



AGENDA

VALLEJO PLANNING COMMISSION REGULAR MEETING – 7:00 P.M. VIA TELECONFERENCE

Robert Schussel, Chair
Peggy Cohen-Thompson, Vice-Chair
Diosdado "J.R." Matulac
Chris Platzer
Kathleen Diohep
Randy Larson
Thomas Judt

VIA TELECONFERENCE

www.cityofvallejo.net

April 20, 2020

This AGENDA contains a brief general description of each item to be considered. The posting of the recommended actions does not indicate what action may be taken. If comments come to the Planning Commission without prior notice and are not listed on the AGENDA, no specific answers or response should be expected at this meeting per State law.

Notice of Availability of Public Records: All public records relating to an open session item, which are not exempt from disclosure pursuant to the Public Records Act, that are distributed to a majority of the Planning Commission will be available on the City of Vallejo website at www.cityofvallejo.net subject to staff's ability to post the documents prior to the meeting.

Disclosure Requirements: Government Code Section 84308 (d) sets forth disclosure requirements which apply to persons who actively support or oppose projects in which they have a "financial interest", as that term is defined by the Political Reform Act of 1974. If you fall within that category, and if you (or your agent) have made a contribution of \$250 or more to any commissioner within the last twelve months to be used in a federal, state or local election, you must disclose the fact of that contribution in a statement to the Commission.

Appeal Rights: The applicant or any party adversely affected by the decision of the Planning Commission may, within ten days after the rendition of the decision of the Planning Commission, appeal in writing to the City Council by filing a written appeal with the City Clerk. Such written appeal shall state the reason or reasons for the appeal and why the applicant believes he or she is adversely affected by the decision of the Planning Commission. Such appeal shall not be timely filed unless it is actually received by the City Clerk or designee no later than the close of business on the tenth calendar day after the rendition of the decision of the Planning Commission. If such date falls on a weekend or City holiday, then the deadline shall be extended until the next regular business day.

Notice of the appeal, including the date and time of the City Council's consideration of the appeal, shall be sent by the City Clerk to all property owners within two hundred or five hundred feet of the project boundary, whichever was the original notification boundary.

The Council may affirm, reverse or modify any decision of the Planning Commission which is appealed. The Council may summarily reject any appeal upon determination that the appellant is not adversely affected by a decision under appeal.



The Council Chambers in City Hall is ADA compliant. Devices for the hearing impaired are available from the City Clerk. Requests for disability related modifications or accommodations, aids or services may be made by a person with a disability to the City Clerk's office no less than 72 hours prior to the meeting as required by Section 202 of the Americans with Disabilities Act of 1990 and the federal rules and regulations adopted in implementation thereof.

If you have any questions regarding any of the following agenda items, please call the assigned planner or project manager at (707) 648-4326.

Please note: Due to the Coronavirus emergency, all Planning Commission meetings will be held via teleconference. Members of the public will be able to submit public comment. Members of the public interested in participating or observing the Planning Commission meeting may either click the links below or type the link into an internet browser. You will be taken to the internet platform where the meeting is being held.

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1. CALL TO ORDER
 2. PLEDGE OF ALLEGIANCE
 3. ROLL CALL
 4. APPROVAL OF MINUTES - NONE
 5. WRITTEN COMMUNICATIONS
 6. REPORT OF THE SECRETARY

A. Upcoming Meetings:

May 4, 2020

Senate Bill 743 Vehicle Miles Traveled (VMT) Study Session
(Tentative)

384 Fairgrounds Drive, Storage Facility: Site Development,
Use Permit, Variance, Sign Permit, Landscape Review,
Environmental Document (Tentative)

Public Works Capital Improvement Project (Tentative)

May 18, 2020

Zoning Code Study Session: Non-residential Districts
(Tentative)

7. CITY ATTORNEY REPORT
8. REPORT OF THE PRESIDING OFFICER AND MEMBERS OF THE PLANNING COMMISSION AND LIAISON REPORTS
 - A. Report of the Presiding Officer and Members of the Planning Commission
 - B. Council Liaison to Planning Commission

9. COMMUNITY FORUM

Due to the current Shelter at Home Order and in conformance with the Governor's Executive Order N-29-30, the City of Vallejo has opted to hold Planning Commission meetings via teleconference. Any interested members of the public desiring to communicate with the Planning Commission as part of the Community Forum must do so by accessing the link at the conclusion of this paragraph. There will be no public access to City Hall for any Planning Commission meetings until further notice.

<https://www.opentownhall.com/8525>

10. CONSENT CALENDAR AND APPROVAL OF THE AGENDA

Due to the current Shelter at Home Order and in conformance with the Governor's Executive Order N29 30, the City of Vallejo has opted to hold Planning Commission meetings via teleconference. Any interested members of the public desiring to communicate with the Planning Commission as part of Public Comment Regarding Consent Calendar Items must do so by accessing the link at the conclusion of this paragraph. There will be no public access to City Hall for any Planning Commission meetings until further notice.

<https://www.opentownhall.com/8535>

11. PUBLIC HEARING

Due to the current Shelter at Home Order and in conformance with the Governor's Executive Order N-29-30, the City of Vallejo has opted to hold Planning Commission meetings via teleconference. Any interested members of the public desiring to communicate with the Planning Commission as part of Public Comment Regarding Public Hearing Items must do so by accessing the link at the conclusion of this paragraph. There will be no public access to City Hall for any Planning Commission meetings until further notice.

<https://www.opentownhall.com/8527>

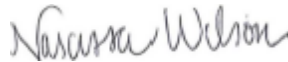
Project Title:	Costco/Fairview at Northgate
Applicant:	Vallejo-Fairview Developers, LLC
Location:	Vacant site at southeast corner of Admiral Callaghan Lane and Turner Parkway (APN: 0081-490-010)
Project Description:	Mixed use development on a vacant 51.3-acre site, including a new, larger Costco store to replace the existing store at 198 Plaza Drive, a gas station, a 27,500-square-foot commercial center, and 178 single-family dwellings.
Proposed Environmental Determination:	A Final Environmental Impact Report (EIR) has been prepared.
Staff Recommendation:	Staff recommends that the Planning Commission adopt Resolution No. PC 20-01 to: 1) Recommend that the City Council certify the Final EIR; 2) Recommend that the City Council approve Zoning Map Amendment #ZMA17-0001, Planned Development #PD17-0007, and Major Use Permit #UP18-0007; and 3) Approve Vesting Tentative Map #TM17-0002 contingent on the above City Council actions.
Project Manager:	Aaron Sage, (707) 648-5391, aaron.sage@cityofvallejo

12. OTHER

A. Discussion of Future Agenda Items

13. ADJOURNMENT

I, Narcissa Wilson, Planning Executive Secretary, do hereby certify that I have caused a true copy of the above notice and agenda to be delivered to each of the members of the Vallejo Planning Commission, at the time and in the manner prescribed by law and that this agenda was posted at City Hall, 555 Santa Clara Street, CA at 5:00 p.m. Tuesday, April 7, 2020.



Dated April 7, 2020

Narcissa Wilson, Planning Executive Secretary



**STAFF REPORT
CITY OF VALLEJO
PLANNING COMMISSION**

I. PROJECT INFORMATION

DATE OF MEETING:	April 20, 2020	Item No. 11
PREPARED BY:	Aaron Sage, AICP, Principal Planner	
PROJECT NAME:	Fairview at Northgate	
PROJECT LOCATION:	Vacant site at southeast corner of Admiral Callaghan Lane and Turner Parkway (APN: 0081-490-010)	
PROJECT NUMBERS:	Planned Development #PD17-0007 (includes Master Plan and Unit Plans) Tentative Map #TM17-0002 Major Use Permit #UP18-0007 Zoning Map Amendment #ZMA17-0001	
PROJECT SUMMARY:	Mixed use development on a vacant 51.3-acre site in northeast Vallejo. The main components of the project are: • A 152,138-square-foot Costco store with a tire center, gasoline sales, and 774 surface parking spaces; • Closure of the existing Costco store and gas station at 198 Plaza Drive upon completion of the new store; • A commercial center with four buildings totaling 27,500 square feet and including a drive-through restaurant and 188 surface parking spaces; • 178 two-story single-family dwellings; • A central open space buffer, including protected wetlands, between the commercial and residential portions of the project; • Widening of Admiral Callaghan Lane from two to four lanes, with a new traffic signal at the main Costco driveway	
REQUIRED PERMITS AND APPROVALS:	• Certification of Final Environmental Impact Report • Vesting Tentative Subdivision Map for creation of commercial, residential and open space parcels (VMC Chapter 15.10) • Zoning Map Amendment to change zoning from Pedestrian Shopping and Service (CP) to Mixed Use Planned Development (MUPD) (VMC Chapter 16.86) • Master Plan for conceptual design of overall project (VMC Section 16.116.050)	

- Unit Plans for specific design of site buildings (VMC Section 16.116.090)¹
- Major Use Permit for Costco building, which meets City’s definition of a “superstore” (VMC Section 16.76.030)
- Major Use Permit for a restaurant with a drive-through (VMC Section 16.57.020.K)
- Major Use Permit to allow Costco to receive warehouse deliveries between 2 a.m. and 6 a.m., and operate a gas station from 5 a.m. to 6 a.m., within 300 feet of the residential zoning district located south of the project site (VMC Section 16.57.030.A.1).
- Approval of new park sites (VMC Section 3.18.070.A)

PROPOSED ENVIRONMENTAL DETERMINATION:

Because the project may have significant impacts on the environment, Draft and Final Environmental Impact Reports (EIRs) have been prepared pursuant to the California Environmental Quality Act (CEQA) and are available for public review at: <https://bit.ly/2Qy3dbv>. See Section IV for further discussion of the EIR.

RECOMMENDATION:

Staff recommends that the Planning Commission adopt the attached Resolution No. PC 20-01 to:

- 1) Recommend that the City Council certify the Final EIR;
- 2) Recommend that the City Council approve Zoning Map Amendment #ZMA17-0001, Planned Development #PD17-0007, and Major Use Permit #UP18-0007; and
- 3) Approve Vesting Tentative Map #TM17-0002 contingent on the above City Council actions.

PROJECT DATA SUMMARY:

Applicant: Vallejo-Fairview Developers, LLC
5142 Franklin Drive, Suite B
Pleasanton, CA 94588

Property Owner: Frank Toller
1312 Oak Avenue

¹ The applicant has requested Unit Plans for all buildings in the project except for the drive-through restaurant located on Admiral Callaghan Lane; the Unit Plan for this restaurant will be submitted in the future once a tenant is selected.

St. Helena, CA 94574

Zoning District: Existing: Pedestrian Shopping and Service (CP)
Proposed: Mixed Use Planned Development (MUPD)

General Plan Designation: West Portion: Retail Entertainment (RE)
East Portion: Mix of Housing Types/Medium Density (R-MH)

Specific Plan: None

Existing Uses: None (Vacant)

Surrounding Land Uses: North: Target Center, Gateway Plaza (retail centers)
South: Avery Greene Honda, Sundance Apartment Homes
East: Single family residential development
West: Interstate 80 (mobile home park beyond)

Lot Area: 51.3 acres (2,234,192 square feet)

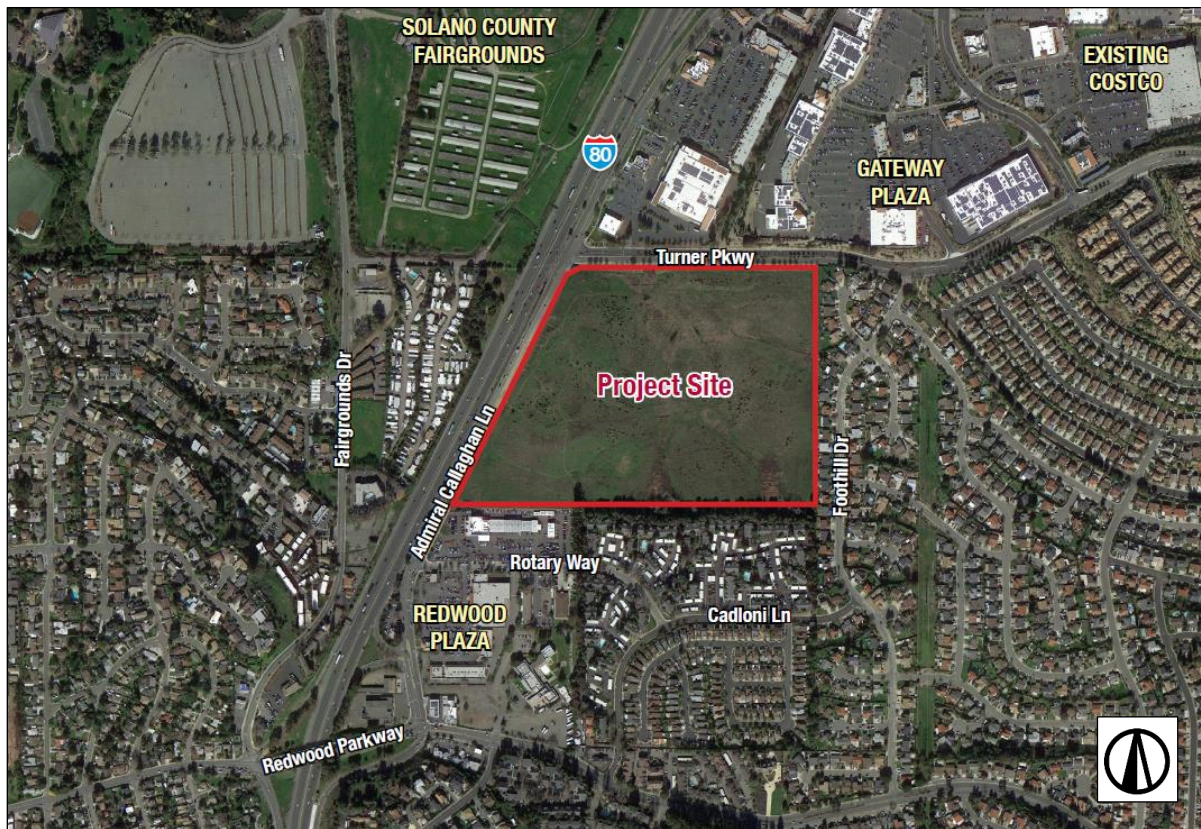
II. PROJECT DESCRIPTION

Table 1 – Project Timeline	
Date	Action/Event
11/3/16	Applicant files Preliminary Review application to obtain early input from City staff on the project.
8/28/17	Applicant files Planned Development (PD), Tentative Map (TM), and Zoning Map Amendment (ZMA) applications.
9/27/17	City deems PD, TM and ZMA applications incomplete.
10/1/18	Applicant submits revised and additional materials for PD, TM and ZMA applications.
10/2/18	City releases Notice of Preparation of Environmental Impact Report (EIR).
10/31/18	City deems PD, TM and ZMA applications incomplete.
12/10/18	Applicant files Use Permit (UP) application for Costco “superstore”.
1/9/19	City deems UP application incomplete.
5/20/19	Applicant submits revised and additional materials for PD, TM, UP and ZMA applications.
6/19/19	City deems PD, TM, UP and ZMA applications complete.
1/17/19	City releases Draft EIR for public review.
1/22/19	Planning Commission holds study session on project.
3/2/19	Planning Commission holds public hearing on Draft EIR. Draft EIR public review period ends.
4/10/19	Draft responses to public comments on Draft EIR and revisions to Draft EIR released for Planning Commission and public review.
4/20/19	Planning Commission holds public hearing to take action on TM and make recommendations to City Council on Final EIR, PD, UP and ZMA)
6/9/19 (tentative)	City Council holds public hearing to consider Planning Commission recommendations and take action on Final EIR, PD, UP and ZMA).

A. Site Location and Context

The project site is located in northeast Vallejo, at the southeast corner of Admiral Callaghan Lane and Turner Parkway, immediately east of Interstate 80. The surrounding area is primarily developed with low-density residential and commercial uses.

Figure 1 – Vicinity Map



B. Project Description

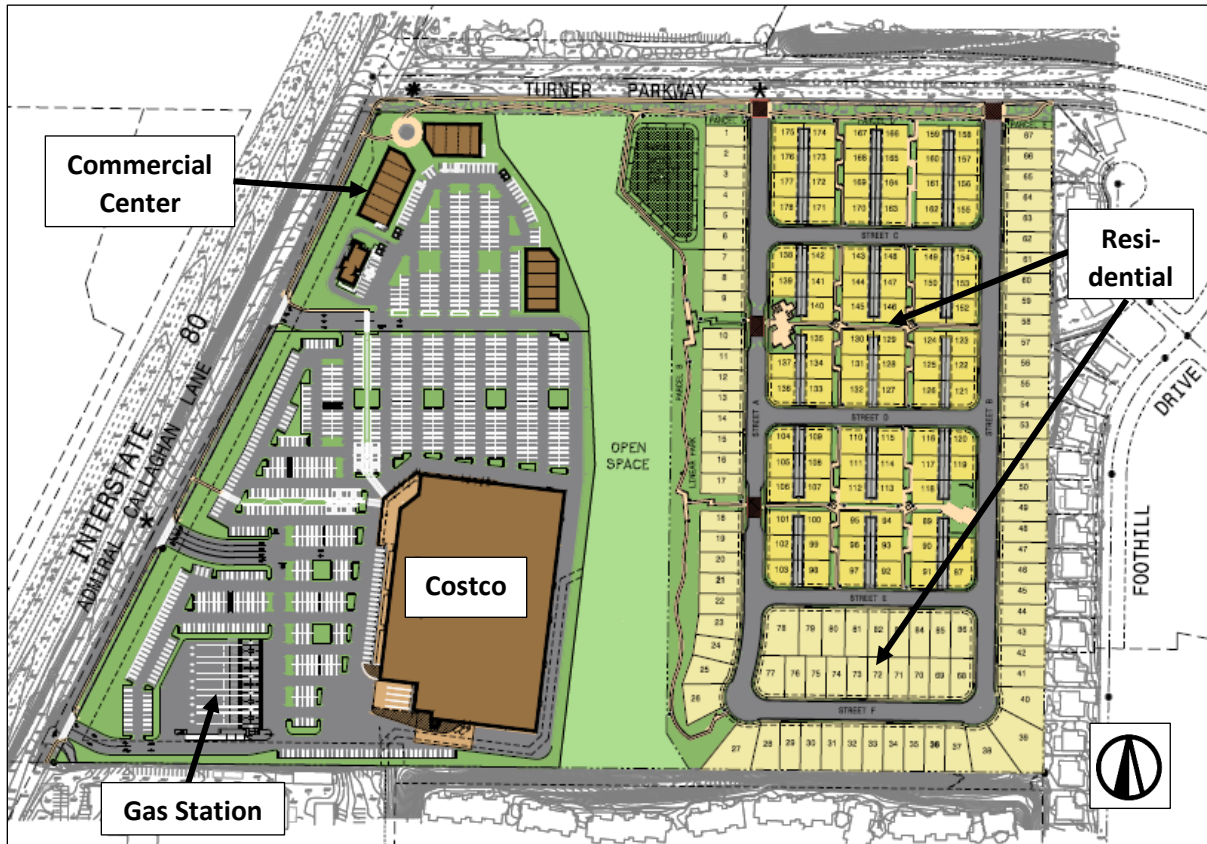
The proposed project is a mixed use development on a vacant 51.3-acre site in northeast Vallejo. The main components of the project are:

- A 152,138-square-foot Costco store on the southwest portion of the site, with a tire center, gasoline sales, and 774 surface parking spaces;
- Closure of the existing Costco store and gas station at 198 Plaza Drive upon completion of the new store;
- A commercial center on the northwest portion of the site with four buildings totaling 27,500 square feet (including a drive-through restaurant) and 188 surface parking spaces;
- 178 two-story single-family dwellings on the east portion of the site;
- A central open space buffer, including protected wetlands, between the commercial and residential portions of the project; and

- Widening of Admiral Callaghan Lane from two to four lanes, with a new traffic signal at the main Costco driveway.

A more detailed project description is available in Chapter 3.0 of the Draft EIR.

Figure 2 – Site Plan



III. PROJECT DESIGN IMPROVEMENTS

Since the January 22 study session, the applicant has considered input from staff and the Planning Commission, and has made the following improvements to the project design:

- Planting additional trees in the commercial parking lot, further enhancing the aesthetic appeal of the project and reducing the “urban heat island” effect caused by unshaded parking lots; this change was made in direct response to a Planning Commissioner’s suggestion;
- Lowering the height of the main pylon sign for the commercial center from 40 feet to 30 feet, thereby reducing the visual prominence of the sign while still allow adequate visibility from the adjacent freeway; see Attachment 3 for further analysis and comparison with nearby sign heights; and

- Creating a new pedestrian trail across the central open space to provide a more direct pedestrian connection between the residential and commercial portions of the project; this connection allows the project to meet the minimum parkland dedication requirement of 4.25 acres for a full waiver of park in-lieu fees under VMC Chapter 3.18.

With these changes, staff believes the applicant has substantially improved upon an already strong proposal and, as discussed in Section V below, all required findings for the project can be made.

IV. FINAL EIR

The January 22 staff report provides further details on the requirements of CEQA and the significant environmental impacts identified in the Draft EIR. As noted in Table 1, the Draft EIR was circulated for public review from January 17 to March 2. The City received comments on the Draft EIR from the following:

- California Department of Fish and Wildlife
- California Department of Toxic Substances Control
- California Department of Transportation
- Council member Robert McConnell
- Herum, Crabtree and Suntag (attorneys representing Safeway)
- Natalie Mattei on behalf of Safeway
- Soluri Meserve (attorneys representing Vallejoans United)

A Final EIR has been prepared for the Commission's review and recommendation to the City Council (see Attachment 2). The Final EIR includes the above comments, responses from the EIR consultant team, and minor revisions to the Draft EIR that are necessary for clarification or correction. Staff and the EIR consultant have carefully reviewed the above comments and determined that the information and analysis in the Draft EIR, along with the proposed revisions, meets the requirements of CEQA and may be certified by the City Council.

V. FINDINGS FOR APPROVAL

The attached Resolution includes proposed findings for certification of the EIR and approval of project entitlements. Because the Commission's role is advisory on the EIR and all entitlements except the Vesting Tentative Map (VTM), all of the findings except those for the VTM are listed as recommended findings. Selected findings are provided or summarized below; please see Attachment 1 for full text.

A. Final EIR

- With implementation of mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen all of the project's impacts except for increased traffic delay at seven intersections in the project vicinity, and nitrogen oxide emissions in excess of Bay Area Air Quality Management District standards.

- These traffic and air quality impacts remain significant and cannot be mitigated in a manner that would substantially lessen the environmental impact. However, the City finds that the following environmental, economic, social, and other benefits of the project outweigh and override these impacts:
 - The proposed project would increase local government revenues via additional business tax, which in turn will be used to enhance City services.
 - The proposed project would provide more opportunities for businesses to be located in Vallejo, which would provide more employment opportunities for residents and attract new residents to the City.
 - The proposed project would increase the number of residents in the Northgate area of Vallejo which would provide additional opportunities for existing businesses in the area.
 - The proposed project will construct new commercial and residential buildings that are energy efficient and incorporate “green building” construction materials and design standards.
 - Vacant urban sites contribute to neighborhood blight and can endanger public safety. Development of this site will benefit the surrounding neighborhood by replacing nuisance conditions with an attractive residential community and public park.
 - The City’s Housing Element identifies vacant, under-utilized properties such as the project site as suitable locations for residential development. In addition, by giving a portion of the site a residential zoning designation in 2017, the City Council planned for the site to eventually transition from a vacant parcel to a residential development.
 - The proposed project concentrates growth in existing urbanized areas as infill development and thereby results in fewer impacts from the construction of new infrastructure. The provision of infill commercial and residential development is needed by the City and is anticipated under the Propel Vallejo 2040 General Plan.
 - The proposed project would provide monetary contributions to planned improvements at the I-80/Redwood Parkway interchange improvements.
 - Future development would create short-term construction jobs that would provide income to local residents.
- The project impact analysis relies upon a deed restriction that will be placed on the property where the current Costco store exists. Please see Attachment 4 for the exact deed restriction language. The deed restriction and analysis assume that for the aesthetic, traffic, air quality, and greenhouse gas emission impacts, a future tenant of the site will be consistent with the permitted uses listed in the Northgate Specific Plan.

The Northgate Specific Plan details uses in a table on page 25 and includes an expanded list of permitted uses in the commercial section on page 29. See Attachment 5 for those detailed uses. The deed restriction could limit a) food and beverage without alcohol and b) wholesales when associated with retail sales. The EIR impact analysis assumes a future tenant of the existing Costco store would need time to make the necessary tenant improvements and the use would be consistent with the Northgate Specific Plan commercial/retail uses (with certain limitations by the deed restriction).

- Alternative 3, All Housing Alternative, was identified as the “environmentally superior” alternative; however, the All Housing Alternative would still require a rezone but would not meet the intent of the General Plan designation of Retail/Entertainment and would require an amendment to the General Plan. The other alternatives would not achieve the proposed project’s objectives and/or offer no substantial benefits as compared to the project.

B. Zoning Map Amendment

- The proposed zoning designation of Mixed Use Planned Development (MUPD) is consistent with the City’s General Plan because it implements the General Plan Land Use Map by allowing residential uses on the east portion of the site, consistent with the General Plan designation for that portion, Mix of Housing Types. The current zoning district (Pedestrian Shopping and Services, or CP) is not consistent with the Mix of Housing Types designation as it would allow commercial uses on the east portion of the site, and it would not allow residential uses on the ground floor.

C. Planned Development

- The Master Plan and Unit Plans are consistent with the goals and policies of the General Plan as discussed in Attachment 1, Exhibit C;
- The Master Plan is in conformity with public convenience, the general welfare and good land use practice, in that it provides additional jobs, housing, and commercial goods and services in a well-designed mixed-use development that is compatible with surrounding land uses and includes high-quality landscape and architectural design, public open space, and supports mobility for pedestrians, bicycles, transit riders and automobiles;
- The proposed buildings are of a design quality that will complement and enhance the surrounding area, with handsome, well-articulated façades, high-quality building materials, and pleasing colors. The buildings are relatively small-scaled, with the exception of the proposed Costco which has generous setbacks from nearby properties and is also well articulated and screened with landscaping to avoid a massive, bulky appearance.

D. Use Permit

- The Costco “superstore” will be located in an existing commercially zoned area with similar uses nearby, and a generous open space buffer will be provided between the store and nearby residential uses. As discussed in the project EIR, there are adequate public facilities and services for the project, and all traffic impacts will be mitigated to the greatest extent feasible.
- The proposed drive-through restaurant will not be located in proximity to any residential uses and will have adequate vehicle queueing capacity to avoid any adverse impacts to traffic flow on adjacent streets.

- The proposed warehouse deliveries from 2 a.m. to 6 a.m., and gasoline sales from 5 a.m. to 6 a.m., will not adversely impact nearby residential uses, because the project EIR's noise analysis found no significant impact to these uses. Furthermore, the Costco loading dock will be located approximately 200 feet from, and at a much lower elevation than, the nearest dwelling units, and the gas station will be located almost 300 feet from the nearest dwelling units. All loading and unloading activities will occur within an enclosed loading dock and vehicles will not be permitted to idle during such activities.
- The proposed Costco is not a new "superstore" but rather a relocation and modest expansion of the existing Costco at 198 Plaza Drive. The economic impact analysis prepared by David Taussig & Associates (DTA) shows that there is adequate demand for retail goods in the surrounding area such that the additional retail space created by the project will not result in widespread retail vacancies, loss of jobs, or urban decay.
- The fiscal impact analysis by DTA shows that the project will generate far more revenues to the City than the cost of public services for the project, which will allow the City to fund additional services to serve the City as a whole.

E. Vesting Tentative Map

- The proposed subdivision, together with the provisions for its design and improvements, is consistent with the goals and policies of the General Plan as discussed in Exhibit C.
- The proposed subdivision, together with the provisions for its design and improvements, conforms with Title 15 (the subdivision ordinance) and Title 16 (the zoning ordinance) of the Vallejo Municipal Code.
- The proposed subdivision, together with the provisions for its design and improvements, conforms with the Subdivision Map Act.

VI. STAFF RECOMMENDATION

Staff recommends that the Planning Commission adopt the attached Resolution No. PC 20-01 to:

1. Recommend that the City Council certify the Final EIR;
2. Recommend that the City Council approve Zoning Map Amendment #ZMA17-0001, Planned Development #PD17-0007, and Major Use Permit #UP18-0007; and
3. Approve Vesting Tentative Map #TM17-0002 contingent on the above City Council actions.

VII. ATTACHMENTS

1. Resolution No. PC 20-01
 - A. CEQA Findings
 - B. Mitigation Monitoring and Reporting Program
 - C. General Plan Policies
 - D. Conditions of Approval
 - E. Project Plans
2. Final EIR
3. Sign Height Analysis
4. Proposed Deed Restriction
5. Northgate Specific Plan Uses
6. Public Communications Since March 2 Hearing (not including EIR comments; see Att. 2)

CITY OF VALLEJO PLANNING COMMISSION

RESOLUTION NO. PC 20-01

A RESOLUTION RECOMMENDING THAT THE CITY COUNCIL CERTIFY THE ENVIRONMENTAL IMPACT REPORT AND APPROVE ZONING MAP AMENDMENT #ZMA17-0001, PLANNED DEVELOPMENT (MASTER PLAN AND UNIT PLANS) #PD17-0007 AND USE PERMIT #UP18-0007, AND APPROVING VESTING TENTATIVE MAP #TM17-0002 CONTINGENT ON THE ABOVE ACTIONS, FOR THE FAIRVIEW AT NORTHGATE PROJECT

APN #0081-490-010

I. GENERAL FINDINGS

WHEREAS, on August 29, 2017, the City Council adopted General Plan 2040; and

WHEREAS, the property is located at the southeast corner of Admiral Callaghan Lane and Turner Parkway, is designated as Assessor's Parcel Number (APN) 0081-490-010, and is zoned Pedestrian Shopping and Service (CP); and

WHEREAS, on August 28, 2017, Vallejo-Fairview Developers, LLC ("Applicant"), submitted applications for a Zoning Map Amendment (#ZMA17-0001), Planned Development (#PD17-0007, for a Master Plan), and Vesting Tentative Map (#TM17-0002), to re-zone the site from Pedestrian Shopping and Service (CP) to Mixed Use Planned Development (MUPD) and to construct a mixed use development including a 152,138-square-foot Costco store and gasoline station, a commercial center totaling 27,500 square feet, and 187 single-family dwellings (later reduced to 178); and

WHEREAS, on December 10, 2018, the Applicant submitted an application for a Major Use Permit (#UP18-0007) for approval of a "superstore" (the Costco store), and this application was later amended to include a drive-through restaurant, deliveries to the Costco between 2 a.m. and 6 a.m., and operation of the gas station from 5 a.m. to 6 a.m.; and

WHEREAS, on June 19, 2019, the above applications were deemed complete for processing and are collectively referred to herein as the "Project"; and

WHEREAS, on January 15, 2020, the Applicant submitted an amendment of application #PD17-0007 to include Unit Plans for all proposed buildings in the Project except the drive-through restaurant, which will be submitted in the future once a tenant is selected, and this amendment was deemed complete upon submittal; and

WHEREAS, on January 17, 2020, the City released a Draft Environmental Impact Report ("EIR") for the Project for a 45-day public comment period ending on March 2; and

WHEREAS, on January 22, 2020, the City of Vallejo Planning Commission (“Commission”) held a study session and provided input to the Applicant on the Project; and

WHEREAS, on March 2, 2020, the Commission held a public hearing to receive public comments and provide its own comments on the Draft EIR; and

WHEREAS, on April 10, 2020, the City released a Final EIR, including responses to all public comments on the Draft EIR, for public review and review by the Commission; and

WHEREAS, on April 20, 2020, the Commission, after giving all public notices required by State law and the Vallejo Municipal Code (“VMC”), conducted a duly noticed public hearing to consider the Final EIR and the requested Project entitlements, at which testimony and evidence, both written and oral, was presented to and considered by the Commission; and

WHEREAS, the Commission considered testimony and evidence, both written and oral, presented to the Commission, including the Final EIR, the oral and written reports from City staff dated April 20, 2020, and other documents contained in the record of proceedings relating to the Project, which are maintained in the offices of the City of Vallejo Planning Division; and

WHEREAS, based on recommendations, testimony and evidence in the record and provided at the public hearing, the Commission recommends that the City Council make the findings in Sections II, III, IV and V below, and the Commission makes the findings in Section VI for approval of the proposed Vesting Tentative Map.

II. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) FINDINGS

See Exhibit A.

III. FINDINGS RELEVANT TO THE ZONING MAP AMENDMENT (VMC Section 16.86.050)

- A. The proposed zoning designation of Mixed Use Planned Development (MUPD) is consistent with the City’s General Plan because it implements the General Plan Land Use Map by allowing residential uses on the east portion of the site, consistent with the General Plan designation for that portion, Mix of Housing Types. The current zoning district (Pedestrian Shopping and Services, or CP) is not consistent with the Mix of Housing Types designation as it would allow commercial uses on the east portion of the site, and it would not allow residential uses on the ground floor.

IV. FINDINGS RELEVANT TO THE APPROVAL OF THE PLANNED DEVELOPMENT (VMC Chapter 16.116)

Master Plan (VMC Section 16.116.060):

- A. The master plan is consistent with the goals and policies of the City’s General Plan as discussed in Exhibit C;

- B. The master plan furthers the stated purpose of the planned development district (VMC Section 16.116.010), in that it allows the development of diverse and varied uses as a single integral project to promote the orderly growth of the City;
- C. The master plan is in conformity with public convenience, the general welfare and good land use practice, in that it provides additional jobs, housing, and commercial goods and services in a well-designed mixed-use development that is compatible with surrounding land uses and includes high-quality landscape and architectural design, public open space, and supports mobility for pedestrians, bicycles, transit riders and automobiles;
- D. The master plan will not be detrimental to health, safety and general welfare, in that all adverse environmental impacts of the project have been mitigated to the greatest extent feasible, and the remaining significant impacts are outweighed by substantial benefits of the project, as discussed in the attached CEQA findings (Exhibit A); and
- E. The master plan will not adversely affect the orderly development or the preservation of property values for the reasons stated in Finding IV.D above.

Unit Plans (VMC Section 16.116.100):

- F. The commercial and residential unit plans are consistent with the intent, purpose and development standards of the master plan;
- G. The unit plans are consistent with the goals and policies of the City's General Plan as discussed in Exhibit C;
- H. The unit plans serve to achieve groupings of structures which will be well related one to another and which, taken together, will result in a well-composed urban design, with consideration given to site, height, arrangement, texture, material, color and appurtenances, the relation of these factors to other structures in the immediate area, and the relation of the development to the total setting as seen from key points in the surrounding area, for the reasons discussed in Exhibit C, policies NBE-1.5 and NBE-2.3:
- I. The unit plans are of a quality and character which harmonizes with, and serves to protect the value of, private and public investments in the area.

V. FINDINGS RELEVANT TO THE APPROVAL OF THE CONDITIONAL USE PERMIT (VMC Chapter 16.82.050)

- A. The location, size, design and operating characteristics of the proposed conditional uses (i.e., the Costco "superstore", the drive-through restaurant, and the hours of operation before 6 a.m.) will be compatible with adjacent uses, building or structures, with consideration given to harmony in scale, bulk, coverage, and density; to the availability of civic facilities and utilities, to the harmful effect, if any, upon desirable neighborhood character; to the generation of traffic and the capacity and physical character of surrounding streets; and to any other relevant impact of the proposed use, for the following reasons:

1. The Costco “superstore” will be located in an existing commercially zoned area with similar uses nearby, and a generous open space buffer will be provided between the store and nearby residential uses. As discussed in the project EIR, there are adequate public facilities and services for the project, and all traffic impacts will be mitigated to the greatest extent feasible.
 2. The proposed drive-through restaurant will not be located in proximity to any residential uses and will have adequate vehicle queueing capacity to avoid any adverse impacts to traffic flow on adjacent streets.
 3. The proposed warehouse deliveries from 2 a.m. to 6 a.m., and gasoline sales from 5 a.m. to 6 a.m., will not adversely impact nearby residential uses, because the project EIR’s noise analysis found no significant impact to these uses. Furthermore, the Costco loading dock will be located approximately 200 feet from, and at a much lower elevation than, the nearest dwelling units, and the gas station will be located almost 300 feet from the nearest dwelling units. All loading and unloading activities will occur within an enclosed loading dock and vehicles will not be permitted to idle during such activities.
- B. The impacts, as described in subsection A of this section, and the location of the proposed conditional use are consistent with the City’s General Plan as discussed in Exhibit C.
- C. (“Superstore” finding per VMC Section 16.75.030.D) The positive economic impacts created by the proposed Costco “superstore” would outweigh the negative economic impacts or, despite any negative impacts, other considerations warrant the granting of major conditional use permit for the superstore, for the following reasons:
1. The proposed Costco is not a new “superstore” but rather a relocation and modest expansion of the existing Costco at 198 Plaza Drive. The economic impact analysis prepared by David Taussig & Associates (DTA) shows that there is adequate demand for retail goods in the surrounding area such that the additional retail space created by the project will not result in widespread retail vacancies, loss of jobs, or urban decay.
 2. The fiscal impact analysis by DTA shows that the project will generate far more revenues to the City than the cost of public services for the project, which will allow the City to fund additional services to serve the City as a whole.

VI. FINDINGS RELEVANT TO THE APPROVAL OF THE VESTING TENTATIVE MAP (VMC Section 15.08.050) AND PARK DEDICATION (VMC Section 3.18.180)

- A. The proposed subdivision, together with the provisions for its design and improvements, is consistent with the goals and policies of the City’s General Plan as discussed in Exhibit C.

- B. The proposed subdivision, together with the provisions for its design and improvements, conforms with this Title 15 (the subdivision ordinance) and Title 16 (the zoning ordinance) of the VMC.
- C. The proposed subdivision, together with the provisions for its design and improvements, conforms with the Subdivision Map Act.
- D. As required by VMC Section 3.18.060 the proposed subdivision requires a condition of approval of the tentative map identifying either a park dedication and/or in-lieu fees. The proposed subdivision meets the requirements under VMC Section 3.18.180:
 - a. The proposed park/open space area is 8.36 acres which is consistent with the minimum requirement for park dedication of 4.25 acres.
 - b. The proposed park/open space area is consistent with the general plan criteria for promoting park spaces (see Exhibit C).
 - c. Approved construction plans of the project shall be made by City Council after recommended approval from Planning Commission.
 - d. Be completed and ready for public use by the time Final Map of the subdivision is recorded.
 - e. At the time of approval by the City Council, the Council shall determine the amount of credits for the park dedication (confirming consultation between the City Manager and Greater Vallejo Recreation District) of such improved parks or recreational sites, in lieu of park impact fees.

NOW, THEREFORE, LET IT BE RESOLVED that based on the findings above, the evidence and testimony, both written and oral, presented at the public hearing, and information contained in the staff report attached hereto and incorporated herein by this reference, the Commission hereby (1) recommends that the City Council certify the EIR and approve applications #ZMA17-0001, #PD17-0007 and #UP18-0007, and (2) approves application #TM17-0002 contingent upon the recommended City Council actions, for the Fairview at Northgate Project, subject to the Mitigation Monitoring and Reporting Program attached hereto as Exhibit B, the Conditions of Approval attached hereto as Exhibit D, and the plans attached hereto as Exhibit E.

PASSED AND ADOPTED at a regular meeting of the Planning Commission of the City of Vallejo, State of California, on the 20th day of April, 2020 by the following vote to-wit:

AYES:

NOES:

ABSENT:

ROBERT SCHUSSEL, CHAIRPERSON
City of Vallejo Planning Commission

Attest:

AFSHAN HAMID, SECRETARY
City of Vallejo Planning Commission

Exhibits:

- A. CEQA Findings
- B. Mitigation Monitoring and Reporting Program
- C. General Plan Policies
- D. Conditions of Approval
- E. Project Plans

ATTACHMENT 1, EXHIBIT A

CEQA FINDINGS OF FACT
and
STATEMENT OF OVERRIDING
CONSIDERATIONS

for the

Fairview at Northgate Project

**Project Numbers: PD 17-0007, TM #17-0002, ZMA
#17-0001, UP #18-0007**



City Council
City of Vallejo

April 2020

Kimley»Horn

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1.0 INTRODUCTION

The purpose of these findings is to satisfy the requirements of Sections 15091, 15092, and 15093 of the California Environmental Quality Act (CEQA) Guidelines, associated with approval of the Fairview at Northgate Project (project).

The CEQA Statutes (California Public Resources Code [PRC] Sections 21000, et seq.) and Guidelines (California Code of Regulations Sections 15000, et seq.) state that if it has been determined that a project may or will have significant impacts on the environment, then an environmental impact report (EIR) must be prepared. Prior to approval of the project, the EIR must be certified pursuant to State CEQA Guidelines Section 15090. This document summarizes the findings of fact and statement of overriding considerations authorized by those provisions of the State CEQA Guidelines and by the PRC for the project. When an EIR has been certified that identifies one or more significant environmental impacts, the approving agency must make one or more of the following findings, accompanied by a brief explanation of the rationale, pursuant to State CEQA Guidelines Section 15091(a), for each identified significant impact:

- A. Changes or alterations have been required in, or incorporated into, such project which avoid or substantially lessen the significant environmental effect as identified in the final environmental impact report.
- B. Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.
- C. Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the environmental impact report.

The State CEQA Guidelines Section 15092 states that after consideration of an EIR, and in conjunction with making the Section 15091 findings identified above, the lead agency may decide whether or how to approve or carry out the project. A project that would result in a significant environmental impact cannot be approved if feasible mitigation measures or feasible alternatives can avoid or substantially lessen the impact.

However, in the absence of feasible mitigation, an agency may approve a project with significant and unavoidable impacts, if there are specific economic, legal, social, technological, or other considerations that outweigh the unavoidable adverse environmental effects. The unavoidable impacts are acceptable if the requirements under State CEQA Guidelines Section 15093 are met by the lead agency to document and substantiate any such determination in a “statement of overriding considerations” as a part of the record. These findings substantiate the record for purposes of Section 15091(b) of the State CEQA Guidelines.

2.0 PROJECT DESCRIPTION

2.1 Project Location and Setting

The proposed project is located to the east of the right-of-way of Admiral Callaghan Lane, south of Turner Parkway, and north of Rotary Way on a single assessor parcel (APN 0052-320-250). The commercial component of the proposed project would be accessed via Admiral Callaghan Lane and the residential component of the proposed project would be accessed via Turner Parkway. The Interstate 80 (I-80) freeway is located immediately adjacent to the west of Admiral Callaghan Lane. Regional access to the proposed project is provided via I-80 which generally trends in a northwesterly to southwesterly direction providing access through the City and San Francisco Bay Area cities to the east. Locally, the project site is accessed by Admiral Callaghan Lane adjacent to the northwest and Turner Parkway to the north. I-80 is located immediately adjacent to the northeasterly alignment of Admiral Callaghan Lane. North of Turner Parkway is an approximately 130-acre commercial development, Gateway Plaza; tracts of single-family residential development in Hunter Ranch to the east; and multi-family residential in the Quail Ridge Condominiums, as well as single-family residential, and additional commercial uses to the south.

2.2 Project Summary

The proposed project is planned to include a mixture of commercial, residential and recreation uses, and designated open space uses. The commercial element would be located in the westerly portion of the proposed project site. The residential element would be located on the easterly portion of the proposed project site. The proposed project incorporates numerous sidewalks, paseos, and a trail designed to promote a pedestrian and bicycle-friendly environment, to encourage alternative transportation between the commercial and residential project elements and improve access to the proposed open space. All components of the proposed project have been designed and planned with the intent of being responsive to the existing on-site features, topography, and other resources and constraints found on the proposed project site and within the surrounding areas, and to be compliant with pertinent planning documents, regulations, and guidelines. While the project is considered consistent with the existing General Plan and zoning designations, the project does propose a zoning map amendment to make the existing zoning classification consistent with the adopted General Plan.

The western portion of the project site is planned for a commercial center. The proposed project uses would accommodate 179,688 square feet of commercial building area on 21.8 acres. The commercial area is proposed for 5 separate buildings and a gasoline service station accommodating up to 30 fueling dispensers and a related 50 square-foot kiosk. The commercial center would have 962 parking spaces including accessible spaces for persons with disabilities.

The southern portion of the commercial center is proposed for a 152,138 square foot Costco store on 17.3 acres of the 21.8-acre commercial area; this would be the largest building. Costco intends to relocate their existing Vallejo operations from the existing store within the Gateway Plaza shopping center to the proposed project site at a distance of approximately 0.75-mile. The existing Costco building will be

available for re-use for general commercial uses consistent with the existing zoning and permitted uses within the Northgate Specific Plan excluding those restricted by the specified deed language. The existing gas station would be decommissioned and removed from the property.

The northern end of the commercial area is proposed to be developed with four buildings ranging in size from 3,000 square foot to 9,400 square foot on approximately 4.56 acres of the 21.8-acre site. This portion of the commercial area would have 188 parking stalls, inclusive of 8 spaces reserved for disabled accessible parking. These commercial uses would be located along the Turner Parkway frontage and roughly one-third of the Admiral Callaghan Lane frontage. A restaurant with a drive-thru is proposed for the southernmost building along Admiral Callaghan Lane; potential uses for the other three buildings could include general neighborhood services such as restaurants, health and fitness clubs, medical clinics, pharmacies, salons, laundry, clothing, convenience stores, and other related services.

In conjunction with the project driveways, the project includes improvements to Admiral Callaghan Lane. The project would improve Admiral Callaghan Lane to an approximately 76-foot cross-section with improvements along the project frontage. The new lane configuration for Admiral Callaghan would consist of two travel lanes in each direction, an eleven-foot landscaped center median, a 5-foot wide bike lane in each direction, and a 4.5-foot wide pedestrian sidewalk on the eastern side (northbound direction) of Admiral Callaghan Lane along the project frontage. None of these proposed improvements would occur within Caltrans right-of-way on the western side of Admiral Callaghan Drive.

Where Blue Rock Springs Creek crosses the southwest corner of the project site, a distance of approximately 90 feet, the proposed road widening would span the creek and would not place fill material or extend the existing culverts.

The residential component would be located on the eastern portion of the project site on 23.8 acres. The project proposes 178 single-family detached units with two building types: those with a private front courtyard and alley loaded garages, and those with traditional driveways and front-loaded garages. The 92 alley-loaded residences, generally located within the interior of the project site, would have courtyards and garage access from the north-south-oriented alleys.

The central 5.7-acre portion of the proposed project site would be preserved as open space and development would be prohibited in this area. The adjacent residential developments to the south and southeast of the proposed project site drain into this area, certain portions of which are designated as wetlands pursuant to federal regulations. This open space would separate the proposed project's commercial and residential components and provide a buffer between the two uses. This area would be subject to protective restrictions that would not allow for public or private use and the open space (other than the pedestrian trail) and would be secured by attractively designed perimeter fencing consistent with the appearance of open space. The project includes a 12-foot pedestrian and bicycle pathway that would connect the commercial and residential areas through the open space area. The pathway would span the wetland areas avoiding any impacts to sensitive wetland habitats.

The proposed project would include approximately 1.3 acres of park area within the residential component including two pocket parks and linear paseos which would be for the use of project residents. A 2.0-acre linear park/trail would be located between the residential area and the open space described above. The linear park/trail would connect to a meandering sidewalk along Turner Parkway on the north and extend to the south with connections to the residential area via three pass-thru walkways between homesites bordering the park/trail. Within the interior of the residential area, there would be a series of pedestrian paseos connecting to the parks and liner park/trail and a new meandering sidewalk on Turner Parkway. The proposed project was designed to include these walkways to encourage pedestrian activity within the residential community as well as from the residential community to the service-oriented uses at the north end of the commercial area and Gateway Plaza.

The proposed project would tie into existing utility lines, mains and infrastructure located in the adjacent public right of way (i.e., Admiral Callaghan Lane and Turner Parkway) or easements and extend these lines, mains and infrastructure into the proposed project site. As a part of the proposed project, the existing PG&E gas line and easement would be realigned to the western edge of the property along the southern and western property boundary. A portion of the VFWD sewer main and easement would also be realigned to be located within the proposed parking lot on the west side of the proposed Costco building.

The following discretionary entitlements are requested from the City by the project applicant:

- Approval by the City of Vallejo of a zoning map amendment.
- Approval by the City of Vallejo of a Planned Development Master Plan.
- Approval by the City of Vallejo of a Parcel Map, Vesting Tentative Map, subsequent Final Maps and subdivision/public improvement agreements.
- Approval by the City of Vallejo of Major Conditional Use Permit (for Costco “superstore,” receipt of warehouse deliveries between 2 a.m. and 6 a.m. within 300 feet of a residential use), and drive-through restaurant).
- Approval by the City of Vallejo of Unit Plan for review of new commercial and residential architecture.

2.3 Project Objectives

Section 15124(b) of the State CEQA Guidelines requires that an EIR include “[a] statement of the objectives sought by the proposed project. A clearly written statement of objectives will help the Lead Agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision-makers in preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the proposed project.”

1. Implement the objectives of the General Plan to leverage public infrastructure investment to catalyze a mix of new housing, commercial, retail, and recreational development in an opportunity area;
2. Develop a project in an opportunity area with an appropriate mix of uses to serve the needs of the public, including housing needs;
3. Develop a project in an opportunity area that is compatible with the density, intensity, scale and uses of surrounding development;
4. Develop a project in an opportunity area that is economically feasible and supports the extraordinary costs of required project infrastructure and physical features without imparting undue strain on existing public facilities, services or finances;
5. Develop a project that is sensitive to the environmental conditions of the site and surroundings by identifying and conserving a portion of the onsite natural resources to the extent feasible through project design;
6. Develop a project in an opportunity area that includes a pedestrian-friendly residential neighborhood with cohesive design that includes active and passive recreational opportunities and bike/pedestrian circulation amenities for future residents and users of the commercial space;
7. Develop a project that minimizes visual conflicts by including a thoughtful landscaping and planting plan that is compatible with surrounding development;
8. Develop a project in an opportunity area that enhances amenities and recreational opportunities for residents and visitors to the area; and,
9. Support economic development by developing a vacant, under-developed site with a project that provides a broad range of retail goods and services, retains a major source of sales tax revenue, generates significant additional sales tax revenues, and creates jobs for city residents.

3.0 PROCEDURAL FINDINGS

CEQA (PRC Section 21000 et seq.) requires state and local government agencies to consider the environmental consequences of projects for which they have discretionary authority. This document, which has been prepared in compliance with the requirements of CEQA and the State CEQA Guidelines (California Code of Regulations Title 14 Section 15000 et seq.), sets forth the findings of the City of Vallejo (City), the lead agency under CEQA, regarding the Fairview at Northgate Project (proposed project). The document also presents a Statement of Overriding Considerations.

To determine the scope of the EIR, the City prepared a Notice of Preparation. On October 2, 2018, the Notice of Preparation (NOP) for the proposed project was distributed to trustee and responsible agencies, members of the public, other interested parties, and the California Office of Planning and Research, State

Clearinghouse. This began the 30-day public review period, which ended on November 1, 2018. A total of seven comment letters from regional agencies were received. A scoping meeting was held on October 10, 2018 and additional comments were received. Comments received during the public scoping period were considered during the preparation of the Draft EIR (see below) and are included in their entirety in Appendix A to that document.

The Draft EIR, with an accompanying Notice of Completion (NOC), was circulated to the State Clearinghouse, trustee agencies, responsible agencies, other government agencies, and interested members of the public for a 45-day review period, extending from January 17, 2020 through March 2, 2020. On March 2, 2020, the City of Vallejo Planning Commission held a public hearing to receive oral comment on the Draft EIR. Comments on the Draft EIR, a list of commenters, and the City's responses to comments are contained in the Final EIR, which was issued on April 10, 2020. In addition, the Final EIR contains the Draft EIR itself, responses to public comments, revisions to the EIR and a Mitigation Monitoring and Reporting Program. Pursuant to State CEQA Guidelines §15088(b), the Final EIR was made available for review by trustee and responsible agencies that provided written comments on the Draft EIR for a 10-day period, extending from April 10, 2020 to April 20, 2020.

The EIR for the project consists of the following:

- A. Draft Environmental Impact Report ("Draft EIR"), issued January 17, 2020;
- B. All appendices to the Draft EIR;
- C. Final EIR, issued April 10, 2020, containing all written comments and responses on the Draft EIR, refinements and clarifications to the Draft EIR, the mitigation monitoring and reporting program, and technical appendices;
- D. All of the comments and staff responses entered into the record orally and in writing, as well as accompanying technical memoranda or evidence entered into the record.

The Final EIR did not provide any significant new information regarding proposed project or cumulative impacts or mitigation measures beyond that contained in the Draft EIR. The City therefore properly decided not to recirculate the Final EIR for additional public review.

In conformance with CEQA, the City has taken the following actions in relation to the EIR:

- A. On April 20, 2020, the Planning Commission conducted a duly and properly noticed public hearing on the project and the EIR and recommended that the City Council certify the EIR and approve the proposed Tentative Map, Planned Development Master Plan, Zoning Map Amendment, Unit Plan, and Major Conditional Use Permit.
- B. On XX, 2020, at a duly and properly noticed public hearing, the City Council certified the EIR and adopted findings, Mitigation Monitoring and Reporting Program, and Statement of Overriding Considerations related to the Fairview at Northgate project.

