th & Broadway | 2855 Broadway | No generator assumed | 0 | 0 | 0 | 10 | 0.00 | 0.0E+00 | 0.0E+00 |
| | 27th & Broadway - BVDSP Priority Site 3A | 2630 Broadway | Includes generator, but no HRA | 10 | 0.004 | 0.0182 | 710 | 0.16 | 5.9E-05 | 3.0E-04 |
| | 424 28th Street | 424 28th Street | Generator assumed | 10 | 0.004 | 0.0182 | 700 | 0.17 | 6.0E-05 | 3.1E-04 |
| | | | | | | | | | | |
| **Mobile Sources within 1,000 feet[6]** | | | | | | | | | | |
| | Highways | | | | | | | 18.2 | -- | 0.442 |
| | Major Roadways | | | | | | | 2.8 | -- | 0.037 |
| | | | | | | **Cumulative Health Risks** | | **26.8** | **0.006** | **0.499** |
| | | | | | | City of Oakland Significance Thresholds | | 100 | 10 | 0.8 |

**NOTES:**

1. Health risk screening values obtained from BAAQMD's Permitted Stationary Sources Risk and Hazards web tool refined based on BAAQMD's response to the SSIF.
2. Health risks for sources adjusted for distance using the BAAQMD's distance multiplier.
3. Based on construction HRA conducted for the Project.
4. List of proposed projects within 1,000 feet was derived based on Oakland Planning Bureau/Major Projects List - Q1 2021 available at https://oakgis.maps.arcgis.com/apps/webappviewer/index.html?id=e1357dbaeffc473caa57b1227a7a7739. All projects were assumed to include an emergency generator.
5. Health risks for diesel generators adjusted for distance using the BAAQMD's distance multiplier.
6. Data from BAAQMD GIS database for health risks from mobile sources.

## CUMULATIVE SCREENING ANALYSIS - Project Residential Receptors

| | | | | Screening Risk | | | Exposure to MEIR | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **BAAQMD Plant #** | **Name of Source** | **Address** | **Source Type** | **Cancer Risk** | **HI** | **$PM_{2.5}$** | **Distance to Project Receptor (feet)** | **Adjusted Cancer Risk** | **Adjusted HI** | **Adjusted $PM_{2.5}$** |
| **BAAQMD Permitted Stationary Sources within 1,000 feet[1,2]** | | | | | | | | | | |
| 15483 | Autotrends | 2840 Broadway | Auto Body Coating Operation | 0 | 0.00458 | 0 | 280 | 0.00 | 4.7E-05 | 0.0E+00 |
| 19269 | West Lake Christian Terrace | 275 28th Street | Generators | 0.917988506 | 0.001747 | 0.0011614 | 650 | 0.02 | 3.2E-05 | 2.1E-05 |
| 22103 | Valdez Plaza | 280 28th Street | Generators | 2.355554575 | 0.001893 | 0.0030646 | 490 | 0.06 | 5.0E-05 | 8.0E-05 |
| 24268 | Sutter Bay Hospitals dba Alta Bates Summit Med Ctr | 450 30th Street | (1) Boilers, (1) Generators | 11.94270429 | 0.019244 | 0.3270549 | 950 | 0.14 | 2.2E-04 | 3.8E-03 |
| 24269 | Sutter Bay Hospitals dba Alta Bates Summit Med Ctr | 3100 Summit Street | (2) Boilers, (2) Generators | 67.58389547 | 0.106412 | 1.0958604 | 800 | 0.96 | 1.5E-03 | 1.6E-02 |
| | | | | | | | | | | |
| **Proposed Projects within 1,000 feet[3,4]** | | | | | | | | | | |
| | 3093 Broadway Mixed Use | 3093 Broadway | Includes generator, but no HRA | 10 | 0.004 | 0.0182 | 1000 | 0.11 | 3.8E-05 | 2.0E-04 |
| | 3000 Broadway | 3000 Broadway | No generator | 0 | 0 | 0 | 445 | 0.00 | 0.0E+00 | 0.0E+00 |
| | Oakland 29 | 295 29th Street | No generator assumed | 0 | 0 | 0 | 260 | 0.00 | 0.0E+00 | 0.0E+00 |
| | 28th & Broadway | 2855 Broadway | No generator assumed | 0 | 0 | 0 | 50 | 0.00 | 0.0E+00 | 0.0E+00 |
| | 27th & Broadway - BVDSP Priority Site 3A | 2630 Broadway | Includes generator, but no HRA | 10 | 0.004 | 0.0182 | 805 | 0.14 | 5.0E-05 | 2.6E-04 |
| | 424 28th Street | 424 28th Street | Generator assumed | 10 | 0.004 | 0.0182 | 730 | 0.16 | 5.7E-05 | 2.9E-04 |
| | | | | | | | | | | |
| **Mobile Sources within 1,000 feet[5]** | | | | | | | | | | |
| | Highways | | | | | | | 18.2 | -- | 0.442 |
| | Major Roadways | | | | | | | 2.8 | -- | 0.037 |
| | | | | | | **Cumulative Health Risks** | | **22.6** | **0.002** | **0.499** |
| | | | | | | City of Oakland Significance Thresholds | | 100 | 10 | 0.8 |

**NOTES:**

1. Health risk screening values obtained from BAAQMD's Permitted Stationary Sources Risk and Hazards web tool refined based on BAAQMD's response to the SSIF.
2. Health risks for sources adjusted for distance using the BAAQMD's distance multiplier.
3. List of proposed projects within 1,000 feet was derived based on Oakland Planning Bureau/Major Projects List - Q1 2021 available at https://oakgis.maps.arcgis.com/apps/webappviewer/index.html?id=e1357dbaeffc473caa57b1227a7a7739. All projects were assumed to include an emergency generator.
4. Health risks for diesel generators adjusted for distance using the BAAQMD's distance multiplier.
5. Data from BAAQMD GIS database for health risks from mobile sources.

# Appendix B

## Geotechnical Investigation and Design Report, 2929 Broadway

This page intentionally left blank

# GEOTECHNICAL INVESTIGATION AND DESIGN REPORT
# 2929 BROADWAY, OAKLAND, CALIFORNIA

*Prepared for*

MBO Developer, LLC
C/O The Martin Group of Companies, LLC
1970 Broadway, Suite 745
Attn: Justin Osler
Oakland, CA 94612

*Prepared by*

Terraphase Engineering Inc.
1404 Franklin Street, Suite 600
Oakland, California 94612

March 18, 2021

Project Number 0228.006.0001

*THIS PAGE LEFT INTENTIONALLY BLANK*

# CONTENTS

**ACRONYMS AND ABBREVIATIONS ..... III**

**1.0 INTRODUCTION ..... 1**

**2.0 SCOPE OF SERVICES ..... 2**

**3.0 FIELD EXPLORATION AND LABORATORY TESTING ..... 3**

3.1 Subsurface Information ..... 3
3.2 Laboratory Testing ..... 3

**4.0 SITE AND SUBSURFACE CONDITIONS ..... 5**

4.1 Site Conditions ..... 5
4.2 Subsurface Conditions ..... 5

**5.0 REGIONAL SEISMICITY AND FAULTING ..... 6**

5.1 Regional Seismicity ..... 6
5.2 Building Code Seismic Design Parameters ..... 7

**6.0 SEISMIC HAZARDS ..... 8**

6.1 Liquefaction ..... 8
6.2 Fault Rupture ..... 8

**7.0 DISCUSSION AND CONCLUSIONS ..... 9**

7.1 Foundations and Settlement ..... 9
7.1.1 Shallow Foundation ..... 9
7.2 Excavation ..... 9
7.3 Groundwater ..... 9
7.4 Corrosion Potential ..... 9

**8.0 RECOMMENDATIONS ..... 10**

8.1 Earthwork ..... 10
8.1.1 Site Preparation ..... 10
8.1.2 Subgrade Preparation ..... 10
8.1.3 Fill Placement ..... 10
8.2 Utility Trenches ..... 11
8.3 Mat Foundations ..... 11
8.4 Floor Slab and Moisture Control ..... 12
8.5 Retaining Walls ..... 12

**9.0 DESIGN REVIEW AND CONSTRUCTION MONITORING ..... 14**

**10.0 LIMITATIONS ..... 15**

11.0 REFERENCES ........................................................................................................................ 18

**TABLES**

1 Regional Faults and Seismicity
2 Earthquake Probabilities
3 Gradation Requirements for Capillary Moisture Break

**FIGURES**

1 Site Location
2 Subsurface Locations
3 Geological Map
4 Earthquake Faults
5 Historical Earthquakes
6 CGS Liquefaction Hazard Zones
7 Recommended Mat Spring Stiffnesses

**APPENDICES**

A CPT Report
B Boring Logs from Environmental Studies
C Terraphase Boring Logs
D Laboratory Results
E Map-Based Building Code Seismic Parameters

# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| bgs | below the ground surface |
| CPT | Cone Penetration Test |
| g | the acceleration of gravity at the Earth’s surface (32.2 feet per second squared) |
| Ic | soil behavior type index |
| kcf | kip per cubic foot |
| MM | Modified Mercalli |
| Mw | Earthquake Moment Magnitude |
| pcf | pounds per cubic foot |
| PES | PES Environmental |
| PGA | peak ground acceleration |
| psf | pound per square foot |
| SPT | Standard Penetration Test |
| Terraphase | Terraphase Engineering Inc. |
| w/c | water/cement ratio |
| WGCEP | Working Group on California Earthquake Probabilities |

All conclusions and recommendations in this report were prepared by a California-registered Geotechnical Engineer.

March 18, 2021

Jeffery R Raines, GE (2762)
Principal Geotechnical Engineer

Date

JEFFERY R. RAINES
No. 2762
Exp. 9-30-21

# 1.0 INTRODUCTION

This report presents the results of our geotechnical investigation for the proposed development at 2929 Broadway in Oakland, California (the “Site”). Our services were performed in general accordance with our proposal dated August 19, 2020.

The building site is located just north of 29th Street on the west side of Broadway in Oakland as shown on Figure 2. The proposed development consists of a seven-story building. The building will likely be constructed at-grade with a two- level concrete podium and five-levels of wood framing apartments. The parking garage walls on the north and east sides of the building will need to retain up to 8 feet of soil.

The preliminary plans by BDE Architecture (2020) show the first floor to be level with Broadway extending back to Webster Street. Hence, some degree of cut is expected. We understand that there is a partial basement under the existing structure at the Site. The Site soils cut for the building pad can be used to fill this basement (please see Section 8.1.3 for fill placement recommendations).

There was no structural loading and grading information available at the time of this report. We expect that the building will impose between 1,000 and 1,200 pounds per square foot (psf) on the underlying soil – all of the dead load and half the live load. Once structural engineering estimates are available, please forward them to us to verify that assumption and possibly update the recommendations as contained herein.

# 2.0 SCOPE OF SERVICES

The scope of our services was outlined in our proposal dated August 19, 2020. For our geotechnical services we reviewed available geologic information and performed the evaluations documented herein. The information reviewed included the results of boring and Cone Penetration Tests (CPTs) performed by Wheeler Environmental (Appendix A) and a boring installed by Terraphase adjacent to one of the CPT probe locations. We also reviewed the boring logs for 12 environmental borings installed across the Site (Appendix B). We conducted laboratory tests on samples recovered from direct push borings installed by PES Environmental (Appendix B) and from the Terraphase boring (Appendix C) and performed engineering analyses to develop conclusions and recommendations regarding:

- subsurface conditions including groundwater levels
- site seismicity and potential for seismic hazards including liquefaction, lateral spreading, fault rupture
- appropriate foundation types for the building
- design parameters for the recommended foundation types, including vertical and lateral capacities and associated estimated settlements
- Soil loads for the garage walls
- subgrade preparation for slab-on-grade floors and exterior slabs and flatwork, including sidewalks
- site preparation, grading, and excavation, including criteria for fill quality and compaction

# 3.0 FIELD EXPLORATION AND LABORATORY TESTING

## 3.1 Subsurface Information

On October 10, 2019, Gregg Drilling of Martinez, California advanced two Cone Penetration Test (CPT) test probes at the Site as part of an environmental investigation. The locations of the borings and CPT probes used in our analyses are shown on attached Figure 2 and the CPT and boring logs from other environmental investigations are appended to this report in Appendices A and B.

The CPTs were performed by hydraulically pushing a 1.7-inch-diameter, cone- tipped probe with a projected area of 15 square centimeters into the ground. The CPTs were advanced to depths of 60.4 and 50.4 feet below the ground surface (bgs).

The cone-tipped probe measures tip resistance, and the friction sleeve behind the cone tip measures frictional resistance. Electrical strain gauges within the cone continuously measure soil parameters for the entire depth advanced. Soil data, including tip resistance and frictional resistance, are recorded by a computer during the test. Data is processed by a computer to provide engineering information such as the types and approximate strength characteristics of the soil. The CPT logs showing tip resistance, side friction, and interpreted standard penetration blow counts, as well as soil behavior type, friction ratio by depth, shear strength, and soil behavior type index (Ic) are presented in Appendix A.

On August 29, 2020, PES Environmental of Novato, California (PES) installed three direct push borings to depths of 19.5 feet bgs for environmental purposes. The locations of these borings are presented on Figure 2. The field boring logs from these borings are attached to this report in Appendix B.

On January 23, 2021, Cascade Drilling under the observation of Terraphase installed a boring to 27 feet bgs adjacent to the location of CPT-2. The boring was installed using direct push technology. Refusal was reached at 27 feet bgs to assess if the soils encountered in CPT-1 were actually liquefiable. On February 17, 2021, Gregg Drilling under the observation of Terraphase installed a boring to 41 feet adjacent to the location of CPT-1 to assess if the soils encountered in CPT-1 were actually liquefiable. The boring logs for these borings are attached to this report in Appendix C.

## 3.2 Laboratory Testing

On August 29, 2020, Jeff Raines of Terraphase obtained soil samples collected by PES. The soil samples collected by PES at depths of 12 and 18 feet bgs were submitted to the Cooper Geotechnical Testing Laboratory in Palo Alto, California for determinations of Atterberg Limits and moisture/density.

Soil samples collected from Terraphase Borings B-1 and B-2 were submitted to the laboratory for assessment of Atterberg Limits, moisture/density and grain-size analysis. Laboratory data is appended to this report in Appendix D.

# 4.0 SITE AND SUBSURFACE CONDITIONS

## 4.1 Site Conditions

The Site slopes down from North to South from about Elevation 55 on the north side of the Site to 44 feet at the south end of the Site. Topography in the Site vicinity slopes down at about 1.7% to east-southeast to Glen Echo Creek (USGS 1993).

The Site is not mapped within a liquefaction hazard zone, as designated by the California Geological Survey (State of California Seismic Hazard Zones, Oakland West Quadrangle, 2003 (Figure 3)).

## 4.2 Subsurface Conditions

The results of the borings and CPTs indicate the Site is underlain by about 4½ to 7 feet of undocumented fill consisting of sandy clay, clayey sand, and silty sand with gravel. Immediately underlying the fill is a layer of native alluvium consisting of loose to medium dense clayey sand and medium stiff sandy clay. Laboratory testing of soil samples recovered from the borings generally classified as fat clays, CH in the Unified Soil Classification System (Appendix D). The sandiest strata encountered by Terraphase (at 30 feet bgs in Boring B-1) classified as a sandy clay with a plasticity index of 11. Regional geology maps (Graymer, 1997) indicate that this stratigraphic package is referred to as basin and alluvial fan deposits of the Alameda Formation.

Miller (1990) reported that groundwater stabilized in three monitoring wells installed at the Site at depths of 10.4 to 12.4 feet with a groundwater flow direction to the southeast which is consistent with the topographic slope. Miller described the shallow groundwater aquifer as semi-confined due to the rise in groundwater elevation following the completion of drilling. However this likely represents slow discharge into the wells due to the clayey nature of the soils.

As indicated above, the soil samples collected between 12 and 21 feet bgs were found to be high plasticity clays which are often highly expansive (Appendix D). However, given the groundwater levels are high, moisture changes in the fat clays are unlikely to be significant. As a result, the high plasticity clays are unlikely to have a significant expansion potential. Fat clays encountered during grading should either be off-hauled or lime/cement treated if it is to be used as fill.

# 5.0 REGIONAL SEISMICITY AND FAULTING

## 5.1 Regional Seismicity

The major active faults in the area are the Hayward, Mount Diablo Thrust, Calaveras and San Andreas faults. These and other faults of the region are shown on Figure 4. For each of the active faults within about 50 kilometers of the Site, the distance from the Site and estimated mean characteristic Moment magnitude [Working Group on California Earthquake Probabilities (WGCEP) (2008) are summarized in Table 1.

**Table 1**
**Regional Faults and Seismicity**
**Mercedes Site**
**Oakland, California**

| Fault Name | Approximate Distance from Fault (kilometers) | Direction from Site | Mean Characteristic Moment Magnitude, |
|---|---|---|---|
| Total Hayward | 4.3 | East | 7 |
| Total Hayward-Rodgers Creek | 4.3 | East | 7.33 |
| Mount Diablo Thrust | 21 | East | 6.7 |
| Total Calaveras | 22 | East | 7.03 |
| N. San Andreas – Peninsula | 25 | West | 7.23 |
| N. San Andreas (1906 event) | 25 | West | 8.05 |
| Green Valley Connected | 26 | East | 6.8 |
| N. San Andreas – North Coast | 28 | West | 7.51 |
| San Gregorio Connected | 31 | West | 7.5 |
| Rodgers Creek | 34 | Northwest | 7.07 |
| Greenville Connected | 39 | East | 7 |
| West Napa | 39 | North | 6.7 |
| Monte Vista-Shannon | 42 | South | 6.5 |
| Great Valley 5, Pittsburg Kirby Hills | 43 | East | 6.7 |

Figure 5 shows the earthquake epicenters and magnitudes for large earthquake events in the Bay Area.

Since 1800, four major earthquakes have been recorded on the San Andreas Fault. In 1836, an earthquake with an estimated maximum intensity of VII on the Modified Mercalli (MM) scale occurred east of Monterey Bay on the San Andreas Fault (Toppozada and Borchardt 1998). The estimated Moment magnitude (Mw) for this earthquake is about 6.25. In 1838, an earthquake occurred with an estimated intensity of about VIII-IX on the MM Scale, corresponding to an Mw of about 7.5. The San Francisco Earthquake of 1906 caused the most significant damage in the history of the Bay Area in terms of loss of lives and property damage. This earthquake created a surface rupture along the San Andreas Fault from Shelter Cove to San Juan Bautista approximately 470 kilometers in length. It had a maximum intensity of XI (MM), an Mw of about 7.9, and was felt 560 kilometers away in Oregon, Nevada, and Los Angeles. The most recent earthquake on the San Andreas Fault was the Loma Prieta Earthquake of 17 October 1989, in the Santa Cruz Mountains with an Mw of 6.9, approximately 93 km from the Site.

The most recent large earthquake felt in the Bay Area occurred on August 24, 2014. The earthquake was located on the West Napa fault with a MW of 6.0. The WGCEP at the U.S. Geologic Survey (USGS) predicted a 63 percent chance of a magnitude 6.7 or greater earthquake occurring in the San Francisco Bay Area in 30 years. More specific estimates of the probabilities for different faults in the Bay Area are presented in Table 2.

**TABLE 2**
**WGCEP (2008) Estimates of 30-Year Probability of a Magnitude 6.7 or Greater Earthquake**
**Mercedes Site**
**Oakland, California**

| Fault | Probability (percent) |
|---|---|
| Hayward-Rodgers Creek | 31 |
| N. San Andreas | 21 |
| Calaveras | 7 |
| San Gregorio | 6 |
| Concord-Green Valley | 3 |
| Greenville | 3 |
| Mount Diablo Thrust | 1 |

## 5.2 Building Code Seismic Design Parameters

Based on the results of the subsurface investigations, we classified the soils at the Site as Site Class D, a stiff soil site. The mapped seismic design parameters for the Site based on ASCE 7 – 2016 are appended to this report in Appendix E. We understand that the structural engineer for the project does not need a site-specific seismic hazard analysis.

# 6.0 SEISMIC HAZARDS

During a major earthquake on one of the nearby faults, strong to violent shaking is expected to occur at the Site. Strong shaking during an earthquake can result in ground failure due to soil liquefaction, lateral spreading, or cyclic densification.

## 6.1 Liquefaction

Liquefaction refers to the sudden, temporary loss of soil strength during strong ground shaking. This phenomenon can occur where there are saturated, loose, granular (sandy and silty) deposits subjected to seismic shaking. Liquefaction-related phenomena include settlement, flow failure, and lateral spreading. Lateral spreading generally occurs on slopes and near the tops of slopes where stiff soils are underlain by soft liquefiable deposits.

Geologic mapping by Graymer (1997) shows the Site to be underlain by basin and alluvial fan deposits of the Alameda Formation. The Alameda Formation is of Pleistocene Age (11,700 to 2.6 million years before the present) and is typically not liquefiable. CGS does not map the Site as being in a liquefaction hazard zone (Figure 6).

Potential liquefaction settlements were assessed using the software program C-Liq (Geologismiki 2020). Based on Petersen et al. (2014) the analysis was run under a magnitude 6.8 event. A Peak Ground Acceleration (PGA) of 0.865 from the USGS seismic design maps was used in the analysis. The groundwater was assumed to be at 12 feet bgs.

The C-Liq result predicted large liquefaction settlements in soils characterized as silty sands. A boring was installed adjacent to CPT-1 to assess if the soils were liquefiable. The layers that had been predicted to be liquefiable turned out to be hard clays which will not liquefy or significantly lose strength during earthquakes.

The sandiest material encountered in the Terraphase borings (B-1 at 30 feet bgs) in the strata predicted to be liquefiable had a silt and clay content of 54.6% and a plasticity index of 11. The strata was six inches thick. While this material may be marginable liquefiable, any settlements due to the liquefaction of a six inch thick strata would be insignificant.

## 6.2 Fault Rupture

Historically, ground surface displacements closely follow the trace of geologically young faults. The Site is not within an Earthquake Fault Zone, as defined by the Alquist-Priolo Earthquake Fault Zoning Act, and no known active or potentially active faults exist on the Site. In a seismically active area, a remote possibility exists for future faulting in areas where no faults previously existed; however, the risk of surface faulting and consequent secondary ground failure is low.

# 7.0 DISCUSSION AND CONCLUSIONS

From a geotechnical engineering standpoint, the site can be developed as currently planned, provided the recommendations presented in this report are incorporated into the project plans and specifications and subsequently implemented during construction.

The primary geotechnical considerations for the proposed project include:

- presence of loose to medium dense sandy fill and native soil

## 7.1 Foundations and Settlement

### 7.1.1 Shallow Foundation

A shallow foundation system can be used to support the building. The borings across the site indicate 5 to 7 feet of soft soil (fill) overlying stiffer clays. Webster street is about 6 feet higher than Broadway and the north side of the Site is 11 feet higher than the south side of the Site, so considerable grading is likely to occur at the Site. To address heterogeneous soil conditions, the soil within two feet of the bottom of the building pad should be over excavated and recompacted as engineered fill.

The building could then be constructed over a mat foundation. While grade-beam connected spread footings are a potential foundation type, the presence of undocumented fill and heterogenous subsurface conditions and the differential loadings across the site lead us to recommend a reinforced mat foundation.

## 7.2 Excavation

Any excavations greater than four feet deep should be shored or sloped in accordance with OSHA regulations. The contractor must supply a “knowledgeable person” to oversee any trenching performed at the Site that will extend more than 4 feet bgs.

## 7.3 Groundwater

Groundwater is not expected to be encountered. However previous investigators have encountered perched groundwater as shallow as 3.5 feet bgs.

## 7.4 Corrosion Potential

Corrosion potential of the Site soils should be investigated during a final geotechnical investigation once a preliminary grading plan is available for the structure.

# 8.0 RECOMMENDATIONS

Our recommendations regarding geotechnical aspects of this project are presented in the following sections.

## 8.1 Earthwork

### 8.1.1 Site Preparation

Site preparation should include removal of all existing slabs, pavement, and underground utilities (if any) within the footprint of the planned structures. Where existing utility lines will not interfere with the planned construction, they may be abandoned in-place, provided the lines are filled with lean concrete or cement grout to the limits of the project. Voids resulting from demolition activities should be properly backfilled with engineered fill as described in Section 8.1.3.

### 8.1.2 Subgrade Preparation

We recommend areas to receive fill or other improvements be scarified to a depth of at least 8 inches, moisture-conditioned to above the optimum moisture content, and compacted to between 88 and 93 percent of the soil’s maximum dry density as determined using the methodology of ASTM D-1557. Over compacting expansive clays can lead to excessive swells, so over-compacting Site soils should be avoided.

### 8.1.3 Fill Placement

Imported fill should consist of soil and/or crushed asphalt and concrete, if acceptable to the building official, that is non-corrosive, non- hazardous, free of organic matter or other deleterious material, contain no rocks or lumps larger than four inches in the greatest dimension, have a low expansion potential (defined by a liquid limit of less than 40 and a plasticity index lower than 12), and is approved by the Geotechnical Engineer. Fill should be placed in 8-inch thick loose lifts, moisture-conditioned to near optimum moisture content, and compacted to at least 95 percent relative compaction (ASTM D-1557). Clean sand or gravel (defined as soil with less than 10 percent fines by weight) used as fill should be compacted to at least 95 percent relative compaction.

Fill should be placed in loose lifts 8 inches in thickness and be compacted to at least 95 percent relative compaction (ASTM D-1557).

The Geotechnical Engineer should approve all sources of engineered fill at least three days before use at the site. If imported fill is used, the grading subcontractor should provide analytical test results or other suitable environmental documentation indicating the imported fill is free of hazardous materials at least three days before use at the site. If this data is not available, two weeks should be allowed to perform analytical testing on the proposed import material.

## 8.2 Utility Trenches

Backfill for utility trenches and other excavations should be placed and compacted according to the recommendations in Section 8.1.3 or in accordance with City or Utility Company requirements if they are more stringent. If imported clean sand or gravel (defined as soil with less than 10 percent fines) is used as backfill, it should be compacted to at least 95 percent relative compaction as determined by ASTM D1557. Jetting of trench backfill is not permitted.

## 8.3 Mat Foundations

The average mat bearing pressures for the structure is unknown, but we expect it to be in the range of 1,000 to 1,200 pounds per square foot (psf), based on our experience with buildings of similar size. The mat foundations may be designed to impose a maximum dead plus live load pressure under columns and walls equivalent to allowable bearing capacities of 3000 psf. The allowable bearing pressure can be increased by one-third for total design loads, including wind and seismic loads. During a seismic event, these pressures may be exceeded under portions of the mat, and we should review the predicted stress distributions when available.

To design the mats using the modulus of subgrade reaction method, we recommend an initial modulus of subgrade reaction in general accordance with the spring stiffnesses shown on Figure 7. This will produce a dish shaped settlement profile across the seven story sections over the mat. After the mat analyses are completed, we should review the computed settlement and bearing pressure profiles to check that the modulus values are appropriate. We expect that settlements under a uniform load of 1100 psf will be less than ½ inch.

Resistance to lateral loads can be mobilized by a combination of passive pressure acting against the vertical faces of the mat and friction along the base of the mat. Passive resistance may be calculated using lateral pressures corresponding to the pressure induced by an equivalent fluid with a unit weight of 300 pounds per cubic foot (pcf); however, the resistance, but not the weight, of the upper foot of soil should be ignored unless confined by a concrete slab or pavement. Frictional resistance can be computed using a base friction coefficient of 0.35. The passive resistance and base friction values include a factor of safety of about 1.5 and may be used in combination without reduction.

The Geotechnical Engineer should observe the mat subgrade prior to placement of reinforcing steel. If weak soil is encountered at the bottom of the mat excavation, it should be over-excavated and replaced with lean concrete. Mat excavations should be free of standing water, debris, and disturbed materials prior to placing concrete. The bottom and sides of the mat excavations should be wetted following excavation and maintained in a moist condition until concrete is placed. If the foundation soil dries during construction, the foundation will heave when exposed to moisture, which may result in cracking and distress.

## 8.4 Floor Slab and Moisture Control

A capillary moisture break consists of at least four inches of clean, free-draining gravel or crushed rock should be placed under the mat. The vapor retarder should be 15-mil Stego, Grace FlorPrufe or equivalent. The structural engineer should be consulted regarding whether a sand layer should be installed above the moisture barrier to aid in curing of the overlying concrete.

The particle size of the gravel/crushed rock should meet the gradation requirements presented in Table 3.

**TABLE 3**
**Gradation Requirements for Capillary Moisture Break**
**Mercedes Site**
**Oakland, California**

| Size | % Passing |
|---|---|
| 1 inch | 90 – 100 |
| 3/4 inch | 30 – 100 |
| 1/2 inch | 5 – 25 |
| 3/8 inch | 0 – 6 |

Concrete mixes with high water/cement (w/c) ratios result in excess water in the concrete, which increases the cure time and results in excessive vapor transmission through the slab. Therefore, concrete for the floor slab should have a low w/c ratio – less than 0.45. and water should not be added in the field. If necessary, workability should be increased by adding plasticizers. In addition, the slab should be properly cured. Before the floor covering is placed, the contractor should check that the concrete surface and the moisture emission levels (if emission testing is required) meet the manufacturer's requirements.

## 8.5 Retaining Walls

Below-grade walls should be designed to resist lateral pressures imposed by the adjacent soil and any surcharge loads. As the garage walls will not be free to rotate, they should be designed for an equivalent fluid load of 90 pounds per cubic foot. If construction, building, or other surcharge loads occur within the zone of influence (defined by an imaginary plane projected up from the bottom of the wall at a 45-degree angle from horizontal), a surcharge pressure should be included in the wall design. Where vehicular traffic will pass within 10 feet of below-grade walls, temporary traffic loads should be considered in the design of the walls. Traffic loads may be modeled by a uniform pressure of 100 pounds per square foot applied in the upper 10 feet of the walls.

All retaining walls should be backdrained to prevent the buildup of hydrostatic pressure or the wall should be designed to resist an additional fluid load.

To protect against moisture migration, below-grade walls should be waterproofed, and water stops placed at all construction joints. The waterproofing should be placed directly against the backside of the walls unless the manufacturer of the waterproofing directs otherwise. While groundwater is deep, perched groundwater has been observed in some subsurface locations and the deeper groundwater is potentially artesian.

Wall backfill, if needed, should be compacted to at least 90 percent relative compaction using light compaction equipment. Wall backfill with less than 10 percent fines, or thicker than five feet, should be compacted to at least 95 percent relative compaction for its entirety. If heavy equipment is used, the wall should be appropriately designed to withstand loads exerted by the equipment and/or temporarily braced.

Shoring will be required along portions of the north and east garage walls. A shoring contractor knowledgeable of local conditions should be retained to design the shoring.

# 9.0 DESIGN REVIEW AND CONSTRUCTION MONITORING

Terraphase recommends that the geotechnical aspects of the project be reviewed by Terraphase during the design process. The scope of services may include:

- assisting the design team in providing specific recommendations for special cases,
- reviewing the foundation design and evaluating the overall applicability of our recommendations,
- reviewing the geotechnical portions of the project for possible cost savings through alternative approaches,
- reviewing the proposed construction techniques to evaluate whether they satisfy the intent of our recommendations,
- working with the project structural engineer to provide spring stiffnesses for mat design,
- reviewing and stamping drawings, and
- responding to Contractor Requests for Information (RFIs).

Terraphase recommends that foundation construction and earthwork performed during construction be monitored by a qualified representative from our office, including:

- site preparation (stripping and grading),
- placement of compacted fill and backfill,
- all foundation excavations, and
- preparation of slab subgrade.

Terraphase’s representative should be present to observe the soil conditions encountered during construction to evaluate the applicability of the recommendations presented in this report to the soil conditions encountered and to recommend appropriate changes in design or construction procedures, if conditions differ from those described herein.

# 10.0 LIMITATIONS

The opinions and recommendations presented in this report are based upon the scope of services, information obtained through the performance of the services, and the schedule as agreed upon by Terraphase and the party for whom this report was originally prepared. This report is an instrument of professional service and was prepared in accordance with the generally accepted standards and level of skill and care under similar conditions and circumstances established by the geotechnical consulting industry. No representation, warranty, or guarantee, express or implied, is intended or given. To the extent that Terraphase relied upon any information prepared by other parties not under contract to Terraphase, Terraphase makes no representation as to the accuracy or completeness of such information. This report is expressly for the sole and exclusive use of the party for whom this report was originally prepared for a particular purpose and only in its entirely. Only the party for whom this report was originally prepared and/or other specifically named parties have the right to make use of and rely upon this report. Reuse of this report or any portion thereof for other than its intended purpose, or if modified, or if used by third parties, shall be at the user’s sole risk.

Furthermore, nothing contained in this report shall relieve any other party of its responsibility to abide by contract documents and applicable laws, codes, regulations, or standards.

### Subsurface Explorations and Testing

Results of any observations, subsurface exploration or testing, and any findings presented in this report apply solely to conditions existing at the time when Terraphase’s exploratory work was performed. It must be recognized that any such observations and exploratory or testing activities are inherently limited and do not represent a conclusive or complete characterization. Conditions in other parts of the Site may vary from those at the locations where data were collected, and conditions can change with time. Terraphase’s ability to interpret exploratory and test results is related to the availability of the data and the extent of the exploratory and testing activities.

The findings and recommendations submitted in this report are based, in part, on data obtained from subsurface borings, test pits, and specific, discrete sampling locations. The nature and extent of variation between these test locations, which may be widely spaced, may not become evident until construction. If variations are subsequently encountered, it will be necessary to re-evaluate the conclusions and recommendations of this report.

Correlations and descriptions of subsurface conditions presented in boring logs, test pit logs, subsurface profiles, and other materials are approximate only. Subsurface conditions may vary significantly from those encountered in borings and sampling locations and transitions between subsurface materials may be gradual or highly variable.

Conditions at the time water level measurements and other subsurface observations were made are presented in the boring logs or other sampling forms. These field data have been reviewed and interpretations provided in this report. However, groundwater levels may be variable and may fluctuate due to variations in precipitation, temperature, and other factors. Therefore, groundwater levels at the Site at any time may be different than stated in this report.

### Review

In the event that any change in the nature, design, or location of the proposed structure(s) is planned, the conclusions and recommendations in this report shall not be considered valid nor relied upon unless the changes are reviewed, and the conclusions and recommendations of this report are modified or verified in writing.

Terraphase should be provided the opportunity for a general review of final design plans and specifications to assess that our recommendations have been properly interpreted and included in the design and construction documents.

### Construction

To verify conditions presented in this report and modify recommendations based on field conditions encountered in the field, Terraphase should be retained to provide geotechnical engineering services during the construction phase of the project. This is to observe compliance with design concepts, specifications, and recommendations contained in this report, and to verify and refine our recommendations as necessary in the event that subsurface conditions differ from those anticipated prior to the start of construction.

During final design, we should be retained to consult with the design team as geotechnical questions arise. Technical specifications and design drawings should incorporate our recommendations. When authorized, we will assist the design team in preparing specification sections related to geotechnical issues such as foundation installation and testing, temporary shoring and excavation support, earthwork, and backfill. We should also, when authorized, review the project plans, as well as Contractor submittals relating to materials and construction procedures for geotechnical work, to check that the designs incorporate the intent of our recommendations. There will likely be Contractor Requests for Information (RFIs) that we should respond to.

We have investigated and interpreted the Site subsurface conditions and developed the foundation design recommendations contained herein and are therefore well qualified to perform quality assurance observation and testing of geotechnical-related work during construction. The work requiring quality assurance confirmation and/or special inspections per the Building Code includes, but is not limited to, installation and testing of foundations, earthwork, backfill, and excavation support. In fulfillment of these duties, we should observe excavation of the final foundation subgrade. We should also observe any fill placement and perform field density tests to check that adequate fill compaction has been achieved.

Recognizing that construction observation is the final stage of geotechnical evaluation, quality assurance observation during construction is necessary to confirm the design assumptions and design elements.

# 11.0 REFERENCES

BDE Architecture. 2020. Broadway & 29th ST, Planning Review. 39 Sheets. November 30.

California Geological Survey. 2003. State of California "Seismic Hazard Zones" Oakland West Quadrangle. February 14.

GeoStudio. 2018. Slope/W version 9.0.0.15234.

Graymer. 1997. "Quaternary Geology of Alameda County and Surrounding Areas, California: Derived from the Digital Database Open-File 97-97." U.S. Department of the Interior,

Idriss, I.M., and Boulanger, R.W. 2008) "Soil Liquefaction During Earthquakes" EERI Monograph, Earthquake Engineering Research Institute.

Ishihara, K. (985. "Stability of Natural deposits during earthquakes." 11th International Conference on Soil Mechanics and Foundation Engineering, p. 321-376.

Langan. 2016. Geotechnical Investigation 2820 and 2855 Broadway Oakland, California. August 23.

Miller Environmental Company. 1990. Report on Limited Subsurface Environmental Investigation and Remediation of Contaminated Soil, 21915 Broadway, Oakland, California. April 2.

Petersen, M.D., M. P. Moschetti, P. M. Powers, C. S. Mueller, K. M. Haller, A. D. Frankel, Y. Zeng, S. Rezaeian, S. C. Harmsen, O. S. Boyd, N. Field, R. Chen, K. S. Rukstales, N. Luco, R. L. Wheeler, R. A. Williams, and A. H. Olsen (2014). Documentation for the 2014 update of the United States national seismic hazard maps: U.S. Geological Survey Open-File Report 2014–1091, 243 p., http://dx.doi.org/10.3133/ofr20141091 . – available at https://earthquake.usgs.gov/scenarios/catalog/bssc2014/

Townley, S. D. and Allen, M. W. 1939) "Descriptive catalog of earthquakes of the Pacific coast of the United States 1769 to 1928." Bulletin of the Seismological Society of America, 29(1).

Toppozada, T. R. and Borchardt G. 1998. "Re-Evaluation of the 1836 "Hayward Fault" and the 1838 San Andreas Fault earthquakes." Bulletin of Seismological Society of America, 88(1), 140-159.

USGS. 1993. 7.5-minute Topographic Map Series, Oakland West.

Weber, J.P. 2015. Engineering evaluation of post-liquefaction strength. Ph.D. diss., University of California, Berkeley. 158 pp. Available at http://digitalassets.lib.berkeley.edu/etd/ucb/text/Weber_berkeley_0028E_15600.pdf. October 2016.

Wells, D. L. and Coppersmith, K. J. 1994. "New Empirical Relationships among Magnitude, Rupture Length, Rupture Width, Rupture Area, and Surface Displacement." Bulletin of the Seismological Society of America, 84(4), 974-1002.

Wheeler. 2020. Site Investigation Report: Mercedes-Benz of Oakland, 340 E. 29th Street, Oakland, California, APN 9-701-9. July 27.

Working Group on California Earthquake Probabilities (WGCEP) (2013). "The Uniform California Earthquake Rupture Forecast, Version 3" Open File Report 2013–1165

# FIGURES

*THIS PAGE LEFT INTENTIONALLY BLANK*

J:\CADD FILES\0228 Martin Group\FIGURE 1.dwg Drawn by:_______; Checked by:______

Source: Google Earth

**SAFETY FIRST**

terraphase engineering

CLIENT: The Martin Group

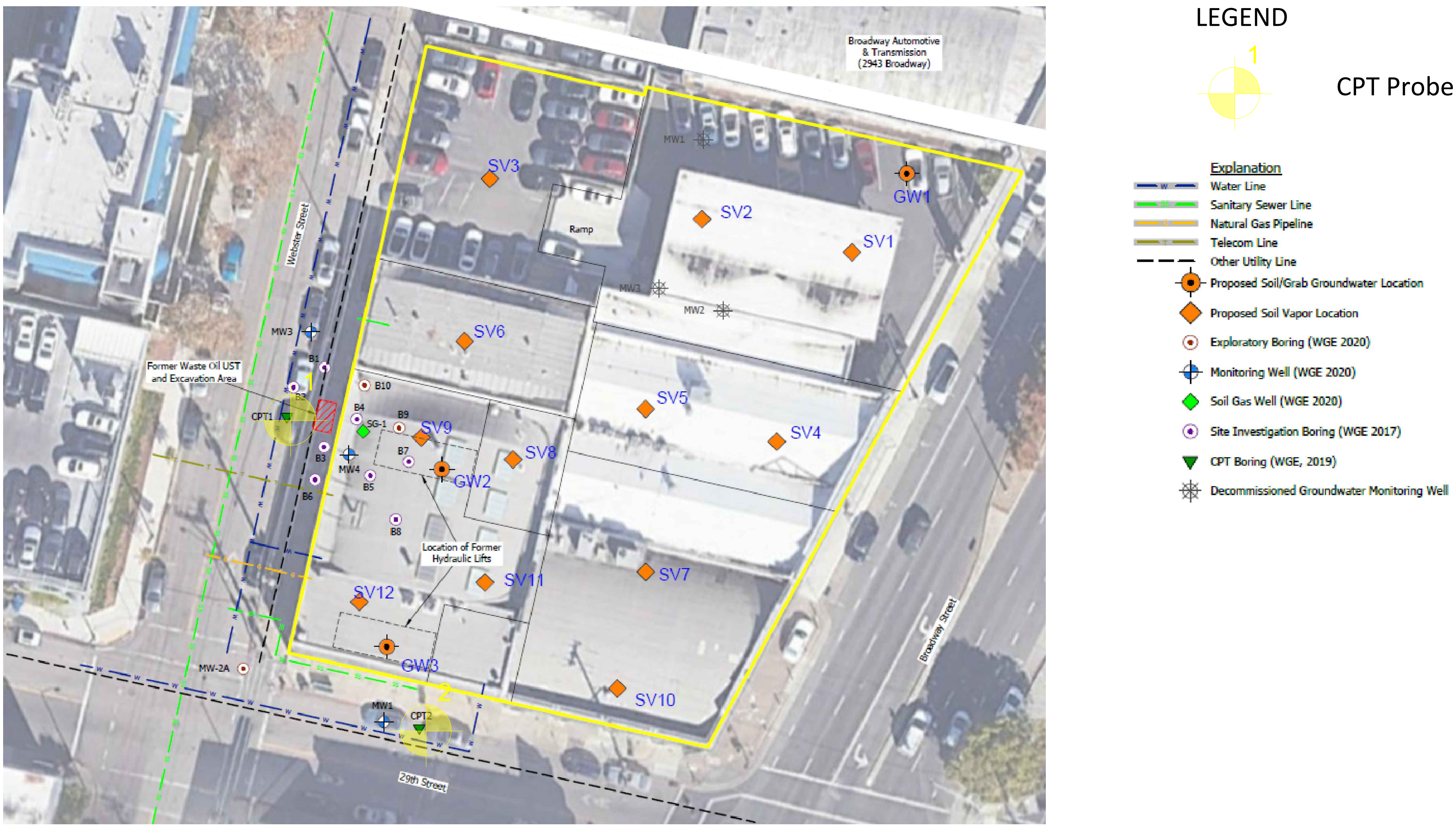
PROJECT: Mercedes Oakland

PROJECT NUMBER: 0228.006.0001

**Site Location**

**Figure 1**

J:\CADD FILES\0228 Martin Group\FIGURE 1.dwg Drawn by: jr ; Checked by: bw



0' 25 50 100

APPROXIMATE SCALE IN FEET

**SAFETY FIRST**

terraphase engineering

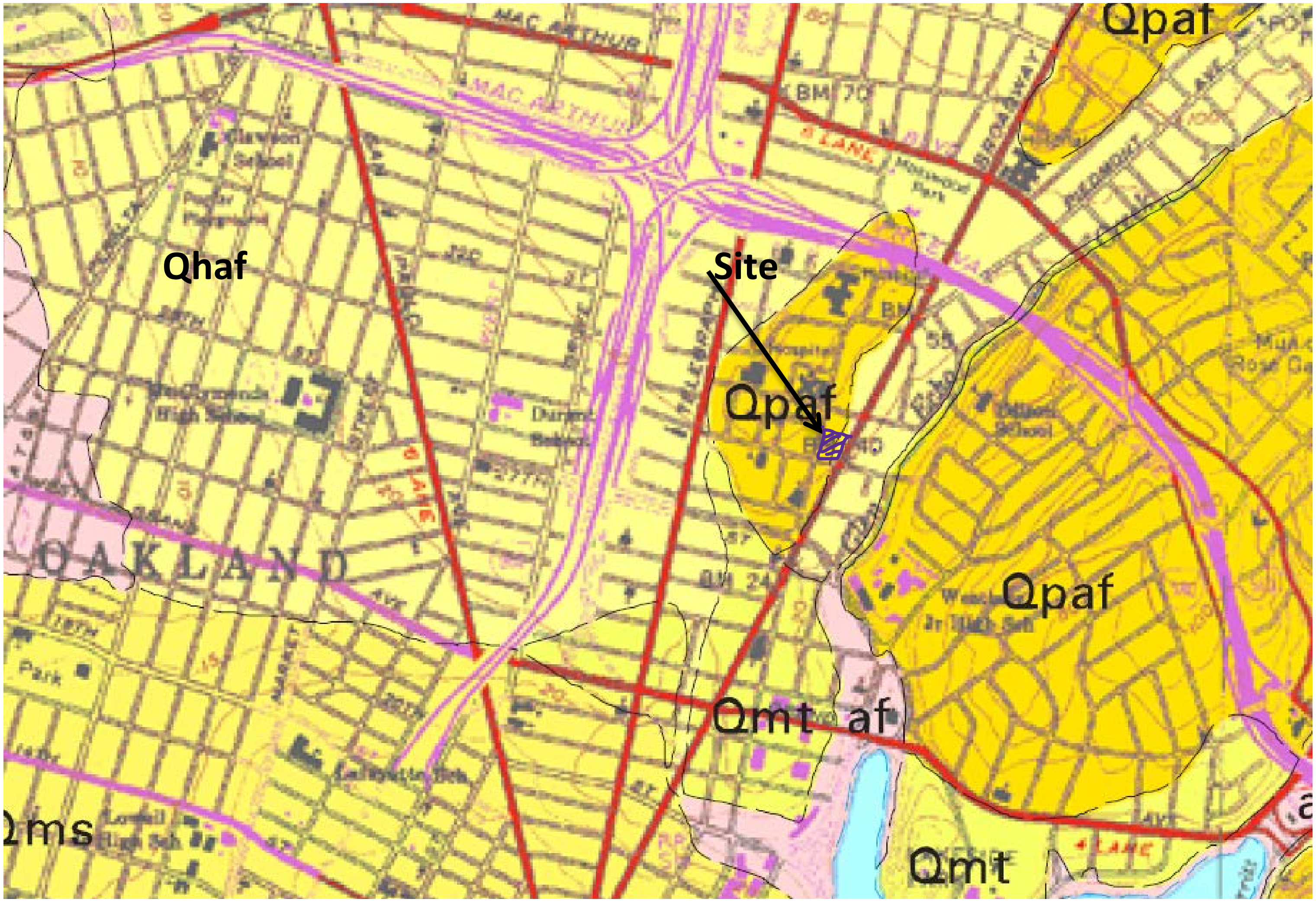
CLIENT: The Martin Group

PROJECT: Mercedes Oakland

PROJECT NUMBER: 0228.006.0001

**Subsurface Locations**

**Figure 2**



| | |
|---|---|
| Qhaf | Alluvial fan and fluvial deposits (Holocene) |
| Qms | Merrit sand (Holocene and Pleistocene) |
| Qmt | Marine terrace deposits (Pleistocene) |
| Qpaf | Alluvial fan and fluvial deposits (Pleistocene) |

Reference: Graymer 2000

0 0.25 0.5

Scale in Miles

N

**SAFETY FIRST**

terraphase engineering

CLIENT: The Martin Group

PROJECT: Mercedes Oakland

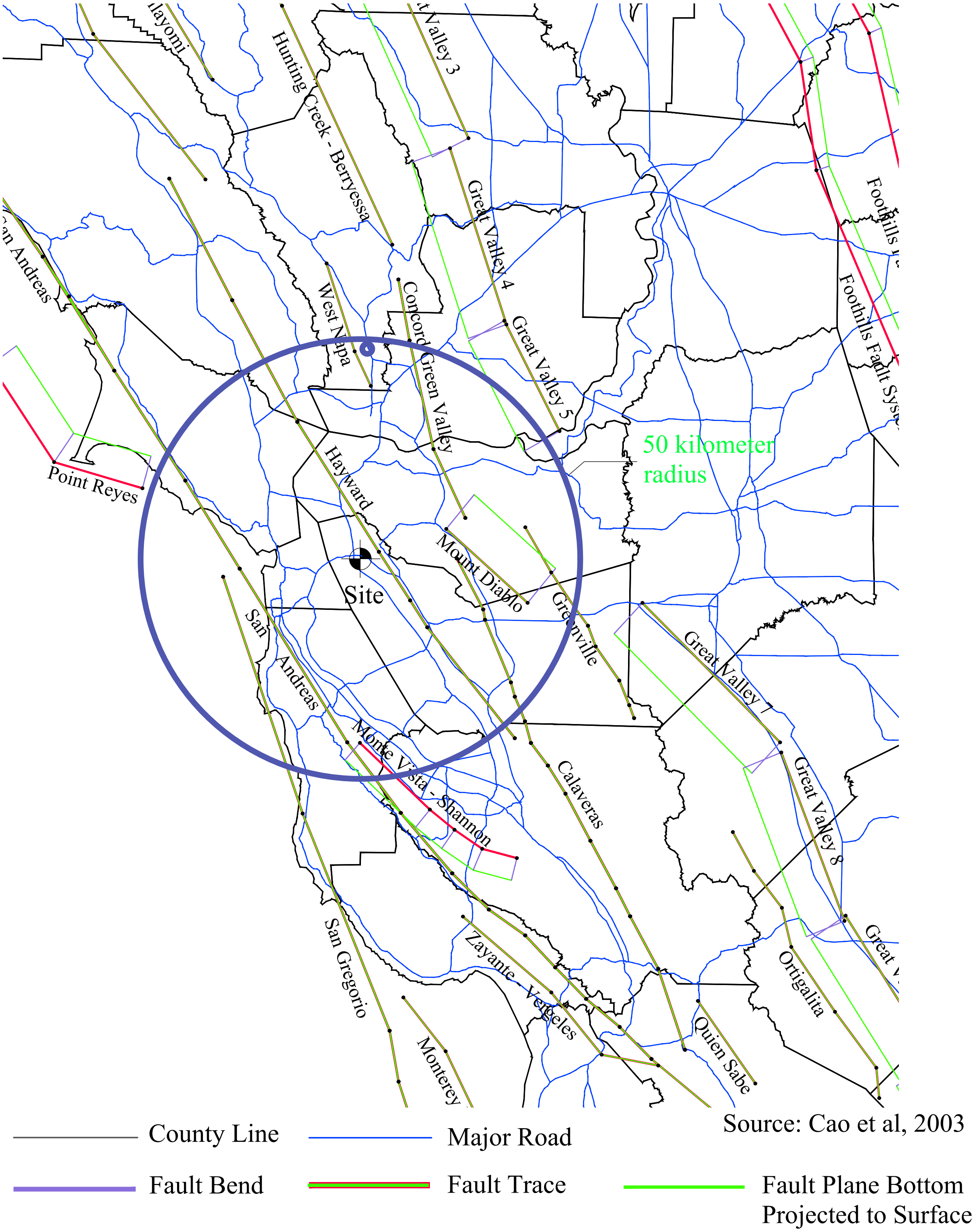
PROJECT NO. 0228.006.0001

**Geological Map**

**Figure 3**

File Name: figure 6 geological map.docx drawn by: jrr checked by: em

J:\CADD FILES\0228 Martin Group\Figure 4 california fault map_recover.dwg Drawn by:______; Checked by:______