4.0 RECORD OF PROCEEDINGS

The documents and other materials that constitute the record of proceedings on which the City Council bases the Findings are located at the Planning & Development Services Department, 555 Santa Clara Street, Vallejo, California 94590. The custodian for these documents and materials that constitute the record is the City of Vallejo Planning & Development Services Department. This information is provided in compliance with PRC Section 21081.6(a)(2) and Title 14 California Code of Regulations (State CEQA Guidelines) Section 15091(e). At the time these findings have been prepared, the City Planning & Development Service Department (and all of City Hall) is closed to the public because of precautions associated with the COVID-19 (Novel Coronavirus) global pandemic. This document, Draft EIR and technical studies, and application materials are available to the public on the City's website:

https://www.cityofvallejo.net/city_hall/departments_divisions/planning_and_development_services/community_development_projects.

The environmental analysis provided in the EIR and these findings are based on and are supported by the following documents, materials and other evidence, which constitute the administrative record for the approval of the project:

- A. All application materials for the project and supporting documents submitted by the applicant, including but not limited to those materials constituting the project and listed in Section 3.0 of these findings.
- B. The NOP, comments received on the NOP and all other public notices issued by the City in relation to the EIR (e.g., Notice of Availability).
- C. The Draft EIR, the Final EIR, all appendices to any part of the EIR, all technical materials cited in any part of the EIR, comment letters, oral testimony, responses to comments, as well as the comments and staff responses entered into the record orally and in writing between January 17, 2020 and March 2, 2020. One additional comment letter from the California Department of Transportation (Caltrans) on March 6, 2020. This comment letter is included in the Final EIR.
- D. All non-draft and/or non-confidential reports and memoranda prepared by the City and consultants related to the EIR, its analysis and findings.
- E. Minutes and transcripts of the discussions regarding the project and/or project components at public hearings or scoping meetings held by the Planning Commission and the City Council.
- G. Staff reports associated with Planning Commission and Council Meetings on the project and supporting technical memoranda and any letters or other material submitted into the record by any party.
- H. Matters of common knowledge to the Planning Commission and City Council which they consider, such as the Propel Vallejo 2040 General Plan, any other applicable specific plans or

other similar plans, and the Vallejo Municipal Code.

5.0 FINDINGS REQUIRED UNDER CEQA

The PRC Section 21002 provides that “public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects[.]” The same statute states that the procedures required by CEQA “are intended to assist public agencies in systematically identifying both the significant effects of projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects.” PRC Section 21002 goes on to state that “in the event [that] specific economic, social, or other conditions make infeasible such project alternatives or such mitigation measures, individual projects may be approved in spite of one or more significant effects thereof.”

The mandate and principles in PRC Section 21002 are implemented, in part, through the requirement that agencies must adopt findings before approving projects for which EIRs are required. For each significant environmental effect identified in an EIR for a project, the approving agency must issue a written finding reaching one or more of three permissible conclusions.

The first such finding is that changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant environmental effect as identified in the Final EIR (State CEQA Guidelines Section 15091[a][1]). For purposes of these finding, the term “avoid” refers to the effectiveness of one or more mitigation measures to reduce an otherwise significant effect to a less than significant level. In contrast, the term “substantially lessen” refers to the effectiveness of such measure or measures to substantially reduce the severity of a significant effect, but not to reduce that effect to a less than significant level.

The second permissible finding is that such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding, and that such changes have been adopted by such other agency or can and should be adopted by such other agency (State CEQA Guidelines Section 15091[a][2]).

The third potential conclusion is that specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the Final EIR (State CEQA Guidelines Section 15091[a][3]). “Feasible” means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, legal, and technological factors (State CEQA Guidelines Section 15364).

The concept of “feasibility” also encompasses the question of whether a particular alternative or mitigation measure promotes the underlying goals and objectives of a project. Moreover, “feasibility” under CEQA encompasses “desirability” to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, legal, and technological factors” (City of Del Mar v. City of San Diego (1982) 133 Cal.App.3d 410, 417).

In the process of adopting mitigation measures, the City has made a determination regarding whether the mitigation proposed in the EIR is “feasible.” In some cases, modifications may have been made to the mitigation measures proposed in the EIR to update, clarify, streamline, or revise those measures.

With respect to a project for which significant impacts are not avoided or substantially lessened, a lead agency, after adopting proper findings, may nevertheless approve the project if the agency first adopts a statement of overriding considerations setting forth the specific reasons in support of the finding that the project benefits outweigh its unavoidable adverse environmental effects. In the process of considering the EIR for certification, the City has recognized that impact avoidance is not possible in all instances. To the extent that significant adverse environmental impacts will not be reduced to a less than significant level with the adopted mitigation, the City has found that specific economic, social, and other considerations support approval of the project. Those findings are reflected herein in Section 5, “Findings Required Under CEQA,” and in Section 7, “Statement of Overriding Considerations,” below.

5.1 Summary of Findings

The Draft EIR identified a number of less than significant impacts associated with the project that do not require mitigation. The Draft EIR also identified a significant environmental effect (or impact) that may be caused in whole or in part by the project that can be mitigated to less than significant as well as significant effects that cannot be mitigated, and thus may be significant and unavoidable. For reasons set forth in Section 7, “Statement of Overriding Considerations,” however, the City has determined that overriding economic, social, and other considerations outweigh the significant, unavoidable effects of the project.

The findings of the City with respect to the project’s significant effects are set forth in the Final EIR and these Findings of Fact. The Summary of Findings does not replace nor summarize the full analysis of each environmental impact contained in the Final EIR. Please refer to the Draft EIR and the Final EIR for more detail, both of these documents are part of the final record.

The following provides a summary description of each potentially significant and significant impact, describes the applicable mitigation measures identified in the Final EIR and adopted by the City, and states the findings of the City regarding the significance of each impact after imposition of the adopted mitigation measures. A full explanation of these environmental findings and conclusions can be found in the Final EIR and associated record (described herein), both of which are incorporated by reference. The City hereby ratifies, adopts, and incorporates the analysis and explanation in the record into these findings, and ratifies, adopts, and incorporates in these findings the determinations and conclusions of the Final EIR relating to environmental impacts and mitigation measures, except to the extent any such determinations and conclusions are specifically and expressly modified by these findings.

Some of the measures identified below are within the jurisdiction and control of other agencies. To the extent any of the mitigation measures are within the jurisdiction of other agencies, the City finds those agencies can and should implement those measures within their jurisdiction and control (CEQA Guidelines Section 15091[a][2]).

5.1.1 Findings Regarding Errata and EIR Recirculation

CEQA Guidelines Section 15088.5 requires a lead agency to recirculate an EIR when “significant new information” is added to the EIR after the lead agency gives public notice of the availability of the DEIR but before certification. “Information” may include project changes, changes to the environmental setting, or additional data or other information. The CEQA Guidelines do not consider new information to be significant unless the lead agency changes the EIR in a way that deprives the public of a meaningful opportunity to comment on a substantial adverse environmental effect or a feasible way to mitigate the impact that the agency or project proponent has declined to implement.

CEQA Guidelines Section 15088.5 states “significant new information” requiring recirculation may include:

- (1) A new significant environmental impact that had not previously been disclosed in the draft EIR would result from the project or from a new mitigation measure;
- (2) A substantial increase in the severity of an environmental impact that had already been identified unless mitigation measures would be adopted to reduce the impact to a level of insignificance;
- (3) A feasible project alternative or mitigation measure would considerably lessen the significant environmental impacts of the project, but the proponents will not adopt it; or
- (4) The draft EIR was so inadequate and conclusory that meaningful public review and comment were precluded.

Recirculation is not required if new information added to the Draft EIR just clarifies or makes minor modifications to an otherwise adequate Draft EIR.

The City made changes to the Draft EIR after this document was released, which are described in Chapter 3, “Revisions to the Draft EIR Text,” of the Final EIR. Minor changes were made to the analysis sections of the Draft EIR to clarify project discussion related to, aesthetics, hazardous materials, biological resources, cultural resources, , and the City’s wastewater capacity. The pedestrian trail through the open space was added by the City to increase connectivity between the residential and commercial developments. These changes are described in the Final EIR. No impacts identified in the Draft EIR would be substantially increased because of changes to the project or mitigation measures following the release of the Draft EIR circulation. There are no new feasible alternatives or mitigation measures that are considerably different from those considered in the Draft EIR that the City has declined to adopt.

5.1.2 Findings Regarding Less Than Significant Impacts (No Mitigation Required)

The City agrees with the characterization in the Final EIR of all project-specific impacts identified as “less than significant” and finds that those impacts have been described accurately and are either less than significant or have no impact, as described in the Final EIR. Section 15091 of the CEQA Guidelines does

not require specific findings to address environmental effects that an EIR identifies as having “no impact” or a “less than significant” impact.

The impacts where the project would result in either no impact or a less than significant impact, and which require no mitigation, are identified in the bulleted list below. Incorporated by references is the detailed analysis of the Draft and Final EIR.

Aesthetics

Impact AES-1: Impacts on Scenic Vistas

Impact AES-2: Impacts on Scenic Resources

Impact AES-3: Impacts on Existing Visual Character

Impact AES-4: Impacts on Urban Decay

Cumulative Impacts

Agricultural Resources

AG-a: Impacts from conversion of prime farm lands to non-agricultural use

AG-b: Conflicts with zoning for agricultural use or Williamson Act lands

AG-c: Changes to the environment resulting in conversion of prime farm lands to non-agricultural use

Cumulative Impacts

Air Quality

Impact AQ-3: Impacts to Sensitive Receptors

Impact AQ-4: Impacts on a Substantial Number of People as a Result of Other Emissions

Biological Resources

Impact BIO-5: Impacts on Local Policies or Ordinances Protecting Biological Resources

Impact BIO-6: Impacts on Any Adopted Conservation Plan

Cumulative Impacts

Cultural and Tribal Resources

Impact CUL-1: Impacts on Historical Resources Pursuant to State CEQA Guidelines § 15064.5

Geology and Soil

Impact GEO-5: Impacts on Septic Tanks or Alternative Wastewater Disposal Systems

Hazards and Hazardous Materials

Impact HAZ-1: Impacts on the Public Through Transport, Use, or Disposal of Hazardous Materials

Impact HAZ-3: Impacts on Schools within One-Quarter Mile

Impact HAZ-4: Impacts on Public or the Environment due to Hazardous Material Site Location (Government Code Section 65962.5)

Impact HAZ-5: Impacts on People due to Airport Safety Hazards or Excessive Noise

Impact HAZ-6: Impacts on Adopted Emergency or Evacuation Plan

Impact HAZ-7: Impacts to People and Structures due to Wildland Fires

Cumulative Impacts

Hydrology and Water Quality

Impact HYD-2: Impacts on Groundwater Supply and Recharge

Impact HYD-6: Impacts on Drainage Patterns

Impact HYD-7: Impacts on Release of Pollutants due to Flood Hazard, Tsunami, or Seiche Zones

Impact HYD-8: Impacts on Water Quality Control Plan or Groundwater Management Plan

Land Use

Impact LU-1: Impacts on an Established Community

Impact LU-2: Impacts on an Adopted Land Use Plan, Policy, or Regulation

Cumulative Impacts

Mineral Resources

MR-a: Impacts from the loss of a mineral resource

MR-b: Impacts from the loss of availability of a mineral resource

Cumulative Impacts

Noise

Impact NOI-2: Impacts on Groundborne Vibration and Noise Levels

Impact NOI-3: Impacts on People due to Private Airstrip or Airport Land Use

Energy

Impact ENG-1: Impacts on Consumption of Energy Resources

Impact ENG-2: Impacts on Renewable Energy or Energy Efficiency Plan

Cumulative Impacts

Population and Housing

Impact POP-1: Impacts on Population Growth

Impact POP-2: Impacts on People or Housing due to Displacements

Cumulative Impacts

Public Services

Impact PUB-1: Impacts on Governmental Facilities

Cumulative Impacts

Recreation

Impact REC-1: Impacts on Recreational Facilities

Impact REC-2: Impacts on the Environment due to Construction or Expansion of Recreational Facility

Cumulative Impacts

Transportation

Impact TR-2: Impacts on Hazards due to Design Features or Incompatible Uses

Impact TR-3: Impacts on Emergency Access

Utilities and Service Systems

Impact UT-1: Impacts on Water or Wastewater Treatment, Stormwater Drainage, Electrical Power,

Natural Gas, or Telecommunications Facilities

Impact UT-2: Impacts on Water Supply

Impact UT-3: Impacts on Wastewater Treatment Providers

Impact UT-4: Impacts on Solid Waste Standards, Infrastructure Capacities, or Waste Reduction Goals

Impact UT-5: Impacts on Management and Reduction Statutes and Regulations Related to Solid Waste

Cumulative Impacts

Wildfire

WF-a: Impair an adopted emergency response plan or evacuation plan

WF-b: Expose occupants to pollutant concentrations from a wildfire or uncontrolled spread of wildfire

WF-c: Impact from the installation or maintenance of infrastructure that may exacerbate fire risk

WF-d: Expose people or structures to significant risks from flooding or landslides as a result of runoff or post fire slope instability

Cumulative Impacts

5.1.3 Findings Regarding Impacts Mitigated to Less Than Significant

The City hereby finds that feasible mitigation measures have been identified in the Draft EIR and these Findings of Fact that will avoid or substantially lessen the following potentially significant and significant environmental impacts to a less than significant level. Feasible is defined by CEQA Guidelines Section 15364 as capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. The potentially significant and significant impacts and the mitigation measures that will reduce them to a less than significant level are summarized below. The Draft and Final EIR are incorporated by reference and provide more detail.

A. AESTHETICS

Impact AES-5: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area

As described in the Draft EIR, implementation of the project would introduce new light sources. The new light sources would be used for the commercial center and residences, including parking areas and roadway lighting. Light sources would consist of exterior and interior building lighting including commercial and pedestrian-scale pole lights, bollard lights, exterior wall lights, to provide security lighting

for the commercial and residential areas including walkways, buildings, and parking areas. The project would also include in-ground up-lights to illuminate and accent landscaping.

Mitigation Measure AES-1 requires submittal of a lighting plan as part of the building permit review process. The lighting plan would be reviewed by City staff to ensure that the project does not adversely affect the visual quality of the area or create a substantial new source of light and glare, and to ensure light does not spill offsite including within the proposed open space area which could adversely affect wildlife including nesting birds.

Mitigation Measure AES-1

Lighting Plan. Prior to issuance of a building permit, the project applicant shall submit, to the satisfaction of the Planning & Development Services Director, a lighting plan for the project site demonstrating that outdoor lighting fixtures will not cause substantial glare and light spillover to surrounding properties including the open space area. At the Director's discretion the lighting plan can be broken up into commercial and residential components. The plan shall include photometric contours, manufacturer's specifications on the fixtures, and mounting heights.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measure, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this aesthetics impact identified in the Final EIR to less than significant.

B. BIOLOGICAL RESOURCES

Impact BIO-1: Impact either directly or through habitat modifications, any species identified as a candidate, sensitive, or special status species

The project site has a moderate to high potential to support nesting habitat for eight special-status bird species: white-tailed kite, northern harrier, Nuttall's woodpecker, oak titmouse, loggerhead shrike, Bryant's savannah sparrow, Samuel's song sparrow, and San Francisco common yellowthroat. In addition, a special-status bird was observed during the May 2017 visit: Allen's hummingbird. The project site has potential to support common bird species protected by the Migratory Bird Treaty Act and California Fish and Game Code.

Activities that result in the removal of active nests (nests containing eggs and/or young) or disturbance to nesting birds sufficient to result in the abandonment of active nests may be considered a significant impact under the State CEQA Guidelines and a violation of the Migratory Bird Treaty Act and the California Fish and Game Code. Based on these conditions, proposed project activities should be in accordance with

Mitigation Measure BIO-1 to ensure impacts on special-status bird species are reduced to a less than significant level. Implementation of Mitigation Measure AES-1 would also reduce potential impacts on special status bird species by avoiding light spillover in the open space area.

Mitigation Measure BIO-1

Nesting Birds. Project activities should be initiated outside of the nesting season to the extent feasible (September 1 - January 31). However, if vegetation removal, grading, or initial ground-disturbing activities must be conducted during the nesting season, a pre-construction nesting bird survey shall be conducted by a qualified biologist prior to vegetation removal or initial ground disturbance. Nesting habitat may include grasslands, shrubs, trees, snags and open ground. The survey should be conducted in a sufficient area around the work site to identify the location and status of any nests that could potentially be affected by Project activities.

If active nests are found within the project limits of impact or close enough to these areas to affect breeding success, a work exclusion zone shall be established around each nest by a qualified biologist and confirmed by the City. Established exclusion zones shall remain in place until all young in the nest have fledged or the nest otherwise becomes inactive (e.g., due to predation). Appropriate exclusion zone sizes vary dependent upon bird species, nest location, existing visual buffers and ambient sound levels, and other factors; an exclusion zone radius shall be a minimum of 25 feet (for common, disturbance-adapted species) or as large as 250 feet or more for raptors. Exclusion zone size may also be reduced from established levels if supported with nest monitoring by a qualified biologist indicating that work activities outside the reduced radius are not adversely impacting the nest.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this biological resource impact identified in the Final EIR to less than significant.

Impact BIO-2: Impact any riparian habitat or other sensitive natural community

The project site contains three sensitive biological communities: perennial stream, anthropogenic depressions, and seasonal wetland swales. The project has been designed to avoid approximately 2.50 acres of seasonal wetlands in the central region of the project site; however, project activities would impact 2.52 acres of seasonal wetland swale and 0.08 acre of anthropogenic depression. Construction of the Admiral Callaghan Lane roadway improvements would result in shading to 0.01-acre of perennial stream, in the southwestern corner of the project site, below the OHWM (0.03 acre below the top of bank).

Wetland swales and anthropogenic depressions are within the jurisdiction of the Corps under Section 404 of the CWA and the RWQCB under the Porter Cologne Act and Section 401 of the CWA. The perennial stream is jurisdictional by those agencies as well as the CDFW under Section 1602 of the California Fish and Game Code. Permits from these agencies will be required for work on or affecting wetlands and open water habitats. In addition, the existing PG&E gas line and portion of the existing sewer line that underlie the project site and would no longer be used would be abandoned in place. These lines would remain underground and no additional disturbance would occur. The applicant shall demonstrate compliance with these regulations through the implementation of Mitigation Measure BIO-2. In order to compensate for impacts to Waters of the U.S. and State, the applicant shall provide compensation in accordance with Mitigation Measure BIO-3. Implementation of Mitigation Measures BIO-4 and BIO-5 ensure that the wetland areas preserved onsite are not adversely impacted during project construction. With the implementation of Mitigation Measures BIO-2 through BIO-5, impacts on wetland habitats would be reduced to a less than significant level.

Mitigation Measure BIO-2

Wetland Permits. Prior to the approval of grading permits or improvement plans, the applicant shall provide, to the satisfaction of the Planning & Development Services Director, evidence that the U. S. Army Corps of Engineers (USACE) California Department of Fish and Wildlife (CDFW), and the San Francisco Regional Water Quality Control Board (RWQCB) have been notified in writing regarding the existence of wetlands on the property. Any permits required shall be obtained and copies submitted to the Director prior to any equipment staging, clearing, grading, or excavation work. The permit shall include authorization for temporary construction work within the wetland area.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this biological resource impact identified in the Final EIR to less than significant.

Mitigation Measure BIO-3

Wetland Compensation. Prior to the approval of grading permits or improvement plans, the applicant shall submit to the satisfaction of the Planning & Development Services Director evidence that the following measures have been completed:

Provide written evidence that compensatory mitigation has been established through the purchase of mitigation credits at a qualified wetland mitigation bank established by and in agreement with the U. S. Army Corps of Engineers (USACE) and the San Francisco Regional Water Quality Control Board (RWQCB).

The purchase of credits shall be a minimum of 1:1 or equal to the amount necessary as determined and by USACE and RWQCB to replace impacted jurisdictional wetlands including compensation for temporal loss in accordance with approved regulatory permits (e.g., Regional Water Quality Control Board Section 401 Water Quality Certification, US Army Corps of Engineers 404 Permit, and California Department of Fish and Game Section 1602 Lake and Streambed Alteration Agreement). The total amount of impacted jurisdictional wetlands, as determined by the regulatory agencies, shall be replaced in accordance with the total amount of impacted acreage.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this biological resource impact identified in the Final EIR to less than significant.

Mitigation Measure BIO-4

Construction Fencing. Prior to approval of grading or improvement plans, the applicant shall submit to the satisfaction of the Planning & Development Services Director evidence that the following measures have been completed:

The grading or improvement plans shall identify the location of protective construction fencing. High visibility and silt fencing shall be erected at the edge of the construction/maintenance footprint if work is anticipated to occur within 50 feet of the preserved jurisdictional features and riparian areas. A qualified biologist shall be present during the fence installation and during any initial grading or vegetation clearing activities within 50 feet of jurisdictional features and riparian areas which are proposed for avoidance.

Temporary construction activities related to the transfer of graded soil material and equipment to and from the commercial and residential areas shall be described and included in the permit issued for grading and encroachment in the wetland area. The crossing shall be limited to a single span in a single location and shall not be moved during any grading activities. The span shall be fenced and marked and shall be removed at the earliest feasible time upon the completion of grading. The span shall be installed, operated, and removed to minimize disturbance to the wetland area to the maximum extent feasible.

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this biological resource impact identified in the Final EIR to less than significant.

Mitigation Measure BIO-5

Construction Staging. Prior to the approval of grading or improvement plans, the applicant shall submit to the satisfaction of the Planning & Development Services Director evidence that the following measures have been completed:

All equipment shall be stored, fueled and maintained in a vehicle staging area 300 feet (or the maximum distance possible) from any wetland feature. The staging area shall be no closer than 200 feet unless a bermed area is constructed between it and the wetland. Within the staging area the refueling areas shall be lined to prevent fuel contamination and hazardous-material absorbent pads shall be available in the event of a spill. The grading or improvement plans shall include a note clearly stating the requirements for the staging area distances, berming requirements, and use of liners in the refueling areas

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this biological resource impact identified in the Final EIR to less than significant.

Impact BIO-3: Impact state or federally protected wetlands

The project site contains three wetland categories, perennial stream, seasonal wetland stream and anthropogenic depressions. The project has been designed to avoid approximately 2.50 acres of seasonal wetlands in the central region of the project site; however, project activities would impact 2.52 acres of seasonal wetland swale and 0.08 acre of anthropogenic depression. Construction of the Admiral Callaghan Lane roadway improvements would result in shading to 0.01-acre of perennial stream, in the southwestern corner of the project site, below the OHWM (0.03 acre below the top of bank). A multi-use pathway is proposed over the seasonal wetlands within the open space area. The pathway has been designed to keep the pathway (including abutments) outside of the seasonal wetland jurisdictional area. The pathway includes a 35-foot span over the wetland area. While not physical improvements will be located within the wetlands the span structure will result in shading to approximately 0.01-acre of the seasonal wetlands. Seasonal wetlands and anthropogenic depressions are within the jurisdiction of the Corps under Section 404 of the CWA and the RWQCB under the Porter Cologne Act and Section 401 of the CWA. The perennial stream is jurisdictional by those agencies as well as the CDFW under Section 1602 of the California Fish and Game Code. The project will seek a Lake and Streambed Alteration Agreement per Fish and Game Code Section 1602. Compliance with Mitigation Measures BIO-2 through BIO-5 are required to mitigate impacts to protected wetlands. Thus, impacts would be reduced to a less than significant level with mitigation incorporated.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this biological resources impact identified in the Final EIR to less than significant.

Impact BIO-4: Interfere substantially with the movement of any native resident or migratory fish or wildlife species

The project site is surrounded by existing single-family homes and other types of urban development. Therefore, activities associated with the proposed project would not result in fragmentation of natural habitats. The project site is also not connected to a natural watercourse and thus, has no potential to impact migratory fish or other special-status fish species, nor does the project site contain Essential Fish Habitat. Blue Rock Springs Creek crosses the southwest boundary of the project site, subsequently undergrounnds downstream, and is thus not accessible by in any migrating special-status fish.

Migratory birds are protected under the MBTA and Sections 3500 and 4511 of the California Fish and Game Code which prohibit the “take” of migratory birds and their eggs, nests, or young. The project site has the potential to support nesting for eight special-status bird species which are also protected under the MBTA. Adherence to Mitigation Measure BIO-1 would minimize the potential impacts of project activities to all birds covered under the MBTA as it would require a pre-construction nesting bird survey prior to vegetation removal or initial ground disturbance during the nesting season. Thus, compliance with Mitigation Measure BIO-1 would reduce impacts on nesting birds to a less than significant level with mitigation incorporated.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measure, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this biological resource impact identified in the Final EIR to less than significant.

C. CULTURAL RESOURCES

Impact CUL-2: Impact an Archeological Resource Pursuant to § 15064.5

Although no historical or archaeological resources were located on the project site, the region in which the project site is located is known to have been occupied by native peoples. This region includes the ethnographic territory of the Patwin who occupied the southern Sacramento Valley west of the Sacramento River from the town of Princeton, north to Colusa, south to San Pablo and Suisun bays. Additionally, the project site is known to have been occupied in the 1800s and 1900s by people who used the site for agricultural purposes and unknown and buried resources from these prior times and activities could have been left after occupation ended and may be located within the project site.

Implementation of the proposed project would result in ground disturbance including grading and excavation. To account for existing land contours, the excavation depth for the proposed project would be approximately 5 to 10 feet on the eastern side of the project site and as much as 20 feet on the western side. The site disturbance could result in impacts by damaging or destroying unknown buried historic and archaeological resources should they exist below the ground surface. The incorporation of mitigation measures for project-specific impacts would address the potential risk from direct impacts, as well as secondary or accidental impacts to cultural resources. Without mitigation, impacts resulting from the proposed project could be significant. Mitigation Measure CUL-1, requires the implementation of a Cultural Awareness Training Program; Mitigation Measures CUL-2 and CUL-3 address procedures for monitoring and inadvertent discovery. Implementation of these mitigation measures would reduce this impact to a less than significant level.

Per State CEQA Guidelines Section 15126.4(b)(3), project redesign and preservation in place shall be the preferred means to avoid impacts to significant historical resources, if discovered. Consistent with State CEQA Guidelines Section 15126.4(b)(3)(C), if resources cannot be avoided, additional treatment measures shall be developed in consultation with the City of Vallejo Planning & Development Services Department and may include testing and evaluation or data recovery excavation. The City of Vallejo shall consult with appropriate Native American representatives in determining appropriate treatment for unearthed cultural resources if the resources are prehistoric or Native American in nature. By law, the qualified archaeologist shall prepare a report documenting evaluation and/or additional treatment of the resource. A copy of the report shall be provided to the City of Vallejo Planning & Development Services Department and to the Northwest Information Center.

Mitigation Measure CUL-1

Cultural Awareness Training Program. Prior to the issuance of grading permits, a Cultural Awareness Training Program shall be provided to all construction managers and construction personnel prior to commencing ground disturbance work at the project site. The training shall be prepared and conducted by a qualified archaeologist to the satisfaction of the City of Vallejo Planning & Development Services Department. The training shall be a length of time adequate to explain applicable statutes, regulations,

enforcement provisions; the prehistoric and historic environmental setting and context, local tribal groups; show sample artifacts; and what prehistoric and historic archaeological deposits look like at the surface and when exposed during construction. The training may be discontinued to new workers to the site when ground disturbance is completed. Construction personnel shall not be permitted to operate equipment within the construction area unless they have attended the training. The entity responsible for the training shall extend an invitation to the Yocha Dehe Wintun Nation to be present during the training program. A list of the names of all personnel who attended the training and copies of the signed acknowledgement forms shall be submitted to the City Planning & Development Services Department for their review and approval.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this cultural resources impact identified in the Final EIR to less than significant.

Mitigation Measure CUL-2

Cultural Resources Construction Monitoring. During mass grading activities, a qualified archaeologist and Native American Monitor shall be continuously present onsite, and on-call during trenching activities, to observe disturbance areas. The applicant shall provide to the satisfaction of the Director of Planning & Development Services that a Native American Monitor from the Yocha Dehe Wintun Nation has been retained or that every reasonable effort to has been made to retain a Native American monitor. The qualified archaeologist or contractor shall halt work in the immediate vicinity if artifacts, exotic rock, shell or bone are uncovered during the construction. In the event such cultural resources are unearthed during ground-disturbing activities, and the qualified archaeologist is not in that location, the project operator shall cease all ground-disturbing activities within 50 feet of the find and immediately contact the qualified archaeologist and the Native American monitor. Work shall not resume until the potential resource can be evaluated by the qualified archaeologist and Native American monitor. The qualified archaeologist shall be empowered to halt or redirect ground-disturbing activities away from the vicinity of the find until the qualified archaeologist has evaluated the find, determined whether the find is culturally sensitive, and designed an appropriate short-term and long-term treatment plan in consultation with the Native American monitor. The significance of the find shall be determined by the archaeologist and monitor. If determined to be significant the archaeologist shall prepare a treatment plan in consultation with local experts, Native American Representatives, and the City Planning & Development Services Department.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this cultural resources impact identified in the Final EIR to less than significant.

Mitigation Measure CUL-3

Discovery of Unknown Resources. The project applicant shall continuously comply with the following requirement: In the event that unanticipated cultural or tribal cultural resources are encountered during the course of grading or construction, the project operator/contractor shall cease any ground-disturbing activities within 50 feet of the find. Cultural and/or tribal cultural resources may include prehistoric archaeological materials such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock, as well as historic materials such as glass, metal, wood, brick, or structural remnants. A qualified archaeologist shall evaluate the resource and recommend treatment measures, as appropriate.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this cultural resources impact identified in the Final EIR to less than significant.

Impact CUL-3: Impacts on any Human Remains

Future ground-disturbing activities during grading and construction activities could encounter buried human remains that were not identified during the cultural resource report conducted for the proposed project. This could result in damage to unknown, buried human remains and mitigation would be required. Mitigation Measure CUL-4 identifies procedures for recording and treating any human remains should they be discovered during project construction. The measure requires that these items be protected, preserved and treated in accordance with applicable laws, regulations and guidelines. With the implementation of mitigation, potential impacts would be less than significant.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this cultural resources impact identified in the Final EIR to less than significant.

Mitigation Measure CUL-4

Discovery of Human Remains. The project applicant shall continuously comply with the following: If human remains are uncovered during ground disturbing activities, the project proponent shall immediately halt work and contact the Solano County Coroner to evaluate the remains, and follow the procedures and protocols set forth in Section 15064.5 (e)(1) of the State CEQA Guidelines. The City of Vallejo Police Department and City of Vallejo Planning & Development Services Department shall be contacted immediately after contact or attempted contact with the County Coroner. All excavation activities on the project site shall cease. If the County Coroner determines that the remains are Native American, the Native American Heritage Commission shall be notified, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by AB 2641). No further excavation activity shall occur on the site or any nearby area reasonably suspected to overlie adjacent human remains until consultation is complete with the most likely descendant, the Coroner and the City Planning & Development Services Department staff. Authorization to resume construction shall only be given by the City after consultation with the most likely descendent and shall include implementation of all appropriate measures to protect any possible burial sites or human remains.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this cultural resources impact identified in the Final EIR to less than significant.

Impact CUL-4: Impact a Tribal Cultural Resource defined in Public Resources Code Section 21074.

Formal letters inviting consultation for the project pursuant to PRC § 21080.3.1(b) were sent in August 2019. One response to the letters was received in August 2019 and indicated that the project site was within the ancestral tribal territory of the Yocha Dehe Wintun Nation and that the proposed project could impact known archaeological/cultural sites. The letter requested that the project include cultural monitors during development and ground disturbance. The cultural resources report did not locate any archaeological or tribal cultural resources on the project site. Mitigation Measure CUL-2 requires the project archaeologist to consult with local experts and Native American Representatives for the

preparation of a treatment plan if significant unknown cultural resources are discovered during construction mass grading and trenching activities.

Implementation of the proposed project could result in disturbance or destruction of unknown buried tribal cultural resources that were not located during previous study and site evaluation. Mitigation Measure CUL-1 requires a Cultural Awareness Training Program for all project workers and Mitigation Measures CUL-2 through CUL-4 require mitigation to protect inadvertently discovered archaeological resources and human remains, respectively. In addition, all such finds would be required to be treated in accordance with all CEQA requirements and all other applicable laws and regulations. With implementation of these measures, impacts in this regard would be less than significant.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this cultural resources impact identified in the Final EIR to less than significant.

Cumulative Impacts

The proposed project could result in potential site-specific impacts to currently unknown archaeological, cultural, and tribal cultural resources discovered during grading and trenching activities during construction. Other projects within the cumulative study area also have the potential to result in damage and/or loss to these resources. The combination of the proposed project as well as past, present, and reasonably foreseeable projects in the City and Solano County would be required to comply with all applicable State, federal, and County and local regulations concerning preservation, salvage, or handling of cultural and paleontological resources, including compliance with required mitigation. Similar to the proposed project, these projects also would be required to implement and conform to mitigation measures, which would be likely to reduce impacts to less than significant. Although in the process of development, some known or unknown resources may be lost, it is not anticipated that these impacts would be cumulatively considerable. In addition, implementation of Mitigation Measures CUL-1 through CUL-4 listed above would reduce project-specific impacts to a less than significant level.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen cumulative cultural resources impacts identified in the Final EIR to less than significant.

D. GEOLOGY AND SOILS**Impact GEO-1: Directly or indirectly cause potential adverse effects involving:*****a. Rupture of a known earthquake fault***

There are no mapped Alquist–Priolo Earthquake Fault Zones in Vallejo. Since there are no known faults crossing the project site and the property is not within an Earthquake Fault Specialty Study Zone, the likelihood of primary ground rupture in the project area is considered low. In addition, the applicant would be required to conform to the California Building Standards Code and the California Health and Safety Code for all structures proposed as part of the project. The proposed project would not expose people or structures to potential risk of loss or injury where there is high potential for earthquake-related ground rupture in the vicinity of major fault crossings. Any potential impacts would therefore be less than significant.

b. Strong seismic ground shaking

According to the 2017 ENGEO report, an earthquake of moderate to high magnitude generated within the San Francisco Bay Region could cause considerable ground shaking at the project site, similar to that which has occurred in the past. All structures would be required to be designed using sound engineering judgment and meeting the then-current CBC requirements. According to the 2017 ENGEO report, conformance to the current building code recommendations does not guarantee that significant structural damage would not occur in the event of a maximum magnitude earthquake; however, having a well-designed and well-constructed structure would lessen the chance of collapse or cause loss of life in a major earthquake. In addition, the project applicant would be required to submit a design-level geotechnical report to the City as part of MM GEO-1 and implement all remedial grading measures in the 2017 ENGEO report. The implementation of this measure would mitigate impacts to a less than significant level.

c. Seismic ground failure, including liquefaction

While there are no known active or potentially active faults crossing the project site, there are numerous faults in the region. According to the 2017 ENGEO report, the risk of liquefaction at the project site is low based on the material types and densities of granular materials encountered in the test pits. The different types of ground failure associated with liquefaction often leaves geomorphic evidence after the event in the form of scarps, and open or unfilled groups cracks, and sand volcanoes. Due to the shallow bedrock

at the project site, soil liquefaction and liquefaction are not a concern for development on the project site.

The applicant would be required to submit a geotechnical investigation report to the City as part of MM GEO-1 and implement all remedial grading measures in the 2017 ENGEO report. This would reduce any potential impacts associated with seismic-related ground failure and liquefaction

d. Landslide

Lateral spreading and earthquake-induced landslides involve lateral ground movements caused by seismic shaking. According to the 2017 ENGEO report, the risk of subsidence and landslides is low based on ENGEO's review of topographic and lithologic data due to the shallow bedrock. The project site is relatively flat and is not located adjacent to any areas with steep slopes. However, as discussed above, the applicant would be required to submit a geotechnical investigation report to the City as part of MM GEO-1 and implement all remedial grading measures in the 2017 ENGEO report. This would reduce any potential impacts associated with landslides.

Mitigation Measure GEO-1

Geotechnical Investigation. Prior to construction, the project applicant shall prepare a design-level geotechnical investigation and a final geotechnical report with site-specific recommendations, which must be reviewed and approved by the City of Vallejo prior to issuance of any grading permit. All recommended remedial grading measures identified in the ENGEO reports dated April 17, 2017 shall be updated to reflect current building code requirements and be implemented unless alternative techniques developed by a certified geotechnical engineer or engineering geologist are identified as part of the final geotechnical report.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measure, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this impact from geological hazards identified in the Final EIR to less than significant.

Impact GEO-2: Result in substantial soil erosion or loss of loss of topsoil

The proposed project site is generally flat but still has the potential for soil erosion. Buildout of the proposed project would involve construction-related activities and during the early stages of construction, topsoil would be exposed during grading activities. As a result, once grading is complete but prior to overlaying the ground surface with structures, the potential exists for wind and water erosion to occur which could affect project site soils causing a potentially significant impact.

The project would implement a Stormwater Pollution Prevention Plan (SWPPP) pursuant to MM HYD-1 that specifies how water quality would be protected during construction activities. The SWPPP would include best management practices (BMPs) to protect the quality of storm water runoff. Construction BMPs would include, but are not limited to, stabilization of construction entrances, straw wattles on embankments, and sediment filters on existing inlets. These measures would minimize erosion, protect exposed slope areas, control surface water flows over exposed soils, and require the implementation of a sediment monitoring plan. In addition, the project applicant would be required to submit a geotechnical investigation report to the City as part of MM GEO-1. As a result, with implementation of MM GEO-1 and measures from the SWPPP, impacts associated with soil erosion and loss of topsoil would be less than significant.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measure, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this impact from soil erosion and loss of top soil identified in the Final EIR to less than significant.

Impact GEO-3: Result in on- or off- site landslide, lateral spreading, subsidence, liquefaction or collapse

The risk of subsidence and landslides is low based on ENGEO's review of topographic and lithologic data.

The risk of liquefaction at the project site is low based on the material types and densities of granular materials encountered in the test pits. The different types of ground failure associated with liquefaction often leaves geomorphic evidence after the event in the form of scarps, and open or unfilled groups cracks, and sand volcanoes. Due to the shallow bedrock at the project site, soil liquefaction and liquefaction are not a concern for development on the project site.

An earthquake of moderate to high magnitude generated within the San Francisco Bay Region could cause considerable ground shaking at the project site, similar to that which has occurred in the past. To mitigate the shaking effects, all structures will be required to be designed using sound engineering judgment and the current CBC requirements, as a minimum. According to the 2017 ENGEO report, conformance to the current building code recommendations does not guarantee that significant structural damage would not occur in the event of a maximum magnitude earthquake; however, having a well-designed and well-constructed structure will lessen the chance of collapse or cause loss of life in a major earthquake. In addition, the project applicant would be required to submit a design-level geotechnical report to the City as part of MM GEO-1 and implement all remedial grading measures in the 2017 ENGEO report. The implementation of this mitigation measure would ensure that any buildings constructed within the project is not exposed to strong ground shaking hazards and impacts would be less than significant.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measure, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this impact from landslides, lateral spreading, subsidence, liquefaction or collapse identified in the Final EIR to less than significant.

Impact GEO-4: Located in expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating direct or indirect risks to life or property.

Soils in the vicinity of the project site were observed to be potentially expansive. Laboratory testing of the test pits indicates that these soils have moderate to high shrink/swell potential with variations in moisture content. Future development on the project site would be subject to existing CBC regulations and provisions, as adopted in Chapter 12.04 of the City of Vallejo Municipal Code and enforced by the City during plan review prior to building permit issuance.

Implementation of MM GEO-1 (Geotechnical Report) and consistency with the General Plan policies and actions would require that a site-specific design-level geotechnical investigation be prepared by a licensed professional and submitted to the City for review and confirmation prior to construction. This design-level geotechnical investigation would identify the potential for damage related to expansive soils and non-uniformly compacted fill and engineered fill. If a risk is identified, design criteria and specification options may include removal of the problematic soils, and replacement, as needed, with properly conditioned and compacted fill material that is designed to withstand the forces exerted during the expected shrink-swell cycles and settlements.

Design criteria and specifications set forth in the design-level geotechnical investigation would ensure impacts from problematic soils are minimized. As a result, with implementation of MM GEO-1 and compliance with City ordinances and policies, impacts associated with expansive soils would be reduced to less-than-significant levels.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measure, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this impact from expansive soils identified in the Final EIR to less than significant.

Impact GEO-6: Directly or indirectly destroy a Unique Paleontological Resource or Site or Unique Geological Feature.

There are no known paleontological resources located in Vallejo's Planning Area, including the project site. However, development of the proposed project could result in the discovery and disturbance of previously unknown or undiscovered paleontological resources. While fossils are not expected to be discovered during construction, it is possible that significant fossils could be discovered during excavation activities, even in areas with a low likelihood of occurrence. Fossils encountered during excavation could be inadvertently damaged. If a unique paleontological resource is discovered, the impact to the resource could be substantial. MM GEO-2 would require that a qualified archeologist monitor grading and excavation activities, and a paleontologist be notified if paleontological resources are found. If any scientifically important large fossil remains are uncovered, the paleontologist would have the authority to divert heavy equipment away from the fossil site.

With implementation of MM GEO-2 and consistency with General Plan Action NBE-1.9A, impacts associated with paleontological resources would be less than significant.

Mitigation Measure GEO-2

Paleontological Monitor. Prior to the issuance of a grading permit, the project applicant shall, to the satisfaction of the Planning & Development Services Director, provide evidence that a qualified paleontologist has been retained to monitor mass grading and construction activities. The paleontological monitor may periodically inspect construction activities to adjust the level of monitoring in response to subsurface conditions. In the event that any potentially significant paleontological resources are discovered, the paleontological monitor shall stop work inside a zone designated by him/her where additional paleontological resources could be found. A plan for the evaluation of the resource shall be submitted to the Planning & Development Services Director for approval. In the event that a paleontological resource (fossilized invertebrate, vertebrate, plant or micro-fossil) is found during construction, excavation within 50 feet of the find shall be temporarily halted or diverted until the discovery is evaluated. Upon discovery, the Planning & Development Services Director shall be notified immediately, and a qualified paleontologist shall be retained to document and assess the discovery in accordance with Society of Vertebrate Paleontology's 2010 Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources and determine procedures to be followed before construction is allowed to resume at the location of the find. If determined to be significant, the paleontologist will prepare an excavation plan for mitigating the Project's impact on this resource, including preparation, identification, cataloging, and curation of any salvaged specimens.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measure, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this impact on paleontological resources identified in the Final EIR to less than significant.

Cumulative

Cumulative effects related to geology resulting from the implementation of future development of the site and surrounding areas could expose more persons and property to potential impacts due to seismic activity. Long-term impacts related to geology include the exposure of people to the potential for seismically induced ground shaking. Implementation of other cumulative projects would incrementally increase the number of people and structures subject to a seismic event. Seismic and geologic significance would be considered on a project-by-project basis through the preparation of a design-level geotechnical study and such exposures would be minimized through strict engineering guidelines as they pertain to protection against known geologic hazards and potential geologic and soil-related impacts.

Development projects would be required to be constructed in accordance with the latest edition of the CBC and to adhere to all current earthquake construction standards, including those relating to soil characteristics. The proposed project would not contribute to any cumulatively considerable geologic and/or soils impacts. Therefore, cumulative effects of increased seismic risk would be less than significant. In addition, implementation of Mitigation Measures GEO-1 through GEO-2 listed above would reduce project-specific impacts to a less than significant level.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen cumulative impacts from geology and soils identified in the Final EIR to less than significant.

E. GREENHOUSE GAS**Impact GHG-1: Generate Greenhouse Gas emissions, directly or indirectly, that could impact the environment.**

The project would include direct and indirect GHG emissions from project commercial and residential construction and operations. Construction is considered a direct source since these emissions occur at the site. Direct operational-related GHG emissions for the proposed project would include emissions from

area and mobile sources, while indirect emissions are from energy consumption, water demand, and solid waste.

With the implementation of Mitigation Measure GHG-1 through GHG-11, net GHG emissions resulting from the proposed project would exceed the BAAQMD efficiency metric of 4.6 MT CO₂e/year/SP and the substantial progress efficiency metric of 4.05 MT CO₂e/year/SP for 2023. However, Mitigation Measure GHG-12 requires the purchase of GHG offset credits to reduce the emission levels below BAAQMD thresholds. With implementation of the following mitigation measures (MM GHG-1 through 12), the project related GHG emissions would be less than significant.

Mitigation Measure GHG-1

Electric Powered Landscape Equipment. Prior to issuance of building permits, the project applicant shall prepare and submit building plans to the City of Vallejo Chief Building Official that demonstrate that all new residential and non-residential structures have outdoor electrical outlets accessible to maintenance workers and landscapers in the front, side and rear exteriors of all structures to allow the use of electric-powered equipment.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this greenhouse gas impact identified in the Final EIR to less than significant.

Mitigation Measure GHG-2

Hearth Emissions. Prior to the issuance of building permits, the building official shall confirm that the applicable project plans and specifications do not include wood-burning and natural gas hearths.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this greenhouse gas impact identified in the Final EIR to less than significant.

Mitigation Measure GHG-3

Vehicle Trip Reduction. The project applicant shall submit a qualifying Commute Trip Reduction (CTR)/Transportation Demand Management (TDM) plan prepared by a qualified transportation consultant acceptable to the City to reduce vehicle miles traveled by at least 17.8 percent. The TDM plan shall be approved by the City of Vallejo Public Works Director prior to the issuance of occupancy permits and incorporated into the project's Covenants, Conditions and Restrictions (CC&Rs). The TDM plan shall discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. The TDM plan shall include a requirement for annual reporting to the City Planning Division showing good faith compliance with plan requirements. The TDM plan may be modified with the City's agreement, provided that no additional trips are generated.

Examples of trip reduction measures for non-residential uses may include, but are not limited to:

- Include a pedestrian access system integrated into the design of the project to encourage pedestrian travel as an alternative to automobile travel.
- Post transit information (maps, schedules, fares, etc.) in a public area of Costco that is accessible to employees and patrons;
- Provide a work commute trip reduction program for on-site employment that may include employer carpooling promotion, employer ride-matching assistance, preferential carpool parking on-site, employer vanpool assistance, and on-site bicycle end-trip facilities including bicycle parking.
- Provide employer-subsidized transit passes;
- Sponsor an employee ride-sharing program;
- Provide employee lockers for personal items;
- Provide employees with an employee-only restroom with a shower (applies only to Costco warehouse);
- Provide secure indoor bicycle parking (racks or lockers) for employees;
- Provide customer bicycle parking (racks) in safe and convenient locations;
- Allow flex scheduling or compressed scheduling practices;
- Provide preferential parking spaces for clean air vehicles;
- Provide additional parking spaces designated for electric vehicles and electric vehicle charging stations beyond what is already required (applies only to Costco warehouse) and

- If home delivery service is provided in the future, it shall be performed using low emission or alternative-fueled (electric, natural gas, hydrogen, etc.) vehicles.

Examples of trip reduction measures for residential uses may include, but are not limited to:

- Provide a ride-matching assistance program that will include ride-matching through a website and/or social media site and/or advertisements in community common areas;
- Provide a school trip matching program via the Homeowners Association (HOA) and the local schools to match local students together for potential carpools through the HOA, PTA, and school website and/or social media site and/or promotion at the local schools;
- Establish a Transit Management Association, such as through a HOA, to promote, manage, and monitor transit and mobility services and infrastructure, such as through distributing information to homeowners on transit options or through posters to inform the public; and
- The Transit Management Association shall work with local automotive dealers to help promote CNG electric and hybrid electric vehicles, such as requesting that dealers offer incentive programs to residents of the project.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this greenhouse gas impact identified in the Final EIR to less than significant.

Mitigation Measure GHG-4

Traffic Calming. The project developers shall integrate the traffic calming measures as shown in the Project Application materials into the community-wide circulation network to promote reduced speeds and encourage pedestrian and bicycle trips. Prior to the issuance of building permits, the building official shall confirm with the Public Works Director that the applicable project public improvement plans and specifications include traffic calming measures as shown in the Project Application materials such as marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others where applicable.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this greenhouse gas impact identified in the Final EIR to less than significant.

Mitigation Measure GHG-5

Pedestrian Connectivity. The project developers shall provide as part of the project and consistent with City requirements and limitations, sidewalks and crosswalks at all streets (along with general pedestrian connectivity throughout the project) to encourage pedestrian travel and offer an alternative to vehicle trips.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this greenhouse gas impact identified in the Final EIR to less than significant.

Mitigation Measure GHG-6

Internal Trails. The project developers shall construct a multi-purpose internal trail system that includes an off-road multi-use trail and bike lanes within the street right-of-way.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this greenhouse gas impact identified in the Final EIR to less than significant.

Mitigation Measure GHG-7

Alternatively Fueled Equipment. To the extent that such equipment is readily available and can adequately perform all tasks, Costco shall use electric-, propane-, or natural gas-powered mobile equipment (forklifts, non-street legal street sweepers, etc.) for operational activities within the project site. Existing gasoline- or diesel-powered mobile equipment may continue to be used until its service life

is exhausted.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this greenhouse gas impact identified in the Final EIR to less than significant.

Mitigation Measure GHG-8

Idling Limitation. Prior to issuance of occupancy permits for the Costco store, the project applicant shall submit to the satisfaction of the Planning & Development Director, an idling restriction program for heavy-duty diesel vehicles. The program shall require that all trucks comply with state regulations limiting idling to no more than 5 minutes. The program shall be implemented through signage in all loading areas and training of store personnel about the idling restrictions.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this greenhouse gas impact identified in the Final EIR to less than significant.

Mitigation Measure GHG-9

Loading Dock Electrical Hookups. Prior to issuance of building permits for the proposed Costco store, the project applicant shall provide at least of one electrical hookup in each of the proposed loading docks that is capable of powering a truck-mounted transport refrigeration unit (TRU) with an electrical hookup option.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have

been required in, or incorporated into, the project that avoid or substantially lessen this greenhouse gas impact identified in the Final EIR to less than significant.

Mitigation Measure GHG-10

On-Site Renewable Energy. Prior to issuance of building permits for the proposed Costco store, the project applicant shall submit to the satisfaction of the Chief Building Official, a roof layout plan that illustrates how future installation of a photovoltaic system could be accommodated, including plans that identify installation of conduit from the roof to the electrical room—or to electrical panels if no electrical room is provided—to accommodate future photovoltaic system or other collector/power generation installation. Within four years of project occupancy, Costco shall install rooftop photovoltaic panels or another renewable energy source that generates at least 500,000-kilowatt hours (kWh) per year.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this greenhouse gas impact identified in the Final EIR to less than significant.

Mitigation Measure GHG-11

Additional GHG Emissions Reduction Measures. The proposed project shall include, but not be limited to, the following list of Project Design Features, which shall be incorporated into the project to ensure compliance with BAAQMD GHG thresholds. The project applicant may submit a report to the City, prepared by a qualified independent consultant, that substantiates why specific measures are considered infeasible at that point in time and identify alternate measures that would achieve equivalent reductions. The recommended measures for reducing operational GHG emissions are listed below. The recommended measures may be updated as new technologies or methods become available, to the satisfaction of the Planning & Development Services Director. The project applicant shall be required to implement the following:

Energy Efficiency Measures

- Include conduits and space for the future addition of energy storage to optimize renewable energy generation systems and avoid peak energy use. Electrical panels should appropriately sized to allow for future expanded use. This measure shall be verified prior to building permit issuance.
- The City shall verify before issuance of all residential building permits that where appliances are offered by residential project developers, Energy Star-rated appliances (or

other equivalent technology) for clothes washers, dishwashers, refrigerators, and fans shall be installed in the residences.

- The City shall verify before issuance of all residential and non-residential building permits that high-efficiency light bulbs and lighting fixtures are installed in residential and non-residential buildings. High-efficiency light bulbs include compact fluorescent lamps (CFLs), light-emitting diodes (LED), and other light bulbs that provide an energy efficiency of at least 75% compared to traditional incandescent bulbs.
- The City shall verify before issuance of building permits that buildings comply with Title 24 Building Energy Efficiency Standards, which includes energy-efficient design practices such as high-performance glazing. Energy Star compliant systems, radiant heat roof barriers (including but not limited to high-albedo white thermoplastic polyolefin roof membrane), high-efficient HVAC with hot-gas reheat, insulation on all pipes, programmable thermostats, solar access, shading of HVAC systems from direct sunlight, use of formaldehyde-free insulation, use of recycled-content gypsum board, sealed ducts, orientation of building and incorporation of landscaping to maximize passive solar (heating during cool seasons, and minimize heat gain during hot season), and designs that take advantage of prevailing winds .
- The project developers shall site and design buildings to take advantage of daylight where feasible and consistent with building purpose.
- The project developers shall use lighter-colored paving or open-grid paving materials for surface parking areas or break up large expanses of paved area with shade trees or shade structures or use light-colored roofing materials.

Water Efficiency Measures

- To the extent feasible, project developers shall landscape to preserve natural vegetation and maintain watershed integrity. This measure shall be verified prior to building permit issuance.
- The project shall use native species and drought-tolerant species for a minimum of 50 percent of the ornamental plant palette in non-turf areas for all retail, common, and public areas, and residential front-yard landscaping to minimize water demand.

Solid Waste Measures

- Reuse, recycle, and divert construction waste, and use locally-sourced building materials with a high recycled material content to the greatest extent feasible (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard). This measure shall be verified prior to grading permit issuance.

- Provide interior and exterior storage areas for recyclables and adequate recycling containers located in public areas. Recycling bins in the storage areas shall be included to promote recycling of paper, metal, glass, and other recyclable material. These bins shall be emptied and recycled accordingly as part of the proposed project's regular solid waste disposal program. The project applicant or its successor in interest shall only contract for waste disposal services within a company that recycles waste in compliance with AB 341. This measure shall be implemented prior to issuance of occupancy permit.

GHG Reduction Education and Information

- The project applicant or its successors or the HOA shall maintain a Fairview website that includes, but is not limited to, information about greenhouse gas (GHG) reduction opportunities to help educate project residents, as well as schools, other agencies, and businesses with facilities on the project site.
- The project applicant or its successors or the HOA shall include on the Fairview website information about rebates and low-interest loans to residents that make energy-saving improvements to their homes.
- The project applicant or its successors or the HOA shall include on the Fairview website information about the air quality and greenhouse gas benefits of electric landscape maintenance equipment.
- The project applicant or its successors or the HOA shall include on the Fairview website educational information on energy and water conservation and efficiency for project residents, customers, tenants, and large energy users.
- The project applicant or its successors or the HOA shall include in the Fairview website information about energy conservation and financial incentive programs.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this greenhouse gas impact identified in the Final EIR to less than significant.

Mitigation Measure GHG-12

GHG Emissions Offsets. The project applicant shall purchase and retire GHG offsets to reduce the project's

GHG emissions for the first 30 years below the BAAQMD's thresholds of significance (i.e., below 1,100 MTCO₂e per year, or 4.6 MTCO₂e per service population per year [as adjusted for post-2020 GHG reduction targets], or the latest applicable threshold at the time). GHG offsets shall be purchased either with a lump sum payment prior to occupancy for the entire 30-year period, or on an annual basis for a period of thirty years from project occupancy. If annual payments are made, evidence of the purchase of GHG offsets for the first year of occupancy shall be submitted to the satisfaction of the Planning & Development Services Director prior to the issuance of occupancy permits. Evidence of the GHG offsets years 2-30 shall be submitted annually on or before the anniversary of the occupancy permit (or as adjusted by the Planning & Development Services Director). GHG offsets shall be consistent with the performance standards and requirements set forth below.

- The GHG offsets shall be secured from an accredited registry that is recognized by the California Air Resources Board (CARB) or a California air district, or from an emissions reduction credits program that is administered by CARB or a California air district.
- The GHG offsets shall represent the past reduction or sequestration that is "not otherwise required," in accordance with California Environmental Quality Act (CEQA) Guidelines Section 15126.4(c)(3).
- The GHG offsets shall be real, permanent, quantifiable, verifiable, and enforceable.
- Recognizing that future regulatory mandates, technological advances, new renewable energy programs, or final project design features would likely result in GHG emissions that are lower than the levels presented in this EIR, the project applicant may prepare a final project GHG emissions inventory prior to issuance of the certificate of occupancy. The inventory shall be subject to verification by a City-approved third party (at applicant expense), with the final emissions estimates dictating the increment to be mitigated through purchase of GHG offsets. The offsets must also be secured by the applicant and verified by the City prior to issuance of the certificate of occupancy, thus providing full mitigation prior to completion of the project.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this greenhouse gas impact identified in the Final EIR to less than significant.

Impact GHG-2: Conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing greenhouse gases.

As noted above, the proposed project would develop the project site with uses consistent with the General Plan. The proposed project would be consistent with the overall goals of Plan Bay Area 2040 in concentrating new development in locations where there is existing infrastructure as the proposed project would redevelop the project site to provide a mix of land uses. Additionally, the project includes numerous design features and mitigation measures to reduce VMT. The project proposes commercial and residential land uses (with open space) adjacent to existing residential and commercial uses and within three miles to downtown Vallejo. The proposed project also incorporates sidewalks, paseos, and a trail designed to promote a pedestrian- and bicycle-friendly environment; to encourage alternative transportation between the commercial and residential project elements; and, improve access to the proposed open space. Therefore, the proposed project would be consistent with the Plan Bay Area goals of providing housing, healthy and safe communities, and climate protection and would not conflict with the land use concept plan in Plan Bay Area 2040. Impacts would be less than significant.

Therefore, implementation of the project, including Mitigation Measures GHG-1 through GHG-12 listed in the previous section, would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs, and this impact would be less than significant. In summary, the proposed project, an infill and mixed-use project within a currently developed area would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this greenhouse gas impact identified in the Final EIR to less than significant.

Cumulative

Project emissions would not exceed the BAAQMD thresholds with the implementation of Mitigation Measures GHG-1 through GHG-12. Therefore, the project's impacts do not represent a cumulatively considerable contribution toward global GHG emissions. Similarly, all future development with the potential to generate GHG emissions would be required to demonstrate compliance with applicable federal and State regulatory requirements, including General Plan goals and policies of the affected jurisdiction, intended to reduce and/or avoid potential adverse environmental effects. The proposed project would be consistent with the goals and policies in the CARB Scoping Plan, Plan Bay Area, and the Vallejo Climate Action Plan. As such, the cumulative impacts to GHG emissions would be mitigated on a

project-by-project level, and in accordance with the established regulatory framework, through the established regulatory review process. Cumulative impacts associated with the proposed project would be less than significant.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen cumulative impacts from greenhouse gas emissions identified in the Final EIR to less than significant.

F. HAZARDS AND HAZARDOUS MATERIALS

Impact HAZ-2: Create a significant hazard to the public or environment through the release of hazardous materials.

Although no hazardous materials are known to occur within the project site, the proposed project does include a Costco gas station that would include 30 fueling dispensers. The dispensers would be supplied by underground storage tanks and would require refilling with diesel fuel and gasoline to ensure continued supplies are available to Costco customers. There is the potential that some fuel may spill during normal operation of the gas station and there is a small potential that a structural failure of the USTs or connecting plumbing could weaken and leak into surrounding soils. A release of diesel or gasoline into the environment would be considered a significant impact and mitigation is required. In addition to the operation safeguards described in Chapter 3.0, Project Description that will be included as conditions of approval, the project will be required to implement Mitigation Measure HAZ-1 which requires specific design requirements for the gas station equipment and safety features. The mitigation measure also includes specific measures for storm drainage to prevent untreated surface water runoff from the gas station area from entering adjacent environmentally sensitive areas such as the perennial stream located in the southwest corner of the site.

The proposed project also would be subject to state and local regulations related to OES requirements under Chapter 6.95 of the California Health and Safety Code Article 1 – Hazardous Materials Release Response and Inventory Program (Sections 25500 to 25520) and Article 2 – Hazardous Materials Management (Sections 25531 to 25543.3). CCR Title 19, Public Safety, Division 2, Office of Emergency Services, Chapter 4 – Hazardous Material Release Reporting, Inventory, and Response Plans, Article 4 (Minimum Standards for Business Plans) which establishes minimum statewide standards for Hazardous Materials Business Plans (HMBP). In accordance with requirements, these plans are required to include the following: (1) a hazardous material inventory in accordance with Sections 2729.2 to 2729.7; (2) emergency response plans and procedures in accordance with Section 2731; and (3) training program information in accordance with Section 2732. In addition, the proposed project would be required to

comply with OSHA standards are listed in Title 29 CFR Part 1910. Conformance to these regulations and implementation of Costco's Operational Safeguards as conditions of project approval and Design Features listed Mitigation Measure HAZ-1 below, would be required for the life of the project and would reduce impacts from accident or upset conditions to less than significant.

Mitigation Measure HAZ-1

Gas Station Design Requirements. Prior to the issuance of building permits for the Costco gas station, the project applicant shall to the satisfaction of the Planning & Development Services Director or designee, demonstrate that the following measures have been incorporated into the applicable plans and project designs to the satisfaction of the Planning & Development Services Director or their designee. All design features requiring verification of installation shall be verified and approved by the appropriate City representative prior to initiation of fueling station operations.

1. The tank and piping monitoring system shall be designed to meet the federal underground storage tank leak detection standards of 95 percent probability of detection and 5 percent probability of false alarm. California State Water Resources Control Board also certifies the system under LG-113.
2. The project shall be designed to utilize durable petroleum-resistant sealant joint sealers to seal the concrete control joints to prevent petroleum products from entering the underlying soil at the concrete joints.
3. The storm drainage system for the fueling facility area shall be designed in accordance with State of California Best Management Practices for water quality treatment standards. Stormwater from the fueling area will be isolated and will be directed away from the perennial stream (located in the southeastern corner of the project site) to a catch basin and processed through an oil/water separator prior to discharge to the storm drain system or bioretention basin.
4. The underground tank and piping control units shall be housed inside the controller enclosure. The enclosure shall contain the power console, the dispenser interface unit, the submersible pump variable speed controllers, and the monitoring system console. An air conditioner mounted on the side of the enclosure shall have a preset thermostat to maintain a safe operating temperature.
5. The underground storage tanks and all containment sumps, including the dispenser sumps shall be double-walled fiberglass for its corrosion resistance and plasticity. The double-walled storage tank system shall include a hydrostatic interstitial space sensor that monitors the primary and secondary tank walls. An interstitial sensor shall be installed to immediately shut down the product delivery system and activate a visual/audible alarm if a tank wall is compromised, the.
6. The underground storage tanks shall be secured in place with anchoring straps (tie-downs) connected to concrete hold down deadmen. The entire tank excavation hole shall be backfilled with pea gravel and capped with an 8-inch-thick reinforced concrete slab (overburden). The tie-

downs, together with the overburden, shall be designed to overcome any possible buoyancy factors and resist buckling under hydrostatic pressures.

7. All product, vapor and vent piping shall be non-corrosive and provide three levels of protection. All product piping shall be monitored with pressure line leak detection. All piping shall be double-walled to provide secondary containment. All fiberglass piping shall be additionally monitored under vacuum per California 2481 regulations such that if a breach is detected in the vacuum, the product delivery system will shut down and system will sound audible alarm.
8. All piping connections to the tanks and dispensers shall be flexible to prevent rupture from any form of ground movement.
9. The project shall be designed such that all piping slopes to the sumps at the underground storage tanks. If a piping leak occurs, the gasoline shall flow through the secondary pipe to the sump, where a sensor is triggered to immediately shut down the system and activate an audible/visual alarm.
10. All tanks and dispensers shall be equipped with latest Phase I and Phase II Enhanced Vapor Recovery (EVR) vapor recovery air pollution control equipment technology per the California Air Resources Board regulations and associated Executive Orders.
11. Emergency shutoff switches shall be installed next to the controller enclosure and in locations near the dispensers, as dictated by the fire code.
12. The UST monitoring system incorporates automatic shutoffs. If gasoline is detected in the sump at the fuel dispenser, the dispenser shuts down automatically and an alarm is sounded. If a problem is detected with a tank, the tank is automatically shut down and an alarm is sounded.
13. Each fuel dispenser includes several safety devices. Specifically, each dispenser sump is equipped with an automatic shutoff valve to protect against vehicle impact.
14. Closed-circuit television monitor cameras shall be aimed to show all fueling positions, the tank slab, and equipment enclosures. Equipment enclosures shall be mounted on canopy columns adjacent to the fuel islands. A split-screen monitor shall be located in the Costco warehouse to allow for full-time monitoring of the fueling operation. All images shall be recorded by the camera system.
15. A monitoring system to detect leaks from the tank and piping system that is programmed to activate visual/audible alarms in the event of an alarm condition shall be installed. One visual/audible alarm shall be located on the outside of the controller enclosure and a second visual/audible alarm shall be located in the Costco warehouse entry/exit area. The monitoring system shall be designed so that if power is lost to the monitoring console the facility is shut down and will not operate.

16. An independent security company shall monitor the Costco Wholesale warehouse alarm system. The alarm system shall acknowledge an alarm condition at the fueling facility and notify Costco management staff of an alarm condition should it occur after operating hours.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measure, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this hazardous materials impact identified in the Final EIR to less than significant.

G. HYDROLOGY AND WATER QUALITY

Impact HYD-1: Impacts on water quality standards, waste discharge requirements, or surface or ground water quality.

The proposed project would disturb more than one acre of land, the project would be required to comply with the requirements of the NPDES General Permit, which helps control water pollution by regulating point source and non-point sources that discharge pollutants into receiving waters.

The proposed project would also be required to obtain a General Construction Permit. The General Construction Permit requires implementation of an SWPPP, which would include BMPs designed to protect the quality of storm water runoff. Preparation, implementation, and participation with both the NPDES General Permit and the General Construction Permit, including the SWPPP and BMPs, would reduce project demolition and construction effects on water quality to acceptable levels. As a result, short-term construction impacts associated with water quality standards and wastewater discharge requirements would be less than significant.

The proposed residential development on the east side of the project site would use a drainage system to collect rainwater and the existing intermittent flows from the east and convey flows to a bioretention basin within the linear park site in the northwestern part of the neighborhood. The bioretention basin would treat the surface water through infiltration in compliance with C3 requirements. About 40 percent of the residential site would have pervious landscape areas. A large portion of runoff from residences would drain via surface flow to lawns and vegetation prior to flowing to the streets and storm drains routed to the designated storm water treatment facility. The residential portion of the project would implement “Integrated Management Practices” to treat a total drainage area of 1,037,167 square feet (23.8-acres) with an impervious ratio of 58.8 percent. Two bioretention treatment facilities at the northwest corner of the site would provide a combined treatment area of 42,640 square feet (0.98 acre). The bioretention facilities would be designed to meet both treatment and flow-control requirements.

Approximately 18.5% percent of the commercial site would be pervious landscape. The proposed commercial area would implement “Integrated Management Practices” to treat a total drainage area of 946,593 square feet (21.7-acre) with an impervious ratio of approximately 81.5%. A total of twenty bioretention treatment facilities, located throughout the site, provide a total treatment area of 42,245 square feet. The bioretention facilities are designed to meet both treatment and flow-control requirements.

The proposed project also includes permanent and operational BMPs to control and treat stormwater after project construction is complete; *Table 4.8- 1: Source Control BMPs* in the Draft EIR summarizes these measures.

To ensure that the new storm water drainage improvements are planned and designed to satisfy the San Francisco RWQCB’s MRP requirements, and all other applicable requirements and standards, implementation of Mitigation Measure HYD-1, MM HYD-2, and MM HYD-3 would be required. With implementation of these measures, construction and operational impacts associated with water quality standards and wastewater discharge requirements would be less than significant.

Mitigation Measure HYD-1

Construction Water Quality Plan. Prior to issuance of any grading permit, the applicant shall submit to the satisfaction of the Public Works Director, a Storm Water Pollution Prevention Plan (SWPPP) that satisfies the requirements of the National Pollutant Discharge Elimination System (NPDES) and State General Permit for construction. The SWPPP shall incorporate Best Management Practices (BMPs) to control runoff and sedimentation.

The SWPPP shall identify specific types and sources of storm water pollutants, determine the location and nature of potential impacts, and specify appropriate control measures to eliminate any potentially significant impacts on receiving water quality from storm water runoff. The SWPPP shall comply with the most current standards established by the San Francisco RWQCB. The BMPs shall be selected from a menu according to site requirements and shall be subject to approval by the Public Works Director and San Francisco RWQCB.

Additionally, the project applicant shall provide the Public Works Director, evidence of a Waste Discharged Identification (WDID) number generated from the State Regional Water Quality Control Board’s Stormwater Multiple Application & Reports Tracking System (SMARTS). This serves as the Regional Water Quality Control Board approval or permit under the National Pollutant Discharge Elimination System (NPDES) construction stormwater quality permit.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this hydrology and water quality impact identified in the Final EIR to less than significant.

Mitigation Measure HYD-2

Stormwater Quality Control Plan. Prior to issuance of a grading permit or approval of improvement plans, the project applicant shall submit to the satisfaction of the Public Works Director, a final Storm Water Quality Plan (SWQP), either within the Final Drainage Plan or as a separate document that identifies how the proposed project will meet the City's MS4 permit obligations. Site design measures, source control measures, and Low Impact Development (LID) standards, as necessary, shall be incorporated into the design and shown on the grading or improvement plans. In addition, per the MS4 permit, projects creating and/or replacing one acre or more of impervious surface (excepting projects that do not increase impervious surface area over the pre-project condition) are also required to demonstrate hydromodification management of stormwater such that post-project runoff is maintained to equal or below pre-project flow rates for the 2 year, 24-hour storm event, generally by way of infiltration, rooftop and impervious area disconnection, bioretention, and other LID measures that result in post-project flows that mimic pre-project conditions. For the commercial area, specific source control measures for trash storage areas and the gas station shall be identified in the SWCP.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this hydrology and water quality impact identified in the Final EIR to less than significant.

Mitigation Measure HYD-3

Final Drainage Plan. Prior to the issuance of grading and construction permits, the City of Vallejo shall review and approve a Final Drainage Plan prepared by the project applicant to demonstrate the ability of the planned on-site storm water drainage facilities to adequately collect on-site storm water flows in accordance with all applicable standards and requirements. The final drainage plan shall demonstrate that the new storm water drainage facilities can satisfy the Regional Water Quality Control Board's Municipal Regional Permit (MRP) requirements by: Minimizing impervious surfaces, as feasible, and directing flows to Integrated Management Practices (IMPs); Integrating appropriately sized IMPs to ensure post-development flows do not exceed pre-development flows; and Incorporating bio-retention in combination with site planning, minimizing impervious areas, and dispersion of runoff to meet Low Impact

Development (LID) requirements.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this hydrology and water quality impact identified in the Final EIR to less than significant.

Impact HYD-3: Alter the existing drainage pattern of the site or area, in a manner which would result in substantial erosion or siltation on- or off- site

Development of the proposed project would include site preparation activities such as grading, excavation, and other earthmoving activities. The proposed project would include a new storm water drainage system that would contain and collect storm water flows before runoff (including the soils, sediments, and particulates contained within) leave the project site. As required by the San Francisco RWQCB, the new storm water drainage facilities would be planned and designed to satisfy the MRP standards, and all other applicable standards and requirements, which include ensuring that post-development flows do not exceed pre-development flows. By maintaining storm water flows at or below pre-development levels, the new storm water drainage system would reduce the potential for both on-site and off-site erosion. Ground disturbing activities, including grading, would occur on approximately 44.5 acres of the 51.3-acre project site. Some off-site but adjacent construction may be needed to tie into existing utilities. These improvements and other temporary disturbance areas would likely occur only in Admiral Callaghan Lane and Turner Parkway. The site preparation and grading phase of the proposed project is expected to include construction equipment such as graders, scrapers, compactors, and water trucks.

The project site is not connected to an off-site natural watercourse and the existing on-site drainage features, including the seasonal wetlands, are fed by urban run-off and stormwater flowing onto the project site from the existing developed areas to the south and southeast.

The proposed drainage of the site would maintain the existing northerly and southerly flows along Admiral Callaghan Lane and would be constructed with newly installed bioretention areas adjacent to the roadway. The new drainage system(s) include, water storage, infiltration points, and a water treatment system with permeable treatment media prior to being conducted off-site. Similar to the existing drainage patterns, flows would be dictated by the direction of the slope. As the crown of Admiral Callaghan Lane would remain, flows would be similar. Northerly flows would be directed towards Turner Parkway, and southerly flows and drainage from the southern portion of the commercial area would flow to bioretention areas along the perimeter of the site. The driveway areas around the proposed gas station

include curbs and gutters to prevent surface water from flowing into Blue Rock Creek. The surface water is directed to bioretention areas for treatment.

To further ensure that graded areas do not interfere with existing drainage areas, and to ensure that new storm water drainage improvements are planned and designed to satisfy the San Francisco RWQCB's MRP requirements and all other applicable standards and requirements, the project would be required to comply with MM HYD-1, MM HYD-2, and MM HYD-3. With implementation of these mitigation measures, impacts associated with the altering of existing drainage patterns and erosion would be less than significant.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this hydrology and water quality impact identified in the Final EIR to less than significant.

Impact HYD-4: Alter the existing drainage pattern of the site or area, in a manner which would increase surface runoff and result in flooding on- or off-site

The proposed project would result in the impervious surfaces being constructed on the project site. The residential component includes an area of approximately 1,037,167 square feet, of which approximately 609,854 or 58% would be impervious and 427,313 square feet would be pervious. The commercial component includes a total of 946,593 square feet, of which approximately 771,473 square feet or 81.5% is impervious and 175,120 square feet would be pervious. In addition to the open space and landscaped areas that increase pervious surfaces, the commercial component of the proposed project includes approximately 42,640 square feet of IMP area and the residential area would have approximately 42,245 square feet of IMPs. These areas are constructed with LIDs and contain soils and other materials to facilitate infiltration of surface water runoff.

The project would not alter precipitation amounts or intensities, nor would it require any additional water to be imported into the project site. However, construction would require earth-disturbing activities which may affect site-specific infiltration and permeability during construction (temporary) and operation (permanent).

The proposed project's new storm water system would contain and collect storm water flows in the project site, before runoff is allowed to drain off-site. As mandated by the San Francisco RWQCB, new storm water facilities would be planned and designed to satisfy its MRP requirements, which includes ensuring that post-development flows do not exceed pre-development flows. To ensure that the new storm water drainage improvements are planned and designed to satisfy the San Francisco RWQCB's MRP

requirements, incorporation of MM HYD-3 would be required. With implementation of MM HYD-3 and maintaining storm water flows at or below pre-development levels, impacts would be less than significant.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this hydrology and water quality impact identified in the Final EIR to less than significant.

Impact HYD-5: Alter the existing drainage pattern of the site or area, in a manner which would create or contribute runoff water which would exceed the capacity of stormwater drainage systems or provide additional sources of polluted runoff

The proposed project must comply with the requirements of the NPDES General Permit, which helps control water pollution by regulating point and non-point sources that discharge pollutants into receiving waters.

The proposed project would also be required to obtain a General Construction Permit. The General Construction Permit requires implementation of an SWPPP, which would include BMPs designed to protect the quality of storm water runoff. Preparation, implementation, and participation with both the NPDES General Permit and the General Construction Permit, including the SWPPP and BMPs, would reduce the potential for storm water flows, and any potential contaminants contained within those flows, to be conveyed off-site during construction of the proposed project. As a result, short-term construction-related impacts associated with creating or contributing to runoff and additional sources of polluted runoff would be less than significant with the incorporation of MM HYD-3.

As mandated by the San Francisco RWQCB, the proposed project's new storm water drainage system facilities have been planned and designed to satisfy the RWQCB's MRP requirements (as well as all other applicable standards and requirements) by:

- Minimizing impervious surfaces as feasible and directing flows to IMPs.
- Integrating appropriately sized IMPs to ensure post-development flows do not exceed pre-development flows.
- Incorporating bio-retention in combination with site planning, minimizing impervious areas, and dispersion of runoff to meet LID requirements.

To ensure that the new storm water drainage improvements are planned and designed to satisfy the San Francisco RWQCB's MRP requirements, and all other applicable standards and requirements,

incorporation of MM HYD-3 would be required. With implementation of MM HYD-3, impacts associated with the altering of drainage patterns and flooding would be less than significant.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measure, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this hydrology and water quality impact identified in the Final EIR to less than significant.

Cumulative

New development and redevelopment projects would result in some increases in impervious surfaces, and thus could generate increased runoff from the affected project sites. Future developments in the watershed would be required to comply with the SWRCB and San Francisco Bay RWQCB. Depending on the size of future projects, they would be required to obtain and comply with all required water quality permits and the Water Quality Control Plan, as needed and prepare and implement SWPPPS, implement BMPs, including LID BMPs to minimize runoff, erosion, and storm water pollution, comply with the MRP and associated C3 requirements. As part of these requirements, projects would be required to implement and maintain source controls, and treatment measures to minimize polluted discharge and prevent increases in runoff flows that could substantially decrease water quality. Conformance to these measures would minimize runoff from those sites and reduce contamination of runoff with pollutants. Therefore, related projects are not expected to cause substantial increases in storm water pollution. With compliance with State and local mandates, and implementation of Mitigation Measures HYD-1 through HYD-3 listed above would reduce project-specific impacts to a less than significant level. Cumulative impacts would be less than significant, and project impacts would not be cumulatively considerable.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen cumulative impacts on hydrology and water quality identified in the Final EIR to less than significant.

H. NOISE

Impact NOI-1: Generate a substantial temporary or permanent increase in ambient noise levels

The proposed project includes site preparation, grading, building construction, paving, and architectural coating. After grading occurs and the site is prepared, construction of the proposed project would begin. Construction activities are anticipated to last approximately 3 years. Individual pieces of construction equipment anticipated to be used during construction of the proposed project could produce maximum noise levels (Lmax) of between 77 dBA to 90 dBA at a reference distance of 50 feet from the noise source, as shown in Draft EIR Table 4.10-7. These maximum noise levels are the highest individual sound occurring at an individual time period and would occur when equipment is operating under full power conditions (i.e., the equipment engine at maximum speed). However, equipment used on construction sites typically operates under less than full power conditions, or part power. To more accurately characterize construction-period noise levels, the average (hourly Leq) noise level associated with each construction stage is calculated based on the quantity, type, and usage factors for each type of equipment that would be used during each construction stage.¹ These noise levels are typically associated with multiple pieces of equipment operating on part power, simultaneously.

A reasonable worst-case assumption is that the three loudest pieces of equipment would operate simultaneously within a focused area and occur continuously over at least one hour. The combined sound level of a grader, scraper, and concrete saw is 92 dBA when measured at 50 feet from the noise source. It should be noted that a hydraulic break ram and mounted impact hammer would not be used near the project property line and are not anticipated to be used for project construction. Although the closest sensitive receptors are located approximately 15 feet east of the property line, the distance from the closest area where heavy equipment would operate to the sensitive receptor's area of frequent human use would be 96 feet. Based on distance attenuation alone, this maximum noise level would be reduced to 86 dBA at the closest receptor. And the combined Leq would be 81 dBA. Actual construction-related noise activities would be lower than these conservative rates and would cease upon completion of construction. Due to the variability of construction activities and equipment for the project, overall construction noise levels would fluctuate over time.

These assumptions represent the worst-case noise scenario because construction activities would typically be spread out throughout the project site, and thus some equipment would be farther away from the affected receptors. In addition, the noise modeling assumes that construction noise is constant, when, in fact, construction activities and associated noise levels would fluctuate and generally be brief and sporadic, depending on the type, intensity, and location of construction activities.

¹ The FHWA Roadway Construction Noise Model User's Guide (2006) defines the usage factor as the percentage of time during a construction noise operation that a piece of construction equipment is operating at full power.

As discussed on Draft EIR pages 4.10-5, the Occupational Safety and Health Administration (OSHA) has a noise exposure standard that is set at the noise threshold where hearing loss may occur from long-term exposures. OSHA's maximum permissible noise exposure standard is 90 dBA for an eight-hour period, 105 dBA for a one-hour period, and up to 115 dBA for a 15-minute period or less. As noted above, the maximum noise levels of construction would be 86 dBA, which is below OSHA's continuous noise exposure standard. Furthermore, as detailed above, construction noise would not be continuous over an 8-hour period. The conservative maximum 1-hour (Leq) level would be 81 dBA, which is far below the 115 dBA 1-hour standard. Furthermore, a typical building attenuates outdoor noise levels by approximately 25 dBA, which would reduce maximum indoor noise exposure to 56 dBA, which is even further below any health-based noise exposure limits.

Mitigation Measure NOI-1 is required to ensure that grading noise levels do not exceed the City's standards and that time-of-day restrictions are adhered to. In addition, as a standard condition of approval for all discretionary permits, the City applies the time-of-day restrictions for grading activities to all other construction activities. With Implementation of Mitigation Measure NOI-1, construction noise impacts to nearby receptors would be less than significant.

As noted in Chapter 3.0 of the Draft EIR, the project will also require the use of a helicopter to lift and place large Heating Ventilation, and Air Conditioning Units (HVAC) units on the roof of the Costco building. the use of a helicopter is not subject to the City's maximum sound levels pursuant to VMC Section 16.072.050.C. In addition, VMC Section 7.84.010 allows a wide variety of factors to be used in determining whether a noise is "loud, unnecessary or unusual", including but not limited to the level and intensity of background noise, the nature and zoning of the area, the time of day, and whether the noise is produced by commercial or noncommercial activity. The use of a helicopter would also not be considered a violation of VMC Section 7.84.010 given the high level of ambient noise at the site (due to the proximity to I-80), the site's commercial zoning and adjacency to a large commercial area, the daytime hours of the helicopter use, and the fact that this is the conventional method for installation of heavy rooftop equipment on commercial buildings of this size. For these reasons, the use of a helicopter would not have a significant noise impact. However, for the comfort and convenience of nearby residents, Mitigation Measure NOI-1 below includes additional time and day restrictions on the use of the helicopter and requires advance notice to properties within 500 feet of the site.

The proposed project includes a new Costco that is anticipated to indirectly result in the redistribution of trips from the existing Costco in Gateway Plaza. The highest increase in noise levels would increase by 1.9 dBA with the project. This level is below the perceptible noise level change of 3.0 dBA. Since the noise level increase along the roadways in the project area would not be perceptible, no significant impacts would occur.

Implementation of the proposed project would create new sources of noise in the project vicinity from residential sources, mechanical equipment, truck loading areas, parking lot noise, and landscape maintenance. The closest point of the loading dock and drive aisle area where trucks would be maneuvering and idling are 150 and 190 feet away from sensitive receptors, respectively. The Draft EIR

conservatively analyzed all truck noise levels at 150 feet away as this is the distance from the drive aisle area where trucks would be maneuvering and idling. Truck noise at the loading docks would be lower as they are further away. If two trucks were to operate either simultaneously or within the same hour, noise levels would be 71 dBA at 30 feet which is 57 dBA at 150 feet and below the 60-dBA standard. Additionally, the distance to the loading dock is 190 feet away, resulting in loading dock outdoor noise level of 55 dBA. Furthermore, Section 16.72.040 of the Vallejo Municipal Code provides a correction factor of plus 5 dB to the 60-dBA noise standard for noise levels emitted between 7 a.m. and 10 p.m. As described in the Draft EIR and above, noise levels would not exceed 60-dBA noise standard, or the 65-dBA adjusted daytime noise standard.

The U.S. EPA document, Protective Noise Levels (1974) document notes that a typical building attenuates outdoor noise levels by approximately 25 dBA with windows closed and 15 dBA with windows open, which would reduce maximum indoor noise exposure from 57 dBA to 32 dBA with windows closed and 42 dBA with windows open. Therefore, the 45-dBA interior and nighttime standard would also not be exceeded. Further, the Draft EIR conservatively did not take credit for the 8-foot barrier (i.e., masonry wall) along the south side of the loading dock, which would lower noise levels by another approximately 5 dBA. The noise levels described above and in the Draft EIR are the noise levels that would occur from activities occurring closest to sensitive receptors and other activities, such as trucks driving through other areas of the parking lot, access roads, or for gas station deliveries would be lower and would also not exceed the City's standards.

The City's Municipal Code (VMC Section 16.072.050(C)) specifically exempts "sounds from transportation equipment used exclusively in the movement of goods and people to and from a given premises" which would include deliveries to and from the proposed Costco warehouse. As described in the Draft EIR and above, potential impacts from the proposed loading area are considered less than significant, and no mitigation is required.

Implementation of MM NOI-1 and adherence to the City's Municipal Code requirements, noise impacts associated with traffic, mechanical equipment, deliveries, loading/unloading activities, and parking lot noise would be reduced to a less than significant level.

Mitigation Measure NOI-1

Construction Noise. Prior to the start of grading, the Construction Manager shall provide evidence acceptable to the City of Vallejo Planning & Development Services Director ("Director"), that:

- Construction activities shall be restricted to day time hours of between 7:00 a.m. and 6:00 p.m. Mondays through Saturdays. No construction activity shall occur on Sundays or federal holidays. The Director shall have authority to grant exceptions from this restriction for the concrete pour of the Costco store and for activities occurring within a fully sealed building envelope.

- Helicopter usage shall be limited to no more than two weekdays between 9 a.m. and 5 p.m. At times when the helicopter is not actively in the process of connecting straps to and lifting and placing HVAC units on the roof of the Costco building, the helicopter shall ascend, as appropriate, to lessen the level of noise. At least 14 days prior to helicopter usage, the construction contractor shall provide written notice of such usage to residents, businesses and owners of property within 500 feet of the project site. The Director shall review and approve such notice prior to distribution.
- Prior to the start of construction activities, the construction contractor shall:
 - Maintain and tune all proposed equipment in accordance with the manufacturer's recommendations to minimize noise emission.
 - Inspect all proposed equipment and should fit all equipment with properly operating mufflers, air intake silencers, and engine shrouds that are no less effective than as originally equipped by the manufacturer.
 - Post a sign, clearly visible at the site, with a contact name and telephone number of the City of Vallejo's authorized representative to respond in the event of a noise complaint.
 - Place stationary construction equipment and material delivery in loading and unloading areas as far as practicable from the residences.
 - Limit unnecessary engine idling to the extent feasible.
 - Use smart back-up alarms, which automatically adjust the alarm level based on the background noise level or switch off back-up alarms and replace with human spotters.
 - Use low-noise emission equipment.
 - Limit use of public address systems.
 - Minimize grade surface irregularities on construction sites.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this construction noise impact identified in the Final EIR to less than significant.

Cumulative

Construction activities at other planned and approved projects would be required to take place during daytime hours, and the City and project applicants would be required to evaluate construction noise impacts and implement mitigation, if necessary, to minimize noise impacts. Each project would be required to comply with the applicable City's Municipal Code limitations on allowable hours of construction. Therefore, project construction would not contribute to cumulative impacts and impacts in this regard are not cumulatively considerable. Compliance with the City's Municipal Code, and implementation of Mitigation Measures NOI-1 listed above would reduce project-specific impacts to a less than significant level.

Cumulative noise impacts would occur primarily as a result of increased traffic on local roadways due to buildout of the proposed project and other projects in the vicinity. However, noise from generators and other stationary sources could also generate cumulative noise levels but are not found to be significant.

No known past, present, or reasonably foreseeable projects would compound or increase the operational noise levels generated by the project. Thus, cumulative operational noise impacts from related projects, in conjunction with project-specific noise impacts, would not be cumulatively significant.

The proposed project would not result in long-term mobile noise impacts based on project-generated traffic as well as cumulative and incremental noise levels. Therefore, the proposed project, in combination with cumulative background traffic noise levels, would result in a less than significant cumulative impact. The proposed project's contribution to noise levels would not be cumulatively considerable.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen cumulative impacts from noise identified in the Final EIR to less than significant.

I. TRANSPORTATION

Impact TR-1: Would the proposed project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities

This finding discusses the transit, bicycle, and pedestrian facilities component of this impact statement. Impacts related to the circulation system and roadways are discussed below in

Section 5.1.4.

Pedestrian and Bicycle Access

The City's Propel Vallejo 2040 General Plan identifies Admiral Callaghan Lane between Turner Parkway and Redwood Parkway as a future Class II bike lane facility. While the project's bicycle trip generation has not been estimated, it is expected that some bicyclists would travel by bicycle to and from the project site. As part of the project design, Admiral Callaghan Lane would be widened along the project frontage and would include sidewalks and bicycle lanes in each direction. The proposed bicycle lanes contribute to a portion of the City's General Plan bicycle network and are consistent with the City's General Plan 2040 goals and policies regarding bicycle circulation. Additionally, the project includes public pathways between the residential and commercial components of the project. One pathway is located just south of the Turner Parkway Right-of-Way and the other is a pathway that connects the residential and commercial areas through the open space area. Both of these pathways are proposed to be 12-foot wide and support pedestrian and bicycle users. Potential impacts on pedestrian and bicycle access are less than significant no mitigation is required.

Transit Access

According to Soltrans route maps, the closest bus stop to the project site is on eastbound Turner Parkway just east of Admiral Callaghan. The existing bus stop consists of a pole-sign that is located close to the intersection of Admiral Callaghan. SolTrans has indicated that a new bus pull-out on eastbound Turner Parkway east of the Admiral Callaghan Lane intersection would be needed to better serve residents, employees and customers of the project. SolTrans staff has noted that cars making the right turn from Admiral Callaghan are often narrowly avoiding the bus that is stopping. With the implementation of Mitigation Measure TR-4, potential impacts on transit access and circulation are considered less than significant.

Mitigation Measure TR-4

New Bus Pull-Out. Prior to issuance of occupancy permits, the applicant shall, to the satisfaction of the Planning & Development Services Director, coordinate with SolTrans and construct a new bus pull-out on eastbound Turner Parkway East of Admiral Callaghan Lane. The Project applicant will construct a bus pull-out and concrete pad per Soltrans' and the City's specifications. Soltrans will provide, and the applicant will install, signage, a shelter, lighting, and trash receptacle. With the implementation of Mitigation Measure TR-4, potential impacts on transit access and circulation are considered less than significant.

Level of Significance After Mitigation

Less Than Significant.

Finding on Proposed Mitigation

The City finds that, with implementation of the above mitigation measures, changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen this public transit related impact identified in the Final EIR to less than significant.

5.1.4 Findings Regarding Environmental Impacts Not Fully Mitigated To Less Than Significant

The following significant environmental impacts of the project are unavoidable and cannot be mitigated in a manner that would substantially lessen the environmental impact. The City finds that the project's environmental, economic, social, and other benefits outweigh and override the significant adverse cumulative impacts related to change in the environment. The City hereby elects to approve the project due to overriding considerations as set forth below in Section 7, "Statement of Overriding Considerations."

A. AIR QUALITY

Impact AQ-1: Conflict with or obstruct implementation of the applicable air quality plan

The project is subject to the *2017 Clean Air Plan: Spare the Air, Cool the Climate* adopted by BAAQMD on April 19, 2017. Projects are considered consistent with the 2017 Clean Air Plan if they incorporate all applicable and feasible control measures from the 2017 Clean Air Plan and would not disrupt or hinder implementation of any 2017 Clean Air Plan control measures. The project is consistent with the 2017 Clean Air Plan policies that are applicable to the project site. As discussed in *Table 4.2-6: Project Consistency with Applicable Clean Air Plan Control Measures*, the project would comply with city, state, and regional requirements. Additionally, the project is conforming with the existing General Plan designation of Retail/Entertainment on the western portion of the site and the Mix of Housing Types designation on the eastern portion of the site. It should be noted that the Clean Air Plan does not make a specific assumption for development on the site, but bases assumptions on growth in population, travel, and business, based on socioeconomic forecasts. As noted in Section 4.12 (Population and Housing), the project would not exceed the growth assumptions in the General Plan and project-related population growth would be well within the range of population growth forecasted by ABAG. The proposed project would generate new employment opportunities and would be consistent with the City's jobs and housing goals. Therefore, the growth assumptions in the Clean Air Plan would not be exceeded. As shown in Chapter 4.2, Air Quality, of the Draft EIR (Table 4.2-8), operational air quality emissions generated by the proposed project would exceed BAAQMD's emissions thresholds for NO_x. These thresholds are established to identify projects that have the potential to generate a substantial amount of criteria air pollutants. The project includes

MM GHG-3 to reduce vehicle miles traveled by at least 17.8 percent. The mitigation measure specifies that the TDM plan shall discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. The TDM plan includes a requirement for annual reporting to the City Planning Division showing good faith compliance with plan requirements. Additional trip-reduction measures outlined in MM GHG-4 through MM GHG-6 and MM GHG-8, and construction of a new SolTrans bus pull-out as part of MM TR-4. Each of these mitigation measures is intended to reduce the number of traffic trips associated with the project which would reduce the overall NO_x emissions generated by project related traffic. Even with the implementation of these mitigation measures, the project would exceed BAAQMD threshold for NO_x emissions. Because the proposed project would exceed these thresholds, the proposed project would potentially conflict with BAAQMD's Clean Air Plan and impacts would be significant and unavoidable.

Level of Significance After Mitigation

Following compliance with the Commute Trip Reduction (CTR)/Transportation Demand Management (TDM) plan required per MM GHG-3. MM GHG-3 requires the project to reduce vehicle miles traveled by at least 17.8 percent. The mitigation measure specifies that the TDM plan shall discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. The TDM plan includes a requirement for annual reporting to the City Planning Division showing good faith compliance with plan requirements. Additional trip-reduction measures are outlined in MM GHG-4 through MM GHG-6 and MM GHG-8, and construction of a new SolTrans bus pull-out as part of MM TR-4. These mitigation measures would result in a decrease of the project's mobile NO_x emissions would be reduced from 79 pounds per day to 63 pounds per day (approximately 20 percent) but would still exceed BAAQMD threshold of 54 pounds per day.

The proposed project's operational emissions would exceed BAAQMD thresholds for NO_x despite the implementation of project design features and all feasible mitigation measures described above that would minimize operational emissions. No other mitigation measures are available, beyond what the project applicant is already doing (e.g., Transportation Demand Management program) to reduce emissions from project operations below the thresholds established in BAAQMD's Clean Air Plan. As a result, operational emissions associated with the proposed project would result in a direct and cumulatively considerable contribution to significant air quality impacts regarding the implementation of the 2017 Clean Air Plan.

Finding on Proposed Mitigation

Therefore, the City finds that the operational air quality impact from NO_x emissions is significant and unavoidable. The City further finds that specific economic, legal, social, technological, or other considerations including considerations identified in the Statement of Overriding Considerations, make infeasible additional mitigation measures or project alternatives related to operational air quality impacts identified in the Final EIR.

Impact AQ-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard

As shown in Chapter 4.2, Air Quality, of the Draft EIR (Table 4.2-7) construction emissions from the proposed project would not cause exceedances for ROG, PM10 or PM2.5. Although BAAQMD does not have numerical thresholds for fugitive PM10 and PM2.5 emissions, the proposed project would be required to comply with BAAQMD Basic Construction Measures (refer to MM AQ-1). In addition, NOx emissions from construction would be reduced below BAAQMD thresholds with implementation of BAAQMD Additional Construction Mitigation Measures outlined in MM AQ-2 (see Table 4.2-7). The project would also be subject to applicable BAAQMD Regulations, such as Regulation 8 Rule 3: Architectural Coatings and 15: Emulsified and Liquid Asphalts, and Regulation 9, Rule 8: Organic Compounds to further reduce specific construction-related emissions. The calculated emission results from CalEEMod demonstrate that the construction emissions of this project would not exceed average daily thresholds created by BAAQMD with implementation of MM AQ-1 and MM AQ-2. Therefore, construction emissions are less than significant with mitigation incorporated.

Mitigation Measure AQ-1

BAAQMD Basic Construction Measures. Prior to any grading activities, the applicant shall prepare and implement a Construction Management Plan that includes the BAAQMD Basic Construction Mitigation Measures to minimize construction-related emissions. This shall plan shall first be reviewed and approved by the Director of Public Works/City Engineer. The BAAQMD Basic Construction Mitigation Measures are:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers on an as-needed basis. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Mitigation Measure AQ-2

BAAQMD Additional Construction Mitigation Measures. Prior to the issuance of any grading permits, the applicant shall prepare and implement a Construction Management Plan that includes the BAAQMD Additional Construction Mitigation Measures to minimize construction-related emissions. This plan shall first be reviewed and approved by the Planning & Development Services Director. The applicable BAAQMD Additional Construction Mitigation Measures are:

- The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.
- Idling time of diesel-powered construction equipment shall be limited to two minutes.
- The project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction (i.e., owned, leased, and subcontractor vehicles) will meet United States Environmental Protection Agency Tier 4 final off-road emissions standards or would achieve a project-wide fleet-average 20 percent NOX reduction and 45 percent PM reduction compared to the most recent CARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available.
- Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., BAAQMD Regulation 8, Rule 3: Architectural Coatings).
- Requiring that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOX and PM.
- Require the lifting and placing of HVAC units on the roof of the proposed Costco building via helicopter to only occur when no other excavation, grading, and ground-disturbing construction activities are being conducted on the project site.

However, as discussed in Table 4.2-8, the NO_x emissions of from the long-term operation of the project (63 pounds per day; mostly from mobile sources), would exceed the BAAQMD threshold of 54 pounds per day.

BAAQMD has not established separate significance thresholds for cumulative operational emissions. The nature of air emissions is largely a cumulative impact. As a result, no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. BAAQMD developed the operational thresholds of significance based on the level above which a project's individual emissions would result in a cumulatively considerable contribution to the Basin's existing air quality conditions. Therefore, a project that exceeds BAAQMD operational thresholds would also be a cumulatively considerable contribution to a significant cumulative impact.

Level of Significance After Mitigation

Following compliance with the Commute Trip Reduction (CTR)/Transportation Demand Management (TDM) plan required per MM GHG-3. MM GHG-3 requires the project to reduce vehicle miles traveled by at least 17.8 percent. The mitigation measure specifies that the TDM plan shall discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. The TDM plan includes a requirement for annual reporting to the City Planning Division showing good faith compliance with plan requirements. Additional trip-reduction measures outlined in MM GHG-4 through MM GHG-6 and MM GHG-8, and construction of a new SolTrans bus pull-out as part of MM TR-4. These mitigation measures would result in a decrease of the project's mobile NO_x emissions would be reduced from 79 pounds per day to 63 pounds per day (approximately 20 percent) but would still exceed BAAQMD threshold of 54 pounds per day.

The proposed project's operational emissions would exceed BAAQMD thresholds for NO_x despite the implementation of project design features and all feasible mitigation measures described above that would minimize operational emissions. No other mitigation measures are available, beyond what the project applicant is already doing (e.g., Transportation Demand Management program) to reduce emissions from project operations below the thresholds established in BAAQMD's Clean Air Plan. As a result, operational emissions associated with the proposed project would result in a cumulatively considerable contribution to significant cumulative air quality impacts.

Finding on Proposed Mitigation

Therefore, the City finds that the operational air quality impact from NO_x emissions is significant and unavoidable. The City further finds that specific economic, legal, social, technological, or other considerations including considerations identified in the Statement of Overriding Considerations, make infeasible additional mitigation measures or project alternatives related to operational air quality impacts identified in the Final EIR.

Cumulative

As described in Impact Statement AQ-1, above, the project would also be consistent with the appropriate 2017 Clean Air Plan control measures, which are provided to reduce air quality emissions for the entire Bay Area region. However, the discussion in Impact Statement AQ-2 shows that NO_x emissions would exceed BAAQMD operational thresholds despite mitigation, which would also trigger a cumulative impact. BAAQMD CEQA Air Quality Guidelines note that the nature of air emissions is largely a cumulative impact. Although no single project is sufficient in size by itself to result in nonattainment of ambient air quality standards, the project's individual emissions would potentially contribute to existing cumulatively significant adverse air quality impacts. Consistency with the 2017 Clean Air Plan control measures would help mitigate these effects. However, as operational NO_x emissions would be exceeded, cumulative impacts would be considered significant and unavoidable.

Finding on Proposed Mitigation

Therefore, the City finds that the cumulative air quality impact from NO_x emissions is significant and unavoidable. The City further finds that specific economic, legal, social, technological, or other considerations including considerations identified in the Statement of Overriding Considerations, make infeasible additional mitigation measures or project alternatives related to operational air quality impacts identified in the Final EIR.

B. Transportation and Traffic

Impact TR-1: Would the proposed project conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities

The project would cause the following intersections to operate at a deficient level of service during at least one peak hour:

- #7 Adm Callaghan Lane at Rotary Way²,
- #9 Redwood St/Fairgrounds Dr at I-80 Ramps,
- #10 Redwood Pkwy/Adm Callaghan Ln (N) at I-80 EB Off-Ramp,
- #11 Redwood Pkwy at Adm Callaghan LN (S),
- #21 Adm Callaghan Ln at Southern Project Driveway,
- #22 Adm Callaghan Ln at Middle Project Driveway and,
- #23 Adm Callaghan Ln at Northern Project Driveway

² This intersection was evaluated as an all-way stop control because that was the control type in 2017, but this intersection has since had a signal installed. With signalization. This intersection is projected to operate acceptably in the weekday AM, mid-day and PM peak hours. In the Saturday mid-day peak hour, the intersection is projected to operate with less delay with signalization, but still at an unacceptable level of service.

Mitigation Measure TR-1

Roadway Improvements. Prior to the issuance of occupancy permits, the applicant shall construct, to the satisfaction of the Public Works Director, the following roadway improvement:

- Admiral Callaghan Lane at Turner Parkway – Add a northbound right-turn pocket lane and modify the geometry of the westbound approach to provide a right-turn lane, one left-turn lane and one left-turn pocket.

Mitigation Measure TR-2

Initial Signal Timing Study. Prior to the issuance of Occupancy Permits, the City shall initiate a signal timing study for the proposed traffic signal and the existing traffic signals. The timing study shall include the same traffic signals included in the Transportation Impact Analysis prepared for the project. This study is to assist the City in optimizing traffic flow in the project vicinity and provide a baseline for a post-occupancy signal coordination study.

Mitigation Measure TR-3

Post Costco Occupancy Signal Coordination Study. Within 3 months of occupancy of the Costco store (or as adjusted by the Public Works Director), the applicant shall fund and prepare, to the satisfaction of the Public Works Director, a signal timing and coordination study to confirm the EIR's traffic analysis and further optimize traffic flow in the project vicinity. The study shall include the same intersections noted in the Transportation Impact Analysis, so that refined signal timings and coordination based on actual traffic volumes and observed conditions can be implemented if necessary. Upon the Public Works Director's approval of the study, the City shall update signal timing based on the results of this study, if necessary.

Level of Significance After Mitigation

Implementation of Mitigation Measures TR-1 through TR-3, which include the construction of a right turn pocket on northbound Admiral Callaghan Lane/Turner Parkway and signal timing coordination along Turner Parkway would improve traffic flow and reduce delays in the impact area. MM GHG-3 requires the project to reduce vehicle miles traveled by at least 17.8 percent. The mitigation measure specifies that the TDM plan shall discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. The TDM plan includes a requirement for annual reporting to the City Planning Division showing good faith compliance with plan requirements. Additional trip-reduction measures outlined in MM GHG-4 through MM GHG-6 and MM GHG-8, and construction of a new SolTrans bus pull-out as part of MM TR-4. However, to be conservative, no trip credits were taken for the proposed project as part of this analysis. Impacts at these intersections would remain significant and unavoidable because no other feasible mitigation measures have been identified which would further mitigate the impacts. The project area is located in a developed urban area and insufficient right-of-way exists to add capacity to the City of Vallejo intersections which are significantly impacted. Caltrans has prepared an interchange improvement plan for the I-80/Redwood

Parkway interchange which will improve operations at the I-80 ramp intersections; however, this Caltrans project is not yet fully funded, and the timing and construction of those improvements are outside the control of the City of Vallejo and there is no guarantee that these improvements would be implemented in the near term scenario. Therefore, those improvements cannot be considered feasible mitigation for the Existing With Project and Near Term with Project impacts at those I-80/Redwood Parkway interchange intersections.

Cumulative Impact: Project Plus Cumulative Operations

Under the Project Plus Cumulative scenario, the proposed project would cause the following seven intersections to operate at a deficient level of service during at least one peak hour to operate at a deficient level of service:

- #6 Adm Callaghan Ln at Turner Pkwy,
- #7 Adm Callaghan Ln at Rotary Way,
- #9 Redwood St/Fairgrounds Dr at I-80 Ramps,
- #11 Redwood Pkwy at Adm Callaghan LN (S),
- #21 Adm Callaghan Ln at Southern Project Driveway,
- #23 Adm Callaghan Ln at Northern Project Driveway, and
- #25 I-80 SB Ramp at Redwood Pkwy.

One freeway segment would operate at a deficient level: I-80 Eastbound – West of Redwood Parkway.

Level of Significance After Mitigation

Implementation of mitigation measures TR-1 through TR-3 (listed above), which include the construction of a right turn pocket on northbound Admiral Callaghan Lane/Turner Parkway and signal timing coordination along Turner Parkway would improve traffic flow and reduce delays in the impact area. However, impacts at these seven intersections and one freeway segment under Cumulative With Project Conditions would remain significant and unavoidable. MM GHG-3 requires the project to reduce vehicle miles traveled by at least 17.8 percent. The mitigation measure specifies that the TDM plan shall discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. The TDM plan includes a requirement for annual reporting to the City Planning Division showing good faith compliance with plan requirements. Additional trip-reduction measures outlined in MM GHG-4 through MM GHG-6 and MM GHG-8, and construction of a new SolTrans bus pull-out as part of MM TR-4. However, to be conservative, no trip credits were taken for the proposed project as part of this analysis. No other feasible mitigation measures have been identified which would further mitigate the impacts. The project area is located in a developed urban area and insufficient right-of-way exists to add capacity to the City of Vallejo intersections which are significantly impacted. Caltrans has prepared an interchange improvement plan for the I-80/Redwood Parkway interchange which will improve operations at the I-80 ramp intersections. However; this Caltrans project is not yet fully funded, and the timing and construction of those improvements are outside the control of the City of Vallejo. Furthermore, this area is within the Caltrans Right-of-Way which would

require Caltrans approval to make improvements and any interim improvements would be removed once the proposed I-8-/Redwood Parkway Interchange improvements are constructed.

As a condition of approval, the applicant is required to pay the Solano County Regional Transportation Impact Fee (as part of the County Public Facilities Fee) at the time building permits are issued. The fees collected are transferred to Solano County and the funds are managed by the Solano Transportation Authority. These fees are used to fund regional capital transit and roadway improvement projects. These regional transit and County road projects are expected to benefit all Solano County residents and workers, both those that are already in the County and those that will come to the County as a result of new development. These projects include ramp improvements to the Redwood Parkway/I-80 interchange; for both for eastbound and westbound directions. The Caltrans interchange project has a certified environmental document³ and is identified on the Solano Transportation Authority list of projects for which Regional Transportation Impact Fees (RTIF) are being collected (the project applicant is paying into RTIF). Components of the interchange project are being constructed as funding packages become available. While completion of commencement of the construction for these improvements is unlikely to occur prior to the completion of the proposed project, unknown, the project's implementation completion of the Caltrans improvements by 2040 is reasonably foreseeable.