Source: Cao et al, 2003

**SAFETY FIRST**

terraphase engineering

CLIENT: The Martin Group

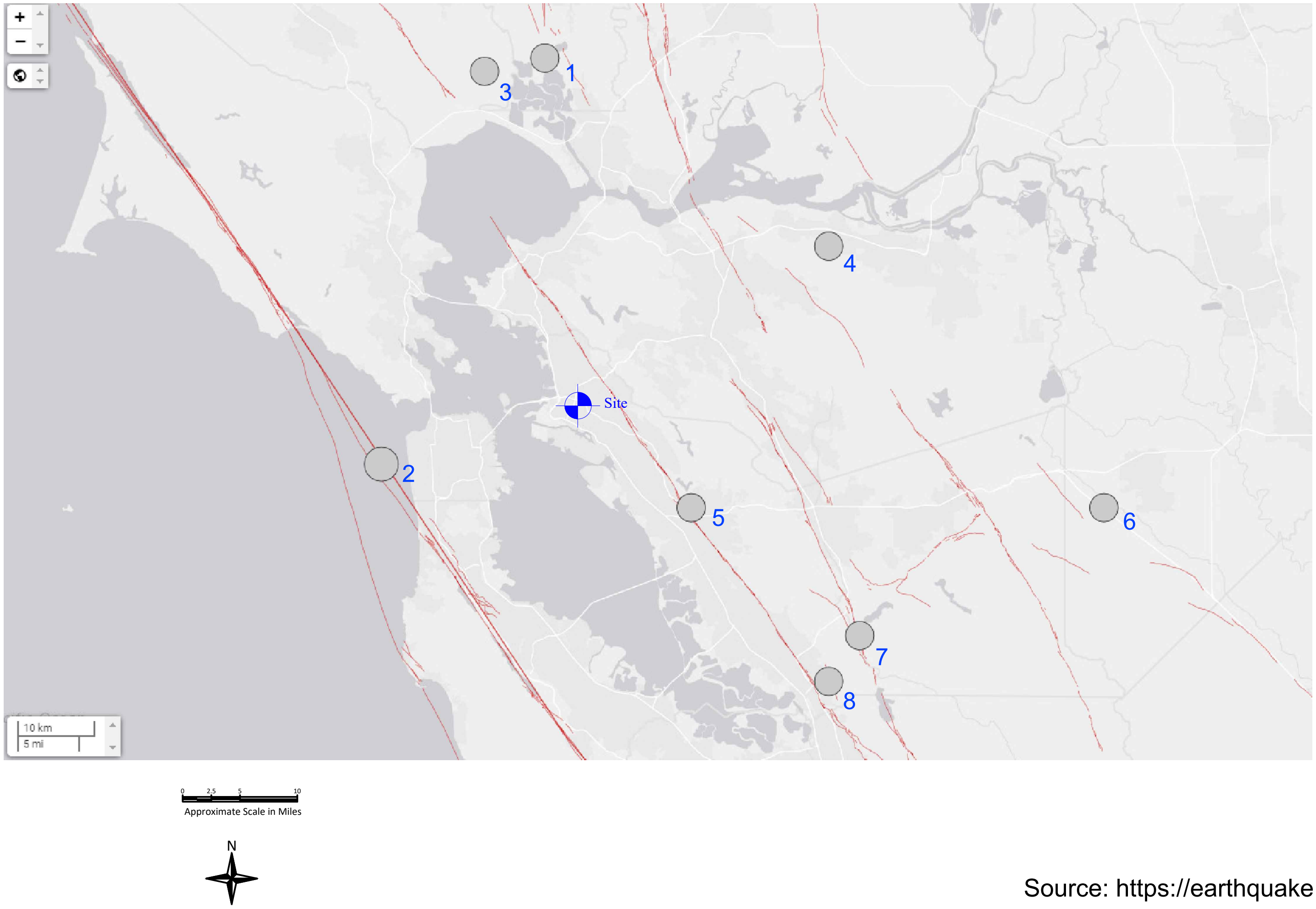
PROJECT: Mercedes Oakland

PROJECT NUMBER: 0228.006.0001

**Earthquake Fault Map**

**Figure 4**

J:\CADD FILES\0228 Martin Group\Napa FIGUREs.dwg Drawn by:______; Checked by:_____



| | | | |
|---|---|---|---|
| 1 | 6.0 | South Napa<br>2014-08-24 10:20:44 (UTC) | 11.1 km |
| 2 | 7.9 | The 1906 San Francisco Eart...<br>1906-04-18 13:12:26 (UTC) | 11.7 km |
| 3 | 6.2 | San Francisco Bay area, Calif...<br>1898-03-31 07:43:00 (UTC) | km |
| 4 | 6.0 | San Francisco Bay area, Calif...<br>1889-05-19 11:10:00 (UTC) | km |
| 5 | 6.8 | The 1868 Hayward Fault Eart...<br>1868-10-21 15:53:00 (UTC) | km |
| 6 | 6.0 | Southwest of Stockton, Calif...<br>1866-07-15 06:30:00 (UTC) | km |
| 7 | 6.1 | Alameda County, California<br>1864-03-05 16:49:00 (UTC) | km |
| 8 | 6.1 | San Francisco Bay area, Calif...<br>1858-11-26 08:35:00 (UTC) | km |

| | |
|---|---|
| ― | Fault |
| ● | Earthquake Epicenter |

Source: https://earthquake.usgs.gov/earthquakes/search/

**SAFETY FIRST**

terraphase engineering

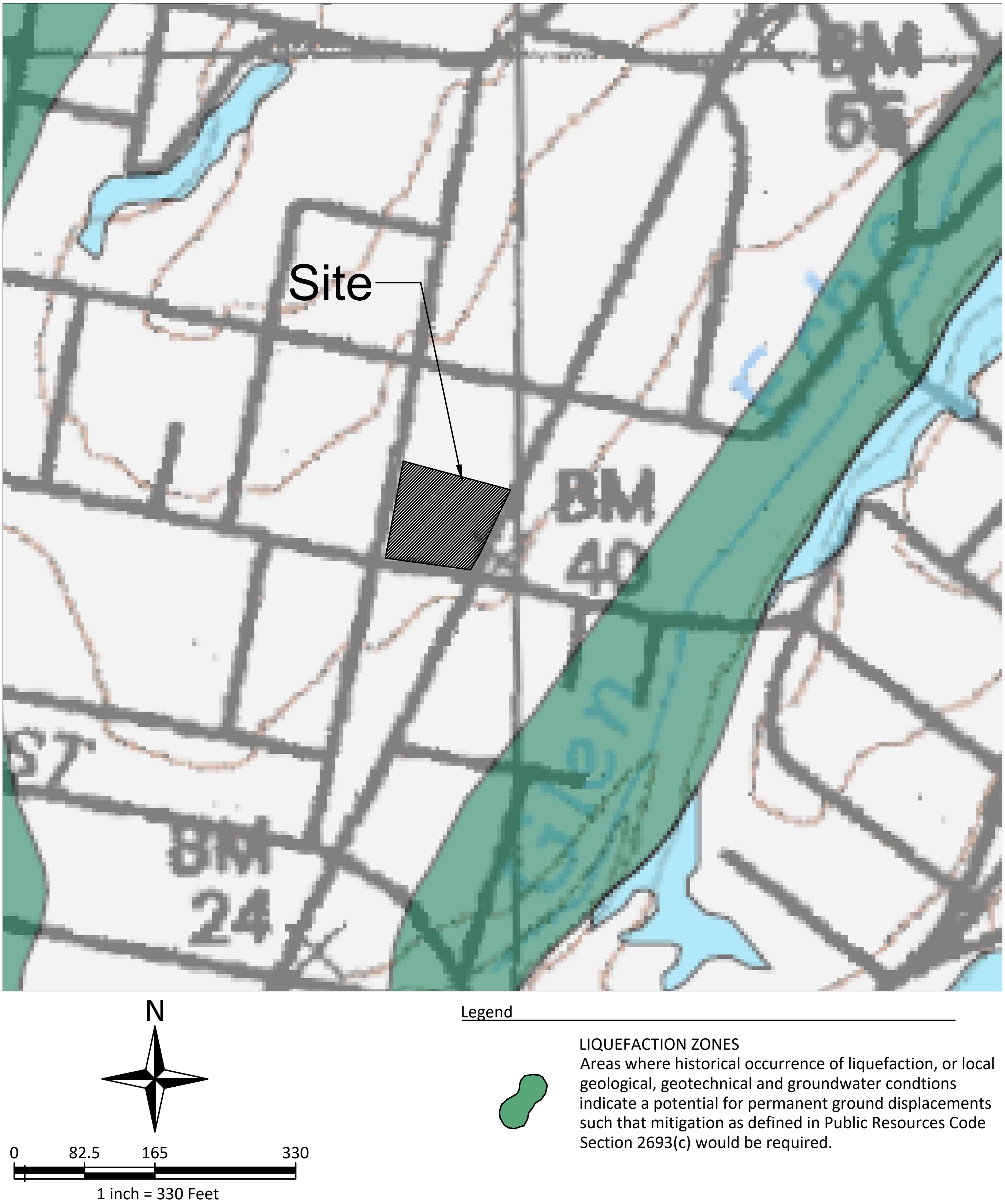
CLIENT: The Martin Group

PROJECT: Mercedes Oakland

PROJECT NUMBER: 0228.006.001

**Historical Earthquakes**

**Figure 5**



Legend

🟩 LIQUEFACTION ZONES
Areas where historical occurrence of liquefaction, or local geological, geotechnical and groundwater condtions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

**terraphase engineering**
*celebrating 10 years*

| | |
|---|---|
| CLIENT: | The Martin Group |
| PROJECT: | Mercedes Oakland |
| PROJECT NUMBER: | 0228.006.0001 |

## CGS Liquefaction Hazard Zones

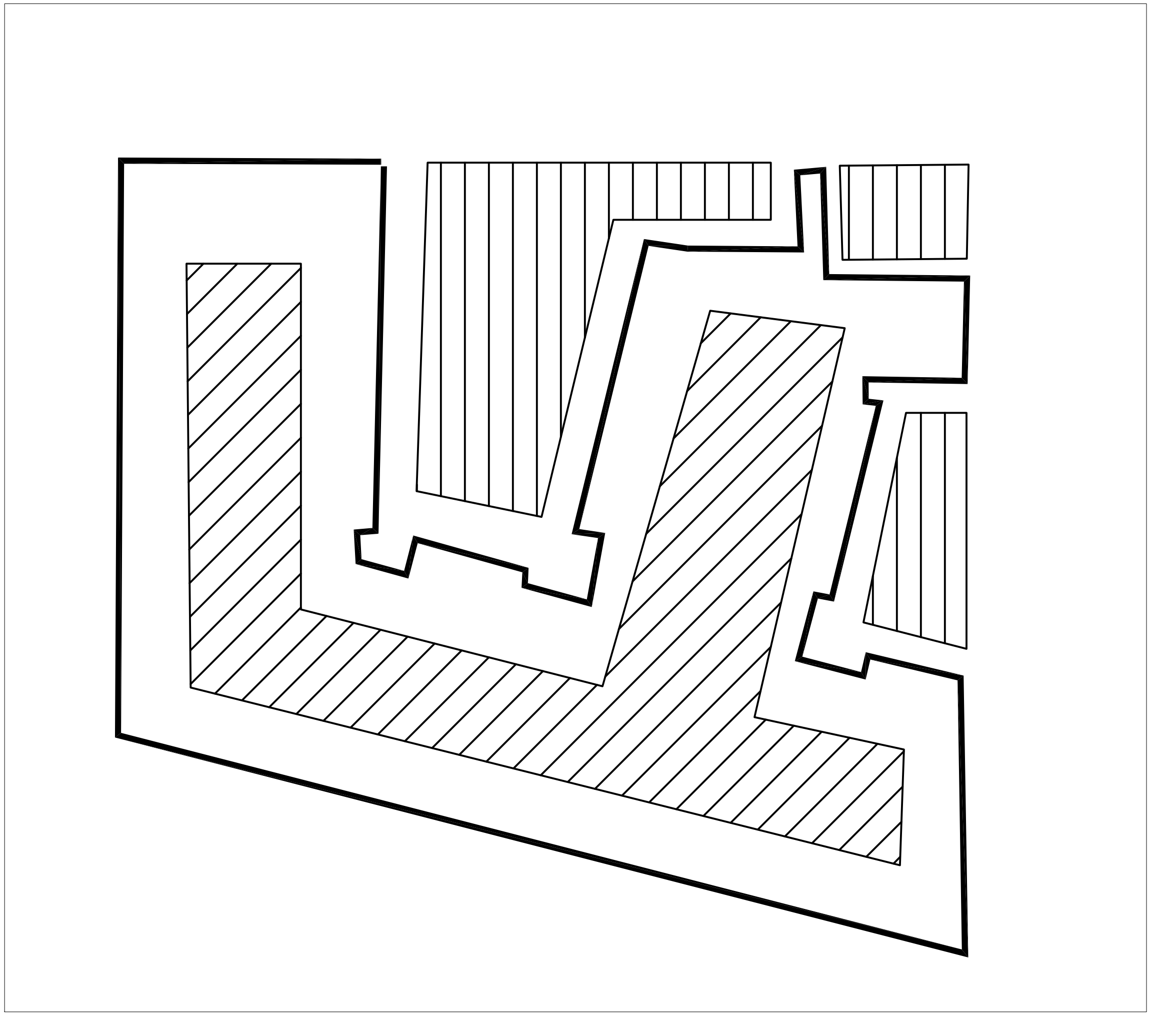
**Figure 6**

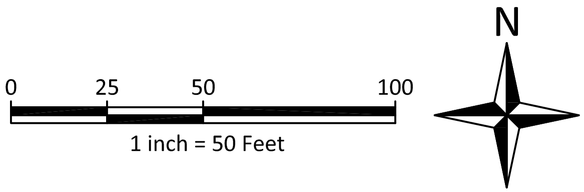
J:\CADD FILES\0228 Martin Group\Mercedes figures.dwg Drawn by: XXX ; Checked by: XXX

J:\CADD FILES\0228 Martin Group\Mercedes figures.dwg Drawn by: jr ; Checked by: bw

Legend

| | |
|---|---|
| ▥ | k = 100 pounds per cubic inch (pci) |
| ☐ | k = 55 pci |
| ▨ | k= 30 pci |
| ━ | Outline of 7 story buildings |





terraphase engineering
celebrating 10 years

CLIENT:
The Martin Group

PROJECT:
2929 Broadway

PROJECT NUMBER:
0228.006.0001

# RECOMMENDED MAT SPRING STIFFNESSES

Figure 7

*THIS PAGE LEFT INTENTIONALLY BLANK*

# APPENDIX A
## CPT REPORT

THIS PAGE LEFT INTENTIONALLY BLANK

GREGG DRILLING, LLC.
GEOTECHNICAL AND ENVIRONMENTAL INVESTIGATION SERVICES

10/11/19

Wheeler Group Environmental
Attn: Brent Wheeler

Subject: CPT Site Investigation
Mercedes Benz Oakland – 340 29th Street
Oakland, California
GREGG Project Number: D2194073MA

Dear Mr. Wheeler:

The following report presents the results of GREGG Drilling Cone Penetration Test investigation for the above referenced site. The following testing services were performed:

| | | | |
|---|---|---|---|
| 1 | Cone Penetration Tests | (CPTU) | ☒ |
| 2 | Pore Pressure Dissipation Tests | (PPD) | ☒ |
| 3 | Seismic Cone Penetration Tests | (SCPTU) | ☐ |
| 4 | UVOST Laser Induced Fluorescence | (UVOST) | ☐ |
| 5 | Groundwater Sampling | (GWS) | ☒ |
| 6 | Soil Sampling | (SS) | ☐ |
| 7 | Vapor Sampling | (VS) | ☐ |
| 8 | Pressuremeter Testing | (PMT) | ☐ |
| 9 | Vane Shear Testing | (VST) | ☐ |
| 10 | Dilatometer Testing | (DMT) | ☐ |

A list of reference papers providing additional background on the specific tests conducted is provided in the bibliography following the text of the report. If you would like a copy of any of these publications or should you have any questions or comments regarding the contents of this report, please do not hesitate to contact me at 714-863-0988.

Sincerely,
GREGG Drilling, LLC.

Frank Stolfi
HRSC Division Manager, Gregg Drilling, LLC.

## Cone Penetration Test Sounding Summary

### -Table 1-

| CPT Sounding Identification | Date | Termination Depth (feet) | Depth of Groundwater Samples (feet) | Depth of Soil Samples (feet) | Depth of Pore Pressure Dissipation Tests (feet) |
|---|---|---|---|---|---|
| CPT1 | 10/10/2019 | 60.37 | 28, 48 | - | 25.4 |
| CPT2 | 10/10/2019 | 50.36 | 25, 44 | - | 23.4, 41.5, 42.4 |

# Cone Penetration Test Coordinates

## -Table 2-

| CPT Sounding Identification | Date | Lat or Northing | Long or Easting | Elevation (Feet) |
|---|---|---|---|---|
| CPT1 | 10/10/2019 | UNKNOWN | UNKNOWN | UNKNOWN |
| CPT2 | 10/10/2019 | UNKNOWN | UNKNOWN | UNKNOWN |

# Bibliography

Lunne, T., Robertson, P.K. and Powell, J.J.M., “Cone Penetration Testing in Geotechnical Practice” E & FN Spon. ISBN 0 419 23750, 1997

Roberston, P.K., “Soil Classification using the Cone Penetration Test”, Canadian Geotechnical Journal, Vol. 27, 1990 pp. 151-158.

Mayne, P.W., “NHI (2002) Manual on Subsurface Investigations: Geotechnical Site Characterization”, available through www.ce.gatech.edu/~geosys/Faculty/Mayne/papers/index.html, Section 5.3, pp. 107-112.

Robertson, P.K., R.G. Campanella, D. Gillespie and A. Rice, “Seismic CPT to Measure In-Situ Shear Wave Velocity”, Journal of Geotechnical Engineering ASCE, Vol. 112, No. 8, 1986
pp. 791-803.

Robertson, P.K., Sully, J., Woeller, D.J., Lunne, T., Powell, J.J.M., and Gillespie, D.J., "Guidelines for Estimating Consolidation Parameters in Soils from Piezocone Tests", Canadian Geotechnical Journal, Vol. 29, No. 4,
August 1992, pp. 539-550.

Robertson, P.K., T. Lunne and J.J.M. Powell, “Geo-Environmental Application of Penetration Testing”, Geotechnical Site Characterization, Robertson & Mayne (editors), 1998 Balkema, Rotterdam, ISBN 90 5410 939 4 pp 35-47.

Campanella, R.G. and I. Weemees, “Development and Use of An Electrical Resistivity Cone for Groundwater Contamination Studies”, Canadian Geotechnical Journal, Vol. 27 No. 5, 1990 pp. 557-567.

DeGroot, D.J. and A.J. Lutenegger, “Reliability of Soil Gas Sampling and Characterization Techniques”, International Site Characterization Conference - Atlanta, 1998.

Woeller, D.J., P.K. Robertson, T.J. Boyd and Dave Thomas, “Detection of Polyaromatic Hydrocarbon Contaminants Using the UVIF-CPT”, 53rd Canadian Geotechnical Conference Montreal, QC October pp. 733-739, 2000.

Zemo, D.A., T.A. Delfino, J.D. Gallinatti, V.A. Baker and L.R. Hilpert, “Field Comparison of Analytical Results from Discrete-Depth Groundwater Samplers” BAT EnviroProbe and QED HydroPunch, Sixth national Outdoor Action Conference, Las Vegas, Nevada Proceedings, 1992, pp 299-312.

Copies of ASTM Standards are available through www.astm.org

# Cone Penetration Testing Procedure (CPT)

Gregg Drilling carries out all Cone Penetration Tests (CPT) using an integrated electronic cone system, *Figure CPT*.

The cone takes measurements of tip resistance ($q_c$), sleeve resistance ($f_s$), and penetration pore water pressure ($u_2$). Measurements are taken at either 2.5 or 5 cm intervals during penetration to provide a nearly continuous profile. CPT data reduction and basic interpretation is performed in real time facilitating on-site decision making. The CPT parameters are stored electronically for further analysis and reference. All CPT soundings are performed in accordance with revised ASTM standards (D 5778-12).

The 5mm thick porous plastic filter element is located directly behind the cone tip in the $u_2$ location. A new saturated filter element is used on each sounding to measure both penetration pore pressures as well as measurements during a dissipation test (*PPDT*). Prior to each test, the filter element is fully saturated with oil under vacuum pressure to improve accuracy.

When the sounding is completed, the test hole is backfilled according to client specifications. If grouting is used, the procedure generally consists of pushing a hollow tremie pipe with a "knock out" plug to the termination depth of the CPT hole. Grout is then pumped under pressure as the tremie pipe is pulled from the hole. Disruption or further contamination to the site is therefore minimized.

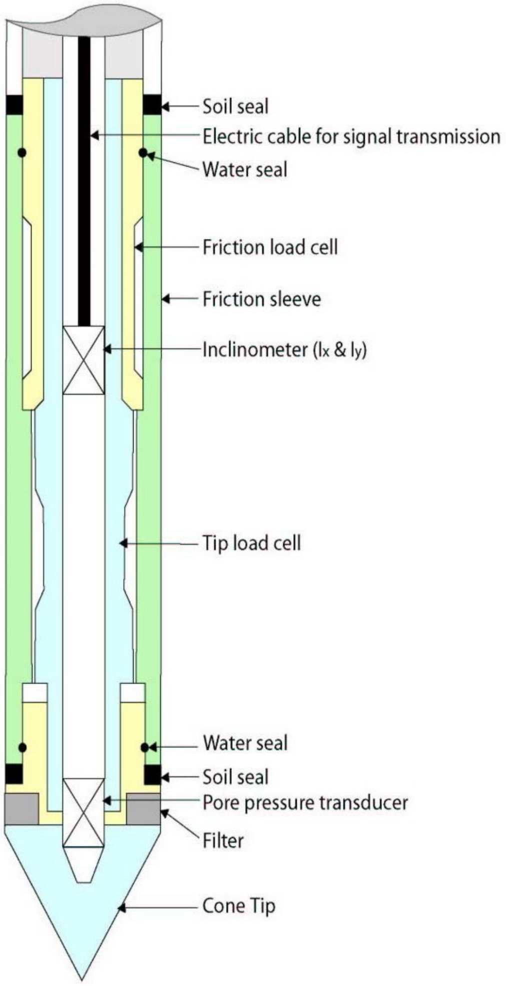


*Figure CPT*

Gregg 15cm$^2$ Standard Cone Specifications

| | |
|---|---|
| **Dimensions** | |
| Cone base area | 15 cm$^2$ |
| Sleeve surface area | 225 cm$^2$ |
| Cone net area ratio | 0.85 |
| | |
| **Specifications** | |
| **Cone load cell** | |
| Full scale range | 180 kN (20 tons) |
| Overload capacity | 150% |
| Full scale tip stress | 120 MPa (1,200 tsf) |
| Repeatability | 120 kPa (1.2 tsf) |
| | |
| **Sleeve load cell** | |
| Full scale range | 31 kN (3.5 tons) |
| Overload capacity | 150% |
| Full scale sleeve stress | 1,400 kPa (15 tsf) |
| Repeatability | 1.4 kPa (0.015 tsf) |
| | |
| **Pore pressure transducer** | |
| Full scale range | 7,000 kPa (1,000 psi) |
| Overload capacity | 150% |
| Repeatability | 7 kPa (1 psi) |

*Note: The repeatability on site will depend somewhat on ground conditions, abrasion, maintenance and zero load stability.*

# Cone Penetration Test Data & Interpretation

The Cone Penetration Test (CPT) data collected are presented in graphical and electronic form in the report. The plots include interpreted Soil Behavior Type (SBT) based on the charts described by Robertson (2009 & 2010). Typical plots display SBT based on the non-normalized charts of Robertson (2010). For CPT soundings deeper than 30m, we recommend the use of the normalized charts of Robertson (2009) which can be displayed as SBTn, upon request. The report can also include spreadsheet output of computer calculations of basic interpretation in terms of SBT and SBTn and various geotechnical parameters using current published correlations based on the comprehensive review by Lunne, Robertson and Powell (1997), as well as recent updates by Robertson and Cabal (Guide to Cone Penetration Testing, 2015). The interpretations are presented only as a guide for geotechnical use and should be carefully reviewed. Gregg Drilling does not warranty the correctness or the applicability of any of the geotechnical parameters interpreted by the software and does not assume any liability for use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used in the software. Some interpretation methods require input of the groundwater level to calculate vertical effective stress. An estimate of the in-situ groundwater level has been made based on field observations and/or CPT results, but should be verified by the user.

A summary of locations and depths is available in Table 1. Note that all penetration depths referenced in the data are with respect to the existing ground surface. Note that it is not always possible to clearly identify a soil type based solely on $q_t$, $f_s$, and $u_2$. In these situations, experience, judgment, and an assessment of the pore pressure dissipation data should be used to infer the correct soil behavior type.

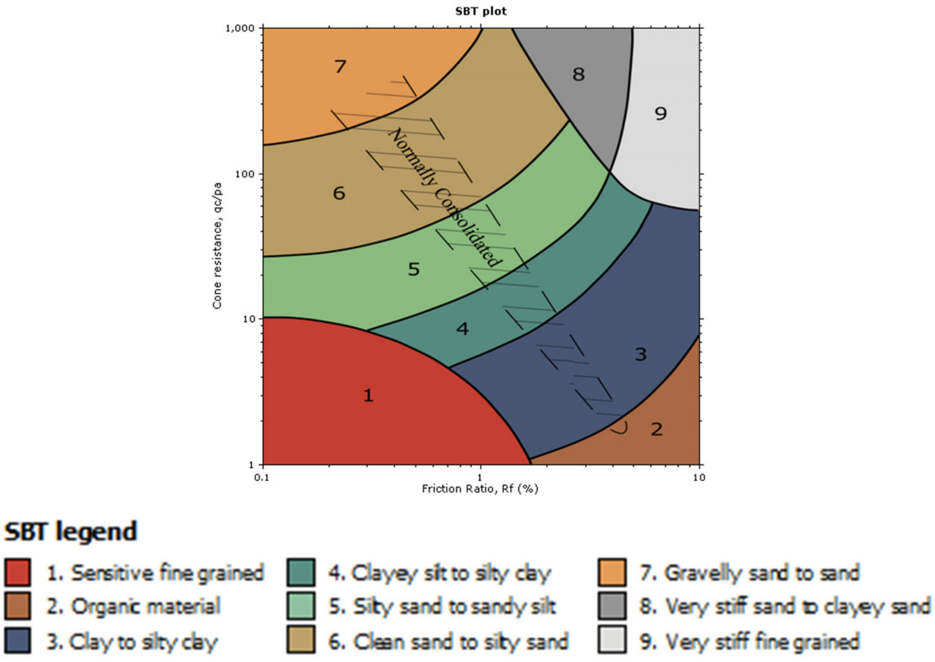


*Figure SBT (After Robertson, 2010) – Note: Colors may vary slightly compared to plots*

# Cone Penetration Test (CPT) Interpretation

Gregg uses a commercial CPT interpretation and plotting software (CPeT-IT https://geologismiki.gr/products/cpet-it/). The software takes the CPT data and performs basic interpretation in terms of soil behavior type (SBT) and various geotechnical parameters using current published empirical correlations based on the comprehensive review by Lunne, Robertson and Powell (1997) and updated by Robertson and Cabal (2015). The interpretation is presented in tabular format. The interpretations are presented only as a guide for geotechnical use and should be carefully reviewed. Gregg does not warranty the correctness or the applicability of any of the geotechnical parameters interpreted by the software and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used in the software.

The following provides a summary of the methods used for the interpretation. Many of the empirical correlations to estimate geotechnical parameters have constants that have a range of values depending on soil type, geologic origin and other factors. The software uses ‘default’ values that have been selected to provide, in general, conservatively low estimates of the various geotechnical parameter.

Presented below is a list of formulas used for the estimation of various soil properties. The formulas are presented in SI unit system and assume that all components are expressed in the same units.

### :: Unit Weight, g (kN/m$^3$) ::

$$g = g_w \cdot \left(0.27 \cdot \log(R_f) + 0.36 \cdot \log(\frac{q_t}{p_a}) + 1.236\right)$$

where $g_w$ = water unit weight

### :: Permeability, k (m/s) ::

$I_c < 3.27$ and $I_c > 1.00$ then $k = 10^{0.952-3.04 \cdot I_c}$

$I_c \leq 4.00$ and $I_c > 3.27$ then $k = 10^{-4.52-1.37 \cdot I_c}$

### :: $N_{SPT}$ (blows per 30 cm) ::

$$N_{60} = \left(\frac{q_c}{P_a}\right) \cdot \frac{1}{10^{1.1268-0.2817 \cdot I_c}}$$

$$N_{1(60)} = Q_{tn} \cdot \frac{1}{10^{1.1268-0.2817 \cdot I_c}}$$

### :: Young's Modulus, Es (MPa) ::

$$(q_t - \sigma_v) \cdot 0.015 \cdot 10^{0.55 I_c + 1.68}$$

(applicable only to $I_c < I_{c\_cutoff}$)

### :: Relative Density, Dr (%) ::

$$100 \cdot \sqrt{\frac{Q_{tn}}{k_{DR}}}$$

(applicable only to $SBT_n$: 5, 6, 7 and 8 or $I_c < I_{c\_cutoff}$)

### :: State Parameter, ψ ::

$$\psi = 0.56 - 0.33 \cdot \log(Q_{tn,cs})$$

### :: Drained Friction Angle, φ (°) ::

$$\varphi = \varphi'_{cv} + 15.94 \cdot \log(Q_{tn,cs}) - 26.88$$

(applicable only to $SBT_n$: 5, 6, 7 and 8 or $I_c < I_{c\_cutoff}$)

### :: 1-D constrained modulus, M (MPa) ::

If $I_c > 2.20$
$\alpha = 14$ for $Q_{tn} > 14$
$\alpha = Q_{tn}$ for $Q_{tn} \leq 14$
$M_{CPT} = \alpha \cdot (q_t - \sigma_v)$

If $I_c \geq 2.20$

$$M_{CPT} = 0.03 \cdot (q_t - \sigma_v) \cdot 10^{0.55 \cdot I_c + 1.68}$$

### :: Small strain shear Modulus, Go (MPa) ::

$$G_0 = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 \cdot I_c + 1.68}$$

### :: Shear Wave Velocity, Vs (m/s) ::

$$V_s = \left(\frac{G_0}{\rho}\right)^{0.50}$$

### :: Undrained peak shear strength, Su (kPa) ::

$N_{kt} = 10.50 + 7 \cdot \log(F_r)$ or user defined

$$S_u = \frac{(q_t - \sigma_v)}{N_{kt}}$$

(applicable only to $SBT_n$: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

### :: Remolded undrained shear strength, Su(rem) (kPa) ::

$S_{u(rem)} = f_s$ (applicable only to $SBT_n$: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

### :: Overconsolidation Ratio, OCR ::

$$k_{OCR} = \left[\frac{Q_{tn}^{0.20}}{0.25 \cdot (10.50 \cdot +7 \cdot \log(F_r))}\right]^{1.25}$$ or user defined

$$OCR = k_{OCR} \cdot Q_{tn}$$

(applicable only to $SBT_n$: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

### :: In situ Stress Ratio, Ko ::

$$K_O = (1 - \sin\varphi') \cdot OCR^{\sin\varphi'}$$

(applicable only to $SBT_n$: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

### :: Soil Sensitivity, $S_t$ ::

$$S_t = \frac{N_S}{F_r}$$

(applicable only to $SBT_n$: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

### :: Peak Friction Angle, φ' (°) ::

$$\varphi' = 29.5° \cdot B_q^{0.121} \cdot (0.256 + 0.336 \cdot B_q + \log Q_t)$$

(applicable for $0.10 < B_q < 1.00$)

## References

ASTM D5778-12, 2012, Standard Test Method for Performing Electronic Friction Cone and Piezocone Penetration Testing of Soils. ASTM West Conshohocken, USA

Lunne, T., Robertson, P.K. and Powell, J.J.M., 1997. Cone Penetration Testing in Geotechnical Practice.

Robertson, P.K., 1990. Soil Classification using the Cone Penetration Test. Canadian Geotechnical Journal, Volume 27: 151-158

Robertson, P.K., 2009. Interpretation of Cone Penetration Tests – a unified approach. Canadian Geotechnical Journal, Volume 46: 1337-1355

Robertson, P.K., 2010, “Soil Behavior type from the CPT: an update”, 2nd International Symposium on Cone Penetration Testing, Huntington Beach, CA, Vol.2. pp 575-583

Robertson, P.K. and Cabal, K.L., “Guide to Cone Penetration Testing for Geotechnical Engineering”, 6th Edition, 2015, 145 p. Free online, http://www.greggdrilling.com/technical-guides.

Robertson, P.K., R.G. Campanella, D. Gillespie and A. Rice, "Seismic CPT to Measure In-situ Shear Wave Velocity", Journal of Geotechnical Engineering, ASCE, Vol. 112, No. 8, pp. 791-803, 1986.

Robertson, P.K., Sully, J., Woeller, D.J., Lunne, T., Powell, J.J.M., and Gillespie, D.J., "Guidelines for Estimating Consolidation Parameters in Soils from Piezocone Tests", Canadian Geotechnical Journal, Vol. 29, No. 4, August 1992, pp. 539-550.

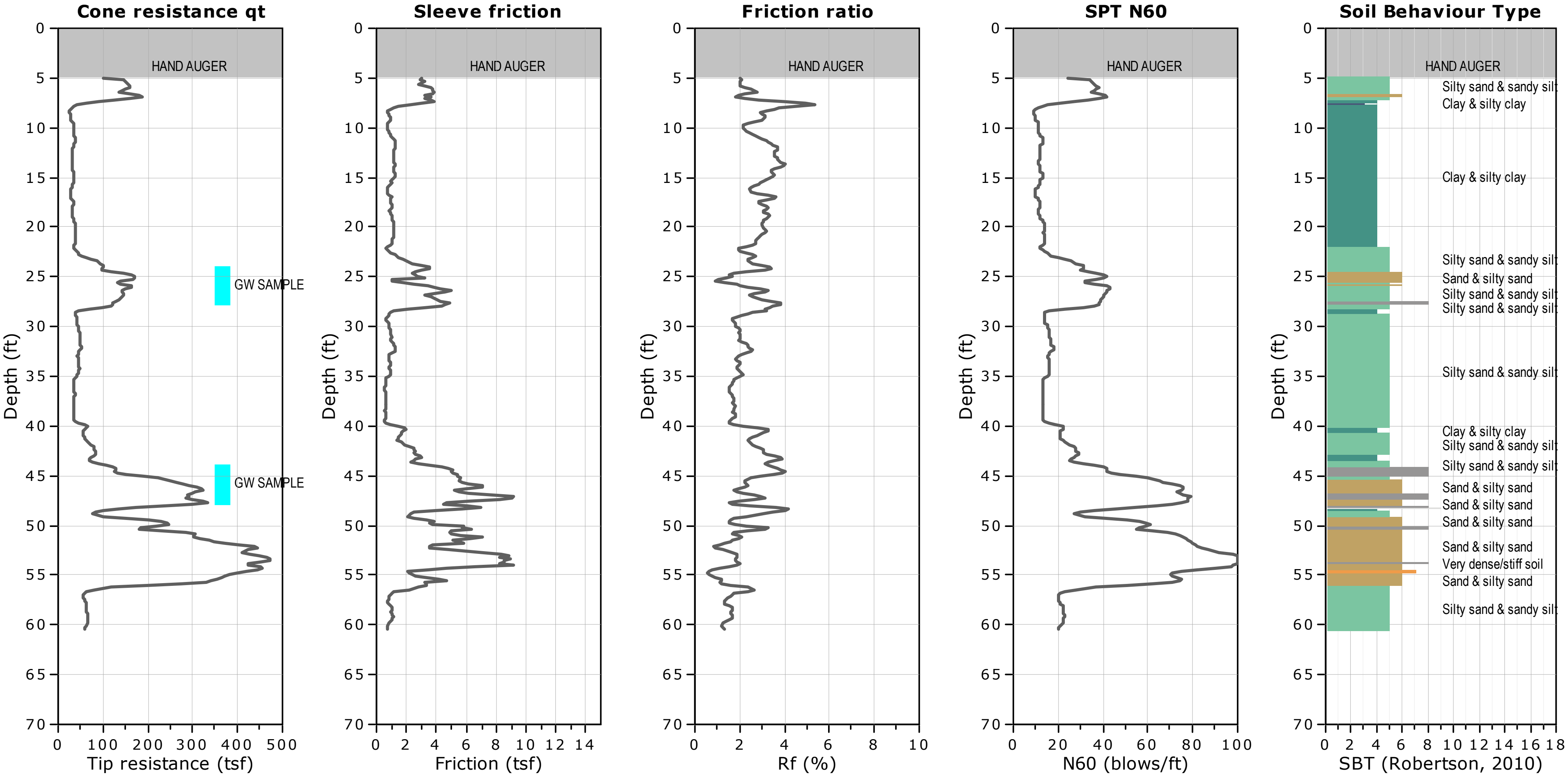
# CPT BORINGS

**GREGG DRILLING, INC.**
www.greggdrilling.com

# CPT: CPT1

**CLIENT: WHEELER GROUP ENVIRONMENTAL**
**SITE: MERCEDES BENZ OAKLAND - 340 29TH STREET, OAKLAND, CA**

**FIELD REP: BRENT WHEELER**
Total depth: 60.37 ft, Date: 10/10/2019



**SBTn legend**

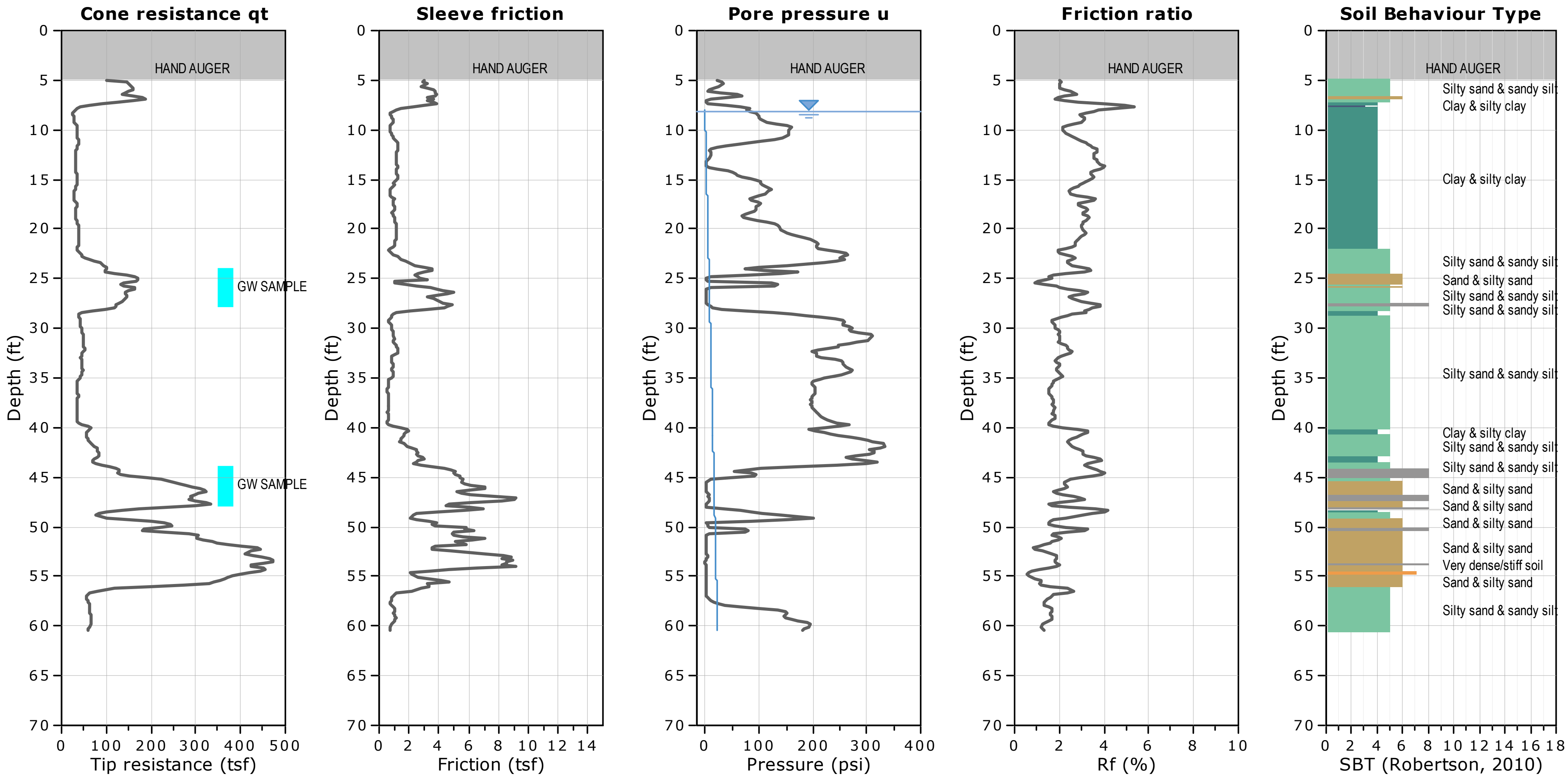
- 🟥 1. Sensitive fine grained
- 🟫 2. Organic material
- 🟦 3. Clay to silty clay
- 🟩 4. Clayey silt to silty clay
- 🟩 5. Silty sand to sandy silt
- 🟫 6. Clean sand to silty sand
- 🟧 7. Gravely sand to sand
- ⬛ 8. Very stiff sand to clayey sand
- ⬜ 9. Very stiff fine grained

**GREGG DRILLING, INC.**
www.greggdrilling.com

# CPT: CPT1

**CLIENT: WHEELER GROUP ENVIRONMENTAL**
**SITE: MERCEDES BENZ OAKLAND - 340 29TH STREET, OAKLAND, CA**

**Field Rep: BRENT WHEELER**
Total depth: 60.37 ft, Date: 10/10/2019



**SBTn legend**

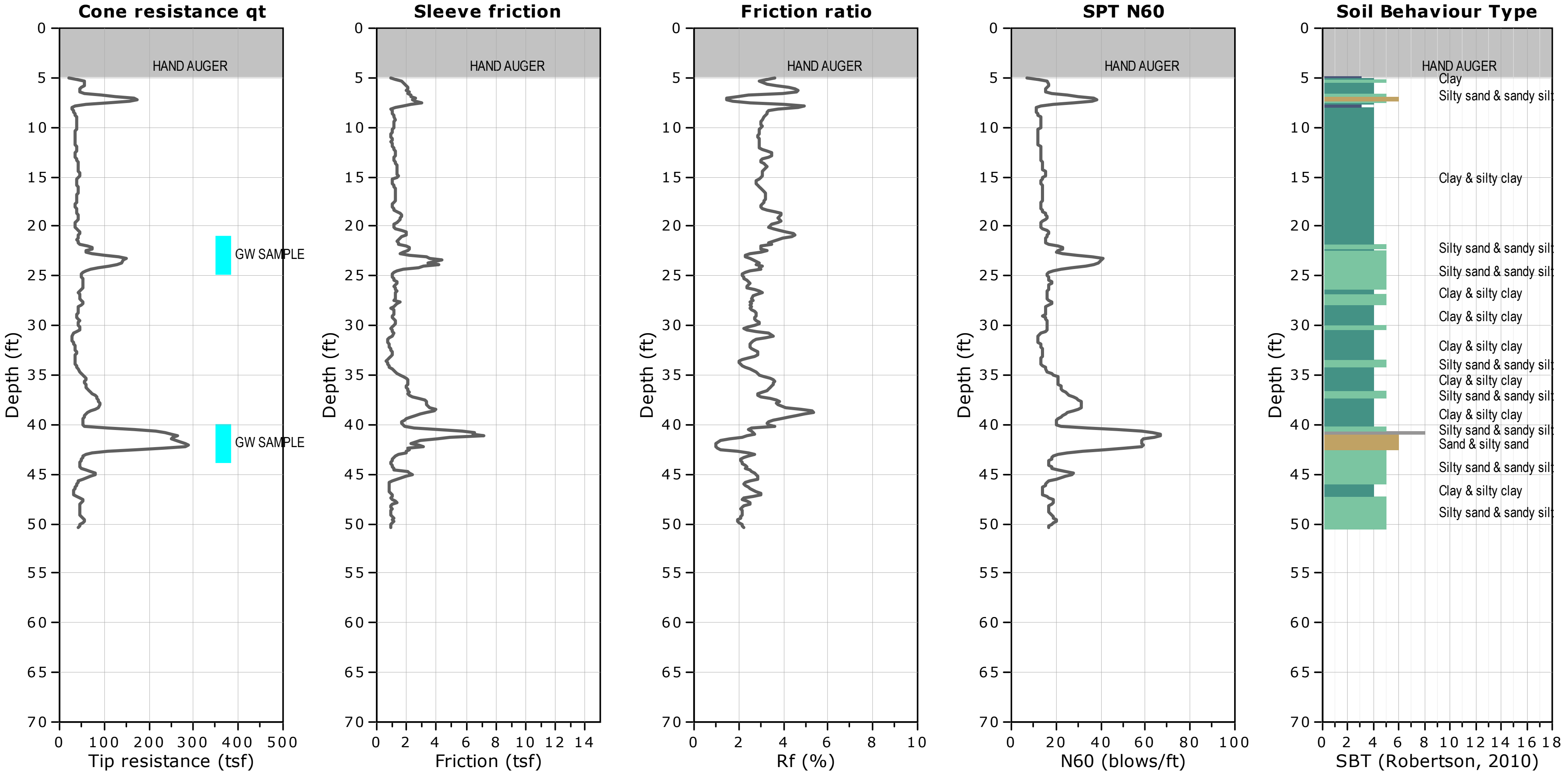
🟥 1. Sensitive fine grained
🟫 2. Organic material
🟦 3. Clay to silty clay
🟩 4. Clayey silt to silty clay
🟩 5. Silty sand to sandy silt
🟨 6. Clean sand to silty sand
🟧 7. Gravely sand to sand
⬛ 8. Very stiff sand to clayey sand
⬜ 9. Very stiff fine grained

**WATER TABLE FOR ESTIMATING PURPOSES ONLY**

# CPT: CPT2

**CLIENT: WHEELER GROUP ENVIRONMENTAL**
**SITE: MERCEDES BENZ OAKLAND - 340 29TH STREET, OAKLAND, CA**

**FIELD REP: BRENT WHEELER**
Total depth: 50.36 ft, Date: 10/10/2019



**SBTn legend**

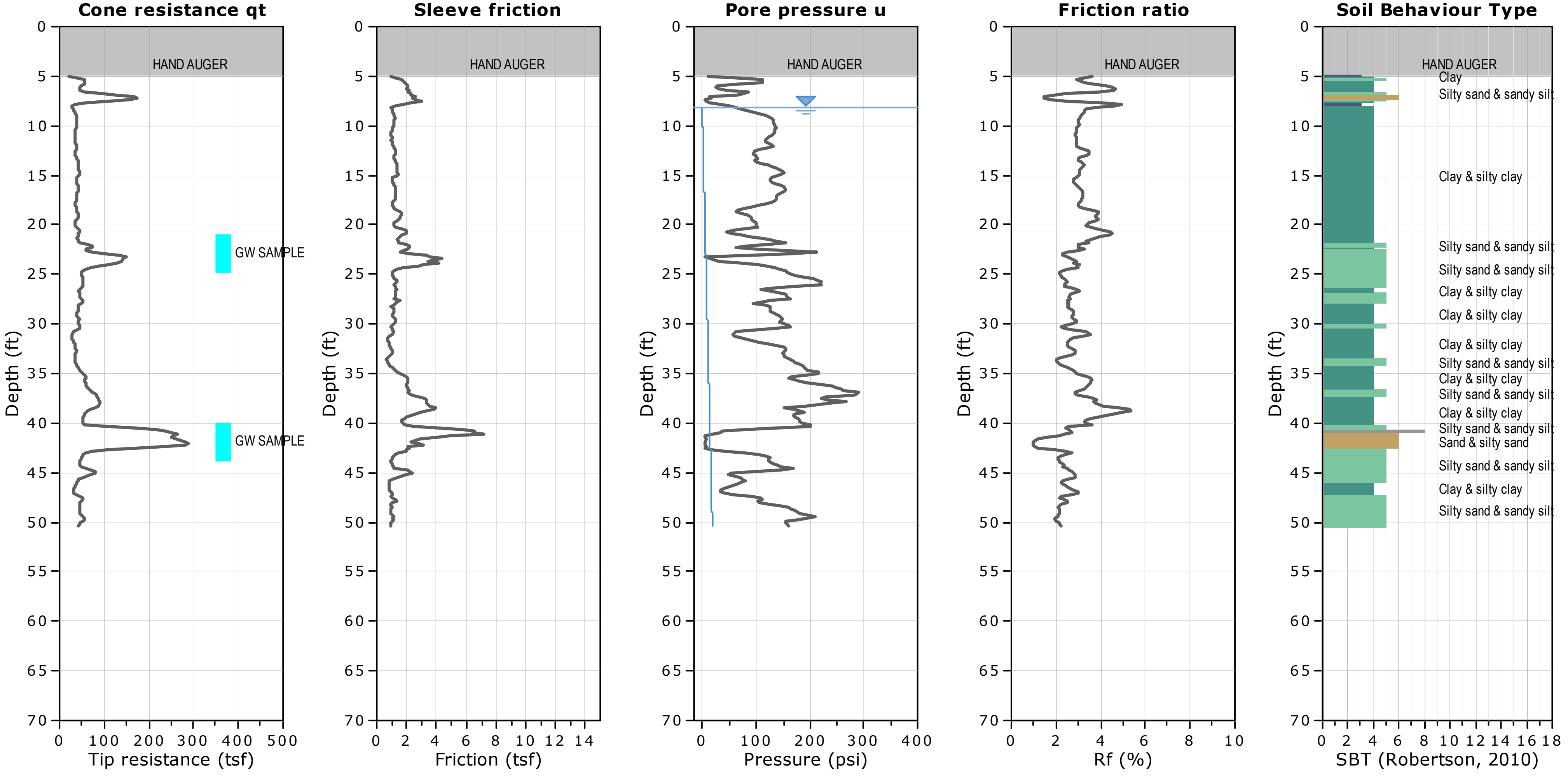
- 🟥 1. Sensitive fine grained
- 🟫 2. Organic material
- 🟦 3. Clay to silty clay
- 🟩 4. Clayey silt to silty clay
- 🟩 5. Silty sand to sandy silt
- 🟫 6. Clean sand to silty sand
- 🟧 7. Gravely sand to sand
- ⬛ 8. Very stiff sand to clayey sand
- ⬜ 9. Very stiff fine grained

**GREGG DRILLING, INC.**
www.greggdrilling.com

# CPT: CPT2

**CLIENT: WHEELER GROUP ENVIRONMENTAL**
**SITE: MERCEDES BENZ OAKLAND - 340 29TH STREET, OAKLAND, CA**

**Field Rep: BRENT WHEELER**
Total depth: 50.36 ft, Date: 10/10/2019



**SBTn legend**

🟥 1. Sensitive fine grained
🟫 2. Organic material
🟦 3. Clay to silty clay
🟩 4. Clayey silt to silty clay
🟩 5. Silty sand to sandy silt
🟫 6. Clean sand to silty sand
🟧 7. Gravely sand to sand
⬛ 8. Very stiff sand to clayey sand
⬜ 9. Very stiff fine grained

**WATER TABLE FOR ESTIMATING PURPOSES ONLY**

# PORE PRESSURE DISSIPATION

# Pore Pressure Dissipation Tests (PPDT

Pore Pressure Dissipation Tests (PPDT's) conducted at various intervals can be used to measure equilibrium water pressure (at the time of the CPT). If conditions are hydrostatic, the equilibrium water pressure can be used to determine the approximate depth of the ground water table. A PPDT is conducted when penetration is halted at specific intervals determined by the field representative. The variation of the penetration pore pressure (*u)* with time is measured behind the tip of the cone and recorded.