In a similar manner, while potential impacts to the freeway mainline segments and ramps have been evaluated, implementation of the transportation improvements to Caltrans facilities listed above is the primary responsibility of Caltrans. While Caltrans has recognized that private development has a role to play in funding fair share improvements to impacts on the I-80, Caltrans has not adopted a program that can ensure that locally-contributed impact fees will be tied to improvements to freeway mainlines and only Caltrans has jurisdiction over mainline improvements. Because Caltrans has exclusive control over state highway improvements, ensuring that developer fair share contributions to mainline improvements are actually part of a program tied to implementation of mitigation is within the jurisdiction of Caltrans. However, funding programs are in place in Solano County to assist in improving and upgrading the regional transportation system. If these programs are not implemented by the agencies with the responsibility to do so, the eastbound segment of I-80 west of Redwood Parkway would remain significant and unavoidable.

Finding on Proposed Mitigation

Therefore, the City finds that the traffic impacts on operations of seven intersections and one freeway segment is significant and unavoidable. The City further finds that specific economic, legal, social, technological, or other considerations including considerations identified in the Statement of Overriding Considerations, make infeasible additional mitigation measures or project alternatives related to operational air quality impacts identified in the Final EIR.

³ Caltrans, Redwood Parkway – Fairgrounds Drive Improvement Project, Final EIR/EA. June 2015

5.2 Mitigation Monitoring

A MMRP was prepared for the project and approved by the City (see PRC, Section 21081.6, subd. [a][1]; State CEQA Guidelines Section 15097). The City will use the MMRP to track compliance with project mitigation measures discussed in the EIR. The MMRP will remain available for public review during the compliance period.

5.3 Significant Irreversible Environmental Effects

The State CEQA Guidelines (Section 15126) require a discussion of the significant irreversible environmental changes which would be involved in a project should it be implemented. The irreversible and irretrievable commitment of resources is the permanent loss of resources for future or alternative purposes. Irreversible and irretrievable resources are those that cannot be recovered or recycled or those that are consumed or reduced to unrecoverable forms.

Implementation of the proposed project would result in the long-term commitment of resources of the project site to developed land use. The proposed project would likely result in or contribute to the following irreversible environmental changes:

1. Conversion of existing undeveloped land, approximately 51.3 acres, to developed uses, thus precluding other alternative land uses in the future.
2. Increased ambient noise associated with an increase in traffic.
3. Irreversible consumption of goods and services associated with future residents.
4. Degradation of air quality associated with project construction and operation.
5. Irreversible consumption of energy and natural resources associated with construction and operation of the project, as well as by the future residential population.

Development of the proposed project would result in the dedication of the project site to commercial and residential uses, thereby precluding other conflicting uses for the lifespan of the project. Restoration of the site to pre-developed conditions would not be feasible given the degree of disturbance, the urbanization of the site, and the level of capital investment.

The City finds that the project's use of these nonrenewable resources is expected to account for a minimal portion of the region's resources and would not affect the availability of these resources for other needs within the region. Construction activities would not result in inefficient use of energy or natural resources. Long-term project operation would not result in substantial long-term consumption of energy and natural resources.

5.4 Growth Inducement

The project would involve the construction of 178 residential units, a 152,138 square foot Costco, a gas station, and 27,500 square feet for new local commercial on a project site of approximately 51.3 acres. The project consists of an infill site that is surrounded on all sides with urban development. As discussed in Chapter 4.12, Population and Housing, of the Draft EIR, the City of Vallejo Housing Element notes that this balance is a high priority and the City of Vallejo has a high proportion of older rental housing stock. The proposed project would provide 178 new homes toward the City's obligation of 1,362 units for the Housing Element cycle 2015-2023. In addition to the housing units, the project would create 92 new jobs from the commercial uses. While the proposed project would result in more new residents than jobs, the proposed project would not substantially affect the City's jobs-housing balance. For these reasons, the project would not induce a significant amount of growth within the City.

It is anticipated that the project would directly increase in employment opportunities and indirectly induce a small number of people to move into the city for the jobs and thereby increase the local population. However, this increase is anticipated to be incrementally small compared to the overall population in the City.

5.4.1 Removal of a Barrier to Growth

Implementation of the project would not remove barriers to population growth because the project is consistent with existing land use designations and planned growth described in the City's Propel Vallejo 2040 General Plan. As discussed in Chapter 4.9, Land Use, the proposed project was evaluated for consistency with the applicable goals, policies, and action items of the City's General Plan. The proposed project is found to be consistent with the applicable General Plan goals and policies. The project would not extend new roads or infrastructure to any adjacent properties where such facilities are not currently available. The project would not result in or require the construction or expansion of public facilities such as an expansion of water or wastewater treatment facilities or extension of water and sewer infrastructure offsite into areas where no infrastructure previously existed. In addition, the proposed project is an infill project in a developed, urban area, which, if implemented, would not remove any other obstacles that could encourage growth in an adjacent, undeveloped area. The project would not remove any barriers to growth in the surrounding area.

5.4.2 Economic Growth

Construction of the proposed project would generate temporary employment opportunities for construction workers, heavy equipment operators, engineers, surveyors, building inspectors, and several other types of workers related to construction activities. After completion of project construction, these construction jobs would be relocated to other areas in the region as the demand arose. Operation of the proposed project would require new employees and would result in new permanent employment growth related to staff hired to operate the businesses, maintain the grounds, and provide services to both the commercial and residential portions of the project. The proposed Costco is anticipated to require

approximately 330 employees, of which 60 will be new employees, because most of the existing 270 employees at the existing Costco are anticipated to relocate to the new store approximately 0.75 miles away. The new local commercial uses are anticipated to generate approximately 32 new jobs. This would total approximately 92 new commercial employees. In addition, new interim and very short-term jobs would be generated by the residential uses. This increase, however, has a limited duration and would include persons needed for home repairs, landscaping, maintenance, etc.; work which is intermittent in nature and does not constitute full-time employment. Overall, the number of people needed to fill full and part-time labor demand would not create a substantial increase in population in Solano County or within the City of Vallejo such that a substantial demand in new housing or infrastructure would occur.

The proposed project would generate revenue in the form of property taxes and fees, which would be available to the City to fund public services. While the increased revenue and moderate demand for new services would foster some economic growth, it is not anticipated to be at a level that would encourage or facilitate economic effects that could result in other activities (such as installation of infrastructure improvements) that could significantly affect the environment.

6.0 PROJECT ALTERNATIVES

Where a lead agency has determined that, even after the adoption of all feasible mitigation measures, a project as proposed will still cause one or more significant environmental effects that cannot be substantially lessened or avoided, the agency, prior to approving the project as mitigated, must first determine whether, with respect to such impacts, there remains any project alternatives that are both environmentally superior and feasible within the meaning of CEQA.

As noted under the heading “Findings Required under CEQA,” an alternative may be “infeasible” if it fails to achieve the lead agency’s underlying goals and objectives with respect to the project. Thus, “feasibility” under CEQA encompasses ‘desirability’ to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors” of a project (City of Del Mar v. City of San Diego [1982] 133 Cal.App.3d 401, 417).

6.1 Alternatives Considered But Ultimately Rejected

6.1.1 Offsite Alternatives

Viable alternative locations for the project are limited to those that would feasibly attain most of the project objectives. There are no other appropriately located and sufficient sized lots in Vallejo along a major transportation corridor that would satisfy the project objectives and eliminate or reduce impacts from the proposed project. The proposed project would offer a commercial and retail development in proximity to a major transportation corridor. Furthermore, the applicant has indicated that it does not own, control, or have the ability to reasonably acquire other lands in Vallejo that could feasibly meet these project objectives. Additionally, the other vacant properties within the City are not adequately sized, are

not in suitable locations (specifically adjacent to I-80) and would not be reasonable to acquire within a reasonable time frame.

6.1.2 Other Alternatives Considered

Comments received during the NOP process suggested that an access driveway off Turner Parkway for the commercial area would help alleviate congestion on Admiral Callaghan Lane. A driveway in this location was considered during the initial site planning process but was removed from further consideration for the following reasons:

- Existing culverts under Turner Parkway would require the proposed access driveway to be located too close to the Admiral Callaghan intersection resulting in potentially unsafe intersection geometries;
- Removing and relocating the existing culverts would result in additional wetland habitat impacts; and,
- The existing median on Turner Parkway would restrict ingress and egress to right turn in and right turn out movements. While the median could be modified, allowing these new turning movements could potentially create traffic congestion at other locations along Turner Parkway away from the project site.

Other proposed alternatives suggested by the public during the Notice of Preparation scoping period included:

- Developing an ice rink or a performing arts center on the project site;
- Develop a public park on the project site; and
- Developing an office park.

These alternatives were not considered for further evaluation because these developments would not meet any of the basic project objectives, including leveraging the economic opportunities (i.e., tax revenue) that the City is seeking by developing in an Opportunity Area along a major transportation corridor. Additionally, this type of development would not be expected to provide the financial return required to support the necessary infrastructure improvements.

6.2 Alternatives Considered in the EIR

The Final EIR evaluated four alternatives to the proposed project in detail as described below:

- Alternative 1: No Project Alternative

- Alternative 2: Existing Zoning Alternative
- Alternative 3: All Housing Alternative
- Alternative 4: Wetland Preservation Alternative

Based on a comparison of the impacts of each alternative, Alternative 3, All Housing Alternative, was identified as the “environmentally superior” alternative; however, the All Housing Alternative would still require a rezone and would not meet the intent of the General Plan designation of Retail/Entertainment and would require an amendment to the General Plan. The other alternatives would not achieve the proposed project’s objectives and/or offer no substantial benefits as compared to the project as proposed, for the reasons set forth below.

A. ALTERNATIVE 1: NO PROJECT ALTERNATIVE

The No Project Alternative assumes the proposed project with the proposed land uses would not be implemented and other improvements would not be constructed. The existing project site would remain unaltered and in its current condition. All infrastructure improvements identified in the proposed project including water, wastewater, drainage, and roadway improvements would not be constructed. Because the project site would remain unchanged, few or no environmental impacts would occur. This alternative serves as the baseline against which the effects of the proposed project and other project alternatives are evaluated. Under this alternative none of the proposed improvements would occur and the project site would remain undeveloped.

- None of the impacts associated with the project would occur.
- Baseline growth (without project) would still occur.
- No environmental protections of any of the onsite wetlands would occur.
- Existing nuisance uses and fire hazards associated with the site would likely continue.

The “No Project” alternative fails to meet any of the stated objectives for the proposed project as described in Chapter 6.1 of the Final EIR.

B. ALTERNATIVE 2: EXISTING ZONING ALTERNATIVE

Under this alternative the project site would be developed under the existing zoning and no zone change would be proposed. Under the Existing Zoning Alternative all 51.3 acres of the project site would remain zoned Pedestrian Shopping and Service District. This alternative would develop approximately 500,000 total square feet of commercial and retail space with approximately 1,850 parking spaces. This would be an increase of 320,300 square feet of commercial area compared to the proposed project. Development under this alternative would be similar to the type of commercial development in Gateway

Plaza located across Turner Parkway from the project site. Building height for larger stores would be approximately 30 to 35 feet and smaller stores would likely be 15 to 20 feet in height.

The overall layout of this alternative would include the same 5.7-acre open space corridor in the central portion of the site which would preserve wetland areas onsite. This alternative also assumes that Costco would relocate to the project site in the same location as the proposed project. Unlike the proposed project; however, this alternative would not include any residential component and no housing would be included. Driveway access to the project site from Admiral Callaghan Lane and Turner Parkway would be the same as the proposed project.

Under the Existing Zoning Alternative, the development footprint would be the same as the proposed project; however, the intensity of development would be significantly increased and impacts on resources such as air quality, greenhouse gas emissions, and traffic also would be increased. This alternative would not provide any new housing opportunities in Vallejo to support the City's job housing balance. This alternative would not be consistent with the General Plan land use designation of Mix of Housing Types.

The Existing Zoning Alternative fails to meet the following stated objectives for the proposed project as described in Section 6.1 of this Chapter:

- Implement the objectives of the General Plan to leverage public infrastructure investment to catalyze a mix of new housing, commercial, retail, and recreational development in an opportunity area;
- Develop a project in an opportunity area with an appropriate mix of uses to serve the needs of the public, including housing needs;
- Develop a project in an opportunity area that includes a pedestrian-friendly residential neighborhood with cohesive design that includes active and passive recreational opportunities and bike/pedestrian circulation amenities for future residents and users of the commercial space;
- Develop a project that minimizes visual conflicts by including a thoughtful landscaping and planting plan that is compatible with surrounding development; and
- Develop a project in an opportunity area that enhances amenities and recreational opportunities for residents and visitors to the area.

C. ALTERNATIVE 3: ALL HOUSING ALTERNATIVE

Under the All Housing Alternative, only single-family residential units would be developed on the project site. The existing Costco in Gateway Plaza north of the project site would not relocate to the western portion of the property and there would be no retail component. The project design would maintain the 5.7-acre wetland designated as open space similar to the proposed project. The commercial area on the western portion of the project site would be replaced with 171 single-family homes. The eastern portion of the project would retain the same design as the proposed project and be developed with 178 single-family units. In total, the All Housing Alternative would result in 349 homes. The eastern portion of the

project site would retain the same parks as the proposed project, and the residential development in the western portion of the project site would have a linear park along the eastern edge of the development. The same natural gas and sewer utility line relocation would be required under this alternative as compared to the proposed project.

Under the All Housing Alternative, the development footprint would be the same as the proposed project, however the intensity of development would be significantly less and impacts to resources such as air quality, greenhouse gas emissions, and traffic would be decreased. This alternative would not provide any new employment opportunities in Vallejo to support the City's job housing balance. The All Housing Alternative would not provide for an opportunity for the expansion and retention of Costco. This alternative would not meet the intent of the General Plan land use designation of Retail/Entertainment for the western portion of the project site. This property was specifically identified in the City's Callaghan – Columbus opportunity area in the General Plan 2040. The key opportunity areas were identified as important infill sites where development could produce a significant positive impact on quality of life. This alternative would not help the City meet those General Plan goals.

The All Housing Alternative fails to meet the following stated objectives for the proposed project as described in Section 6.1 of this Chapter:

- Implement the objectives of the General Plan to leverage public infrastructure investment to catalyze a mix of new housing, commercial, retail, and recreational development in an opportunity area;
- Develop a project in an opportunity area with an appropriate mix of uses to serve the needs of the public, including housing needs.
- Develop a project in an opportunity area that enhances amenities and recreational opportunities for residents and visitors to the area; and
- Support economic development by developing a vacant, under-developed site with a project that provides a broad range of retail goods and services, retains a major source of sales tax revenue, generates significant additional sales tax revenues, and creates jobs for city residents.

D. ALTERNATIVE 4: WETLAND CONSERVATION ALTERNATIVE

The Wetland Preservation Alternative has been designed to minimize impacts on the wetland areas onsite. Under this design, the majority of wetland areas onsite would be preserved, and no development would occur within the wetland areas, with the exception of internal roadway crossings. The Costco and retail areas would be developed similar to the proposed project, as would the 5.7-acre open space preservation area. On the eastern portion of the site, the development footprint of the residential area would be reduced to avoid wetland impacts. A 25-foot building setback is included around the edge of the wetlands to prohibit development within this area (with the exception of roadway crossings needed for building access and emergency vehicle access). Preserving the wetland areas would result in a smaller

development footprint and less area for constructing homes. Under this alternative, the residential component would be modified to include 510 multi-family residential units. The multi-family units would consist of 20 buildings located throughout the site. The building heights would range between 3-4 stories. Single-family development would not be feasible under this alternative because the number of units would be substantially reduced, and denser development scheme would be needed to support the construction and infrastructure costs associated with constructing roadways, wetland crossings, water and sewer lines, and wetland preservation costs. Under this alternative, there would be fewer opportunities for common open space areas and a linear park depending on parking requirements and where parking areas would be located.

Under the Wetland Preservation Alternative, the development footprint would be slightly reduced compared to the proposed project; however, the intensity of residential development would be significantly greater. Impacts on resources such as air quality, energy consumption, greenhouse gas emissions, public services, recreation, traffic, and utilities would be substantially increased. The increased residential density (approximately 21 dwelling units per acre) proposed under this alternative would not provide the surrounding area with a development of a similar style and intensity as the existing residential development surrounding the property, particularly the adjacent residences to the east. Preserving all of the wetland habitat onsite would substantially reduce the area available for recreational opportunities onsite such as neighborhood parks and a linear park within the residential area. A wetland preservation design also substantially limits the design opportunities to create a walkable neighborhood with interconnected pathways for bike and pedestrian circulation on the project site because the residential development areas are isolated and only connected by bridges. As the commercial development would be the same as the proposed project, this alternative would provide for an opportunity for the expansion and retention of Costco.

The Wetland Preservation Alternative fails to meet the following stated objectives for the proposed project as described in Section 6.1 of this Chapter:

- Develop a project in an opportunity area that includes a pedestrian-friendly residential neighborhood with cohesive design that includes active and passive recreational opportunities and bike/pedestrian circulation amenities for future residents and users of the commercial space;

Develop a project in an opportunity area that enhances amenities and recreational opportunities for residents and visitors to the area.

7.0 STATEMENT OF OVERRIDING CONSIDERATIONS

Pursuant to Section 21081 of the PRC and Section 15093 of the State CEQA Guidelines, the City adopts and makes the following statement of overriding considerations regarding the remaining significant unavoidable impacts of the project, as discussed above, and the anticipated economic, social, and other benefits of the project.

Based on the record of proceedings, the City finds and determines that (1) the majority of the significant impacts of the project will be reduced to less than significant levels by implementation of the mitigation measures recommended in these findings; (2) the City's approval of the project as proposed will result in certain significant adverse environmental effects that cannot be avoided or reduced to a less than significant level even with the incorporation of all feasible mitigation measures into the project; and (3) there are no other feasible mitigation measures or feasible project alternatives that will further mitigate, avoid, or reduce to a less than significant level the remaining significant environmental effects.

In light of the environmental, social, economic, and other considerations identified in the findings for the project, the objectives of the project, and the considerations set forth below related to this project, the City chooses to approve the project because, in its view, the economic, social, technological, and other benefits resulting from the project substantially outweigh the project's significant and unavoidable adverse environmental effects.

The following statements identify the reasons why, in the City's judgment and based on substantial evidence, the benefits of the project outweigh the significant and unavoidable effects. The substantial evidence supporting the enumerated benefits of the project can be found in the preceding findings, which are herein incorporated by reference; in the project itself; and in the record of proceedings as defined above. Each of the overriding considerations set forth below constitutes a separate and independent ground for finding that the benefits of the project outweigh its significant adverse environmental effects and is an overriding consideration warranting approval.

The City finds that the project, as conditionally approved, will have the following economic, social, technological, and environmental benefits, which constitute overriding considerations:

- The proposed project would increase local government revenues via additional business tax, which in turn will be used to enhance City services.
- The proposed project would provide more opportunities for businesses to be located in Vallejo, which would provide more employment opportunities for residents and attract new residents to the City.
- The proposed project would increase the number of residents in the Northgate area of Vallejo which would provide additional opportunities for existing businesses in the area.
- The proposed project will construct new commercial and residential buildings that are energy efficient and incorporate "green building" construction materials and design standards.
- Vacant urban sites contribute to neighborhood blight and can endanger public safety. Development of this site will benefit the surrounding neighborhood by replacing nuisance conditions with an attractive residential community and public park.
- The City's Housing Element identifies vacant, under-utilized properties such as the project site as suitable locations for residential development. In addition, by giving a portion of the site a residential

zoning designation in 2017, the City Council planned for the site to eventually transition from a vacant parcel to a residential development.

- The proposed project concentrates growth in existing urbanized areas as infill development and thereby results in fewer impacts from the construction of new infrastructure. The provision of infill commercial and residential development is needed by the City and is anticipated under the Propel Vallejo 2040 General Plan.
- The proposed project would provide monetary contributions to planned improvements at the I-80/Redwood Parkway interchange improvements.
- Future development would create short-term construction jobs that would provide income to local residents.

The above statements of overriding considerations are consistent with, and substantially advance, the policies of the City's General Plan in Attachment 1, Exhibit C of the April 20 Planning Commission staff report.

8.0 GENERAL FINDINGS

- 8.1 The City is the “Lead Agency” for the Project that is evaluated in the EIR. The City finds that the EIR was prepared in compliance with CEQA and the CEQA Guidelines. The City finds that it has independently reviewed and analyzed the EIR for the Project, that the Draft EIR that was circulated for public review reflected its independent judgment, and that the Final EIR reflects its independent judgment.
- 8.2 The City finds that the EIR provides objective information to assist the decision-makers and the public at large in their consideration of the environmental consequences of the Project. The public review period provided all interested jurisdictions, agencies, private organizations, and individuals the opportunity to submit comments regarding the Draft EIR. The Final EIR was prepared after the review period and responds to comments made during the public review period.
- 8.3 Textual refinements and errata were compiled and presented to the decision-makers for review and consideration. The City staff has made every effort to notify the decision-makers and the interested public/agencies of each textual change in the various documents associated with Project review. These textual refinements arose for a variety of reasons. First, it is inevitable that draft documents would contain minor ambiguities or errors that require clarifications or corrections. Second, textual clarifications were necessitated to describe refinements suggested as part of the public participation process.
- 8.4. The Planning Department evaluated comments on environmental issues received from persons who reviewed the Draft EIR. In accordance with CEQA, written responses were prepared describing the disposition of significant environmental issues raised. The Final EIR provides adequate, good faith, and reasoned response to the comments. The Planning Department

reviewed the comments received and responses thereto and has determined that neither the comments received nor the responses to such comments add significant new information regarding environmental impacts to the Draft EIR. The City, as Lead Agency, has based its actions on full appraisal of all viewpoints, including all comments received up to the date of adoption of these findings, concerning the environmental impacts identified and analyzed in the EIR.

- 8.5 The Final EIR documents changes to the Draft EIR. The Final EIR provides additional information that was not included in the Draft EIR. Having reviewed the information contained in the Draft EIR and the Final EIR and in the administrative record, as well as the requirements of CEQA and the CEQA Guidelines regarding recirculation of Draft EIRs, the City finds that there are no new significant impacts, substantial increases in the severity of a previously disclosed impact, significant information in the record of proceedings, or other met criteria under CEQA that would require recirculation of the Draft EIR, or preparation of a supplemental or subsequent EIR.

Specifically, the City finds that:

- a. The Responses To Comments contained in the Final EIR (i) fully considered and responded to comments claiming that the Project would have new significant impacts or more severe impacts than those disclosed in the Draft EIR, and (ii) include substantial evidence that none of these comments provided credible evidence that the project would result in changed circumstances, significant new information, considerably different mitigation measures, or new or more severe significant impacts than were discussed in the Draft EIR.
 - b. The City has thoroughly reviewed the public comments received regarding the Project and the Final EIR as it relates to the Project to determine whether under the requirements of CEQA, any of the public comments provide substantial evidence that would require recirculation of the EIR prior to its adoption and has determined that recirculation of the EIR is not required.
 - c. None of the information submitted after publication of the Final EIR, including testimony at and documents submitted for the public hearings on the Project, constitutes significant new information or otherwise requires recirculation of the Draft EIR or preparation of a supplemental or subsequent EIR. The City does not find this information and testimony to be credible evidence of a significant impact, a substantial increase in the severity of an impact disclosed in the Final EIR, or a feasible mitigation measure or alternative not included in the Final EIR.
- 8.6 The mitigation measures identified for the Project were included in the Draft EIR and Final EIR. As revised, the final mitigation measures for the Project are described in the Mitigation Monitoring and Reporting Program (MMRP). Each of the mitigation measures identified in the MMRP is incorporated into the Project. The City finds that, to the greatest extent feasible, the environmental impacts of the Project have been mitigated to less than significance by the mitigation measures identified in the MMRP.
- 8.7 CEQA requires the Lead Agency approving a project to adopt an MMRP or the changes to the project which it has adopted or made a condition of project approval to ensure compliance with

the mitigation measures during project implementation. The mitigation measures included in the EIR as certified by the City serve that function. The MMRP includes all the mitigation measures and project design features adopted by the City in connection with the approval of the Project and has been designed to ensure compliance with such measures during implementation of the Project. In accordance with CEQA, the MMRP provides the means to ensure that the mitigation measures are fully enforceable. In accordance with the requirements of Public Resources Code Section 21081.6, the City hereby adopts the MMRP.

- 8.8 In accordance with the requirements of Public Resources Code Section 21081.6, the City hereby adopts each of the mitigation measures expressly set forth herein as conditions of approval for the Project.
- 8.9 The City finds and declares that substantial evidence for each and every finding made herein is contained in the EIR, which is incorporated herein by this reference, or is in the record of proceedings in the matter.
- 8.10 The City is certifying an EIR for, and is approving and adopting findings for, the entirety of the actions described in these Findings and in the EIR as comprising the Project.
- 8.11 The EIR is a project EIR for purposes of environmental analysis of the Project. A project EIR examines the environmental effects of a specific project. The EIR serves as the primary environmental compliance document for entitlement decisions regarding the Project by the City and other regulatory jurisdictions.

9.0 INCORPORATION BY REFERENCE

In addition to the Draft and Final EIR, the following documents are incorporated into these Findings by reference in its entirety:

- Propel Vallejo 2040 General Plan; (available online at:
<http://www.cityofvallejo.net/common/pages/DisplayFile.aspx?itemId=12181697>)
- Propel Vallejo 2040 General Plan and Sonoma Boulevard Specific Plan EIR (SCH# 2014112035); (available online at:
<http://www.ci.vallejo.ca.us/workspaces/One.aspx?objectId=12182299&contextId=12182299>)
- City of Vallejo Climate Action Plan; (available online at:
https://www.cityofvallejo.net/city_hall/departments_divisions/planning_and_development_services/planning_division/climate_action_plan)
- City of Vallejo General Plan 2030 5th Cycle Housing Element Update (2015-2023) (available online at:
<http://www.cityofvallejo.net/common/pages/DisplayFile.aspx?itemId=3309812>)

- City of Vallejo Municipal Code (available online:

http://www.ci.vallejo.ca.us/city_hall/departments_divisions/city_attorney/vallejo_municipal_code)

Without limitation, this incorporation is intended to elaborate on the scope and nature of project and cumulative impacts, related mitigation measures, the basis for determining the significance of impacts, and the comparative analysis of alternatives.

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**Mitigation Monitoring and Reporting Program
Fairview at Northgate Project**

Mitigation Measure	Implementation Phase	Enforcing Agency	Verification of Compliance		
			Initials	Date	Remarks
AESTHETICS					
AES-5: Lighting Plan. Prior to issuance of a building permit, the project applicant shall submit, to the satisfaction of the Planning & Development Services Director, a lighting plan for the project site demonstrating that outdoor lighting fixtures will not cause substantial glare and light spillover to surrounding properties including the open space area. At the Director’s discretion, the lighting plan can be broken up into commercial and residential components. The plan shall include photometric contours, manufacturer’s specifications on the fixtures, and mounting heights.	Prior to issuance of a building permit	City of Vallejo Planning & Development Services Department			
AIR QUALITY					
AQ-1: BAAQMD Basic Construction Measures. Prior to any grading activities, the applicant shall prepare and implement a Construction Management Plan that includes the BAAQMD Basic Construction Mitigation Measures to minimize construction-related emissions. This shall plan shall first be reviewed and approved by the Director of Public Works/City Engineer. The BAAQMD Basic Construction Mitigation Measures are: 1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. 2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered. 3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street	Prior to grading activities	City of Vallejo Public Works Department and/or City Engineer			

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			Initials	Date	Remarks
sweepers on an as-needed basis. The use of dry power sweeping is prohibited. 4. All vehicle speeds on unpaved roads shall be limited to 15 mph. 5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. 6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. 7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. 8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.					

AQ-2: BAAQMD Additional Construction Mitigation Measures. Prior to the issuance of any grading permits, the applicant shall prepare and implement a Construction Management Plan that includes the BAAQMD Additional Construction Mitigation Measures to minimize construction-related emissions. This plan shall first be reviewed and approved by the Planning & Development Services Director. The applicable BAAQMD Additional Construction Mitigation Measures are: • The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time. • Idling time of diesel-powered construction equipment shall be limited to two minutes. • The project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction (i.e., owned, leased, and subcontractor vehicles) will meet United States Environmental Protection Agency Tier 4 final off-road emissions standards or would achieve a project-wide fleet-average 20 percent NOX reduction and 45 percent PM reduction compared to the most recent CARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available. • Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., BAAQMD Regulation 8, Rule 3: Architectural Coatings).	Prior to issuance of grading permits	City of Vallejo Planning & Development Services Department			
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- Requiring that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOX and PM. - Require the lifting and placing of HVAC units on the roof of the proposed Costco building via helicopter to only occur when no other excavation, grading, and ground-disturbing construction activities are being conducted on the project site.					
BIOLOGICAL RESOURCES					
BIO-1: Nesting Birds. Project activities should be initiated outside of the nesting season to the extent feasible (September 1 - January 31). However, if vegetation removal, grading, or initial ground-disturbing activities must be conducted during the nesting season, a pre-construction nesting bird survey shall be conducted by a qualified biologist prior to vegetation removal or initial ground disturbance. Nesting habitat may include grasslands, shrubs, trees, snags and open ground. The survey should be conducted in a sufficient area around the worksite to identify the location and status of any nests that could potentially be affected by Project activities. If active nests are found within the project limits of impact or close enough to these areas to affect breeding success, a work exclusion zone shall be established around each nest by a qualified biologist and confirmed by the City. Established exclusion zones shall remain in place until all young in the nest have fledged or the nest otherwise becomes inactive (e.g., due to predation). Appropriate	Prior to ground-disturbing activities	City of Vallejo Planning & Development Services Department			

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exclusion zone sizes vary dependent upon bird species, nest location, existing visual buffers and ambient sound levels, and other factors; an exclusion zone radius shall be a minimum of 25 feet (for common, disturbance-adapted species) or as large as 250 feet or more for raptors. Exclusion zone size may also be reduced from established levels if supported with nest monitoring by a qualified biologist indicating that work activities outside the reduced radius are not adversely impacting the nest.					
BIO-2: Wetland Permits. Prior to the approval of grading permits or improvement plans, the applicant shall provide, to the satisfaction of the Planning and Development Services Director, evidence that the U. S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and the San Francisco Regional Water Quality Control Board (RWQCB) have been notified in writing regarding the existence of wetlands on the property. Any permits required shall be obtained and copies submitted to the Director prior to any equipment staging, clearing, grading, or excavation work. The permit shall include authorization for temporary construction work within the wetland area.	Prior to approval of grading permits or improvements plans	City of Vallejo Planning & Development Services Department			
BIO-3: Wetland Compensation. Prior to the approval of grading permits or improvement plans, the applicant shall submit to the satisfaction of the Planning and Development Services Director evidence that the following measures have been completed: Provide written evidence that compensatory mitigation has been established through the purchase of mitigation	Prior to approval of grading permits or improvements plans	City of Vallejo Planning & Development Services Department			

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credits at a qualified wetland mitigation bank established by and in agreement with the U. S. Army Corps of Engineers (USACE) and the San Francisco Regional Water Quality Control Board (RWQCB). The purchase of credits shall be a minimum of a 1:1 ratio or equal to the amount necessary as determined by USACE and RWQCB to replace impacted jurisdictional wetlands including compensation for temporal loss in accordance with approved regulatory permits (e.g., Regional Water Quality Control Board Section 401 Water Quality Certification, US Army Corps of Engineers 404 Permit, and California Department of Fish and Game Section 1602 Lake and Streambed Alteration Agreement) (minimum 1:1 ratio; more if required by other agencies). The total amount of impacted jurisdictional wetlands, as determined by the regulatory agencies, shall be replaced in accordance with the total amount of impacted acreage.					
BIO-4: Construction Fencing. Prior to approval of grading or improvement plans, the applicant shall submit to the satisfaction of the Planning & Development Services Director evidence that the following measures have been completed: The grading or improvement plans shall identify the location of protective construction fencing. High visibility and silt fencing shall be erected at the edge of the construction/maintenance footprint if work is anticipated to occur within 50 feet of the preserved jurisdictional features and riparian areas. A qualified biological shall be present during the fence installation and during any initial	Prior to approval of grading or improvements plans	City of Vallejo Planning & Development Services Department			

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grading or vegetation clearing activities within 50 feet of jurisdictional features and riparian areas which are proposed for avoidance. Temporary construction activities related to the transfer of graded soil material and equipment to and from the commercial and residential areas shall be described and included in the permit issued for grading and encroachment in the wetland area. The crossing shall be limited to a single span in a single location and shall not be moved during any grading activities. The span shall be fenced and marked and shall be removed at the earliest feasible time upon the completion of grading. The span shall be installed, operated, and removed to minimize disturbance to the wetland area to the maximum extent feasible.					
BIO-5: Construction Staging. Prior to the approval of grading permits or improvement plans, the applicant shall submit to the satisfaction of the Planning & Development Services Director evidence that the following measures have been completed: All equipment shall be stored, fueled and maintained in a vehicle staging area 300 feet (or the maximum distance possible) from any wetland feature. The staging area shall be no closer than 200 feet unless a bermed area is constructed between it and the wetland. Within the staging area the refueling areas shall be lined to prevent fuel contamination and hazardous-material absorbent pads shall be available in the event of a spill. The grading or improvement plans shall include a note clearly stating	Prior to approval of grading permits or improvements plans	City of Vallejo Planning & Development Services Department			

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			Initials	Date	Remarks
the requirements for the staging area distances, berming requirements, and use of liner in the refueling areas.					
CULTURAL RESOURCES					
CUL-1: Cultural Awareness Training Program. Prior to the issuance of grading permits, a Cultural Awareness Training Program shall be provided to all construction managers and construction personnel prior to commencing ground disturbance work at the project site. The training shall be prepared and conducted by a qualified archaeologist to the satisfaction of the City of Vallejo Planning & Development Services Department. The training shall be a length of time adequate to explain applicable statutes, regulations, enforcement provisions; the prehistoric and historic environmental setting and context, local tribal groups; show sample artifacts; and what prehistoric and historic archaeological deposits look like at the surface and when exposed during construction. The training may be discontinued to new workers to the site when ground disturbance is completed. Construction personnel shall not be permitted to operate equipment within the construction area unless they have attended the training. The entity responsible for the training shall extend an invitation to the Yocha Dehe Wintun Nation to be present during the training program. A list of the names of all personnel who attended the training and copies of the signed acknowledgment forms shall be submitted to the City Planning & Development Services Department for their review and approval.	Prior to the issuance of grading permits	City of Vallejo Planning & Development Services Department; Yocha Dehe Tribe			

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CUL-2: Cultural Resources Construction Monitoring. During mass grading activities, a qualified archaeologist and Native American Monitor shall be continuously present onsite, and on-call during trenching activities, to observe disturbance areas. The applicant shall provide to the satisfaction of the Director of Planning & Development Services that a Native American Monitor from the Yocha Dehe Wintun Nation has been retained or that every reasonable effort to has been made to retain a Native American monitor. The qualified archaeologist or contractor shall halt work in the immediate vicinity if artifacts, exotic rock, shell or bone are uncovered during the construction. In the event such cultural resources are unearthed during ground-disturbing activities, and the qualified archaeologist is not in that location, the project operator shall cease all ground-disturbing activities within 50 feet of the find and immediately contact the qualified archaeologist and the Native American monitor. Work shall not resume until the potential resource can be evaluated by the qualified archaeologist and Native American monitor. The qualified archaeologist shall be empowered to halt or redirect ground-disturbing activities away from the vicinity of the find until the qualified archaeologist has evaluated the find, determined whether the find is culturally sensitive, and designed an appropriate short-term and long-term treatment plan in consultation with the Native American monitor. The significance of the find shall be determined by the archaeologist and monitor. If determined to be significant the archaeologist shall prepare a treatment plan in consultation with local experts,	During grading activities	City of Vallejo Planning & Development Services Department; Yocha Dehe Tribe			

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Native American Representatives, and the City Planning & Development Services Department.					
CUL-3: Discovery of Unknown Resources. The project applicant shall continuously comply with the following requirement: In the event that unanticipated cultural or tribal cultural resources are encountered during the course of grading or construction, the project operator/contractor shall cease any ground-disturbing activities within 50 feet of the find. Cultural and/or tribal cultural resources may include prehistoric archaeological materials such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock, as well as historic materials such as glass, metal, wood, brick, or structural remnants. A qualified archaeologist shall evaluate the resource and recommend appropriate treatment measures, as appropriate.	During grading and construction activities	City of Vallejo Planning & Development Services Department			
CUL-4: Discovery of Human Remains. The project applicant shall continuously comply with the following: If human remains are uncovered during ground-disturbing activities, the project proponent shall immediately halt work and contact the Solano County Coroner to evaluate the remains, and follow the procedures and protocols set forth in Section 15064.5 (e)(1) of the CEQA Guidelines. The City of Vallejo Police Department and City of Vallejo Planning & Development Services Department shall be contacted immediately after contact or attempted contact with the County Coroner. All excavation activities on the project site shall cease. If the County Coroner determines that the remains are Native American, the Native American	During ground-disturbing activities	City of Vallejo Planning & Development Services Department			

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Heritage Commission shall be notified, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by AB 2641). No further excavation activity shall occur on the site or any nearby area reasonably suspected to overlie adjacent human remains until consultation is complete with the most likely descendant, the Coroner and the City Planning & Department Services Department staff. Authorization to resume construction shall only be given by the City after consultation with the most likely descendent and shall include implementation of all appropriate measures to protect any possible burial sites or human remains.					
GEOLOGY AND SOILS					
GEO-1: Geotechnical Investigation. Prior to construction, the project applicant shall prepare a design-level geotechnical investigation and a final geotechnical report with site-specific recommendations, which must be reviewed and approved by the City of Vallejo prior to issuance of any grading permit. All recommended remedial grading measures identified in the ENGEO reports dated April 17, 2017 shall be updated to reflect current building code requirements and be implemented unless alternative techniques developed by a certified geotechnical engineer or engineering geologist are identified as part of the final geotechnical report.	Prior to construction	City of Vallejo Planning & Development Services Department			
GEO-2: Paleontological Monitor. Prior to the issuance of a grading permit, the project applicant shall, to the satisfaction of the Planning & Development Services	Prior to issuance of grading permit	City of Vallejo Planning & Development			

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			Initials	Date	Remarks
Director, provide evidence that a qualified paleontologist has been retained to monitor mass grading and construction activities. The paleontological monitor may periodically inspect construction activities to adjust the level of monitoring in response to subsurface conditions. In the event that any potentially significant paleontological resources are discovered, the paleontological monitor shall stop work inside a zone designated by him/her where additional paleontological resources could be found. A plan for the evaluation of the resource shall be submitted to the Planning & Development Services Director for approval. In the event that a paleontological resource (fossilized invertebrate, vertebrate, plan or micro-fossil) is found during construction, excavation within 50 feet of the find shall be temporarily halted or diverted until the discovery is evaluated. Upon discovery, the Planning & Development Services Director shall be notified immediately, and a qualified paleontologist shall be retained to document and assess the discovery in accordance with Society of Vertebrate Paleontology's 2010 Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources, and determine procedures to be followed before construction is allowed to resume at the location of the find. If determined to be significant, the paleontologist will prepare an excavation plan for mitigating the Project's impact on this resource, including preparation, identification, cataloging, and curation of any salvaged specimens.		Services Department			

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GREENHOUSE GAS					
GHG-1: Electric Powered Landscape Equipment. Prior to issuance of building permits, the project applicant shall prepare and submit building plans to the City of Vallejo Chief Building Official that demonstrate that all new structures have outdoor electrical outlets that are accessible to maintenance workers and landscapers front and back exteriors of all residential and non-residential structures to allow the use of electric-powered equipment.	Prior to issuance of building permits	City of Vallejo Building Division or Planning Division			
GHG-2: Hearth Emissions. Prior to the issuance of building permits, the building official shall confirm that the applicable project plans and specifications do not include wood-burning and natural gas hearths.	Prior to issuance of building permits	City of Vallejo Building Division or Planning Division			
GHG-3: Vehicle Trip Reduction. The project applicant shall submit a qualifying Commute Trip Reduction (CTR) /Transportation Demand Management (TDM) plan prepared by a qualified transportation consultant acceptable to the City to reduce vehicle trips by 17.8 percent. The TDM plan shall be approved by the City of Vallejo Public Works Director prior to the issuance of occupancy permits and incorporated into the project’s Covenants, Conditions, and Restrictions (CC&Rs). The TDM plan shall discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. The TDM plan shall include a requirement for annual reporting to the City Planning Division showing good faith compliance with plan requirements. The TDM plan may be modified with	Prior to construction	City of Vallejo Public Works			

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the City's agreement, provided that no additional trips are generated. Examples of trip reduction measures for non-residential uses may include, but are not limited to: • Include a pedestrian access system integrated into the design of the project to encourage pedestrian travel as an alternative to automobile travel. • Post transit information (maps, schedules, fares, etc.) in a public area of Costco that is accessible to employees and patrons; • Provide a work commute trip reduction program for on-site employment that may include employer carpooling promotion, employer ride-matching assistance, preferential carpool parking on-site, employer vanpool assistance, and on-site bicycle end-trip facilities including bicycle parking. • Provide employer-subsidized transit passes; • Sponsor an employee ride-sharing program; • Provide employee lockers for personal items; • Provide employees with an employee-only restroom with a shower (only applies to Costco warehouse); • Provide secure indoor bicycle parking (racks or lockers) for employees; • Provide customer bicycle parking (racks) in safe and convenient locations; • Allow flex scheduling or compressed scheduling practices;					

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• Provide preferential parking spaces for clean air vehicles; • Provide additional parking spaces designated for electric vehicles and electric vehicle charging stations beyond what is already required (applies only to Costco warehouse) as; and • Provide a minimum of two charging stations for electric vehicles (applies only to Costco warehouse); and • If home delivery service is provided in the future, it shall be performed using low emission or alternative-fueled (electric, natural gas, hydrogen, etc.) vehicles. Examples of trip reduction measures for residential uses may include, but are not limited to: • Provide a ride-matching assistance program that will include ride-matching through a website and/or social media site and/or advertisements in community common areas; • Provide a school trip matching program via the Homeowners Association (HOA) and the local schools to match local students together for potential carpools through the HOA, PTA, and school website and/or social media site and/or promotion at the local schools; • Establish a Transit Management Association, such as through a HOA, to promote, manage, and monitor transit and mobility services and infrastructure, such as through distributing information to homeowners on transit options or through posters in inform the public; and					

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The Transit Management Association shall work with local automotive dealers to help promote CNG electric and hybrid electric vehicles, such as requesting that dealers offer incentive programs to residents of the project.					
GHG-4: Traffic Calming. The project developers shall integrate the traffic calming measures as shown in the Project Application materials into the community-wide circulation network to promote reduced speeds and encourage pedestrian and bicycle trips. Prior to the issuance of building permits, the building official shall confirm with the Public Works Director that the applicable project improvement plans and specifications include the traffic calming measures shown in the Project Application materials such as marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others where applicable.	Prior to issuance of building permits	City of Vallejo Public Works			
GHG-5: Pedestrian Connectivity. The project developers shall provide as part of the project and consistent with City requirements and limitations, sidewalks, and crosswalks at all streets (along with general pedestrian connectivity throughout the project) to encourage pedestrian travel and offer an alternative to vehicle trips.	Prior to construction	City of Vallejo Planning & Development Services Department			

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GHG-6: Internal Trails. The project developers shall construct a multi-purpose internal trail system that includes an off-road multi-use trail and bike lanes within the street right-of-way.	Prior to construction	City of Vallejo Planning & Development Services Department			
GHG-7: Alternatively Fueled Equipment. To the extent that such equipment is readily available and can adequately perform all tasks, Costco shall use electric-, propane-, or natural gas-powered mobile equipment (forklifts, non-street legal street sweepers, etc.) for operational activities within the project site. Existing gasoline- or diesel-powered mobile equipment may continue to be used until its service life is exhausted.	Prior to issuance of building permits	City of Vallejo Planning & Development Services Department			
GHG-8: Idling Limitation. Prior to issuance of occupancy permits for the Costco store, the project applicant shall submit to the satisfaction of the Planning & Development Services Director, an idling restriction program for heavy-duty diesel vehicles. The program shall require that all trucks comply with state regulations limiting idling to no more than 5 minutes. The program shall be implemented through signage in all loading areas and training of store personnel about the idling restrictions.	Prior to issuance of occupancy permits	City of Vallejo Planning & Development Services Department			
GHG-9: Loading Dock Electrical Hookups. Prior to issuance of building permits for the proposed Costco store, the project applicant shall provide at least of one electrical hookup in each of the proposed loading docks that is capable of powering a truck-mounted transport refrigeration unit (TRU) with an electrical hookup option.	Prior to issuance of building permits	City of Vallejo Planning & Development Services Department			

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GHG-10: On-Site Renewable Energy. Prior to issuance of building permits for the proposed Costco store, the project applicant shall submit to the satisfaction of the Chief Building Official, a roof layout plan that illustrates how future installation of a photovoltaic system could be accommodated, including plans that identify installation of conduit from the roof to the electrical room—or to electrical panels if no electrical room is provided—to accommodate future photovoltaic system or other collector/power generation installation. Within four years of project occupancy, Costco shall install rooftop photovoltaic panels or another renewable energy source that generates at least 500,000 kilowatt-hours (kWh) per year.	Prior to issuance of building permits	City of Vallejo Building Division or Planning Division			
GHG-11: Additional GHG Emissions Reduction Measures. The proposed project shall include, but not be limited to, the following list of Project Design Features, which shall be incorporated into the project to ensure compliance with BAAQMD GHG thresholds. The project applicant may submit a report to the City, prepared by a qualified independent consultant, that substantiates why specific measures are considered infeasible at that point in time and identify alternate measures that would achieve equivalent reductions. The recommended measures for reducing operational GHG emissions are listed below. The recommended measures may be updated as new technologies or methods become available, to the satisfaction of the Planning & Development Services	Prior to issuance of building permits	City of Vallejo Planning & Development Services Department			

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Director. The project applicant shall be required to implement the following: Energy Efficiency Measures • Include conduits and space for the future addition of energy storage to optimize renewable energy generation systems and avoid peak energy use. Electrical panels should appropriately be sized to allow for future expanded use. This measure shall be verified prior to building permit issuance. • The City shall verify before issuance of all residential building permits that where appliances are offered by residential project developers, Energy Star-rated appliances (or other equivalent technology) for clothes washers, dishwashers, refrigerators, and fans shall be installed in the residences. • The City shall verify before issuance of all residential and non-residential building permits that high-efficiency light bulbs and lighting fixtures are installed in residential and non-residential buildings. High-efficiency light bulbs include compact fluorescent lamps (CFLs), light-emitting diodes (LED), and other light bulbs that provide energy efficiency of at least 75% compared to traditional incandescent bulbs. • The City shall verify before issuance of building permits that buildings comply with Title 24 Building Energy Efficiency Standards, which includes energy-efficient design practices such as high-performance glazing. Energy Star compliant systems, radiant heat roof barriers (including but not limited to high-albedo white					

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thermoplastic polyolefin roof membrane), high-efficient HVAC with hot-gas reheat, insulation on all pipes, programmable thermostats, solar access, shading of HVAC systems from direct sunlight, use of formaldehyde-free insulation, use of recycled-content gypsum board, sealed ducts, orientation of building and incorporation of landscaping to maximize passive solar (heating during cool seasons, and minimize heat gain during hot season), and designs that take advantage of prevailing winds. - The project developers shall site and design buildings to take advantage of daylight where feasible and consistent with building purpose. - The project developers shall use lighter-colored paving or open-grid paving materials for surface parking areas or break up large expanses of paved area with shade trees or shade structures or use light-colored roofing materials. Water Efficiency Measures - To the extent feasible, project developers shall landscape to preserve natural vegetation and maintain watershed integrity. This measure shall be verified prior to building permit issuance. - The project shall use native species and drought-tolerant species for a minimum of 50 percent of the ornamental plant palette in non-turf areas for all retail, common, and public areas, and residential front-yard landscaping to minimize water demand.					

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Solid Waste Measures • Reuse, recycle, and divert construction waste, and use locally-sourced building materials with a high recycled material content to the greatest extent feasible (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard). This measure shall be verified prior to grading permit issuance. • Provide interior and exterior storage areas for recyclables and adequate recycling containers located in public areas. Recycling bins in the storage areas shall be included to promote recycling of paper, metal, glass, and other recyclable material. These bins shall be emptied and recycled accordingly as part of the proposed project's regular solid waste disposal program. The project applicant or its successor in interest shall only contract for waste disposal services within a company that recycles waste in compliance with AB 341. This measure shall be implemented prior to issuance of an occupancy permit.					
GHG Reduction Education and Information • The project applicant or its successors or the HOA shall maintain a Fairview website that includes, but is not limited to, information about greenhouse gas (GHG) reduction opportunities to help educate project residents, as well as schools, other agencies, and businesses with facilities on the project site. • The project applicant or its successors or the HOA shall include on the Fairview website information about					

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rebates and low-interest loans to residents that make energy-saving improvements to their homes. - The project applicant or its successors or the HOA shall include on the Fairview website information about the air quality and greenhouse gas benefits of electric landscape maintenance equipment. - The project applicant or its successors or the HOA shall include on the Fairview website educational information on energy and water conservation and efficiency for project residents, customers, tenants, and large energy users. - The project applicant or its successors or the HOA shall include in the Fairview website information about energy conservation and financial incentive programs.					
GHG-12: GHG Emissions Offsets. The project applicant shall purchase and retire GHG offsets to reduce the project's GHG emissions for the first 30 years below the BAAQMD's thresholds of significance (i.e., below 1,100 MTCO₂e per year, or 4.6 MTCO₂e per service population per year [as adjusted for post-2020 GHG reduction targets], or the latest applicable threshold at the time). GHG offsets shall be purchased either with a lump sum payment prior to occupancy for the entire 30-year period, or on an annual basis for a period of thirty years from project occupancy. If annual payments are made, evidence of the purchase of GHG offsets for the first year of occupancy shall be submitted to the satisfaction of the Planning & Development Services Director prior to the issuance of occupancy permits. Evidence of the GHG offsets years 2-30	Prior to issuance of occupancy permits	City of Vallejo Planning & Development Services Department			

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shall be submitted annually on or before the anniversary of the occupancy permit (or as adjusted by the Planning & Development Services Director). GHG offsets shall be consistent with the performance standards and requirements set forth below. • The GHG offsets shall be secured from an accredited registry that is recognized by the California Air Resources Board (CARB) or a California air district, or from an emissions reduction credits program that is administered by CARB or a California air district. • The GHG offsets shall represent the past reduction or sequestration that is “not otherwise required,” in accordance with California Environmental Quality Act (CEQA) Guidelines Section 15126.4(c)(3). • The GHG offsets shall be real, permanent, quantifiable, verifiable, and enforceable. • Recognizing that future regulatory mandates, technological advances, new renewable energy programs, or final project design features would likely result in GHG emissions that are lower than the levels presented in this EIR, the project applicant may prepare a final project GHG emissions inventory prior to issuance of the certificate of occupancy. The inventory shall be subject to verification by a City-approved third party (at applicant expense), with the final emissions estimates dictating the increment to be mitigated through purchase of GHG offsets. The offsets must also be secured by the applicant and verified by the City prior to issuance of the certificate of occupancy, thus					

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providing full mitigation prior to completion of the project.					
HAZARDS AND HAZARDOUS MATERIALS					
HAZ-1 Gas Station Design Requirements. Prior to the issuance of building permits for the Costco gas station, the project applicant shall to the satisfaction of the Planning & Development Services Director or designee, demonstrate that the following measures have been incorporated into the applicable plans and project designs to the satisfaction of the Planning & Development Services Director or their designee. All design features requiring verification of installation shall be verified and approved by the appropriate City representative prior to initiation of fueling station operations. 1. The tank and piping monitoring system shall be designed to meet the federal underground storage tank leak detection standards of 95 percent probability of detection and 5 percent probability of false alarm. California State Water Resources Control Board also certifies the system under LG-113. 2. The project shall be designed to utilize durable petroleum-resistant sealant joint sealers to seal the concrete control joints to prevent petroleum products from entering the underlying soil at the concrete joints. 3. The storm drainage system for the fueling facility area shall be designed in accordance with State of California Best Management Practices for water quality treatment standards. Stormwater from the fueling area	Prior to the issuance of building permits	City of Vallejo Planning & Development Services Department			

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will be isolated and will be directed away from the perennial stream (located in the southeastern corner of the project site) to a catch basin and processed through an oil/water separator prior to discharge to the storm drain system or bioretention basin. 4. The underground tank and piping control units shall be housed inside the controller enclosure. The enclosure shall contain the power console, the dispenser interface unit, the submersible pump variable speed controllers, and the monitoring system console. An air conditioner mounted on the side of the enclosure shall have a preset thermostat to maintain a safe operating temperature. 5. The underground storage tanks and all containment sumps, including the dispenser sumps shall be double-walled fiberglass for its corrosion resistance and plasticity. The double-walled storage tank system shall include a hydrostatic interstitial space sensor that monitors the primary and secondary tank walls. An interstitial sensor shall be installed to immediately shut down the product delivery system and activate a visual/audible alarm if a tank wall is compromised. 6. The underground storage tanks shall be secured in place with anchoring straps (tie-downs) connected to concrete hold down deadmen. The entire tank excavation hole shall be backfilled with pea gravel and capped with an 8-inch-thick reinforced concrete slab (overburden). The tie-downs, together with the overburden, shall be designed to overcome any					

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possible buoyancy factors and resist buckling under hydrostatic pressures. 7. All products, vapor and vent piping shall be non-corrosive and provide three levels of protection. All product piping shall be monitored with pressure line leak detection. All piping shall be double-walled to provide secondary containment. All fiberglass piping shall be additionally monitored under vacuum per California 2481 regulations such that if a breach is detected in the vacuum, the product delivery system will shut down and system will sound audible alarm. 8. All piping connections to the tanks and dispensers shall be flexible to prevent rupture from any form of ground movement. 9. The project shall be designed such that all piping slopes to the sumps at the underground storage tanks. If a piping leak occurs, the gasoline shall flow through the secondary pipe to the sump, where a sensor is triggered to immediately shutdown the system and activate an audible/visual alarm. 10. All tanks and dispensers shall be equipped with latest Phase I and Phase II Enhanced Vapor Recovery (EVR) vapor recovery air pollution control equipment technology per the California Air Resources Board regulations and associated Executive Orders. 11. Emergency shutoff switches shall be installed next to the controller enclosure and in locations near the dispensers, as dictated by the fire code.					

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12. The UST monitoring system incorporates automatic shutoffs. If gasoline is detected in the sump at the fuel dispenser, the dispenser shuts down automatically and an alarm is sounded. If a problem is detected with a tank, the tank is automatically shut down and an alarm is sounded.					
13. Each fuel dispenser includes several safety devices. Specifically, each dispenser sump is equipped with an automatic shutoff valve to protect against vehicle impact.					
14. Closed-circuit television monitor cameras shall be aimed to show all fueling positions, the tank slab, and equipment enclosures. Equipment enclosures shall be mounted on canopy columns adjacent to the fuel islands. A split-screen monitor shall be located in the Costco warehouse to allow for full-time monitoring of the fueling operation. All images shall be recorded by the camera system.					
15. A monitoring system to detect leaks from the tank and piping system that is programmed to activate visual/audible alarms in the event of an alarm condition shall be installed. One visual/audible alarm shall be located on the outside of the controller enclosure and a second visual/audible alarm shall be located in the Costco warehouse entry/exit area. The monitoring system shall be designed so that if power is lost to the monitoring console the facility is shut down and will not operate.					

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16. An independent security company shall monitor the Costco Wholesale warehouse alarm system. The alarm system shall acknowledge an alarm condition at the fueling facility and notify Costco management staff of an alarm condition should it occur after operating hours.					
HYDROLOGY AND WATER QUALITY					
HYD-1: Construction Water Quality Plan. Prior to issuance of any grading permit, the applicant shall submit to the satisfaction of the Public Works Director, a Storm Water Pollution Prevention Plan (SWPPP) that satisfies the requirements of the National Pollutant Discharge Elimination System (NPDES) and State General Permit for construction. The SWPPP shall incorporate Best Management Practices (BMPs) to control runoff and sedimentation. The SWPPP shall identify specific types and sources of storm water pollutants, determine the location and nature of potential impacts, and specify appropriate control measures to eliminate any potentially significant impacts on receiving water quality from storm water runoff. The SWPPP shall comply with the most current standards established by the San Francisco RWQCB. The BMPs shall be selected from a menu according to site requirements and shall be subject to approval by the Public Works Director and San Francisco RWQCB. Additionally, the project applicant shall provide to the satisfaction of the Public Works Director, evidence of a	Prior to issuance of grading permit	City of Vallejo Public Works and/or San Francisco RWQCB			

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Waste Discharged Identification (WDID) number generated from the State Regional Water Quality Control Board's Stormwater Multiple Application & Reports Tracking System (SMARTS). This serves as the Regional Water Quality Control Board approval or permit under the National Pollutant Discharge Elimination System (NPDES) construction stormwater quality permit.					
HYD-2: Stormwater Quality Control Plan. Prior to issuance of a grading permit or approval of improvement plans, the project applicant shall submit to the satisfaction of the Public Works Director, a final Storm Water Quality Plan (SWQP), either within the Final Drainage Plan or as a separate document that identifies how this project will meet the City's MS4 permit obligations. Site design measures, source control measures, and Low Impact Development (LID) standards, as necessary, shall be incorporated into the design and shown on the grading or improvement plans. In addition, per the MS4 permit, projects creating and/or replacing one acre or more of impervious surface (excepting projects that do not increase impervious surface area over the pre-project condition) are also required to demonstrate hydromodification management of stormwater such that post-project runoff is maintained to equal or below pre-project flow rates for the 2 year, 24-hour storm event, generally by way of infiltration, rooftop and impervious area disconnection, bioretention, and other LID measures that result in post-project flows that mimic pre-project conditions. For the commercial area, specific source control measures for	Prior to issuance of a grading permit or approval of improvement plans	City of Vallejo Public Works			

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trash storage areas and the gas station shall be identified in the SWCP.					
HYD-3: Final Drainage Plan. Prior to the approval of grading permits or improvement plans, the applicant shall submit to the satisfaction of the Public Works Director a Final Drainage Plan to demonstrate the ability of the planned on-site storm water drainage facilities to adequately collect on-site storm water flows in accordance with all applicable standards and requirements The final drainage plan shall demonstrate that the new storm water drainage facilities can satisfy the Regional Water Quality Control Board's Municipal Regional Permit (MRP) requirements by: Minimizing impervious surfaces, as feasible, and directing flows to Integrated Management Practices (IMPs); Integrating appropriately sized IMPs to ensure post-development flows do not exceed pre-development flows; and Incorporating bio-retention in combination with site planning, minimizing impervious areas, and dispersion of runoff to meet Low Impact Development (LID) requirements.	Prior to approval of grading permits or improvement plans	City of Vallejo Public Works			
NOISE					
NOI-1: Construction Noise. Prior to the start of grading, the Construction Manager shall provide evidence acceptable to the City of Vallejo Public Planning & Development Services Director ("Director"), that: Construction activities shall be restricted to day time hours of between 7:00 a.m. and 6:00 p.m. Mondays through Saturdays. No construction activity shall occur	Prior to the start of grading	City of Vallejo Planning & Development Services Department			

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on Sundays or federal holidays. The Director shall have authority to grant exceptions from this restriction for the concrete pour of the Costco store and for activities occurring within a fully sealed building envelope. • Helicopter usage shall be limited to no more than two weekdays between 9 a.m. and 5 p.m. At times when the helicopter is not actively in the process of connecting straps to and lifting and placing HVAC units on the roof of the Costco building, the helicopter shall ascend, as appropriate, to lessen the level of noise. At least 14 days prior to helicopter usage, the construction contractor shall provide written notice of such usage to residents, businesses and owners of property within 500 feet of the project site. The Director shall review and approve such notice prior to distribution. • Prior to the start of construction activities, the construction contractor shall: - o Maintain and tune all proposed equipment in accordance with the manufacturer's recommendations to minimize noise emission. - o Inspect all proposed equipment and should fit all equipment with properly operating mufflers, air intake silencers, and engine shrouds that are no less effective than as originally equipped by the manufacturer. - o Post a sign, clearly visible at the site, with a contact name and telephone number of the City of Vallejo's authorized representative to respond in the event of a noise complaint.					

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- o Place stationary construction equipment and material delivery in loading and unloading areas as far as practicable from the residences. - o Limit unnecessary engine idling to the extent feasible. - o Use smart back-up alarms, which automatically adjust the alarm level based on the background noise level or switch off back-up alarms and replace with human spotters. - o Use low-noise emission equipment. - o Limit use of public address systems. - o Minimize grade surface irregularities on construction sites.					
TRAFFIC AND TRANSPORTATION					
TR-1: Roadway Improvements. Prior to the issuance of occupancy permits, the applicant shall construct, to the satisfaction of the Public Works Director, the following roadway improvement: Admiral Callaghan Lane at Turner Parkway – Add a northbound right-turn pocket lane and modify the geometry of the westbound approach to provide a right-turn lane, one left-turn lane and one left-turn pocket.	Prior to the issuance of occupancy permits	City of Vallejo Public Works			
TR-2: Initial Signal Timing Study. Prior to the issuance of Occupancy Permits, the City shall initiate a signal timing study for the proposed traffic signal and the existing traffic signals. The timing study shall include the same traffic signals included in the Transportation Impact Analysis	Prior to the issuance of occupancy permits	City of Vallejo Planning & Development Services Department			

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prepared for the project. This study is to assist the City in optimizing traffic flow in the project vicinity and provide a baseline for a post-occupancy signal coordination study.					
TR-3: Post Costco Occupancy Signal Coordination Study. Within 3 months of occupancy of the Costco store (or as adjusted by the Public Works Director), the applicant shall fund and prepare, to the satisfaction of the Public Works Director, a signal timing and coordination study to confirm the EIR's traffic analysis and further optimize traffic flow in the project vicinity. The study shall include the same intersections noted in the Transportation Impact Analysis, so that refined signal timings and coordination based on actual traffic volumes and observed conditions can be implemented if necessary. Upon the Public Works Director's approval of the study, the City shall update signal timing based on the results of this study, if necessary.	Within 3 months of occupancy of the Costco store (or as adjusted by the Public Works Director)	City of Vallejo Public Works			
TR-4: New Bus Pull-Out. Prior to issuance of occupancy permits, the applicant shall, to the satisfaction of the Planning & Development Services Director, coordinate with SolTrans and construct a new bus pull-out on eastbound Turner Parkway East of Admiral Callaghan Lane. The Project applicant will construct a bus pull-out and concrete pad per Soltrans' and the City's specifications. Soltrans will provide, and the applicant will install, signage, a shelter, lighting, and trash receptacle.	Prior to the issuance of occupancy permits	City of Vallejo Planning & Development Services Department			

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**FAIRVIEW AT NORTHGATE
GENERAL PLAN POLICIES**

Policy Number (Pg. No.)	Policy Text	Project Analysis
CP-1.1 (3-3)	Retail Food Sources. Strive to ensure that all households in Vallejo have easy access to retail sources of affordable healthy food, including organic options, such as full service grocery stores, ethnic food markets, produce markets, and convenience stores.	The project expands an existing source of healthy food which serves the entire City (the Costco at 198 Plaza Drive).
CP-1.6 (3-6)	Active Transportation Network. Promote the health benefits of walking and bicycling by providing a convenient and safe network of bicycle paths and routes, sidewalks, pedestrian paths, and trails, including connections with major destinations such as civic facilities, educational institutions, employment centers, shopping, and recreation areas.	The project provides publicly accessible pedestrian and bicycle trails, tree-lined sidewalks, buffered bicycle lanes on Admiral Callaghan Lane, and a signalized crossing on Turner Parkway to connect the proposed residential neighborhood to the Gateway Plaza shopping center.
CP-1.7 (3-7)	Green Space. Promote community physical and mental health through provision and preservation of the urban forest, natural areas, and “green” infrastructure (i.e. best practices water management).	The project preserves and restores most of the wetlands on the site, and provides over 5 acres of permanent open space, hundreds of new trees, and bioretention swales in accordance with State and Federal water treatment requirements. See EIR Chapters 4.3 and 4.8 for further details.
CP-1.12 (3-9)	Clean Air. Protect the community from harmful levels of air pollution. (See Actions B, D, E and F)	The project complies with the Air District’s requirements for mitigation of construction dust and other emissions, and does not include wood burning fireplaces. See EIR Chapter 4.2 for further details.
CP-1.13 (3-9)	Clean Water. Provide a safe, adequate water supply citywide.	The City’s Water Department has confirmed there are adequate long-term water supplies to serve the project. See EIR Chapter 4.16 for further details.
CP-1.15 (3-10)	Water Quality. Maintain and improve water quality in a way that provides public and environmental health benefits.	See response to CP-1.7.

Policy Number (Pg. No.)	Policy Text	Project Analysis
CP-2.1 (3-12)	Police Services. Provide responsive, efficient, and effective police services that promote a high level of public safety.	According to the fiscal impact analysis prepared for the project, the project is anticipated to generate far more revenues to the City than its costs for police and other public services, allowing the overall level of public services to be increased Citywide.
CP-2.2 (3-13)	Safer Urban Design. Improve public safety and reduce demand for police service through project design enhancements in new development and public spaces. (See Actions A-D)	The Police Department has reviewed the project design and has no outstanding concerns.
CP-2.3 (3-13)	Fire Prevention and Response Services. Ensure the provision of fire prevention and emergency response services that minimize fire risks and protect life and property.	See response to CP-2.1. The Fire Department has reviewed the project design and has no outstanding concerns.
CP-3.1 (3-15)	High Quality Education. Foster high quality schools that enhance civic pride. (See Action C)	The project will pay approximately \$900,000 in impact fees to Vallejo City Unified School District to ensure there are adequate school facilities to serve project residents.
CP-3.4 (3-17)	Parks. Plan for and provide parkland and facilities to support Vallejo's recreational needs. (See Actions A-C)	The project provides approximately 8.6 acres of public parks and open space, thereby exceed the minimum standards of the City and the Greater Vallejo Recreation District (GVRD).
CP-3.5 (3-24)	Parks Maintenance. Maintain and improve parks and facilities in Vallejo. (See Action A)	The proposed parks will be maintained in perpetuity through a Community Facilities District or other form of tax assessment district.
CP-3.6 (3-24)	Park Safety. Ensure that parks are designed and managed to maximize the personal safety of users and maintain the visibility of play areas.	GVRD has reviewed and approved the proposed park plans, and the Conditions Approval will require GVRD's approval of detailed improvement plans, provision of adequate lighting, and adherence to CPTED (Crime Prevention Through Environmental Design) principles.
NBE-1.1 (4-3)	Natural Resources. Protect and enhance hillsides, waterways, wetlands, occurrences of special-status species and sensitive natural communities, and aquatic and important wildlife habitat through land use decisions that	A Biological Resources Assessment (BRA) was performed for the project and identified mitigation measures that reduce all project impacts to a less than significant level. See EIR Chapter 4.3 for further details.

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	avoid and mitigate potential environmental impacts on these resources to the extent feasible. (See Actions F and G)	
NBE-1.2 (4-4)	Sensitive Resources. Ensure that adverse impacts on sensitive biological resources, including special-status species, sensitive natural communities, and wetlands are avoided and mitigated to the greatest extent feasible as development takes place. (See Actions B-D)	The proposed landscaping includes native and bay-friendly species. The project EIR includes mitigations to ensure no significant impacts to nesting birds and no net loss of wetlands. See EIR Chapter 4.3 for further details.
NBE-1.4 (4-5)	Waterway Restoration. Restore riparian corridors and waterways throughout the city. (See Action A)	A small section of Blue Rock Springs Creek passes through the southwest corner of the site, Although the project does not include restoration of this creek, the California Department of Fish and Wildlife has reviewed the project plans and identified mitigation measures to avoid any significant adverse impacts to the creek. See EIR Chapter 4.3 for further details.
NBE-1.5 (4-5)	Scenic Vistas. Protect and improve scenic vistas, including views from Interstate 80 and State Route 37 in Vallejo.	Views of the site from Interstate 80 will be improved due to the project's generous landscaping along the west frontage and in the commercial parking lots. The commercial buildings are attractively designed and relatively low-scale or (in the case of the Costco) set back very far from the west frontage.
NBE-1.7 (4-8)	Green Infrastructure. Encourage the installation of green infrastructure, including tools such as permeable pavement, rain gardens, constructed wetlands, grassy swales, rain barrels and cisterns, and green roofs, to treat stormwater, attenuate floods, increase groundwater recharge, and reduce urban heat islands.	See response to CP-1.7.
NBE-1.8 (4-8)	Urban Forest. Encourage planting of street trees and landscaping to beautify the city, encourage walking and biking, and create a stronger sense of identity.	The project includes new street trees that exceed code requirements, plus parking lot trees that will contribute to the urban forest. The applicant has agreed to plant over 400 24-inch box

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		trees, which exceed the minimum size stated in the code.
NBE-1.9 (4-9)	Cultural Resources. Protect and preserve archaeological, historic, and other cultural resources.	There are no historic resources on the site, or known archaeological or cultural resources. The project will be subject to monitoring by the Yocha Dehe tribe and other mitigations to prevent adverse impacts to any archaeological or cultural resources that may be inadvertently disturbed during construction. See EIR Chapter 4.4 for further details.
NBE-1.14 (4-12)	Water Conservation. Promote water conservation through a range of proactive City efforts. (See Action C)	The project will conserve water through compliance with the City's Water Efficient Landscape Ordinance (WELO) and the California Green Building Code.
NBE-1.15 (4-12)	Energy Efficiency. Support measures to reduce energy consumption and increase energy efficiency in residential, commercial, industrial, and public buildings.	The project will comply with all applicable energy efficiency requirements of the California Building Code, along with additional measures required through the EIR process. See EIR Chapters 4.6 and 4.11 for further details.
NBE-1.16 (4-13)	Solid Waste Reduction. Promote reduction of the production of solid waste throughout Vallejo. (See Actions A and B)	The project will comply with the City's construction and demolition recycling ordinance and provide recycling bins in the parks and commercial parking lots. See EIR Chapter 4.16 for further details.
NBE-2.1 (4-14)	Strengthen Local Identity. Focus future growth to foster a vibrant Downtown/Waterfront District, strong job centers, comfortable neighborhoods, thriving neighborhood corridors and urban villages, and retail/entertainment clusters that draw visitors from the city and the region. (See Action A)	The project expands and strengthens the existing Northgate retail/job center with an attractive mixed use development that retains a major employer and revenue generator in the City.
NBE-2.3 (4-14)	Inviting, Compatible Design. Promote attractive development that is compatible with surrounding uses. (See Actions A-C)	The proposed buildings are of a design quality that will complement and enhance the surrounding area, with handsome, well-articulated façades, high-quality building materials, and pleasing colors. The buildings are relatively small-scaled, with the exception of the proposed Costco which has generous setbacks

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		from nearby properties and is also well articulated and screened with landscaping to avoid a massive, bulky appearance.
NBE-2.5 (4-15)	Regional Retail and Entertainment. Support a thriving mix of regional retail and entertainment uses near Interstate 80.	The project allows retention and expansion of a major regional retail use (Costco) near Interstate 80.
NBE-2.7 (4-16)	Jobs-Housing Balance. Match the levels of employment and housing opportunities locally. (See Action A)	The project adds both new jobs and housing near the existing Northgate employment center and Interstate 80.
NBE-2.8 (4-16)	Infill Development. Promote infill development targets vacant and underutilized sites for community-desired and enhancing uses that is compatible with surrounding uses.	The project site is one of the City's largest and most important vacant infill sites. The proposed retail and residential uses are compatible with surrounding uses, which are similar.
NBE-2.9 (4-16)	Public Service Provision. Ensure that private development provides sufficient funding for infrastructure and public services to support the development. (See Actions A and E)	See responses to CP-2.1 and CP-3.1.
NBE-5.3 (4-29)	Health and Safety Codes. Enforce development regulations and building code requirements to protect residents, businesses, and employees from flooding, liquefaction, earthquakes, fires, and other hazards.	The project complies with all applicable health and safety codes. No buildings will be located in a flood or high severity fire zone. The project soils report addresses liquefaction and other seismic hazards and these will be addressed further through the building permit review process.
NBE-5.10 (4-35)	Site Safety. Ensure that affected soil, groundwater, or buildings will not have the potential to adversely affect the environment or the health and safety of site occupants.	The site has never been developed and has no history of hazardous materials usage. The proposed gas station will be regulated by the Solano County Environmental Health Division and subject to additional mitigation measures from the EIR. See EIR Chapter 4.7 for further details.
NBE-5.13 (4-36)	Noise Control. Ensure that noise does not affect quality of life in the community. (See Actions A-D)	The project EIR's noise analysis found there would be no significant impact to adjacent or proposed residential uses See EIR Chapter 4.10 for further details.
NBE-5.14 (4-37)	Vibration Control. Ensure that vibration does not affect quality of life in the community.	The project EIR's vibration analysis found there would be no significant impact to adjacent uses See EIR Chapter 4.10 for further details.

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NBE-5.15 (4-37)	Noise Compatibility Standards. Apply the General Plan noise and land use compatibility standards to all new residential, commercial, and mixed-use development and redevelopment. (See Actions C-E)	See response to NBE-5.13.
EET-1.9 (5-10)	Municipal Services. Provide robust, high-quality municipal services and build revenue to achieve a self-sustaining model of funding.	See response to CP-2.1.
EET-2.2 (5-12)	Good Jobs. Retain and attract new businesses offering high quality jobs.	See response to NBE-2.5.
EET-3.2 (5-15)	Local Business Retention. Retain existing businesses and encourage their expansion within Vallejo.	See response to NBE-2.5.
EET-4.2 (5-20)	Responsible Development. Favor residential, commercial, and industrial development that can mitigate or avoid environmental impacts.	See previous references to project EIR.
MTC-1.6 (6-7)	Public Access. Promote public access to open space and trails. (See Action B)	The project provides about 0.6 miles of publicly accessible trails to connect the residential and commercial portions of the project and allow passive enjoyment of the wetland preservation area.
MTC-2.1 (6-10)	Safety First. Prioritize pedestrian, bicycle, and automobile safety over traffic flow.	The project provides generous pedestrian, bicycle and transit connections (e.g. trails, buffered bike lanes, new bus stop on Turner Parkway, and new signalized crossing on Turner Parkway) while maintaining adequate traffic flow.
MTC-2.4 (6-18)	Citywide Mobility. Maintain a transportation network that provides mobility for all ages and abilities and for all areas of the community.	See response to MTC-2.1.
MTC-2.5 (6-18)	Street Classification System. Maintain a street classification system that establishes user mode priorities and associated performance standards for each type of street. (See Actions D and E)	Per one of the EIR mitigation measures, the project will perform traffic signal timing adjustments after occupancy to ensure maximum efficiency of the traffic network. The project will pay over \$2 million in City

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		and regional transportation impact fees.
MTC-2.8 (6-20)	Transportation Demand Management (TDM). Decrease dependence on single-occupant vehicles by increasing the attractiveness of other modes of transportation. (See Actions A-C)	See response to MTC-2.1. In addition, the project will include an ambitious TDM plan as part of its mitigations to reduce greenhouse gas (GHG) emissions. See EIR Chapter 4.6 for further details.
MTC-2.9 (6-20)	Local Transit. Encourage increased local transit ridership to work, school, shopping, and recreation. (See Actions A and B)	See response to MTC-2.1. The proposed bus stop will include a shelter, trash can, lighting, and a pathway connecting to the project's commercial and residential uses.
MTC-2.12 (6-21)	Resource Efficiency. Facilitate use of emerging vehicle technology to help reduce vehicle miles travelled and greenhouse gas emissions. (See Action C)	The project will include electrical vehicle charging stations in accordance with California Building Code requirements and GHG mitigations. See EIR Chapter 4.6 for further details.
MTC-2.13 (6-21)	Alternative Fuel Vehicles. Utilize alternative fuel vehicles as much as feasible. (See Action C)	See response to MTC-2.12. Action C promotes electric charging at high-priority locations.
MTC-3.1 (6-22)	Coordinated Transportation Planning. Ensure that improvements to the transportation network support a land use pattern that connects the community and facilitates travel among Vallejo's neighborhoods.	The project closes existing gaps in the City's transportation network (see General Plan Maps MTC-3 and MTC-5) by widening Admiral Callaghan Lane to a four-lane arterial with buffered bicycle lanes.
MTC-3.4 (6-26)	Walking, Biking, and Rolling. Expand the local bicycle and trail network to provide safe, healthy, attractive options for non-motorized travel among destinations in Vallejo, including for wheelchair users. (See Actions A and B)	See response to MTC-3.1.

**EXHIBIT D
CONDITIONS OF APPROVAL
Fairview at Northgate Project**

**Planned Development #PD17-0007
Tentative Map #TM17-0002
Major Use Permit #UP18-0007
Zoning Map Amendment #ZMA17-0001**

APN #0081-490-010

PERMIT DESCRIPTION:

Mixed use development on a vacant 51.3-acre site in northeast Vallejo. The main components of the project are:

- A 152,138-square-foot Costco store with a tire center, gasoline sales, and 774 surface parking spaces;
- Closure of the existing Costco store and gas station at 198 Plaza Drive upon completion of the new store;
- A commercial center with four buildings totaling 27,500 square feet and including a drive-through restaurant and 188 surface parking spaces;
- 178 two-story single-family dwellings;
- A central open space buffer, including protected wetlands, between the commercial and residential portions of the project;
- Widening of Admiral Callaghan Lane from two to four lanes, with a new traffic signal at the main Costco driveway

PLANNING DIVISION:

Plans, Landscaping & Architecture:

1. The plans submitted by the applicant on April 10, 2020, attached as Exhibit E, are approved and shall be incorporated as Conditions of Approval.
2. Prior to building permit issuance, the applicant shall include these conditions in the plans submitted for building and/or improvement plans, immediately after the cover sheet, with a written explanation of how each condition has been, or will be, addressed. This condition may be satisfied separately for the commercial and residential portions of the project.
3. Prior to building permit issuance, the applicant shall submit a color board indicating exterior materials and colors to the Planning Division for review and approval. The color board shall substantially conform to the colors included in the approved plans. Color chips shall be attached to the building elevation drawings. Once installed, all improvements are to be maintained in accordance with the approved plans. Any changes which affect the exterior character shall

be resubmitted to the Planning Division for approval. This condition may be satisfied separately for the commercial and residential portions of the project.

4. Prior to building permit issuance, submit construction-level landscaping plans prepared by a registered landscape architect to the Planning Division for review and approval. Landscape plans shall comply with Chapter 16.70 (VMC), substantially comply with the landscape plans in the approved Planned Development plan set, and are to include the following:
 - a. Location, species and size of all mature trees six inches in trunk diameter or greater;
 - b. City-approved street trees to be planted at least 6 feet from any sewer line;
 - c. Specification of low-growth-type species adjacent to doors, windows, and walkways;
 - d. Low-water-using and drought-resistant plant materials;
 - e. Screening of the required backflow preventers;
 - f. At least 440 trees in high-visibility locations shall be a minimum of 24-inch box size; all other trees shall be a minimum of 15-gallon, double staked;
 - g. At least 50 percent of the proposed shrubs shall be a minimum of 5-gallon;
 - h. Irrigation plan indicating all components of the irrigation system including sprinklers and other outlets, valves, backflow prevention devices, controllers, piping and water usage; and
 - i. Six-inch-high curbing around planters within commercial portion of project.
5. Prior to building permit issuance, submit details and location of any proposed fencing to the Planning Division for review and approval. Fencing shall comply with Chapter 16.70 (VMC). This condition may be satisfied separately for the commercial and residential portions of the project.
6. Prior to building permit issuance for commercial buildings, submit design details of trash enclosures to the Planning Division for review and approval. Trash enclosure shall meet the requirements of Vallejo Recology. Materials and colors shall be compatible with those approved for nearby buildings.
7. Prior to building permit issuance, submit site lightning to the Planning Division for review and approval. Exterior illumination shall comply with the Division's Outdoor Lighting Standards. All pole mounted or raised fixture housing shall be constructed so that the light is diffused downward. All light devices shall be protected by weather and vandal resistant covers. This condition may be satisfied separately for the commercial and residential portions of the project.
8. All mechanical equipment and utility meters shall be screened in a manner approved by the Planning Division. Electrical transformers shall be screened or placed underground.

9. All vents, gutters, downspouts, flashings, electrical conduits, etc., shall be painted to match the color of the adjacent surface or as approved by the City.
10. All roof-mounted mechanical devices and their components such as air conditioners, heating equipment, exhaust fans, vents or ducts, or similar equipment shall be screened from view in a manner approved by the Planning Division. All wall-mounted air conditioners shall be flush mounted.

Signage:

11. One 30-foot-tall pylon sign is approved for the commercial center, subject to approval of final design plans. Submit plans showing the dimensions, font style, logos, colors, materials, and construction details for Planning approval, prior to issuance of a Building Permit for the sign.
12. All signage shall comply with the City of Vallejo Sign Ordinance.
13. Prior to submittal of any sign permit application, submit a Final Master Sign Program (MSP) for review and approval by the Planning Division, substantially conforming to the Sign Program in the approved Master Plan, and containing the following criteria:
 - A. Dimensioned drawings for all architectural variations of the building elevations showing all types of permitted signs, drawn to scale, at the maximum size allowed, including distances to the edge of sign area/roofline.
 - B. Drawings and standards showing specific location and types of signs allowed; minimum and maximum size (square footage), dimensions, letter height, length, font; colors, criteria for logos, and method of illumination, for all signs.
 - C. Written criteria for determination of sign type, size and location.
 - D. Wayfinding signs.
 - E. Material samples, color chips, and construction details.
 - F. Drawings and written criteria for temporary banners, window signs and other promotional signage.
 - G. Prohibited signs.
 - H. Criteria for freestanding sign and area identification signs. (use for shopping centers)
 - I. Additional criteria and requirements necessary for clarification.
 - J. Definitions. (PLNG)
14. Signs with exposed raceways shall not be permitted. (PLNG)
15. Signs shall be flush-mounted to the building façade. (PLNG)
16. Internally illuminated signs shall have an opaque background, with only individual letters or logos illuminated. (PLNG)

17. Pennants, banners, streamers, or flags in connection with special promotions and business openings shall be permitted for a period not to exceed 60 days. The same, different, or similar pennants, banners, streamers, and flags shall not be permitted within 150 calendar days after such removal. No pennants, banners, streamers, balloons, inflatable devices, flags, or any other advertising devices shall be mounted on or above any roof or mansard, or otherwise extend above a parapet wall or ridge of a structure. This condition shall not apply to devices associated with the initial sales and marketing of the residential portion of the project. (PLNG) VMC Section 16.64.040.A
18. Paper or printed window signs shall be limited to no more than 10 percent of the window area of any street frontage or more than 50 percent of any single window pane. (PLNG) VMC Section 16.64.040.B
19. The street address shall be incorporated on the ground sign. (PLNG, BLDG)
20. Construction plans showing details for installation, dimensions, font, logos, materials and colors, including a sample of all materials and colors shall be submitted for review and approval prior to the issuance of a Sign Permit. (PLNG)
21. One sign denoting the architect, engineer, and/or contractor associated with the project may be permitted on site. The maximum sign area shall be 64 square feet. This sign shall be removed upon occupancy approval. (PLNG) VMC Section 16.64.040.C

Pre-Permit:

22. Prior to building permit issuance, obtain an administrative permit from the Planning Division for any temporary office or construction trailer. This condition may be satisfied separately for the commercial and residential portions of the project.
23. Prior to building permit issuance, the Planning Division shall confirm that the building permit drawings and subsequent construction substantially conform with the approved Planning application drawings. This condition may be satisfied separately for the commercial and residential portions of the project.
24. Prior to building permit issuance for commercial buildings, submit details for shopping cart corrals adjacent to the building and within parking lots for approval by the Planning Division. (PLNG)
25. Prior to issuance of building or grading permits or improvement plans for any park improvements, the Greater Vallejo Recreation District (GVRD) shall review and approve construction drawings for such improvements, and any revisions required by GVRD shall be included in the permit and/or improvement plans.
26. Prior to issuance of a building permit for the gas station, a queueing plan demonstrating that the gas station queue will not extend into the public right of

way shall be submitted to, and approved by, the City's traffic engineer. The queueing plan shall be prepared by a qualified traffic engineer.

Pre-Occupancy:

27. Obtain an inspection from the Planning Division prior to occupancy/final building inspection. All inspections require a minimum 24-hour notice. Occupancy permits shall not be granted until all construction and landscaping is completed and finalized in accordance with the approved plans and required conditions of approval or a bond has been posted to cover all costs of the unfinished work as agreed to by the Planning Manager.
28. Prior to occupancy/final building inspection for commercial buildings, install landscaping and irrigation per approved plans. The landscape architect shall verify in writing that the landscaping and irrigation have been installed in accordance with the approved landscape plans with respect to size, health, number and species of plants, and the overall design concept.
29. Prior to occupancy/final building inspection for commercial buildings, install parking lot per approved plans. Each parking space designated for compact cars shall be identified by a permanent marking reading "compact".
30. Prior to occupancy/final building inspection for commercial buildings, install trash enclosure per approved plans.
31. Prior to occupancy/final building inspection, install fencing per approved plans. This condition may be satisfied separately for the commercial and residential portions of the project.
32. Prior to occupancy/final building inspection, obtain a sign permit from the Planning Division prior to the erection of any wall or building sign, including flags, banners, etc. All signs shall comply with Chapter 16.64 (VMC).
33. The applicant shall establish a recycling program for the project in coordination with the Planning Division and when established, either participate in the Citywide commercial recycling program or demonstrate to the satisfaction of the Planning Division that the established recycling program is sufficient.
34. Contact local postal authorities to get their requirements for mail facilities for the project. The design and location of mail receptacles shall be reviewed and approved by the Planning Division and shown on the Utility, Landscape, and Building Plans, prior to issuance of Building Permits, whichever comes first. Mail facilities shall be installed prior to occupancy approval. (PLNG)
35. Submit a written request for new street names with a site plan showing their location to the Planning Division for review and approval, at the time of submittal of Improvement Plans and Final Map. Include a list of alternatives for each name, as some names may not be acceptable. (PLNG)

36. Prior to occupancy/final building inspection, the applicant shall record the deed restriction shown in Attachment 4 on the real property located at 198 Plaza Drive, Vallejo (APN 0081-570-030), and provide a certified copy of the recorded document to the Planning Division.

Post-Occupancy:

37. Required landscaping shall be maintained in a neat, clean, and healthy condition. This shall include pruning, mowing of lawns, weeding, removal of litter, fertilizing, replacement of plants when necessary, and the regular watering of all plantings.
38. There shall be no outdoor storage or display of any kind except as allowed per VMC Chapters 16.70 and 16.77.
39. Consistent with Mitigation Measure GHG-8 of the project EIR, vehicles transporting goods or materials to or from the commercial portion of the project, including but not limited to the commercial center, the Costco warehouse, and the Costco gasoline station, shall limit idling to no more than 5 minutes while loading or unloading such goods or materials.
40. The conditions herein contained shall run with the property and shall be binding on the applicant and all heirs, executors, administrators, and successors in interest to the real property that is the subject of this approval.
41. If the Planning Division, either independently or as a result of complaints from the public, becomes aware that the use is being conducted in a manner which violates the conditions of this use permit or other applicable City regulations, and Planning staff is unable to obtain compliance or abatement, staff will refer the use permit to the Planning Commission for possible suspension or revocation per Section 16.82.110, Vallejo Municipal Code.

General:

42. The Mitigation Monitoring and Reporting Plan (MMRP) in Exhibit B is incorporated by reference. If there is an inconsistency between these Conditions of Approval and the MMRP, the MMRP shall govern.
43. Approval of the Tentative Map (TM) is contingent upon the City Council's certification of the Final EIR and approval of the Zoning Map Amendment (ZMA) and Planned Development (PD). Said TM approval shall be null and void if the Final EIR is not certified or the ZMA and/or PD are not approved. (PLNG)
44. This Permit does not include a Unit Plan for the drive-through restaurant. Prior to issuance of a building permit for said restaurant, a Unit Plan application for said restaurant shall be submitted and approved.
45. The hours of operation for the commercial uses shall be as follows:

- A. Costco store public hours: 9 AM to 8:30 PM weekdays; 9 AM to 6 PM weekends
- B. Costco store deliveries: 2 AM to 6 PM, 7 days per week
- C. Costco tire center: 6 AM to 9:30 PM weekdays; 6 AM to 7 PM weekends
- D. Costco gas station: 5 AM to 10 PM, 7 days per week
- E. All other commercial uses: 6 AM to 12 AM (midnight), 7 days per week

46. The entitlements granted by this approval shall expire as follows:

- A. Pursuant to VMC Section 15.08.110, an approved tentative map shall expire thirty-six months after its approval (April 20, 2023). However, if the subdivider is subject to a requirement of one hundred thousand dollars or more to construct, improve or finance the construction or improvement of public improvements outside the boundaries of the tentative map, each filing of a final map shall extend the expiration of the approved tentative snap by thirty-six months from the date of its expiration as provided in this section, or the date of the previously filed final map, whichever is later. The extensions shall not extend the tentative map more than ten years from its approval or conditional approval. However, a tentative map on property subject to a development agreement may be extended for the period of time provided for in the agreement, but not beyond the duration of the agreement. "Public improvement," as used in this title, include traffic controls, streets, roads, highways, freeways, bridges, overcrossings, street interchanges, flood control or storm drain facilities, sewer facilities, water facilities, and lighting facilities.
- B. Pursuant to VMC Section 16.82.090, approval of a use permit shall expire automatically twenty-four months after its approval (June 9, 2022) unless authorized construction has commenced prior to the expiration date, except that upon application of the subdivider filed prior to the expiration of the approved or conditionally approved use permit, the time at which such use permit expires may be extended by the commission for a period or periods not exceeding a total of three years (until June 9, 2025). Prior to the expiration of an approved or conditionally approved use permit, upon an application by the subdivider to extend that use permit, the use permit shall automatically be extended for sixty days or until the application for the extension is approved, conditionally approved, or denied, whichever occurs first. If the commission denies a subdivider's application for extension, the subdivider may appeal to the city council within fifteen days after the commission has denied the extension.
- C. Pursuant to VMC Section 16.116.130.A.1, the master plan shall expire upon the expiration of the unit plan or tentative map (April 20, 2023 unless extended).
- D. Pursuant to VMC Section 16.116.130.B.2, a unit plan approval in conjunction with an approved or conditionally approved tentative map of

five or more lots shall remain in effect for the life of the tentative map (until April 20, 2023 unless extended). The unit plan does not expire once construction is complete or the final map has been recorded.

- E. Pursuant to VMC Section 16.116.130.D, every master plan and/or unit plan of a planned development permit shall automatically expire and be of no further force and effect when any of the conditions attached to such permit are no longer fulfilled or become nonexistent.
47. Unless otherwise provided in the Vallejo Municipal Code, a request for a time extension from the above expiration dates can be considered if an application with required fee is filed at least 45 days before the original expiration date, otherwise a new application is required. A public hearing will be required for all extension applications, except those involving only Unit Plans. Extensions are not automatically approved. Changes in conditions, City policies, surrounding neighborhood, and other factors permitted to be considered under the law, may require, or permit denial. (PLNG)
48. Applicant shall indemnify, hold harmless, and defend City, its officers, officials, directors, employees, agents, volunteers and affiliates and each of them from any and all claims, demands, causes of action, damages, costs, expenses, actual attorney's fees, applicant's fees, expert fees, losses or liability, in law or in equity, of every kind and nature whatsoever arising out of or in connection with Applicant's operations, or any subcontractor's operations, to be performed under this agreement for Applicant's or subcontractor's tort negligence including active or passive, or strict negligence, including but not limited to personal injury including, but not limited to bodily injury, emotional injury, sickness or disease, or death to persons and/or damage to property of anyone, including loss of use thereof, caused or alleged to be caused by any act or omission of Applicant, or any subcontractor, or anyone directly or indirectly employed by any of them or anyone for the full period of time allowed by the law, regardless to any limitation by insurance, with the exception of the sole negligence or willful misconduct of the City. No modification of the project, any application, permit, certification, condition, environmental determination, other approval, change in applicable laws and regulations, or change in processing methods shall alter the Applicant's indemnity obligation.

BUILDING DIVISION:

1. Permits required per California Code of Regulations, Title 24 and applicable City Ordinance in effect at the time of completed Building Permit application date and required fees paid at time of application.
2. Accessibility required from public way to all public access structures and between public access structures within the same shopping center.
3. NOTE: Sidewalk accessibility is subject to the Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG); see <https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines>.

4. R302.4 Passing Spaces. Where the clear width of pedestrian access routes is less than 1.5 m (5.0 ft), passing spaces shall be provided at intervals of 61 m (200.0 ft) maximum. Passing spaces shall be 1.5 m (5.0 ft) minimum by 1.5 m (5.0 ft) minimum. Passing spaces are permitted to overlap pedestrian access routes.

VALLEJO FLOOD & WASTEWATER DISTRICT:

1. The trash capture device at the commercial drainage outlet shall meet the State's requirements for trash capture and prevent trash from entering the green space. Confirm the depth requirements can be met for the selected trash capture device.
2. Fill out the Sanitary Sewer & Storm Drain Information Form and pay the District's Fees for each building prior to issuance of a building permit for that building.
3. Prior to issuance of any occupancy permits, a bar screen approved by the District shall be installed on the new span across Blue Rock Springs Creek to prevent trash and people from entering the structure.
4. Prior to submittal of improvement plans, the note for abandoning manholes shall be revised to read: "Abandon manholes as stated or as approved by District."
5. Prior to issuance of any occupancy permits, a new 24-inch diameter sanitary sewer main approximately 1,534 feet long shall be installed per the approved plans and District Standards.

WATER DEPARTMENT:

1. The 2" line from the fire service to the Costco shall be deleted and connected to the meter at the public right of way (shall not tie into fire service).
2. Irrigation meter locations will be required and must include connections to the public system. (This can be addressed by indicating on the callout for meters)
3. The plans do not show water connections for commercial buildings adjacent to Turner Parkway. (Indicating at least a connection to the main and meter would provide for design flexibility.)
 - a. All commercial meters are required to be placed in the public right of way
 - b. Each commercial unit will be required to have its own meter.
4. All fire lines that serve both commercial parcels within the Costco/retail complex will have to be negotiated under a maintenance contract between the parcel owners (These are all private water lines, and the owners must determine how to maintain them across the parcels).
5. All water service lines shall be perpendicular to the main up to the backflow. (No bends in the line from the backflow to the water main in the street)

6. Private service lines should be tapped into the existing water main in the street not the fire service. Size of service lines will be based on fixture counts for each tenant/building.

PUBLIC WORKS DEPARTMENT:

General Conditions:

1. The Conditions are the responsibility of the applicant and all contractors. Compliance shall occur as specified in the Conditions or at one of the following project milestones:
 - a) With the submittal of Grading, Improvement, Landscape, or Building Plans.
 - b) Prior to issuance of Encroachment, Grading, or Building Permits, whichever comes first.
 - c) Prior to construction.
 - d) Prior to Acceptance of Improvements.
 - e) Prior to approval of the Final Map.
 - f) Prior to issuance of Certificate of Occupancy.

If timing for compliance is not specified, it will be determined by the Divisions listed after the Condition. **(PLNG, BLDG, ENGR, VFWD, CAO)**

2. A temporary or permanent perimeter fence/wall that abut the adjacent properties shall be installed within three weeks from completion of site demolition or grading work in the area of the fence/wall. If the fence at an abutting residential property is planned for removal, or if an existing residential property does not have a fence, the replacement perimeter fence/wall shall be completed within three weeks from removal of the original fence, unless otherwise approved by the City. **(PLNG, ENGR)**
3. Submit a temporary fence/wall plan showing the location, design, height, and construction details, for all fencing and walls consistent with, and as a part of, the Grading, Improvement, Landscape, and Building plans, whichever comes first, and provide a timetable for installation. The project is a single entity, and it encompass all improvements whether commercial, residential or otherwise. As such, Public Works Conditions of Approval apply to the project as a whole, not to any specific land use type, area, or work unless specified herein. **(PLNG, ENGR)**
4. Submit a separate commercial and residential Photometric plan for review and approval, showing the location of all light sources, streetlight spacing, intensity of luminance, and uniformity ratio, in accordance with the City's specifications, with the Improvement, Utility, or Building Plans whichever comes first. The photometric analysis shall be reviewed by the Engineering Division for the determination of streetlight spacing. **(ENGR)**

Street Improvements:

5. Project shall dedicate right-of-way to the City along the Turner Parkway frontage, to accommodate the construction of bus turnout, bus stop concrete pad, meandering walkway, and landscaping features per the approved Master Plan. **(ENGR)**
6. **PG&E** shall own and maintain its own facilities in **Parcels 1 and 2** per attached Exhibit D.1. Project shall dedicate 45 feet of Public Utility Easement (PUE) to PG&E for gas, electric, landscaping, construction, maintenance and related work in Parcels 1 and 2 as shown on Vesting Tentative Map. Project shall install a new 12" steel gas line in alignment acceptable to PG&E and the City as noted on the plans. **(ENGR)**
7. The **City of Vallejo** shall own and maintain all surface street improvements (not sewer, storm drains, inlets) on streets identified as **Streets A, B, C, D, E and F in Parcel 4** per attached Exhibit D.1. Project shall dedicate to the City said streets in Parcel 4 for roadway, utility, access, and parking purposes as shown on Vesting Tentative Map. **(ENGR)**
8. The **City of Vallejo** shall own all sanitary sewer lines and manholes, and storm drains and inlets on streets identified as Streets A, B, C, D, E and F in **Parcel 4** per the attached Exhibit D.1. The **Vallejo Flood and Wastewater District (VFWD)** shall maintain all sanitary sewer mains and manholes, and storm drains and inlets on streets identified as **Streets A, B, C, D, E and F in Parcel 4** per the attached Exhibit D.1. Project shall provide for Public Utility Easements (PUEs) on City-owned streets for VFWD construction and maintenance purposes as shown on Vesting Tentative Map. **(ENGR, VFWD)**
9. Dedicate three (3) feet right-of-way to the City along Admiral Callaghan Lane frontage, to widen the street and accommodate a 2-foot wide standard concrete raised curb/median at three southbound left turn pockets at the three project driveways instead of just striping. **(ENGR)**
10. The "Residential Parking and Grading Plan C.4.1" dated March 2020 prepared by the applicant, and hereinafter referred to as RPGP, shall be made a part of the construction document. Project shall install all signs, striping, pavement markings, and curb paint as required by the RPGP. The RPGP shall be a permanent record of the Homeowners' Association (HOA). HOA shall conform to Recology requirements. **(ENGR)**
11. Construct improvements along Turner Parkway frontage including but not limited to: construction of bus turnout, bus stop concrete pad, meandering walkway, and landscaping features per the approved Master Plan, ADA-compliant concrete driveway approach, ADA-accessible ramps, storm drainage system, traffic signal and appurtenances, street lighting, joint trench, signing and pavement striping, conforms to existing improvements, and repair/replacement of deficient frontage improvements as determined by the City Engineer, prior to Acceptance of Improvements. **(ENGR)**

12. Construct improvements along the frontage on Admiral Callaghan Lane including but not limited to: pavement removal, pavement replacement, and pavement widening on the northbound lanes to accommodate two additional lanes, concrete median island with landscaping and irrigation, construction of concrete curb, gutter and sidewalk, ADA-compliant concrete driveway approach, ADA-accessible ramps, storm drainage system, bridge culvert and appurtenant structures, traffic signal and appurtenances, street lighting, joint trench, signing and pavement striping, conforms to existing improvements, and repair/replacement of deficient Project frontage improvements as they directly abut the Project as determined by the City Engineer, prior to Acceptance of Improvements. **(ENGR)**
13. Northbound Admiral Callaghan Lane starting from the outside northern limits of the intersection of Rotary Way shall be re-striped to provide two northbound lanes to match the lane configurations of the newly constructed section of Admiral Callaghan Lane along the commercial project frontage. Remove all conflicting signs and return to the City corporation yard. This condition shall be met prior to issuance of Certificate of Occupancy. **(ENGR)**
14. The southbound left turn pockets at the three project driveways on Admiral Callaghan Lane shall be lengthened per the "Response to Planning Commission Questions" Memorandum prepared by Kimley Horn & Associates dated February 10, 2020. This condition shall be met prior to the issuance of Certificate of Occupancy. **(ENGR)**
15. Comply with the recommendations and mitigation measures from the Traffic Impact Analysis prepared by Fehr & Peers dated May 2019, prior to issuance of Certificate of Occupancy. **(ENGR)**
16. Construct all public facilities in accordance with the current Americans with Disabilities Act (ADA), including driveways and curb ramps. Sidewalk accessibility is subject to the Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG); see <https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines> **(ENGR, BLDG)**
17. Show construction details for all pedestrian paths and trails on the Improvement Plans and Final Landscape Plans. Trail crossings of streets shall have curb cuts, ramps, signs, and pavement markings as approved by Engineering Division. At least one access point on route along the trail shall comply with ADA. **(ENGR)**

Noise:

18. Noise producing site preparation and construction activities shall be limited to the days and hours as set forth below and subject to the provisions of Mitigation Measure NOI-1 (MM NOI-1) of the project EIR. In the event of any conflict, MM NOI-1 shall govern.

Monday through Saturday 7:00 a.m. to 6:00 p.m.

Construction on Saturdays are allowed consistent with EIR findings. No changes to these construction hours will be allowed without the prior written consent of the City. A contact person shall be available during all construction activities in the evening and on weekends to respond to complaints and take actions necessary to reduce noise. **(BLDG, ENGR, PLNG)**

Construction Activities:

19. Contact Engineering Division to arrange for a Pre-Construction Meeting prior to issuance of Grading or Building Permits, whichever comes first. **(ENGR)**
20. Implement a dust control plan. Submit the plan to Engineering Division for review and approval prior to issuance of the Grading Permit. Comply with EIR Mitigation Measure NOI-1. **(ENGR)**
21. No deliveries (including gasoline tanker trucks) or servicing/repairs of construction equipment shall occur outside of construction hours. Construction hours are Monday to Saturday, from 7 am to 6 pm, in compliance with EIR Mitigation Measure NOI-1. **(BLDG, ENGR, PLNG)**
22. Project shall use low-noise emission equipment in compliance with EIR Mitigation Measure NOI-1 and applicable State law. **(BLDG, ENGR, PLNG)**
23. Implement the following measures during construction:
 - a.
 - a. Gather all construction debris on a regular basis and place them in a dumpster or other container that is emptied or removed on an as-needed basis to avoid overflow or debris. When appropriate, use tarps on the ground to collect fallen debris or splatters that could contribute to storm water pollution.
 - b. Remove all dirt, gravel, rubbish, refuse, and green waste from the street pavement, and storm drains adjoining the project site. During wet weather, avoid driving vehicles off paved areas.
 - c. Broom sweep the public street pavement adjoining the project site on an as-needed basis during active construction. Caked-on mud or dirt shall be scraped from these areas before sweeping.
 - d. Install filter materials (e.g., sandbags and filter fabric) at the storm drain inlet nearest the downstream side of the site in order to preclude any debris or dirt from flowing into the City storm drain system. Filter materials shall be maintained and/or replaced as necessary to ensure effectiveness and to prevent street flooding. Dispose of filter particles in an approved trash receptacle.
 - e. Create a contained and covered area on the site for the storage of bags, cement, paints, flammable, oils, fertilizers, pesticides, or any other materials used on the site that have the potential for being discharged to the storm drain system by being windblown or in the event of a material spill.
 - f. Never clean items such as machinery, tools, and brushes or rinse containers in a street gutter, or storm drain.