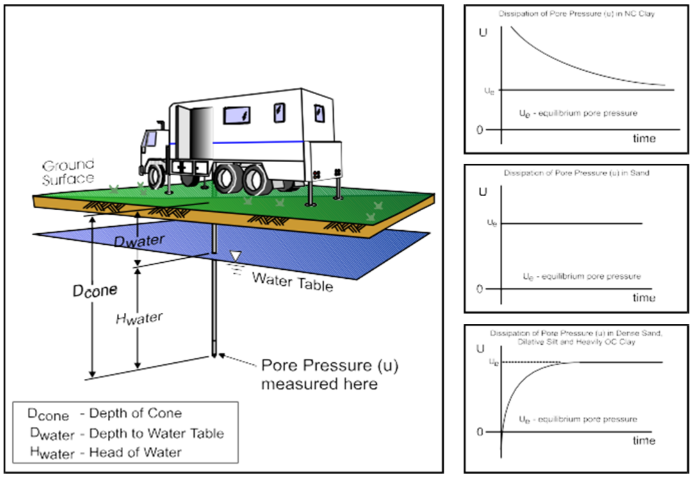
Pore pressure dissipation data can be interpreted to provide estimates of:

- Equilibrium piezometric pressure
- Phreatic Surface
- In-situ horizontal coefficient of consolidation ($c_h$)
- In-situ horizontal coefficient of permeability ($k_h$)

In order to correctly interpret the equilibrium piezometric pressure and/or the phreatic surface, the pore pressure must be monitored until it reaches equilibrium, *Figure PPDT*. This time is commonly referred to as $t_{100}$, the point at which 100% of the excess pore pressure has dissipated.

A complete reference on pore pressure dissipation tests is presented by Robertson et al. 1992 and Lunne et al. 1997.

A summary of the pore pressure dissipation tests is summarized in Table 1.



Water Table Calculation

$$D_{water} = D_{cone} - H_{water}$$

where $H_{water} = U_e$ (depth units)

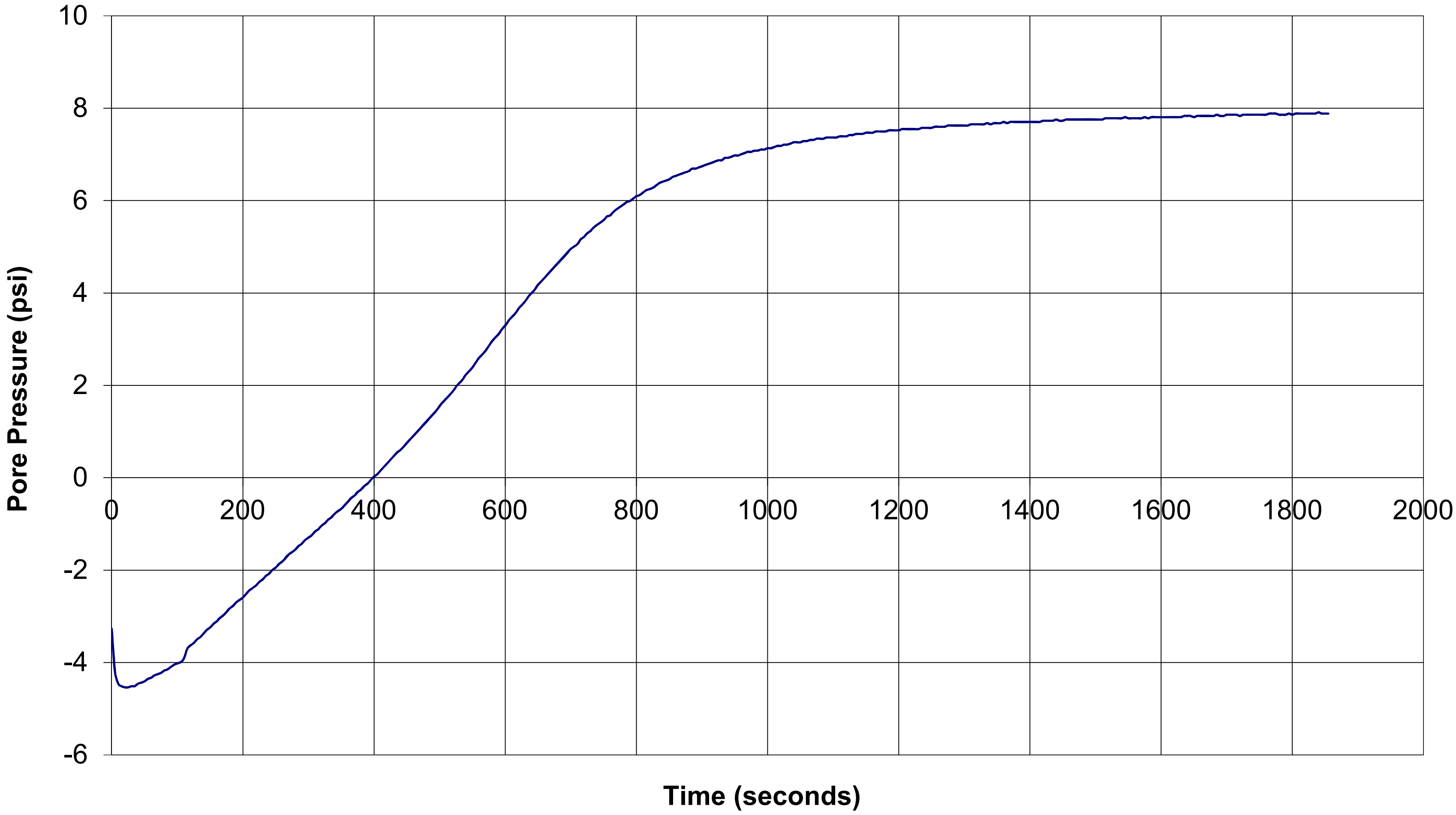
Useful Conversion Factors:
1psi = 0.704m = 2.31 feet (water)
1tsf = 0.958 bar = 13.9 psi
1m = 3.28 feet

*Figure PPDT*

# GREGG DRILLING & TESTING

## Pore Pressure Dissipation Test

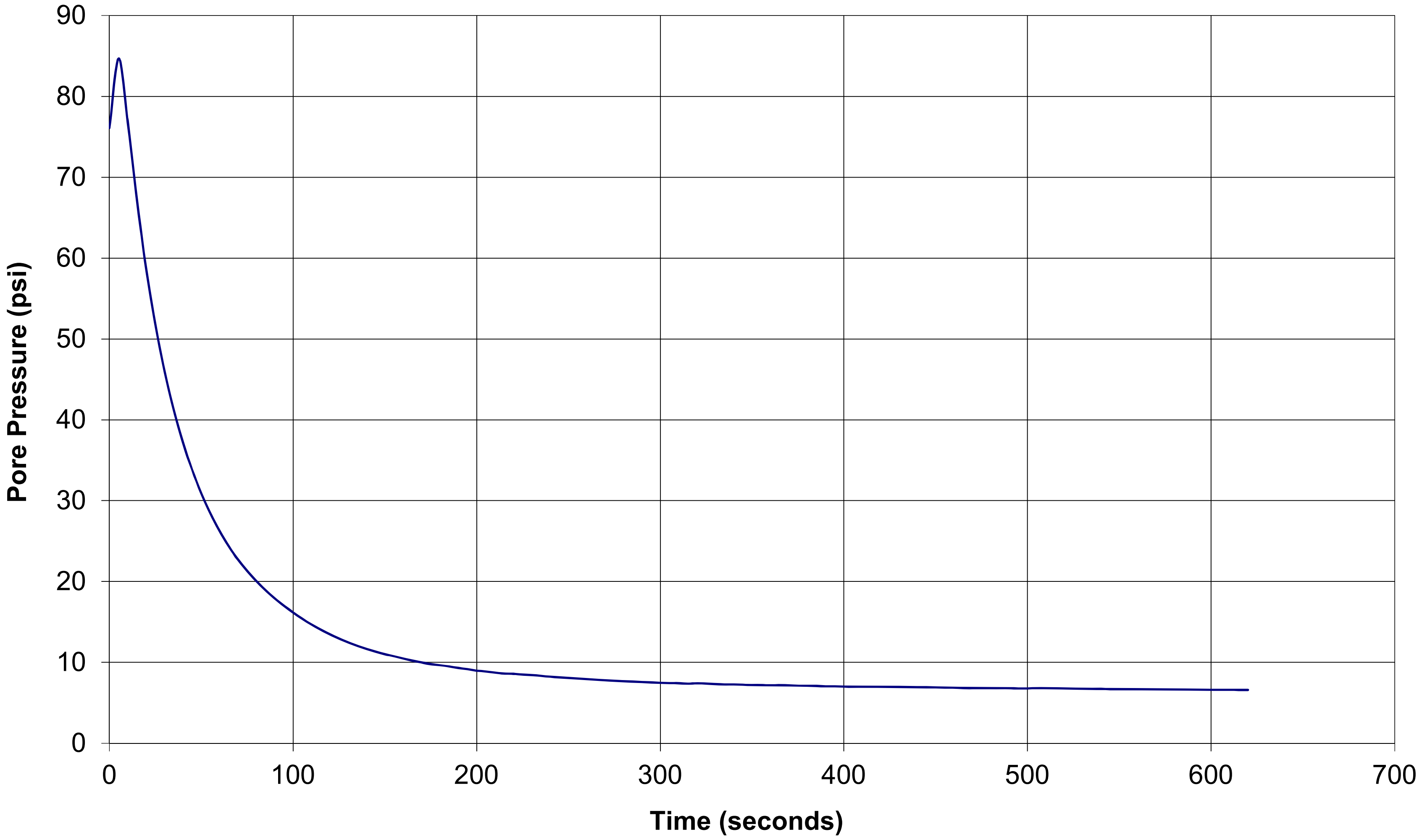
Sounding: CPT1
Depth: 25.4264325
Site: MERCEDES
Engineer: BRENT



# GREGG DRILLING & TESTING

## Pore Pressure Dissipation Test

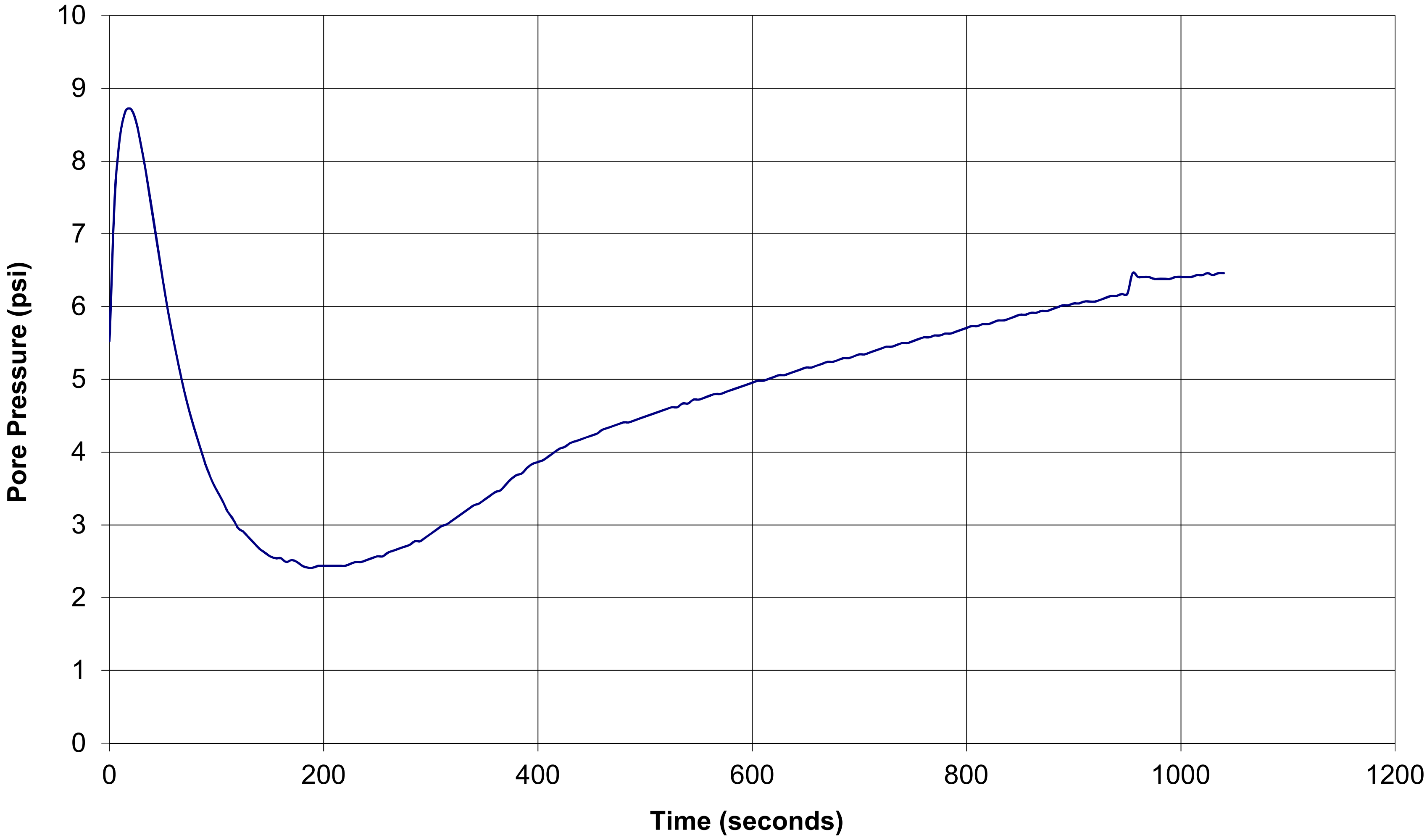
Sounding: CPT2
Depth: 23.4579345
Site: MERCEDES
Engineer: BRENT



# GREGG DRILLING & TESTING

## Pore Pressure Dissipation Test

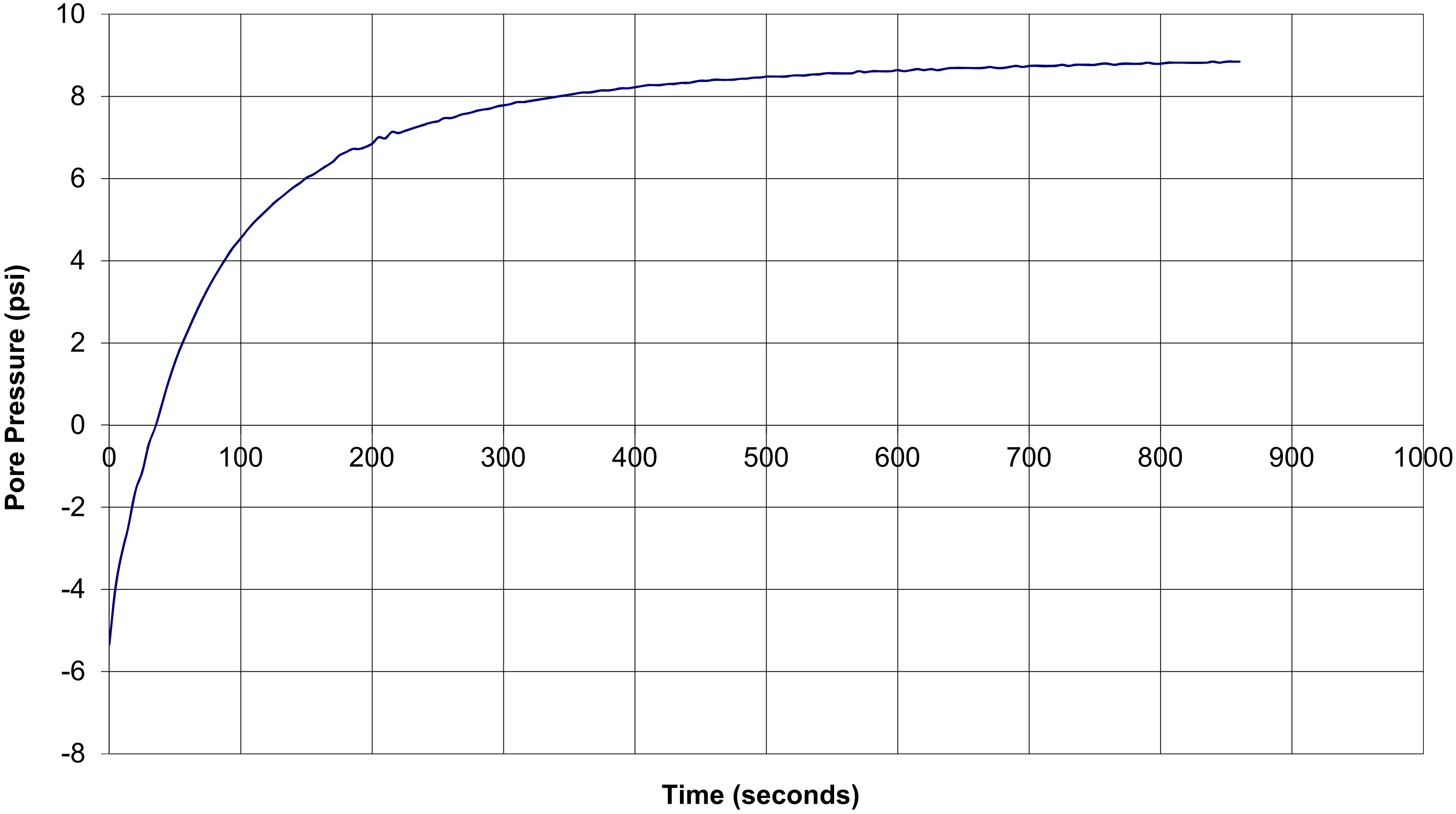
Sounding: CPT2
Depth: 41.5024995
Site: MERCEDES
Engineer: BRENT



# GREGG DRILLING & TESTING

## Pore Pressure Dissipation Test

Sounding: CPT2
Depth: 42.4867485
Site: MERCEDES
Engineer: BRENT



# GROUNDWATER SAMPLING

# Groundwater Sampling

Gregg Drilling & Testing, Inc. conducts groundwater sampling using a sampler as shown in *Figure GWS*. The groundwater sampler has a retrievable stainless steel or disposable PVC screen with steel drop off tip. This allows for samples to be taken at multiple depth intervals within the same sounding location. In areas of slower water recharge, provisions may be made to set temporary PVC well screens during sampling to allow the pushing equipment to advance to the next sample location while the groundwater is allowed to infiltrate.

The groundwater sampler operates by advancing 44.5mm (1¾ inch) hollow push rods with the filter tip in a closed configuration to the base of the desired sampling interval. Once at the desired sample depth, the push rods are retracted; exposing the encased filter screen and allowing groundwater to infiltrate hydrostatically from the formation into the inlet screen. A small diameter bailer (approximately ½ or ¾ inch) is lowered through the push rods into the screen section for sample collection. The number of downhole trips with the bailer and time necessary to complete the sample collection at each depth interval is a function of sampling protocols, volume requirements, and the yield characteristics and storage capacity of the formation. Upon completion of sample collection, the push rods and sampler, with the exception of the PVC screen and steel drop off tip are retrieved to the ground surface, decontaminated and prepared for the next sampling event.

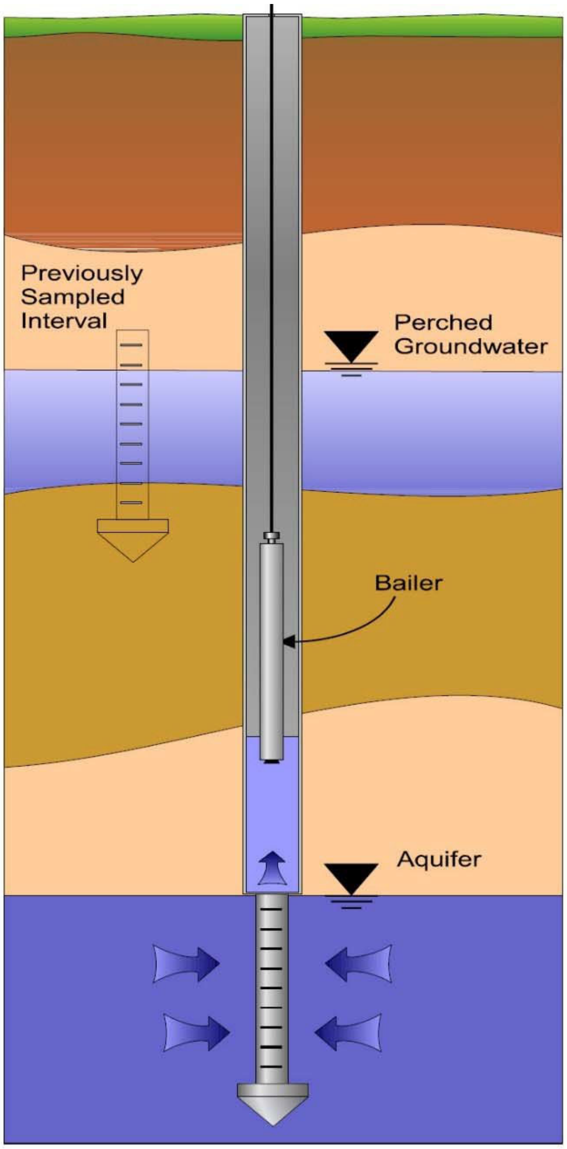


*Figure GWS*

# APPENDIX B
## BORING LOGS FROM ENVIRONMENTAL STUDIES

*THIS PAGE LEFT INTENTIONALLY BLANK*

| MAJOR DIVISIONS | | | | | TYPICAL NAMES |
|---|---|---|---|---|---|
| COARSE-GRAINED SOILS<br>MORE THAN HALF IS COARSER THAN NO. 200 SIEVE | GRAVELS<br>MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE | CLEAN GRAVELS WITH LESS THAN 15% FINES | GW | | WELL-GRADED GRAVELS WITH OR WITHOUT SAND |
| | | | GP | | POORLY-GRADED GRAVELS WITH OR WITHOUT SAND |
| | | GRAVELS WITH 15% OR MORE FINES | GM | | SILTY GRAVELS WITH OR WITHOUT SAND |
| | | | GC | | CLAYEY GRAVELS WITH OR WITHOUT SAND |
| | SANDS<br>MORE THAN HALF COARSE FRACTION IS FINER THAN NO. 4 SIEVE SIZE | CLEAN SANDS WITH LESS THAN 15% FINES | SW | | WELL-GRADED SANDS WITH OR WITHOUT GRAVEL |
| | | | SP | | POORLY-GRADED SANDS WITH OR WITHOUT GRAVEL |
| | | SANDS WITH 15% OR MORE FINES | SM | | SILTY SANDS WITH OR WITHOUT GRAVEL |
| | | | SC | | CLAYEY SANDS WITH OR WITHOUT GRAVEL |
| FINE-GRAINED SOILS<br>MORE THAN HALF IS FINER THAN NO. 200 SIEVE | SILTS AND CLAYS<br>LIQUID LIMIT 50% OR LESS | | ML | | INORGANIC SILTS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL |
| | | | CL | | INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL |
| | | | OL | | ORGANIC SILTS OR CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL |
| | SILTS AND CLAYS<br>LIQUID LIMIT GREATER THAN 50% | | MH | | INORGANIC SILTS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL |
| | | | CH | | INORGANIC CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL |
| | | | OH | | ORGANIC SILTS OR CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL |
| HIGHLY ORGANIC SOILS | | | PT | | PEAT AND OTHER HIGHLY ORGANIC SOILS |

## ABBREVIATION KEY

| | |
|---|---|
| PID (PPM) | - Photo Ionization Detector readings in parts per million from field headspace sample screening. |
| BLOWS/6" | - Blows required to drive sampler 6 inches as indicated on the logs using sample drive hammer weight of 140 pounds falling 30 inches. |
| 2.5YR 6/2 | - Soil Color according to Munsell Soil Color Charts (1994 Revised Edition) |
| feet MSL | - feet above Mean Seal Level |
| feet BGS | - feet below ground surface |

## SYMBOLS KEY

- ☐ No Soil Sample Recovered
- ⧄ Partial Soil Sample Recovered
- ☒ Undisturbed Soil Sample Recovered
- ■ Soil Sample Submitted for Laboratory Analysis
- ⊞ Hydropunch Sample
- ▽ First Encountered Groundwater Level
- ▼ Piezometric Groundwater level

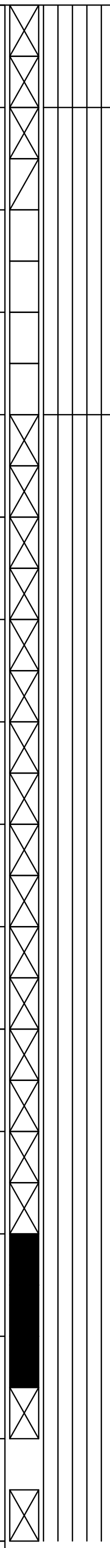
**PES Environmental, Inc.**
Engineering & Environmental Services

**Unified Soil Classification System Chart**
Oakland Mercedes
340 29th Street, Oakland, CA

PLATE
**A0**

| | | | |
|---|---|---|---|
| 1498.007.01.001 | USCS CHART | PDG | 8/20 |
| JOB NUMBER | DRAWING NUMBER | REVIEWED BY | DATE |

# LOG OF BORING GW1



| PID (ppm) | BLOWS/6IN | DEPTH (FT) | GRAPHICS | MATERIALS DESCRIPTION |
|---|---|---|---|---|
| | | | | LIGHT BROWNISH GRAY SANDY SILT WITH GRAVEL (SM) (10YR 6/2), dry, very fine- to coarse-grained sand, (20% gravel, 20% sand, 60% fines), subangular to subrounded gravel up to 1" diameter |
| 0 | | | | DARK BROWN SANDY SILT (ML) (10YR 3/3), dry, tsf = 0.75, fine- to medium-grained sand, gravel up to 0.75" diameter, (5% gravel, 15% sand, 80% fines) |
| 0 | | | | |
| | | | | OLIVE GRAY SANDY SILT (ML) (5Y 5/2), moist, 2.5 tsf, very fine- to medium-grained sand, (0% gravel, 30% sand, 70% fines) |
| 0 | | | | |
| | | 5 | | |
| 0 | | | | |
| 0 | | | | |
| | | 10 | | |
| 0 | | | | |
| | | | | *Geotech Sample ID: GW1-12-13.5* |
| 0 | | | | |
| 0 | | | | |
| | | 15 | | |

(Continued)

| | | | |
|---|---|---|---|
| PROJECT | Oakland Mercedes | DIAMETER OF HOLE | 2.25 inches |
| LOCATION | 340 29th Street, Oakland, CA | TOTAL DEPTH OF HOLE | 19.5 feet |
| JOB NUMBER | 1498.007.01.001 | DRILL RIG | Geoprobe DT22 |
| LOGGED BY | J. DePriest | DATE STARTED | 8/29/20 |
| REVIEWED BY | PDG | DATE COMPLETED | 8/29/20 |

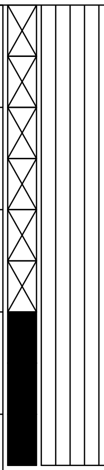
PLATE

**A1**

**PES Environmental, Inc.**
Engineering & Environmental Services

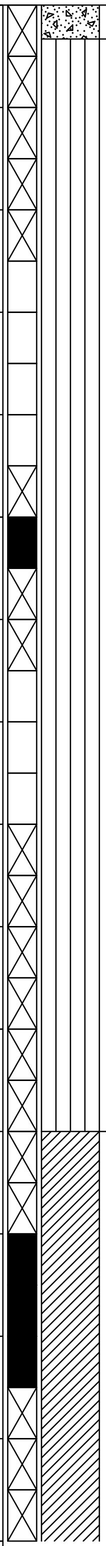
# LOG OF BORING GW1

PAGE 2 OF 2

| PID (ppm) | BLOWS/6IN | DEPTH (FT) | GRAPHICS | MATERIALS DESCRIPTION |
|---|---|---|---|---|
| | | |  | Color change to dark brown (7.5YR 3/2) |
| | | | | *Geotech Sample ID: GW1-18-19.5* |
| | | | | Bottom of boring at 19.5 ft bgs. Boring/PVC well is dry 24 hours after completion (no groundwater sample collected) |
| | | 20 | | |
| | | 25 | | |
| | | 30 | | |

| | | | | |
|---|---|---|---|---|
| PROJECT | Oakland Mercedes | DIAMETER OF HOLE | 2.25 inches | PLATE |
| LOCATION | 340 29th Street, Oakland, CA | TOTAL DEPTH OF HOLE | 19.5 feet | |
| JOB NUMBER | 1498.007.01.001 | DRILL RIG | Geoprobe DT22 | **A1** |
| LOGGED BY | J. DePriest | DATE STARTED | 8/29/20 | |
| REVIEWED BY | PDG | DATE COMPLETED | 8/29/20 | |

# LOG OF BORING GW2



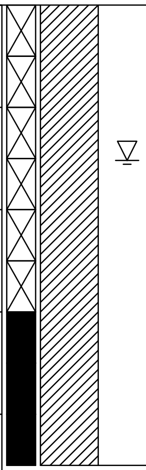
| PID (ppm) | BLOWS/6IN | DEPTH (FT) | GRAPHICS | MATERIALS DESCRIPTION |
|---|---|---|---|---|
| | | | | CONCRETE 4" |
| | | | | DARK BROWN SANDY SILT (ML) (10YR 3/3), dry, tsf = 0.75, fine- to medium-grained sand, gravel up to 0.75" diameter, (0% gravel, 10% sand, 85% fines) |
| 0 | | | | |
| | | | | Increase in stiffness to 1.5 tsf |
| 0 | | | | |
| | | 5 | | Increase in gravel from 5 to 6 ft bgs, (5% gravel, 15% sand, 80% fines)<br>*GW Sample ID: GW2-5* |
| 0 | | | | |
| | | | | Increase in stiffness to 2.0 tsf |
| | | | | Increase in gravel (subangular to 1" diameter), red, orange, gray, (10% gravel, 15% sand, 75% fines) |
| | | 10 | | |
| | | | | Increase in stiffness to 3.0 tsf |
| | | | | DARK BROWN LEAN CLAY (CL) (7.5YR 3/2), dry, stiff (tsf = 3), (0% gravel, 5% sand, 95% fines) |
| | | | | Increased plasticity<br>*Geotech Sample ID: GW2-12-13.5* |
| 0 | | | | |
| | | | | Increase in stiffness to 2.0 tsf |
| | | 15 | (Continued) | |

| | | | |
|---|---|---|---|
| PROJECT | Oakland Mercedes | DIAMETER OF HOLE | 2.25 inches |
| LOCATION | 340 29th Street, Oakland, CA | TOTAL DEPTH OF HOLE | 19.5 feet |
| JOB NUMBER | 1498.007.01.001 | DRILL RIG | Geoprobe DT22 |
| LOGGED BY | J. DePriest | DATE STARTED | 8/29/20 |
| REVIEWED BY | PDG | DATE COMPLETED | 8/29/20 |

PLATE

**A2**

# LOG OF BORING GW2

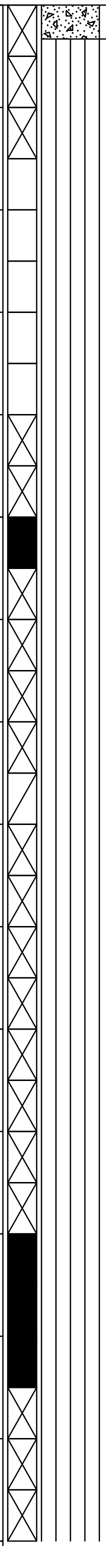


| PID (ppm) | BLOWS/6IN | DEPTH (FT) | GRAPHICS | MATERIALS DESCRIPTION |
|---|---|---|---|---|
| | | | ∇ | Water level = 16.52' bgs on 8/30/2020 @ 11:00 |
| | | | | Stiffness tsf = 2.0 |
| 0 | | | | *Geotech Sample ID: GW2-18-19.5* |
| | | | | Bottom of boring at 19.5 ft bgs. Grab groundwater sample GW-2 collected from temporary PVC casing. |
| | | 20 | | |
| | | 25 | | |
| | | 30 | | |

| | | | |
|---|---|---|---|
| PROJECT | Oakland Mercedes | DIAMETER OF HOLE | 2.25 inches |
| LOCATION | 340 29th Street, Oakland, CA | TOTAL DEPTH OF HOLE | 19.5 feet |
| JOB NUMBER | 1498.007.01.001 | DRILL RIG | Geoprobe DT22 |
| LOGGED BY | J. DePriest | DATE STARTED | 8/29/20 |
| REVIEWED BY | PDG | DATE COMPLETED | 8/29/20 |

PLATE
**A2**

# LOG OF BORING GW3



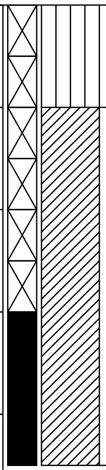
| PID (ppm) | BLOWS/6IN | DEPTH (FT) | GRAPHICS | MATERIALS DESCRIPTION |
|---|---|---|---|---|
| | | | | CONCRETE 4" |
| | | | | DARK BROWN SANDY SILT (ML) (10YR 3/3), dry, tsf = 0.75, fine- to medium-grained sand, gravel up to 0.75" diameter, (5% gravel, 15% sand, 80% fines) |
| 0 | | | | |
| 0 | | | | Increase in stiffness to 2.0 tsf, decrease in sand and gravel, (0% gravel, 10% sand, 90% fines) |
| | | 5 | | *GW Sample ID: GW3-5* |
| 0 | | | | |
| | | | | Color change to olive gray (5Y 5/2) from 9 to 11 ft bgs, increased subangular gravel up to 1" diameter, (5% gravel, 15% sand, 80% fines) |
| | | 10 | | |
| 0 | | | | *Geotech Sample ID: GW3-12-13.5* |
| | | 15 | (Continued) | |

| | | | |
|---|---|---|---|
| PROJECT | Oakland Mercedes | DIAMETER OF HOLE | 2.25 inches |
| LOCATION | 340 29th Street, Oakland, CA | TOTAL DEPTH OF HOLE | 19.5 feet |
| JOB NUMBER | 1498.007.01.001 | DRILL RIG | Geoprobe DT22 |
| LOGGED BY | J. DePriest | DATE STARTED | 8/29/20 |
| REVIEWED BY | PDG | DATE COMPLETED | 8/29/20 |

PLATE

**A3**

# LOG OF BORING GW3

| PID (ppm) | BLOWS/6IN | DEPTH (FT) | GRAPHICS | MATERIALS DESCRIPTION |
|---|---|---|---|---|
| | | |  | DARK BROWN LEAN CLAY (CL), dry, stiff ~3.5 tsf, increase in plasticity, (0% gravel, 5% sand, 95% fines) |
| 0 | | | | *Geotech Sample ID: GW3-18-19.5* |
| | | | | Bottom of boring at 19.5 ft bgs. Boring/PVC well is dry 24 hours after completion (no groundwater sample collected) |
| | | 20 | | |
| | | 25 | | |
| | | 30 | | |

| | | | |
|---|---|---|---|
| PROJECT | Oakland Mercedes | DIAMETER OF HOLE | 2.25 inches |
| LOCATION | 340 29th Street, Oakland, CA | TOTAL DEPTH OF HOLE | 19.5 feet |
| JOB NUMBER | 1498.007.01.001 | DRILL RIG | Geoprobe DT22 |
| LOGGED BY | J. DePriest | DATE STARTED | 8/29/20 |
| REVIEWED BY | PDG | DATE COMPLETED | 8/29/20 |

PLATE

**A3**

WHEELER GROUP
ENVIRONMENTAL LLC

# Site Investigation Report
## Mercedes-Benz of Oakland
## 340 29th Street, Oakland, California

APN 9-701-9
Alameda County LOP Case No. RO0003220
Geotracker Global ID T10000009111

# APPENDIX C

## BORING LOGS

Soil Boring Logs B1 to B8
Soil Gas Well Construction Log B4-SG

**Wheeler Group Environmental, LLC**
369-B Third Street, Suite #221, San Rafael, CA 94901
Phone: 415-686-8846

Project no. 2016102

# *SOIL BORING LOG B1*

| Depth (fbg) | Recovery/ Sample ID | Blow Counts (#/6") | Organic Vapor (ppm) | USCS Soil Type | Description | Boring Backfill Detail |
|---|---|---|---|---|---|---|
| | | | | | Concrete – Sidewalk (4") | Concrete (0'-0.5') |
| 1 | Hand Auger | | 0.0<br>0.0 | CL | (0.5'-5') **CLAY (CL)**. Moist to Wet, Moderate to Dark Yellowish Brown (10YR 5/4, 4/2), Silty, Soft; No Odor / No Staining.<br>@ 2.5'; Same, Change in Color to Dark Yellowish Orange (10YR 6/6). | |
| 5 | B1-5<br>B1-6<br>B1-8 | NA<br>NA<br>NA | 0.0<br>0.0<br>101<br>253<br>162 | SM | (5'-9.5') **SAND (SM)**. Damp to Moist, Moderate Yellowish Brown (10YR 5/4) to Pale Yellowish Brown (10YR 6/2), Fine-Grained, Clayey, Soft; No Odor / No Staining.<br>@ 6'; Change in Color to Light Olive Gray (5Y 6/1), with Rock Fragments and Coarse-Grained Sand (Moderate Motor Oil Odor). | Neat Portland Cement (0.5'-16') |
| 10<br>(11.65') ▽<br>15 | B1-10<br>B1-15 | NA<br>NA | 5.0<br>0.0<br>0.0<br>0.0<br>0.0 | CL | (9.5'-16') **CLAY (CL)**. Damp, Moderate Yellowish Brown (10YR 5/4) and Light Olive Gray (5Y 6/1), Firm; No Odor.<br>@ 11.5'; Same, Change in Color to Moderate Yellowish Brown (10YR 5/4). | |
| 20<br>25 | | | | | Total Borehole Depth = 16 fbg<br>Install 3/4"-Dia. Piezometer Casing to Total Depth at 11:20AM. Borehole Dry at 11:25AM.<br>Depth to groundwater measured in B1 using electronic oil/water interface meter at 11.65 fbg (10.90' TOC) on 6-27-17 @ 7:29AM (No Product); Collect Grab Groundwater Sample B1-GW on 6-27-17 at 10:40AM. | 2.25" |

**BORING NUMBER: B1**
**LOCATION:** 344 29th Street, Oakland, CA
**PROJECT No:** 2016102
**DRILLING CONTRACTOR:** EnProbe
**DRILLING METHOD:** Hand Auger/GeoProbe
**DRILLING DATE:** June 26, 2017
**Logged By:** B. Wheeler **Checked By:** M.Youngkin

***Page 1 of 1***

***Legend/Notes:***

fbg = feet below grade
ppm = parts per million
☒ = Lithologic Sample Interval
☐ = Sample Retained for Laboratory Analysis
▽ = Measured Depth to Groundwater (Non-Static)
NA = Not applicable

***Wheeler Group Environmental, LLC***

# SOIL BORING LOG B2

| Depth (fbg) | Recovery/ Sample ID | Blow Counts (#/6") | Organic Vapor (ppm) | USCS Soil Type | Description | Boring Backfill Detail |
|---|---|---|---|---|---|---|
| 1 | | | | | Asphaltic Concrete (12") | Concrete (0'-1') |
| | Hand Auger | | 0.0<br>0.0 | ML | (1'-4.5') **SILT (ML)**. Damp to Moist, Moderate Yellowish Brown (10YR 5/4) and Pale Yellowish Brown (10YR 6/2), Slightly Clayey, Sift to Firm; No Odor, No Staining.<br>@ 2'; Same, Change in Color w/ Dark Yellowish Orange (10YR 6/6). | Neat Portland Cement (1'-20') |
| 5 | B2-5 | NA | 0.0<br>0.0<br>0.0 | SM | (4.5'-8.5') **SAND (SM)**. Damp to Moist, Moderate to Dark Yellowish Brown (10YR 5/4, 4/2), Clayey, Fine-Grained w/ Rock Fragments; No Odor / No Staining.<br>@ 7'; 1"-Thick Lense of Gravel/Crushed Rock. | |
| 10<br>(11.45')<br>15<br>20 | B2-10<br>B2-15<br>B2-20 | NA<br>NA<br>NA | 0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0 | CL | (8.5'-20') **CLAY (CL)**. Damp to Moist, Moderate Yellowish Brown (10YR 5/4) and Pale Yellowish Brown (10YR 6/2), Firm to Soft; No Odor / No Staining.<br>@ 13.5'; Same, Change in Color to Moderate Yellowish Brown (10YR 5/4).<br>@ 18'; Same, Change in Color to Moderate Yellowish Brown (10YR 5/4). | |
| 25 | | | | | Total Borehole Depth = 20 fbg<br>Install 3/4"-Dia. Piezometer Casing to Total Depth at 9:55AM. Borehole Dry at 9:55AM.<br>Depth to groundwater measured in B2 using electronic oil/water interface meter at 19.08 fbg @ 1:45PM (No Product); 11.45 fbg (10.82' TOC) on 6-27-17 @ 7:25AM (No Product); Collect Grab Groundwater Sample B2-GW on 6-27-17 at 10:50AM. | 2.25" |

**BORING NUMBER: B2**
**LOCATION:** 344 29th Street, Oakland, CA
**PROJECT No:** 2016102
**DRILLING CONTRACTOR:** EnProbe
**DRILLING METHOD:** Hand Auger/GeoProbe
**DRILLING DATE:** June 26, 2017
**Logged By:** B. Wheeler **Checked By:** M.Youngkin

***Legend/Notes:***

fbg = feet below grade
ppm = parts per million
☒ = Lithologic Sample Interval
☐ = Sample Retained for Laboratory Analysis
▽ = Measured Depth to Groundwater (Non-Static)
NA = Not applicable

***Wheeler Group Environmental, LLC***

# *SOIL BORING LOG B3*

| Depth (fbg) | Recovery/ Sample ID | Blow Counts (#/6") | Organic Vapor (ppm) | USCS Soil Type | Description | Boring Backfill Detail |
|---|---|---|---|---|---|---|
| | | | | | Concrete – Sidewalk (4") | Concrete (0'-0.5') |
| 1 | Hand Auger | | 0.0<br>0.0 | CL | (0.5'-6') **CLAY (CL)**. Moist to Wet, Moderate to Dark Yellowish Brown (10YR 5/4, 4/2), Silty, Soft; No Odor / No Staining.<br>@ 3'; Same, Change in Color to Dark Yellowish Orange (10YR 6/6). | |
| 5 | B3-5 | NA | 0.0 | | | Neat Portland Cement (0.5'-16') |
| | | | 0.0<br>0.0<br>0.0 | SM | (6'-9.5') **SAND (SM)**. Damp to Moist, Moderate to Dark Yellowish Brown (10YR 5/4,4/2), Fine-Grained with Rock Fragments and Trace Gravel; No Odor / No Staining.<br>@ 8'-9.25'; Same, Wet. | |
| 10 | B3-10 | NA | 0.0 | | | |
| | B3-11 | NA | 3.7<br>10.7 | CL | (10'-16') **CLAY (CL)**. Damp, Moderate Yellowish Brown (10YR 5/4) and Pale Yellowish Brown (10YR 6/2), Firm; No Odor. | |
| (12.5') ⊻ | B3-13 | NA | 0.0 | | | |
| 15 | B3-15 | NA | 0.0<br>0.0 | | | |
| | | | | | Total Borehole Depth = 16 fbg | ↔ 2.25" |
| 20 | | | | | | |
| 25 | | | | | Install 3/4"-Dia. Piezometer Casing to Total Depth at 12:30AM. Borehole Dry at 12:35AM.<br>Depth to groundwater measured in B3 using electronic oil/water interface meter at 12.50 fbg (11.68' TOC) on 6-27-17 @ 7:35AM (No Product); Collect Grab Groundwater Sample B3-GW on 6-27-17 at 11:10AM. | |

**BORING NUMBER:** B3

**LOCATION:** 344 29th Street, Oakland, CA

**PROJECT No:** 2016102

**DRILLING CONTRACTOR:** EnProbe

**DRILLING METHOD:** Hand Auger/GeoProbe

**DRILLING DATE:** June 26, 2017

**Logged By:** B. Wheeler **Checked By:** M.Youngkin

***Legend/Notes:***

fbg = feet below grade

ppm = parts per million

☒ = Lithologic Sample Interval

☐ = Sample Retained for Laboratory Analysis

⊻ = Measured Depth to Groundwater (Non-Static)

NA = Not applicable

***Wheeler Group Environmental, LLC***

# *SOIL BORING LOG B4*

| Depth (fbg) | Recovery/ Sample ID | Blow Counts (#/6") | Organic Vapor (ppm) | USCS Soil Type | Description | Boring Backfill Detail |
|---|---|---|---|---|---|---|
| | | | | | Concrete – Slab Floor (5") | Concrete (0'-1') |
| 1 | | | | CL | (1'-2.5') **CLAY (CL)**. Damp to Moist, Dark Yellowish Brown (10YR 4/2), Soft; No Odor / No Staining;@ 2.5'; 1"-Thick Lense of Gravel. | |
| | | | 0.0 | | | |
| | B4-3 | NA | 1.1 | ML | (2.5'-4.5') **SILT (ML)**. Damp, Moderate Yellowish Brown (10YR 5/4) and Dark Greenish Gray (5G 4/1), Clayey, Soft; Slight Motor Oil Odor. | |
| | | | 11.7 | | | Neat Portland Cement (1'-19') |
| 5 | B4-5 | NA | 6.4 | SM | (4.5'-7.5') **SAND (SM)**. Damp, Moderate Yellowish Brown (10YR 5/4) and Moderate Red (5R 5/4), Coarse-Grained w/ Rock Fragments & Gravel, Loose; No Odor / No Staining. | |
| | | | 3.6 | | | |
| | | | 1.3 | | | |
| | | | 7.2 | | | |
| | | | 0.0 | CL | (7.5'-19') **CLAY (CL)**. Damp, Moderate Yellowish Brown (10YR 5/4) and Dark Yellowish Orange (10YR 6/6), Firm; No Odor / No Staining. | |
| | B4-8.5 | NA | 30.5 | | | |
| | | | 13.5 | | | |
| 10 | B4-10 | NA | 8.7 | | @ 9'-9.5'; Same, Change in Color to Moderate Red (5R 5/4), Silty w/ Coarse-Grained Sand | |
| | | | 0.0 | | | |
| (12.15') ▽ | | | 0.0 | | | |
| | | | 0.0 | | | |
| | | | 0.0 | | | |
| 15 | B4-15 | NA | 0.0 | | @ 15.5'; Same, Change in Color w/ Dark Greenish Gray (5GY 4/1); Slight Hydrocarbon Odor | |
| | | | 13.1 | | | |
| | B4-17 | NA | 0.0 | | @ 16'-19'; Same, Change in Color to Moderate Yellowish Brown (10YR 5/4); No Odor/No Staining | |
| | | | 0.0 | | | |
| | | | 0.0 | | | |
| 20 | | | | | Total Borehole Depth = 19 fbg | 2.25" |
| | | | | | Install 3/4"-Dia. Piezometer Casing to Total Depth at 1:15AM. Borehole Dry at 1:20AM. | |
| | | | | | Depth to groundwater measured in B4 using electronic oil/water interface meter at 12.15 fbg (13.79' TOC) on 6-27-17 @ 7:45AM (No Product); Collect Grab Groundwater Sample B4-GW on 6-27-17 at 11:35AM. | |
| 25 | | | | | | |

**BORING NUMBER: B4**
**LOCATION:** 340 29th Street, Oakland, CA
**PROJECT No:** 2016102
**DRILLING CONTRACTOR:** EnProbe
**DRILLING METHOD:** Hand Auger/GeoProbe
**DRILLING DATE:** June 26, 2017
**Logged By:** B. Wheeler **Checked By:** M.Youngkin

***Legend/Notes:***

***Page 1 of 1***

fbg = feet below grade
ppm = parts per million
☒ = Lithologic Sample Interval
☐ = Sample Retained for Laboratory Analysis
▽ = Measured Depth to Groundwater (Non-Static)
NA = Not applicable

***Wheeler Group Environmental, LLC***

# *SOIL BORING LOG B5*

| Depth (fbg) | Recovery/ Sample ID | Blow Counts (#/6") | Organic Vapor (ppm) | USCS Soil Type | Description | Boring Backfill Detail |
|---|---|---|---|---|---|---|
| | | | | | Concrete – Slab Floor (5") | Concrete (0'-0.5') |
| 1 | ☒ | | 0.0 | CL | (0.5'-6') **CLAY (CL)**. Moist, Moderate to Dark Yellowish Brown (10YR 5/4, 4/2), Soft; No Odor / No Staining | |
| (3.20') ▽ | ☐ B5-3 | NA | 0.0 | CL | @ 3'; Same, w/ Rock Fragments & Gravel | |
| | NR | | 0.0 | CL | | |
| 5 | | | 0.0 | CL | | Neat Portland Cement (0.5'-8') |
| | | | 0.0 | CL | | |
| | | | 0.0 | SM | (6'-8') **SAND (SM)**. Wet to Saturated, Moderate Yellowish Brown (10YR 5/4), Fine-Grained w/ Rock Fragments & Gravel, Loose; No Odor / No Staining. | |
| | ☐ B4-7.5 | NA | 0.0 | SM | | |
| | | | | | Total Borehole Depth = 8 fbg | 2.25" |
| 10 | | | | | | |
| 15 | | | | | | |
| | | NA | 0.0 | | | |
| | | | 0.0 | | | |
| | | | 0.0 | | | |
| 20 | | | | | | |
| 25 | | | | | | |

Water in Borehole rose Immediately to 4.5 fbg after extracting drill tubes.