- g. Ensure that concrete, gunite, plaster, or similar supply trucks do not discharge wash water into street gutters or drains. **(ENGR, BLDG)**
- 24. Ensure that no debris or construction scrap material is placed on any adjoining lot, open space area, or street, and that any such material stored on an adjoining site shall be completely removed and the site cleaned, prior to issuance of Certificate of Occupancy. **(ENGR, BLDG)**
- 25. At no time shall campers, trailers, motor homes, or any other vehicle be used as living or sleeping quarters on the construction site unless authorized for site security. **(ENGR, BLDG)**
- 26. There shall be no parking of construction equipment or construction workers' vehicles on existing offsite residential streets not within the Project at any time; all vehicles shall be maintained on-site. **(ENGR, BLDG)**
- 27. Portable toilets used during construction shall be kept as far as possible from adjacent properties and shall be emptied on a regular basis as necessary to prevent odor. **(ENGR, BLDG)**
- 28. Identify truck routes for the import or export of cut/fill material and/or construction debris for review and approval by the City Engineer prior to the issuance of permits, if applicable. Repair any damage to City streets (private and public) caused by activity associated with this project. **(ENGR)**
- 29. In the event of the encounter of subsurface materials suspected to be of an archaeological or paleontological nature, all grading and/or excavation shall cease, the find shall be left untouched, and the Engineering Division shall be immediately notified. This requirement shall be noted on the Grading Plans, prior to issuance of permits. See EIR Mitigations CUL-1 and CUL-2 for detailed requirements. **(ENGR)**
- 30. In the above event, retain a qualified professional archaeologist certified by the Register of Professional Archaeologists or paleontologist with a degree(s) in paleontology or geology, to evaluate and make recommendations as to disposition, mitigation and/or salvage. The recommendation shall be implemented before work may proceed. The City shall not be responsible for any costs associated with the professional investigation, implementation, remediation or restoration of findings. See EIR Mitigations CUL-1 and CUL-2 for detailed requirements. **(PLNG, ENGR, BLDG)**

Construction Plan Review/Pre-Permit Requirements:

- 31. Submit two copies of Preliminary Title Report, prepared within three months prior to the first plan submittal. **(ENGR)**
- 32. The proposed bridge on Admiral Callaghan Lane at Blue Rock Springs Creek is within the FEMA Special Flood Hazard Area (SFHA) 100-year Floodplain Zone AE. At a minimum, comply with the requirements of City of Vallejo Municipal

Code Section 7.98. Obtain required permits for the construction of bridge deck, headwall, abutment, and grading work prior to approval of the Improvement Plans. **(ENGR)**

33. The Improvement Plans shall show plan and profile of all proposed street, drainage and sewer improvements and details for curb, gutter, sidewalk, wheelchair ramps, and driveway construction. **(ENGR)**
34. Design improvements in accordance with the City Standards for sight distance, sidewalk, back up, fencing, geometrics at intersection and corner setback requirements, prior to approval of Improvement Plan. Plans shall be subject to review and approval by Engineering Division. **(ENGR)**
35. Obtain an Encroachment Permit from the City prior to performing any work within the public right-of-way or public easements. **(ENGR)**

Subdivisions/Site Development Plans:

36. The Vesting Tentative Map prepared by MacKay & Soms is not approved for construction. Submit Grading, Erosion Control, Improvement, and Stormwater Control Plans prepared by a Registered Civil Engineer to Engineering Division for review and approval prior to issuance of Grading and Encroachment Permits. A Stormwater Pollution Prevention Plan (SWPPP) shall be prepared by a Qualified SWPPP Developer (QSD) prior to the issuance of Grading and Encroachment Permits. **(ENGR)**
37. The Final Map shall be in substantial conformance with the Vesting Tentative Map. The Final Map shall be prepared by a qualified Civil Engineer or Licensed Land Surveyor and shall be subject to review and approval by Engineering Division. **(ENGR)**
38. Provide common area, access, parking, utility, drainage, emergency vehicle access, and other easements as needed on the commercial parcel. **(ENGR)**
39. **The owner(s) of Parcels 1 and 2** shall own and maintain all private storm drain facilities, bio-retention areas, underground hydromodification/detention system, and trails in **Parcels 1 and 2** per attached Exhibit D.1. Project shall provide for Public Access Easements and Emergency Vehicle Access Easements on said facilities as shown on Vesting Tentative Map and/or Planned Development plans. Provisions for Public Utility Easements shall be governed by a separate Stormwater Operation and Maintenance Agreement between the owner(s) of Parcels 1 and 2 and the State Water Resources Control Board (SWRCB). **(ENGR)**
40. The **HOA** shall own and maintain all trails in **Parcels 3, 4, and A** per attached Exhibit D.1. Project shall dedicate to HOA and provide for Public Utility Easements on said facilities as shown on Vesting Tentative Map and/or Planned Development plans. **(ENGR)**

41. The **HOA** shall own and maintain all private alleys and driveways on alleys in **Parcel 4** per attached Exhibit D.1. Project shall dedicate to HOA and provide for Private (not Public) Utility Easements Private (not Public) Access Easements, and Emergency Vehicle Access Easements on said facilities as shown on Vesting Tentative Map and/or Planned Development plans. **(ENGR)**
42. The **HOA** shall own and maintain all private water, sewer, storm drains and inlets in HOA-owned alleys, driveways on alleys, and north-south pedestrian paseos in **Parcel 4** per attached Exhibit D.1. Project shall dedicate to HOA said private facilities in Parcel 4, and shall provide for Private (not Public) Utility Easements (PUEs) on HOA-owned facilities as shown on Vesting Tentative Map and/or Planned Development plans. **(ENGR)**
43. The **HOA** shall own and maintain all private parksites, landscaped areas, and east-west private pedestrian paseos in **Parcels B, C, D, E, F and G in Parcel 4** per attached Exhibit D.1. Project shall dedicate to HOA said private facilities in Parcel 4, and provide for Public Access Easements (PAEs) on HOA-owned facilities as shown on Vesting Tentative Map and/or Planned Development plans. **(ENGR)**
44. The **Vallejo Flood and Wastewater District (VFWD)** shall own and maintain all publicly owned trunk sewer lines and manholes in **Parcels 1 and 2** per attached Exhibit D.1. Project shall dedicate to VFWD a 15 feet wide Public Utility Easement (PUE) along said facilities in Parcels 1 and 2 for VFWD construction and maintenance purposes. **(ENGR, VFWD)**
45. The applicant shall submit a Mylar copy and CAD file of the Final Map prior to City Council approval of the Final Map. **(ENGR)**
46. Approved street names shall be shown on the Final Map prior to recordation of the map. **(ENGR, PLNG)**
47. Three (3) copies of project Covenants, Conditions, and Restrictions (CC&Rs) shall be submitted with the Final Map, for review and approval. The CC&Rs shall include the following provisions and shall be recorded prior to issuance of Certificate of Occupancy:
 - a. A Homeowners' Association (HOA) shall be formed and shall be responsible in perpetuity, for the ownership, maintenance, repair, restoration, replacement, and management of:
 - i) All parcels held in common, open space and common area improvements including building exteriors, private driveways, private alleys, access easements, pedestrian paths and walkways, landscaping, irrigation systems, fencing, retaining walls, sound walls, signage, trash and recycling areas, and utilities.
 - ii) All landscaping and irrigation equipment on-site
 - iii) All privately-owned permanent stormwater management facilities included in the approved Stormwater Control Plan and the approved Stormwater Control Operations and Maintenance Plan.

- b. HOA shall enter into a Maintenance Agreement with the Vallejo Flood and Wastewater District to hire a qualified engineering firm to maintain, repair, restore, replace and manage all privately-owned permanent storm water facilities and to ensure compliance with all applicable Federal, State, regional and local regulations.
- c. Contain a statement that in the event these areas or facilities are not properly maintained, repaired, restored, replaced or managed according to the approved plans, each property owner shall be responsible for their proportionate share of these costs, secured by a lien on the property in favor of the HOA, in accordance with the HOA procedures.
- d. Provide reciprocal easements over all common parcels for maintenance purposes.
- e. The HOA shall be responsible for enforcing the CC&Rs and providing written notice of any violation to the property owners.
- f. The HOA shall provide the Planning Division with the name, address and phone number of the current HOA representative. **(PLNG, ENGR, CAO)**

Grading/Erosion Control/Geotechnical:

- 48. Submit a Geotechnical Report with the Grading Plans which provides recommendation for grading and drainage. Submit a Geotechnical Report with Building Plans that addresses and provides recommendations for walls, building foundations, and pavement structural sections. **(ENGR)**
- 49. All grading shall require a Grading and Drainage Plan prepared by a registered Civil Engineer, a Soils Report prepared by a registered Geotechnical Engineer and receipt of a Grading Permit approved by the City Engineer. The Grading Plans and Soils Report shall require review by the City's Geotechnical consultant with all costs to be borne by the applicant. **(ENGR)**
- 50. Contour grading techniques shall be employed throughout the project to achieve a more natural appearance, and shall be in substantial conformance with the approved Vesting Tentative Map. Tops of cuts or toes of fills adjacent to existing public rights-of-way or easements to be set back two feet minimum from said rights-of-way and easements where feasible. All cut and fill slopes in excess of five (5) feet in height to be rounded both horizontally and vertically where feasible. **(ENGR)**
- 51. Grading on adjacent properties shall require written approval from the affected property owners. **(ENGR)**
- 52. On-site finish grading work shall require drainage to be directed away from all building foundations at a minimum slope of 2 percent and a maximum slope of 20 percent toward approved drainage facilities or swales. Non-paved drainage swales shall have a minimum slope of 1 percent. **(ENGR)**
- 53. The applicant's project engineer shall inspect the finished grading and certify that it conforms to the compaction and elevations shown on the Grading Plan and Soils Report. **(ENGR)**

54. At all times seasonally appropriate erosion control measures shall be implemented per plans approved by the City Engineer for all grading work. Wet season measures shall be in place October through April at a minimum and when there is rain forecast. At the time of approval of the Improvement and/or Grading Plans, an approved Erosion Control Plan prepared by a registered Civil Engineer shall be filed with the City Engineer. **(ENGR)**
55. All graded slopes and stockpiles of loose soil shall be hydromulched/hydroseeded by October of any given year in compliance with BMP and State requirements. During grading work between October and April, if there is a rain forecast, stop all grading work two days before the rain forecast and implement BMPs to ensure that the site is protected from erosion. **(ENGR)**
56. Improve interior private alleys in accordance with the City of Vallejo standards. **(ENGR)**
57. Designate private alleys as required fire access lanes thereby prohibiting parking on **both sides** of the alleys at all times. Signs and/or curb striping shall be installed according to the regulations established by the Vallejo Fire Department, Vallejo Police Department, and Engineering Division. If signs are installed, they shall include the Police Department telephone number and a notification that a citation may be issued for the violation with vehicle towed at owner's expense. This requirement shall be included in the CC&Rs. **(ENGR)**

Utilities:

58. New electrical transformers shall be screened from view. **(PLNG, ENGR)**
59. No above ground utility facilities/structures shall be located between the face of curb and back of sidewalk in the public right-of-way. **(ENGR)**
60. Install streetlights along the Admiral Callaghan Lane and Turner Parkway frontages. Submit streetlight plans in accordance with the City Standard Specifications showing pole type, luminaires type, conductor and wiring schedule, connection points, lamp wattage and pull box locations, at the time of submittal of improvement plans. Streetlights shall be completely installed and operational prior to issuance of Certificate of Occupancy. **(ENGR)**
61. All new utilities shall be constructed underground prior to issuance of Certificate of Occupancy. **(ENGR)**
62. The City requests that the applicant assist in the coordination of the undergrounding of the existing overhead utilities along Admiral Callaghan Lane including aerial street crossings. The applicant will work with the City on an Agreement to manage the design, construction and administration of this work, provided this is feasible within the project timeline. The applicant is not required to fund design and construction. The applicant will coordinate all work related to undergrounding the overhead utilities with the affected utility companies. Grant funds may be available for design and construction. **(ENGR)**

Drainage/Stormwater/C.3 Requirements:

63. Submit a Stormwater Control Plan (SWCP) prepared in accordance with the current Contra Costa Clean Water Program Stormwater C.3 Guidebook for review and approval by Engineering Division prior to issuance of any permit. The SWCP shall be prepared and certified by a Registered Civil Engineer, registered in the State of California, demonstrating an understanding of the design of treatment measures for water quality and groundwater protection principles applicable to the project site. **(ENGR)**
64. Prior to issuance of permits for building, site improvements, or landscaping, applicant shall submit a permit application consistent with the applicant's approved Stormwater Control Plan (SWCP), and include drawings and specifications necessary for construction of site design features, measures to limit directly connected impervious area, pervious pavements, self-retaining areas, treatment Best Management Practices (BMP's), permanent source control BMP's, and other features that control stormwater flow and potential stormwater pollutants. The Contra Costa Clean Water Program permit application shall include a completed "Construction Plan C.3 Checklist" as described in the Stormwater C.3 Guidebook, and a detailed draft Stormwater BMP Operation and Maintenance (O&M) Plan consistent with the general O&M plan included in the applicant's approved Stormwater Control Plan. Guidelines for the preparation of Stormwater BMP Operation and Maintenance Plans are in Appendix F of the Stormwater C.3 Guidebook. **(ENGR)**
65. Comply with stormwater treatment measures per the approved SWCP prior to issuance of Certificate of Occupancy. **(ENGR)**
66. Submit a final Stormwater BMP Operation and Maintenance Plan (O&M Plan) for review and approval by Engineering Division, prior to issuance of Certificate of Occupancy. This O&M Plan shall incorporate City comments on the draft O&M Plan and any revisions resulting from changes made during construction. The implementation of the O&M Plan shall be the responsibility of the property owner or the HOA where one exists. **(ENGR)**
67. Execute any agreements identified in the SWCP which pertain to the transfer of ownership, right-of-entry for inspection or abatement, and/or long-term maintenance of stormwater treatment or hydrograph modification BMPs, prior to issuance of Certificate of Occupancy. **(ENGR)**
68. Prevent site drainage from sheet flow across sidewalks and driveways in a concentrated manner. **(ENGR)**
69. Collect and convey all stormwater entering, and/or originating from, the site to an adequate downstream drainage facility. Submit a detailed hydrologic and hydraulic study including calculations for a 100-year storm as well as a capacity study accounting for offsite sources with the Improvement Plans to Engineering Division for review and approval. **(ENGR, VFWD)**

70. Submit a Construction Best Management Practice (BMP) Program for review and approval by the Engineering Division prior to issuance of a Building and/or Grading Permit. The general contractor and all subcontractors and suppliers of materials and equipment shall implement these BMPs. Construction site cleanup and control of construction debris shall also be addressed in this program. Failure to comply with the approved construction BMP may result in the issuance of correction notices, citations, or a project stop work order. **(ENGR)**
71. Ensure that the area surrounding the project such as the streets stay free and clear of construction debris such as silt, dirt, dust, and tracked mud coming in from or in any way related to project construction. Areas that are exposed for extended periods shall be watered regularly to reduce wind erosion. Paved areas and access roads shall be swept on a regular basis. All trucks carrying soil, silt, dirt, dust, debris and other materials that may potentially become airborne during transport shall be covered. **(ENGR)**

Agreements, Fees, Bonds:

72. Enter into a Subdivision Agreement with the City agreeing to construct and complete all improvements necessary to service the subdivision. The Agreement shall be executed and submitted to the City prior to approval of the Final Map. As part of the Agreement, pay all fees and provide securities acceptable to the City, guaranteeing construction of the required improvements. **(ENGR)**
73. **The owner(s) of Parcels 1 and 2** shall own and maintain all private water lines, sewer lines and manholes in **Parcels 1 and 2** as shown on the attached Vesting Tentative Map and/or Planned Development plans. Applicant shall submit three (3) copies of the Commercial Center's **Operation and Maintenance Plan (O&M Plan)** or equivalent for Parcels 1 and 2 with the Grading and Improvement Plans and Final Map, for review and approval. The O&M Plan shall address reciprocal access, maintenance of: utilities, water quality features, storm drainage, lighting, driveway isles, parking lot pavement and striping, access easements, pedestrian paths and walkways, landscaping, irrigation systems, fencing, retaining walls, signage, trash and recycling areas, and other common area improvements. **(ENGR)**
74. The **HOA** shall own and maintain all private storm drain facilities, passive detention areas, trails and open space in **Parcel 3** per attached Exhibit D.1. This includes all storm drain facilities with connections and shared connections to/from adjoining Parcels 1, 2, 4 and Turner Parkway. Project shall dedicate to Parcel 3 to HOA, and provide for Public Utility Easements (PUEs) on HOA-owned facilities and Public Access Easements (PAEs) on HOA-owned facilities as shown on Vesting Tentative Map and/or Planned Development plans. HOA shall enter into a **Maintenance Agreement (MA)** with the owner(s) of Parcels 1 and 2, the City of Vallejo, and VFWD per attached Exhibit D.1. The MA shall address maintenance responsibilities, and legal and financing terms and conditions on said facilities. Applicant shall submit three (3) copies of said Maintenance Agreement (MA) with the Grading and Improvement Plans and Final Map to Engineering Division for review and approval. **(ENGR, VFWD)**

75. The **HOA** shall own and maintain all storm drains and bio-retention basins in **Parcel A of Parcel 4** per attached Exhibit D.1. Project shall dedicate to HOA said facilities in Parcel 4, and provide for Private (not Public) Utility Easements on HOA-owned facilities as shown on Vesting Tentative Map and/or Planned Development plans. HOA shall enter into a **Maintenance Agreement (MA)** with the City, VFWD, and Water Resources Control Board (SWRCB) per attached Exhibit D.1. **(ENGR, VFWD)**
76. All improvement and maintenance agreements required in connection with said plans shall be submitted to and approved by the City and other agencies having jurisdiction over said project prior to recording of the Final Map or issuance of a Building Permit, whichever comes first, unless otherwise specified therein. Grading Permit may be issued prior to recording of Final Map. **(ENGR)**
77. All required faithful performance bonds and labor materials bonds in a penal amount equal to 100 percent of the approved estimates of construction costs of improvements shall be submitted to and approved by the City and other agencies having jurisdiction prior to approval of the Final Map or issuance of a Building Permit, whichever comes first. A Grading Permit may be issued without the other permits in place by posting an appropriate Bond for grading. **(ENGR)**
78. The applicant shall pay its fair share amount not-to-exceed \$206,400 for the installed traffic signal on Admiral Callaghan Lane at Rotary Way. This represents 40 percent of the maximum total traffic signal cost of \$516,000 per the City's reimbursement agreement with In-N-Out. **(ENGR)**
79. The applicant shall pay all required fees in the Northgate Fee District 94-1. This condition shall be met prior to the issuance of a Building Permit. **(ENGR)**

State of California:

80. The applicant shall obtain a Transportation Permit (TP) from the State of California, and provide a copy of TP to the City Engineer. The applicant shall also provide a copy of the Transportation Management Plan (TMP) to the City Engineer, if it is required by the State. **(ENGR)**

Applicant shall adhere to the following (but not limited to) standard conditions on detailed project construction plans:

- PW1. **PUBLIC IMPROVEMENT STANDARDS.** All public improvements shall be designed to City of Vallejo standards and to accepted engineering design standards. The **City Engineer** has all such standards on file and the Engineer's decision shall be final regarding the specific standards that shall apply. (COV, Regulations & Standard Specifications, 2011).
- PW2. **IMPROVEMENT PLANS.** Prior to building permit submittals, submit three sets of plans to the **Department of Public Works** for plan check review and approval. (Improvement or civil plans are to be prepared by a licensed civil engineer.) Plans are to include, but may not be limited to, grading and erosion control plans, improvement plans, joint trench utility, street light plans, and landscaping,

irrigation and fencing plans and all supporting documentation, calculations and pertinent reports. (COV, Regulations & Standard Specifications, 2011, Section 1.1.7–A).

- PW3. **LINE OF SIGHT CRITERION.** In design of grading and landscaping, line of sight distance shall be provided based on Caltrans standards. Installation of fencing, signage, above ground utility boxes, etc. shall not block the line of sight of traffic and must be set back as necessary. (VMC, Section 10.14).
- PW4. **ON-SITE SOILS ENGINEER.** Per the requirements of a **Public Works Grading Permit**, the project geologist or soils engineer and necessary soils testing equipment must be present onsite during grading operations. In the absence of the soils engineer or his representative onsite, the **Department of Public Works** shall shut down the grading operation. (VMC, Section 12.40.080).
- PW5. **DUST AND EROSION CONTROL.** Applicant to submit an Erosion and Sediment Control Plan as a part of the Building Permit Application. All dust and erosion control shall be in conformance with City standards and ordinances. (VMC, Sections 12.40.050 & 12.40.070).
- PW6. **COMPACTION TESTS.** Prior to building permit issuance or acceptance of grading, compaction test results and certification letter from the project soils engineer and civil engineer confirming that the grading is in conformance with the approved plans must be submitted to the **Department of Public Works** for review and approval. Test values must meet minimum relative compaction recommended by the soils engineer (usually at least 90 percent). (COV, Regulations & Standard Specifications, 2011, Section 2.4.1).
- PW7. **DRIVEWAY STANDARDS.** Entrances to any private project must be standard driveway approaches unless deviation is permitted by the **City Engineer**. (VMC, Section 10.04.260).
- PW8. **STREET EXCAVATION PERMIT.** Applicant shall obtain a street excavation permit from the **Department of Public Works** prior to performing any work within City streets or rights-of-way, or prior to any cutting and restoration work in existing public streets for utility trenches. All work shall conform to City standards. (VMC, Section 10.08).
- PW9. **ENCROACHMENT PERMIT.** Prior to issuance of Building Permit, applicant shall obtain an encroachment permit from the **Department of Public Works** for all work proposed within the public right-of-way. (VMC, Section 10.16).
- PW10. **TRAFFIC CONTROL PLAN.** Prior to start of construction, applicant shall submit a traffic control plan to the **Department of Public Works** for review and approval. (CA MUTCD).
- PW11. **COORDINATION OF CONSTRUCTION INSPECTION.** Construction inspection shall be coordinated with the **Department of Public Works** and no construction shall deviate from the approved plans. (COV, Regulation & Standard Specification Sections 1.1.4 & 1.1.5).

- PW12. **BONDS AND FEES.** Prior to approval of construction plans, provide bonds and pay applicable fees. Bonding shall be provided to the City in the form of a "Performance Surety" and a separate "Labor and Materials Surety" in amounts stipulated by City ordinance. (VMC, Section 15.12.090)
- PW13. **INSTALL IMPROVEMENTS.** Prior to occupancy/final building inspection, install the improvements required by the **Department of Public Works** including but not limited to streets and utilities.
- PW14. **SIDEWALK REPAIR.** Prior to occupancy/final building inspection, remove and replace any broken curb, gutter, sidewalk or driveway approach as directed in the field by the **City Engineer**. (VMC, Section 10.04).
- PW15. **STREET TREES.** Prior to release for occupancy, plant required street trees in accordance with City Municipal Code. The list of approved trees is available in the office of the Public Works Director. The minimum standard shall be at least one tree for each 50 feet of street frontage or fraction thereof, including secondary or side streets. Street tree(s) shall be inspected by Public Works Landscape Inspector prior to release for occupancy. (VMC, Section 15.06.190 and Regulations and Standard Specifications Section 3.3.48).
- PW16. **JOINT TRENCH.** The developer shall provide preliminary joint trench composite plans for the underground electrical, gas, telephone, cable television and communications conduits and cables including the size, location and details of all trenches, location of all building utility service stubs and meters and placement or arrangements of junction structures as a part of the Improvement Plans submitted for the project. The composite drawings and/or utility improvement plans shall be signed by a licensed engineer. (VMC, Sections 15.06.160&170).
- PW17. **SIGNAL INTERCONNECT CABLES.** There may be fiber optic and /or copper signal interconnect cables located at the edge of the roadway or under the sidewalk. The plans should address either the relocation of these cables or a note should be made of the cable location. A warning should be included on the plans stating that if the cable is damaged, the entire length of the cable between the two nearest hubs will be replaced by the contractor unless otherwise authorized by the City Engineer.
- PW18. **ADA COMPLIANCE WITHIN CITY ROW.** In order to ensure ADA compliance within any and all City ROW, ADA compliance will be addressed in accordance to the state government and federal codes: HEALTH AND SAFETY CODE DIVISION 13 PART 5.5. ACCESS TO PUBLIC ACCOMMODATIONS BY PHYSICALLY HANDICAPPED PERSONS [19955 - 19959.5] (Part 5.5 added by Stats. 1969, Ch. 1560.)
http://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=HSC&division=13.&title=&part=5.5.&chapter=&article=
GOVERNMENT CODE DIVISION 5 CHAPTER 7 ACCESS TO PUBLIC BUILDINGS BY PHYSICALLY HANDICAPPED PERSONS [4450 – 4461] (Chapter 7 added by Stats. 1968, Ch. 261.)

http://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=GOV&division=5.&title=1.&part=&chapter=7.&article=

FEDERAL

THE AMERICAN WITH DISABILITIES ACT OF 1990

https://www.ada.gov/2010_reqs.htm

FIRE DEPARTMENT:

Mercantile and Business Occupancies – Code Requirements:

Access and Water Supply:

- 1) Access roads shall be designed and maintained to support the imposed loads of fire apparatus weighing 70,000 lbs. with an all-weather driving surface.
- 2) All access roads shall be installed and maintained serviceable prior to and during combustible construction.
- 3) Access roads shall have an unobstructed width of not less than 20' with a maximum grade of 15%. Access roads shall have a minimum of 13'-6" of vertical clearance, including trees, wires and overhead signs. Speed bumps or other vertical traffic calming devices are prohibited on routes of fire access.
- 4) All vehicle access gates shall be equipped with a Knox Key switch or pad lock. Contact the Fire Department at 707-648-4546 or visit www.knoxbox.com for further information.
- 5) Access roads that are fire lanes shall either be posted with permanent all-weather signs constructed and installed in accordance with the Fire Department Fire Lane Marking Standards or shall all have curbs painted red and a sign posted at each entrance. Contact the Fire Prevention Bureau for further information and design templates. Location of such areas shall be determined prior to final inspection.
- 6) Submit plans and obtain permit from the Fire Department for new fire service main and fire hydrants.
- 7) Approved impact protection shall be installed as necessary to protect hydrants from vehicular impact. Such measures shall be provided to the Fire Prevention Bureau for review and approval prior to final inspection. The building owner shall be responsible for painting of hydrants, verifying street valves are fully open and the placement of blue reflective dots prior to requesting a final inspection. Maintenance, inspection and testing of private hydrants are the responsibility of the property owner. Private hydrants shall be painted red.

- 8) All fire protection equipment and building utilities including gas shut-off valves, and electrical service disconnects shall be located in a single area to allow use by the fire department without having to transit through a structure. In new construction, equipment should be located within an interior room having an exterior access door or in an exterior enclosure attached to the building, specifically for the purpose of housing such equipment.
- 9) The building electrical service disconnecting means shall be installed in a readily accessible location either outside the building or nearest the point of entrance of the service conductors. The disconnecting means shall be accessible to emergency personnel, either directly or by a remote actuating device without requiring transit of the building interior.
- 10) Prior to final Inspection, in accordance with the 2016 California Fire Code rooms or areas containing controls for HVAC systems, electrical panels, automatic fire extinguishing systems, fire alarm equipment or other detection, suppression or control elements shall be identified with appropriate signs.
- 11) A flush-mounted (recessed) Knox Box (key box) mounted no higher than 5 feet above the finished floor containing appropriate keys for emergency fire department access shall be provided. The minimum size box is the 3200 series with a hinged door and recessed mounting kit. The tamper kit is not required, box color may be any of the Knox options. It takes approximately 2 weeks for delivery. For more information call the Fire Prevention Division at (707) 648-4565
- 12) Keys for the Knox Box entry system required by the fire department shall be attached to durable tags with permanent marking identifying the door(s) or lock(s) that the key functions with. i.e. "MASTER" or "MECHANICAL ROOM".

Building Identification:

- 13) Prior to final inspection, in accordance with the 2016 California Fire Code approved address numbers shall be placed on all new and existing buildings in such a position as to be plainly visible and legible from the street or road fronting the property. Said numbers shall clearly contrast with their background. The characters shall be a minimum of 4" high (6" for Commercial) with a 1/2" stroke. The size of the building and distance or location of the address numbers from the roadway may necessitate larger numbers.

Building Fire Extinguishers:

- 14) Prior to final inspection, the minimum fire-extinguisher requirement shall be one 2A-10BC rated portable unit in such locations so that maximum floor-travel

distance does not exceed 75' to the nearest extinguisher from any portion of the building with a maximum of 3,000 square feet of floor area surveyed. Plan submittal shall include the proposed location of extinguishers. Final location shall be approved in the field by the fire department. Hazardous areas will require increased sizing of fire extinguishers.

- 15) All fire extinguishers shall be mounted in a conspicuous and readily accessible location either on a bracket or within an approved storage cabinet. Fire extinguishers shall be mounted so the top of the unit is 3 feet to 5 feet off the finished floor. If the extinguisher is not readily visible, a sign shall be located directly above the extinguisher. The sign shall be legible and of a contrasting color with its background. Final installation measures and identification signage shall be approved in the field by the Fire Department prior to final inspection sign-off.

Automatic Fire Extinguishing Systems:

- 16) An automatic fire sprinkler system is required for this building. Please submit 2 sets of plans and calculations to the Fire Marshal's Office and obtain permit prior to installation. Please note the density of the system must be compatible with the occupancy classification. The plan review and permit fee is \$567 plus \$6 per head. This is a separate submittal to the Fire Department.
- 17) All fire-sprinkler systems shall be designed and installed in accordance with NFPA Standard 13, and the California Fire and Building Code.
- 18) The Fire Department Connection (FDC) and (PIV) shall be located within 100 feet of the nearest fire hydrant and approved by the fire department. The FDC shall be labeled with the building address.
- 19) If cooking is proposed, provide an approved automatic fire extinguishing system to protect all cooking equipment. A permit is required from the Fire Marshal's office for fixed fire extinguishing systems. Please submit 2 sets of plans for review and approval. Design and system calculations shall be prepared by a licensed C-16 Contractor.

Fire Flow and Water Service:

- 20) Fire-Flow requirements for buildings shall be in accordance with the 2016 California Fire Code.
- 21) An underground fire service main and fire hydrants are required for this building. Please submit 2 sets of plans for the underground fire service main for review and permitting requirements. The plan review and permit fee is \$637. This is a separate deferred submittal to the Fire Department.

Building Fire Alarm and Monitoring Systems:

- 22) An approved fire alarm system shall be designed and installed as specified in the 2016 California Fire Code, California Building Code, NFPA 72, and the National Electrical Code as amended by the State of California and local ordinances. Please submit 2 sets of fire alarm plans and obtain permit from the Fire Marshal's Office prior to installation. Please include listed device selections cut sheets. Fire alarm system must be designed and installed by a C-10 Licensed Contractor or be certified as a Fire/Life Safety Technician on all systems that exceed 100VA. Approved audible and visual notification devices shall be connected to every automatic sprinkler system to alert occupants upon activation within each separate occupancy.

Audible alarm devices shall also be provided on the exterior of the building in an approved location.

A minimum of one smoke detector listed for the intended purpose shall be installed in the following areas:

- a. Mechanical equipment, electrical, transformer, telephone equipment, elevator machine or similar rooms.
- b. The main return and exhaust air plenum of each air-conditioning system serving more than one story and located in a serviceable area downstream of the last duct inlet.

The plan review and permit fee is \$598 plus \$6 for each device.

An automatic smoke detection system shall be installed throughout high-piled combustible storage areas - Review commodity classification 2016 CFC Table 3206.2 for this requirement.

- 23) Smoke detection/dampers for HVAC systems shall be required as set forth in the Mechanical Code. Areas served by a single or multiple units exceeding 2000 CFM shall have detectors installed and supervised by the fire alarm system. Detectors shall not trip a general alarm. Detectors shall be self-restoring or a readily accessible manual reset shall be installed.

Building Egress:

- 24) Means of egress illumination shall be provided and maintained at any time the building is occupied. The means of egress shall be illuminated of not less than 1 foot candle power and shall be approved by the Fire Prevention Division prior to sign-off of the final inspection.

- 25) Emergency exit lighting shall be provided at or near all exits and as designated by the Fire Marshal. Final exit lighting shall be approved by the Fire Marshal prior to sign-off of the final inspection.
- 26) In accordance with the 2016 California Fire Code Chapter 10, all emergency lighting and exit signs lights shall have two separate sources of power.
- 27) All buildings shall comply with the 2016 California Building Code, Chapter 10 Means of Egress requirements. Including but not limited to: exit signs, exit doors, exit hardware and exit illumination.
- 28) Provide a detailed means of egress, path of travel, exit plan prior to building permit approval. Due prior to Building Permit issuance.
- 29) Locking devices on exit doors shall conform to the 2016 California Fire Code Chapter 10, only one lock or latch requiring one motion/operation to open/unlock is required. No double keyed dead-bolts are permitted on exit doors. Panic hardware is required.
- 30) Maintain the width of the exit system; tables, chairs, merchandise storage systems and other devices shall not obstruct the means of egress along the path of exit travel based on the cumulative occupant load served. Maintain clear access to all exits at all times.

Occupancy Separations:

- 31) Occupancy separations (fire walls) are required. Please see Table 508.3 of the 2016 California Building Code for more information.

Hazardous Materials Storage, High Pile Storage and Use:

- 32) Outdoor storage of combustible rubbish shall not produce conditions that will create a nuisance or a hazard to the public health, safety or welfare. All combustible material shall be stored separately from non-combustible material in piles with a minimum separation of six (6) feet and shall not exceed a height limit of twenty (20) feet.
- 33) Maintain indoor combustable storage at or below 12 feet in the warehouse storage area or the facility shall comply with all applicable sections of the 2016 California Fire Code with regards to High-Piled Combustible Storage. A permit is required for High Piled Combustible Storage from Vallejo Fire Department.
- 34) Smoke and Heat Removal: Smoke and heat vents *or mechanical smoke exhaust systems* shall be installed in the roofs of buildings or portions thereof occupied for the uses; Group F-1 or S-1 occupancy having more than 50,000 square feet

of undivided area and in Buildings and portions thereof containing high-piled combustible stock or rack storage. This item is approved for a differed submittal. Due prior to final inspection. Please see the 2016 CFC, Chapter 9, Sections 909, 910 for further information. Review commodity classification in the 2016 CFC Table 3206.2 for this requirement.

- 35) Tire Storage shall be in accordance with the 2016 California Fire Code, Chapter 34. A separate permit is required from the Vallejo Fire Department prior to occupancy.
- 36) Hazardous Materials Business Plan Requirements. Any occupancy that will be conducting operations or storing materials that are hazardous will obtain the appropriate permits from the Solano County Department of Health prior to commencing business operations.
- 37) Material Data Safety Sheets (MSDS) covering all hazardous materials on site shall be readily available on the premises. Location of the MSDS sheets shall be posted in a conspicuous location approved by the Fire Prevention Division prior to sign-off of the final inspection.
- 38) NFPA 704 placard signs shall be posted at all hazardous material storage area's. Please indicate on the plans the location of all signage for review and approval by the Fire Prevention Division prior to final inspection.
- 36) Warning signs (NO SMOKING) are required per the California Fire Code.
- 37) All compressed gas cylinders shall be adequately secured to prevent falling or being knocked over. Fasteners used to secure cylinders shall be of non-combustible material. This requirement shall be reviewed and approved by the Fire Prevention Division prior to final inspection sign-off.
- 41) Provide "Roof Access" sign at roof ladder location.
- 42) All roof material shall be rated class "A" or better.

Motor Vehicle Fuel Dispensing Station – Code Requirements:

- 1) All buildings, facilities, and developments shall be accessible to fire department apparatus by way of approved access roadways.
- 2) Access roads shall be designed and maintained to support the imposed loads of fire apparatus weighing 70,000 lbs. with an all-weather driving surface. The turning radius shall be determined by the fire official. Due prior to building permit issuance.

- 3) Access roads shall have an unobstructed width of not less than 20' with a maximum grade of 15%. Access roads shall have a minimum of 13'-6" of vertical clearance, including trees, wires and overhead signs. Speed bumps or other vertical traffic calming devices are prohibited on routes of fire access.
- 4) Access roads that are fire lanes shall either be posted with permanent all-weather signs constructed and installed in accordance with the Fire Department Fire Lane Marking Standards and shall have curbs painted red and a sign posted at each entrance. Contact the Fire Prevention Bureau for further information and design templates. Location of such area's shall be determined prior to final inspection.
- 5) All fire protection equipment and building utilities including gas shut-off valves, and electrical service disconnects shall be located in a single area to allow use by the Fire Department without having to transit through a structure. In new construction, equipment should be located within an interior room having an exterior access door or in an exterior enclosure attached to the building, specifically for the purpose of housing such equipment. Please indicate on the plans these locations.
- 6) The building electrical service disconnecting means shall be installed in a readily accessible location either outside the building or nearest the point of entrance of the service conductors. The disconnecting means shall be accessible to emergency personnel, either directly or by a remote actuating device without requiring transit of the building interior.
- 7) Rooms or areas containing controls for HVAC systems, electrical panels, automatic fire extinguishing systems, fire alarm equipment or other detection, suppression or control elements shall be identified with appropriate signs. Due prior to final inspection.
- 8) Approved address numbers shall be placed on all new and existing buildings in such a position as to be plainly visible and legible from the street or road fronting the property. Said numbers shall clearly contrast with their background. The characters shall be a minimum of 4" high with a 1/2" stroke. The size of the building and distance or location of the address numbers from the roadway may necessitate larger numbers. Due prior to final inspection.
- 9) All roof material shall be rated class "A" or better.
- 10) Hazardous Materials Business Plan Requirements. Any occupancy that will be conducting operations or storing materials that are hazardous will obtain the appropriate permits from the Solano County Department of Health prior to commencing business operations.
- 11) All hazardous material underground storage tanks (Motor Fuel – Dispensing Facilities) shall comply with the 2016 California Fire Code Chapters 22, 27, and

34. Installation permits for underground storage tanks are required from Solano County Department of Health. Installation permits are required from the Vallejo Fire Department for all above ground storage tanks.

12) All hazardous material storage tanks shall be constructed and installed in accordance with nationally recognized standards and the manufacturer's instructions.

13) All hazardous material storage tanks shall be labeled and the content classification clearly indicated. Warning Labels, Identification Labels & Haz-Mat tanks shall comply with the 2016 California Fire Code secondary containment requirements. Compliance shall be confirmed by the Fire Prevention Division prior to sign-off of the final inspection.

14) Protection from Vehicles: Guard posts or other approved means shall be provided to protect tanks subject to vehicular damage in accordance with CFC §312. When guard posts are installed, posts shall be:

312.1 General. Vehicle impact protection required by this code shall be provided by posts that comply with Section 312.2 or by other approved physical barriers that comply with Section 312.3.

312.2 Posts. Guard posts shall comply with all of the following requirements:

- a. Constructed of steel not less than 4 inches (102 mm) in diameter and concrete filled.
- b. Spaced not more than 4 feet (1219 mm) between posts on center.
- c. Set not less than 3 feet (914 mm) deep in a concrete footing of not less than a 15-inch (381 mm) diameter.
- d. Set with the top of the posts not less than 3 feet (914 mm) above ground.
- e. Located not less than 3 feet (914 mm) from the protected object.

15) Emergency disconnect switches: An *approved*, clearly identified and readily accessible emergency disconnect switch shall be provided at an *approved* location to stop the transfer of material to the tank. The emergency disconnect switch shall be located within 100 feet (30 480 mm) of, but not less than 20 feet (6096 mm) from the material dispensers. Such devices shall be distinctly *labeled* as:

EMERGENCY SHUTOFF. Signs shall be provided in *approved* locations established during final inspection, using the following language:

IN CASE OF FIRE, SPILL OR RELEASE:

- a. USE EMERGENCY PUMP SHUTOFF**
- b. REPORT THE ACCIDENT**
- c. FIRE DEPARTMENT TELEPHONE NUMBER 911**
- d. FACILITY ADDRESS: [Insert address here]**

16) Provide spill containment measures (Spill Kit) on site in safe accessible location. The Spill Kit material shall be compatible the material being stored. Training shall be provided to staff in accordance with 2016 California Fire Code. Due prior to final inspection.

17) Material Data Safety Sheets (MSDS) covering all hazardous materials on site shall be readily available on the premises. Location of the MSDS sheets shall be posted in a conspicuous location approved by the Fire Prevention Division prior to sign-off of the final inspection.

18) **Warning signs.** Warning signs shall be conspicuously posted within sight of each dispenser in the fuel-dispensing area and shall state the following:

- 1. No smoking.
- 2. Shut off motor.
- 3. Discharge your static electricity before fueling by touching a metal surface away from the nozzle.
- 4. To prevent static charge, do not reenter your vehicle while gasoline is pumping.
- 5. If a fire starts, do not remove nozzle-back away immediately.
- 6. It is unlawful and dangerous to dispense gasoline into unapproved containers.
- 7. No filling of portable containers in or on a motor vehicle. Place container on ground before filling.

19) NFPA 704 placard signs shall be posted at all hazardous material storage area's and must be approved by the Fire Prevention Division during final inspection.

20) Provide one 4A20BC fire extinguisher not less than 10 feet or no more than 50 feet from any dispensers.

21) All fire extinguishers shall be mounted in a conspicuous and readily accessible location either on a bracket or within an approved storage cabinet. Fire extinguishers shall be mounted so the top of the unit is 3 feet to 5 feet off the finished floor. If the extinguisher is not readily visible, a sign shall be located directly above the extinguisher. The sign shall be legible and of a contrasting color with its background.

22) A separate Operational Permit is required from the Fire Department for the MOTOR VEHICLE FUEL DISPENSING STATION. Due prior to Building Permit issuance.

Assembly Occupancies – Code Requirements:

- 1) Access roads shall be designed and maintained to support the imposed loads of fire apparatus weighing 70,000 lbs. with an all-weather driving surface.
- 2) Access roads shall have an unobstructed width of not less than 20' (16' for single residential) with a maximum grade of 15%. Access roads shall have a minimum of 13'-6" of vertical clearance, including trees, wires and overhead signs. Speed bumps or other vertical traffic calming devices are prohibited on routes of fire access.
- 3) All access roads shall be installed and maintained serviceable prior to and during combustible construction.
- 4) Access roads that are fire lanes shall either be posted with permanent all-weather signs constructed and installed in accordance with the Fire Department Fire Lane Marking Standards or shall all have curbs painted red and a sign posted at each entrance. Contact the Fire Prevention Bureau for further information and design templates. Location of such area's shall be determined prior to final inspection.
- 5) All fire protection equipment and building utilities including gas shut-off valves, and electrical service disconnects shall be located in a single area to allow use by the Fire Department without having to transit through a structure. In new construction, equipment should be located within an interior room having an exterior access door or in an exterior enclosure attached to the building, specifically for the purpose of housing such equipment.
- 6) The building electrical service disconnecting means shall be installed in a readily accessible location either outside the building or nearest the point of entrance of the service conductors. The disconnecting means shall be accessible to emergency personnel, either directly or by a remote actuating device without requiring transit of the building interior.
- 7) Prior to final Inspection, in accordance with the 2016 California Fire Code rooms or areas containing controls for HVAC systems, electrical panels, automatic fire extinguishing systems, fire alarm equipment or other detection, suppression or control elements shall be identified with appropriate signs.
- 8) A flush-mounted (recessed) Knox Box (key box) mounted no higher than 5 feet above the finished floor containing appropriate keys for emergency Fire Department access shall be provided. The minimum size box is the 3200 series with a hinged door and recessed mounting kit. The tamper kit is not required, box color may be any of the Knox options. It takes approximately 2 weeks for delivery. For more information call the Fire Prevention Division at (707) 658-4565 or visit www.knoxbox.com

- 9) Keys for the Knox Box entry system required by the Fire Department shall be attached to durable tags with permanent marking identifying the door(s) or lock(s) that the key functions with. i.e. "MASTER" or "MECHANICAL ROOM".
- 10) Prior to final inspection, in accordance with the 2016 California Fire Code approved address numbers shall be placed on all new and existing buildings in such a position as to be plainly visible and legible from the street or road fronting the property. Said numbers shall clearly contrast with their background. The characters shall be a minimum of 4" high (6" for Commercial) with a 1/2" stroke. The size of the building and distance or location of the address numbers from the roadway may necessitate larger numbers.
- 11) Prior to final inspection, the minimum fire-extinguisher requirement shall be one 2A-10BC rated portable unit in such locations so that maximum floor-travel distance does not exceed 75' to the nearest extinguisher from any portion of the building with a maximum of 3,000 square feet of floor area surveyed. Plan submittal shall include the proposed location of extinguishers. Final location shall be approved in the field by the Fire Department.
- 12) All fire extinguishers shall be mounted in a conspicuous and readily accessible location either on a bracket or within an approved storage cabinet. Fire extinguishers shall be mounted so the top of the unit is 3 feet to 5 feet off the finished floor. If the extinguisher is not readily visible, a sign shall be located directly above the extinguisher. The sign shall be legible and of a contrasting color with its background. Final installation measures and identification signage shall be approved in the field by the Fire Department prior to final inspection.
- 13) If cooking is proposed provide an approved automatic fire extinguishing system to protect all cooking equipment. A permit is required from the Fire Marshal's office for fixed fire extinguishing systems. Please submit 2 sets of plans for review and approval. Design and system calculations shall be prepared by a licensed C-16 Contractor.
- 14) Activation of the (kitchen) fixed fire extinguishing system shall activate the fire sprinkler monitoring system alarm.
- 15) Smoke detection/dampers for HVAC systems shall be required as set forth in the Mechanical Code. Areas served by a single or multiple units exceeding 2000 CFM shall have detectors installed and supervised by the fire alarm system. Detectors shall not trip a general alarm. Detectors shall be self-restoring or a readily accessible manual reset shall be installed.
- 16) An automatic fire sprinkler system is required for the proposed building. Please submit 2 sets of plans and calculations to the Fire Marshal's Office and obtain permit prior to installation. Please note the density of the system must be compatible with the occupancy classification and designed in accordance with NFPA 13.

- 17) Prior to final inspection an approved fire sprinkler monitoring system shall be designed and installed as specified in the 2016 California Fire Code and NFPA 72. Please submit 2 sets of fire alarm monitoring plans and obtain permit from the Fire Marshal's Office prior to installation. Please include listed device selections cut sheets.
- 18) A fire alarm system may be required based on the 2016 California Fire Code requirements.
- 19) Approved impact protection shall be installed as necessary to protect fire hydrants from vehicular impact.
- 20) The building owner shall be responsible for painting of private hydrants, verifying street valves are fully open and the placement of blue reflective dots prior to requesting a final inspection. Maintenance, inspection and testing of private hydrants are the responsibility of the property owner. Private hydrants shall be painted yellow.
- 21) Means of egress illumination shall be provided and maintained at any time the building is occupied. The means of egress shall be illuminated of not less than 1 foot candle power and shall be approved by the Fire Prevention Division prior to sign-off of the final inspection.
- 22) Emergency exit lighting shall be provided at or near all exits and as designated by the Fire Marshal. Final exit lighting shall be approved by the Fire Marshal prior to sign-off of the final inspection.
- 23) In accordance with the 2016 California Fire Code Chapter 10, all emergency lighting and exit signs lights shall have two separate sources of power.
- 24) All buildings shall comply with the 2016 California Building Code, Chapter 10 Means of Egress requirements. Including but not limited to: exit signs, exit doors, exit hardware and exit illumination.
- 25) Panic hardware is required at all exits.
- 26) Post an occupant load sign in a conspicuous place near the main exit from all rooms designated as "Assembly Areas". The sign shall read as follows:

Maximum Occupants:

General_____ (calculations shall be provided by the Architect)
Dining_____
- 27) Businesses will require an annual fire department permit for "Places of Assembly" A permit fee of \$318 will be due and payable annually.
- 28) All roof material shall be rated class "A" or better.

Residential R-3 Occupancies – Code Requirements:

The project plans have been reviewed with the information supplied. Subsequent plan submittals for review may be subject to additional requirements. Field inspections that discover fire/life safety issues may require additional revisions or alterations.

- 1) All buildings, facilities, and developments shall be accessible to fire department apparatus by way of approved access roadways. Fire Lanes shall be posted with all-weather no parking signs or RED CURBING. Locations shall be established prior to final inspection.
- 2) Access roads shall be designed and maintained to support the imposed loads of fire apparatus weighing 70,000 lbs. with an all-weather driving surface. The turning radius shall be determined by the fire official. Please indicate the turning radius for all turning approach areas.
- 3) Access roads shall have an unobstructed width of not less than 20' exclusive of parking (16' for single residential and (EVA)) with a maximum grade of 15%. Access roads shall have a minimum of 14' of vertical clearance, including trees, wires and overhead signs. Speed bumps or other vertical traffic calming devices are prohibited on routes of fire access. All access roads shall be installed and maintained serviceable prior to and during combustible construction.
- 4) Access roads that are fire lanes (EVA) shall either be posted with permanent all-weather signs constructed and installed in accordance with the Fire Department Fire Lane Marking Standards and shall all have curbs painted red and a sign posted at each entrance. Contact the Fire Prevention Bureau for further information and design templates.
- 5) All vehicles access gates shall be equipped with both a Knox Keyswitch or Click to Enter System . Contact the fire department at 707-648-4546 or visit www.knoxbox.com for further information.
- 6) Fire-Flow requirements for buildings shall be in accordance with the 2016 California Fire Code Appendix B Please indicate on the improvement plans all fire flow requirements for this project.
- 7) Fire hydrants must be installed and approved by the fire department prior to combustible construction. Fire hydrants shall be spaced a maximum of 500 feet apart.
- 8) Approved impact protection shall be installed as necessary to protect hydrants from vehicular damage.
- 9) The contractor shall be responsible for painting of hydrants, verifying street valves are fully opened and the placement of blue reflective dots prior to requesting a final inspection.

- 10) NFPA 13D Automatic Fire Sprinkler systems are required in all new residential construction and will require adequate water pressure and GPM flow. Separate permits are required from the fire department for plan review and installation.
- 11) Prior to Final Inspection, in accordance with the 2016 California Fire Code, approved address numbers shall be placed on all new and existing buildings in such a position as to be plainly visible and legible from the street or road fronting the property. Said numbers shall clearly contrast with their background. The characters shall be a minimum of 4" high (6" for commercial) with a ½" stroke. The size of the building and distance or location of the address numbers from the roadway may necessitate larger numbers.
- 12) Carbon monoxide detectors shall be installed in accordance with the manufacturers recommendations.
- 13) Provide smoke detectors in all sleeping rooms and common hallways. Detectors shall be hardwired, interconnected with battery backup. Electrical circuits supplying detectors shall be separate dedicated lines with no other devices on the circuits.

Exhibits:

- D.1 Summary of Public Works Conditions Re: Public/Private Facilities

EXHIBIT D.1
FAIRVIEW AT NORTHGATE PROJECT
CITY OF VALLEJO PUBLIC WORKS DEPARTMENT
SUMMARY CONDITIONS OF APPROVAL (COA)
April 10, 2020

Large Lot Parcel	Small Lot Parcel	Land Use	Facilities	Owned By	Maintained By	Public Utility Easement (PUE)	Access Easement (PAE)	Emergency Vehicle Access Easement (EVAE)	Public Works COA #
1		Commercial	Storm Drain Facilities, Bio-Retention Areas, Underground Hydromodification/Detention System, Trails	VFD/Lewis (future Costco)	VFD/Lewis	Governed by Stormwater O&M Agreement between VFD and Water Board	Yes. Privately Owned Public Easement.	Yes	39
2		Commercial	Storm Drain Facilities, Bio-Retention Areas, Underground Hydromodification/Detention System, Trails	VFD/Lewis (future Costco)	VFD/Lewis	Governed by Stormwater O&M Agreement between VFD and Water Board	Yes. Privately Owned Public Easement.	Yes	39
1, 2		Commercial	Public Sewer Main	VFWD	VFWD	Yes. Publicly Owned Public Easement	No	No	44
1, 2		Commercial	Private Sewer Line & Manholes	VFD/Lewis	VFD/Lewis	No	No	No	73
1, 2		Commercial	Public Gas Lines	PG&E	PG&E	Public Easement	No	No	6
1, 2		Commercial	Private Water Lines	VFD/Lewis	VFD/Lewis	No	No	No	73
3		Open Space	Storm Drain Facilities, Passive Detention Areas, Trails	HOA	HOA. Thru a MA with City/VFWD	Yes. Privately Owned Public Easement.	Yes. Privately Owned Public Easement.	No	74
3		Open Space	MA between Commercial property owners and HOA for legal and financing of shared stormwater facilities	HOA	HOA. Thru a MA with VFD, City, VFWD	Yes. Privately Owned Public Easement.	Yes. Privately Owned Public Easement.	No	74
4	A	Residential	Storm Drains, Bio-Retention Basin	HOA	HOA. Thru a MA with City, VFWD, WRCB	Yes. Privately Owned Private Easement.	Yes. Privately Owned Public Easement.	No	75
4	B, C, D, E, F, G	Residential	Sewer, Storm Drains + Inlets on Streets A, B, C, D, E, F	City	VFWD	Yes for VFWD	No	No	8
4	B, C, D, E, F, G	Residential	Surface Street Improvements (not sewer, storm drains + inlets) on Streets A, B, C, D, E, F	City	City	No	No	No	7
4		Residential	Private Alleys, Driveways on Alleys	HOA	HOA	Yes. Privately Owned Private Easement.	Yes. Privately Owned Private Easement.	Yes	41
4		Residential	Water, Sewer, Storm Drains + Inlets in Private Alleys & Driveways In Alleys, North-South Pedestrian Paseos	HOA	HOA	Yes. Privately Owned Private Easement.	No	Yes	42
4		Residential	Parksites in Parcels B, F, G; Landscaped Areas in Parcels C, D, E; East-West Pedestrian Paseos in Parcels F and G	HOA	HOA	No	Yes. Privately Owned Public Easement.	No	43
1, 2		Commercial	Trails	VFD/Lewis	VFD/Lewis	No	Yes. Privately Owned Public Easement.	No	39
3, 4		Residential	Trails	HOA	HOA	No	Yes. Privately Owned Public Easement.	No	40

LEGEND	
City	City of Vallejo
HOA	Homeowners' Association
MA	Maintenance Agreement
PG&E	Pacific Gas & Electric
VFD	VFD/Lewis (future Costco)
VFWD	Vallejo Flood and Wastewater District
SWRCB	State Water Resources Control Board

FAIRVIEW AT NORTHGATE

MASTER PLAN

VALLEJO, CALIFORNIA

MAY 2019

Revised: April 2020



ADOPTED BY THE VALLEJO CITY COUNCIL ON: _____

MACKEY & SOMPS

ENGINEERS PLANNERS SURVEYORS
5142B FRANKLIN DR, PLEASANTON, CA 94588 (925)225-0690

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SECTION 1: INTRODUCTION

1.1 MIXED USE PLANNED DEVELOPMENT (MUPD)

Fairview at Northgate is a mixed use project with both a residential component and a commercial component. The project is currently zoned as Pedestrian Shopping and Service District in the Zoning Code and will be rezoned to Mixed Use Planned Development (MUPD). The General Plan 2040 calls the property out as “Retail/Entertainment” to the west and “Mix of Housing Types” to the east. The proposed project is compatible with the General Plan and the surrounding land uses as described in Section 1.5.

Development standards have been established to provide a high quality of design and continuity throughout the Fairview at Northgate project. Design requirements such as street widths, building setbacks, architectural guidelines and landscape materials are included in the standards.

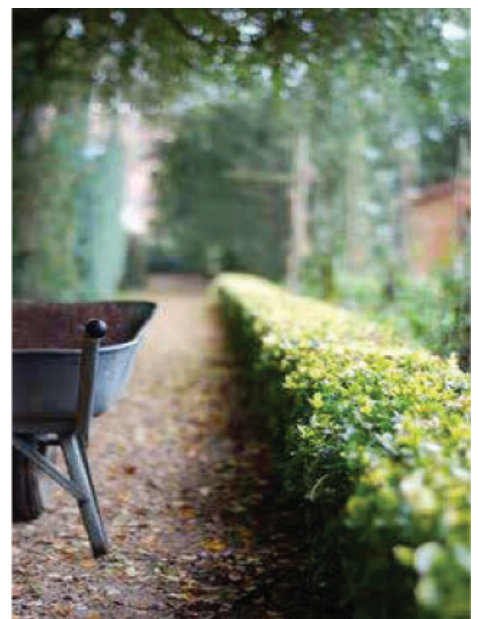
The development standards are broken down into eight sections. The first section introduces you to the project, the second section addresses the community-wide roadway standards, the third section outlines the proposed utilities, the fourth section explains residential standards, the fifth section plans for commercial standards, the sixth section describes community-wide landscape standards, the seventh section proposes project signage, the eighth section delineates community-wide architecture standards, the ninth section looks at Open Space requirements and the tenth section concludes the Master Plan.

All development within the Fairview at Northgate Master Plan is intended to conform to the development standards which are presented in this document.



1.2 PROJECT CONCEPT

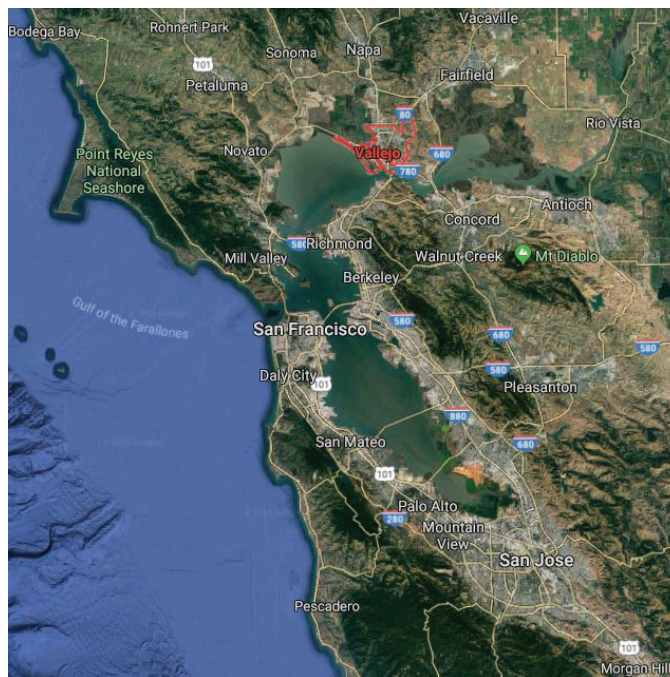
Fairview at Northgate is a Mixed Use community with a commercial side and a residential side separated by a linear Open Space. This community is walkable and connected by public streets. The project is thematically accented to create a micro agri-community with plant material and architecture taking a few cues from agriculture. There will be herb gardens and fruit trees that can be picked and enjoyed by the Fairview community. These accents will be evident in both the residential and commercial portions of the site. The central open space will be slightly enhanced beyond its natural state and can be visually enjoyed from the trail system that is adjacent to it. A plant list with the agrarian landscape theme has been created and is listed in Section 6 of these guidelines.



1.3 PROJECT LOCATION

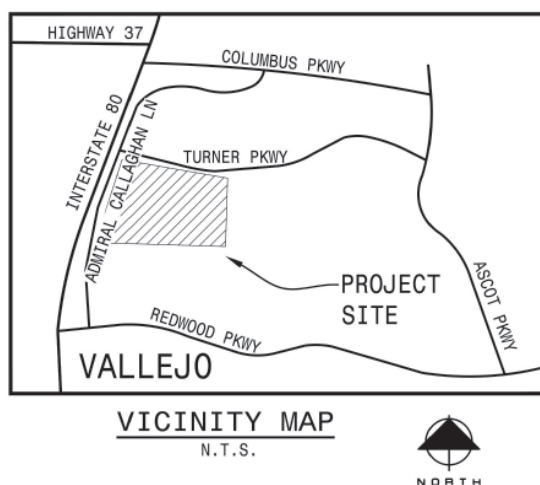
1.3.1 Regional Context

Fairview at Northgate is located in the City of Vallejo. Vallejo has excellent access to freeways and transit and has a popular and widely used ferry system that connects directly to the City of San Francisco and other parts of the Greater Bay Area. The region is experiencing continued growth, creating strong demand for commercial centers and more housing in Vallejo. See Figure below.



1.3.2 Site Location

Fairview at Northgate is 51.3± acre vacant project site located in northeast Vallejo. It occupies a single assessor parcel number (APN 0081-490-010) and fronts onto Admiral Callaghan Lane to the west and Turner Parkway to the north. The project area is south of an existing 130-acre commercial development, Gateway Plaza. There is multi-family residential and a car dealership to the south, and single-family residential to the east. The site is highly visible from Interstate-80 and is accessible via Columbus Parkway and Redwood Parkway. See Figure below.



1.4 EXISTING CONDITIONS AND TOPOGRAPHY

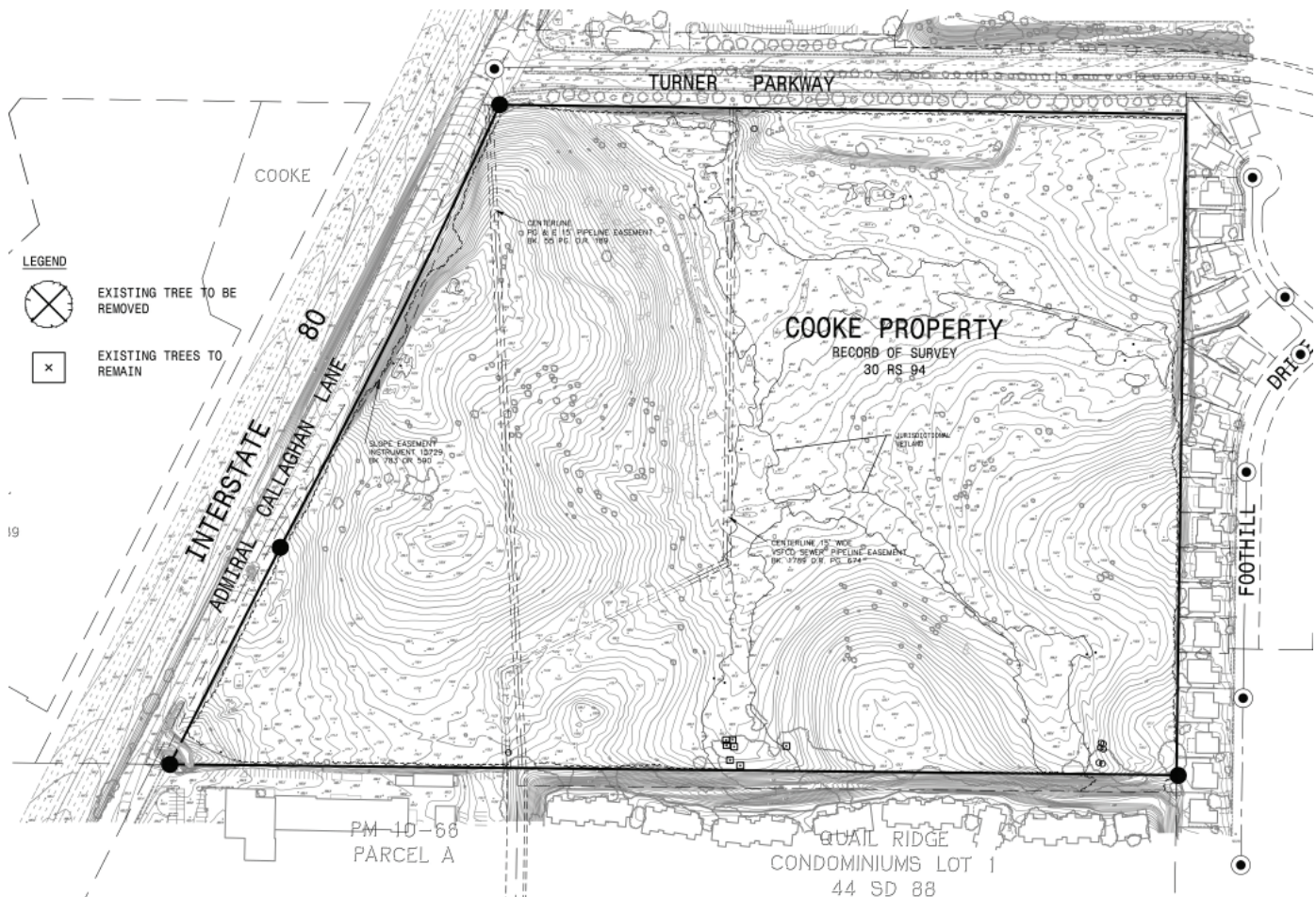
Fairview at Northgate is a 51.3± Acre vacant land parcel with gentle rolling topography crossed by two easements: a sewer easement and a PG&E gas-line easement. The easements and the utilities within shall be relocated as needed for development.

A low lying area with a jurisdictional wetland can be found in the middle part of the site. This wetland is created from regional flows off of the neighboring developed properties. The average width of this drainage shed is approximately 70 feet wide.

There are 15 existing trees located on the site. 14 of the existing trees are Red Willow trees (*Salix laevigata*) and 1 is a Eucalyptus tree (*Eucalyptus globulus*). 7 of the 14 Red Willow trees will be preserved with the development, and the remaining 7 shall be removed. The Eucalyptus tree will be removed as well. None of the existing trees are listed as protected species and will not require mitigation for removal. The existing trees planned for preservation and removal are both identified and listed on Sheet 9.0 "Existing Tree Plan" of the Planned Development Permit Application Package.

There are no significant views in any direction from this site.

The project is currently zoned as Pedestrian Shopping and Service District in the Zoning Code and will be rezoned to Mixed Use Planned Development (MUPD). The General Plan 2040 calls the property out as Retail/ Entertainment and Mix of Housing Types. The proposed project is compatible with the surrounding land uses as described in Section 1.5.



1.5 SURROUNDING LAND USES

The project site is located in a suburban and urban environment and is bordered by existing development. Surrounding land uses consist primarily of residential, commercial, open space, park uses, and transportation corridors (I-80 and other roadways). The text below provides a brief description of the surrounding land uses in the Propel Vallejo General Plan 2040 (General Plan) and zoning designations in the Development Code.

1.5.1 Land Uses to the North

The approximately 130-acre existing Gateway Plaza Shopping Center is located north of Turner Parkway. The shopping center is partially bound by Admiral Callaghan Lane on the west (which traverses through the northwest corner of the shopping center); Turner Parkway on the south; and residential and office development to the east. The General Plan land use designation for this area is Retail/Entertainment (RE) and the zoning designation in the Development Code is Freeway Shopping and Service and Mixed Use Planned Development.

1.5.2 Land Uses to the South

Land uses to the south of the project site include automotive, commercial, and residential uses. A Honda Dealership is located on the northeast corner of Admiral Callaghan Lane at Rotary Way and is immediately adjacent to the southwest boundary of the project site. The Quail Ridge Condominiums and Sundance Apartment Homes are located to the east of the auto dealership and are immediately adjacent to the southern boundary of the project site. South of Rotary Way is Redwood Plaza neighborhood commercial center that includes a Safeway grocery store, Golden 1 Credit Union, Oil Changers, Fed Ex Office, Shell gas station and other small retail uses. A two-building office complex and a KinderCare facility are located east of Redwood Plaza along Rotary Way. The General Plan land use designation for this area is primarily Mix of Housing Types, Retail/Entertainment, and Business/limited Residential. The zoning designation in the Development Code is Pedestrian Shopping and Service and High Density Residential.

1.5.3 Land Uses to the East

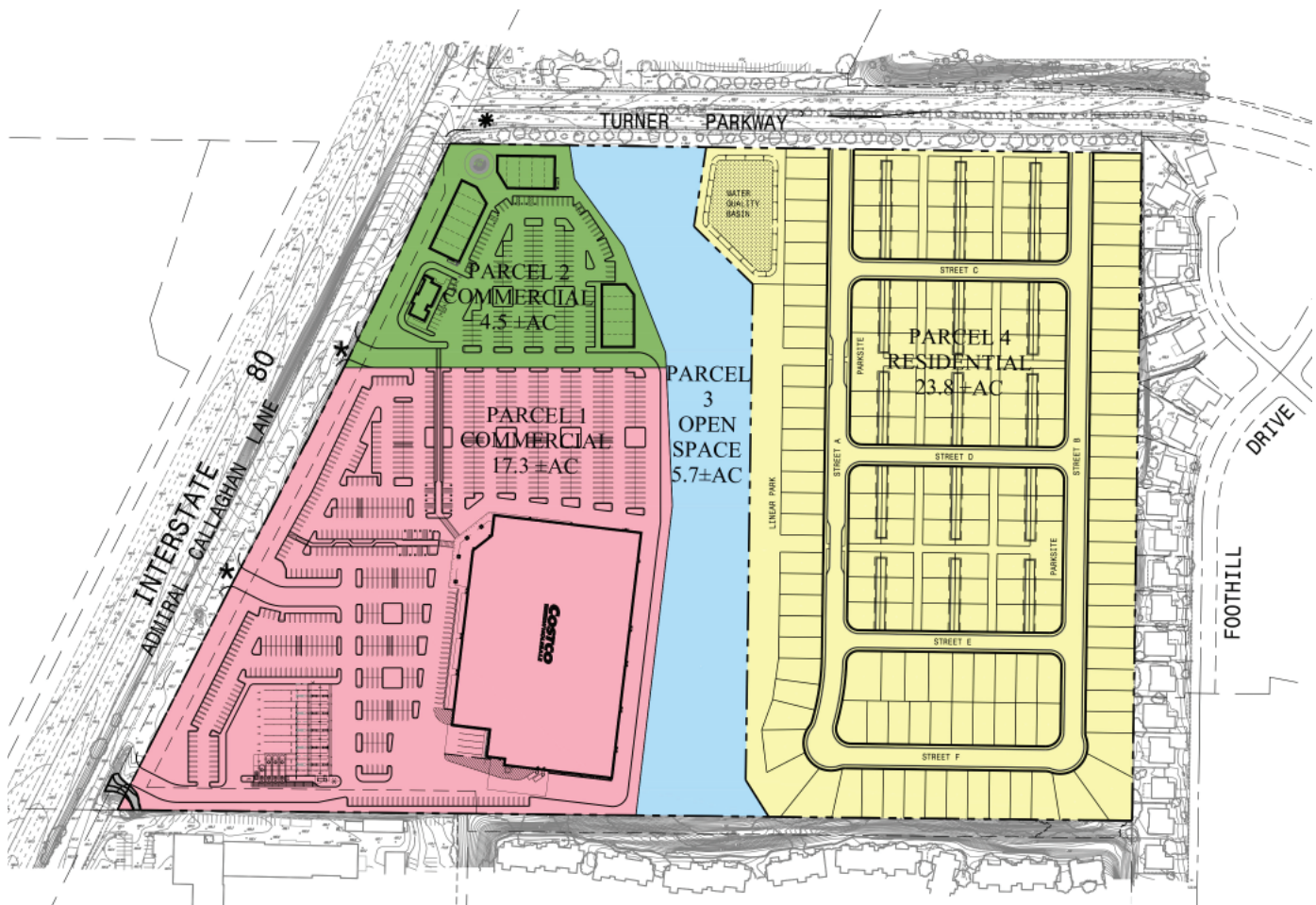
Single-family residences in the existing Hunter Ranch Subdivision are located east of the project site. Residences are on small lots ranging in size from approximately 0.15 to 0.25 acre. This area is accessed from Turner Parkway on the north, Redwood Parkway on the south, and Ascot Parkway on the east. The General Plan land use designation for this area is Primarily Single-family (R-SF) and the zoning designation in the Development Code is Low Density Residential and Mixed Use Planned Development.

1.5.4 Land Uses to the West

To the west of the proposed project site is Admiral Callaghan Lane, a two-lane undivided roadway. The road right-of-way includes an approximately 50-foot-wide area that is largely unvegetated and spans the length of the western project site boundary. To the west of Admiral Callaghan is I-80, and west of I-80 is a mix of uses including a mobile home park, single-family and multi-family residential uses, commercial uses, and the Solano County Fairgrounds. The General Plan Land use designation for this area is Business/Limited Residential (B/LR), Primarily Multi-Family (R-MF), and District Solano 360 (D-360) in the General Plan. The zoning designation in the Development Code is Freeway Shopping & Service, High-Density Residential, Linear Commercial, and Public.

1.6 PARCELS IN SITEPLAN

Fairview at Northgate is broken down into four distinct parcels: a large commercial parcel (17.3± AC), a smaller commercial parcel (4.5± AC), an open space parcel (5.7± AC) and a residential parcel (23.8±AC). The residential parcel has a density of approximately 7.5 dwelling units per acre.



1.7 PROJECT DESCRIPTION

The approximately 51.3-acre vacant, undeveloped project site is proposed for a mix of commercial, residential, recreation, and designated open space. The commercial development would be located in the western portion of the proposed project site bordered by Admiral Callaghan Lane to the west, Turner Parkway to the north, a Honda car dealership and condominiums and apartments to the south, and an open space corridor bisecting the project site to the east. The open space area would serve as a buffer to the planned residential area. Residential development would be located on the eastern portion of the proposed project site bordered by Turner Parkway to the north, the existing Hunter Ranch Subdivision to the east, condominiums and apartments to the south, and the designated open space to the west (buffer to the planned commercial area).

The proposed project incorporates sidewalks, paseos, and a trail that are designed to promote a pedestrian- and bicycle-friendly environment; to encourage alternative transportation between the commercial and residential project elements; and improve access for viewing the proposed open space. All components of the proposed project have been designed and planned with the intent of being responsive to the existing on-site features, topography, and other resources and constraints found on the proposed project site and in the surrounding areas, and to be compliant with pertinent planning documents, regulations, and guidelines.

While the project is considered consistent with the existing General Plan and zoning designations, the project does propose a zoning map amendment to make the existing zoning classification consistent with the recently adopted General Plan. Table 3-2: Existing and Proposed Land Use Designations summarizes the changes for the proposed project.

The project includes a subdivision of the 51.3-acre site into four parcels. Two parcels for the commercial component of the project, one parcel for the residential component, and one parcel for the proposed open space area. The Tentative Map showing the proposed large lot subdivision is shown in Section 1.6: Parcels in Siteplan. The proposed configuration of the commercial and retail sites can be found on Page 11 and the proposed layout of the residential lots is shown on Page 13. Each component of the proposed project is described in detail in the following sections. The project will be built with one phase.



- LANDSCAPE AREAS
- SINGLE-FAMILY LOTS
- CLUSTER LOTS (ALLEY-LOADED)

- 1 OPEN SPACE - WITH PEDESTRIAN CONNECTION
- 2 COMMERCIAL BUILDING
- 3 RETAIL BUILDING
- 4 PARKING AREA
- 5 LOADING ZONE
- 6 GAS STATION
- 7 WATER QUALITY BASIN
- 8 BUS STOP
- 9 SIGNALIZED INTERSECTION
- 10 PEDESTRIAN PATHWAY
- 11 PARKS

REFER TO SECTION 3: PROJECT UTILITIES FOR EASEMENTS

1.7.1 Commercial - Western Portion of the Site

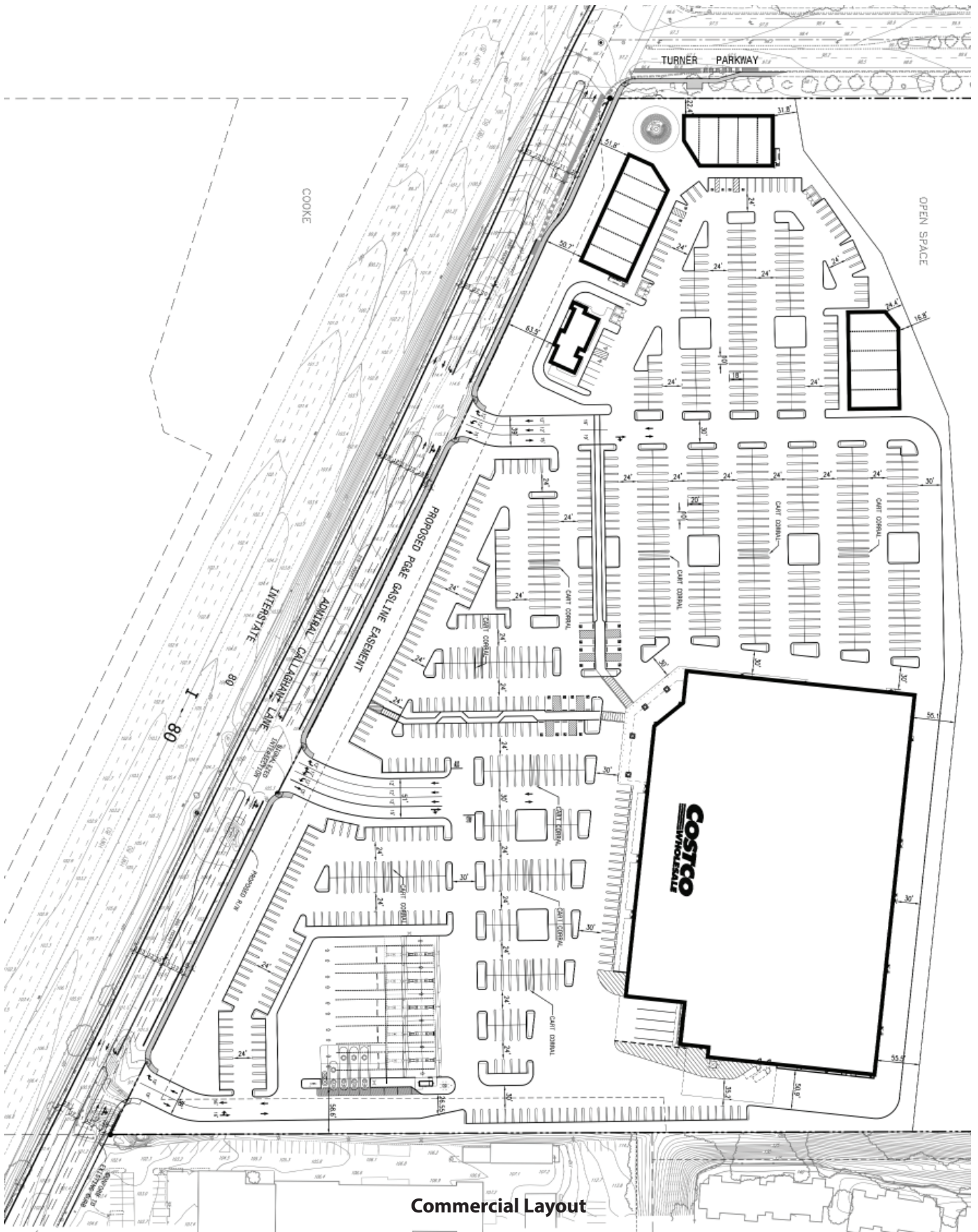
The western portion of the project site is planned for a commercial center. The proposed project uses will accommodate 179,688 square feet (sf) of commercial building area on 21.8 acres. The commercial area is proposed for 5 separate buildings and a gasoline service station accommodating up to 30 fueling dispensers and a related 50-sf kiosk. The commercial center will have 962 parking spaces including accessible spaces.

The southern portion of the commercial center is proposed for a 152,138 sf Costco store on 17.3 acres of the 21.8-acre commercial area; this will be the largest building. Costco intends to relocate their existing Vallejo operations from the Gateway Plaza shopping center to the proposed project site. The Costco would have 774 parking stalls, of which 16 would be reserved for accessible parking. The proposed gas station will be located in the southern portion of the commercial center parking lot and the Costco building will be setback from the roadway approximately 450 feet, separated from Admiral Callaghan Lane by the parking lot.

The northern end of the commercial area is proposed to be developed with four buildings ranging in size from 3,000 sf to 9,400 sf on approximately 4.56 acres of the 21.8-acre site. This portion of the commercial area will have 188 parking stalls, inclusive of 8 spaces reserved for accessible parking. These commercial uses will be located along the frontage with Turner Parkway and wrap around the southeast corner of Admiral Callaghan Lane at Turner Parkway and then along roughly one-third of the western edge of the commercial area fronting Admiral Callaghan Lane. A restaurant with a drive-through is proposed for one of the four buildings in the northern end of the commercial area; potential uses for the other three buildings could include general neighborhood services such as restaurants, health and fitness clubs, medical clinics, pharmacies, salons, laundry, clothing, convenience stores, and other related services. See Appendix A at the end of this document.

The proposed commercial area will take access from three driveways off of Admiral Callaghan Lane as shown on Page 11. The selection of traffic control devices at the three intersections also considers the City's concerns regarding traffic signal spacing and the number of traffic signals along Admiral Callaghan Lane. The driveway configurations are as follows:

- Northern Driveway: Unsignalized, separate outbound left turn and right turn lanes, southbound left turn pocket for inbound left turns;
- Middle Driveway: Signalized, two outbound left turn lanes and one outbound right turn lane, southbound left turn pocket for inbound left turns;
- Southern Driveway: Unsignalized, one outbound right turn lane, no outbound left turn allowed, southbound left turn pocket for inbound left turns.



Commercial Layout

1.7.2 Residential - Eastern Portion of the Site

The residential component will be located on the eastern portion of the project site on 23.8 acres. The project proposes 178 single-family detached units with two building types: those with a private front courtyard and alley loaded garages (Cluster Lots), and those with traditional driveways and front-loaded garages (Single-Family Lots). The 92 alley-loaded residences, generally located within the interior of the project site, would have courtyards and garage access from the north-south-oriented private alleys. The alleys would be accessed from east-west-trending 42-foot-wide interior public streets. Between the interior residences, landscaped paseos would provide access to the front of the homes. The Cluster homes will come in three different design styles with architectural differences among the three designs. A conceptual design of home with an alley facing garage is shown in Section 7.2.3 Cluster Home Typical Example. Of the remaining 86 residences, 67 would be located around the perimeter of the residential area and 19 residences would be in the southern residential zone. The 86 residential units will be traditional single-family detached units on lots with a 42-foot minimum width and an 85-foot minimum depth, except on pie lots which have a varying width. The traditional residential units would feature a front driveway and front entry way facing the streets and be generally oriented to the interior of the residential area. These homes will also come in three different design styles with subtle variations among the designs. A conceptual design of a Single-Family home is shown in Section 7.2.2: Single Family Home Typical Example. The average density for the residential uses will be 7.9 units per gross acre.

The residential component of the project will be accessed from two driveways off Turner Parkway as shown in the residential plan on Page 13. The western residential driveway was assumed to be signalized with full access for all movements. The eastern driveway was assumed to be unsignalized with right-in/right-out access only. Signalization of the western driveway would include a modification to provide a left turn lane into the project site and a left turn out of the project site.

1.7.3 Open Space

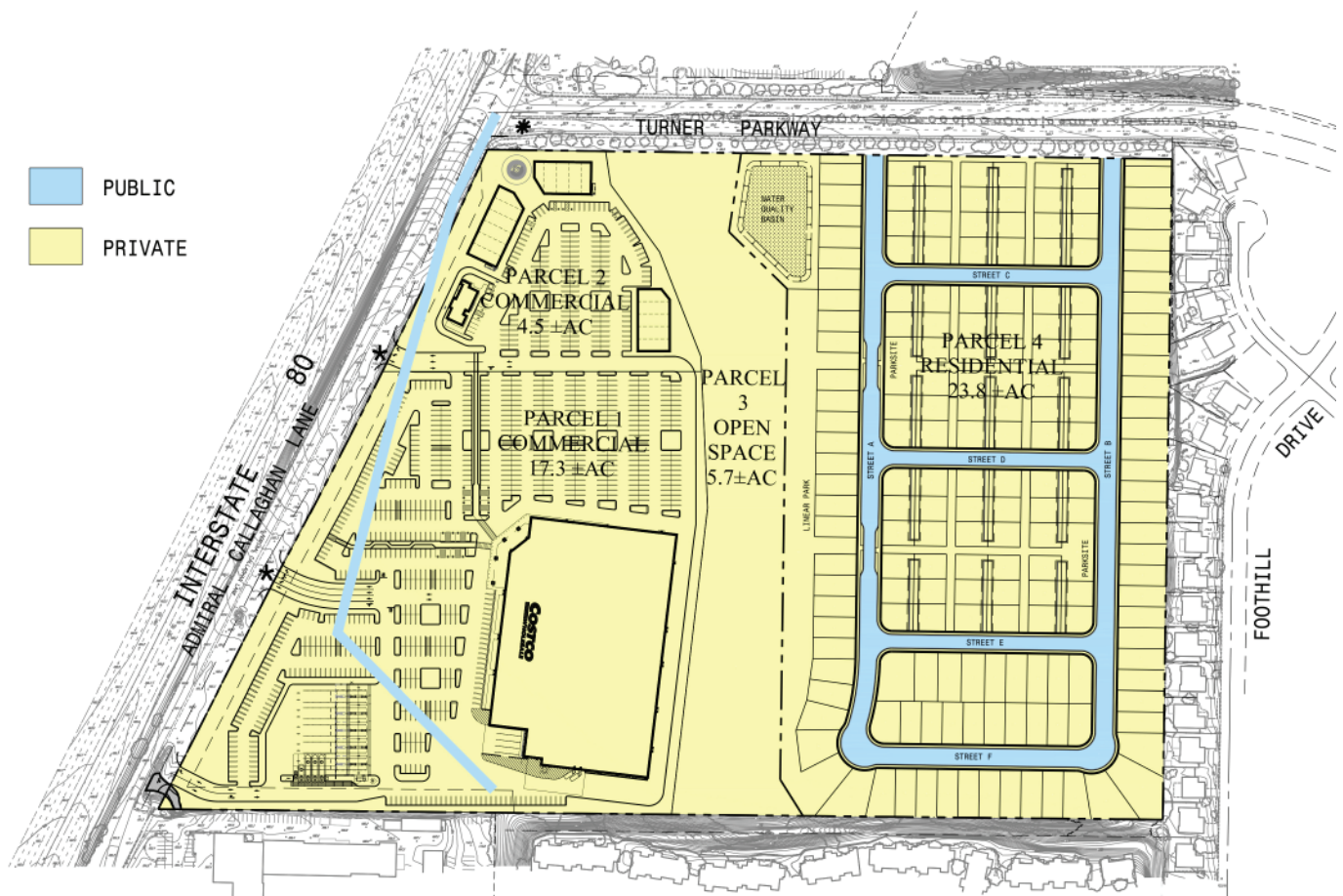
The central portion of the proposed project site will be preserved as open space would consist of 5.7 acres. Development would be precluded in this area. This area drains the existing off-site residential developments to the south and southeast of the proposed project site drain into low lying areas. This open space would separate the proposed project's commercial and residential components and provide a buffer between the two uses. This area will be subject to protective restrictions that would not allow for public or private use and the open space would be secured by attractively designed perimeter fencing consistent with the appearance of open space. The open space would only be accessible via private gates located on the commercial side of the proposed project in order to facilitate maintenance activities. The proposed project anticipates that the open space would be owned, managed, and maintained by a homeowners association (HOA) created in connection with the residential component.



Residential Layout

1.8 LAND OWNERSHIP DESCRIPTION

Fairview at Northgate is a 51.3 acre proposed mixed use project that contains three distinct land uses that include a) Retail-Commercial, b) Residential, and c) Open Space. The Retail-Commercial portion is 21.8 acres divided into two parcels of 17.3 acres and 4.5 acres. The entire 21.8 acres will be privately owned by one or more parties, with the exception of the public sewer main line. The Residential portion is 23.8 acres and includes 178 residential lots, courtyards, streets, 2 pocket parks, a linear park, and a water quality basin. Within the residential areas, the individual lots, courtyards, pocket parks, linear park, and water quality basin will be privately owned. The streets (non-courtyards) that serve the residential lots shall be dedicated to the City of Vallejo for public ownership and maintenance. The Open Space portion is 5.7 acres, separating the Retail-Commercial and Residential portions of the property. The Open Space shall be privately owned and will ultimately be transferred to a future private home owner's association.



SECTION 2: ROADWAY DEVELOPMENT STANDARDS

2.1 ROAD STANDARDS

Roadway cross sections have been created for the Fairview at Northgate development project based on future projection of traffic. A traffic study was prepared by Fehr & Peers in 2019 to assess the development's impact on the existing traffic circulation. The following standards describe each roadway and their typical mid-block cross section.



2.1.1 Admiral Callaghan Lane

Admiral Callaghan Lane runs adjacent to Interstate-80 and fronts the Fairview at Northgate project. Currently the road is a major north-south public street. Admiral Callaghan Lane is found along the commercial side of the project with three access points proposed. The central access point will be signalized and the other two will have stop controlled movement coming out of the entrances. The two existing lanes will serve as the southbound lanes while two additional lanes to be constructed will serve as the northbound lanes for a total of four lanes of traffic. This street section will only be constructed on the east side of the street, and the west side will remain. A 12-foot wide landscaped median will be constructed between the two sides to match Admiral Callaghan Lane north of the project.

ADMIRAL CALLAGHAN LANE STANDARDS

Street Standards:

- 76-foot overall Right-of-Way
- Four vehicle travel lanes
- 11' median
- 5' bike lanes with 2' buffer both sides of the street
- No parking on roadway
- Commercial Signage to be located along street frontage
- Lighting to meet City of Vallejo Public Improvements Standards

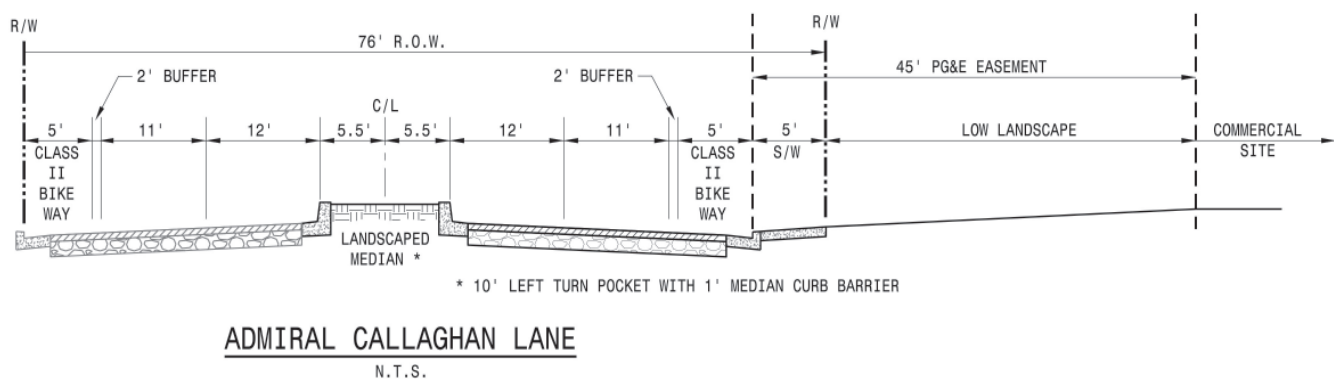
Landscape Zone Containing:

- 5-foot attached walk
- 45' PG&E easement (40' from R.O.W.)
- 50'± total landscape frontage before parking starts on commercial property
- 11' landscaped median

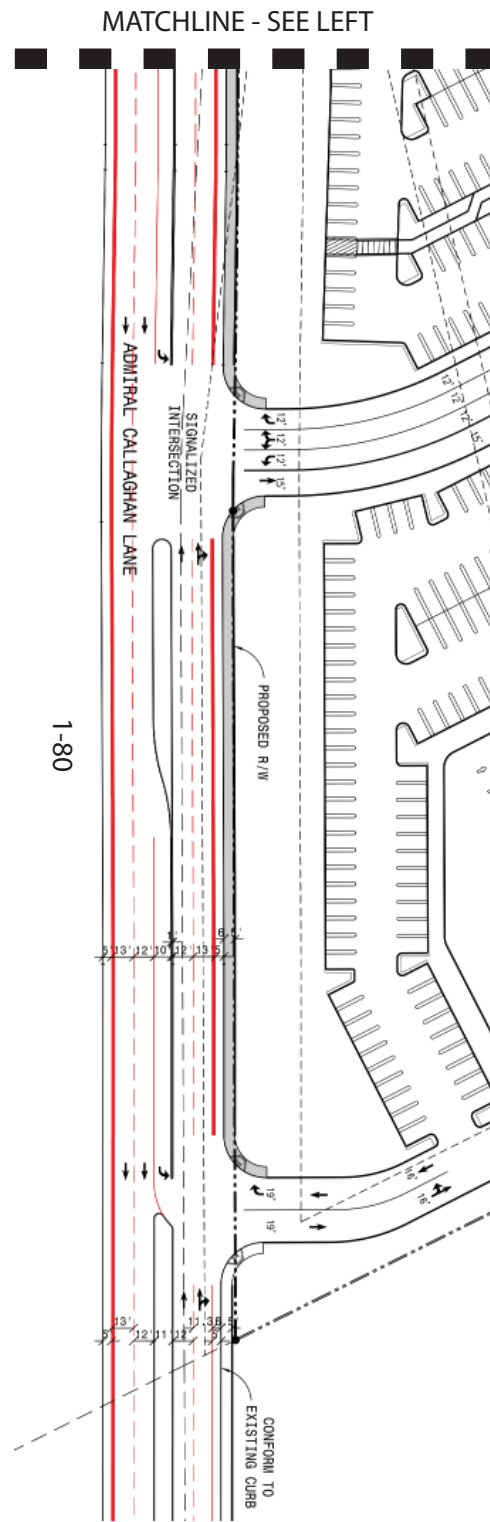
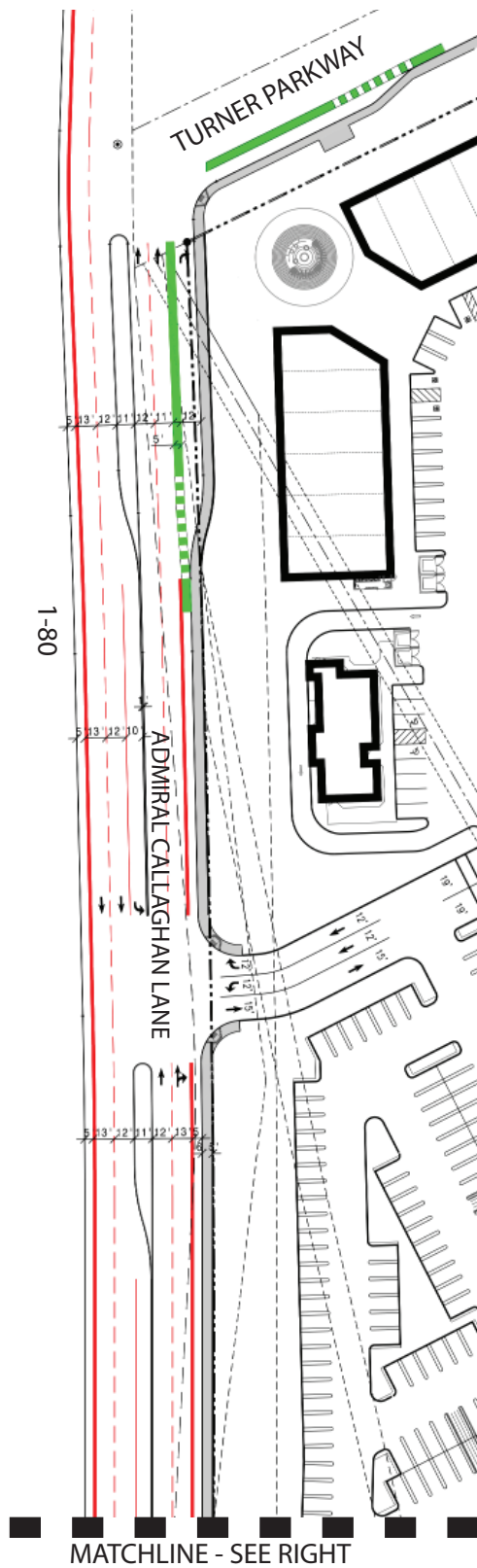
Landscaping:

- All landscape and irrigation plans shall be reviewed by the City of Vallejo for approval
- Trees located outside of the PG&E easement
- Shrubs and ground cover to be located in the PG&E easement

2.1.2 Admiral Callaghan Lane - SECTION



2.1.3 Admiral Callaghan Lane - PLAN VIEW



2.1.4 Existing Turner Parkway

Turner Parkway is a public street connecting Admiral Callahan and Ascot Parkway. This road will be left in place including the existing 4.5-foot sidewalk. The proposed right-of-way will be enhanced with a meandering trail that will be behind the existing tree line. This road will service the residential side of the project with two access points into it. The western access point will be signaled and the eastern access point will have a stop sign onto Turner Parkway with limited right in/out access.

EXISTING TURNER PARKWAY STANDARDS

Street Standards:

- a. 80-foot Right-of-Way
- b. Four vehicle travel lanes
- c. Existing landscaped median
- d. No parking on roadway
- e. Community Signage to be located along street frontage
- f. Lighting to meet City of Vallejo Public Improvements Standards

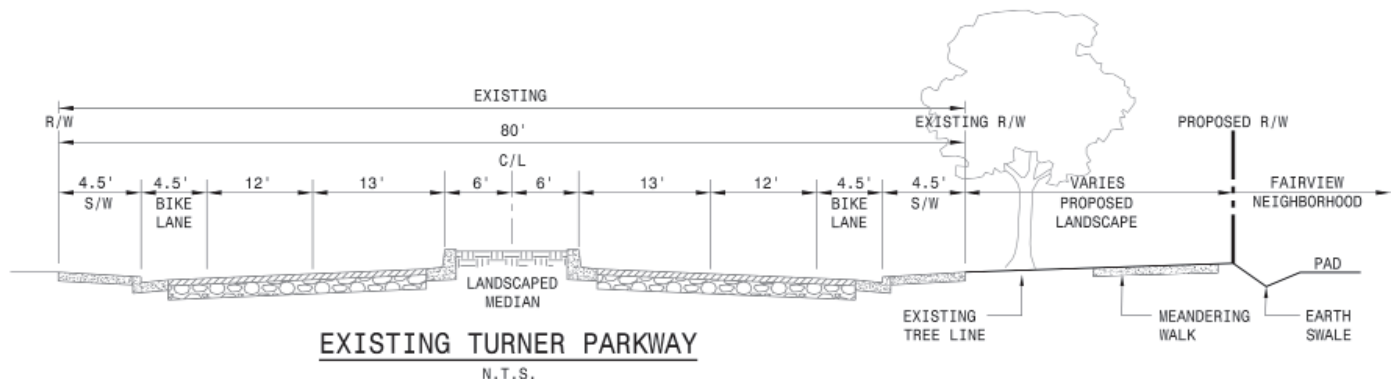
Landscape Zone Containing:

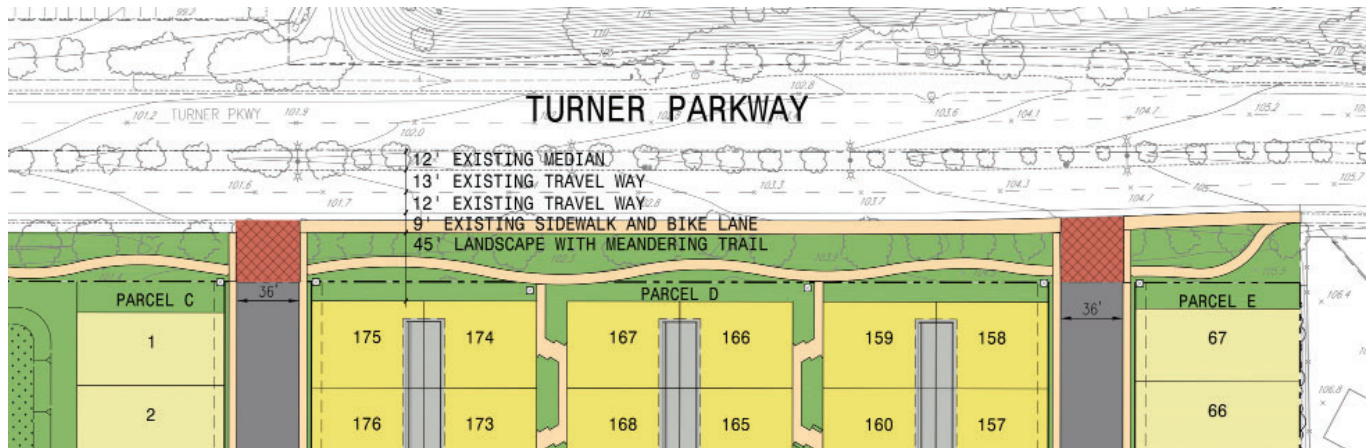
- a. 4.5-foot attached walk
- b. 45' ± total landscape frontage along commercial and residential frontage once development is completed
- c. Meandering walk running behind existing attached sidewalk

Landscaping:

- a. All landscape and irrigation plans shall be reviewed by the City of Vallejo for approval
- b. Most existing trees to remain
- c. All existing landscape in median to remain
- d. New trees will fill in behind existing trees
- e. Shrubs and ground cover will be provided

2.1.5 Existing Turner Parkway - SECTION



2.1.6 Existing Turner Parkway - PLAN VIEW

2.1.7 Residential Streets

Residential streets will provide access to houses fronting onto it. City of Vallejo Standards have been applied to the streets planned for the Fairview at Northgate residential development. These streets are internal to the project and connect to the collector street of Turner Parkway. In special cases the road widths were reduced to allow parking only on one-side of the street.

RESIDENTIAL STREET STANDARDS

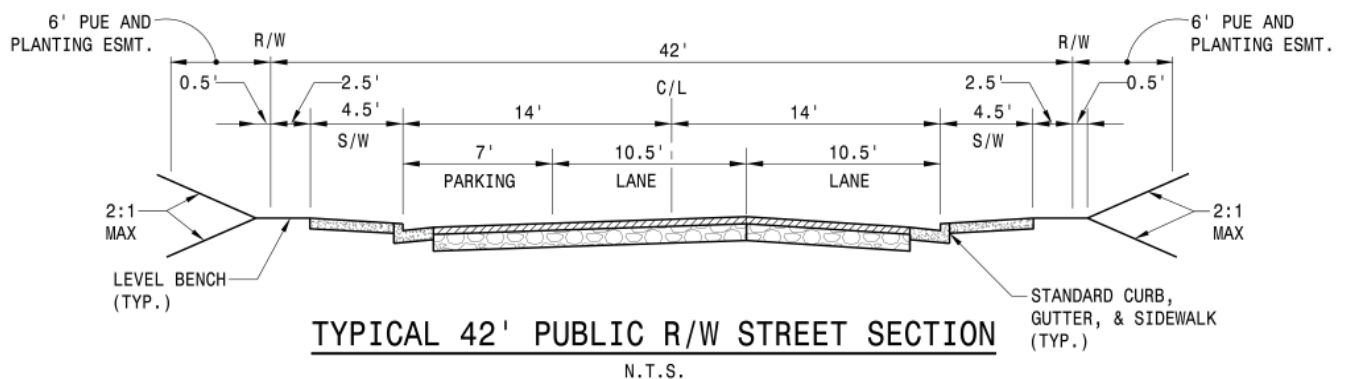
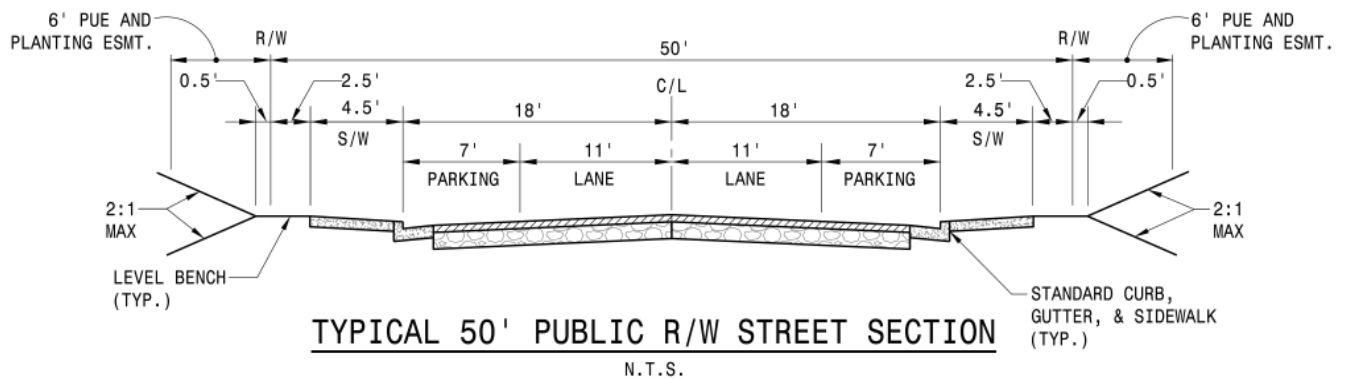
Street Standards:

- a. 50-foot Right-of-Way
 - 36-foot curb-to-curb
 - parking on both sides
 - lighting to meet City of Vallejo Public Improvements Standards
- b. 42-foot Right-of-Way
 - 28-foot curb to curb
 - parking on one-side on 42-foot Right-of-Way
 - lighting to meet City of Vallejo Public Improvements Standards

Landscaping:

- a. 4.5-foot attached walk
- b. Street trees to be planted in private yards

2.1.7 Residential Streets - SECTIONS



2.1.9 Private Alleys

Alleys provided shared vehicular access to houses with garages fronting onto it. These are private and the lot lines will go to the centerline of each alley. These alleys are small in scale and connect to the public residential streets. Private alleys will be owned and maintained by the residential HOA.

PRIVATE ALLEY STANDARDS

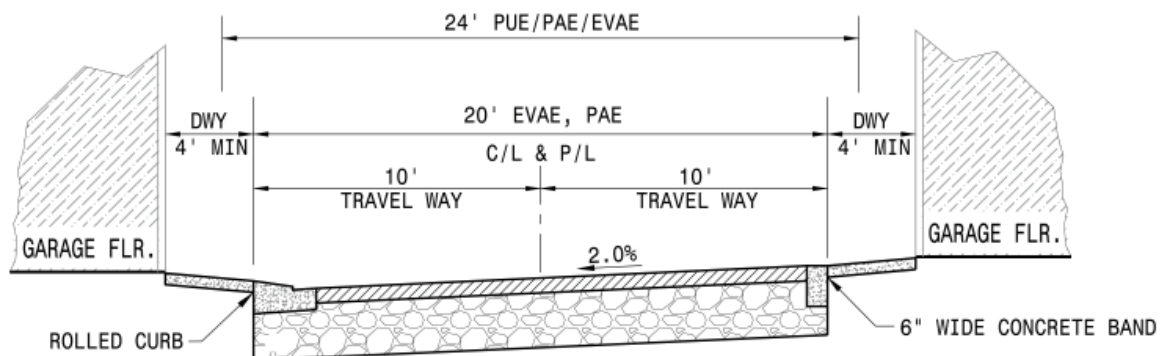
Street Standards:

- a. 20-foot PAE
- b. 10-foot travel way in each direction
- c. No parking on the Alleys
- d. Garage lighting to meet safety standards

Landscaping:

- a. Landscaping pockets will be in areas between driveways.
- b. No street trees

2.1.10 Private Alley - SECTION

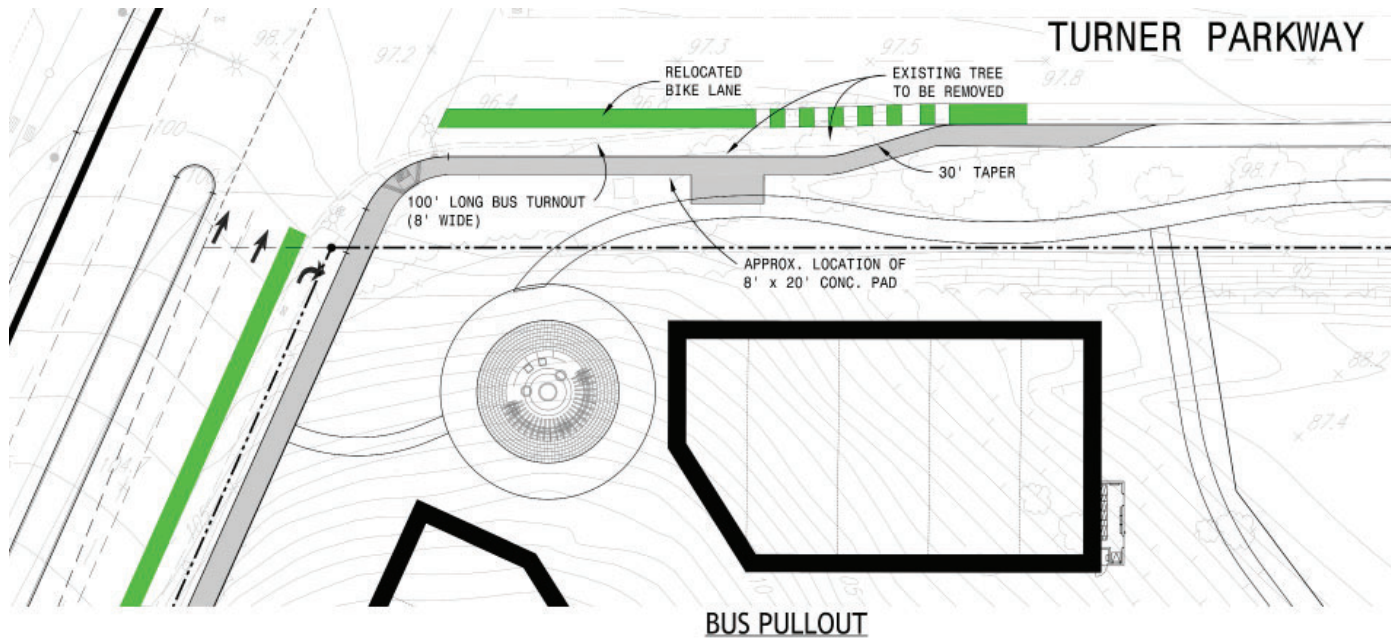


TYPICAL 20' PRIVATE ALLEY SECTIONS

N.T.S.