Depth to water measured in B5 using electronic oil/water interface meter at 3.16 fbg on 6-26-17 @ 4:05PM; 3.20 on 6-27-17 @ 7:42AM (No Product); No Grab Groundwater Sample Collected in boring B5.

**BORING NUMBER: B5**
**LOCATION:** 340 29th Street, Oakland, CA
**PROJECT No:** 2016102
**DRILLING CONTRACTOR:** EnProbe
**DRILLING METHOD:** Hand Auger/GeoProbe
**DRILLING DATE:** June 26, 2017
**Logged By:** B. Wheeler **Checked By:** M.Youngkin

***Legend/Notes:***

***Page 1 of 1***

fbg = feet below grade
ppm = parts per million
☒ = Lithologic Sample Interval
☐ = Sample Retained for Laboratory Analysis
▽ = Measured Depth to Groundwater (Non-Static)
NA = Not applicable

***Wheeler Group Environmental, LLC***

# SOIL BORING LOG B6

| Depth (fbg) | Recovery/ Sample ID | Blow Counts (#/6") | Organic Vapor (ppm) | USCS Soil Type | Description | Boring Backfill Detail |
|---|---|---|---|---|---|---|
| | | | | | Concrete – Sidewalk (4.5") | Concrete (0'-0.5') |
| 1 | | | | CL | (0.5'-6') **CLAY (CL)**. Moist to Wet, Moderate to Dark Yellowish Brown (10YR 5/4, 4/2), Silty, Soft; No Odor / No Staining. | |
| | | | 0.0 | | | |
| | | | 0.0 | | | Neat Portland Cement (0.5'-16') |
| 5 | B6-5 | NA | 0.0 | | | |
| | | | 0.0 | SM | (6'-9.5') **SAND (SM)**. Damp, Moderate to Dark Yellowish Brown (10YR 5/4,4/2) w/ Dark Yellowish Orange (10YR 6/6), Fine-Grained with Rock Fragments and Trace Gravel (≤1/4"); No Odor / No Staining. | |
| | | | 0.0 | | | |
| | | | 0.0 | | | |
| 10 | B6-10 | NA | 0.0 | | (9.5'-11') **SAND (SM)**. Damp, Moderate to Dark Yellowish Brown (10YR 5/4,4/2) and Moderate Red (5R 5/4), Coarse-Grained with Gravel & Rock Fragments, Clayey, Dense; No Odor / No Staining. | |
| | | NA | 0.0<br>0.0 | CL | | |
| | | NA | 0.0 | | (11'-16') **CLAY (CL)**. Damp to Moist, Moderate Yellowish Brown (10YR 5/4) and Pale Yellowish Brown (10YR 6/2), Firm; No Odor / No Staining. | |
| (14.89') ▽<br>15 | | | 0.0 | | | |
| | | NA | | | | |
| | | | 0.0 | | | |
| | | | | | Total Borehole Depth = 16 fbg | 2.25" |
| 20 | | | | | | |
| 25 | | | | | Install 3/4"-Dia. Piezometer Casing to Total Depth at 1:35PM. Borehole Dry at 1:50PM.<br>Depth to groundwater measured in B6 using electronic oil/water interface meter at 14.89 fbg (14.35' TOC) on 6-27-17 @ 7:38AM (No Product); Collect Grab Groundwater Sample B6-GW on 6-27-17 at 11:20AM. | |

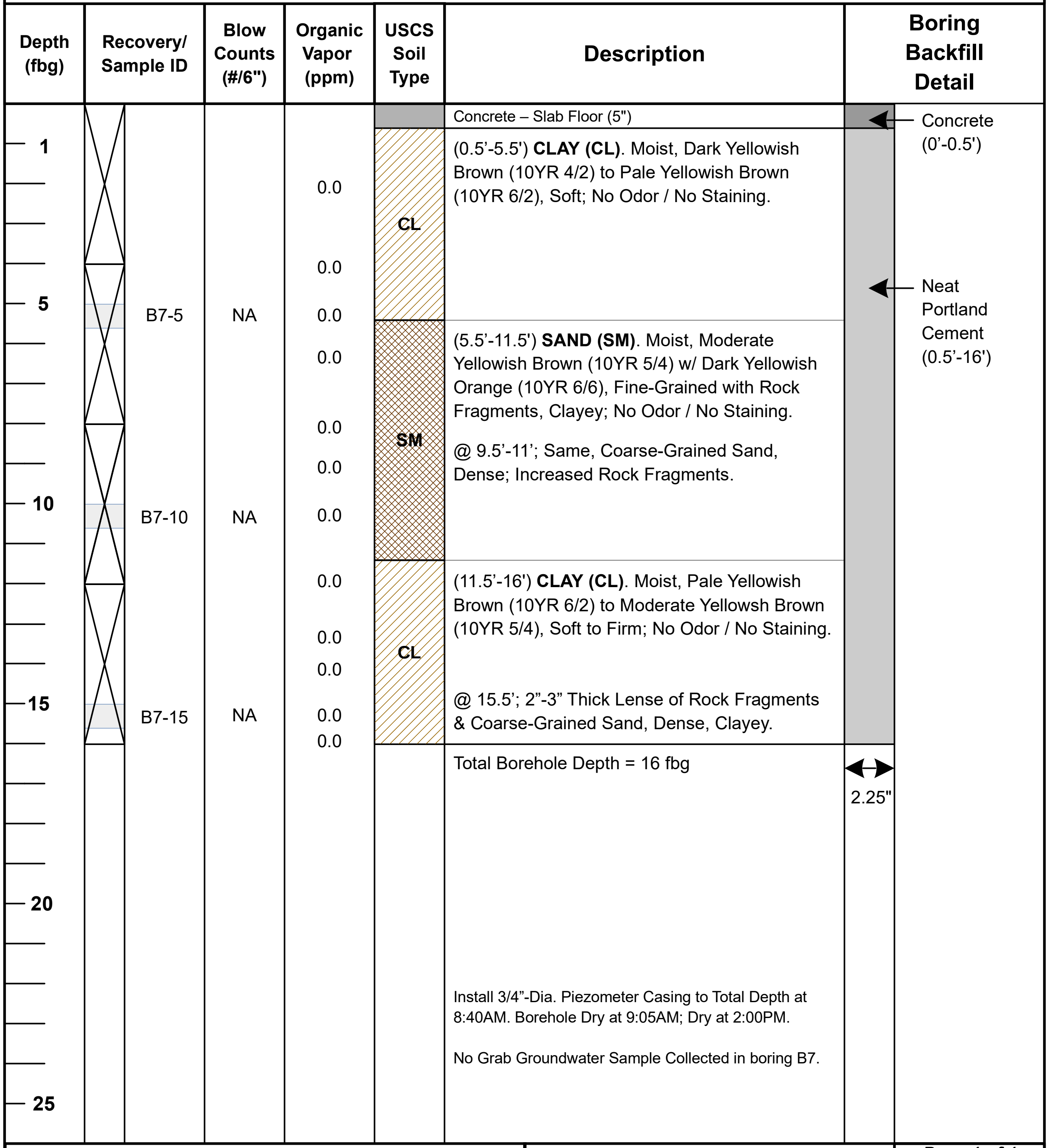
**BORING NUMBER: B6**
**LOCATION:** 340 29th Street, Oakland, CA
**PROJECT No:** 2016102
**DRILLING CONTRACTOR:** EnProbe
**DRILLING METHOD:** Hand Auger/GeoProbe
**DRILLING DATE:** June 26, 2017
**Logged By:** B. Wheeler **Checked By:** M.Youngkin

***Legend/Notes:***

fbg = feet below grade
ppm = parts per million
☒ = Lithologic Sample Interval
☐ = Sample Retained for Laboratory Analysis
▽ = Measured Depth to Groundwater (Non-Static)
NA = Not applicable

***Wheeler Group Environmental, LLC***

# SOIL BORING LOG B7



Concrete – Slab Floor (5")

(0.5'-5.5') **CLAY (CL)**. Moist, Dark Yellowish Brown (10YR 4/2) to Pale Yellowish Brown (10YR 6/2), Soft; No Odor / No Staining.

(5.5'-11.5') **SAND (SM)**. Moist, Moderate Yellowish Brown (10YR 5/4) w/ Dark Yellowish Orange (10YR 6/6), Fine-Grained with Rock Fragments, Clayey; No Odor / No Staining.

@ 9.5'-11'; Same, Coarse-Grained Sand, Dense; Increased Rock Fragments.

(11.5'-16') **CLAY (CL)**. Moist, Pale Yellowish Brown (10YR 6/2) to Moderate Yellowsh Brown (10YR 5/4), Soft to Firm; No Odor / No Staining.

@ 15.5'; 2"-3" Thick Lense of Rock Fragments & Coarse-Grained Sand, Dense, Clayey.

Total Borehole Depth = 16 fbg

Install 3/4"-Dia. Piezometer Casing to Total Depth at 8:40AM. Borehole Dry at 9:05AM; Dry at 2:00PM.

No Grab Groundwater Sample Collected in boring B7.

**BORING NUMBER: B7**
**LOCATION:** 340 29th Street, Oakland, CA
**PROJECT No:** 2016102
**DRILLING CONTRACTOR:** EnProbe
**DRILLING METHOD:** Hand Auger/GeoProbe
**DRILLING DATE:** June 27, 2017
**Logged By:** B. Wheeler **Checked By:** M.Youngkin

***Legend/Notes:***

fbg = feet below grade
ppm = parts per million
☒ = Lithologic Sample Interval
☐ = Sample Retained for Laboratory Analysis
▽ = Measured Depth to Groundwater (Non-Static)
NA = Not applicable

***Page 1 of 1***

***Wheeler Group Environmental, LLC***

# *SOIL BORING LOG B8*

| Depth (fbg) | Recovery/ Sample ID | Blow Counts (#/6") | Organic Vapor (ppm) | USCS Soil Type | Description | Boring Backfill Detail |
|---|---|---|---|---|---|---|
| | | | | | Concrete – Slab Floor (5") | Concrete (0'-0.5') |
| 1 | | | 0.0 | CL | (0.5'-6.5') **CLAY (CL)**. Moist, Dark Yellowish Brown (10YR 4/2) to Pale Yellowish Brown (10YR 6/2), Soft; No Odor / No Staining. | |
| | | | 0.0 | | | |
| | | | 0.0 | | | Neat Portland Cement (0.5'-16') |
| 5 | B8-5 | NA | 0.0 | | | |
| | | | 0.0 | SM | (6.5'-13') **SAND (SM)**. Moist, Moderate Yellowish Brown (10YR 5/4) and Dark Yellowish Orange (10YR 6/6), Fine-Grained with Rock Fragments, Clayey; No Odor / No Staining. | |
| | | | 0.0 | | | |
| | | | 0.0 | | | |
| 10 | B8-10 | NA | 0.0 | | | |
| | B8-12 | NA | 0.0 | | @11'; Same, Grades to Dark Yellowish brown (10YR 4/2). | |
| | | | 0.0 | CL | (13'-16') **CLAY (CL)**. Damp, Pale Yellowish Brown (10YR 6/6) Firm; No Odor / No Staining. | |
| | | | 0.0 | | | |
| 15 | B8-15 | NA | 0.0 | | | |
| | | | 0.0 | | | |
| | | | | | Total Borehole Depth = 16 fbg | 2.25" |
| 20 | | | | | | |
| | | | | | Install 3/4"-Dia. Piezometer Casing to Total Depth at 9:50AM. Borehole Dry at 10:00AM; Dry at 2:00PM.<br>No Grab Groundwater Sample Collected in boring B8. | |
| 25 | | | | | | |

**BORING NUMBER: B8**
**LOCATION:** 340 29th Street, Oakland, CA
**PROJECT No:** 2016102
**DRILLING CONTRACTOR:** EnProbe
**DRILLING METHOD:** Hand Auger/GeoProbe
**DRILLING DATE:** June 27, 2017
**Logged By:** B. Wheeler **Checked By:** M.Youngkin

***Legend/Notes:***

***Page 1 of 1***

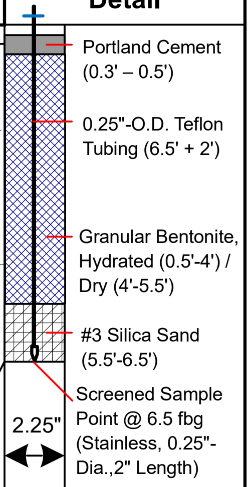
fbg = feet below grade
ppm = parts per million
☒ = Lithologic Sample Interval
☐ = Sample Retained for Laboratory Analysis
▽ = Measured Depth to Groundwater (Non-Static)
NA = Not applicable

***Wheeler Group Environmental, LLC***

# *SOIL GAS WELL CONSTRUCTION LOG B4-SG*

| Depth (fbg) | Recovery/ Sample ID | Blow Counts (#/6") | Organic Vapor (ppm) | USCS Soil Type | Description |
|---|---|---|---|---|---|
| | | | | | Concrete - Slab Floor (5") |
| 1 | ☒ No Samples | | 0.0 | CL | (5"-2') **CLAY (CL)**. Moist, Dark Yellowish Brown (10YR 4/2) to Pale Yellowish Brown (10YR 6/2), Soft; No Odor / No Staining. |
| | | | 0.0 | CL | (2'-5') **CLAY (CL)**. Damp, Moderate to Dark Yellowish Brown (10YR 5/4, 4/2), Firm; No Odor / No Staining. |
| 5 | ☒ B4-SG-6.5 | NA | 0.0 | SM | (5'-6.5') **SAND (SM)**. Damp, Moderate Yellowish Brown (10YR 5/4) and Pale Yellowish Brown (10YR 6/2), Clayey, Fine-Grained w/ Rock Fragments and Gravel; Slight Solvent Odor; No Staining. |
| 10 | | | | | Total Borehole Depth = 6.5 fbg<br>Total Soil Gas Well Depth = 6.5 fbg |
| 15 | | | | | Complete Soil Gas Well B4-SG at 3:05PM on 6/26/17; Collect Soil Gas Sample B4-SG-6.5 on 6/27/17 at 1:35PM per DTSC Guidance. |
| 20 | | | | | |
| 25 | | | | | |

**Soil Gas Probe Construction Detail**



**BORING NUMBER: B4-SG**
**LOCATION:** 340 29th Street, Oakland CA
**PROJECT No:** 2016102
**DRILLING CONTRACTOR:** EnProbe
**DRILLING METHOD:** GeoProbe
**DRILLING/INSTALLATION DATE:** June 26, 2017
**Logged By:** B.Wheeler **Checked By:** M.Youngkin

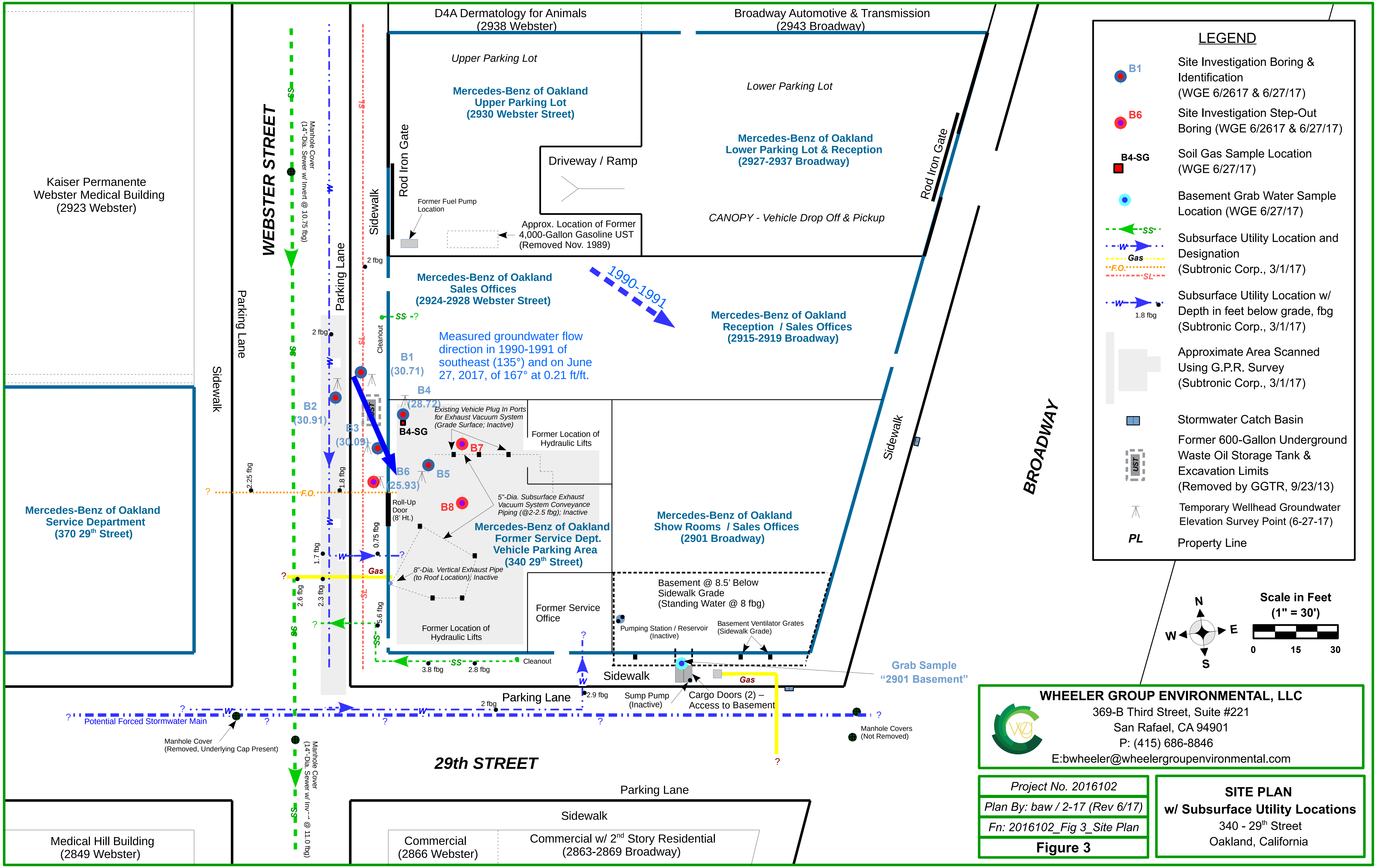
***Legend/Notes:***

fbg = feet below grade
ppm = parts per million
☒ = Lithologic Sample Interval
■ = Sample Retained for Laboratory Analysis

NA = Not applicable

*Page 1 of 1*

***Wheeler Group Environmental, LLC***



**WHEELER GROUP ENVIRONMENTAL, LLC**
369-B Third Street, Suite #221
San Rafael, CA 94901
P: (415) 686-8846
E:bwheeler@wheelergroupenvironmental.com

*Project No. 2016102*
*Plan By: baw / 2-17 (Rev 6/17)*
*Fn: 2016102_Fig 3_Site Plan*
**Figure 3**

**SITE PLAN**
**w/ Subsurface Utility Locations**
340 - 29th Street
Oakland, California

*THIS PAGE LEFT INTENTIONALLY BLANK*

# APPENDIX C
# TERRAPHASE BORING LOG

*THIS PAGE LEFT INTENTIONALLY BLANK*

Project: **2929 Broadway**

Project Location: **Oakland, California**

Project Number: **0228.006.0001**

# Log of Boring B-1

## Sheet 1 of 2

| | | |
|---|---|---|
| Date(s) Drilled **1-23-21** | Logged By **Jeff Raines** | Checked By **BW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **8 inch** | Total Depth of Borehole **41** |
| Drill Rig Type **Track Rig** | Drilling Contractor **Gregg** | Approximate Surface Elevation **43** |
| Groundwater Level and Date Measured **No water day of drilling** | Sampling Method(s) **SPT** | Hammer Data **140 # / 30 in Automatic** |
| Borehole Backfill **Neat Cement Grout** | Location **Mercedes Dealership Oakland** | |

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION | Water Content, % | Dry Unit Weight, pcf | Percent Fines | PID Reading, ppm | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | 0 | | | | Asphalt | ■ | Asphalt | | | | | |
| | | | | | GW | ● | Mcadam gravel | | | | | |
| | | | | | CL | ▨ | Gravelly-Clay Stiff - gravel 1" broken, wet at 3 feet | | | | | |
| 38 | 5 | | | | CL | ▨ | Softer with more sand | | | | | |
| 33 | 10 | | | | | ▨ | | | | | | |
| 28 | 15 | | | | | ▨ | | | | | | |
| 23 | 20 | | | | | ▨ | | | | | | |
| | | ▨ | 1 | 5/8/10 | CL | ▨ | Very small gravel, damp - less gravel with depth | | | | | LL=42,PI=21 |
| 18 | 25 | | | | | ▨ | | | | | | |
| 13 | 30 | | | | | | | | | | | |

C:\Users\Jeff\Desktop\napa college boring logs.bg4[(master 4 lab).tpl]

Project: **2929 Broadway**
Project Location: **Oakland, California**
Project Number: **0228.006.0001**

# Log of Boring B-1

## Sheet 2 of 2

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION | Water Content, % | Dry Unit Weight, pcf | Percent Fines | PID Reading, ppm | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | 30 | ▨ | 2 | 4/8/12 | SP<br>CH | ⁘<br>▨ | 6 inch strata of very fine sand, damp | | | 56.7 | | LL=32, PI=11, clay fraction 13.4% |
| 8 | 35 | ▨ | 3 | 7/9/12 | CH | ▨ | Hard stiff dry clay, dark grey, pocket penetrometer 3.5 tsf | | | | | LL=58, PI=32 |
| 3 | 40 | | 4 | 6/10/14 | | ▨ | | | | | | LL=55, PI=38 |
| | | | | | CH | | Same as above pocket penetrometer 4.5 tsf | | | | | |
| -2 | 45 | | | | | | | | | | | |
| -7 | 50 | | | | | | | | | | | |
| -12 | 55 | | | | | | | | | | | |
| -17 | 60 | | | | | | | | | | | |
| -22 | 65 | | | | | | | | | | | |

Project: **2929 Broadway**
Project Location: **Oakland, California**
Project Number: **0228.006.0001**

# Log of Boring B-2

## Sheet 1 of 1

| | | | | | |
|---|---|---|---|---|---|
| Date(s) Drilled | **1-23-21** | Logged By | **Jeff Raines** | Checked By | |
| Drilling Method | **Direct Push** | Drill Bit Size/Type | **2.25** | Total Depth of Borehole | **27** |
| Drill Rig Type | **Geoprobe 7822DT** | Drilling Contractor | **Cascade** | Approximate Surface Elevation | **41** |
| Groundwater Level and Date Measured | **No water day of drilling** | Sampling Method(s) | **Continuous** | Hammer Data | **none** |
| Borehole Backfill | **Neat Cement Grout** | Location | **Mercedes Dealership Oakland** | | |

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION | Water Content, % | Dry Unit Weight, pcf | Percent Fines | PID Reading, ppm | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 41 | 0 | | | | Asphalt | ■ | Asphalt | | | | | |
| | | | | | GW | ∴ | Roadbase | | | | | |
| | | | | | CH | ▨ | Blue-grey, dry, hard | | | | | |
| | | | | | CH | ▨ | Turns olive-brown, ~2% sand | | | | | |
| 36 | 5 | | | | CH | ▨ | Stiff, damp, blue-grey clay, 4" seam of broken gravel (1/4 to 1/2 inch) | | | | | |
| 31 | 10 | | | | | ▨ | | | | | | |
| | | | | | CH | ▨ | Turns olive brown, stiff, damp | | | | | |
| 26 | 15 | | | | | ▨ | | | | | | |
| | | | 1 | | | ▨ | | 24.1 | 101.7 | 98.3 | | LL=51,PI=30 |
| 21 | 20 | | | | | ▨ | | | | | | |
| | | | 2 | | CH | ▨ | Same as above, pushed 2 feet and got 4 feet of sample | | | 54.6 | | LL=54, PI=36 |
| 16 | 25 | | | | CL | ▨ | Lower plasticity | | | | | |
| | | | 3 | | | ▨ | | 26.8 | 99.3 | 78.5 | | LL=41, PI=20 |
| | | | | | CL | | Same as above, driller indicates refusal at 27 feet | | | | | |
| 11 | 30 | | | | | | | | | | | |

C:\Users\Jeff\Desktop\napa college boring logs.bg4[(master 4 lab).tpl]

Project: **2929 Broadway**
Project Location: **Oakland, California**
Project Number: **0228.006.0001**

# Key to Log of Boring

## Sheet 1 of 1

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION | Water Content, % | Dry Unit Weight, pcf | Percent Fines | PID Reading, ppm | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |

### COLUMN DESCRIPTIONS

1 Elevation (feet): Elevation (MSL, feet).
2 Depth (feet): Depth in feet below the ground surface.
3 Sample Type: Type of soil sample collected at the depth interval shown.
4 Sample Number: Sample identification number.
5 Sampling Resistance, blows/ft: Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.
6 Material Type: Type of material encountered.
7 Graphic Log: Graphic depiction of the subsurface material encountered.
8 MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
9 Water Content, %: Water content of the soil sample, expressed as percentage of dry weight of sample.
10 Dry Unit Weight, pcf: Dry weight per unit volume of soil sample measured in laboratory, in pounds per cubic foot.
11 Percent Fines: The percent fines (soil passing the No. 200 Sieve) in the sample. WA indicates a Wash Sieve, SA indicates a Sieve Analysis.
12 PID Reading, ppm: The reading from a photo-ionization detector, in parts per million.
13 REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.

### FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

### MATERIAL GRAPHIC SYMBOLS

■ Asphaltic Concrete (AC)
▨ Fat CLAY, CLAY w/SAND, SANDY CLAY (CH)
▨ Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)
▦ Well graded GRAVEL (GW)

### TYPICAL SAMPLER GRAPHIC SYMBOLS

▨ Auger sampler
▩ Bulk Sample
⧗ 3-inch-OD California w/ brass rings
▩ CME Sampler
▯ Grab Sample
■ 2.5-inch-OD Modified California w/ brass liners
◧ Pitcher Sample
▨ 2-inch-OD unlined split spoon (SPT)
☒ Shelby Tube (Thin-walled, fixed head)

### OTHER GRAPHIC SYMBOLS

▽ Water level (at time of drilling, ATD)
▼ Water level (after waiting)
↴ Minor change in material properties within a stratum
– – Inferred/gradational contact between strata
–?– Queried contact between strata

### GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

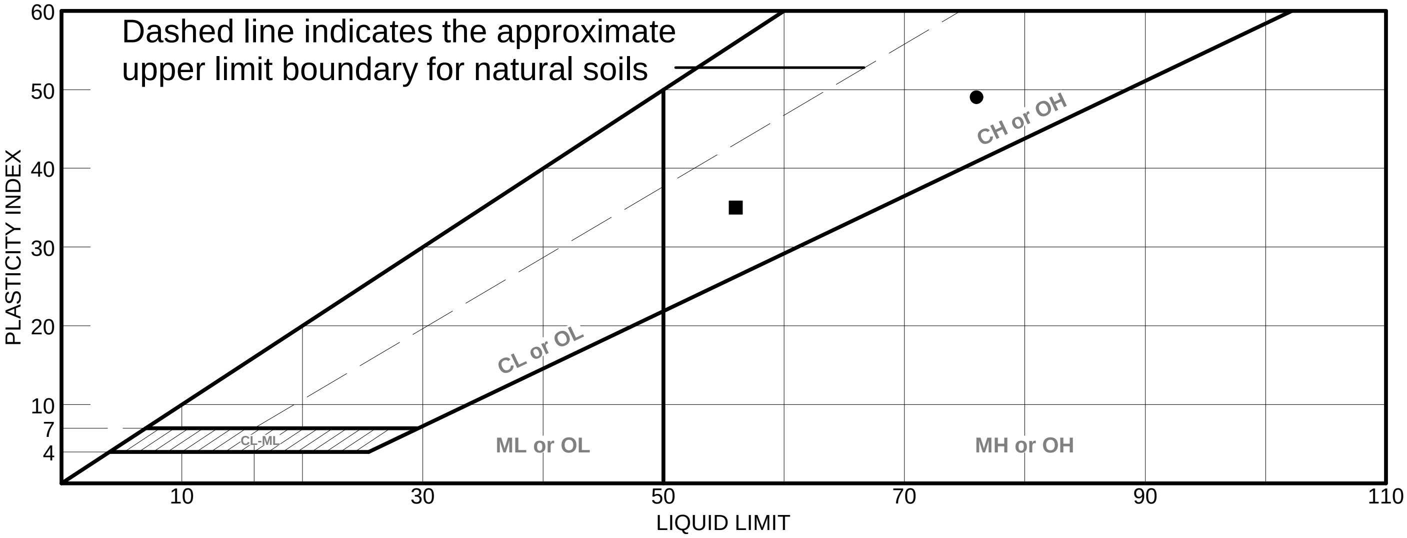
C:\Users\Jeff\Desktop\napa college boring logs.bg4[(master 4 lab).tpl]

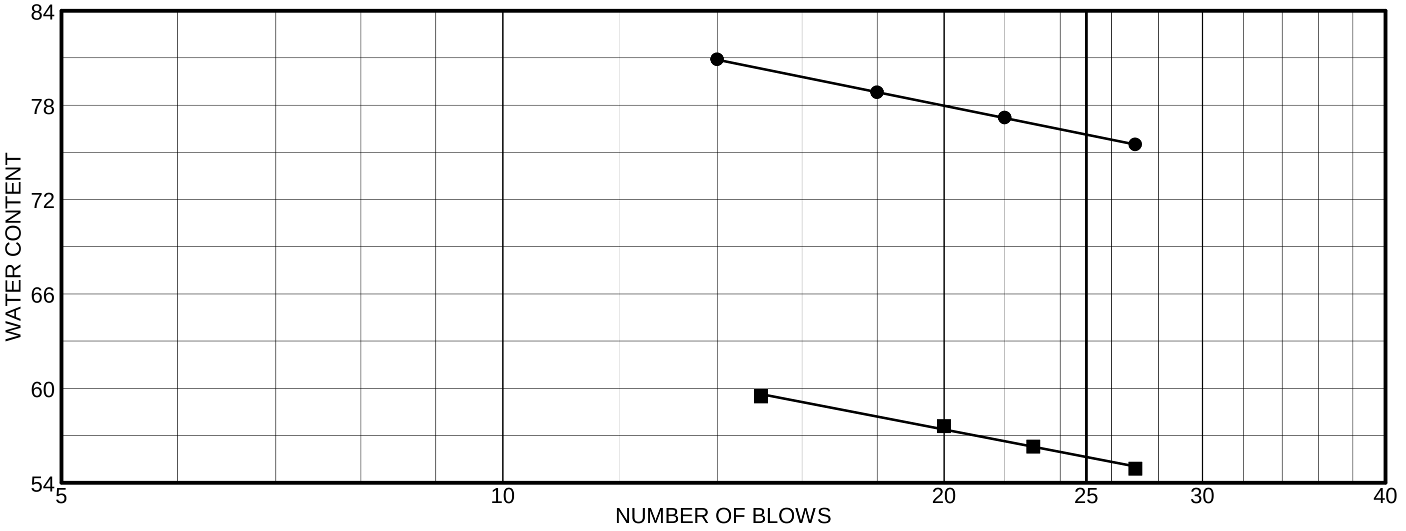
**Figure B-1**

# APPENDIX D
# GEOTECHNICAL LABORATORY

*THIS PAGE LEFT INTENTIONALLY BLANK*

# LIQUID AND PLASTIC LIMITS TEST REPORT





| | MATERIAL DESCRIPTION | LL | PL | PI | %<#40 | %<#200 | USCS |
|---|---|---|---|---|---|---|---|
| ● | Yellowish Brown Sandy Fat CLAY | 76 | 27 | 49 | | | |
| ■ | Yellowish Brown Sandy Fat CLAY | 56 | 21 | 35 | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**Project No.** 734-079 **Client:** Terraphase

**Project:** Mercedes Benz - 0228-mb

● **Source:** GW2 **Elev./Depth:** 12'

■ **Source:** GW3 **Elev./Depth:** 18'

**Remarks:**

●

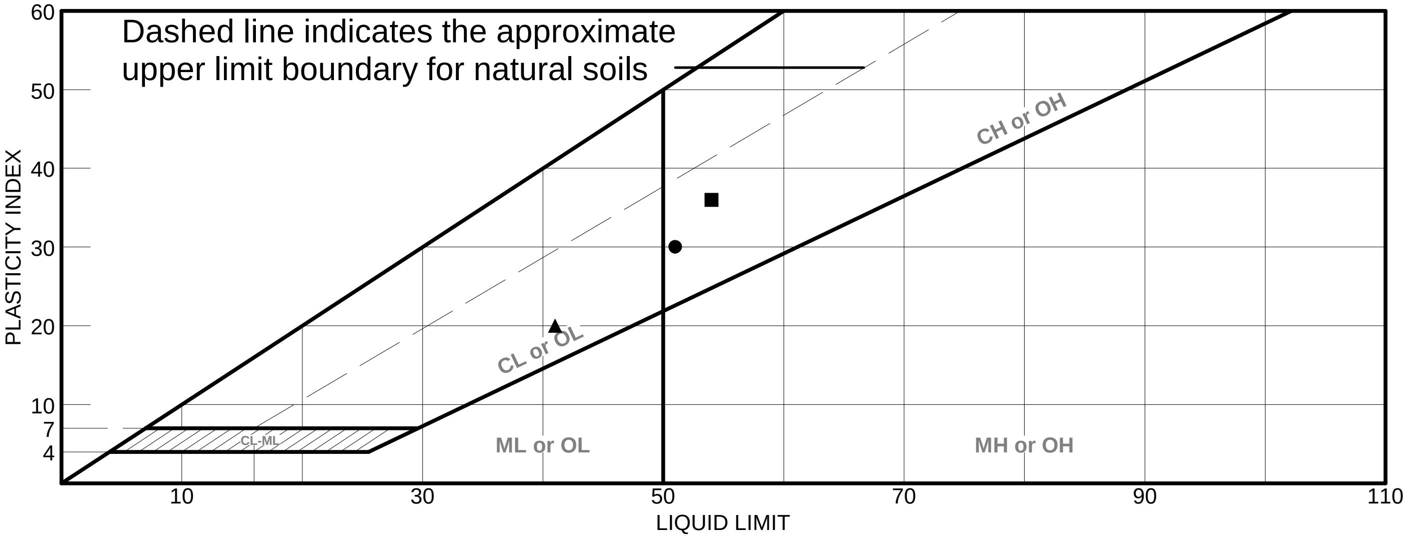
■

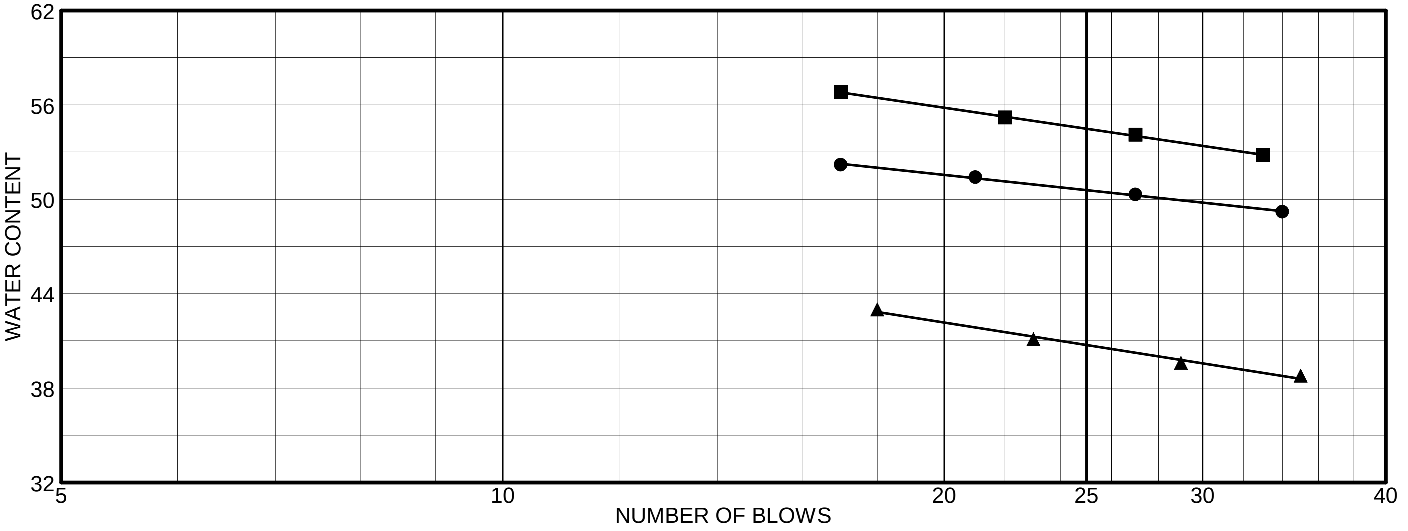
LIQUID AND PLASTIC LIMITS TEST REPORT

## COOPER TESTING LABORATORY

**Figure**

# LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318)





| | MATERIAL DESCRIPTION | LL | PL | PI | %<#40 | %<#200 | USCS |
|---|---|---|---|---|---|---|---|
| ● | Brown Fat CLAY | 51 | 21 | 30 | | | |
| ■ | Olive Brown Sandy Fat CLAY | 54 | 18 | 36 | | | |
| ▲ | Brown Lean CLAY w/ Sand | 41 | 21 | 20 | | | |
| | | | | | | | |
| | | | | | | | |

**Project No.** 734-081 **Client:** Terraphase

**Project:** Mercedes - 0228.005.0001

● **Source:** B-2 **Elev./Depth:** 18.3'

■ **Source:** B-2 **Elev./Depth:** 21'

▲ **Source:** B-2 **Elev./Depth:** 25'

**Remarks:**

●

■

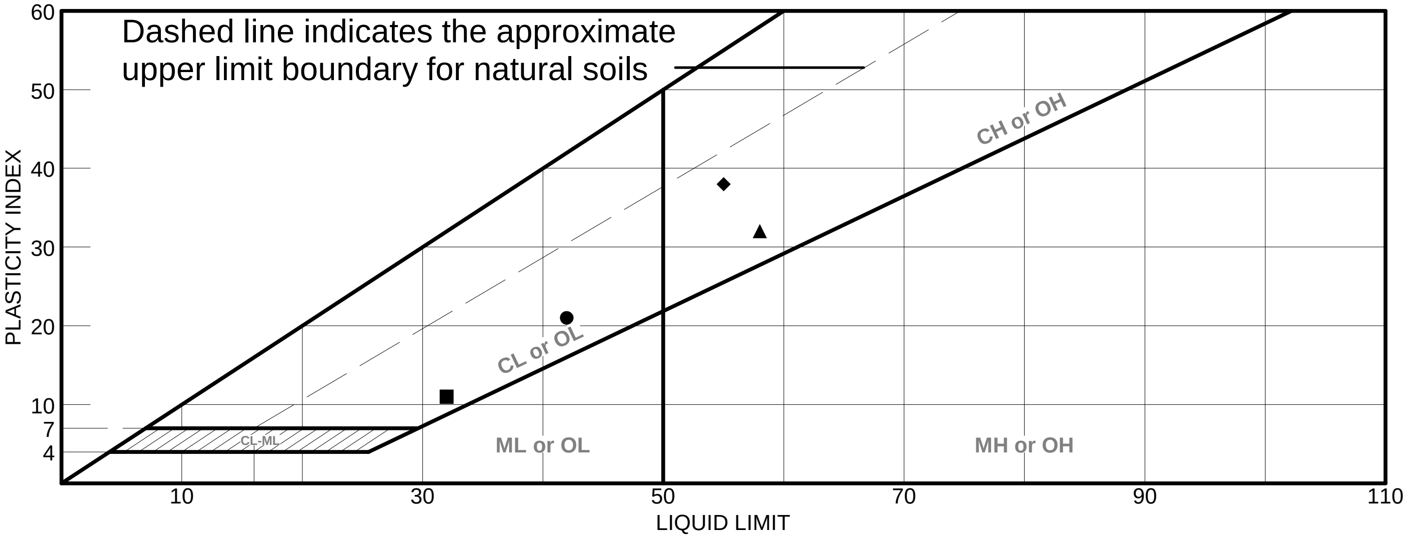
▲

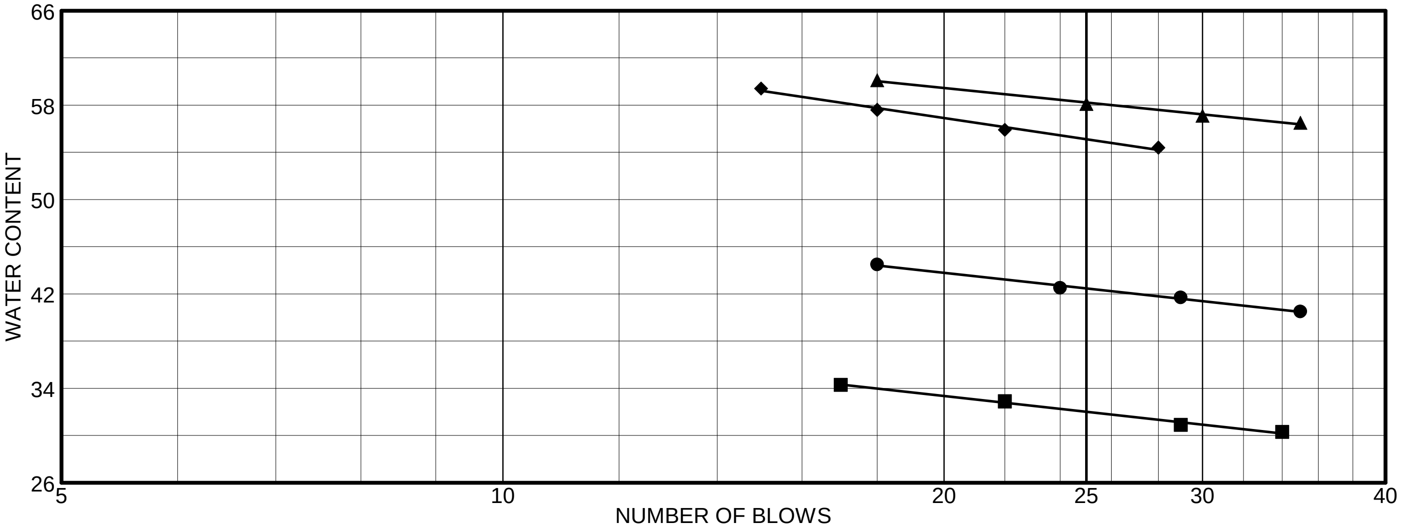
LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318)

## COOPER TESTING LABORATORY

**Figure**

# LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318)





| | MATERIAL DESCRIPTION | LL | PL | PI | %<#40 | %<#200 | USCS |
|---|---|---|---|---|---|---|---|
| ● | Grayish Brown Lean CLAY w/ Sand | 42 | 21 | 21 | | | |
| ■ | Yellowish Brown Sandy Lean CLAY | 32 | 21 | 11 | 99.4 | 56.7 | CL |
| ▲ | Gray Fat CLAY | 58 | 26 | 32 | | | |
| ◆ | Gray Fat CLAY w/ Sand | 55 | 17 | 38 | | | |
| | | | | | | | |

**Project No.** 734-083 **Client:** Terraphase

**Project:** Mercedes - 0228.006.0001

● **Source:** Hole 2 **Sample No.:** 1 **Elev./Depth:** 22'
■ **Source:** Hole 2 **Sample No.:** 2 **Elev./Depth:** 30'
▲ **Source:** Hole 2 **Sample No.:** 3 **Elev./Depth:** 35'
◆ **Source:** Hole 2 **Sample No.:** 4 **Elev./Depth:** 40'

**Remarks:**
●
■
▲
◆

LIQUID AND PLASTIC LIMITS TEST REPORT (ASTM D4318)

**COOPER TESTING LABORATORY**

**Figure**

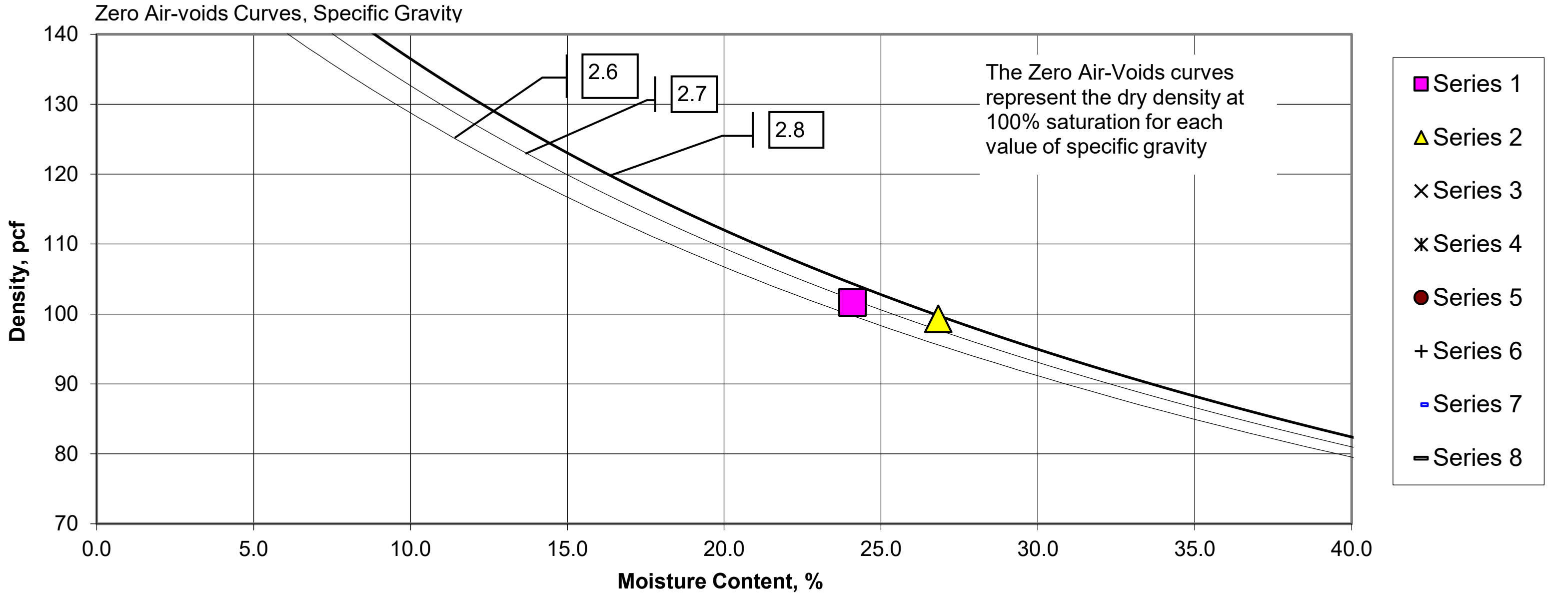
# Moisture-Density-Porosity Report
## Cooper Testing Labs, Inc. (ASTM D7263b)

**CTL Job No:** 734-081 **Project No.** 0228.005.0001 **By:** RU
**Client:** Terraphase **Date:** 01/28/21
**Project Name:** Mercedes **Remarks:**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Boring:** | B-2 | B-2 | | | | | | |
| **Sample:** | | | | | | | | |
| **Depth, ft:** | 18.3 | 25 | | | | | | |
| **Visual Description:** | Brown Fat CLAY | Brown Lean CLAY w/ Sand | | | | | | |
| **Actual $G_s$** | | | | | | | | |
| **Assumed $G_s$** | 2.80 | 2.80 | | | | | | |
| **Moisture, %** | 24.1 | 26.8 | | | | | | |
| **Wet Unit wt, pcf** | 126.1 | 126.0 | | | | | | |
| **Dry Unit wt, pcf** | 101.7 | 99.3 | | | | | | |
| Dry Bulk Dens.ρb, (g/cc) | 1.63 | 1.59 | | | | | | |
| **Saturation, %** | 93.6 | 98.6 | | | | | | |
| **Total Porosity, %** | 41.9 | 43.2 | | | | | | |
| **Volumetric Water Cont,Θw,%** | 39.2 | 42.6 | | | | | | |
| **Volumetric Air Cont., Θa,%** | 2.7 | 0.6 | | | | | | |
| **Void Ratio** | 0.72 | 0.76 | | | | | | |
| **Series** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Note: All reported parameters are from the as-received sample condition unless otherwise noted. If an assumed specific gravity (Gs) was used then the saturation, porosities, and void ratio should be considered approximate.

**Moisture-Density**



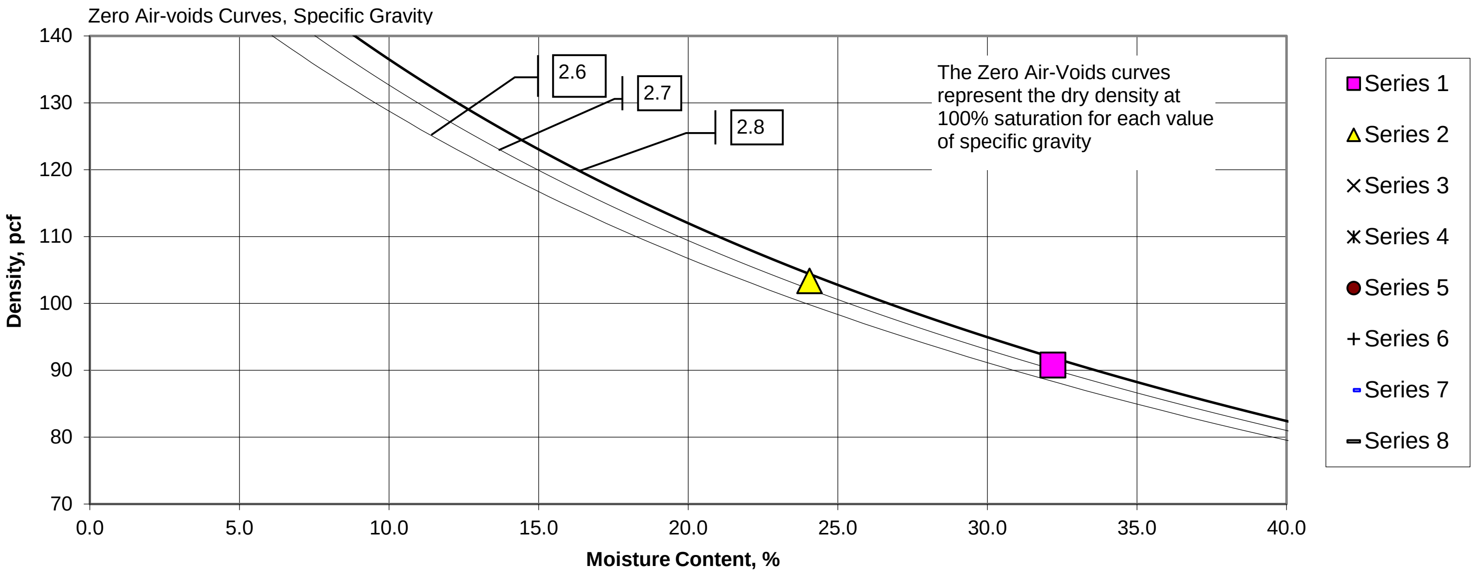
# Moisture-Density-Porosity Report
## Cooper Testing Labs, Inc. (ASTM D7263b)

**CTL Job No:** 734-079
**Client:** Terraphase
**Project Name:** Mercedes Benz
**Project No.** 0228-mb
**Date:** 09/03/20
**Remarks:**
**By:** RU

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Boring:**<br>**Sample:**<br>**Depth, ft:** | GW2<br><br>12 | GW3<br><br>18 | | | | | | |
| **Visual Description:** | Yellowish Brown Sandy Fat CLAY | Yellowish Brown Sandy Fat CLAY | | | | | | |
| **Actual $G_s$** | | | | | | | | |
| **Assumed $G_s$** | 2.80 | 2.80 | | | | | | |
| **Moisture, %** | 32.2 | 24.1 | | | | | | |
| **Wet Unit wt, pcf** | 120.0 | 128.2 | | | | | | |
| **Dry Unit wt, pcf** | 90.8 | 103.4 | | | | | | |
| Dry Bulk Dens.pb, (g/cc) | 1.45 | 1.66 | | | | | | |
| **Saturation, %** | 97.2 | 97.3 | | | | | | |
| **Total Porosity, %** | 48.1 | 40.9 | | | | | | |
| **Volumetric Water Cont,Θw,%** | 46.8 | 39.8 | | | | | | |
| **Volumetric Air Cont., Θa,%** | 1.4 | 1.1 | | | | | | |
| **Void Ratio** | 0.93 | 0.69 | | | | | | |
| **Series** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Note: All reported parameters are from the as-received sample condition unless otherwise noted. If an assumed specific gravity (Gs) was used then the saturation, porosities, and void ratio should be considered approximate.

**Moisture-Density**



COOPER
TESTING LABORATORY

# #200 Sieve Wash Analysis

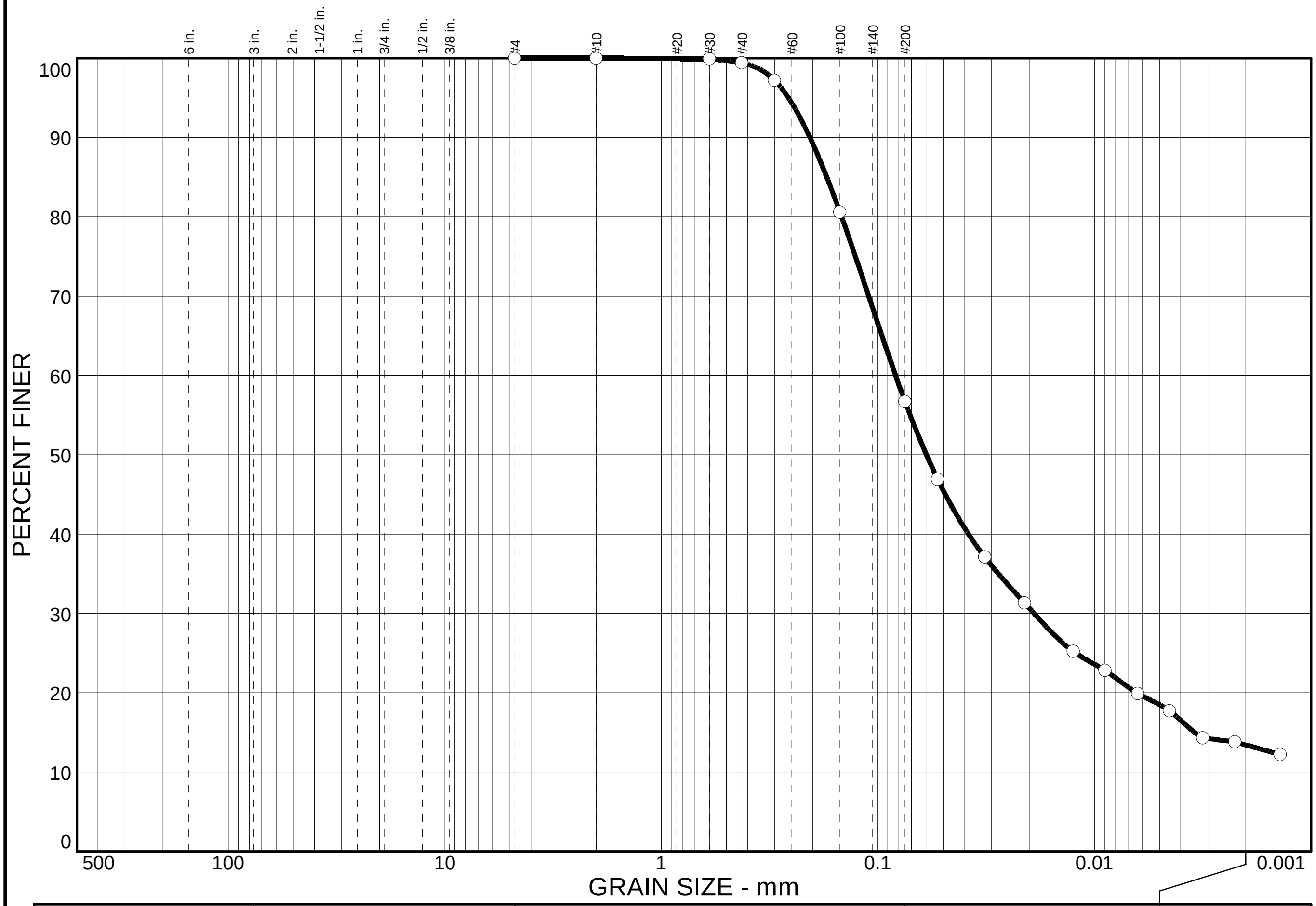
## ASTM D 1140

**Job No.:** 734-081
**Client:** Terraphase
**Project:** Mercedes
**Project No.:** 0228.005.0001
**Date:** 1/29/2021
**Run By:** MD
**Checked By:** DC

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Boring:** | B-2 | B-2 | B-2 | | | | | |
| **Sample:** | | | | | | | | |
| **Depth, ft.:** | 18.3 | 21 | 25 | | | | | |
| **Soil Type:** | Brown Fat CLAY | Olive Brown Sandy Fat CLAY | Brown Lean CLAY w/ Sand | | | | | |
| **Wt of Dish & Dry Soil, gm** | 496.0 | 502.2 | 659.5 | | | | | |
| **Weight of Dish, gm** | 172.0 | 174.1 | 173.0 | | | | | |
| **Weight of Dry Soil, gm** | 324.0 | 328.1 | 486.5 | | | | | |
| **Wt. Ret. on #4 Sieve, gm** | 0.0 | 2.0 | 0.0 | | | | | |
| **Wt. Ret. on #200 Sieve, gm** | 5.5 | 149.1 | 104.5 | | | | | |
| **% Gravel** | **0.0** | **0.6** | **0.0** | | | | | |
| **% Sand** | **1.7** | **44.8** | **21.5** | | | | | |
| **% Silt & Clay** | **98.3** | **54.6** | **78.5** | | | | | |

Remarks: As an added benefit to our clients, the gravel fraction may be included in this report. Whether or not it is included is dependent upon both the technician's time available and if there is a significant enough amount of gravel. The gravel is always included in the percent retained on the #200 sieve but may not be weighed separately to determine

# Particle Size Distribution Report



| % COBBLES | % GRAVEL | % SAND | % SILT | % CLAY |
|---|---|---|---|---|
| 0.0 | 0.0 | 43.3 | 43.3 | 13.4 |

| SIEVE SIZE | PERCENT FINER | SPEC.* PERCENT | PASS? (X=NO) |
|---|---|---|---|
| #4 | 100.0 | | |
| #10 | 100.0 | | |
| #30 | 99.9 | | |
| #40 | 99.4 | | |
| #50 | 97.2 | | |
| #100 | 80.6 | | |
| #200 | 56.7 | | |
| #270 | 46.9 | | |
| 0.0321 mm. | 37.1 | | |
| 0.0210 mm. | 31.3 | | |
| 0.0125 mm. | 25.2 | | |
| 0.0089 mm. | 22.8 | | |
| 0.0063 mm. | 19.9 | | |
| 0.0045 mm. | 17.7 | | |
| 0.0032 mm. | 14.3 | | |
| 0.0022 mm. | 13.8 | | |
| 0.0014 mm. | 12.2 | | |

* (no specification provided)

**Soil Description**

Yellowish Brown Sandy Lean CLAY

**Atterberg Limits**

PL= 21 LL= 32 PI= 11

**Coefficients**

$D_{85}$= 0.172 $D_{60}$= 0.0830 $D_{50}$= 0.0598
$D_{30}$= 0.0190 $D_{15}$= 0.0035 $D_{10}$=
$C_u$= $C_c$=

**Classification**

USCS= CL AASHTO=

**Remarks**

**Sample No.:** 2 **Source of Sample:** Hole 2 **Date:** 3/5/21
**Location:** **Elev./Depth:** 30'

**COOPER TESTING LABORATORY**

**Client:** Terraphase
**Project:** Mercedes - 0228.006.0001

**Project No:** 734-083 **Figure**

*THIS PAGE LEFT INTENTIONALLY BLANK*

# APPENDIX E

## MAP-BASED BUILDING CODE SEISMIC PARAMETERS

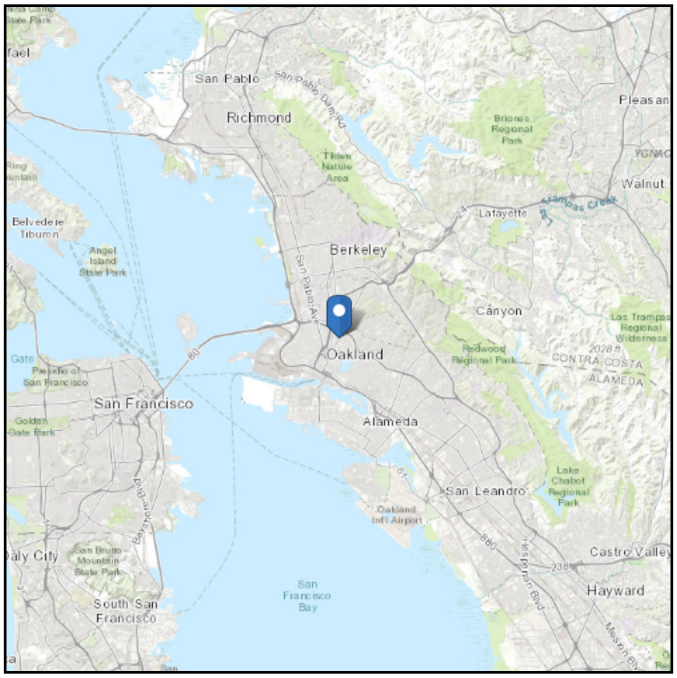
*THIS PAGE LEFT INTENTIONALLY BLANK*

# ASCE 7 Hazards Report

**Address:**
2915 Broadway
Oakland, California
94611

**Standard:** ASCE/SEI 7-16
**Risk Category:** III
**Soil Class:** D - Stiff Soil

**Elevation:** 44.58 ft (NAVD 88)
**Latitude:** 37.817682
**Longitude:** -122.263007



# Seismic

---

**Site Soil Class:** D - Stiff Soil

**Results:**

| | | | |
|---|---|---|---|
| $S_S$ : | 1.871 | $S_{D1}$ : | N/A |
| $S_1$ : | 0.714 | $T_L$ : | 8 |
| $F_a$ : | 1 | PGA : | 0.786 |
| $F_v$ : | N/A | $PGA_M$ : | 0.865 |
| $S_{MS}$ : | 1.871 | $F_{PGA}$ : | 1.1 |
| $S_{M1}$ : | N/A | $I_e$ : | 1.25 |
| $S_{DS}$ : | 1.247 | $C_v$ : | 1.474 |

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

**Data Accessed:** Wed Sep 16 2020

**Date Source:** USGS Seismic Design Maps

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

# Appendix C

## ECAP Consistency Review Checklist

This page intentionally left blank

# CITY OF OAKLAND
# Equitable Climate Action Plan Consistency Checklist

250 Frank H. Ogawa Plaza, Suite 2114, Oakland, CA 94612-2031
Zoning Information: 510-238-3911
https://www.oaklandca.gov/topics/planning

---

The purpose of this Equitable Climate Action Plan Consistency Review Checklist is to determine, for purposes of compliance with the California Environmental Quality Act (CEQA), whether a development project complies with the City of Oakland Equitable Climate Action Plan (ECAP) and the City of Oakland's greenhouse gas (GHG) emissions reduction targets. CEQA Guidelines require the analysis of GHG emissions and potential climate change impacts from new development.

- If a development project completes this Checklist and can qualitatively demonstrate compliance with the Checklist items as part of the project's design, or alternatively, demonstrate to the City's satisfaction why the item is not applicable, then the project will be considered in compliance with the City's CEQA GHG Threshold of Significance.
- If a development project cannot meet all of the Checklist items, the project will alternatively need to demonstrate consistency with the ECAP by complying with the City of Oakland GHG Reduction Plan Condition of Approval.
- If the project cannot demonstrate consistency with the ECAP in either of those two ways, the City will consider the project to have a significant effect on the environment related to GHG emissions.

## Application Submittal Requirements

1. The ECAP Consistency Checklist applies to all development projects needing a CEQA GHG emissions analysis, including a specific plan consistency analysis.
2. If required, the ECAP Consistency Review Checklist must be submitted concurrently with the City of Oakland Basic Application.

## Application Information

**Applicant's Name/Company:** MBO Developer, LLC

**Property Address:** 2929 Broadway

**Assessor's Parcel Number:** 009-0701-005-00, 006-00, 007-00, 008-00, 009-00, 010-00, 011-00, and 012-00

**Phone Number:** 415 429 6044

**E-mail:** Justin@themartingroup.com

**Checklist Item (Check the appropriate box and provide explanation for your answer).**

**Transportation & Land Use**

| | Yes | No | N/A |
|---|---|---|---|
| 1. Is the proposed project substantially consistent with the City's over-all goals for land use and urban form, and/or taking advantage of allowable density and/or floor area ratio (FAR) standards in the City's General Plan?<br>(TLU1) | ✓ | | |

Please explain how the proposed project is substantially consistent with the City's General Plan with respect to density and FAR standards, land use, and urban form.

The project is consistent with the City's General Plan and zoning designations. The proposed development is under the maximum FAR and height in the zoning controls. A density bonus will also be utilized to maximize residential units.

| | Yes | No | N/A |
|---|---|---|---|
| 2. For developments in "Transit Accessible Areas" as defined in the Planning Code, would the project provide: i) less than half the maximum allowable parking, ii) the minimum allowable parking, or iii) take advantage of available parking reductions?<br>(TLU1) | ✓ | | |

Please explain how the proposed project meets this action item.

Yes, the project is taking advantage of the TOD credit for car parking.

| | Yes | No | N/A |
|---|---|---|---|
| 3. For projects including structured parking, would the structured parking be designed for future adaptation to other uses? (Examples include, but are not limited to: the use of speed ramps instead of sloped floors.).<br>(TLU1) | ✓ | | |

Please explain how the proposed project meets this action item.

Parking is design with stackers which can be removed in the future if not being utilized.

| | Yes | No | N/A |
|---|---|---|---|
| 4. For projects that ***are*** subject to a Transportation Demand Management Program, would the project include transit passes for employees and/or residents?<br>(TLU1) | ✓ | | |

Please explain how the proposed project meets this action item.

Transit fare subsidies will be provided per the TDM program requirements.

| | **Yes** | **No** | **N/A** |
|---|---|---|---|
| 5. For projects that are ***not*** subject to a Transportation Demand Management Program, would the project incorporate one or more of the optional Transportation Demand Management measures that reduce dependency on single-occupancy vehicles? (Examples include but are not limited to transit passes or subsidies to employees and/or residents; carpooling; vanpooling; or shuttle programs; on-site carshare program; guaranteed ride home programs)<br>(TLU1 & TLU8) | | | ✓ |

Please explain how the proposed project meets this action item.

Subject to TDM

| | **Yes** | **No** | **N/A** |
|---|---|---|---|
| 6. Does the project comply with the Plug-In Electric Vehicle (PEV) Charging Infrastructure requirements (Chapter 15.04 of the Oakland Municipal Code), if applicable?<br>(TLU2 & TLU-5) | ✓ | | |

Please explain how the proposed project meets this action item.

Project complies with PEV code.

| | **Yes** | **No** | **N/A** |
|---|---|---|---|
| 7. Would the project reduce or prevent the direct displacement of residents and essential businesses? (For residential projects, would the project comply with SB 330, if applicable? For projects that demolish an existing commercial space, would the project include comparable square footage of neighborhood serving commercial floor space.)<br>(TLU3) | ✓ | | |

Please explain how the proposed project meets this action item.

The project would not displace any residents and would construct new residential uses on the project site. The project would demolish approximately 24,107 square feet of existing buildings with auto dealership uses. The project would reduce the direct displacement of businesses by providing approximately 1,696 square feet of ground-floor neighborhood serving retail space. The project also aligns with climate goals by supporting the goal of lowered automobile dependence through transit-oriented development and removal of a car-dependent commercial use.

| | Yes | No | N/A |
|---|---|---|---|
| 8. Would the project prioritize sidewalk and curb space consistent with the City’s adopted Bike and Pedestrian Plans? (The project should not prevent the City’s Bike and Pedestrian Plans from being implemented. For example, do not install a garage entrance where a planned bike path would be unless otherwise infeasible due to Planning Code requirements, limited frontage or other constraints.)<br>(TLU7) | ✓ | | |

Please explain how the proposed project meets this action item.

No conflict with bike infrastructure and very limited work in the public right of way adjacent to bike lanes.

## Buildings

| | Yes | No | N/A |
|---|---|---|---|
| 9. Does the project not create any new natural gas connections/hook-ups?<br>(B1 & B2) | ✓ | | |

Please explain how the proposed project meets this action item.

The Project will comply with the City's building electrification ordinance.

| | Yes | No | N/A |
|---|---|---|---|
| 10. Does the project comply with the City of Oakland Green Building Ordinance (Chapter 18.02 of the Oakland Municipal Code), if applicable?<br>(B4) | ✓ | | |

Please explain how the proposed project meets this action item.

Yes, the project is using electric ranges in units, smart HVAC and will follow Green Halo.

| | Yes | No | N/A |
|---|---|---|---|
| 11. For retrofits of City-owned or City-controlled buildings: Would the project be all-electric, eliminate gas infrastructure from the building, and integrate energy storage wherever technically feasible and appropriate?<br>(B5) | | | ✓ |

Please explain how the proposed project meets this action item.

## Material Consumption & Waste

12. Would the project reduce demolition waste from construction and renovation and facilitate material reuse in compliance with the Construction Demolition Ordinance (Chapter 15.34 of the Oakland Municipal Code)?

(MCW6)

| Yes | No | N/A |
|---|---|---|
| ✓ | | |

Please explain how the proposed project meets this action item.

Project to follow green halo.

## City Leadership

13. For City projects: Have opportunities to eliminate/minimize fossil fuel dependency been analyzed in project design and construction?

(CL2)

| Yes | No | N/A |
|---|---|---|
| | | ✓ |

Please explain how the proposed project meets this action item.

## Adaptation

14. For new projects in the Designated Very High Wildfire Severity Zone: Would the project incorporate wildfire safety requirements such creation of defensible space around the house, pruning, clearing and removal of vegetation, replacement of fire resistant plants, as required in the Vegetation Management Plan?

(A4)

| Yes | No | N/A |
|---|---|---|
| | | ✓ |

Please explain how the proposed project meets this action item.

| **Carbon Removal** | | | |
|---|---|---|---|
| 15. Would the project replace a greater number of trees than will be removed in compliance with the Tree Preservation Ordinance (Chapter 12.36 of the Oakland Municipal Code) and Planning Code if applicable and feasible given competing site constraints?<br>(CR-2) | **Yes** | **No** | **N/A** |
| | ✓ | | |
| Please explain how the proposed project meets this action item.<br>Project is planting more trees than exist today. | | | |
| 16. Does the project comply with the Creek Protection, Stormwater Management and Discharge Control Ordinance (Chapter 13.16 of the Oakland Municipal Code), as applicable?<br>(CR-3) | **Yes** | **No** | **N/A** |
| | ✓ | | |
| Please explain how the proposed project meets this action item.<br>The Project will comply with the C.3 Stormwater requirements and control stormwater on-site. | | | |

I understand that answering ***yes*** to all of these questions, means that the project ***is in compliance with*** the City's Energy and Climate Action Plan as adopted on to July 28, 2020 and requires that staff apply the Project Compliance with the Equitable Climate Action Plan (ECAP) Consistency Checklist Condition of Approval as adopted by the Planning Commission on December 16, 2020 and all Checklist items must be incorporated into the project

I understand that answering ***no*** to any of these questions, means that the project ***is not in compliance*** with the City's Energy and Climate Action Plan as adopted on to July 28, 2020 and requires that staff apply the Greenhouse Gas (GHG) Reduction Plan Condition of Approval as adopted by the Planning Commission on December 16, 2020 which will require that the applicant prepare a quantitative GHG analysis and GHG Reduction Plan for staff's review and approval. The GHG Reduction Plan and all GHG Reduction measures shall be incorporated into the project and implemented during construction and after construction for the life of the project.

JUSTIN OSLER
Name and Signature of Preparer

4/27/2021
Date

# Appendix D

## Construction Noise Management Plan

This page intentionally left blank

ESA

180 Grand Avenue
Suite 1050
Oakland, CA 94612
510.839.5066 phone
510.839.5825 fax

esassoc.com

# Construction Noise Management Plan – 2929 Broadway Project

## Introduction

This Construction Noise Management Plan ("CNMP") presents project-specific measures for construction contractors to include in the construction contacts to ensure that construction activities are conducted pursuant to City of Oakland Standard Conditions of Approval (SCA) NOI-3 identified in the 2929 Broadway Project CEQA Analysis, to which this CNMP is incorporated as Appendix C. Qualified consultants of ESA prepared this CNMP concurrent with the CEQA Analysis.

## Project Overview

As described in the CEQA Checklist for the Project, the Project would demolish existing structures at the site and construction of an approximately 222,823 square foot mixed use building containing 220 dwelling units and 1,696 square feet of retail uses within Subdistrict 4 of the Valdez Triangle subarea of the BVDSP. The Project's construction period is estimated to begin in March 2022 and last approximately 24 months. Construction activities on the project site would consist of demolition of the existing structures onsite, site preparation, grading and excavation, building construction, paving and application of architectural coatings for finishing interiors and exteriors of the Project building. The Project would require the excavation and off haul of approximately 7,046 cubic yards of earth from the Project site, in addition to demolition rubble from 25,000 square feet of existing structures on the site. No soils are anticipated to be imported to the site.

The CEQA analysis for the Project concluded that SCA NOI-1, Construction Days/Hours; SCA NOI-2, Construction Noise; SCA NOI-3, Extreme Construction Noise; SCA NOI-4, Construction Noise Complaints; and SCA NOI-5, Operational Noise (see Attachment A to the CEQA Addendum) would be applicable and would be implemented with the Project to ensure less than significant noise-related impacts.

## Project Location and Noise Sensitive Receptors

The Project is located at 2929 Broadway, on a 0.93-acre site on the southern half of the block bounded by Webster Street to the west, 29th Street to the south, Broadway to the east, and 30th Street to the north. Commercial uses are located on adjoining lots to the immediate north of the Project site including an automotive center and clinical uses. Existing sensitive receptors in the project vicinity include the residential receptors in the second floor of the building to the south of the project site at 2867 Broadway approximately 40 feet from the project boundary across 29th

Street. Residential receptors are also located in the Broadstone Axis apartment complex located at 2855 Broadway approximately 135 feet south of the project site. The Street Academy Alternative School is a high school located at 417 29th Street approximately 480 feet west of the project site.

## Construction Noise Levels

Noise from Off-road construction equipment can generate the noise levels indicated in Table 1, below. The values in the first column represent the reference maximum noise levels at 50 feet. The values in second column represent the acoustical usage factors that applies to each equipment type. The last column provides estimated noise levels taking into account the usage factor and adjusted to an operating distance of 40 feet (the distance of the nearest receptor from the project's southern boundary). This is a conservative assumption as in reality, off-road equipment is typically mobile and not static and therefore would not be expected to operate continuously at the property line.

**TABLE 1**
**TYPICAL MAXIMUM NOISE LEVELS FROM CONSTRUCTION EQUIPMENT**

| Construction Equipment | Noise Level[a] (dBA, $L_{max}$ at 50 feet ) | Acoustical Usage Factor (%) | Noise Level Leq (at 40 feet) |
|---|---|---|---|
| Air Compressor | 78 | 40 | 80 |
| Backhoe | 78 | 40 | 80 |
| Compactor | 83 | 20 | 85 |
| Concrete Mixer Truck | 79 | 40 | 81 |
| Concrete Pump Truck | 81 | 20 | 83 |
| Crane | 81 | 16 | 83 |
| Dozer | 82 | 40 | 84 |
| Dump Truck | 77 | 40 | 78 |
| Front End Loader | 79 | 40 | 81 |
| Grader | 85 | 40 | 87 |
| Paver | 77 | 50 | 79 |
| Pumps | 81 | 50 | 83 |
| Roller | 80 | 20 | 82 |
| Scraper | 84 | 40 | 86 |
| Welder | 74 | 40 | 76 |

NOTES:
a These are maximum field measured values at 50 feet as reported from multiple samples.

SOURCE: FHWA, 2006.

The project would include a mat slab foundation which would not require installation of piles and therefore, use of an impact hammer or drilling for cast-in-place piles is not proposed. Operation of multiple pieces of standard construction equipment can generate noise levels of 80 to 85 dBA, hourly $L_{max}$ at a distance of 50 feet without mitigation. Given the presence of residential uses 40 feet to the south across 29th Street, it is reasonable to expect such construction noise levels at the exterior of these receptors during peak excavation and foundation work. The newly constructed Broadstone Axis Apartment Complex will have been designed to attain the City's 45 dBA, $L_{dn}$ interior noise standards which is achieved through noise rated building materials, particularly sound-rated windows. Though the residence at 2867 Broadway is located within an older building, it appears to have had its windows retrofitted based on a review of recent street-level photography. Applying a standard assumption of exterior to interior noise reduction of 25 dBA with windows closed,[1] resultant interior noise levels within these receptors could be expected to be in the range of 55 to 60 dBA, hourly $L_{eq}$. These noise levels from peak construction activity would be audible to occupants of these adjacent sensitive receptors.

# Project-specific Construction Noise Reduction Measures

Although not required because the Project would not include construction activities anticipated to generate noise levels above 90 dBA, pursuant to SCA NOI-3, this Project-specific CNMP has been prepared concurrent with environmental review for the Project. This CNMP is appropriate for the Project's proposed construction methods and the type and proximity of noise-sensitive receptors to the project site. Although the Project would not include any "extreme noise generating construction activity (e.g., pier drilling, pile driving and other activities generating greater than 90 dBA), certain measures included in this CNMP are "potential attenuation measures" identified in SCA NOI-3 (City SCA 65) which address extreme construction noise. These measures are included in this CNMP to the extent they may be appropriate to the Project and its context.

The Project shall implement the following site-specific noise attenuation measures to further reduce construction noise impacts. All construction contractors on the Project shall adhere to these measures, which shall be included within their construction contracts. Measures that are already required by other Oakland SCAs are not included, except those measures that are tailored for the Project:

1. Use back-up beepers only when required by law. Spotters or flaggers should be used in lieu of back-up beepers to direct backing operations when allowable.
2. Use electric forklifts.
3. Minimize truck traffic idling along 29th Street.
4. Minimize drop height when loading excavated materials onto trucks. Minimize drop height when unloading or moving materials on-site.
5. Sequence the nosiest activities to coincide with the noisiest ambient hours.
6. Locate noisy equipment within the building structure once the exterior facade is installed.

---

[1] U.S. E20PA, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, March 1974, http://nepis.epa.gov/Exe/ZyPDF.cgi/2000L3LN.PDF?Dockey=2000L3LN.pdf, accessed January 23, 2019.

7. Notify adjacent property owners within 300 feet of the project site, at least 10 days prior to commencement of activities.
8. Project-Specific Complaint Response Mechanisms
9. Monitor the effectiveness of noise attenuation measures by monitoring noise levels.
    a. **Designation of Enforcement Manager.** Any complaints received with respect to construction noise shall be forwarded to the Compliance Manager: __________________________. Contact Number: _______________________.
    b. **Signage.** A large on-site sign shall be placed near the public right-of-way containing permitted construction days/hours, complaint procedures, and phone numbers for the project complaint manager and City Code Enforcement unit. Example signage provided as Attachment A.
    c. **Complaints.** The noise and Compliance Enforcement Manager for the Project shall ensure response and corrective action to complaints within the same working day if the complaint is received during the noise-related incident and within 48 hours if the complaint is received after working hours. A complaint log shall be maintained by the Compliance Enforcement Manager indicating the date and time of each received noise complaint, the noise source of concern, and how the issue was resolved. Example complaint log provided as Attachment B.

# Attachment A: Example Signage for Noise Complaints

## SIGN REQUIREMENTS FOR POSTING CONSTRUCTION HOURS

.

Contractor shall post a sign at all entrances to the construction site upon commencement of construction. Sign(s) shall be posted in a conspicuous place visible from the public right-of-way near the entrance to the job site, at least five feet (5') above ground level, and shall be of a white background, with legible black lettering. Lettering shall be a minimum of one and one-half inches (1 1/2") in height. The sign shall read as follows:

**Address: 8750 Mountain Boulevard**

**CONSTRUCTION HOURS (includes any and all deliveries)**
MONDAY--FRIDAY 7:00 a.m. to 7:00 p.m.
SATURDAY 9:00 a.m. to 5:00 p.m.
SUNDAY/HOLIDAYS Prohibited

**Responsible Party Contact: "Sean Lennan" "925-449-5764"**
This sign and construction hours posting requirement is for the purpose of informing all contractors and subcontractors, their employees, agents, material, men and all other persons at the construction site. Construction includes: alteration, demolition, maintenance of construction equipment, deliveries of materials or equipment, or repair activities.

**NOISE LIMITS**
The construction site noise level at any point outside of the construction property line shall not exceed ninety (90) dBA. Violation of the construction hours and/or noise limits may be enforced as either an infraction or a misdemeanor punishable by fines or jail time or both or by an administrative citation with a fine, or by a civil action with a monetary penalty, injunction and/or other remedies.

# CONSTRUCTION NOISE COMPLAINT LOG

| Complainant Name | Home Address | Phone Number | Disturbance Date/Time | Description of Complaint | Method and Date of Resoulution |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

# Appendix E

## Non-CEQA Transportation Analysis/Transportation Tables

This page intentionally left blank

# Draft Memorandum

Date: March 28, 2022

To: Elizabeth Kanner, ESA

From: Sam Tabibnia, Fehr & Peers

**Subject: 2929 Broadway – Transportation Impact Review (Non-CEQA)**

*OK21-0416*

This memorandum discusses transportation-related topics for the proposed 2929 Broadway development (the Project) that are not considerations under the California Environmental Quality Act (CEQA) but are evaluated to inform decision makers and the public. Some information in the CEQA document is repeated in this memorandum to provide context for the non-CEQA analysis. The information provided in this memorandum is based on the City of Oakland's *Transportation Impact Review Guidelines* (TIRG) published in April 2017. Sections in this memorandum include:

- Project Description (page 1)
- Trip Generation and Distribution (page 2)
- Intersection Operations (page 5)
- Site Plan Review (page 5)
- Collision History (page 14)
- Conclusion and Summary of Recommendations (page 16)

## Project Description

The Project is located in the Broadway Valdez District of Oakland on the north side of 29th Street between Broadway and Webster Streets. The seven-story building would consist of 220 residential units and about 1,960 square feet of ground-level retail.

Based on the site plan dated September 30, 2021, the Project would provide 110 parking spaces for Project residents in a garage accessed through a driveway on 29th Street, about 40 feet west of Broadway. The parking would consist of 10 surface parking spaces and 100 stacker spaces. A ground level loading space would be located on 29th Street, just west of the garage driveway. Proposed bicycle parking would include a secure bicycle room adjacent to the garage that would accommodate 132 bicycles, and bicycle racks along the sidewalk on Broadway that would provide short-term bicycle parking for 15 bicycles. The Project would demolish an existing automobile showroom.

# Trip Generation and Distribution

## Automobile Trip Generation

Trip generation is the process of estimating the number of vehicles that would likely access the Project on a typical day. Since the Project site includes existing uses that would be demolished, the trip generation accounts for the trips generated by the current site that would be eliminated. **Table 1** summarizes the Project trip generation. Trip generation data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual* (Tenth Edition) was used as a starting point to estimate the vehicle trip generation.

ITE's *Trip Generation Manual* (Tenth Edition) is primarily based on data collected at single-use suburban sites where the automobile is often the only travel mode. However, the Project site is in a dense mixed-use urban environment where many trips are walk, bike, or transit trips. Since the Project is between 0.5 and 1.0 miles of the 19th Street BART Station, this analysis reduces the ITE based trip generation by about 37 percent to account for non-automobile trips. This reduction is consistent with the City of Oakland's TIRG and is based on US Census commute data for Alameda County from the 2014 5-Year Estimates of the American Community Survey (ACS), which shows that the non-automobile mode share for areas between 0.5 and 1.0 miles from a BART Station is about 37 percent.

As summarized in Table 1, the net automobile trip generation for the Project is approximately 620 daily, 48 AM peak hour, and 59 PM peak hour automobile trips.

## Non-Vehicular Trip Generation

Consistent with the City of Oakland TIRG, **Table 2** presents estimates of Project trip generation for all travel modes.

## Trip Distribution

The trip distribution and assignment process is used to estimate how the vehicle trips generated by the Project would be distributed across the roadway network. Based on existing travel patterns, locations of complementary land uses, and the street network in the Project area, Fehr & Peers determined directions of approach to and departure from the Project site. **Figure 1** shows the resulting trip distribution.

### Table 1: Automobile Trip Generation

| Land Use | Size | Units[1] | Daily | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | In | Out | Total | In | Out | Total |
| ***Proposed Project*** | | | | | | | | | |
| Residential[2] | 220 | DU | 1,200 | 21 | 58 | 79 | 59 | 38 | 97 |
| Retail [3] | 2.0 | KSF | 70 | 1 | 1 | 2 | 3 | 4 | 7 |
| *Subtotal* | | | *1,270* | *22* | *59* | *81* | *62* | *42* | *104* |
| *City of Oakland Trip Generation Adjustment*[4] | | | *-470* | *-8* | *-22* | *-30* | *-23* | *-15* | *-38* |
| ***Proposed Project Vehicle Trip Generation*** | | | ***800*** | ***14*** | ***37*** | ***51*** | ***39*** | ***27*** | ***66*** |
| ***Existing*** | | | | | | | | | |
| Auto Showroom[5] | 24.1 | KSF | -280 | -4 | -1 | -5 | -4 | -7 | -11 |
| *Subtotal* | | | *-280* | *-4* | *-1* | *-5* | *-4* | *-7* | *-11* |
| *City of Oakland Trip Generation Adjustment*[6] | | | *100* | *1* | *1* | *2* | *1* | *3* | *4* |
| ***Total Existing*** | | | ***-180*** | ***-3*** | ***0*** | ***-3*** | ***-3*** | ***-4*** | ***-7*** |
| ***Net New Project Trips*** | | | ***620*** | ***11*** | ***37*** | ***48*** | ***36*** | ***23*** | ***59*** |

Notes:

1. DU = Dwelling units, KSF = 1,000 square feet
2. ITE *Trip Generation* (10th Edition) land use category 221 (Multi-Family [Mid-Rise]):
    Daily: T = 5.44*(X)
    AM Peak Hour: T = 0.36*(X) (26% in, 74% out)
    PM Peak Hour: T = 0.44*(X) (61% in, 39% out)
3. ITE *Trip Generation* (10th Edition) land use category 820 (Shopping Center):
    Daily: T = 37.75*(X)
    AM Peak Hour: T = 0.94*(X) (62% in, 38% out)
    PM Peak Hour: T = 3.81*(X) (48% in, 52% out)
4. The 36.7% reduction is based on the City of Oakland's TIRG for development between 0.5 and 1.0 miles of a BART Station.
5. ITE does not provide trip generation rates for an automobile showroom. Since an automobile dealership includes both a showroom and a service center and ITE provides data for both uses, the trip generation for the showroom is estimated by subtracting the estimated ITE-based trips for a service center from the estimated ITE-based trips for an automobile dealership based on the following:
    ITE *Trip Generation* (10th Edition) land use category 840 (Automobile Sales [New]):
        Daily: T = 27.84*(X)
        AM Peak Hour: T = 2.15*(X) (73% in, 27% out)
        PM Peak Hour: T = 1.80*(X)+21.6 (40% in, 60% out)
    ITE *Trip Generation* (10th Edition) land use category 943 (Automobile Parts and Service Center):
        Daily: T = 16.28*(X)
        AM Peak Hour: T = 1.96*(X) (73% in, 27% out)
        PM Peak Hour: T = 2.26*(X) (40% in, 60% out)

Source: Fehr & Peers, 2021.

**Table 2: Trip Generation by Travel Mode**

| Mode | Mode Share Adjustment Factors[1] | Daily | AM Peak Hour | PM Peak Hour |
|---|---|---|---|---|
| Automobile | 0.63 | 620 | 48 | 59 |
| Transit | 0.24 | 230 | 18 | 22 |
| Bike | 0.05 | 50 | 4 | 4 |
| Walk | 0.06 | 60 | 5 | 6 |
| | ***Total Trips*** | **960** | **75** | **91** |

Notes:

1. Based on the City of Oakland *Transportation Impact Review Guidelines* assuming Project site is in an urban environment between 0.5 and 1.0 miles of a BART Station.

Source: Fehr & Peers, 2021.

## Study Intersection Selection

According to the City of Oakland's TIRG, the criteria for the intersections to be studied in a TIR include the following:

- All intersection(s) of streets adjacent to Project site
- All signalized intersections, all-way stop-controlled intersections, or roundabouts where 100 or more peak hour trips are added by the Project
- All signalized intersections with 50 or more peak-hour trips and the existing intersection operations are at Level of Service D, E, or F
- Side-street stop-controlled intersection(s) where 50 or more peak hour trips are added by the Project to any individual movement other than the major-street through movement

Following these criteria, the following two study intersections are selected because they are adjacent to the Project site:

1. Broadway/29th Street
2. Webster Street/29th Street

The Project would not add 50 or more peak hour trips trip to any signalized or all-way stop-controlled intersection or to the stop-controlled movement of a side-street stop-controlled intersection. Thus, no additional intersections would meet the study intersection selection criteria.

Due to the ongoing COVID-19 pandemic and the mandatory shelter-in-place orders for the Bay Are region that started on March 16, 2020, current turning movement counts could not be collected at the two study intersections because counts would not accurately reflect typical conditions due to changes in travel patterns during this time. Instead, data purchased from

StreetLight Data (a big data vendor of anonymous location records from GPS devices) is used. The Streetlight Data volume estimates were downloaded for midweek days (Tuesdays, Wednesdays, and Thursdays) for September and October of 2019 and aggregated to averages for the two study intersections. **Appendix A** presents the detailed StreetLight volume data.

## Intersection Operations

The following scenarios are evaluated:

- **Existing Conditions**: Represents existing (2019) traffic volumes.
- **Existing Plus Project Conditions**: Represents the existing conditions plus traffic generated after completion of the Project.

**Figure 2** presents the Existing and Existing plus Project intersection lane configuration, traffic control, and peak hour traffic volumes at the study intersection. Based on the volumes and roadway configuration presented on Figure 2, Fehr & Peers calculated the LOS at the study intersection using the 2000 *Highway Capacity Manual* (HCM) methodologies. **Appendix B** provides the detailed LOS calculation sheets. **Table 3** summarizes the Existing and Existing Plus Project intersection analysis results. Both the Broadway/29th Street and Webster Street/29th Street intersections are expected to operate at LOS B during both the AM peak hour and the PM peak hour regardless of the Project.

**Table 3: Intersection Level of Service Summary**

| Intersection | Traffic Control[1] | Peak Hour | Existing Conditions | | Existing Plus Project | |
|---|---|---|---|---|---|---|
| | | | Delay[2] (seconds) | LOS | Delay[2] (seconds) | LOS |
| Broadway/29th Street | Signal | AM<br>PM | 15<br>18 | B<br>B | 15<br>19 | B<br>B |
| Webster Street/29th Street | Signal | AM<br>PM | 18<br>15 | B<br>B | 19<br>15 | B<br>B |

Notes:
1. Signal = intersection controlled by traffic signal.
2. Delay calculated using HCM 2000 methodologies. Average intersection delay presented for signalized.

Source: Fehr & Peers, 2021.

### Signal Warrant Analysis

Traffic signal warrants were developed by the Federal Highway Administration (FHWA) and are described in the *Manual on Uniform Traffic Control Devices* (MUTCD, 2009). These warrants correlate the need for a traffic signal at an intersection based on several factors including vehicular and pedestrian volumes, and the crash experience at the intersection. The MUTCD provides nine signal warrants. According to the MUTCD (Section 4B.02), an existing signal can be removed if it is no longer justified. **Table 4** summarizes the MUTCD signal warrants for the Webster Street/29th Street intersection based on 2019 volume data. **Appendix C** provides the detailed signal warrant worksheets.

### Table 4: Signal Warrant Analysis Summary

| Warrant[1] | Webster Street/29th Street Intersection |
|---|---|
| Warrant 1: 8-hour Volume | Not Met |
| Warrant 2: 4-Hour Volume | Not Met |
| Warrant 3: Peak hour Volume | Not Met |
| Warrant 4: Pedestrian Volume | N/A[2] |
| Warrant 5: School Crossing | Not Met |
| Warrant 6: Coordinated Signal System | Not Met |
| Warrant 7: Crash Experience | Not Met |
| Warrant 8: Roadway Network | Not Met |
| Warrant 9: Intersection near a Grade Crossing | Not Met |

Notes:

1. Based on application of the MUTCD signal warrants (2009 MUTD, Section 4C-01). See Appendix C for details.
2. Recent pedestrian volume data at this intersection is not available; however, the pedestrian volumes are expected to be below the warrant threshold.

Source: Fehr & Peers, 2022.

According to the MUTCD, if an engineering study shows that removing a traffic signal is justified, and a decision is made to remove the signal, the removal should be accomplished using the following steps:

A. Determine the appropriate traffic control to be used after removal of the signal
B. Remove any sight-distance restrictions as necessary
C. Inform the public of the removal study
D. Flash or cover the signal heads for a minimum of 90 days, and install the appropriate stop control or other traffic control devices
E. Remove the signal if the engineering data collected during the removal study period confirms that the signal is no longer needed

Since the Webster Street/29th Street intersection does not meet any of the nine MUTCD signal warrants, converting the signal to flashing all-red operations or removing the signal and converting the intersection to all-way stop-controlled operations can be considered. An all-way stop-controlled Webster Street/29th Street intersection is expected to operate at LOS B during both the AM and PM peak hours.

> **Recommendation 1:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:
>
> - Since the Webster Street/29th Street intersection does not meet any of the nine MUTCD traffic signal warrants, further evaluate and if found feasible, consider converting the intersection to flashing all-red (similar to all-way stop-controlled) operations.

## Site Plan Review

An evaluation of access and circulation for all travel modes, based on the site plan dated September 30, 2021, is summarized below.

### Motor Vehicle Access and Circulation

The Project would provide 110 automobile parking spaces in a ground-level garage accessed through a driveway on 29th Street located about 40 feet west of Broadway. The Project's parking facilities would consist of 10 surface parking spaces and 100 stacker spaces accommodated in two- and three-level mechanical lifts. The surface parking spaces would also include seven ADA-accessible spaces.

The Project driveway on 29th Street would be 26-feet wide and provide one inbound and one outbound lane. The Project driveway would provide adequate sight distance[1] between exiting motorists and pedestrians on the sidewalk on either side of the driveway. However, motor vehicles parked along 29th Street east or west of the Project driveway may limit sight lines between exiting motorists and cyclists or motorists on eastbound or westbound 29th Street. In addition, motor vehicles turning right from southbound Broadway to westbound 29th Street may not have adequate sight distance of the Project driveway if they are too fast. The speed of these right-turning vehicles can be reduced through reducing the curb radius at the corner by extending the existing bulb-out at the northwest corner of the Broadway/29th Street intersection into 29th Street.

Within the Project garage, the parking spaces would be perpendicular spaces along two-way drive-aisles. Based on a review of the site plan, the garage drive aisles and parking spaces would meet the minimum dimension requirements and passenger vehicles would be able to maneuver through the parking garage and into and out of all parking spaces.

---

[1] Adequate sight distance is defined as a clear line-of-sight between a motorist ten feet back from the sidewalk and a pedestrian 10 feet away on each side of the driveway.

The residential and retail trash rooms would be located in the southeast corner of the building with access to the garage. Thus, the Project driveway curb-cut can be used to access the trash rooms.

> **Recommendation 2:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:
>
> - Extend the existing bulb-out on the northwest corner of the Broadway/29th Street intersection into 29th Street to reduce the speed of vehicles turning right from southbound Broadway to westbound 29th Street. Ensure the bulb-out would not preclude the future implementation of the planned bicycle facilities on 29th Street (see Recommendation 4).
> - Provide "KEEP CLEAR" striping on 29th Street at the Project driveway.
> - Install visual-only warning devices at the Project driveway on 29th Street.
> - Provide red curb on the north side of 29th Street between Broadway and the Project driveway and for about 20 feet on the west side of the driveway to ensure adequate sight distance between vehicles exiting the driveways and vehicles in both directions of 29th Street.

The curb designations along the streets adjacent to the Project and Project modifications to these curbs are described below:

- Broadway – A 60-foot bulb-out is provided just north of 29th Street. About 80 feet of white curb (passenger loading) accommodating four vehicles is provided just north of the bulb-out. The frontage also includes a 45-foot driveway near the northeast corner of the site and two metered parallel parking spaces just north of the driveway. The Project would eliminate the existing driveway on Broadway resulting in two additional on-street parking spaces.
- Webster Street – About 160 feet of metered on-street parking accommodating eight parking meters is provided along the west side of the Project site. There are also two existing curb-cuts with a combined length of about 30 feet that the Project would eliminate resulting in two additional on-street parking spaces.
- 29th Street – About 30 feet of red curb is provided just east of Webster Street, which was previously used as a bus stop that is no longer in service. The frontage also includes about 30 feet of yellow curb, curb-cuts for two unused driveways, and about 40 feet of metered on-street parallel parking. The Project would provide a 40-foot curb-cut accommodating the garage driveway and loading dock. In addition, Recommendation 2 would provide for red-curbs on both sides of the proposed curb-cut.

As described below, the City's 2019 Oakland Bike Plan proposes protected Class 4 bike lanes on Broadway. In addition, the City of Oakland and AC Transit are exploring transit improvements along the Broadway corridor. Since neither improvement has been designed, details about them and their effects on the curbs along Broadway are not known at this time. Thus, this analysis assumes that the curbs along the Project frontage would remain similar to current conditions. The potential curb designations described below would not prevent the implementation of the planned improvements in the future; however, the recommended curb designations may need to be relocated to other locations along the Project frontage depending on the final design of the improvements.

> **Recommendation 3:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:
>
> - Designate 30 feet of passenger loading space (white curb) along the frontage of the building on Broadway near the lobby for passenger pick-up/ drop-off.
> - Convert the existing red-curb on the north side 29th Street just east of Webster Street to metered on-street parking.
> - Designate the remaining parking spaces along the Project frontages on Broadway and Webster Street as metered parking.

## Automobile Parking Requirements

The City of Oakland Municipal Code establishes minimum parking requirements for residential and commercial activities. **Table 5** presents the off-street automobile parking requirements for the Project per City Code. The Project proposes 110 new parking spaces, which does not meet the City of Oakland Municipal Code minimum requirements. No maximum requirements apply to the Project.

**Table 5: Automobile Parking Requirements**

| Land Use | Size [1] | Minimum Required Parking | Parking Supply | Meets Requirement? |
|---|---|---|---|---|
| Residential | 220 DU | 165 [2] | | -- |
| Retail | 2.07 KSF | 0 [3] | -- | -- |
| ***Total*** | | ***165*** | ***110*** | ***No*** [4] |

Notes:
1. DU = dwelling units, KSF = 1,000 square-feet
2. Per Oakland Planning Code Section 17.116.060 for D-BV-3 zone; Residential: minimum 0.75 space per DU.
3. Per Oakland Planning Code Section 17.116.080 for D-BV zone; no off-street parking is required for less 10,000 square feet of commercial space.
4. Although the Project does not meet the City's Planning Code requirements, it meets the State Density Bonus Law requirements.

Source: Fehr & Peers, 2021.

However, the City Code requirements are not applicable to the Project because it is relying on the State of California Density Bonus. According to the State Density Bonus Law (California Government Code Section 65915(p)2), the Project is required to provide 0.5 parking spaces per unit. Thus, the 110 spaces provided for the Project residents would meet the State Density Bonus requirements.

## Loading Requirements

City Municipal Code Section 17.116.120 requires one off-street loading space with minimum dimensions of 23 feet long, 10 feet wide, and 12 feet high for residential uses larger than 50,000 square feet. No off-street loading is required for retail uses less than 25,000 square feet per section 17.116.140 of the Code. The Project would include one loading berth, approximately 32 feet long, 13 feet wide, and at least 13 feet high which satisfies the City's loading requirements.

The loading space would be just west of the garage driveway on 29th Street and accessed through the same curb-cut as the garage. Trucks would back into and head out of the loading berth. The loading berth would have access to the Project's commercial components on the ground level and the Project's residential units through the ground-level lobby and elevator.

## Bicycle Access and Bicycle Parking

Existing bicycle facilities in the Project vicinity include:

- Broadway provides Class 2 bike lanes in both the northbound and southbound directions
- Webster Street is a designated neighborhood bike route between 29th and 30th Streets and provides a Class 2 bicycle lane in the northbound direction only north of 30th Street
- 29th Street is a Class 3 bike route between Broadway and Telegraph Avenue
- Telegraph Avenue provides Class 4 protected bike lanes in both southbound and northbound directions between 20th and 29th Streets

Currently, no short-term bicycle parking is provided along the Project frontages. The nearest Bay Wheels bikeshare station is located one block north of the Project site (about 0.1 mile) on the west side of Broadway north of 30th Street.

The City's 2019 Oakland Bike Plan (*Let's Bike Oakland*, May 2019) proposes the following in the vicinity of the Project:

- Protected Class 4 bike lanes on Broadway
- Continuation of the Protected Class 4 bile lanes on Telegraph Avenue north of 29th Street
- Class 2 bike lane on 29th Street in the uphill direction between Telegraph Avenue and Broadway. Adjacent to the Project between Webster Street and Broadway, the Class 2

bike lane would be on the westbound (north side) of the street and Class 3 sharrows would be on the eastbound (south side) of the street.

- Neighborhood bike route on Webster Street between 27th Street and MacArthur Boulevard, including buffered bike lanes between 30th Street and Hawthorne Avenue

**Recommendation 4:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:

  - Consistent with the City's 2019 Oakland Bike Plan, implement a Class 2 bicycle lane on westbound and sharrows on eastbound 29th Street between Broadway and Webster Street.

The Project would provide a secure bicycle room that would accommodate 132 bicycle long-term storage spaces located on the north side of the ground level of the building between the garage and the residential lobby. All bicyclists, including ones with cargo bikes, would be able to access the bicycle room through either the garage driveway on 29th Street or through the residential lobby on Broadway. Short-term bicycle racks are proposed to accommodate 15 bicycles on the sidewalks along the Project's frontage.

**Table 6** compares the required and provided quantity of bicycle parking spaces for the Project. The City of Oakland Planning Code Sections 17.117.90 and 17.117.110 require the Project to provide a minimum of 112 long-term and 16 short-term bicycle parking spaces. The Project would exceed the minimum required long-term bicycle parking and would not meet the short-term bicycle parking.

**Table 6: Bicycle Parking Requirements**

| Land Use | Size[1] | Long-Term Bicycle Parking | | Short-Term Bicycle Parking | |
|---|---|---|---|---|---|
| | | Spaces per Unit[2] | Spaces | Spaces per Unit[2] | Spaces |
| Residential | 220 DU | 1:2 DU | 110 | 1:15 DU | 14 |
| Retail | 2.0 KSF | 1:8 KSF[3] | 2 | 1:2 KSF[3] | 2 |
| ***Minimum Required Bicycle Parking*** | | | ***112*** | | ***16*** |
| ***Proposed Parking Spaces*** | | | ***132*** | | ***15*** |
| ***Meets Minimum Parking Requirement?*** | | | ***Yes*** | | ***No*** |

Notes:
1. DU = dwelling units, KSF = 1,000 square-feet
2. Per Oakland Planning Code Section 17.117.090 and 17.117.110 for D-BV zones
3. Minimum two spaces.

Source: Fehr & Peers, 2021.

**Recommendation 5:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:

- Ensure that the Project would provide short-term bicycle parking for at least 16 bicycles. If the short-term bicycle parking cannot be accommodated on the sidewalks adjacent to the Project, consider converting an on-street automobile parking space to a bicycle corral.

## Pedestrian Access and Circulation

The main residential lobby for the Project would be on the northeast corner of the building along Broadway. Elevators and stairs at the residential lobby would connect to the upper levels of the building. Secondary stairs would be located near the southwest and northwest corners of the building. The retail component of the Project would be at the southeast corner of the building fronting both Broadway and 29th Street. After the completion of the Project, the sidewalks along the project would be a minimum of 9.5 feet along Broadway, 12.5 feet along Webster Street, and 11.5 feet along 29th Street.

Pedestrian facilities at the intersections adjacent to the site include:

- The Broadway/29th Street intersection is signalized and provides diagonal curb ramps at all four corners. Truncated domes are provided only at the southeast corner of the intersection. All four intersection approaches provide crosswalks marked by white lines. Pedestrian countdown signal heads are provided in all directions of marked crossings and pushbuttons are provided for crossing Broadway. A bulb-out is provided on the northwest corner of the intersection along Broadway, shortening the pedestrian crossing on the north side of the intersection.
- The Webster Street/29th Street intersection is signalized and provides diagonal curb ramps on all four corners. Truncated domes are provided only at the northwest corner of the intersection. All four intersection approaches provide crosswalks marked by white lines. None of the marked crossings at the intersection provide pedestrian signal heads.

**Recommendation 6:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:

- Upgrade all crosswalks at the Broadway/29th Street and Webster Street/29th Street intersections to high visibility/continental crosswalks.
- Extend the existing bulb-out on the northwest corner of the Broadway/29th Street intersection into 29th Street, which would allow provision of directional curb-ramps at the corner, shorten the pedestrian crossing on the west side of the

intersection, and reduce the speed for southbound right-turn vehicles. Ensure the bulb-out would not preclude the future implementation of the planned bicycle facilities on 29th Street (See Recommendations 2 and 4).

- Provide truncated domes at all the corners of the Broadway/29th Street and Webster Street/29th Street intersections.

## Transit Access

Transit service providers in the Project vicinity include BART and AC Transit. BART provides regional rail service throughout the East Bay and across the Bay. The Project is located about 0.7 miles from the 19th Street BART Station. The nearest station portal is on the north side of Thomas L Berkeley Way, just east of Broadway.

AC Transit is the primary bus service provider in the City of Oakland. **Table 7** summarizes the AC Transit service in the Project vicinity. The nearest bus stops to the Project site are located on Broadway at 30th Street on the far side of the intersection in both directions.

The proposed Broadway Transit Lanes Project would extend the existing bus-only lanes on Broadway between 20th Street and West Grand Avenue to connect to the existing bus-only lanes between 11th and 20th Streets. The City of Oakland and AC Transit are also pursuing additional transit improvements between Grand and College Avenues. Details about these improvements are not known at this time.

**Table 7: AC Transit Stops**

| Stop Location | Distance to Project Site[1] | Lines Served | Stop Amenities |
|---|---|---|---|
| Broadway at 30th Street | <0.1 miles | 51A, 851 | No amenities |
| Broadway at 28th Street | 0.1 miles | 51A, 851 | Northbound: No amenities<br>Southbound: bench, trash receptacle |
| Telegraph Avenue at 29th Street | 0.2 miles | 6, 800 | Southbound: bench |
| Telegraph Avenue at 30th Street | 0.3 miles | 6, 800 | Northbound: bench, trash receptacle |

Notes:
1. Distance shown is walking distance between bus stop and the Project.

Source: Fehr & Peers, 2021.

## Collision History

A five-year history (January 1, 2015 to December 31, 2019) of collision data in the Project vicinity was obtained from the Statewide Integrated Traffic Records System (SWITRS) and was evaluated for this collision analysis. **Table 8** summarizes the collision data by type and location and **Table 9** summarizes the collision data by severity and location.

As shown in Table 8, approximately 15 collisions were reported during this five-year timeframe at the study intersections and study roadway segments. The top collision type was broadside collisions (60 percent). Of the 15 reported collisions, 10 (67 percent) resulted in injuries and none resulted in a fatality.

At the Broadway/29th intersection, three of 12 collisions were reported with improper turning as the primary collision factor, resulting in two broadside collisions and one rear-end collision.

The Highway Safety Manual (HSM, Predictive Method - Volume 2, Part C) provides a methodology to predict the number of collisions for intersections and street segments based on their specific characteristics, such as vehicle and pedestrian volume, number of lanes, signal phasing, on-street parking, and number of driveways. **Table 10** presents the predicted collision frequencies for the two study intersections and three study segments using the HSM Predictive Method for Urban and Suburban Arterials and compares the predicted collision frequencies with the actual reported collision frequencies. **Appendix C** provides the detailed predicted collision frequency calculation sheets based on the HSM methodology. Intersections or roadway segments with collision frequencies greater than the predicted frequency are identified as locations that should be evaluated in greater detail for collision trends and potential modifications.

As shown in Table 10, all study locations have a reported collision frequency lower than or equal to the predicted crash frequency.

**Table 8: Collisions by Type**

| Location | Head-on | Sideswipe | Rear-End | Broadside | Hit Object | Vehicle/ Ped | Other | Total |
|---|---|---|---|---|---|---|---|---|
| **Study Intersections** | | | | | | | | |
| Broadway/29th Street | 0 | 0 | 2 | 7 | 0 | 1 | 2 | 12 |
| Webster Street/29th Street | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| **Study Segments** | | | | | | | | |
| Broadway between 29th and 30th Streets | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Webster Street from 29th and 30th Streets | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 29th Street between Broadway and Webster Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Notes:

1. Based on SWITRS five-year collision data reported from January 1, 2015 to December 31, 2019

Source: Fehr & Peers, 2021.

**Table 9: Summary of Injuries**

| Location | Property Damage Only Collisions | Injury Collisions | Fatality Collisions | Total | Person-Injuries | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Bike | Ped | Driver/ Passenger | Total |
| **Study Intersections** | | | | | | | | |
| Broadway/29th Street | 4 | 8 | 0 | 12 | 2 | 2 | 6 | 10 |
| Webster Street/29th Street | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| **Study Segments** | | | | | | | | |
| Broadway between 29th and 30th Streets | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| Webster Street between 29th and 30th Streets | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 29th Street between Broadway and Webster Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Notes:

1. Based on SWITRS five-year collision data reported from January 1, 2015 to December 31, 2019

Source: Fehr & Peers, 2021.

**Table 10: Predicted and Actual Crash Frequencies**

| Location | Predicted Crash Frequency[1] (per year) | Actual Crash Frequency[2] (per year) | Difference | Higher Than Predicted? |
|---|---|---|---|---|
| **Intersection** | | | | |
| Broadway/29th Street | 5.0 | 2.1 | 2.9 | No |
| Webster Street/29th Street | 1.4 | 0.5 | 0.9 | No |
| **Segment** | | | | |
| Broadway between 29th and 30th Streets | 0.7 | 0.2 | 0.5 | No |
| Webster Street between 29th and 30th Streets | 0.4 | 0.2 | 0.2 | No |
| 29th Street between Broadway and Webster Street | 0.1 | 0.0 | 0.1 | No |

Notes:

1. Based on the Highway Safety Manual Predictive Method (Volume 2, Part C)
2. Based on SWITRS five-year collision data reported from January 1, 2015 to December 31, 2019

Source: Fehr & Peers, 2021

## Conclusion and Summary of Recommendations

Based on our review of the Project site plan and conditions on the surrounding streets, the Project would have adequate automobile, bicycle, pedestrian, and transit access and circulation with the inclusion of the following recommendations:

> **Recommendation 1:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:
>
> - Since the Webster Street/29th Street intersection does not meet any of the nine MUTCD traffic signal warrants, further evaluate and if found feasible, consider converting the intersection to flashing all-red (similar to all-way stop-controlled) operations.
>
> **Recommendation 2:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:
>
> - Extend the existing bulb-out on the northwest corner of the Broadway/29th Street intersection into 29th Street to reduce the speed of vehicles turning right from southbound Broadway to westbound 29th Street. Ensure the bulb-out

would not preclude the future implementation of the planned bicycle facilities on 29th Street (see Recommendation 4).

- Provide "KEEP CLEAR" striping on 29th Street at the Project driveway.
- Install visual-only warning devices at the Project driveway on 29th Street.
- Provide red curb on the north side of 29th Street between Broadway and the Project driveway and for about 20 feet on the west side of the driveway to ensure adequate sight distance between vehicles exiting the driveways and vehicles in both directions of 29th Street.

**Recommendation 3:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:

- Designate 30 feet of passenger loading space (white curb) along the frontage of the building on Broadway near the lobby for passenger pick-up/ drop-off.
- Convert the existing red-curb on the north side 29th Street just east of Webster Street to metered on-street parking.
- Designate the remaining parking spaces along the Project frontages on Broadway and Webster Street as metered parking.

**Recommendation 4:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:

- Consistent with the City's 2019 Oakland Bike Plan, implement a Class 2 bicycle lane on westbound and sharrows on eastbound 29th Street between Broadway and Webster Street.

**Recommendation 5:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:

- Ensure that the Project would provide short-term bicycle parking for at least 16 bicycles. If the short-term bicycle parking cannot be accommodated on the sidewalks adjacent to the Project, consider converting an on-street automobile parking space to a bicycle corral.

**Recommendation 6:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:

- Upgrade all crosswalks at the Broadway/29th Street and Webster Street/29th Street intersections to high visibility/continental crosswalks.
- Extend the existing bulb-out on the northwest corner of the Broadway/29th Street intersection into 29th Street, which would allow provision of directional

curb-ramps at the corner, shorten the pedestrian crossing on the west side of the intersection, and reduce the speed for southbound right-turn vehicles. Ensure the bulb-out would not preclude the future implementation of the planned bicycle facilities on 29th Street (See Recommendations 2 and 4).

- Provide truncated domes at all the corners of the Broadway/29th Street and Webster Street/29th Street intersections.

Please contact Sam Tabibnia (stabibnia@fehrandpeers.com or 510-835-1943) with questions or comments.

## ATTACHMENTS

Figure 1 – Project Vehicle Trip Distribution

Figure 2 – Existing and Existing Plus Project Peak Hour Intersection Volumes, Lane Configurations, and Traffic Controls

Appendix A – StreetLight Data Intersection Volumes

Appendix B – Intersection LOS Calculation Sheets

Appendix C – Signal Warrant Worksheets

Appendix D - Predicted Crash Frequency Calculation Sheets

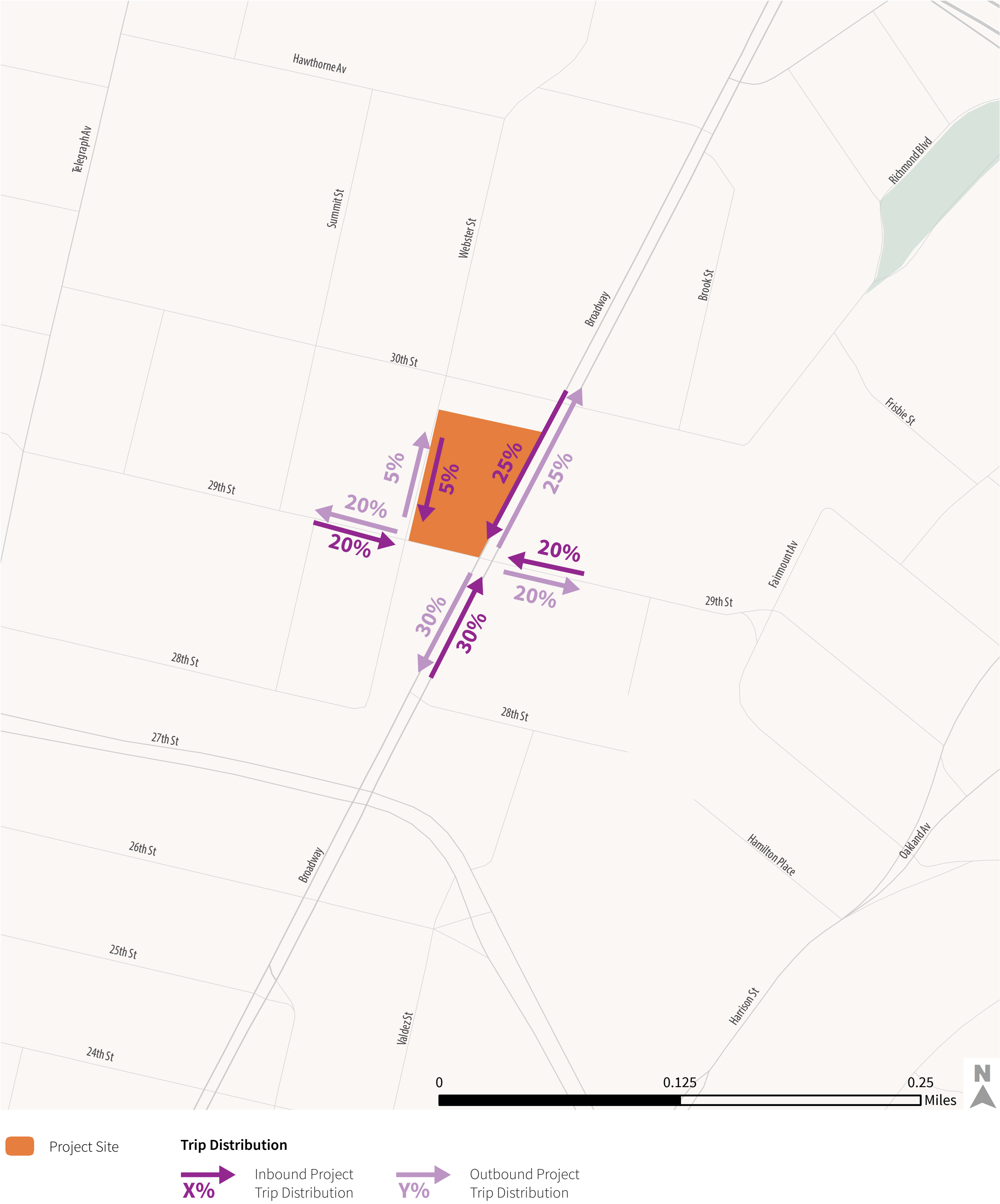


Figure 1

## Trip Distribution

Figure 2

Existing and Existing Plus Project Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

\\fpainc.local\Dfs-ent-data\Oakland N Drive\Projects\2021\OK21-0416.00_2929_Broadway\Graphics\ADOBE\OK21_0416_Volumes.ai

# Appendix A:
# StreetLight Data Intersection Volumes

**Broadway & 29th Street**

| Day Type | Time | NORTHBOUND | | | SOUTHBOUND | | | EASTBOUND | | | WESTBOUND | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | |
| 1: Weekday (Tu-Th) | 01: 12am (12am-1am) | 4 | 51 | 6 | 4 | 60 | 4 | 1 | 10 | 2 | 3 | 1 | 0 | 146 |
| 1: Weekday (Tu-Th) | 02: 1am (1am-2am) | 0 | 25 | 3 | 0 | 31 | 9 | 2 | 5 | 2 | 5 | 6 | 1 | 89 |
| 1: Weekday (Tu-Th) | 03: 2am (2am-3am) | 4 | 32 | 3 | 3 | 31 | 3 | 2 | 0 | 1 | 1 | 0 | 1 | 81 |
| 1: Weekday (Tu-Th) | 04: 3am (3am-4am) | 0 | 20 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 32 |
| 1: Weekday (Tu-Th) | 05: 4am (4am-5am) | 7 | 21 | 6 | 6 | 40 | 0 | 2 | 5 | 0 | 5 | 7 | 0 | 99 |
| 1: Weekday (Tu-Th) | 06: 5am (5am-6am) | 10 | 55 | 18 | 1 | 112 | 2 | 5 | 3 | 10 | 20 | 22 | 6 | 264 |
| 1: Weekday (Tu-Th) | 07: 6am (6am-7am) | 46 | 175 | 18 | 3 | 229 | 8 | 7 | 28 | 26 | 23 | 69 | 13 | 645 |
| 1: Weekday (Tu-Th) | 08: 7am (7am-8am) | 92 | 364 | 35 | 14 | 392 | 54 | 11 | 30 | 50 | 62 | 174 | 45 | 1323 |
| 1: Weekday (Tu-Th) | 09: 8am (8am-9am) | 149 | 583 | 76 | 23 | 675 | 58 | 14 | 53 | 63 | 70 | 249 | 32 | 2045 |
| 1: Weekday (Tu-Th) | 10: 9am (9am-10am) | 79 | 495 | 87 | 45 | 688 | 22 | 25 | 69 | 66 | 60 | 205 | 29 | 1870 |
| 1: Weekday (Tu-Th) | 11: 10am (10am-11am) | 58 | 442 | 70 | 36 | 513 | 43 | 27 | 75 | 69 | 45 | 116 | 26 | 1520 |
| 1: Weekday (Tu-Th) | 12: 11am (11am-12noon) | 59 | 450 | 73 | 42 | 560 | 25 | 39 | 76 | 74 | 65 | 123 | 36 | 1622 |
| 1: Weekday (Tu-Th) | 13: 12pm (12noon-1pm) | 74 | 538 | 85 | 41 | 615 | 33 | 37 | 88 | 69 | 49 | 138 | 34 | 1801 |
| 1: Weekday (Tu-Th) | 14: 1pm (1pm-2pm) | 81 | 552 | 90 | 49 | 540 | 31 | 28 | 86 | 87 | 38 | 134 | 30 | 1746 |
| 1: Weekday (Tu-Th) | 15: 2pm (2pm-3pm) | 82 | 682 | 116 | 50 | 648 | 38 | 30 | 118 | 89 | 64 | 128 | 36 | 2081 |
| 1: Weekday (Tu-Th) | 16: 3pm (3pm-4pm) | 79 | 735 | 129 | 74 | 686 | 15 | 59 | 152 | 82 | 78 | 154 | 33 | 2276 |
| 1: Weekday (Tu-Th) | 17: 4pm (4pm-5pm) | 88 | 796 | 114 | 71 | 782 | 19 | 31 | 257 | 67 | 70 | 100 | 24 | 2419 |
| 1: Weekday (Tu-Th) | 18: 5pm (5pm-6pm) | 90 | 820 | 168 | 95 | 738 | 28 | 45 | 294 | 81 | 76 | 88 | 27 | 2550 |
| 1: Weekday (Tu-Th) | 19: 6pm (6pm-7pm) | 42 | 641 | 130 | 54 | 595 | 25 | 21 | 124 | 56 | 70 | 100 | 39 | 1897 |
| 1: Weekday (Tu-Th) | 20: 7pm (7pm-8pm) | 34 | 389 | 81 | 39 | 433 | 15 | 20 | 83 | 39 | 78 | 72 | 13 | 1296 |
| 1: Weekday (Tu-Th) | 21: 8pm (8pm-9pm) | 23 | 312 | 86 | 30 | 328 | 18 | 8 | 48 | 15 | 45 | 49 | 23 | 985 |
| 1: Weekday (Tu-Th) | 22: 9pm (9pm-10pm) | 26 | 250 | 56 | 24 | 235 | 3 | 6 | 40 | 6 | 45 | 24 | 12 | 727 |
| 1: Weekday (Tu-Th) | 23: 10pm (10pm-11pm) | 26 | 188 | 21 | 7 | 147 | 2 | 3 | 26 | 8 | 28 | 40 | 6 | 502 |
| 1: Weekday (Tu-Th) | 24: 11pm (11pm-12am) | 5 | 85 | 11 | 6 | 134 | 8 | 0 | 16 | 8 | 16 | 17 | 5 | 311 |
| Peak Hour AM | 8:00am-9:00am | 149 | 583 | 76 | 23 | 675 | 58 | 14 | 53 | 63 | 70 | 249 | 32 | 2045 |
| Peak Hour PM | 5:00pm-6:00pm | 90 | 820 | 168 | 95 | 738 | 28 | 45 | 294 | 81 | 76 | 88 | 27 | 2550 |

Note: Data collected by Streetlight for September and October 2019. AM and PM peak hours are highlighted in green.

**Webster Street & 29th Street**

| Day Type | Time | NORTHBOUND | | | SOUTHBOUND | | | EASTBOUND | | | WESTBOUND | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR | |
| 1: Weekday (Tu-Th) | 01: 12am (12am-1am) | 3 | 0 | 3 | 2 | 0 | 2 | 0 | 11 | 0 | 0 | 9 | 4 | 34 |
| 1: Weekday (Tu-Th) | 02: 1am (1am-2am) | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 9 | 0 | 3 | 14 | 0 | 30 |
| 1: Weekday (Tu-Th) | 03: 2am (2am-3am) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 4 | 0 | 7 |
| 1: Weekday (Tu-Th) | 04: 3am (3am-4am) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1: Weekday (Tu-Th) | 05: 4am (4am-5am) | 0 | 8 | 0 | 3 | 0 | 0 | 0 | 4 | 0 | 0 | 10 | 3 | 28 |
| 1: Weekday (Tu-Th) | 06: 5am (5am-6am) | 2 | 5 | 2 | 7 | 0 | 4 | 0 | 9 | 16 | 10 | 23 | 9 | 87 |
| 1: Weekday (Tu-Th) | 07: 6am (6am-7am) | 0 | 3 | 8 | 11 | 3 | 0 | 2 | 52 | 3 | 22 | 80 | 38 | 222 |
| 1: Weekday (Tu-Th) | 08: 7am (7am-8am) | 9 | 5 | 2 | 61 | 60 | 12 | 6 | 45 | 12 | 87 | 137 | 124 | 560 |
| 1: Weekday (Tu-Th) | 09: 8am (8am-9am) | 15 | 12 | 14 | 49 | 46 | 29 | 20 | 88 | 29 | 101 | 288 | 121 | 812 |
| 1: Weekday (Tu-Th) | 10: 9am (9am-10am) | 7 | 20 | 30 | 49 | 21 | 20 | 46 | 90 | 8 | 29 | 219 | 116 | 655 |
| 1: Weekday (Tu-Th) | 11: 10am (10am-11am) | 4 | 23 | 33 | 69 | 25 | 45 | 30 | 114 | 4 | 59 | 118 | 82 | 606 |
| 1: Weekday (Tu-Th) | 12: 11am (11am-12noon) | 8 | 40 | 38 | 72 | 51 | 15 | 18 | 110 | 18 | 38 | 112 | 95 | 615 |
| 1: Weekday (Tu-Th) | 13: 12pm (12noon-1pm) | 12 | 15 | 29 | 57 | 65 | 17 | 19 | 123 | 7 | 56 | 150 | 89 | 639 |
| 1: Weekday (Tu-Th) | 14: 1pm (1pm-2pm) | 4 | 17 | 44 | 97 | 44 | 26 | 26 | 101 | 16 | 44 | 125 | 114 | 658 |
| 1: Weekday (Tu-Th) | 15: 2pm (2pm-3pm) | 22 | 41 | 35 | 111 | 42 | 24 | 69 | 131 | 17 | 43 | 144 | 141 | 820 |
| 1: Weekday (Tu-Th) | 16: 3pm (3pm-4pm) | 9 | 48 | 43 | 96 | 24 | 38 | 61 | 187 | 10 | 60 | 131 | 107 | 814 |
| 1: Weekday (Tu-Th) | 17: 4pm (4pm-5pm) | 6 | 25 | 39 | 116 | 34 | 19 | 29 | 256 | 14 | 24 | 137 | 80 | 779 |
| 1: Weekday (Tu-Th) | 18: 5pm (5pm-6pm) | 7 | 48 | 31 | 118 | 40 | 12 | 26 | 301 | 0 | 50 | 115 | 107 | 855 |
| 1: Weekday (Tu-Th) | 19: 6pm (6pm-7pm) | 2 | 15 | 16 | 60 | 15 | 19 | 10 | 149 | 4 | 29 | 114 | 37 | 470 |
| 1: Weekday (Tu-Th) | 20: 7pm (7pm-8pm) | 7 | 11 | 19 | 40 | 29 | 12 | 13 | 108 | 0 | 23 | 88 | 34 | 384 |
| 1: Weekday (Tu-Th) | 21: 8pm (8pm-9pm) | 0 | 9 | 22 | 17 | 10 | 5 | 0 | 45 | 0 | 12 | 53 | 44 | 217 |
| 1: Weekday (Tu-Th) | 22: 9pm (9pm-10pm) | 0 | 12 | 20 | 13 | 11 | 6 | 0 | 35 | 0 | 8 | 33 | 22 | 160 |
| 1: Weekday (Tu-Th) | 23: 10pm (10pm-11pm) | 0 | 0 | 5 | 12 | 3 | 0 | 3 | 26 | 0 | 10 | 38 | 40 | 137 |
| 1: Weekday (Tu-Th) | 24: 11pm (11pm-12am) | 0 | 3 | 0 | 1 | 4 | 6 | 0 | 17 | 0 | 2 | 26 | 2 | 61 |
| Peak Hour AM | 8:00am-9:00am | 15 | 12 | 14 | 49 | 46 | 29 | 20 | 88 | 29 | 101 | 288 | 121 | 812 |
| Peak Hour PM | 5:00pm-6:00pm | 7 | 48 | 31 | 118 | 40 | 12 | 26 | 301 | 0 | 50 | 115 | 107 | 855 |

Note: Data collected by Streetlight for September and October 2019. AM and PM peak hours are highlighted in green.

# Appendix B:
# Intersection LOS Calculation Sheets

| | ↗ | → | ↘ | ↙ | ← | ↖ | ↖ | ↑ | ↗ | ↘ | ↓ | ↙ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ✣ | | | ✣ | | ↰ | ↑↱ | | ↰ | ↑↱ | |
| Traffic Volume (vph) | 14 | 53 | 63 | 70 | 249 | 32 | 149 | 583 | 76 | 23 | 675 | 58 |
| Future Volume (vph) | 14 | 53 | 63 | 70 | 249 | 32 | 149 | 583 | 76 | 23 | 675 | 58 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.98 | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 0.98 | 1.00 | | 0.98 | 1.00 | |
| Frt | | 0.93 | | | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1693 | | | 1808 | | 1731 | 3434 | | 1727 | 3467 | |
| Flt Permitted | | 0.95 | | | 0.91 | | 0.34 | 1.00 | | 0.38 | 1.00 | |
| Satd. Flow (perm) | | 1625 | | | 1670 | | 623 | 3434 | | 685 | 3467 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 14 | 53 | 63 | 70 | 249 | 32 | 149 | 583 | 76 | 23 | 675 | 58 |
| RTOR Reduction (vph) | 0 | 39 | 0 | 0 | 4 | 0 | 0 | 12 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 91 | 0 | 0 | 347 | 0 | 149 | 647 | 0 | 23 | 725 | 0 |
| Confl. Peds. (#/hr) | 20 | | 20 | 20 | | 20 | 75 | | 75 | 75 | | 75 |
| Confl. Bikes (#/hr) | | | 15 | | | 15 | | | 50 | | | 50 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 24.0 | | | 24.0 | | 51.0 | 51.0 | | 51.0 | 51.0 | |
| Effective Green, g (s) | | 24.0 | | | 24.0 | | 51.0 | 51.0 | | 51.0 | 51.0 | |
| Actuated g/C Ratio | | 0.28 | | | 0.28 | | 0.60 | 0.60 | | 0.60 | 0.60 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 458 | | | 471 | | 373 | 2060 | | 411 | 2080 | |
| v/s Ratio Prot | | | | | | | | 0.19 | | | 0.21 | |
| v/s Ratio Perm | | 0.06 | | | c0.21 | | c0.24 | | | 0.03 | | |
| v/c Ratio | | 0.20 | | | 0.74 | | 0.40 | 0.31 | | 0.06 | 0.35 | |
| Uniform Delay, d1 | | 23.2 | | | 27.6 | | 8.9 | 8.4 | | 7.0 | 8.6 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.0 | | | 9.8 | | 3.2 | 0.4 | | 0.3 | 0.5 | |
| Delay (s) | | 24.1 | | | 37.5 | | 12.1 | 8.8 | | 7.3 | 9.1 | |
| Level of Service | | C | | | D | | B | A | | A | A | |
| Approach Delay (s) | | 24.1 | | | 37.5 | | | 9.4 | | | 9.0 | |
| Approach LOS | | C | | | D | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 15.0 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.51 | | |
| Actuated Cycle Length (s) | 85.0 | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | 122.4% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ✥ | | | ✥ | | | ✥ | | | ✥ | |
| Traffic Volume (vph) | 20 | 88 | 29 | 101 | 288 | 121 | 15 | 12 | 14 | 49 | 46 | 29 |
| Future Volume (vph) | 20 | 88 | 29 | 101 | 288 | 121 | 15 | 12 | 14 | 49 | 46 | 29 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 3.0 | | | 3.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | | 0.98 | | | 0.97 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | | 0.99 | | | 0.99 | | | 0.99 | |
| Frt | | 0.97 | | | 0.97 | | | 0.95 | | | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.98 | | | 0.98 | |
| Satd. Flow (prot) | | 1769 | | | 1749 | | | 1682 | | | 1715 | |
| Flt Permitted | | 0.92 | | | 0.91 | | | 0.92 | | | 0.89 | |
| Satd. Flow (perm) | | 1643 | | | 1611 | | | 1567 | | | 1559 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 20 | 88 | 29 | 101 | 288 | 121 | 15 | 12 | 14 | 49 | 46 | 29 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 14 | 0 | 0 | 8 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 0 | 125 | 0 | 0 | 496 | 0 | 0 | 33 | 0 | 0 | 111 | 0 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Confl. Bikes (#/hr) | | | 15 | | | 15 | | | 30 | | | 30 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 2 | | | 1 | | | 1 | |
| Permitted Phases | 2 | | | 2 | | | 1 | | | 1 | | |
| Actuated Green, G (s) | | 37.0 | | | 37.0 | | | 35.0 | | | 35.0 | |
| Effective Green, g (s) | | 37.0 | | | 37.0 | | | 35.0 | | | 35.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.44 | | | 0.44 | |
| Clearance Time (s) | | 3.0 | | | 3.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 759 | | | 745 | | | 685 | | | 682 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.08 | | | c0.31 | | | 0.02 | | | c0.07 | |
| v/c Ratio | | 0.16 | | | 0.67 | | | 0.05 | | | 0.16 | |
| Uniform Delay, d1 | | 12.5 | | | 16.7 | | | 12.9 | | | 13.6 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 0.5 | | | 4.7 | | | 0.1 | | | 0.5 | |
| Delay (s) | | 13.0 | | | 21.4 | | | 13.1 | | | 14.1 | |
| Level of Service | | B | | | C | | | B | | | B | |
| Approach Delay (s) | | 13.0 | | | 21.4 | | | 13.1 | | | 14.1 | |
| Approach LOS | | B | | | C | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 18.4 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.42 | | |
| Actuated Cycle Length (s) | 80.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 57.6% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

## 1: Broadway & 29th Street

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ✥ | | | ✥ | | ↰ | ↑↱ | | ↰ | ↑↱ | |
| Traffic Volume (vph) | 45 | 294 | 81 | 76 | 88 | 27 | 90 | 820 | 168 | 95 | 738 | 28 |
| Future Volume (vph) | 45 | 294 | 81 | 76 | 88 | 27 | 90 | 820 | 168 | 95 | 738 | 28 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.99 | | | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 0.98 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.97 | | | 0.98 | | 1.00 | 0.97 | | 1.00 | 0.99 | |
| Flt Protected | | 0.99 | | | 0.98 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1786 | | | 1775 | | 1733 | 3384 | | 1744 | 3506 | |
| Flt Permitted | | 0.95 | | | 0.55 | | 0.33 | 1.00 | | 0.24 | 1.00 | |
| Satd. Flow (perm) | | 1708 | | | 1003 | | 597 | 3384 | | 440 | 3506 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 45 | 294 | 81 | 76 | 88 | 27 | 90 | 820 | 168 | 95 | 738 | 28 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 7 | 0 | 0 | 20 | 0 | 0 | 3 | 0 |
| Lane Group Flow (vph) | 0 | 410 | 0 | 0 | 184 | 0 | 90 | 968 | 0 | 95 | 763 | 0 |
| Confl. Peds. (#/hr) | 20 | | 20 | 20 | | 20 | 75 | | 75 | 75 | | 75 |
| Confl. Bikes (#/hr) | | | 15 | | | 15 | | | 50 | | | 50 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 2 | | | 1 | | | 1 | |
| Permitted Phases | 2 | | | 2 | | | 1 | | | 1 | | |
| Actuated Green, G (s) | | 24.0 | | | 24.0 | | 51.0 | 51.0 | | 51.0 | 51.0 | |
| Effective Green, g (s) | | 24.0 | | | 24.0 | | 51.0 | 51.0 | | 51.0 | 51.0 | |
| Actuated g/C Ratio | | 0.28 | | | 0.28 | | 0.60 | 0.60 | | 0.60 | 0.60 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 482 | | | 283 | | 358 | 2030 | | 264 | 2103 | |
| v/s Ratio Prot | | | | | | | | c0.29 | | | 0.22 | |
| v/s Ratio Perm | | c0.24 | | | 0.18 | | 0.15 | | | 0.22 | | |
| v/c Ratio | | 0.85 | | | 0.65 | | 0.25 | 0.48 | | 0.36 | 0.36 | |
| Uniform Delay, d1 | | 28.8 | | | 26.8 | | 8.0 | 9.5 | | 8.7 | 8.7 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 17.0 | | | 11.0 | | 1.7 | 0.8 | | 3.8 | 0.5 | |
| Delay (s) | | 45.8 | | | 37.8 | | 9.7 | 10.3 | | 12.5 | 9.2 | |
| Level of Service | | D | | | D | | A | B | | B | A | |
| Approach Delay (s) | | 45.8 | | | 37.8 | | | 10.3 | | | 9.5 | |
| Approach LOS | | D | | | D | | | B | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 17.9 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.60 | | |
| Actuated Cycle Length (s) | 85.0 | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | 87.8% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

# HCM Signalized Intersection Capacity Analysis
## 2: Webster Street & 29th Street

2929 Broadway
PM Existing

| | ↗ | → | ↘ | ↙ | ← | ↖ | ↖ | ↑ | ↗ | ↘ | ↓ | ↙ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ✥ | | | ✥ | | | ✥ | | | ✥ | |
| Traffic Volume (vph) | 26 | 301 | 0 | 50 | 115 | 107 | 7 | 48 | 31 | 118 | 40 | 12 |
| Future Volume (vph) | 26 | 301 | 0 | 50 | 115 | 107 | 7 | 48 | 31 | 118 | 40 | 12 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 3.0 | | | 3.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 0.97 | | | 0.97 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | |
| Frt | | 1.00 | | | 0.95 | | | 0.95 | | | 0.99 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | | 1853 | | | 1699 | | | 1712 | | | 1737 | |
| Flt Permitted | | 0.97 | | | 0.90 | | | 0.98 | | | 0.76 | |
| Satd. Flow (perm) | | 1798 | | | 1543 | | | 1687 | | | 1359 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 26 | 301 | 0 | 50 | 115 | 107 | 7 | 48 | 31 | 118 | 40 | 12 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 17 | 0 | 0 | 3 | 0 |
| Lane Group Flow (vph) | 0 | 327 | 0 | 0 | 243 | 0 | 0 | 69 | 0 | 0 | 167 | 0 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Confl. Bikes (#/hr) | | | 15 | | | 15 | | | 30 | | | 30 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 2 | | | 1 | | | 1 | |
| Permitted Phases | 2 | | | 2 | | | 1 | | | 1 | | |
| Actuated Green, G (s) | | 37.0 | | | 37.0 | | | 35.0 | | | 35.0 | |
| Effective Green, g (s) | | 37.0 | | | 37.0 | | | 35.0 | | | 35.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.44 | | | 0.44 | |
| Clearance Time (s) | | 3.0 | | | 3.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 831 | | | 713 | | | 738 | | | 594 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.18 | | | 0.16 | | | 0.04 | | | c0.12 | |
| v/c Ratio | | 0.39 | | | 0.34 | | | 0.09 | | | 0.28 | |
| Uniform Delay, d1 | | 14.1 | | | 13.7 | | | 13.2 | | | 14.4 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 1.4 | | | 1.3 | | | 0.2 | | | 1.2 | |
| Delay (s) | | 15.5 | | | 15.0 | | | 13.4 | | | 15.6 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 15.5 | | | 15.0 | | | 13.4 | | | 15.6 | |
| Approach LOS | | B | | | B | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 15.2 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.34 | | |
| Actuated Cycle Length (s) | 80.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 51.9% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ✣ | | | ✣ | | ↰ | ↑↱ | | ↰ | ↑↱ | |
| Traffic Volume (vph) | 23 | 60 | 75 | 70 | 251 | 32 | 152 | 583 | 76 | 23 | 675 | 61 |
| Future Volume (vph) | 23 | 60 | 75 | 70 | 251 | 32 | 152 | 583 | 76 | 23 | 675 | 61 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 0.98 | | | 1.00 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | 0.98 | 1.00 | | 0.98 | 1.00 | |
| Frt | | 0.94 | | | 0.99 | | 1.00 | 0.98 | | 1.00 | 0.99 | |
| Flt Protected | | 0.99 | | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1692 | | | 1809 | | 1732 | 3434 | | 1727 | 3463 | |
| Flt Permitted | | 0.92 | | | 0.91 | | 0.34 | 1.00 | | 0.38 | 1.00 | |
| Satd. Flow (perm) | | 1570 | | | 1661 | | 621 | 3434 | | 685 | 3463 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 23 | 60 | 75 | 70 | 251 | 32 | 152 | 583 | 76 | 23 | 675 | 61 |
| RTOR Reduction (vph) | 0 | 38 | 0 | 0 | 4 | 0 | 0 | 12 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 120 | 0 | 0 | 349 | 0 | 152 | 647 | 0 | 23 | 728 | 0 |
| Confl. Peds. (#/hr) | 20 | | 20 | 20 | | 20 | 75 | | 75 | 75 | | 75 |
| Confl. Bikes (#/hr) | | | 15 | | | 15 | | | 50 | | | 50 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 24.0 | | | 24.0 | | 51.0 | 51.0 | | 51.0 | 51.0 | |
| Effective Green, g (s) | | 24.0 | | | 24.0 | | 51.0 | 51.0 | | 51.0 | 51.0 | |
| Actuated g/C Ratio | | 0.28 | | | 0.28 | | 0.60 | 0.60 | | 0.60 | 0.60 | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | | 443 | | | 468 | | 372 | 2060 | | 411 | 2077 | |
| v/s Ratio Prot | | | | | | | | 0.19 | | | 0.21 | |
| v/s Ratio Perm | | 0.08 | | | c0.21 | | c0.24 | | | 0.03 | | |
| v/c Ratio | | 0.27 | | | 0.75 | | 0.41 | 0.31 | | 0.06 | 0.35 | |
| Uniform Delay, d1 | | 23.7 | | | 27.7 | | 9.0 | 8.4 | | 7.0 | 8.6 | |
| Progression Factor | | 1.00 | | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 1.5 | | | 10.3 | | 3.3 | 0.4 | | 0.3 | 0.5 | |
| Delay (s) | | 25.2 | | | 38.0 | | 12.3 | 8.8 | | 7.3 | 9.1 | |
| Level of Service | | C | | | D | | B | A | | A | A | |
| Approach Delay (s) | | 25.2 | | | 38.0 | | | 9.4 | | | 9.0 | |
| Approach LOS | | C | | | D | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 15.3 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.52 | | |
| Actuated Cycle Length (s) | 85.0 | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | 125.2% | ICU Level of Service | H |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

# HCM Signalized Intersection Capacity Analysis
## 2: Webster St & 29th Street

2929 Broadway
Plus Project AM

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ✥ | | | ✥ | | | ✥ | | | ✥ | |
| Traffic Volume (vph) | 20 | 90 | 29 | 101 | 295 | 123 | 15 | 12 | 14 | 50 | 46 | 29 |
| Future Volume (vph) | 20 | 90 | 29 | 101 | 295 | 123 | 15 | 12 | 14 | 50 | 46 | 29 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 3.0 | | | 3.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 0.99 | | | 0.98 | | | 0.97 | | | 0.98 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 0.99 | | | 0.99 | |
| Frt | | 0.97 | | | 0.97 | | | 0.95 | | | 0.97 | |
| Flt Protected | | 0.99 | | | 0.99 | | | 0.98 | | | 0.98 | |
| Satd. Flow (prot) | | 1771 | | | 1750 | | | 1682 | | | 1715 | |
| Flt Permitted | | 0.92 | | | 0.91 | | | 0.91 | | | 0.89 | |
| Satd. Flow (perm) | | 1644 | | | 1613 | | | 1567 | | | 1556 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 20 | 90 | 29 | 101 | 295 | 123 | 15 | 12 | 14 | 50 | 46 | 29 |
| RTOR Reduction (vph) | 0 | 12 | 0 | 0 | 14 | 0 | 0 | 8 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 0 | 127 | 0 | 0 | 505 | 0 | 0 | 33 | 0 | 0 | 112 | 0 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Confl. Bikes (#/hr) | | | 15 | | | 15 | | | 30 | | | 30 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 2 | | | 1 | | | 1 | |
| Permitted Phases | 2 | | | 2 | | | 1 | | | 1 | | |
| Actuated Green, G (s) | | 37.0 | | | 37.0 | | | 35.0 | | | 35.0 | |
| Effective Green, g (s) | | 37.0 | | | 37.0 | | | 35.0 | | | 35.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.44 | | | 0.44 | |
| Clearance Time (s) | | 3.0 | | | 3.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 760 | | | 746 | | | 685 | | | 680 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.08 | | | c0.31 | | | 0.02 | | | c0.07 | |
| v/c Ratio | | 0.17 | | | 0.68 | | | 0.05 | | | 0.16 | |
| Uniform Delay, d1 | | 12.5 | | | 16.8 | | | 12.9 | | | 13.6 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 0.5 | | | 4.9 | | | 0.1 | | | 0.5 | |
| Delay (s) | | 13.0 | | | 21.7 | | | 13.1 | | | 14.2 | |
| Level of Service | | B | | | C | | | B | | | B | |
| Approach Delay (s) | | 13.0 | | | 21.7 | | | 13.1 | | | 14.2 | |
| Approach LOS | | B | | | C | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 18.7 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.43 | | |
| Actuated Cycle Length (s) | 80.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 58.1% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations |  | ✣ |  |  | ✣ |  | ↰ | ↑↱ |  | ↰ | ↑↱ |  |
| Traffic Volume (vph) | 51 | 298 | 88 | 76 | 95 | 27 | 101 | 820 | 168 | 95 | 738 | 37 |
| Future Volume (vph) | 51 | 298 | 88 | 76 | 95 | 27 | 101 | 820 | 168 | 95 | 738 | 37 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) |  | 5.0 |  |  | 5.0 |  | 5.0 | 5.0 |  | 5.0 | 5.0 |  |
| Lane Util. Factor |  | 1.00 |  |  | 1.00 |  | 1.00 | 0.95 |  | 1.00 | 0.95 |  |
| Frpb, ped/bikes |  | 0.99 |  |  | 0.99 |  | 1.00 | 0.98 |  | 1.00 | 0.99 |  |
| Flpb, ped/bikes |  | 1.00 |  |  | 1.00 |  | 0.98 | 1.00 |  | 0.99 | 1.00 |  |
| Frt |  | 0.97 |  |  | 0.98 |  | 1.00 | 0.97 |  | 1.00 | 0.99 |  |
| Flt Protected |  | 0.99 |  |  | 0.98 |  | 0.95 | 1.00 |  | 0.95 | 1.00 |  |
| Satd. Flow (prot) |  | 1783 |  |  | 1778 |  | 1734 | 3384 |  | 1744 | 3495 |  |
| Flt Permitted |  | 0.94 |  |  | 0.55 |  | 0.32 | 1.00 |  | 0.24 | 1.00 |  |
| Satd. Flow (perm) |  | 1693 |  |  | 999 |  | 590 | 3384 |  | 440 | 3495 |  |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 51 | 298 | 88 | 76 | 95 | 27 | 101 | 820 | 168 | 95 | 738 | 37 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 6 | 0 | 0 | 20 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 0 | 426 | 0 | 0 | 192 | 0 | 101 | 968 | 0 | 95 | 771 | 0 |
| Confl. Peds. (#/hr) | 20 |  | 20 | 20 |  | 20 | 75 |  | 75 | 75 |  | 75 |
| Confl. Bikes (#/hr) |  |  | 15 |  |  | 15 |  |  | 50 |  |  | 50 |
| Turn Type | Perm | NA |  | Perm | NA |  | Perm | NA |  | Perm | NA |  |
| Protected Phases |  | 2 |  |  | 2 |  |  | 1 |  |  | 1 |  |
| Permitted Phases | 2 |  |  | 2 |  |  | 1 |  |  | 1 |  |  |
| Actuated Green, G (s) |  | 24.0 |  |  | 24.0 |  | 51.0 | 51.0 |  | 51.0 | 51.0 |  |
| Effective Green, g (s) |  | 24.0 |  |  | 24.0 |  | 51.0 | 51.0 |  | 51.0 | 51.0 |  |
| Actuated g/C Ratio |  | 0.28 |  |  | 0.28 |  | 0.60 | 0.60 |  | 0.60 | 0.60 |  |
| Clearance Time (s) |  | 5.0 |  |  | 5.0 |  | 5.0 | 5.0 |  | 5.0 | 5.0 |  |
| Lane Grp Cap (vph) |  | 478 |  |  | 282 |  | 354 | 2030 |  | 264 | 2097 |  |
| v/s Ratio Prot |  |  |  |  |  |  |  | c0.29 |  |  | 0.22 |  |
| v/s Ratio Perm |  | c0.25 |  |  | 0.19 |  | 0.17 |  |  | 0.22 |  |  |
| v/c Ratio |  | 0.89 |  |  | 0.68 |  | 0.29 | 0.48 |  | 0.36 | 0.37 |  |
| Uniform Delay, d1 |  | 29.3 |  |  | 27.1 |  | 8.2 | 9.5 |  | 8.7 | 8.7 |  |
| Progression Factor |  | 1.00 |  |  | 1.00 |  | 1.00 | 1.00 |  | 1.00 | 1.00 |  |
| Incremental Delay, d2 |  | 21.5 |  |  | 12.4 |  | 2.0 | 0.8 |  | 3.8 | 0.5 |  |
| Delay (s) |  | 50.8 |  |  | 39.5 |  | 10.2 | 10.3 |  | 12.5 | 9.2 |  |
| Level of Service |  | D |  |  | D |  | B | B |  | B | A |  |
| Approach Delay (s) |  | 50.8 |  |  | 39.5 |  |  | 10.3 |  |  | 9.6 |  |
| Approach LOS |  | D |  |  | D |  |  | B |  |  | A |  |

| Intersection Summary |  |  |  |
|---|---|---|---|
| HCM 2000 Control Delay | 19.1 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.61 |  |  |
| Actuated Cycle Length (s) | 85.0 | Sum of lost time (s) | 10.0 |
| Intersection Capacity Utilization | 87.0% | ICU Level of Service | E |
| Analysis Period (min) | 15 |  |  |
| c Critical Lane Group |  |  |  |

# HCM Signalized Intersection Capacity Analysis
## 2: Webster Street & 29th Street

2929 Broadway
Plus Project PM

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ✥ | | | ✥ | | | ✥ | | | ✥ | |
| Traffic Volume (vph) | 26 | 308 | 0 | 50 | 119 | 108 | 7 | 48 | 31 | 120 | 40 | 12 |
| Future Volume (vph) | 26 | 308 | 0 | 50 | 119 | 108 | 7 | 48 | 31 | 120 | 40 | 12 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 3.0 | | | 3.0 | | | 5.0 | | | 5.0 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | | 1.00 | | | 0.97 | | | 0.97 | | | 0.99 | |
| Flpb, ped/bikes | | 1.00 | | | 1.00 | | | 1.00 | | | 0.98 | |
| Frt | | 1.00 | | | 0.95 | | | 0.95 | | | 0.99 | |
| Flt Protected | | 1.00 | | | 0.99 | | | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | | 1853 | | | 1700 | | | 1712 | | | 1737 | |
| Flt Permitted | | 0.97 | | | 0.90 | | | 0.98 | | | 0.75 | |
| Satd. Flow (perm) | | 1799 | | | 1545 | | | 1687 | | | 1356 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 26 | 308 | 0 | 50 | 119 | 108 | 7 | 48 | 31 | 120 | 40 | 12 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 17 | 0 | 0 | 3 | 0 |
| Lane Group Flow (vph) | 0 | 334 | 0 | 0 | 248 | 0 | 0 | 69 | 0 | 0 | 169 | 0 |
| Confl. Peds. (#/hr) | 15 | | 15 | 15 | | 15 | 15 | | 15 | 15 | | 15 |
| Confl. Bikes (#/hr) | | | 15 | | | 15 | | | 30 | | | 30 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 2 | | | 1 | | | 1 | |
| Permitted Phases | 2 | | | 2 | | | 1 | | | 1 | | |
| Actuated Green, G (s) | | 37.0 | | | 37.0 | | | 35.0 | | | 35.0 | |
| Effective Green, g (s) | | 37.0 | | | 37.0 | | | 35.0 | | | 35.0 | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.44 | | | 0.44 | |
| Clearance Time (s) | | 3.0 | | | 3.0 | | | 5.0 | | | 5.0 | |
| Lane Grp Cap (vph) | | 832 | | | 714 | | | 738 | | | 593 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.19 | | | 0.16 | | | 0.04 | | | c0.12 | |
| v/c Ratio | | 0.40 | | | 0.35 | | | 0.09 | | | 0.28 | |
| Uniform Delay, d1 | | 14.2 | | | 13.8 | | | 13.2 | | | 14.5 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 1.4 | | | 1.3 | | | 0.2 | | | 1.2 | |
| Delay (s) | | 15.6 | | | 15.1 | | | 13.4 | | | 15.7 | |
| Level of Service | | B | | | B | | | B | | | B | |
| Approach Delay (s) | | 15.6 | | | 15.1 | | | 13.4 | | | 15.7 | |
| Approach LOS | | B | | | B | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 15.3 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.34 | | |
| Actuated Cycle Length (s) | 80.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 52.4% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

# Appendix C: Signal Warrant Worksheets

## Warrant 1A: Minimum Vehicular Volume

The warrant is satisfied when, for each of any 8 hours of an average day, the traffic volumes given in the table below exist on the major street and on the higher-volume minor street approach to the intersection.

| Number of lanes for moving traffic on each approach<br>Major Street | <br>Minor Street | Vehicles per hour on major street (total ofboth approaches) | Vehicles per hour on higher-volume minor-street approach (one direction only) |
|---|---|---|---|
| 1 | 1 | 500 | 150 |
| 2 or more | 1 | 600 | 150 |
| 2 or more | 2 or more | 600 | 200 |
| 1 | 2 or more | 500 | 200 |

When the 85-percentile speed of major-street exceeds 40 mph in either an urban or rural area, or when the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the Minimum Vehicular Volume warrant is 70 percent of the requirements above.

## Analysis

| | No of lanes |
|---|---|
| Major Street | 1 |
| Minor Street | 1 |

| Time | Major Street | | Minor Street | | Warrants MET/NOT |
|---|---|---|---|---|---|
| | Volume on major street (total of both approaches) | Threshhold<br>URBAN<br>500 | Veh/hour on higher volume minor street (one direction only) | Threshhold<br>URBAN<br>150 | |
| 8:00 AM | 647 | | 124 | | NOT MET |
| 9:00 AM | 508 | | 90 | | NOT MET |
| 12:00 PM | 444 | | 139 | | NOT MET |
| 1:00 PM | 426 | | 167 | | NOT MET |
| 2:00 PM | 545 | | 177 | | MET |
| 3:00 PM | 556 | | 158 | | MET |
| 4:00 PM | 540 | | 169 | | MET |
| 5:00 PM | 599 | | 170 | | MET |

| | |
|---|---|
| Number of hours for which warrant met | 4 |
| Percentage by which warrant met | 50.0% |

| | |
|---|---|
| **Warrant** | **Not Met** |

**80% Warrant**

| | No of lanes |
|---|---|
| Major Street | 2 |
| Minor Street | 1 |

| Time | Major Street | | Minor Street | | Warrants MET/NOT |
|---|---|---|---|---|---|
| | Volume on major street (total of both | Threshhold<br>URBAN<br>400 | Veh/hour on higher volume minor street | Threshhold<br>URBAN<br>120 | |
| 8:00 AM | 647 | | 124 | | MET |
| 9:00 AM | 508 | | 90 | | NOT MET |
| 12:00 PM | 444 | | 139 | | MET |
| 1:00 PM | 426 | | 167 | | MET |
| 2:00 PM | 545 | | 177 | | MET |
| 3:00 PM | 556 | | 158 | | MET |
| 4:00 PM | 540 | | 169 | | MET |
| 5:00 PM | 599 | | 170 | | MET |

| | |
|---|---|
| Number of hours for which warrant met | 7 |
| Percentage by which warrant met | 87.5% |

| | |
|---|---|
| **Warrant** | **Not Met** |

## Warrant 1B: Interruption of Continuous Traffic

The warrant is satisfied when, for each of any 8 hours of an average day, the traffic volumes given in the table below exist on the major street and on the higher-volume minor street approach to the intersection, and signal installation will not seriously disrupt progressive traffic flow.

| Number of lanes for moving traffic on each approach | | Vehicles per hour on major street (total ofboth approaches) | Vehicles per hour on higher-volume minor-street approach (one direction only) |
|---|---|---|---|
| Major Street | Minor Street | | |
| 1 | 1 | 750 | 75 |
| 2 or more | 1 | 900 | 75 |
| 2 or more | 2 or more | 900 | 100 |
| 1 | 2 or more | 750 | 100 |

The major-street and minor -street volumes are for the same 8 hours. During those 8 hours, the direction of higher volume on the minor street may be on one approach during some hours and on the opposite approach during other hours.

When the 85-percentile speed of major-street exceeds 40 mph in either an urban or rural area, or when the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the Interruption of Continuous Traffic warrant is 70 percent of the requirements above.

## Analysis

| | No of lanes |
|---|---|
| Major Street | 1 |
| Minor Street | 1 |

| Time | Major Street | | Minor Street | | Warrants MET/NOT |
|---|---|---|---|---|---|
| | Volume on major (total of both approaches) | Threshhold | Veh/hour on higher volume minor (one direction only) | Threshhold | |
| | | URBAN | | URBAN | |
| | | 750 | | 75 | |
| 8:00 AM | 647 | | 124 | | NOT MET |
| 9:00 AM | 508 | | 90 | | NOT MET |
| 12:00 PM | 444 | | 139 | | NOT MET |
| 1:00 PM | 426 | | 167 | | NOT MET |
| 2:00 PM | 545 | | 177 | | NOT MET |
| 3:00 PM | 556 | | 158 | | NOT MET |
| 4:00 PM | 540 | | 169 | | NOT MET |
| 5:00 PM | 599 | | 170 | | NOT MET |

| | |
|---|---|
| Number of hours for which warrant met | 0 |
| Percentage by which warrant met | 0.0% |

| | |
|---|---|
| **Warrant** | **Not Met** |

**80% Warrant**

| | No of lanes |
|---|---|
| Major Street | 2 |
| Minor Street | 1 |

| Time | Major Street | | Minor Street | | Warrants MET/NOT |
|---|---|---|---|---|---|
| | Volume on major (total of both | Threshhold | Veh/hour on higher volume minor (one | Threshhold | |
| | | URBAN | | URBAN | |
| | | 600 | | 60 | |
| 8:00 AM | 647 | | 124 | | MET |
| 9:00 AM | 508 | | 90 | | NOT MET |
| 12:00 PM | 444 | | 139 | | NOT MET |
| 1:00 PM | 426 | | 167 | | NOT MET |
| 2:00 PM | 545 | | 177 | | NOT MET |
| 3:00 PM | 556 | | 158 | | NOT MET |
| 4:00 PM | 540 | | 169 | | NOT MET |
| 5:00 PM | 599 | | 170 | | NOT MET |

| | |
|---|---|
| Number of hours for which warrant met | 1 |
| Percentage by which warrant met | 12.5% |

| | |
|---|---|
| **Warrant** | **Not Met** |

## Warrant 1C: Combination of Warrants

In exceptional cases, signals occasionally may be justified where no single warrant is satisfied but where Warrants 1A and 1B are satisfied to the extent of 80% or more of the stated values.

## Analysis

| | |
|---|---|
| 80% of Warrant 1A Met | NO |
| 80% of Warrant 1B Met | NO |

| | |
|---|---|
| **Warrant** | **Not Met** |

# Warrant 2: Four-Hour Vehicular Volumes

The Four Hour Volume Warrant is satisfied when each of any four hours of an average day the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher volume minor street approach (one direction only) all fall above the curve in Figure 4C-1 for the existing combination of approach lanes.

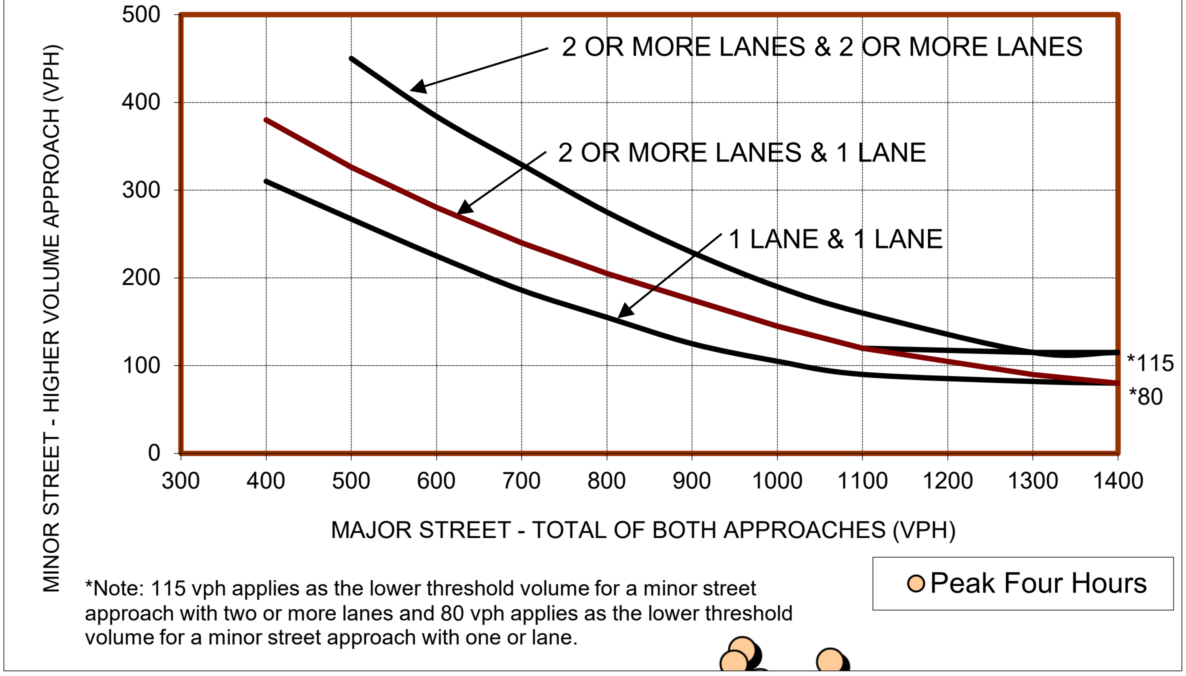
## Analysis

| | No of lanes |
|---|---|
| Major Street | 1 |
| Minor Street | 1 |

**Peak Four Hours**

| Time | Vehicles Per Hour | |
|---|---|---|
| | Major Street (Sum of both approaches) | Minor street (High volume approach) |
| 3:00 PM | 545 | 177 |
| 4:00 PM | 556 | 158 |
| 5:00 PM | 540 | 169 |
| 6:00 PM | 599 | 170 |

**FIGURE 4C-1. FOUR HOUR VOLUME WARRANT**



*Note: 115 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor street approach with one or lane.

| **Warrant** | **Not Met** |
|---|---|

## Warrant 3A: Peak Hour Delay

The peak hour delay warrant is intended for application where traffic conditions are such that for one hour of the day minor street traffic suffers undue delay in entering or crossing the major street. The peak hour delay warrant is satisfied when the conditions given below exist for one hour (any four consecutive 15-minute periods) of an average weekday.

The peak hour delay warrant is met when:

1. The total delay experienced by the traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach, and

2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes, and

3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four (or more) approaches or 650 vph for intersections with three approaches.

## Analysis

| | |
|---|---|
| Minor Street Lanes | 1 |
| Total Approaches | 4 |
| Time | 8:00 AM |

| | Peak Hour Delay on Minor Approach (vehicle-hours) | Peak Hour Volume on Minor Approach (vph) | Peak Hour Entering Volume Serviced for the Intersection (vph) |
|---|---|---|---|
| Existing | 2.2 | 124 | 812 |
| Limiting Value | 4 | 100 | 800 |
| Met/ Not Met | Not Met | Met | Met |

| | |
|---|---|
| **Warrant** | **Not Met** |

## Warrant 3B: Peak Hour Volume

The peak hour volume warrant is satisfied when the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the higher volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) of an average day falls above the curve in Figure 4-5 for the existing combination of approach lanes.

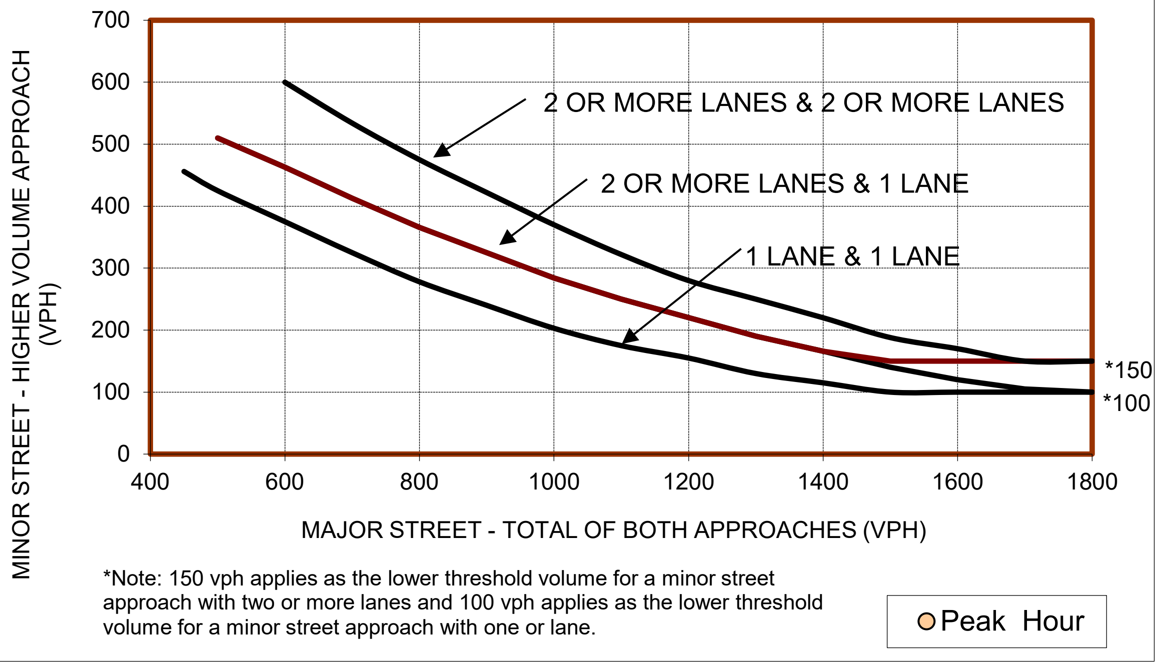
## Analysis

| | No of lanes |
|---|---|
| Major Street | 1 |
| Minor Street | 1 |

**Peak Hour**

| Time | Vehicles Per Hour | |
|---|---|---|
| | Major Street (Sum of both approaches) | Minor street (High volume approach) |
| 5:00 PM | 647 | 124 |

**FIGURE 4C-3. PEAK HOUR VOLUME WARRANT**



*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one or lane.

| **Warrant** | **Not Met** |
|---|---|

## Warrant 7: Crash Experience

The Crash Experience signal warrant conditions are intended for application where severity and frequency of crashes are the principal reasons to consider installing a traffic control signal.

**Standard:**

A. Five or more reported crashes, of types susceptible to correction by a traffic control signal, have occured within a 12-month period, each crash involving personal injury or property damage apparently exceeding the applicable requirements for a reportable crash; and

B. Warrant 1A or Warrant 1B or 80% of the pedestrian volume warrant is met

## Warrant 7A - Five or more reported crashes

| | **Number** | **5 or more?** |
|---|---|---|
| Number of crashes within a 12-month period, of types susceptible to correction by a traffic signal, each involving personal injury or property damage (reportable) | 1 | N |

| **Plus at least one of the following:** | **Yes** | **No** |
|---|---|---|
| **Warrant 7B - 80% Warrant 1A** | | |
| Warrant 1A: 80% threshold met? | | X |
| **Warrant 7C - 80% Warrant 1B** | | |
| Warrant 1B: 80% threshold met? | | X |
| **Warrant 7D - 80% Warrant 4** | | |
| Warrant 4: 80% threshold met (152 or more peds for any hour, and 80 or more peds for any 4 hours)? | | X |

| | |
|---|---|
| **Warrant** | **Not Met** |

# Appendix D: Predicted Crash Frequency Calculation Sheets

**Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections**

| General Information | | Location Information | |
|---|---|---|---|
| Analyst | NT | Roadway | Broadway |
| Agency or Company | Fehr & Peers | Intersection | Broadway & 29th St |
| Date Performed | 08/11/21 | Jurisdiction | Oakland, CA |
| | | Analysis Year | 2021 |

| Input Data | | Base Conditions | Site Conditions |
|---|---|---|---|
| Intersection type (3ST, 3SG, 4ST, 4SG) | | -- | 4SG |
| $AADT_{major}$ (veh/day) | $AADT_{MAX}$ = 67,700 (veh/day) | -- | 21,277 |
| $AADT_{minor}$ (veh/day) | $AADT_{MAX}$ = 33,400 (veh/day) | -- | 6,725 |
| Intersection lighting (present/not present) | | Not Present | Present |
| Calibration factor, $C_i$ | | 1.00 | 1.00 |
| Data for unsignalized intersections only: | | -- | -- |
| Number of major-road approaches with left-turn lanes (0,1,2) | | 0 | 0 |
| Number of major-road approaches with right-turn lanes (0,1,2) | | 0 | 0 |
| Data for signalized intersections only: | | -- | -- |
| Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3] | | 0 | 2 |
| Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3] | | 0 | 0 |
| Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3] | | -- | 4 |
| Type of left-turn signal phasing for Leg #1 | | Permissive | Permissive |
| Type of left-turn signal phasing for Leg #2 | | -- | Permissive |
| Type of left-turn signal phasing for Leg #3 | | -- | Permissive |
| Type of left-turn signal phasing for Leg #4 (if applicable) | | -- | Permissive |
| Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3] | | 0 | 0 |
| Intersection red light cameras (present/not present) | | Not Present | Not Present |
| Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only | | | 1,500 |
| Maximum number of lanes crossed by a pedestrian ($n_{lanesx}$) | | -- | 5 |
| Number of bus stops within 300 m (1,000 ft) of the intersection | | 0 | 5 |
| Schools within 300 m (1,000 ft) of the intersection (present/not present) | | Not Present | Present |
| Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection | | 0 | 3 |

**Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections**

| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|
| CMF for Left-Turn Lanes | CMF for Left-Turn Signal Phasing | CMF for Right-Turn Lanes | CMF for Right Turn on Red | CMF for Lighting | CMF for Red Light Cameras | Combined CMF |
| *CMF 1i* | *CMF 2i* | *CMF 3i* | *CMF 4i* | *CMF 5i* | *CMF 6i* | $CMF_{COMB}$ |
| from Table 12-24 | from Table 12-25 | from Table 12-26 | from Equation 12-35 | from Equation 12-36 | from Equation 12-37 | (1)*(2)*(3)*(4)*(5)*(6) |
| 0.81 | 1.00 | 1.00 | 1.00 | 0.91 | 1.00 | 0.74 |

### Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

| (1) | (2) | | | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **SPF Coefficients** | | | **Overdispersion Parameter, k** | **Initial $N_{bimv}$** | **Proportion of Total Crashes** | **Adjusted $N_{bimv}$** | **Combined CMFs** | **Calibration Factor, $C_i$** | **Predicted $N_{bimv}$** |
| | from Table 12-10 | | | from Table 12-10 | from Equation 12-21 | | $(4)_{TOTAL}*(5)$ | (7) from Worksheet 2B | | (6)*(7)*(8) |
| | a | b | c | | | | | | | |
| Total | -10.99 | 1.07 | 0.23 | 0.39 | 5.474 | 1.000 | 5.474 | 0.74 | 1.00 | 4.038 |
| Fatal and Injury (FI) | -13.14 | 1.18 | 0.22 | 0.33 | 1.747 | $(4)_{FI}/((4)_{FI}+(4)_{PDO})$<br>0.331 | 1.814 | 0.74 | 1.00 | 1.338 |
| Property Damage Only (PDO) | -11.02 | 1.02 | 0.24 | 0.44 | 3.525 | $(5)_{TOTAL}-(5)_{FI}$<br>0.669 | 3.660 | 0.74 | 1.00 | 2.700 |

### Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| **Collision Type** | **Proportion of Collision Type$_{(FI)}$** | **Predicted $N_{bimv\ (FI)}$ (crashes/year)** | **Proportion of Collision Type $_{(PDO)}$** | **Predicted $N_{bimv\ (PDO)}$ (crashes/year)** | **Predicted $N_{bimv\ (TOTAL)}$ (crashes/year)** |
| | from Table 12-11 | $(9)_{FI}$ from Worksheet 2C | from Table 12-11 | $(9)_{PDO}$ from Worksheet 2C | $(9)_{PDO}$ from Worksheet 2C |
| Total | 1.000 | 1.338 | 1.000 | 2.700 | 4.038 |
| | | $(2)*(3)_{FI}$ | | $(4)*(5)_{PDO}$ | (3)+(5) |
| Rear-end collision | 0.450 | 0.602 | 0.483 | 1.304 | 1.906 |
| Head-on collision | 0.049 | 0.066 | 0.030 | 0.081 | 0.147 |
| Angle collision | 0.347 | 0.464 | 0.244 | 0.659 | 1.123 |
| Sideswipe | 0.099 | 0.132 | 0.032 | 0.086 | 0.219 |
| Other multiple-vehicle collision | 0.055 | 0.074 | 0.211 | 0.570 | 0.643 |

### Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

| (1) | (2) | | | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **SPF Coefficients** | | | **Overdispersion Parameter, k** | **Initial $N_{bisv}$** | **Proportion of Total Crashes** | **Adjusted $N_{bimv}$** | **Combined CMFs** | **Calibration Factor, $C_i$** | **Predicted $N_{bisv}$** |
| | from Table 12-12 | | | from Table 12-12 | from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27 | | $(4)_{TOTAL}*(5)$ | (7) from Worksheet 2B | | (6)*(7)*(8) |
| | a | b | c | | | | | | | |
| Total | -10.21 | 0.68 | 0.27 | 0.36 | 0.349 | 1.000 | 0.349 | 0.74 | 1.00 | 0.257 |
| Fatal and Injury (FI) | -9.25 | 0.43 | 0.29 | 0.09 | 0.090 | $(4)_{FI}/((4)_{FI}+(4)_{PDO})$<br>0.260 | 0.091 | 0.74 | 1.00 | 0.067 |
| Property Damage Only (PDO) | -11.34 | 0.78 | 0.25 | 0.44 | 0.256 | $(5)_{TOTAL}-(5)_{FI}$<br>0.740 | 0.258 | 0.74 | 1.00 | 0.190 |

### Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| Collision Type | Proportion of Collision Type$_{(FI)}$ | Predicted $N_{bisv\ (FI)}$ (crashes/year) | Proportion of Collision Type $_{(PDO)}$ | Predicted $N_{bisv\ (PDO)}$ (crashes/year) | Predicted $N_{bisv\ (TOTAL)}$ (crashes/year) |
| | from Table 12-13 | $(9)_{FI}$ from Worksheet 2E | from Table 12-13 | $(9)_{PDO}$ from Worksheet 2E | $(9)_{PDO}$ from Worksheet 2E |
| Total | 1.000 | 0.067 | 1.000 | 0.190 | 0.257 |
| | | $(2)*(3)_{FI}$ | | $(4)*(5)_{PDO}$ | (3)+(5) |
| Collision with parked vehicle | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 |
| Collision with animal | 0.002 | 0.000 | 0.002 | 0.000 | 0.001 |
| Collision with fixed object | 0.744 | 0.050 | 0.870 | 0.166 | 0.215 |
| Collision with other object | 0.072 | 0.005 | 0.070 | 0.013 | 0.018 |
| Other single-vehicle collision | 0.040 | 0.003 | 0.023 | 0.004 | 0.007 |
| Single-vehicle noncollision | 0.141 | 0.009 | 0.034 | 0.006 | 0.016 |

### Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections

| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|
| Crash Severity Level | Predicted $N_{bimv}$ | Predicted $N_{bisv}$ | Predicted $N_{bi}$ | $f_{pedi}$ | Calibration factor, $C_i$ | Predicted $N_{pedi}$ |
| | (9) from Worksheet 2C | (9) from Worksheet 2E | (2) + (3) | from Table 12-16 | | (4)*(5)*(6) |
| Total | -- | -- | -- | -- | 1.00 | -- |
| Fatal and injury (FI) | -- | -- | -- | -- | 1.00 | -- |

### Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

| (1) | (2) | (3) | (4) |
|---|---|---|---|
| CMF for Bus Stops | CMF for Schools | CMF for Alcohol Sales Establishments | Combined CMF |
| $CMF_{1p}$ | $CMF_{2p}$ | $CMF_{3p}$ | |
| from Table 12-28 | from Table 12-29 | from Table 12-30 | (1)*(2)*(3) |
| 4.15 | 1.35 | 1.12 | 6.27 |

### Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections

| (1) | (2) | | | | | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|---|---|---|
| Crash Severity Level | SPF Coefficients | | | | | Overdispersion Parameter, k | $N_{pedbase}$ | Combined CMF | Calibration factor, $C_i$ | Predicted $N_{pedi}$ |
| | from Table 12-14 | | | | | | from Equation 12-29 | (4) from Worksheet 2H | | (4)*(5)*(6) |
| | a | b | c | d | e | | | | | |
| Total | -9.53 | 0.40 | 0.26 | 0.45 | 0.04 | 0.24 | 0.106 | 6.27 | 1.00 | 0.666 |
| Fatal and Injury (FI) | -- | -- | -- | -- | -- | -- | -- | -- | 1.00 | 0.666 |

**Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections**

| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|
| **Crash Severity Level** | **Predicted $N_{bimv}$** | **Predicted $N_{bisv}$** | **Predicted $N_{bi}$** | **$f_{bikei}$** | **Calibration factor, $C_i$** | **Predicted $N_{bikei}$** |
| | (9) from Worksheet 2C | (9) from Worksheet 2E | (2) + (3) | from Table 12-17 | | (4)*(5)*(6) |
| Total | 4.038 | 0.257 | 4.295 | 0.015 | 1.00 | 0.064 |
| Fatal and injury (FI) | -- | -- | -- | -- | 1.00 | 0.064 |

**Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections**

| (1) | (2) | (3) | (4) |
|---|---|---|---|
| **Collision type** | **Fatal and injury (FI)** | **Property damage only (PDO)** | **Total** |
| | (3) from Worksheet 2D and 2F;<br>(7) from 2G or 2I and 2J | (5) from Worksheet 2D and 2F | (6) from Worksheet 2D and 2F;<br>(7) from 2G or 2I and 2J |
| | **MULTIPLE-VEHICLE** | | |
| Rear-end collisions (from Worksheet 2D) | 0.602 | 1.304 | 1.906 |
| Head-on collisions (from Worksheet 2D) | 0.066 | 0.081 | 0.147 |
| Angle collisions (from Worksheet 2D) | 0.464 | 0.659 | 1.123 |
| Sideswipe (from Worksheet 2D) | 0.132 | 0.086 | 0.219 |
| Other multiple-vehicle collision (from Worksheet 2D) | 0.074 | 0.570 | 0.643 |
| Subtotal | 1.338 | 2.700 | 4.038 |
| | **SINGLE-VEHICLE** | | |
| Collision with parked vehicle (from Worksheet 2F) | 0.000 | 0.000 | 0.000 |
| Collision with animal (from Worksheet 2F) | 0.000 | 0.000 | 0.001 |
| Collision with fixed object (from Worksheet 2F) | 0.050 | 0.166 | 0.215 |
| Collision with other object (from Worksheet 2F) | 0.005 | 0.013 | 0.018 |
| Other single-vehicle collision (from Worksheet 2F) | 0.003 | 0.004 | 0.007 |
| Single-vehicle noncollision (from Worksheet 2F) | 0.009 | 0.006 | 0.016 |
| Collision with pedestrian (from Worksheet 2G or 2I) | 0.666 | 0.000 | 0.666 |
| Collision with bicycle (from Worksheet 2J) | 0.064 | 0.000 | 0.064 |
| Subtotal | 0.798 | 0.190 | 0.988 |
| Total | 2.136 | 2.890 | 5.026 |

**Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections**

| (1) | (2) |
|---|---|
| **Crash severity level** | **Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)** |
| | (Total) from Worksheet 2K |
| Total | 5.0 |
| Fatal and injury (FI) | 2.1 |
| Property damage only (PDO) | 2.9 |

**Worksheet 2A -- General Information and Input Data for Urban and Suburban Arterial Intersections**

| General Information | | Location Information | |
|---|---|---|---|
| Analyst | NT | Roadway | Webster Street |
| Agency or Company | Fehr and Peers | Intersection | Webster St & 29th St |
| Date Performed | 08/11/21 | Jurisdiction | Oakland, CA, USA |
| | | Analysis Year | 2021 |

| Input Data | | Base Conditions | Site Conditions |
|---|---|---|---|
| Intersection type (3ST, 3SG, 4ST, 4SG) | | -- | 4SG |
| AADT $_{major}$ (veh/day) | $AADT_{MAX}$ = 67,700 (veh/day) | -- | 6,837 |
| AADT $_{minor}$ (veh/day) | $AADT_{MAX}$ = 33,400 (veh/day) | -- | 2,813 |
| Intersection lighting (present/not present) | | Not Present | Present |
| Calibration factor, $C_i$ | | 1.00 | 1.00 |
| Data for unsignalized intersections only: | | -- | -- |
| Number of major-road approaches with left-turn lanes (0,1,2) | | 0 | 0 |
| Number of major-road approaches with right-turn lanes (0,1,2) | | 0 | 0 |
| Data for signalized intersections only: | | -- | -- |
| Number of approaches with left-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3] | | 0 | 0 |
| Number of approaches with right-turn lanes (0,1,2,3,4) [for 3SG, use maximum value of 3] | | 0 | 0 |
| Number of approaches with left-turn signal phasing [for 3SG, use maximum value of 3] | | -- | 4 |
| Type of left-turn signal phasing for Leg #1 | | Permissive | Permissive |
| Type of left-turn signal phasing for Leg #2 | | -- | Permissive |
| Type of left-turn signal phasing for Leg #3 | | -- | Permissive |
| Type of left-turn signal phasing for Leg #4 (if applicable) | | -- | Permissive |
| Number of approaches with right-turn-on-red prohibited [for 3SG, use maximum value of 3] | | 0 | 0 |
| Intersection red light cameras (present/not present) | | Not Present | Not Present |
| Sum of all pedestrian crossing volumes (PedVol) -- Signalized intersections only | | | 500 |
| Maximum number of lanes crossed by a pedestrian ($n_{lanesx}$) | | -- | 2 |
| Number of bus stops within 300 m (1,000 ft) of the intersection | | 0 | 0 |
| Schools within 300 m (1,000 ft) of the intersection (present/not present) | | Not Present | Not Present |
| Number of alcohol sales establishments within 300 m (1,000 ft) of the intersection | | 0 | 0 |

**Worksheet 2B -- Crash Modification Factors for Urban and Suburban Arterial Intersections**

| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|
| CMF for Left-Turn Lanes | CMF for Left-Turn Signal Phasing | CMF for Right-Turn Lanes | CMF for Right Turn on Red | CMF for Lighting | CMF for Red Light Cameras | Combined CMF |
| *CMF 1i* | *CMF 2i* | *CMF 3i* | *CMF 4i* | *CMF 5i* | *CMF 6i* | *CMF* $_{COMB}$ |
| from Table 12-24 | from Table 12-25 | from Table 12-26 | from Equation 12-35 | from Equation 12-36 | from Equation 12-37 | (1)*(2)*(3)*(4)*(5)*(6) |
| 1.00 | 1.00 | 1.00 | 1.00 | 0.91 | 1.00 | 0.91 |

## Worksheet 2C -- Multiple-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

| (1) | (2) | | | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **SPF Coefficients** | | | **Overdispersion Parameter, k** | **Initial $N_{bimv}$** | **Proportion of Total Crashes** | **Adjusted $N_{bimv}$** | **Combined CMFs** | **Calibration Factor, $C_i$** | **Predicted $N_{bimv}$** |
| | from Table 12-10 | | | from Table 12-10 | from Equation 12-21 | | $(4)_{TOTAL}*(5)$ | (7) from Worksheet 2B | | (6)*(7)*(8) |
| | a | b | c | | | | | | | |
| Total | -10.99 | 1.07 | 0.23 | 0.39 | 1.330 | 1.000 | 1.330 | 0.91 | 1.00 | 1.211 |
| Fatal and Injury (FI) | -13.14 | 1.18 | 0.22 | 0.33 | 0.378 | $(4)_{FI}/((4)_{FI}+(4)_{PDO})$<br>0.296 | 0.394 | 0.91 | 1.00 | 0.359 |
| Property Damage Only (PDO) | -11.02 | 1.02 | 0.24 | 0.44 | 0.898 | $(5)_{TOTAL}-(5)_{FI}$<br>0.704 | 0.936 | 0.91 | 1.00 | 0.852 |

## Worksheet 2D -- Multiple-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| **Collision Type** | **Proportion of Collision Type$_{(FI)}$** | **Predicted N $_{bimv\ (FI)}$ (crashes/year)** | **Proportion of Collision Type $_{(PDO)}$** | **Predicted N $_{bimv\ (PDO)}$ (crashes/year)** | **Predicted N $_{bimv\ (TOTAL)}$ (crashes/year)** |
| | from Table 12-11 | $(9)_{FI}$ from Worksheet 2C | from Table 12-11 | $(9)_{PDO}$ from Worksheet 2C | $(9)_{PDO}$ from Worksheet 2C |
| Total | 1.000 | 0.359 | 1.000 | 0.852 | 1.211 |
| | | $(2)*(3)_{FI}$ | | $(4)*(5)_{PDO}$ | (3)+(5) |
| Rear-end collision | 0.450 | 0.161 | 0.483 | 0.412 | 0.573 |
| Head-on collision | 0.049 | 0.018 | 0.030 | 0.026 | 0.043 |
| Angle collision | 0.347 | 0.124 | 0.244 | 0.208 | 0.332 |
| Sideswipe | 0.099 | 0.035 | 0.032 | 0.027 | 0.063 |
| Other multiple-vehicle collision | 0.055 | 0.020 | 0.211 | 0.180 | 0.200 |

## Worksheet 2E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Arterial Intersections

| (1) | (2) | | | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **SPF Coefficients** | | | **Overdispersion Parameter, k** | **Initial $N_{bisv}$** | **Proportion of Total Crashes** | **Adjusted $N_{bimv}$** | **Combined CMFs** | **Calibration Factor, $C_i$** | **Predicted $N_{bisv}$** |
| | from Table 12-12 | | | from Table 12-12 | from Eqn. 12-24; (FI) from Eqn. 12-24 or 12-27 | | $(4)_{TOTAL}*(5)$ | (7) from Worksheet 2B | | (6)*(7)*(8) |
| | a | b | c | | | | | | | |
| Total | -10.21 | 0.68 | 0.27 | 0.36 | 0.127 | 1.000 | 0.127 | 0.91 | 1.00 | 0.116 |
| Fatal and Injury (FI) | -9.25 | 0.43 | 0.29 | 0.09 | 0.043 | $(4)_{FI}/((4)_{FI}+(4)_{PDO})$<br>0.336 | 0.043 | 0.91 | 1.00 | 0.039 |
| Property Damage Only (PDO) | -11.34 | 0.78 | 0.25 | 0.44 | 0.085 | $(5)_{TOTAL}-(5)_{FI}$<br>0.664 | 0.085 | 0.91 | 1.00 | 0.077 |

**Worksheet 2F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Arterial Intersections**

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| **Collision Type** | **Proportion of Collision Type$_{(FI)}$** | **Predicted $N_{bisv\ (FI)}$ (crashes/year)** | **Proportion of Collision Type $_{(PDO)}$** | **Predicted $N_{bisv\ (PDO)}$ (crashes/year)** | **Predicted $N_{bisv\ (TOTAL)}$ (crashes/year)** |
| | from Table 12-13 | (9)$_{FI}$ from Worksheet 2E | from Table 12-13 | (9)$_{PDO}$ from Worksheet 2E | (9)$_{PDO}$ from Worksheet 2E |
| Total | 1.000 | 0.039 | 1.000 | 0.077 | 0.116 |
| | | (2)*(3)$_{FI}$ | | (4)*(5)$_{PDO}$ | (3)+(5) |
| Collision with parked vehicle | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 |
| Collision with animal | 0.002 | 0.000 | 0.002 | 0.000 | 0.000 |
| Collision with fixed object | 0.744 | 0.029 | 0.870 | 0.067 | 0.096 |
| Collision with other object | 0.072 | 0.003 | 0.070 | 0.005 | 0.008 |
| Other single-vehicle collision | 0.040 | 0.002 | 0.023 | 0.002 | 0.003 |
| Single-vehicle noncollision | 0.141 | 0.005 | 0.034 | 0.003 | 0.008 |

**Worksheet 2G -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Stop-Controlled Intersections**

| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|
| **Crash Severity Level** | **Predicted $N_{bimv}$** | **Predicted $N_{bisv}$** | **Predicted $N_{bi}$** | **$f_{pedi}$** | **Calibration factor, $C_i$** | **Predicted $N_{pedi}$** |
| | (9) from Worksheet 2C | (9) from Worksheet 2E | (2) + (3) | from Table 12-16 | | (4)*(5)*(6) |
| Total | -- | -- | -- | -- | 1.00 | -- |
| Fatal and injury (FI) | -- | -- | -- | -- | 1.00 | -- |

**Worksheet 2H -- Crash Modification Factors for Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections**

| (1) | (2) | (3) | (4) |
|---|---|---|---|
| CMF for Bus Stops | CMF for Schools | CMF for Alcohol Sales Establishments | Combined CMF |
| $CMF_{1p}$ | $CMF_{2p}$ | $CMF_{3p}$ | |
| from Table 12-28 | from Table 12-29 | from Table 12-30 | (1)*(2)*(3) |
| 1.00 | 1.00 | 1.00 | 1.00 |

**Worksheet 2I -- Vehicle-Pedestrian Collisions for Urban and Suburban Arterial Signalized Intersections**

| (1) | (2) | | | | | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **SPF Coefficients** | | | | | **Overdispersion Parameter, k** | **$N_{pedbase}$** | **Combined CMF** | **Calibration factor, $C_i$** | **Predicted $N_{pedi}$** |
| | from Table 12-14 | | | | | | from Equation 12-29 | (4) from Worksheet 2H | | (4)*(5)*(6) |
| | a | b | c | d | e | | | | | |
| Total | -9.53 | 0.40 | 0.26 | 0.45 | 0.04 | 0.24 | 0.040 | 1.00 | 1.00 | 0.040 |
| Fatal and Injury (FI) | -- | -- | -- | -- | -- | -- | -- | -- | 1.00 | 0.040 |

**Worksheet 2J -- Vehicle-Bicycle Collisions for Urban and Suburban Arterial Intersections**

| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|
| **Crash Severity Level** | **Predicted $N_{bimv}$** | **Predicted $N_{bisv}$** | **Predicted $N_{bi}$** | **$f_{bikei}$** | **Calibration factor, $C_i$** | **Predicted $N_{bikei}$** |
| | (9) from Worksheet 2C | (9) from Worksheet 2E | (2) + (3) | from Table 12-17 | | (4)*(5)*(6) |
| Total | 1.211 | 0.116 | 1.327 | 0.015 | 1.00 | 0.020 |
| Fatal and injury (FI) | -- | -- | -- | -- | 1.00 | 0.020 |

**Worksheet 2K -- Crash Severity Distribution for Urban and Suburban Arterial Intersections**

| (1) | (2) | (3) | (4) |
|---|---|---|---|
| **Collision type** | **Fatal and injury (FI)** | **Property damage only (PDO)** | **Total** |
| | (3) from Worksheet 2D and 2F;<br>(7) from 2G or 2I and 2J | (5) from Worksheet 2D and 2F | (6) from Worksheet 2D and 2F;<br>(7) from 2G or 2I and 2J |
| **MULTIPLE-VEHICLE** | | | |
| Rear-end collisions (from Worksheet 2D) | 0.161 | 0.412 | 0.573 |
| Head-on collisions (from Worksheet 2D) | 0.018 | 0.026 | 0.043 |
| Angle collisions (from Worksheet 2D) | 0.124 | 0.208 | 0.332 |
| Sideswipe (from Worksheet 2D) | 0.035 | 0.027 | 0.063 |
| Other multiple-vehicle collision (from Worksheet 2D) | 0.020 | 0.180 | 0.200 |
| Subtotal | 0.359 | 0.852 | 1.211 |
| **SINGLE-VEHICLE** | | | |
| Collision with parked vehicle (from Worksheet 2F) | 0.000 | 0.000 | 0.000 |
| Collision with animal (from Worksheet 2F) | 0.000 | 0.000 | 0.000 |
| Collision with fixed object (from Worksheet 2F) | 0.029 | 0.067 | 0.096 |
| Collision with other object (from Worksheet 2F) | 0.003 | 0.005 | 0.008 |
| Other single-vehicle collision (from Worksheet 2F) | 0.002 | 0.002 | 0.003 |
| Single-vehicle noncollision (from Worksheet 2F) | 0.005 | 0.003 | 0.008 |
| Collision with pedestrian (from Worksheet 2G or 2I) | 0.040 | 0.000 | 0.040 |
| Collision with bicycle (from Worksheet 2J) | 0.020 | 0.000 | 0.020 |
| Subtotal | 0.099 | 0.077 | 0.176 |
| Total | 0.458 | 0.929 | 1.387 |

**Worksheet 2L -- Summary Results for Urban and Suburban Arterial Intersections**

| (1) | (2) |
|---|---|
| **Crash severity level** | **Predicted average crash frequency, $N_{predicted\ int}$ (crashes/year)** |
| | (Total) from Worksheet 2K |
| Total | 1.4 |
| Fatal and injury (FI) | 0.5 |
| Property damage only (PDO) | 0.9 |

## Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

| General Information | | Location Information | |
|---|---|---|---|
| Analyst | NT | Roadway | Broadway |
| Agency or Company | Fehr & Peers | Roadway Section | From 29th Street to 30th Street |
| Date Performed | 08/17/21 | Jurisdiction | Oakland, USA |
| | | Analysis Year | 2021 |

| Input Data | | Base Conditions | Site Conditions |
|---|---|---|---|
| Roadway type (2U, 3T, 4U, 4D, ST) | | -- | 4D |
| Length of segment, L (mi) | | -- | 0.08 |
| AADT (veh/day) | $AADT_{MAX}$ = 66,000 (veh/day) | -- | 20,000 |
| Type of on-street parking (none/parallel/angle) | | None | Parallel (Comm/Ind) |
| Proportion of curb length with on-street parking | | -- | 0.8 |
| Median width (ft) - for divided only | | 15 | 10 |
| Lighting (present / not present) | | Not Present | Present |
| Auto speed enforcement (present / not present) | | Not Present | Not Present |
| Major commercial driveways (number) | | -- | 0 |
| Minor commercial driveways (number) | | -- | 4 |
| Major industrial / institutional driveways (number) | | -- | 0 |
| Minor industrial / institutional driveways (number) | | -- | 0 |
| Major residential driveways (number) | | -- | 0 |
| Minor residential driveways (number) | | -- | 0 |
| Other driveways (number) | | -- | 0 |
| Speed Category | | -- | Posted Speed 30 mph or Lower |
| Roadside fixed object density (fixed objects / mi) | | 0 | 70 |
| Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30] | | 30 | 6 |
| Calibration Factor, Cr | | 1.00 | 1.00 |

## Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| CMF for On-Street Parking | CMF for Roadside Fixed Objects | CMF for Median Width | CMF for Lighting | CMF for Automated Speed Enforcement | Combined CMF |
| *CMF 1r* | *CMF 2r* | *CMF 3r* | *CMF 4r* | *CMF 5r* | *CMF comb* |
| from Equation 12-32 | from Equation 12-33 | from Table 12-22 | from Equation 12-34 | from Section 12.7.1 | (1)*(2)*(3)*(4)*(5) |
| 1.57 | 1.26 | 1.01 | 0.91 | 1.00 | 1.83 |

## Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

| (1) | (2) | | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **SPF Coefficients** | | **Overdispersion Parameter, k** | **Initial $N_{brmv}$** | **Proportion of Total Crashes** | **Adjusted $N_{brmv}$** | **Combined CMFs** | **Calibration Factor, Cr** | **Predicted $N_{brmv}$** |
| | from Table 12-3 | | from Table 12-3 | from Equation 12-10 | | $(4)_{TOTAL}*(5)$ | (6) from Worksheet 1B | | (6)*(7)*(8) |
| | a | b | | | | | | | |
| Total | -12.34 | 1.36 | 1.32 | 0.247 | 1.000 | 0.247 | 1.83 | 1.00 | 0.452 |
| Fatal and Injury (FI) | -12.76 | 1.28 | 1.31 | 0.074 | $(4)_{FI}/((4)_{FI}+(4)_{PDO})$<br>0.281 | 0.069 | 1.83 | 1.00 | 0.127 |
| Property Damage Only (PDO) | -12.81 | 1.38 | 1.34 | 0.188 | $(5)_{TOTAL}-(5)_{FI}$<br>0.719 | 0.178 | 1.83 | 1.00 | 0.325 |

### Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| **Collision Type** | **Proportion of Collision Type$_{(FI)}$** | **Predicted N $_{brmv\ (FI)}$ (crashes/year)** | **Proportion of Collision Type $_{(PDO)}$** | **Predicted N $_{brmv\ (PDO)}$ (crashes/year)** | **Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)** |
| | from Table 12-4 | (9)$_{FI}$ from Worksheet 1C | from Table 12-4 | (9)$_{PDO}$ from Worksheet 1C | (9)$_{TOTAL}$ from Worksheet 1C |
| Total | 1.000 | 0.127 | 1.000 | 0.325 | 0.452 |
| | | (2)*(3)$_{FI}$ | | (4)*(5)$_{PDO}$ | (3)+(5) |
| Rear-end collision | 0.832 | 0.106 | 0.662 | 0.215 | 0.321 |
| Head-on collision | 0.020 | 0.003 | 0.007 | 0.002 | 0.005 |
| Angle collision | 0.040 | 0.005 | 0.036 | 0.012 | 0.017 |
| Sideswipe, same direction | 0.050 | 0.006 | 0.223 | 0.072 | 0.079 |
| Sideswipe, opposite direction | 0.010 | 0.001 | 0.001 | 0.000 | 0.002 |
| Other multiple-vehicle collision | 0.048 | 0.006 | 0.071 | 0.023 | 0.029 |

### Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

| (1) | (2) | | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **SPF Coefficients** | | **Overdispersion Parameter, k** | **Initial N$_{brsv}$** | **Proportion of Total Crashes** | **Adjusted N$_{brsv}$** | **Combined CMFs** | **Calibration Factor, Cr** | **Predicted N$_{brsv}$** |
| | from Table 12-5 | | from Table 12-5 | from Equation 12-13 | | (4)$_{TOTAL}$*(5) | (6) from Worksheet 1B | | (6)*(7)*(8) |
| | a | b | | | | | | | |
| Total | -5.05 | 0.47 | 0.86 | 0.054 | 1.000 | 0.054 | 1.83 | 1.00 | 0.098 |
| Fatal and Injury (FI) | -8.71 | 0.66 | 0.28 | 0.009 | (4)$_{FI}$/((4)$_{FI}$+(4)$_{PDO}$)<br>0.169 | 0.009 | 1.83 | 1.00 | 0.017 |
| Property Damage Only (PDO) | -5.04 | 0.45 | 1.06 | 0.045 | (5)$_{TOTAL}$-(5)$_{FI}$<br>0.831 | 0.045 | 1.83 | 1.00 | 0.082 |

### Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| **Collision Type** | **Proportion of Collision Type$_{(FI)}$** | **Predicted N $_{brsv\ (FI)}$ (crashes/year)** | **Proportion of Collision Type $_{(PDO)}$** | **Predicted N $_{brsv\ (PDO)}$ (crashes/year)** | **Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)** |
| | from Table 12-6 | (9)$_{FI}$ from Worksheet 1E | from Table 12-6 | (9)$_{PDO}$ from Worksheet 1E | (9)$_{TOTAL}$ from Worksheet 1E |
| Total | 1.000 | 0.017 | 1.000 | 0.082 | 0.098 |
| | | (2)*(3)$_{FI}$ | | (4)*(5)$_{PDO}$ | (3)+(5) |
| Collision with animal | 0.001 | 0.000 | 0.063 | 0.005 | 0.005 |
| Collision with fixed object | 0.500 | 0.008 | 0.813 | 0.066 | 0.075 |
| Collision with other object | 0.028 | 0.000 | 0.016 | 0.001 | 0.002 |
| Other single-vehicle collision | 0.471 | 0.008 | 0.108 | 0.009 | 0.017 |

### Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| **Driveway Type** | **Number of driveways, $n_j$** | **Crashes per driveway per year, $N_j$** | **Coefficient for traffic adjustment, t** | **Initial $N_{brdwy}$** | **Overdispersion parameter, k** |
| | | from Table 12-7 | from Table 12-7 | Equation 12-16 | from Table 12-7 |
| | | | | $n_j * N_j * (AADT/15,000)^t$ | |
| Major commercial | 0 | 0.033 | 1.106 | 0.000 | -- |
| Minor commercial | 4 | 0.011 | 1.106 | 0.060 | |
| Major industrial/institutional | 0 | 0.036 | 1.106 | 0.000 | |
| Minor industrial/institutional | 0 | 0.005 | 1.106 | 0.000 | |
| Major residential | 0 | 0.018 | 1.106 | 0.000 | |
| Minor residential | 0 | 0.003 | 1.106 | 0.000 | |
| Other | 0 | 0.005 | 1.106 | 0.000 | |
| Total | -- | -- | -- | 0.060 | 1.39 |

### Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|
| **Crash Severity Level** | **Initial $N_{brdwy}$** | **Proportion of total crashes ($f_{dwy}$)** | **Adjusted $N_{brdwy}$** | **Combined CMFs** | **Calibration factor, $C_r$** | **Predicted $N_{brdwy}$** |
| | $(5)_{TOTAL}$ from Worksheet 1G | from Table 12-7 | $(2)_{TOTAL}$ * (3) | (6) from Worksheet 1B | | (4)*(5)*(6) |
| Total | 0.060 | 1.000 | 0.060 | 1.83 | 1.00 | 0.111 |
| Fatal and injury (FI) | -- | 0.284 | 0.017 | 1.83 | 1.00 | 0.031 |
| Property damage only (PDO) | -- | 0.716 | 0.043 | 1.83 | 1.00 | 0.079 |

### Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **Predicted $N_{brmv}$** | **Predicted $N_{brsv}$** | **Predicted $N_{brdwy}$** | **Predicted $N_{br}$** | **$f_{pedr}$** | **Calibration factor, $C_r$** | **Predicted $N_{pedr}$** |
| | (9) from Worksheet 1C | (9) from Worksheet 1E | (7) from Worksheet 1H | (2)+(3)+(4) | from Table 12-8 | | (5)*(6)*(7) |
| Total | 0.452 | 0.098 | 0.111 | 0.661 | 0.067 | 1.00 | 0.044 |
| Fatal and injury (FI) | -- | -- | -- | -- | -- | 1.00 | 0.044 |

### Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **Predicted $N_{brmv}$** | **Predicted $N_{brsv}$** | **Predicted $N_{brdwy}$** | **Predicted $N_{br}$** | **$f_{biker}$** | **Calibration factor, $C_r$** | **Predicted $N_{biker}$** |
| | (9) from Worksheet 1C | (9) from Worksheet 1E | (7) from Worksheet 1H | (2)+(3)+(4) | from Table 12-9 | | (5)*(6)*(7) |
| Total | 0.452 | 0.098 | 0.111 | 0.661 | 0.013 | 1.00 | 0.009 |
| Fatal and injury (FI) | -- | -- | -- | -- | -- | 1.00 | 0.009 |

**Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments**

| (1) | (2) | (3) | (4) |
|---|---|---|---|
| **Collision type** | **Fatal and injury (FI)**<br>(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J | **Property damage only (PDO)**<br>(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H | **Total**<br>(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J |
| **MULTIPLE-VEHICLE** | | | |
| Rear-end collisions (from Worksheet 1D) | 0.106 | 0.215 | 0.321 |
| Head-on collisions (from Worksheet 1D) | 0.003 | 0.002 | 0.005 |
| Angle collisions (from Worksheet 1D) | 0.005 | 0.012 | 0.017 |
| Sideswipe, same direction (from Worksheet 1D) | 0.006 | 0.072 | 0.079 |
| Sideswipe, opposite direction (from Worksheet 1D) | 0.001 | 0.000 | 0.002 |
| Driveway-related collisions (from Worksheet 1H) | 0.031 | 0.079 | 0.111 |
| Other multiple-vehicle collision (from Worksheet 1D) | 0.006 | 0.023 | 0.029 |
| Subtotal | 0.158 | 0.404 | 0.562 |
| **SINGLE-VEHICLE** | | | |
| Collision with animal (from Worksheet 1F) | 0.000 | 0.005 | 0.005 |
| Collision with fixed object (from Worksheet 1F) | 0.008 | 0.066 | 0.075 |
| Collision with other object (from Worksheet 1F) | 0.000 | 0.001 | 0.002 |
| Other single-vehicle collision (from Worksheet 1F) | 0.008 | 0.009 | 0.017 |
| Collision with pedestrian (from Worksheet 1I) | 0.044 | 0.000 | 0.044 |
| Collision with bicycle (from Worksheet 1J) | 0.009 | 0.000 | 0.009 |
| Subtotal | 0.070 | 0.082 | 0.151 |
| Total | 0.228 | 0.486 | 0.714 |

**Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments**

| (1) | (2) | (3) | (4) |
|---|---|---|---|
| **Crash Severity Level** | **Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)** | **Roadway segment length, L (mi)** | **Crash rate (crashes/mi/year)** |
| | (Total) from Worksheet 1K | | (2) / (3) |
| Total | 0.7 | 0.08 | 8.9 |
| Fatal and injury (FI) | 0.2 | 0.08 | 2.8 |
| Property damage only (PDO) | 0.5 | 0.08 | 6.1 |

### Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

| General Information | | Location Information | |
|---|---|---|---|
| Analyst | NT | Roadway | Webster Street |
| Agency or Company | Fehr & Peers | Roadway Section | From 29th Street to 30th Street |
| Date Performed | 08/17/21 | Jurisdiction | Oakland, USA |
| | | Analysis Year | 2021 |

| Input Data | | Base Conditions | Site Conditions |
|---|---|---|---|
| Roadway type (2U, 3T, 4U, 4D, ST) | | -- | 2U |
| Length of segment, L (mi) | | -- | 0.08 |
| AADT (veh/day) | $\text{AADT}_{\text{MAX}}$ = 32,600 (veh/day) | -- | 4,100 |
| Type of on-street parking (none/parallel/angle) | | None | Parallel (Comm/Ind) |
| Proportion of curb length with on-street parking | | -- | 0.9 |
| Median width (ft) - for divided only | | 15 | 40 |
| Lighting (present / not present) | | Not Present | Present |
| Auto speed enforcement (present / not present) | | Not Present | Not Present |
| Major commercial driveways (number) | | -- | 0 |
| Minor commercial driveways (number) | | -- | 4 |
| Major industrial / institutional driveways (number) | | -- | 1 |
| Minor industrial / institutional driveways (number) | | -- | 1 |
| Major residential driveways (number) | | -- | 0 |
| Minor residential driveways (number) | | -- | 0 |
| Other driveways (number) | | -- | 0 |
| Speed Category | | -- | Posted Speed 30 mph or Lower |
| Roadside fixed object density (fixed objects / mi) | | 0 | 35 |
| Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30] | | 30 | 6 |
| Calibration Factor, Cr | | 1.00 | 1.00 |

### Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| CMF for On-Street Parking | CMF for Roadside Fixed Objects | CMF for Median Width | CMF for Lighting | CMF for Automated Speed Enforcement | Combined CMF |
| *CMF 1r* | *CMF 2r* | *CMF 3r* | *CMF 4r* | *CMF 5r* | *CMF comb* |
| from Equation 12-32 | from Equation 12-33 | from Table 12-22 | from Equation 12-34 | from Section 12.7.1 | (1)*(2)*(3)*(4)*(5) |
| 1.97 | 1.19 | 1.00 | 0.93 | 1.00 | 2.17 |

### Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

| (1) | (2) | | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **SPF Coefficients** | | **Overdispersion Parameter, k** | **Initial $N_{brmv}$** | **Proportion of Total Crashes** | **Adjusted $N_{brmv}$** | **Combined CMFs** | **Calibration Factor, Cr** | **Predicted $N_{brmv}$** |
| | from Table 12-3 | | from Table 12-3 | from Equation 12-10 | | $(4)_{TOTAL}$*(5) | (6) from Worksheet 1B | | (6)*(7)*(8) |
| | a | b | | | | | | | |
| Total | -15.22 | 1.68 | 0.84 | 0.023 | 1.000 | 0.023 | 2.17 | 1.00 | 0.050 |
| Fatal and Injury (FI) | -16.22 | 1.66 | 0.65 | 0.007 | $(4)_{FI}/((4)_{FI}+(4)_{PDO})$<br>0.300 | 0.007 | 2.17 | 1.00 | 0.015 |
| Property Damage Only (PDO) | -15.62 | 1.69 | 0.87 | 0.017 | $(5)_{TOTAL}-(5)_{FI}$<br>0.700 | 0.016 | 2.17 | 1.00 | 0.035 |

### Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| **Collision Type** | **Proportion of Collision Type$_{(FI)}$** | **Predicted $N_{brmv\ (FI)}$ (crashes/year)** | **Proportion of Collision Type $_{(PDO)}$** | **Predicted $N_{brmv\ (PDO)}$ (crashes/year)** | **Predicted $N_{brmv\ (TOTAL)}$ (crashes/year)** |
| | from Table 12-4 | $(9)_{FI}$ from Worksheet 1C | from Table 12-4 | $(9)_{PDO}$ from Worksheet 1C | $(9)_{TOTAL}$ from Worksheet 1C |
| Total | 1.000 | 0.015 | 1.000 | 0.035 | 0.050 |
| | | $(2)*(3)_{FI}$ | | $(4)*(5)_{PDO}$ | (3)+(5) |
| Rear-end collision | 0.730 | 0.011 | 0.778 | 0.027 | 0.038 |
| Head-on collision | 0.068 | 0.001 | 0.004 | 0.000 | 0.001 |
| Angle collision | 0.085 | 0.001 | 0.079 | 0.003 | 0.004 |
| Sideswipe, same direction | 0.015 | 0.000 | 0.031 | 0.001 | 0.001 |
| Sideswipe, opposite direction | 0.073 | 0.001 | 0.055 | 0.002 | 0.003 |
| Other multiple-vehicle collision | 0.029 | 0.000 | 0.053 | 0.002 | 0.002 |

### Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

| (1) | (2) | | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **SPF Coefficients** | | **Overdispersion Parameter, k** | **Initial $N_{brsv}$** | **Proportion of Total Crashes** | **Adjusted $N_{brsv}$** | **Combined CMFs** | **Calibration Factor, Cr** | **Predicted $N_{brsv}$** |
| | from Table 12-5 | | from Table 12-5 | from Equation 12-13 | | $(4)_{TOTAL}*(5)$ | (6) from Worksheet 1B | | (6)*(7)*(8) |
| | a | b | | | | | | | |
| Total | -5.47 | 0.56 | 0.81 | 0.036 | 1.000 | 0.036 | 2.17 | 1.00 | 0.077 |
| Fatal and Injury (FI) | -3.96 | 0.23 | 0.50 | 0.010 | $(4)_{FI}/((4)_{FI}+(4)_{PDO})$<br>0.297 | 0.011 | 2.17 | 1.00 | 0.023 |
| Property Damage Only (PDO) | -6.51 | 0.64 | 0.87 | 0.024 | $(5)_{TOTAL}-(5)_{FI}$<br>0.703 | 0.025 | 2.17 | 1.00 | 0.054 |

### Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| **Collision Type** | **Proportion of Collision Type$_{(FI)}$** | **Predicted $N_{brsv\ (FI)}$ (crashes/year)** | **Proportion of Collision Type $_{(PDO)}$** | **Predicted $N_{brsv\ (PDO)}$ (crashes/year)** | **Predicted $N_{brsv\ (TOTAL)}$ (crashes/year)** |
| | from Table 12-6 | $(9)_{FI}$ from Worksheet 1E | from Table 12-6 | $(9)_{PDO}$ from Worksheet 1E | $(9)_{TOTAL}$ from Worksheet 1E |
| Total | 1.000 | 0.023 | 1.000 | 0.054 | 0.077 |
| | | $(2)*(3)_{FI}$ | | $(4)*(5)_{PDO}$ | (3)+(5) |
| Collision with animal | 0.026 | 0.001 | 0.066 | 0.004 | 0.004 |
| Collision with fixed object | 0.723 | 0.017 | 0.759 | 0.041 | 0.058 |
| Collision with other object | 0.010 | 0.000 | 0.013 | 0.001 | 0.001 |
| Other single-vehicle collision | 0.241 | 0.006 | 0.162 | 0.009 | 0.014 |

### Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| **Driveway Type** | **Number of driveways, $n_j$** | **Crashes per driveway per year, $N_j$** | **Coefficient for traffic adjustment, t** | **Initial $N_{brdwy}$** | **Overdispersion parameter, k** |
| | | from Table 12-7 | from Table 12-7 | Equation 12-16 | from Table 12-7 |
| | | | | $n_j$ * $N_j$ * $(AADT/15,000)^t$ | |
| Major commercial | 0 | 0.158 | 1.000 | 0.000 | -- |
| Minor commercial | 4 | 0.050 | 1.000 | 0.055 | |
| Major industrial/institutional | 1 | 0.172 | 1.000 | 0.047 | |
| Minor industrial/institutional | 1 | 0.023 | 1.000 | 0.006 | |
| Major residential | 0 | 0.083 | 1.000 | 0.000 | |
| Minor residential | 0 | 0.016 | 1.000 | 0.000 | |
| Other | 0 | 0.025 | 1.000 | 0.000 | |
| Total | -- | -- | -- | 0.108 | 0.81 |

### Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|
| **Crash Severity Level** | **Initial $N_{brdwy}$** | **Proportion of total crashes ($f_{dwy}$)** | **Adjusted $N_{brdwy}$** | **Combined CMFs** | **Calibration factor, $C_r$** | **Predicted $N_{brdwy}$** |
| | $(5)_{TOTAL}$ from Worksheet 1G | from Table 12-7 | $(2)_{TOTAL}$ * (3) | (6) from Worksheet 1B | | (4)*(5)*(6) |
| Total | 0.108 | 1.000 | 0.108 | 2.17 | 1.00 | 0.235 |
| Fatal and injury (FI) | -- | 0.323 | 0.035 | 2.17 | 1.00 | 0.076 |
| Property damage only (PDO) | -- | 0.677 | 0.073 | 2.17 | 1.00 | 0.159 |

### Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **Predicted $N_{brmv}$** | **Predicted $N_{brsv}$** | **Predicted $N_{brdwy}$** | **Predicted $N_{br}$** | **$f_{pedr}$** | **Calibration factor, $C_r$** | **Predicted $N_{pedr}$** |
| | (9) from Worksheet 1C | (9) from Worksheet 1E | (7) from Worksheet 1H | (2)+(3)+(4) | from Table 12-8 | | (5)*(6)*(7) |
| Total | 0.050 | 0.077 | 0.235 | 0.362 | 0.036 | 1.00 | 0.013 |
| Fatal and injury (FI) | -- | -- | -- | -- | -- | 1.00 | 0.013 |

### Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **Predicted $N_{brmv}$** | **Predicted $N_{brsv}$** | **Predicted $N_{brdwy}$** | **Predicted $N_{br}$** | **$f_{biker}$** | **Calibration factor, $C_r$** | **Predicted $N_{biker}$** |
| | (9) from Worksheet 1C | (9) from Worksheet 1E | (7) from Worksheet 1H | (2)+(3)+(4) | from Table 12-9 | | (5)*(6)*(7) |
| Total | 0.050 | 0.077 | 0.235 | 0.362 | 0.018 | 1.00 | 0.007 |
| Fatal and injury (FI) | -- | -- | -- | -- | -- | 1.00 | 0.007 |

**Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments**

| (1) | (2) | (3) | (4) |
|---|---|---|---|
| **Collision type** | **Fatal and injury (FI)** | **Property damage only (PDO)** | **Total** |
| | (3) from Worksheet 1D and 1F;<br>(7) from Worksheet 1H; and<br>(8) from Worksheet 1I and 1J | (5) from Worksheet 1D and 1F; and<br>(7) from Worksheet 1H | (6) from Worksheet 1D and 1F;<br>(7) from Worksheet 1H; and<br>(8) from Worksheet 1I and 1J |
| **MULTIPLE-VEHICLE** | | | |
| Rear-end collisions (from Worksheet 1D) | 0.011 | 0.027 | 0.038 |
| Head-on collisions (from Worksheet 1D) | 0.001 | 0.000 | 0.001 |
| Angle collisions (from Worksheet 1D) | 0.001 | 0.003 | 0.004 |
| Sideswipe, same direction (from Worksheet 1D) | 0.000 | 0.001 | 0.001 |
| Sideswipe, opposite direction (from Worksheet 1D) | 0.001 | 0.002 | 0.003 |
| Driveway-related collisions (from Worksheet 1H) | 0.076 | 0.159 | 0.235 |
| Other multiple-vehicle collision (from Worksheet 1D) | 0.000 | 0.002 | 0.002 |
| Subtotal | 0.091 | 0.194 | 0.285 |
| **SINGLE-VEHICLE** | | | |
| Collision with animal (from Worksheet 1F) | 0.001 | 0.004 | 0.004 |
| Collision with fixed object (from Worksheet 1F) | 0.017 | 0.041 | 0.058 |
| Collision with other object (from Worksheet 1F) | 0.000 | 0.001 | 0.001 |
| Other single-vehicle collision (from Worksheet 1F) | 0.006 | 0.009 | 0.014 |
| Collision with pedestrian (from Worksheet 1I) | 0.013 | 0.000 | 0.013 |
| Collision with bicycle (from Worksheet 1J) | 0.007 | 0.000 | 0.007 |
| Subtotal | 0.042 | 0.054 | 0.097 |
| Total | 0.133 | 0.248 | 0.381 |

**Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments**

| (1) | (2) | (3) | (4) |
|---|---|---|---|
| **Crash Severity Level** | **Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)** | **Roadway segment length, L (mi)** | **Crash rate (crashes/mi/year)** |
| | (Total) from Worksheet 1K | | (2) / (3) |
| Total | 0.4 | 0.08 | 4.8 |
| Fatal and injury (FI) | 0.1 | 0.08 | 1.7 |
| Property damage only (PDO) | 0.2 | 0.08 | 3.1 |

## Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

| General Information | | Location Information | |
|---|---|---|---|
| Analyst | NT | Roadway | 29th Street |
| Agency or Company | Fehr & Peers | Roadway Section | From Broadway to Webster Street |
| Date Performed | 08/17/21 | Jurisdiction | Oakland, USA |
| | | Analysis Year | 2021 |

| Input Data | | Base Conditions | Site Conditions |
|---|---|---|---|
| Roadway type (2U, 3T, 4U, 4D, ST) | | -- | 2U |
| Length of segment, L (mi) | | -- | 0.03 |
| AADT (veh/day) | $AADT_{MAX}$ = 32,600 (veh/day) | -- | 6,900 |
| Type of on-street parking (none/parallel/angle) | | None | Parallel (Comm/Ind) |
| Proportion of curb length with on-street parking | | -- | 0.85 |
| Median width (ft) - for divided only | | 15 | Not Present |
| Lighting (present / not present) | | Not Present | Present |
| Auto speed enforcement (present / not present) | | Not Present | Not Present |
| Major commercial driveways (number) | | -- | 0 |
| Minor commercial driveways (number) | | -- | 0 |
| Major industrial / institutional driveways (number) | | -- | 0 |
| Minor industrial / institutional driveways (number) | | -- | 0 |
| Major residential driveways (number) | | -- | 0 |
| Minor residential driveways (number) | | -- | 0 |
| Other driveways (number) | | -- | 0 |
| Speed Category | | -- | Posted Speed 30 mph or Lower |
| Roadside fixed object density (fixed objects / mi) | | 0 | 20 |
| Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30] | | 30 | 12 |
| Calibration Factor, Cr | | 1.00 | 1.00 |

## Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| CMF for On-Street Parking | CMF for Roadside Fixed Objects | CMF for Median Width | CMF for Lighting | CMF for Automated Speed Enforcement | Combined CMF |
| *CMF 1r* | *CMF 2r* | *CMF 3r* | *CMF 4r* | *CMF 5r* | *CMF comb* |
| from Equation 12-32 | from Equation 12-33 | from Table 12-22 | from Equation 12-34 | from Section 12.7.1 | (1)*(2)*(3)*(4)*(5) |
| 1.91 | 1.03 | 1.00 | 0.93 | 1.00 | 1.84 |

## Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

| (1) | (2) | | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **SPF Coefficients** | | **Overdispersion Parameter, k** | **Initial $N_{brmv}$** | **Proportion of Total Crashes** | **Adjusted $N_{brmv}$** | **Combined CMFs** | **Calibration Factor, Cr** | **Predicted $N_{brmv}$** |
| | from Table 12-3 | | from Table 12-3 | from Equation 12-10 | | $(4)_{TOTAL}$*(5) | (6) from Worksheet 1B | | (6)*(7)*(8) |
| | a | b | | | | | | | |
| Total | -15.22 | 1.68 | 0.84 | 0.021 | 1.000 | 0.021 | 1.84 | 1.00 | 0.038 |
| Fatal and Injury (FI) | -16.22 | 1.66 | 0.65 | 0.006 | $(4)_{FI}/((4)_{FI}+(4)_{PDO})$<br>0.296 | 0.006 | 1.84 | 1.00 | 0.011 |
| Property Damage Only (PDO) | -15.62 | 1.69 | 0.87 | 0.015 | $(5)_{TOTAL}-(5)_{FI}$<br>0.704 | 0.015 | 1.84 | 1.00 | 0.027 |

## Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| **Collision Type** | **Proportion of Collision Type$_{(FI)}$** | **Predicted $N_{brmv\ (FI)}$ (crashes/year)** | **Proportion of Collision Type $_{(PDO)}$** | **Predicted $N_{brmv\ (PDO)}$ (crashes/year)** | **Predicted $N_{brmv\ (TOTAL)}$ (crashes/year)** |
| | from Table 12-4 | $(9)_{FI}$ from Worksheet 1C | from Table 12-4 | $(9)_{PDO}$ from Worksheet 1C | $(9)_{TOTAL}$ from Worksheet 1C |
| Total | 1.000 | 0.011 | 1.000 | 0.027 | 0.038 |
| | | $(2)*(3)_{FI}$ | | $(4)*(5)_{PDO}$ | (3)+(5) |
| Rear-end collision | 0.730 | 0.008 | 0.778 | 0.021 | 0.029 |
| Head-on collision | 0.068 | 0.001 | 0.004 | 0.000 | 0.001 |
| Angle collision | 0.085 | 0.001 | 0.079 | 0.002 | 0.003 |
| Sideswipe, same direction | 0.015 | 0.000 | 0.031 | 0.001 | 0.001 |
| Sideswipe, opposite direction | 0.073 | 0.001 | 0.055 | 0.001 | 0.002 |
| Other multiple-vehicle collision | 0.029 | 0.000 | 0.053 | 0.001 | 0.002 |

## Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

| (1) | (2) | | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **SPF Coefficients** | | **Overdispersion Parameter, k** | **Initial $N_{brsv}$** | **Proportion of Total Crashes** | **Adjusted $N_{brsv}$** | **Combined CMFs** | **Calibration Factor, Cr** | **Predicted $N_{brsv}$** |
| | from Table 12-5 | | from Table 12-5 | from Equation 12-13 | | $(4)_{TOTAL}*(5)$ | (6) from Worksheet 1B | | (6)*(7)*(8) |
| | a | b | | | | | | | |
| Total | -5.47 | 0.56 | 0.81 | 0.018 | 1.000 | 0.018 | 1.84 | 1.00 | 0.033 |
| Fatal and Injury (FI) | -3.96 | 0.23 | 0.50 | 0.004 | $(4)_{FI}/((4)_{FI}+(4)_{PDO})$<br>0.255 | 0.005 | 1.84 | 1.00 | 0.008 |
| Property Damage Only (PDO) | -6.51 | 0.64 | 0.87 | 0.013 | $(5)_{TOTAL}-(5)_{FI}$<br>0.745 | 0.013 | 1.84 | 1.00 | 0.024 |

## Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| **Collision Type** | **Proportion of Collision Type$_{(FI)}$** | **Predicted $N_{brsv\ (FI)}$ (crashes/year)** | **Proportion of Collision Type $_{(PDO)}$** | **Predicted $N_{brsv\ (PDO)}$ (crashes/year)** | **Predicted $N_{brsv\ (TOTAL)}$ (crashes/year)** |
| | from Table 12-6 | $(9)_{FI}$ from Worksheet 1E | from Table 12-6 | $(9)_{PDO}$ from Worksheet 1E | $(9)_{TOTAL}$ from Worksheet 1E |
| Total | 1.000 | 0.008 | 1.000 | 0.024 | 0.033 |
| | | $(2)*(3)_{FI}$ | | $(4)*(5)_{PDO}$ | (3)+(5) |
| Collision with animal | 0.026 | 0.000 | 0.066 | 0.002 | 0.002 |
| Collision with fixed object | 0.723 | 0.006 | 0.759 | 0.019 | 0.025 |
| Collision with other object | 0.010 | 0.000 | 0.013 | 0.000 | 0.000 |
| Other single-vehicle collision | 0.241 | 0.002 | 0.162 | 0.004 | 0.006 |

### Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|
| **Driveway Type** | **Number of driveways, $n_j$** | **Crashes per driveway per year, $N_j$** | **Coefficient for traffic adjustment, t** | **Initial $N_{brdwy}$** | **Overdispersion parameter, k** |
| | | from Table 12-7 | from Table 12-7 | Equation 12-16 | from Table 12-7 |
| | | | | $n_j * N_j * (AADT/15,000)^t$ | |
| Major commercial | 0 | 0.158 | 1.000 | 0.000 | -- |
| Minor commercial | 0 | 0.050 | 1.000 | 0.000 | |
| Major industrial/institutional | 0 | 0.172 | 1.000 | 0.000 | |
| Minor industrial/institutional | 0 | 0.023 | 1.000 | 0.000 | |
| Major residential | 0 | 0.083 | 1.000 | 0.000 | |
| Minor residential | 0 | 0.016 | 1.000 | 0.000 | |
| Other | 0 | 0.025 | 1.000 | 0.000 | |
| Total | -- | -- | -- | 0.000 | 0.81 |

### Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|
| **Crash Severity Level** | **Initial $N_{brdwy}$** | **Proportion of total crashes ($f_{dwy}$)** | **Adjusted $N_{brdwy}$** | **Combined CMFs** | **Calibration factor, $C_r$** | **Predicted $N_{brdwy}$** |
| | $(5)_{TOTAL}$ from Worksheet 1G | from Table 12-7 | $(2)_{TOTAL}$ * (3) | (6) from Worksheet 1B | | (4)*(5)*(6) |
| Total | 0.000 | 1.000 | 0.000 | 1.84 | 1.00 | 0.000 |
| Fatal and injury (FI) | -- | 0.323 | 0.000 | 1.84 | 1.00 | 0.000 |
| Property damage only (PDO) | -- | 0.677 | 0.000 | 1.84 | 1.00 | 0.000 |

### Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **Predicted $N_{brmv}$** | **Predicted $N_{brsv}$** | **Predicted $N_{brdwy}$** | **Predicted $N_{br}$** | **$f_{pedr}$** | **Calibration factor, $C_r$** | **Predicted $N_{pedr}$** |
| | (9) from Worksheet 1C | (9) from Worksheet 1E | (7) from Worksheet 1H | (2)+(3)+(4) | from Table 12-8 | | (5)*(6)*(7) |
| Total | 0.038 | 0.033 | 0.000 | 0.071 | 0.036 | 1.00 | 0.003 |
| Fatal and injury (FI) | -- | -- | -- | -- | -- | 1.00 | 0.003 |

### Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|
| **Crash Severity Level** | **Predicted $N_{brmv}$** | **Predicted $N_{brsv}$** | **Predicted $N_{brdwy}$** | **Predicted $N_{br}$** | **$f_{biker}$** | **Calibration factor, $C_r$** | **Predicted $N_{biker}$** |
| | (9) from Worksheet 1C | (9) from Worksheet 1E | (7) from Worksheet 1H | (2)+(3)+(4) | from Table 12-9 | | (5)*(6)*(7) |
| Total | 0.038 | 0.033 | 0.000 | 0.071 | 0.018 | 1.00 | 0.001 |
| Fatal and injury (FI) | -- | -- | -- | -- | -- | 1.00 | 0.001 |

| Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments | | | |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| **Collision type** | **Fatal and injury (FI)**<br>(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J | **Property damage only (PDO)**<br>(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H | **Total**<br>(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J |
| | **MULTIPLE-VEHICLE** | | |
| Rear-end collisions (from Worksheet 1D) | 0.008 | 0.021 | 0.029 |
| Head-on collisions (from Worksheet 1D) | 0.001 | 0.000 | 0.001 |
| Angle collisions (from Worksheet 1D) | 0.001 | 0.002 | 0.003 |
| Sideswipe, same direction (from Worksheet 1D) | 0.000 | 0.001 | 0.001 |
| Sideswipe, opposite direction (from Worksheet 1D) | 0.001 | 0.001 | 0.002 |
| Driveway-related collisions (from Worksheet 1H) | 0.000 | 0.000 | 0.000 |
| Other multiple-vehicle collision (from Worksheet 1D) | 0.000 | 0.001 | 0.002 |
| Subtotal | 0.011 | 0.027 | 0.038 |
| | **SINGLE-VEHICLE** | | |
| Collision with animal (from Worksheet 1F) | 0.000 | 0.002 | 0.002 |
| Collision with fixed object (from Worksheet 1F) | 0.006 | 0.019 | 0.025 |
| Collision with other object (from Worksheet 1F) | 0.000 | 0.000 | 0.000 |
| Other single-vehicle collision (from Worksheet 1F) | 0.002 | 0.004 | 0.006 |
| Collision with pedestrian (from Worksheet 1I) | 0.003 | 0.000 | 0.003 |
| Collision with bicycle (from Worksheet 1J) | 0.001 | 0.000 | 0.001 |
| Subtotal | 0.012 | 0.024 | 0.037 |
| Total | 0.023 | 0.051 | 0.075 |

| Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments | | | |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| **Crash Severity Level** | **Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)** | **Roadway segment length, L (mi)** | **Crash rate (crashes/mi/year)** |
| | (Total) from Worksheet 1K | | (2) / (3) |
| Total | 0.1 | 0.03 | 2.5 |
| Fatal and injury (FI) | 0.0 | 0.03 | 0.8 |
| Property damage only (PDO) | 0.1 | 0.03 | 1.7 |

# Appendix F

## Transportation and Parking Demand Management Plan

This page intentionally left blank

FEHR & PEERS

# Draft Memorandum

Date: March 28, 2022

To: Elizabeth Kanner, ESA

From: Sam Tabibnia, Fehr & Peers

**Subject: 2929 Broadway – Transportation and Parking Demand Management Plan**

*Ok21-0416*

---

The proposed 2929 Broadway Project is required to prepare a Transportation and Parking Demand Management (TDM) Plan per the *City of Oakland's Transportation Impact Review Guidelines* and the City's Standard Conditions of Approval. Since the Project would generate between 50 and 99 net new peak hour trips, the goal of the TDM Plan is to achieve a 10 percent vehicle trip reduction (VTR). This memorandum describes the Project and setting and lists the mandatory TDM strategies that the Project shall implement to achieve the 10 percent VTR.

## Project Description

The Project is located in the Broadway Valdez District of Oakland on the north side of 29th Street between Broadway and Webster Streets. The seven-story building would consist of 220 residential units and about 1,960 square feet of ground-level retail uses. The Project would provide 110 parking spaces in a garage accessed through a driveway on 29th Street. Proposed bicycle parking would include a secure bicycle room adjacent to the garage that would accommodate 132 bicycles, and bicycle racks along the sidewalk on Broadway that would provide short-term bicycle parking for 15 bicycles. The Project would demolish an existing automobile showroom.

## Project Location

The Project is in the Broadway-Valdez District, a dense, pedestrian-friendly, urban area. The Project is near Downtown Oakland, a high-density employment area and is within walking and biking distance of a variety of neighborhood-serving retail, restaurant, and entertainment (such as bars and theaters) uses.

The Project is within 0.7 miles of the 19th Street BART Station, numerous bus routes, including AC Transit's trunk lines 51A along Broadway and 6 along Telegraph Avenue, as well as local buses, night buses, and Transbay buses. The Project's location is expected to result in a relatively high rate of pedestrian, bicycle, and transit trips. As a result of the availability of various destination within walking and biking distance of the site and the available biking infrastructure and transit service in the Project area, the Project site has a WalkScore of 96/100 (walker's paradise), BikeScore of 95 (biker's paradise), and TransitScore of 65 (good transit).

The Project's proximity to both regional transit as well as employment centers and other neighborhood amenities is likely to result in relatively high rates of walking, bicycling and transit use by residents, workers, and visitors. This is evidenced in part by the travel patterns of the area's existing residents. Based on US Census data, **Table 1** summarizes the transportation mode split for employed residents' journey to work, and **Table 2** summarizes vehicle ownership for renter households for Project's census tract. The average automobile ownership in the census tract is about 0.76 automobiles per household. Although 56 percent of households have one or more vehicles at home, only 39 percent of employed residents drive to work, while about one-third take public transit, and 18 percent either walk or bike to work.

**Table 1: Journey to Work for Employed Residents in Nearby Census Tracts**

| Transportation Mode | Percent of Employed Residents |
|---|---|
| Drive Alone | 34% |
| Carpool | 5% |
| Public Transportation | 31% |
| Bicycle | 4% |
| Walk | 14% |
| Other (Taxi, Motorcycle, etc.) | 4% |
| Work from Home | 8% |
| **Total** | **100%** |

Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates, Census Tracts 4013, Table B08006.

**Table 2: Vehicle Ownership for Renter Households in Nearby Census Tracts**

| Vehicles Available | Percent of Renter Households |
|---|---|
| No vehicle available | 44% |
| 1 vehicle available | 39% |
| 2 vehicles available | 13% |
| 3+ vehicles available | 4% |
| **Total** | **100%** |

Source: U.S. Census Bureau, 2014-2018 American Community Survey 5-Year Estimates, Census Tracts 4013, Table B25044.

**Table 3** shows the Project trip generation by travel mode as summarized in the Project Transportation Impact Review (TIR) Memorandum per the City's TIRG. The automobile trips generated by the Project are estimated to be about two-thirds of trips generated by a typical suburban development. Similarly, as discussed in the Project environmental document, the VMT per resident in the Project area is about 35 percent of the regional VMT per resident (The average VMT per resident in the Project area is about 5.3 compared to the regional average VMT of 15.0).

**Table 3: Project Trip Generation by Travel Mode**

| Mode | Mode Share Adjustment Factors[1] | Daily | AM Peak Hour | PM Peak Hour |
|---|---|---|---|---|
| Automobile | 0.63 | 620 | 48 | 59 |
| Transit | 0.24 | 230 | 18 | 22 |
| Bike | 0.05 | 50 | 4 | 4 |
| Walk | 0.06 | 60 | 5 | 6 |
| | **Total Trips** | **960** | **75** | **91** |

Notes:

1. Based on *City of Oakland TIRG*, for an urban environment between 0.5 and 1.0 miles of a BART station.

Source: Fehr & Peers, 2021.

## Mandatory TDM Strategies

This section describes the mandatory strategies that shall be implemented as part of the Project. These strategies shall be directly implemented by the Project Applicant and building management. The City of Oakland Standard Conditions of Approval lists infrastructure and operational strategies that must be incorporated into a TDM plan based on Project location and development characteristics. **Table 4** presents these strategies and indicates their applicability to the Project.

**Table 5** lists all mandatory TDM strategies for the Project, and the effectiveness of each strategy primarily based on the Alameda County Transportation Commission (CTC) VMT Reduction Calculator Tool,[1] which is a tool that accounts for the particular location of a development project and quantifies the effects of various strategies in reducing VMT based on available research such as the research compiled in the draft *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity, Designed for Local Governments, Communities, and Project Developers* (California Air Pollution Control Officers Association [CAPCOA], August 2021). The CAPCOA report is a resource for local agencies to quantify the benefit, in terms of reduced travel demand, of implementing various TDM strategies.

---

[1] See https://www.alamedactc.org/planning/sb743-vmt/ for more information.

### Table 4: Mandatory TDM Program Components as Required by the Oakland TIRG

| TDM Strategy | Required When | Required for Project? |
|---|---|---|
| Bus boarding bulbs or islands | • A bus boarding bulb or island does not already exist, and a bus stop is located along the project frontage; and/or<br>• A bus stop along the project frontage serves a route with 15 minutes or better peak hour service and has a shared bus-bike lane curb | No, a bus stop is not located along the Project frontage |
| Bus shelter | • A stop with no shelter is located within the project frontage, or<br>• The project is located within 0.10 miles of a flag stop with 25 or more boardings per day | No, although bus stops with no shelters are located less than 0.10 miles of the Project site on Broadway at 30th Street, there is not adequate space to install a shelter. |
| Concrete bus pad | • A bus stop is located along the project frontage and a concrete bus pad does not already exist | No, a bus stop is not located along the Project frontage |
| Curb extensions or bulb-outs | • Identified as an improvement within site analysis | **Yes, the Project would extend the existing bulb-out at the northwest corner of the Broadway/29th Street intersection** |
| Implementation of a corridor-level bikeway improvement | • A buffered Class 2 or Class 4 bikeway facility is in a local or county adopted plan within 0.10 miles of the project location; and<br>• The project would generate 500 or more daily bicycle trips | No, the Project would not generate 500 or more daily bicycle trips |
| Implementation of a corridor-level transit capital improvement | • A high-quality transit facility is in a local or county adopted plan within 0.25 miles of the project location; and<br>• The project would generate 400 or more peak period transit trips | No, the Project would not generate 400 or more peak period transit trips |
| Installation of amenities such as lighting; pedestrian-oriented green infrastructure, trees, or other greening landscape; and trash receptacles per the Pedestrian Master Plan and any applicable streetscape plan | • Always required | **Yes, the Project would upgrade the pedestrian amenities adjacent to the site** |

### Table 4: Mandatory TDM Program Components as Required by the Oakland TIRG

| TDM Strategy | Required When | Required for Project? |
|---|---|---|
| Installation of safety improvements identified in the Pedestrian Master Plan (such as crosswalk striping, curb ramps, count down signals, bulb outs, etc.) | • When improvements are identified in the Pedestrian Master Plan along project frontage or at an adjacent intersection | No, improvements are not identified in the Pedestrian Master Plan |
| In-street bicycle corral | • A project includes more than 10,000 square feet of ground floor retail, is located along a Tier 1 bikeway, and on-street vehicle parking is provided along the project frontages. | No, the Project does not include more than 10,000 square feet of ground floor retail |
| Intersection improvements | • Identified as an improvement within site analysis | **Yes, the Project would provide high visibility/ continental crosswalks and truncated domes at the Broadway/29th Street and Webster Street/29th Street intersections** |
| New sidewalk, curb ramps, curb and gutter meeting current City and ADA standards | • Always required | **Yes, the Project would upgrade the sidewalks along Project frontage** |
| No monthly permits and establish minimum price floor for public parking | • If proposed parking ratio exceeds 1:1000 sf (commercial) | No, the Project would not provide off-street commercial parking |
| Parking garage is designed with retrofit capability | • Optional if proposed parking ratio exceeds 1:1.25 (residential) or 1:1000 sf (commercial) | **Yes, although the Project parking ratio would not exceed 1:1.25, the Project garage can be retrofitted for other uses** |
| Parking space reserved for car share | • If a project is providing parking and a project is located within downtown. One car share space reserved for buildings between 50 – 200 units, then one car share space per 200 units. | **Yes, the Project will offer to provide at least two parking spaces reserved for car-share free of charge** |
| Paving, lane striping or restriping (vehicle and bicycle), and signs to midpoint of street section | • Typically required | **Yes, the Project would update the paving and striping along the Project frontage to midpoint of the street section** |

### Table 4: Mandatory TDM Program Components as Required by the Oakland TIRG

| TDM Strategy | Required When | Required for Project? |
|---|---|---|
| Pedestrian crossing improvements | • Identified as an improvement within site analysis | **Yes, the Project would extend the bulb-out at the northwest corner of the Broadway/29th Street intersection** |
| Pedestrian-supportive signal changes | • Identified as an improvement within operations analysis | No, the operations analysis for the Project did not identify any pedestrian-supportive signal changes. |
| Real-time transit information system | • A project frontage block includes a bus stop or BART station and is along a Tier 1 transit route with 2 or more routes or peak period frequency of 15 minutes or better | No, the Project is not adjacent to a BART station or a bus stop |
| Relocating bus stops to far side | • A project is located within 0.10 mile of any active bus stop that is currently near-side | No, a near-side bus stop is not located within 0.10 miles of the Project |
| Signal upgrades, including typical traffic lights, pedestrian signals, bike actuated signals, transit only signals | • Project size exceeds 100 residential units, 80,000 sf of retail, or 100,000 sf of commercial; and<br>• Project frontage abuts an intersection with signal infrastructure older than 15 years | No, but the Project may remove the existing signal at the Webster Street/29th Street intersection |
| Transit queue jumps | • Identified as a needed improvement within operations analysis of a project with frontage along a Tier 1 transit route with 2 or more routes or peak period frequency of 15 minutes or better | No, transit queue jumps have not been identified as a potential improvement along the corridors adjacent to the Project site |
| Trenching and placement of conduit for providing traffic signal interconnect | • Project size exceeds 100 units, 80,000 sf of retail, or 100,000 sf of commercial; and<br>• Project frontage block is identified for signal interconnect improvements as part of a planned ITS improvement; and<br>• A major transit improvement is identified within operations analysis requiring traffic signal interconnect | No, major transit improvements have not been identified in an operations analysis requiring traffic signal interconnect |
| Unbundled parking | • If proposed parking ratio exceeds 1:1.25 (residential) | **yes, the Project will unbundle the residential off-street parking** |

Sources: City of Oakland Standard Conditions of Approval as of December 2020 and summarized by Fehr & Peers, 2021

### Table 5: Mandatory TDM Plan Components

| TDM Strategy | Description | Estimated Vehicle Trip Reduction[1] |
|---|---|---|
| A. Infrastructure Improvements | Various improvements | N/A[2] |
| B. Limited Parking Supply | Project would provide about 0.50 off-street parking spaces per unit, less than the auto ownership in the Project area. | 8-10% |
| C. Unbundled Parking | Residents are required to pay market-rate for a parking space separately from their monthly rent | |
| D. Residential Parking Management | Restrict on-site parking to a maximum of one parking space per unit, thereby discouraging multiple car ownership | |
| E. Bicycle Parking Supply and Monitoring | Provide bicycle parking above the minimum requirement and monitor usage of the bicycle parking facilities | <1% |
| F. Transit Fare Subsidy | Provide a monthly transit subsidy to Project residents[3] | 2-4% |
| G. Carshare Parking Spaces | Offer to dedicate on-site carshare parking spaces | <1% |
| H. Carpool and Ride-Matching Assistance | Assist Project residents and employees in forming carpools | <1% |
| I. TDM Coordinator | Coordinator responsible for implementing and managing the TDM Plan | N/A |
| J. Marketing and Education | Active marketing of carpooling, BART, AC Transit, bikesharing, and other non-auto modes | |
| | ***Total Estimated Vehicle Trip Reduction*** | **11-15%** |

Notes:

1. Based on the results of the Alameda CTC VMT Reduction Calculator Tool. Although the focus of the Tool is reductions to VMT, the research used to generate the reductions also indicates vehicle trip reductions are applicable as well. For the purposes of this analysis the VTR is assumed to equal the VMT reduction.
2. The effectiveness of this strategy cannot be quantified at this time. This does not necessarily imply that the strategy is ineffective. It only demonstrates that at the time of the Alameda CTC VMT Reduction Calculator Tool development, existing literature did not provide a robust methodology for calculating its effectiveness. In addition, many strategies are complementary to each other and isolating their specific effectiveness may not be feasible.
3. Assuming a subsidy of about $2.00 per residential unit per weekday (value to transit user).

Source: Fehr & Peers, 2021.

The mandatory strategies in Table 5 are generally targeted at Project residents. While some of the mandatory strategies would also affect the travel behavior of residential visitors and commercial employees and customers, these groups are not directly targeted with TDM programs. The number of commercial employees would be small relative to the total number of residents, and visitors and customers would likely not be aware of TDM programs or visit frequently to make them cost effective. However, some of the mandatory strategies, especially the ones that would improve the infrastructure, would also benefit these populations.

The TDM strategies include both one-time physical improvements and on-going operational strategies. Physical improvements will be constructed as part of the Project and are therefore anticipated to have a one-time capital cost. Some level of ongoing maintenance cost may also be required for certain improvements. Operational strategies provide on-going incentives and support for the use of non-auto transportation modes. These TDM measures have monthly or annual costs and will require on-going management.

A more detailed description of the TDM measures that comprise the mandatory TDM Plan is provided below:

A. *Infrastructure Improvements* – the following infrastructure improvements in the vicinity of the Project, as recommended in the Project TIR or required by the TIRG would improve the bicycling, walking, and transit systems in the area and further encourage the use of these modes:

    **Recommendation 1:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:

    - Since the Webster Street/29th Street intersection does not meet any of the nine MUTCD traffic signal warrants, further evaluate and if found feasible, consider converting the intersection to flashing all-red (similar to all-way stop-controlled) operations.

    **Recommendation 2:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:

    - Extend the existing bulb-out on the northwest corner of the Broadway/29th Street intersection into 29th Street to reduce the speed of vehicles turning right from southbound Broadway to westbound 29th Street. Ensure the bulb-out would not preclude the future implementation of the planned bicycle facilities on 29th Street (see Recommendation 4).
    - Provide “KEEP CLEAR” striping on 29th Street at the Project driveway.

- Install visual-only warning devices at the Project driveway on 29th Street..
- Provide red curb on the north side of 29th Street between Broadway and the Project driveway and for about 20 feet on the west side of the driveway to ensure adequate sight distance between vehicles exiting the driveways and vehicles in both direction of 29th Street.

**Recommendation 3:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:

- Designate 30 feet of passenger loading space (white curb) along the frontage of the building on Broadway near the lobby for passenger pick-up/ drop-off.
- Convert the existing red-curb on the north side 29th Street just east of Webster Street to metered on-street parking.
- Designate the remaining parking spaces along the Project frontages on Broadway and Webster Street as metered parking.

**Recommendation 4:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:

- Consistent with the City’s 2019 Oakland Bike Plan, implement a Class 2 bicycle lane on westbound and sharrows on eastbound 29th Street between Broadway and Webster Street.

**Recommendation 5:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:

- Ensure that the Project would provide short-term bicycle parking for at least 16 bicycles. If the short-term bicycle parking cannot be accommodated on the sidewalks adjacent to the Project, consider converting an on-street automobile parking space to a bicycle corral.

**Recommendation 6:** While not required to address a CEQA impact, and at the discretion of City of Oakland staff, the following shall be considered as part of the final design for the Project:

- Upgrade all crosswalks at the Broadway/29th Street and Webster Street/29th Street intersections to high visibility/continental crosswalks.

    - Extend the existing bulb-out on the northwest corner of the Broadway/29th Street intersection into 29th Street, which would allow provision of directional curb-ramps at the corner, shorten the pedestrian crossing on the west side of the intersection, and reduce the speed for southbound right-turn vehicles. Ensure the bulb-out would not preclude the future implementation of the planned bicycle facilities on 29th Street (See Recommendations 2 and 4).
    - Provide truncated domes at all the corners of the Broadway/29th Street and Webster Street/29th Street intersections.

B. *Limited Parking Supply* – The Project would provide 110 off-street automobile parking spaces for the 220 residential units, which corresponds to about 0.50 spaces per unit. This is less than the current average auto ownership of 0.76 per household in the Project area.

C. *Unbundle Parking* – Building management shall unbundle parking costs from housing costs (as required by Oakland Municipal Code, Section 17.116.310) for the residential component of the Project. This would result in residents paying one price for the residential unit and a separate price for parking, should they opt for a space. The price of a parking space should be market-based and can be adjusted so that resident parking demand matches the Project's parking supply.

D. *Residential Parking Management* – Building management shall restrict parking to one parking space per unit or less, thereby discouraging multiple car ownership and/or use for the residential component of the Project. Exceptions will only be made for residents with management approved Reasonable Accommodation Requests. A Reasonable Accommodation Request shall need to demonstrate a hardship wherein a household requires more than one vehicle per unit. Examples could include households with multiple disabled residents requiring vehicles or households with multiple residents with places of work inaccessible via transit.

E. *Bicycle Parking Supply Monitoring* – The Project would include long-term on-site parking in a secure bicycle room and short-term parking in the form of bike racks along the Project frontage. Building management shall monitor the usage of these facilities and provide additional bicycle parking, if necessary. Additional short-term bicycle parking may be provided in the form of in-street bicycle corrals.

F. *Transit Fare Subsidy* –Provide a monthly transit benefit to each dwelling unit. Options may include:

  - Participate in AC Transit's Easy Pass Program, where Building Management will purchase an annual Easy Pass per unit for all units in the development (preferred option)

- Offer to provide a regular Adult 31-Day AC Transit Pass at half the price to residents who request it (Pass is valued at $84.60 as of February 2022)
- Offer to provide a monthly Clipper Card contribution of about $40 to residents who request it

G. *Carshare Parking Spaces* – Building management shall offer to dedicate for free at least two on-site parking spaces to carsharing operators, such as Zipcar. Monitor the usage of the carsharing spaces and adjust if necessary.

H. *Carpool and Ride-Matching Assistance Program* – Building management shall offer personalized ride-matching assistance to pair residents interested in forming commute carpools. As an enhancement, the Project could use services such as ZimRide, Scoop, Enterprise RideShare, or 511.org RideShare.

I. *On-Site TDM Coordinator* – Building management shall designate an on-site TDM coordinator responsible for implementing and managing the TDM Plan. The TDM coordinator would also be responsible for ensuring that all residents are aware of their transportation options and would serve as a point of contact regarding the TDM program.

J. *Marketing and Education* – Site management shall provide residents and employees information about transportation options. This information would also be posted at central location(s) and be updated as necessary. This information shall include:

- *Transit Routes* – Promote the use of transit by providing user-focused maps. These maps provide residents and employees with wayfinding to nearby transit stops and transit-accessible destinations and are particularly useful for those without access to portable mapping applications.
- *Real-time Transit Information System* – The Project should consider installing real-time transit information, such as TransitScreen, in a visible location to provide residents, employees, customers, and visitors with up-to-date transit arrival and departure times.
- *Transit Fare Discounts* – Provide information about local discounted fare options offered by BART and AC Transit, including discounts for youth, elderly, persons with disabilities, and Medicare cardholders.
- *Car Sharing* – Promote accessible car sharing programs, such as Zipcar, and Getaround by informing residents and employees of nearby car sharing locations and applicable membership information.
- *Ridesharing* – Provide residents and employees with phone numbers and contact information for ride sharing options including Uber, Lyft, and Oakland taxicab services.

  - *Carpooling* – Provide residents and employees with phone numbers and contact information for carpool matching services such as the Metropolitan Transportation Commission's 511 RideMatching.
  - *Walking and Biking Events* – Provide information about local biking and walking events, such as Oaklavia, as events are planned.
  - *Bikeshare/Scooters* – Educate residents and employees about nearby bike sharing station locations and membership information (nearest Bay Wheels bikeshare station is about 0.1 miles north of the Project site on the west side of Broadway north of 30th Street) and dock-less bikeshare/scooters.

## Monitoring, Evaluation and Enforcement

According to the City's *Standard Condition of Approval #78*, projects generating more than 100 net new peak hour trips are required to submit an annual compliance report for the first five years following completion of the Project for review and approval by the City. Since the Project would generate fewer than 100 net peak hour automobile trips, the Project applicant is not required to submit an annual compliance report to the City.

Please contact Sam Tabibnia (s.tabibnia@fehrandpeers.com or 510-835-1943) with questions or comments.