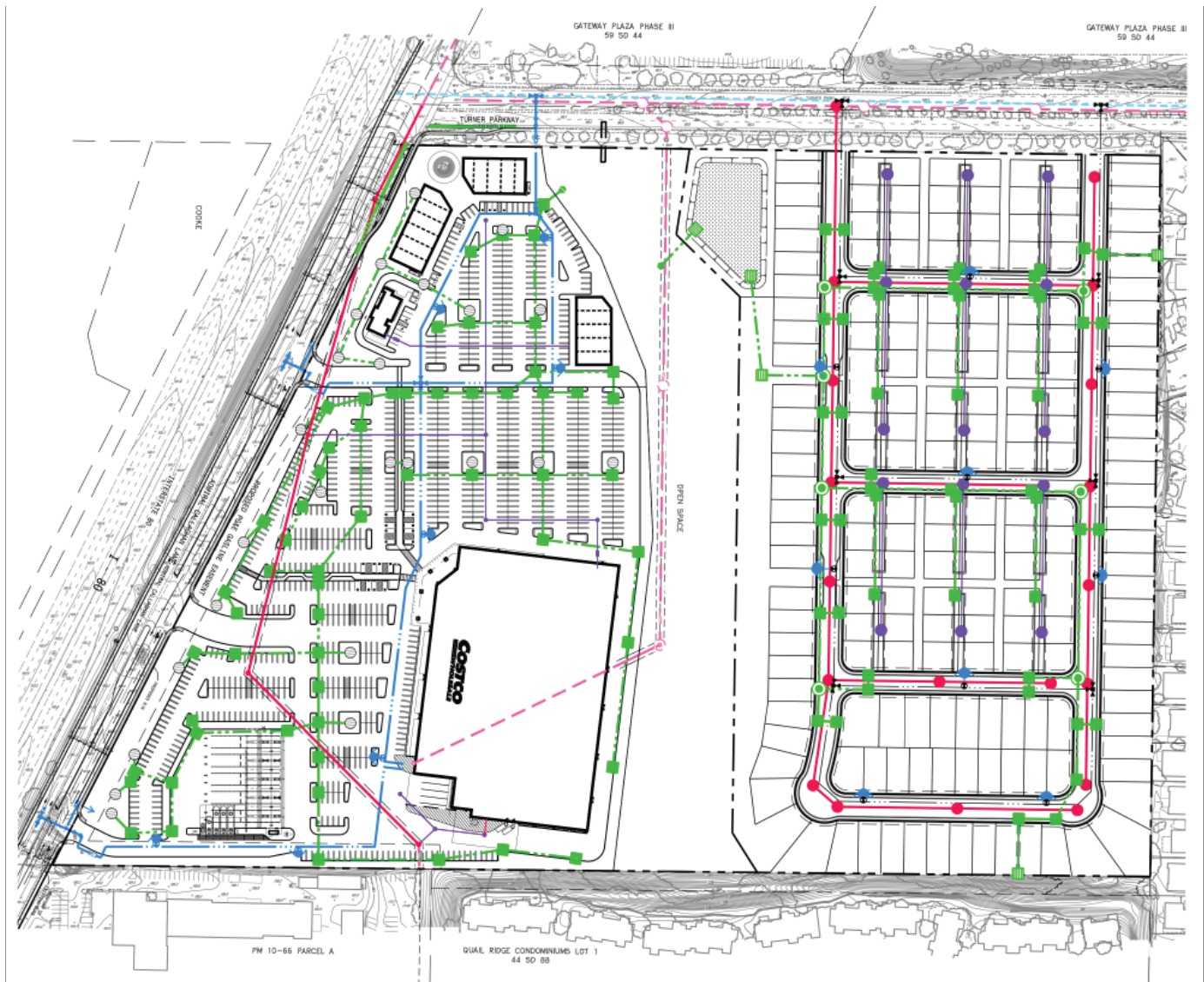
2.1.11 Bus Stop

One bus stop is planned adjacent to Fairview at Northgate. It will be located on Turner Parkway and signs will be placed to indicate the location. This bus stop will serve the residents of Fairview at Northgate, as well as the community at large.



SECTION 3: PROJECT UTILITIES

This Section provides information on the proposed utilities needed for the residential and commercial parts of the Fairview at Northgate Master Plan. The project will be designed, developed and constructed with all utility infrastructure (water, electric, gas, sanitary sewer, storm water, cable/internet) required for the operation of the proposed commercial and residential project improvements. The proposed project will connect to existing utility infrastructure located in adjacent public right of way (i.e. Admiral Callaghan Lane and Turner Parkway). As a part of the proposed project, the existing PG&E gas line will be realigned to the western edge of the property along Admiral Callaghan Lane. A portion of the VFWD sewer main crossing the site will also be realigned within the proposed parking area/drive aisle on the west side of the proposed Costco building. An overview of the project utilities is below, detailed graphics will follow in the section.



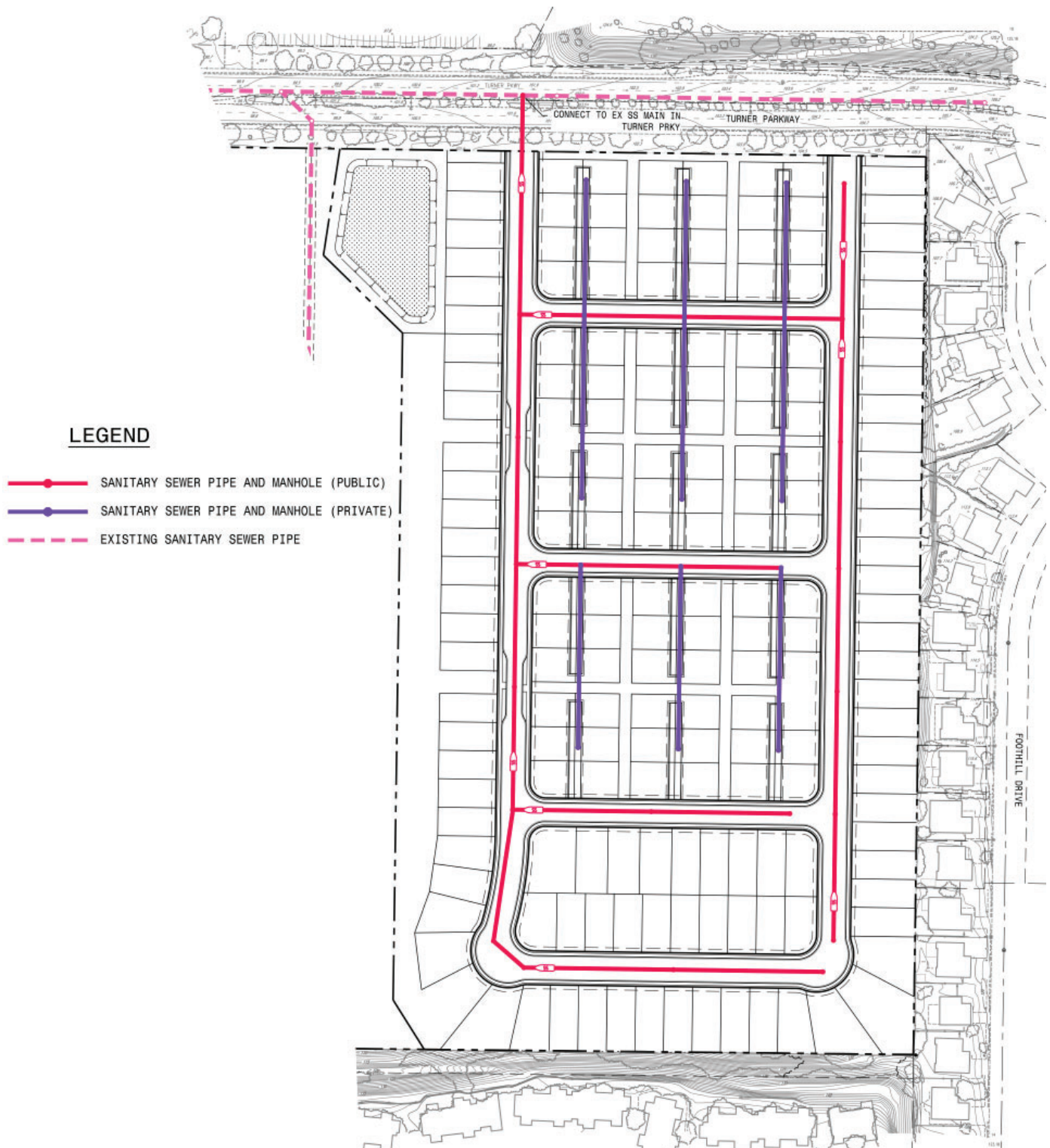
3.1 RESIDENTIAL UTILITIES

This section provides information on proposed utilities for the residential part of the Fairview at Northgate Master Plan. The infrastructure to be provided will be a combination of public and private systems. Infrastructure located within the public streets will be dedicated and maintained by the City/District. Infrastructure located within the private alleys/paseos will be owned and maintained by the future Homeowners Association to be established. The water will connect to the existing water line in Turner Parkway at both project entries. The sanitary sewer will tie into the existing sewer line in Turner Parkway. The proposed storm drain system will convey runoff to a basin to be installed within the northwest corner of the site. This basin will provide both water quality and hydro-modification meeting current City standards before discharging into the Open Space Parcel (Parcel 3). A 51-inch culvert under Turner Parkway currently drains the Open Space Area.



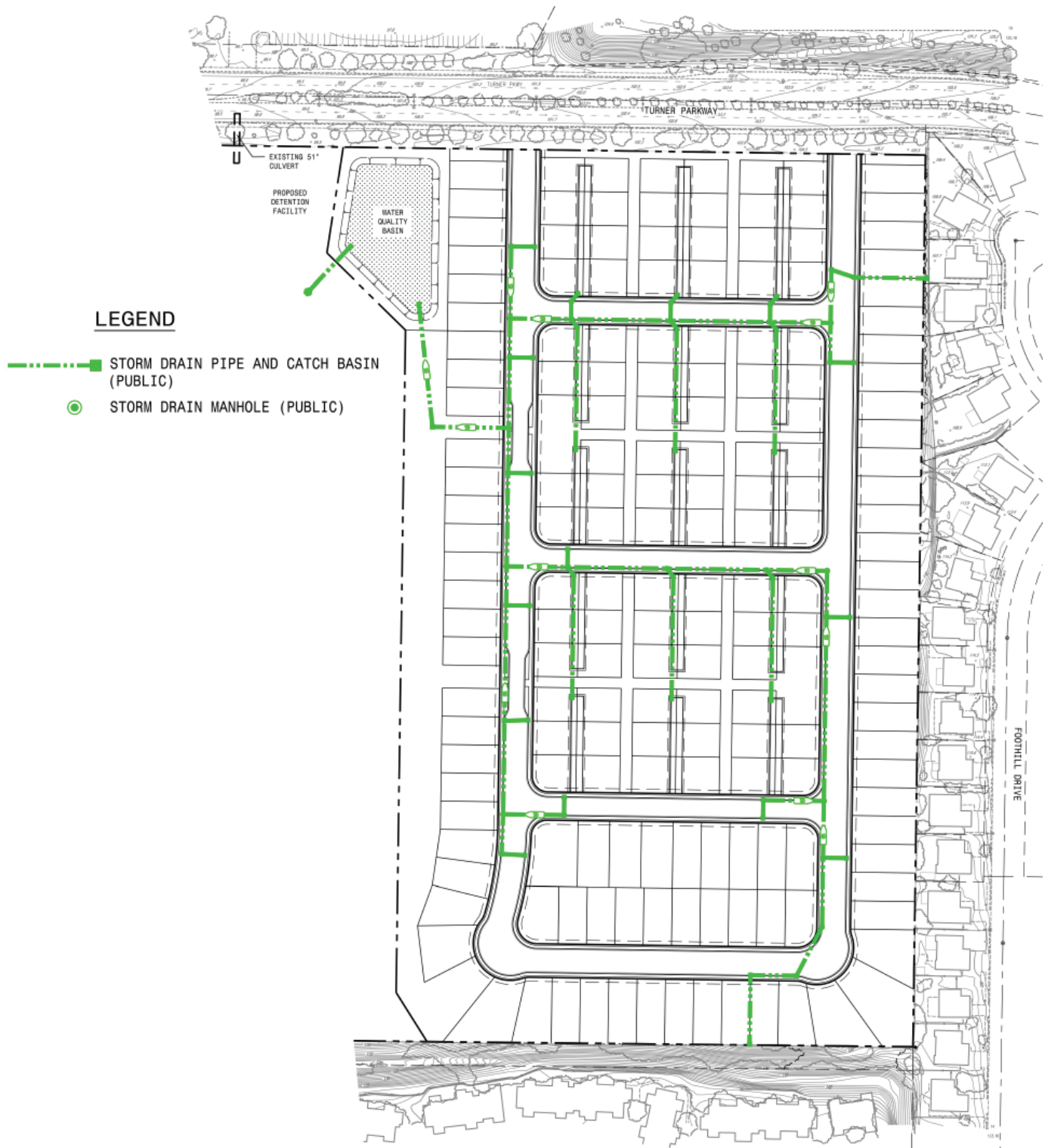
3.1.1 Residential Sanitary Sewer

The Sanitary Sewer shall be designed and installed to VFWD standards. The system will be a combination of publicly and privately owned, connecting to the existing sanitary sewer system located in Turner Parkway.



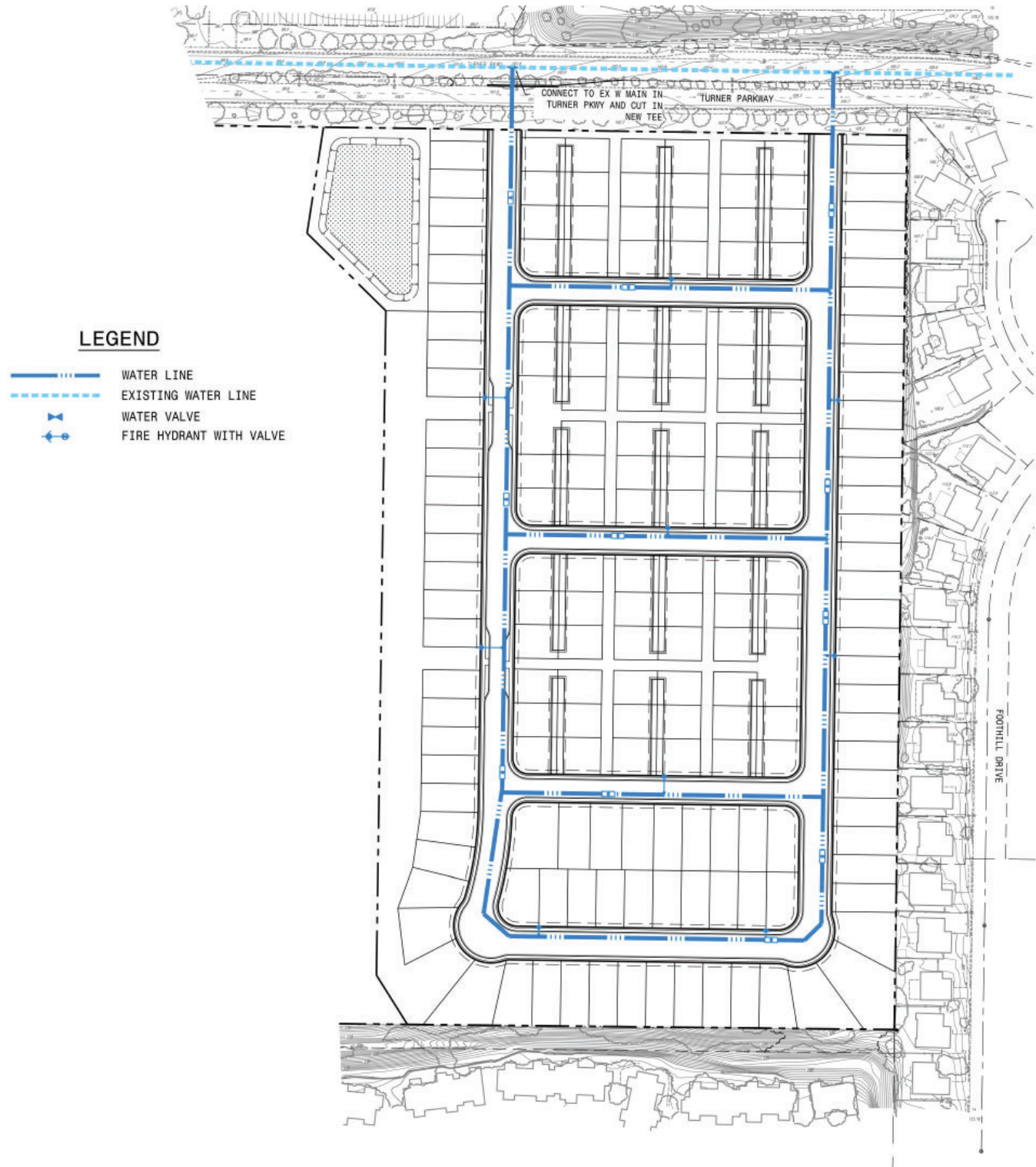
3.1.2 Residential Storm Drain System

The Storm Drain System shall be designed and installed to VFWD standards. The proposed storm drain system will convey runoff to a Basin to be installed within the northwest corner of the site. This basin will provide both water quality and hydro-modification meeting current City standards before discharging into the Open Space parcel (Parcel 3).



3.1.3 Residential Water System

The Water System shall be designed and installed to City of Vallejo Water Department standards. The public system will tie into the existing water line in Turner Parkway at both entries creating a looped system.



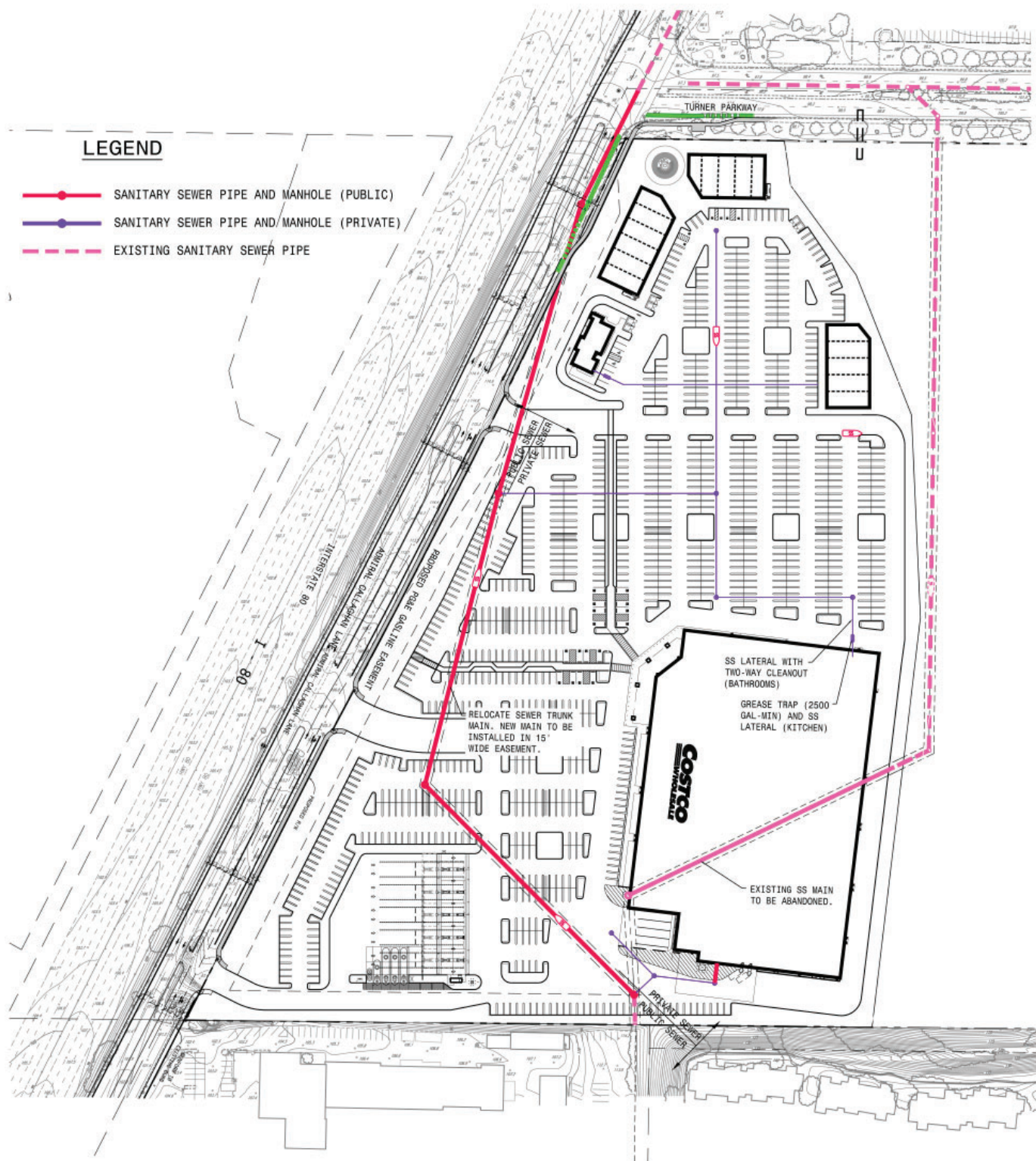
3.2 COMMERCIAL UTILITIES

This section provides information on proposed utilities for the commercial parts of the Fairview at Northgate Master Plan. Within the project site the necessary infrastructure will be privately owned and maintained except for the relocated VFWD sewer truck main. The proposed water system will connect to existing mains within Admiral Callaghan Lane and Turner Parkway creating a loop system. Master water meters will be located within the public Right-of-Way for the two streets, the system becomes private after the meters. The existing sanitary sewer system that flows south to north will be relocated west of the proposed Costco building. Private internal mains needed to serve the proposed uses will connect to the existing trunk sewer. At two locations, the privately owned storm drain system will discharge runoff into the Open Space parcel similar to the residential project. Water quality and hydro-modification will be handled with the landscaping islands/area around the site. If additional hydro-modification is needed it will be handled by storing runoff in oversized pipes or storage cells located within the parking lots. The existing PG&E gas-line that currently runs north-south across the site will be relocated along Admiral Callaghan Lane.



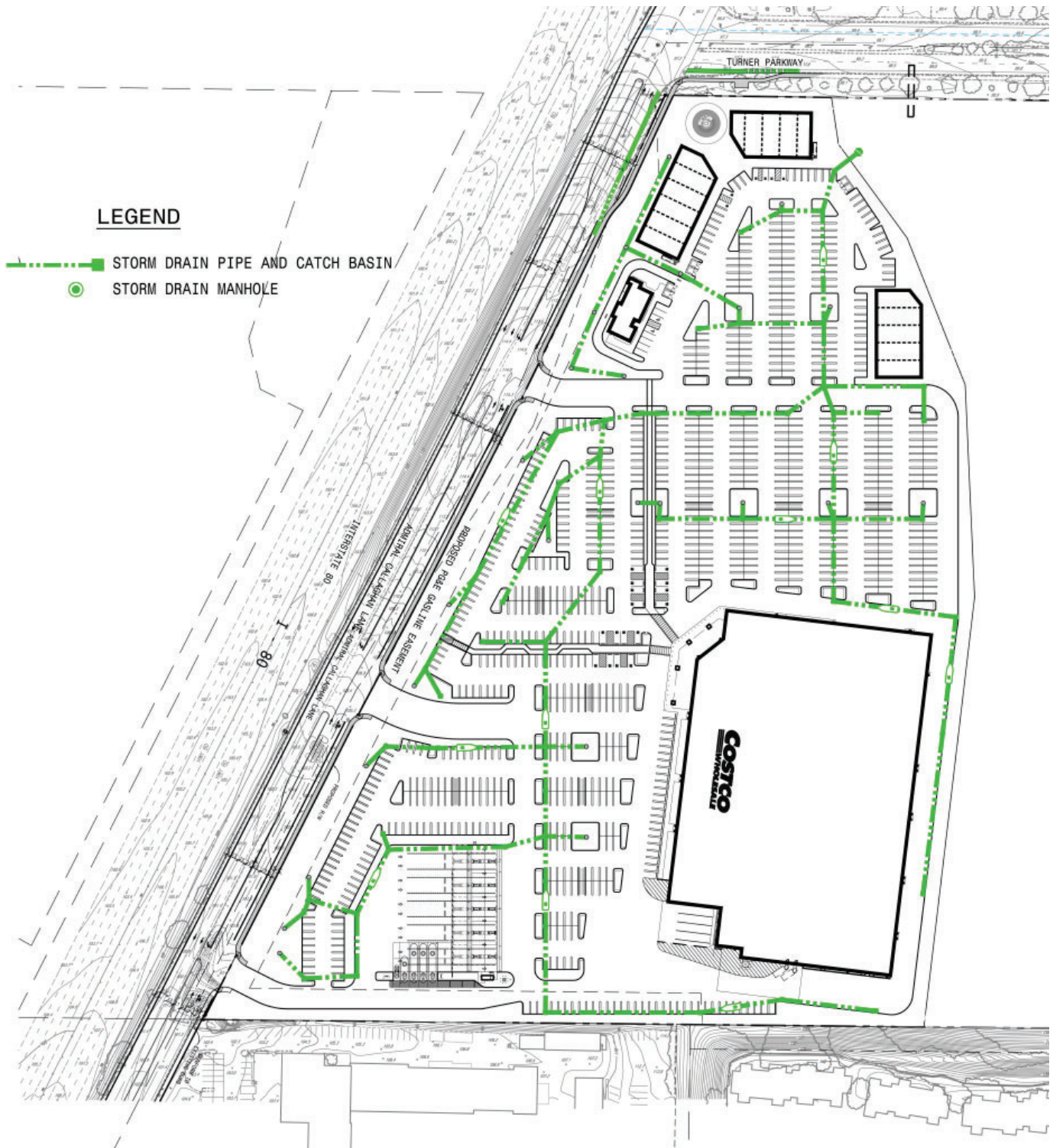
3.2.1 Commercial Sanitary Sewer

The Sanitary Sewer shall be designed and installed to VFWD standards. The privately owned system will tie into the existing relocated sewer trunk system found on the property.



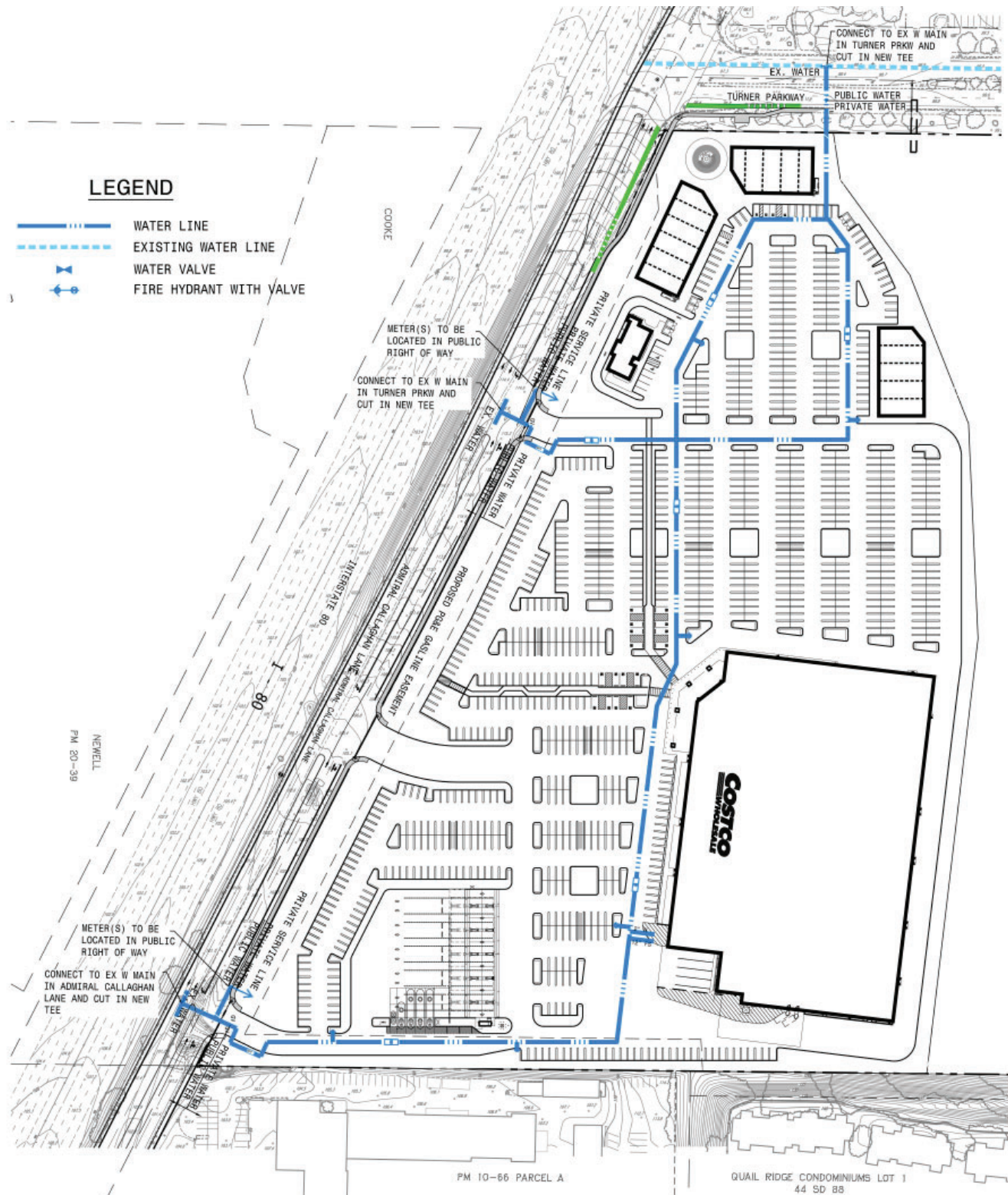
3.2.2 Commercial Storm Drain System

The private storm drain system shall be designed and installed to meet VFWD standards. The storm drain system will discharge runoff into the Open Space Parcel similar to the residential project. Water quality and hydro-modification will be handled with the landscaping islands/area around the site. If additional hydro-modification is needed it will be handled by storing runoff in oversized pipes or storage cells located within the parking lots.



3.2.3 Commercial Water System

The Water System shall be designed and installed to City of Vallejo Water Department standards. The privately owned system will connect the existing mains within Turner Parkway and Admiral Callaghan Lane to create a loop system. The private system will provide domestic water, services and landscaping.



SECTION 4: RESIDENTIAL DEVELOPMENT STANDARDS

This section provides development standards for the residential part of the Fairview at Northgate Master Plan. These standards apply to the residential portion of the Master Plan which makes up approximately 23.8± Acres of the Master Plan.

4.1 RESIDENTIAL STANDARDS

4.1.1 Primary Uses Permitted

Two-story single family detached residences.

4.1.2 Purpose and Intent

This zone allows for the development of homes and commercial within a single zone. 23.8± Acres are going to be used for residential and 21.8± Acres are going to be used for commercial.

4.1.3 Site Development Standards

a. Individual Lots

Each dwelling shall be located on an individual lot

b. Lot Area

Single Family lots shall be a minimum of 3,200 square feet

Cluster lots shall be a minimum of 3,000 square feet

c. Maximum Lot Coverage

For both single family lots and cluster lots; no more than 85% of any lot shall be occupied by a residence or an accessory structure

d. Lot Width

Single family lots shall be a minimum of 42 feet in width at the living setback

Cluster lots shall be a minimum of 50 feet in width at the living setback

e. Lot Depth

Single family lots shall be a minimum of 85' feet in depth

Cluster lots shall be a minimum of 65' in depth

f. Building Setbacks:

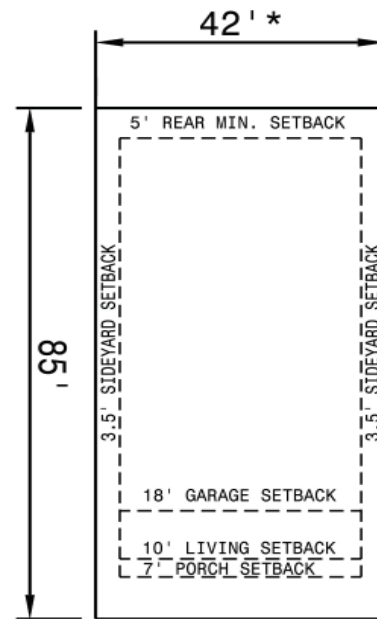
Each *Single Family* dwelling shall have the following setbacks to the property line:

porch:	7'
front (living):	10'
encroachments*:	2' within living setback
garage:	18'
rear:	5'
sideyards:	3.5'
corner lots:	8.5' to R/W

*Allowable encroachments include but not limited to: architectural features such as cornices, canopies, greenhouse or windows, and chimneys may extend into required yards a distance of not more than two feet.

Covered porches, balconies and stairways may extend into required front yard setback not more than three feet.

Three feet of ground level clearance to be maintained.
Allowable by code.

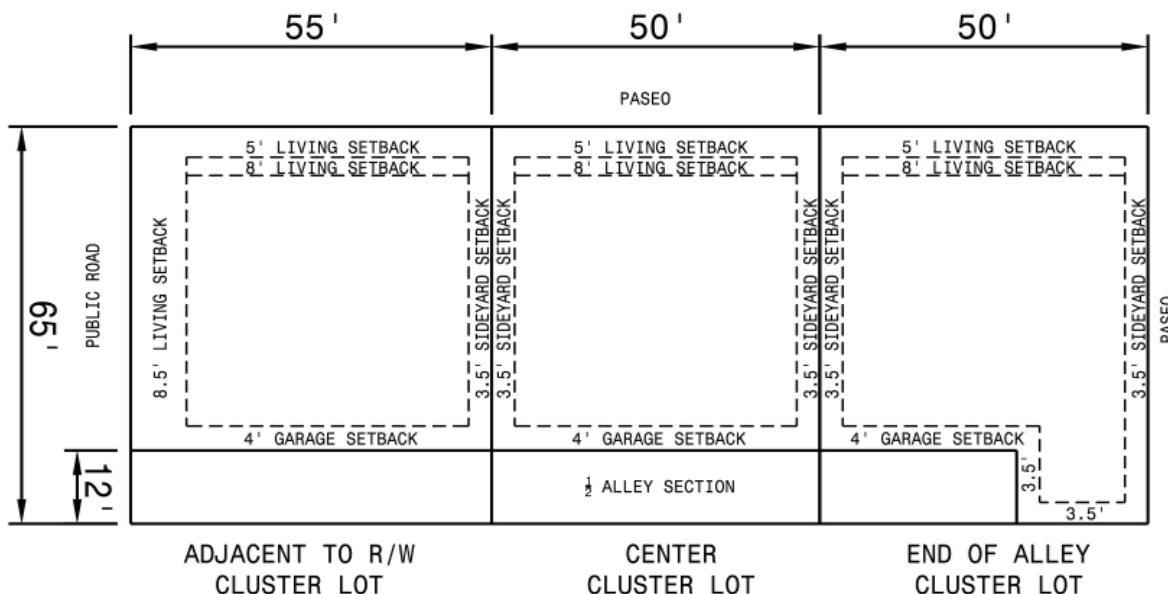


SINGLE FAMILY LOT

* EXCEPT CORNER LOTS
AND PIE LOTS

Each *Cluster* dwelling shall have the following setbacks to property line:

front (living):	8' adjacent to paseo
	8.5' adjacent to public roads
encroachments*:	3' within living setback
garage:	4'
sideyards:	3.5'
corner lots:	8.5' to R.O.W.



g. Maximum Height

The maximum height shall be 30 feet. No house shall be over two-stories.

h. Garages

Garage conversions shall not be permitted. All garages will hold 2 cars.

i. Required Parking

Two parking spaces in a garage are required for every dwelling unit. Additional parking spaces shall be located on the public streets. On street parking space minimum of 7 feet by 20 feet.

j. Fencing

Rear and Side property Lines shall have 6' tall screen fence.

Lots backing onto the open space shall have a 6' tall view fence in the rear and a 6' tall screen fence on the side. See Section 6.3 for more detail.

k. Lighting

Lighting shall be of similar design throughout the development meeting City of Vallejo Public Works standards.

l. Accessory Structures

Accessory structures shall be allowed in the Single-Family portion and shall follow the Vallejo Municipal Code as defined in Section 16.04.540.

- Shall not encroach any setback
- Shall be under 20' in height

4.1.4 Grading Standards

The objective of the preliminary grading concept is to use the existing terrain to define the development footprint while conforming to the existing surrounding land uses.

The existing topography for the site is gentle rolling slopes bisected by a north/south running drainage swale. The existing swale provides a natural break between the proposed Commercial/Residential proposed land uses. Using the City of Vallejo's Hillside Grading Standards as a guide, the grading will be done in such a way as to create buildable lots and pads while providing for efficient and safe roadway/parking lot network.

For the Residential portion of the site; the area will be regraded to create pads and streets that will sit below the surrounding residential uses similar to the existing site conditions. Improvement of the grading concepts as proposed in the Master Plan would require approximately 300,000 cubic yards of material to be moved.

Where topography must be changed; various contour grading techniques will be employed to allow to affected area to blend in with the natural slope. Cut and fill will be constructed with rounded corners to eliminate sharp angles of slopes at the contour intersections. Contour grading will also be utilized to create rounded, undulating slopes between street levels and building pads, and in transition areas from natural slopes to graded slopes. Slope gradients will vary, where, feasible, to produce a more natural appearance.

4.1.5 Homeowners Association

There will be a Homeowner's Association for the residential development. This entity will make and enforce rules for the properties within this residential development. Lot owners will automatically become members of the HOA Association.

4.1.6 Conditions, Covenants, and Restrictions (CC&Rs)

Within the residential neighborhood controls will be placed on each lot to guide the builder and homeowners during the construction of the neighborhood and throughout any subsequent changes in the future. The CC&Rs are part of the purchase of a lot and are legally enforced.

SECTION 5: COMMERCIAL DEVELOPMENT STANDARDS

This section provides development standards for the commercial part of the Fairview at Northgate Master Plan. These standards apply to the commercial portion of the Master Plan which makes up approximately 21.8± Acres of the Master Plan.

5.1 COMMERCIAL STANDARDS

5.1.1 Primary Uses Permitted

The primary uses are intended to promote and emphasize shops and services catering to the daily needs of local residents, as generally referenced in the Neighborhood Corridor (NC) General Plan 2040 land use designation. Permitted uses include, but may not be limited to, automotive services, general neighborhood retail, restaurants, and business/professional offices. See Appendix A for a list of example potential uses within the commercial portion of the Project.

5.1.2 Purpose and Intent

This zone allows for the development of commercial within a single zone. Approximately 21.8± Acres are proposed to be used for commercial.

5.1.3 Entry Sequence

The entry into the site shall be planned to provide a strong entry statement including signage and enhanced landscaping. Landscape areas shall provide appropriate view triangles at the entries onto Admiral Callaghan Lane.

5.1.4 Site Development Standards

a. Setbacks

Minimum setback from any structure to any property line is 15'

b. FAR

The floor area ratio shall not exceed .85

c. Building Height

Maximum building height shall be 40'

d. Lot Standards

The shall be no minimum lot standards

e. Lighting

Lighting shall be similar design throughout the development and be to City of Vallejo Public Works standards.

5.1.5 Grading Standards

The objective of the preliminary grading concept is to use the existing terrain to define the development footprint while conforming to the existing surrounding land uses.

The existing topography for the site is gentle rolling slopes bisected by a north/south running drainage swale. The existing swale provides a natural break between the Commercial/Retail proposed land uses. Using the City of Vallejo's Hillside Grading Standards as a guide, the grading will be done in such a way as to create buildable lots and pads while providing for efficient and safe roadway/parking lot network.

For the Commercial site; visibility from the surrounding areas is key to the success of the project. With this goal, the existing hills will be regraded to accommodate the proposed uses while still keeping the site above the adjacent street. Any excess material from the commercial site will be moved to the residential portion of the property to maintain a balanced project overall. Improvement of the grading concepts as proposed in the Master Plan would require approximately 300,000 cubic yards of material to be moved.

Where topography must be changed; various contour grading techniques will be employed to allow to affected area to blend in with the natural slope. Cut and fill will be constructed with rounded corners to eliminate sharp angles of slopes at the contour intersections. Contour grading will also be utilized to create rounded, undulating slopes between street levels and building pads, and in transition areas from natural slopes to graded slopes. Slope gradients will vary, where, feasible, to produce a more natural appearance.

While the desired parking lot grades shall range from 1%-3%; the maximum grades shall be 5%, excluding access drives.

5.1.6 Parking Standards

Parking stalls shall be designed to a minimum of City of Vallejo standards per Chapter 16.62.

ADA accessible parking stalls will be provided in accordance with California Building Code.

5.1.7 Access Drives

Access drives shall line up with adjacent roadways and drives. They shall be appropriately marked to minimize traffic hazards.

5.1.8 Loading Areas and Refuse Areas

Loading areas shall try to be screened from view from streets, driveways, adjacent buildings and pedestrian ways. Loading areas shall be screened with plantings or architectural elements. Architectural screening shall be constructed of the same materials as the building it serves. All Loading areas will be designed so that no service vehicles will disrupt traffic flow on or off the site.

No loading or unloading in non-designated areas.

Refuse areas shall be screened from view with a wall. Screen wall materials and colors shall complement the adjacent buildings. See Section 6 for wall materials.

No loading or refuse area shall extend into a setback area.

SECTION 6: LANDSCAPE DEVELOPMENT STANDARDS

This section provides development standards for landscape as part of the Fairview at Northgate Master Plan.

6.1 GENERAL GUIDELINES

The landscape of the Master Plan shall be a unifying element to the overall design of the project. It will help to promote views into the open space, screen elements, reduce auto and pedestrian conflicts and direct pedestrians to their destinations within the project.

6.2 PLANT SELECTION

6.2.1 Residential Plant Palette

TREES:

Malus pumila 'Anna'
Olea europaea 'Monher'
Prunus armeniaca 'Blenheim'
Prunus avium 'Royal Crimson'
Prunus salicina 'Santa Rosa'
Quercus lobata

Apple
Fruitless Olive
Apricot
Cherry
Plum
Valley Oak



Malus pumila 'Anna'
Apple

SHRUBS:

Feijoa sellowiana
Hesperaloe parviflora
Juncus patens 'Elk Blue'
Lavendula angustifolia
Lomandra longifolia 'Breeze'
Malus pumila: espalier
Punica granatum 'Nana'
Punica granatum 'Wonderful'
Rosmarinus officinalis
Thymus vulagris
Vaccinium 'Misty'
Vitis californica 'Roger's Red'
Vitis vinifera 'Ruby Seedless'

Pineapple Guava
Red Yucca
Gray Rush
English Lavender
Mat Rush
Apple
Dwarf Pomegranate
Pomegranate
Rosemary
Thyme
Blueberry Bush
California Grape
Table Grape



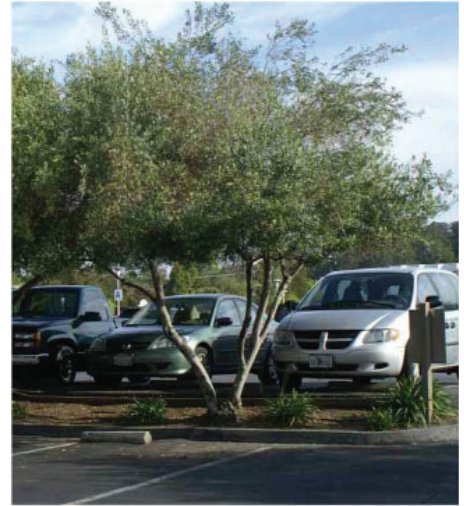
Vitis vinifera 'Ruby Seedless'
Table Grape

6.2.2 Commercial Plant Palette

TREES:

Acer buergerianum
Celtis sinensis
Fraxinus angustifolia 'Raywood'
Ginko biloba (male)
Olea europaea 'Monher'
Tilia tomentosa
Zelkova serrata

Trident Maple
Chinese Hackberry
Raywood Ash
Ginko
Fruitless Olive
Silver Linden
Zelkova

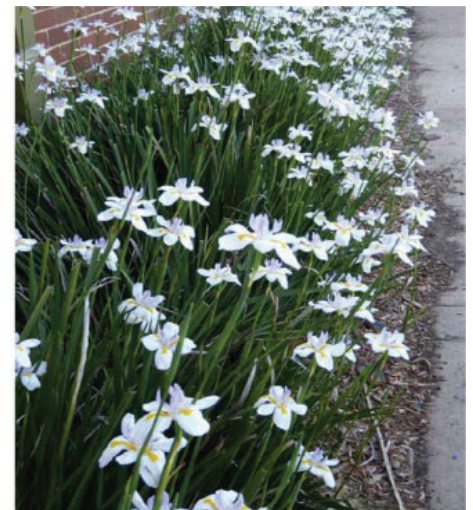


Olea europaea 'Monher'
Fruitless Olive

SHRUBS:

Agava attenuata
Chondropetalum elephantinum
Dietes grandiflora
Frangula californica 'Mound San Bruno'
Hesperaloe parviflora
Juncuc patens 'Elk Blue'
Lantana montevidensis
Leymus condensatus
Lomandra longifolia 'Breeze'
Punica granatum 'Nana'
Salvia x 'Bee's Bliss'
Senecio mandraliscae
Teucrium fruticans 'Compactum'
Zauschneria californica

Soft Agave
Large Cape Rush
Fortnight Lily
Mound San Bruno Coffee
Red Yucca
Gray Rush
Lantana
Giant Wildrye
Mat Rush
Dwarf Pomegranate
Bee's Bliss Sage
Blue Chalk Sticks
Bush Germander
California Fuschia



Dietes grandiflora
Fortnight Lily

6.2.3 Open Space Plant Palette

TREES:

Aesculus californica
Cercis occidentalis
Prunus ilicifolia
Quercus agrifolia
Quercus lobata
Sambucus nigra ssp. caerulea

California Buckeye
Western Redbud
Hollyleaf Cherry
Coast Live Oak
Valley Oak
Blue Elderberry



Aesculus californica
California Buckeye

SHRUBS:

Artemisia douglasiana
Ceanothus 'Julia Phelps'
Ceanothus 'Ray Hartman'
Diplacus aurantiacus
Epilobium californica 'Bert's Bluff'
Festuca californica
Frangula californica 'Mound San Bruno'
Lupinus arboreus
Monardella villosa
Muhlenbergia rigens
Penstemon centranthifolius
Salvia x 'Bee's Bliss'
Salvia spathacea

California Mugwort
Julia Phelps Ceanothus
Mountain Lilac
Sticky Monkey Flower
Bert's Bluff Fuchsia
California Fescue
Mound San Bruno Coffee
Bush Lupine
Coyote Mint
Deer Grass
Scarlet Bugler
Bee's Bliss Sage
Hummingbird Sage

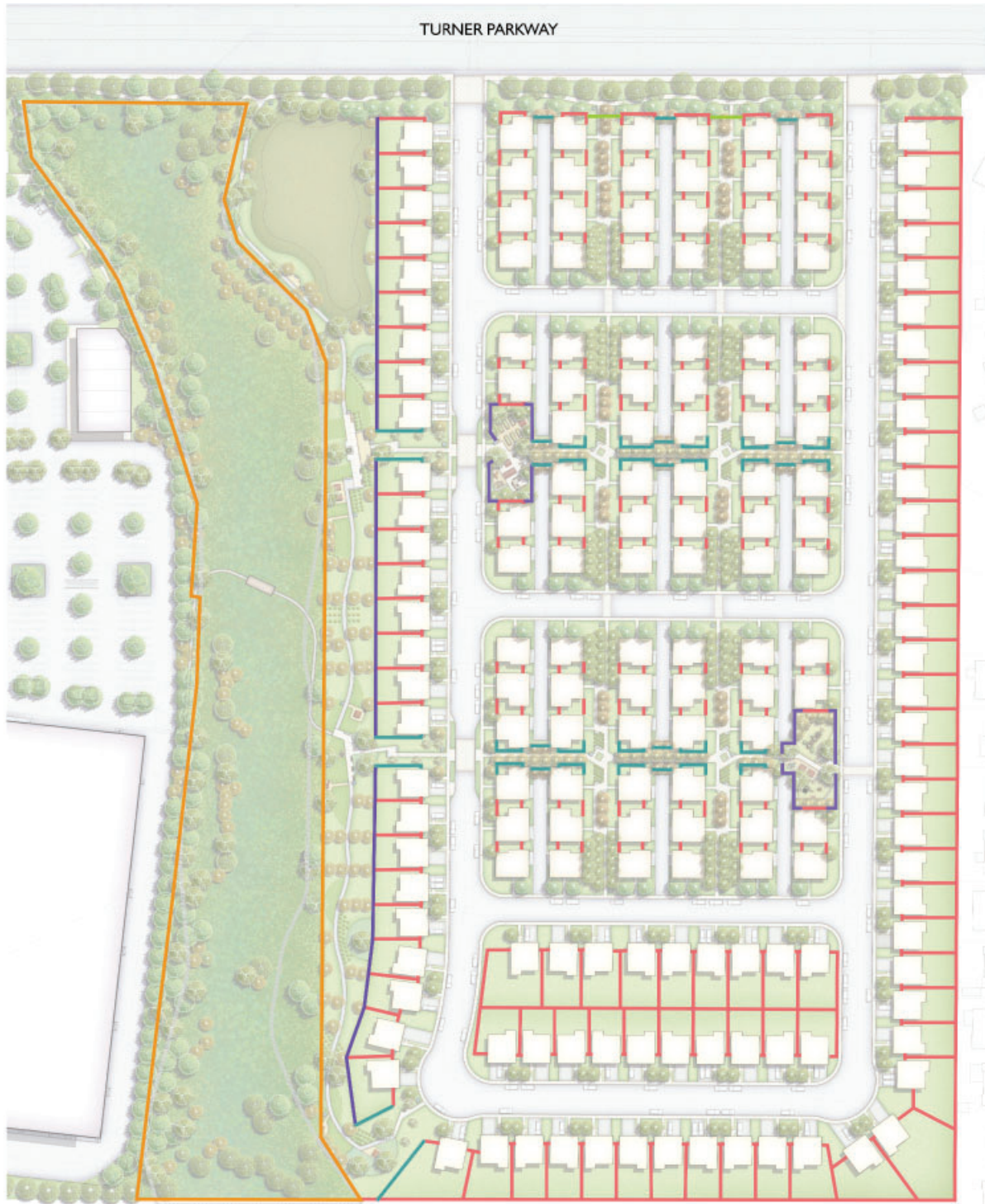


Diplacus aurantiacus
Sticky Monkey Flower

6.3 EXTERIOR WALLS AND FENCES

Walls and fences provide separation, delineate property lines, and can also provide places to sit. There will be several types of walls and fences that shall be proposed within the development. A list is provided within this document. Attached images are conceptual and will be refined in final design.

6.3.1 Residential Fence Plan



6.3.2 Residential Screen Fence

Six foot tall solid wood screen fence. To be located at rear property lines.



Screen Fence

6.3.3 Residential View Fence

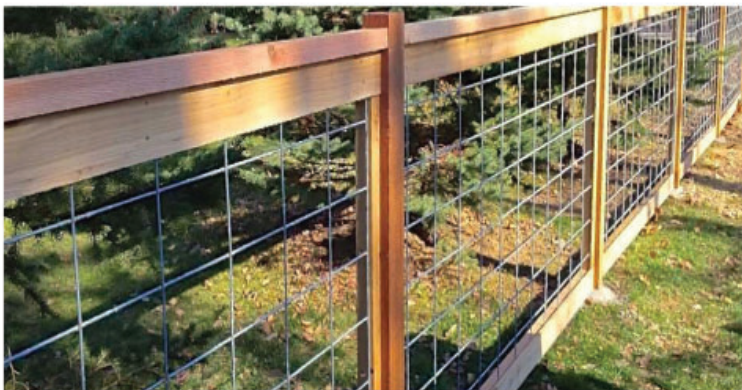
Six foot tall wood frame fence with wire mesh grid panels. To be located at rear property lines facing the Open Space.



View Fence

6.3.4 Low Wire Mesh Fence

Three and a half foot tall wood frame fence with wire mesh grid panels. To be located on Turner Parkway.



Paseo Fence

6.3.5 Special Screen Fence

Six foot tall unfinished wood fence with horizontal slats and galvanized posts. To be used at rear property lines where paseos intersect and at the ends of the alleys.



Horizontal Screen Fence

6.3.6 Open Space Split Rail Fence

2-3 foot tall western red cedar split rail fence, 2 rails



Split Rail Fence

6.3.7 Commercial Low Walls

2 foot – 3 foot tall freestanding walls made of materials to match architecture. Walls to be added to the pedestrian entrance into the commercial site.

6.4 SITE FURNITURE

Site furniture such as benches, tables, chairs, barbecues, fire pits, postal boxes, trash receptacles, umbrellas and bicycle racks shall be incorporated into the overall planning of both the commercial and residential portions of the project. Attached images are conceptual and will be refined in final design.

6.4.1 Benches

Concrete benches with no backs will be located throughout the residential development and will be found in the paseos and parks.



6.4.2 Stone Markers

Concrete stone markers to indicate Pedestrian Paths or Vehicular Entrances.



6.4.3 Tables and Chairs

Movable tables and chairs will offer flexibility and comfort in the commercial areas.



6.4.4 Picnic Tables

Casual seating with picnic tables will be incorporated into the residential pocket parks. This will foster community interaction.



6.5 WALKWAYS AND PATHS

Walkways and paths shall connect through the residential development and offer pedestrian access from the residential development to the commercial development. Walkways shall be a minimum of 5 feet. Walkways in front of retail and commercial entrances shall be a minimum of 12 feet. Design elements, columns and other street furniture can encroach on this so long as a clear walkway not less than 5 feet is maintained.

6.6 LIGHTING

Lighting shall be provided for walkway areas, parking areas, as landscape accents, for storefront displays and entryways, and for building accents. Lighting fixtures should be designed for their specific purpose and may be freestanding, wall mounted, pole mounted, light bollards, recessed or suspended as appropriate. Uniformity of design style is required on the commercial buildings and standard streetlights. Streetlights do not need to match between the residential and commercial areas.

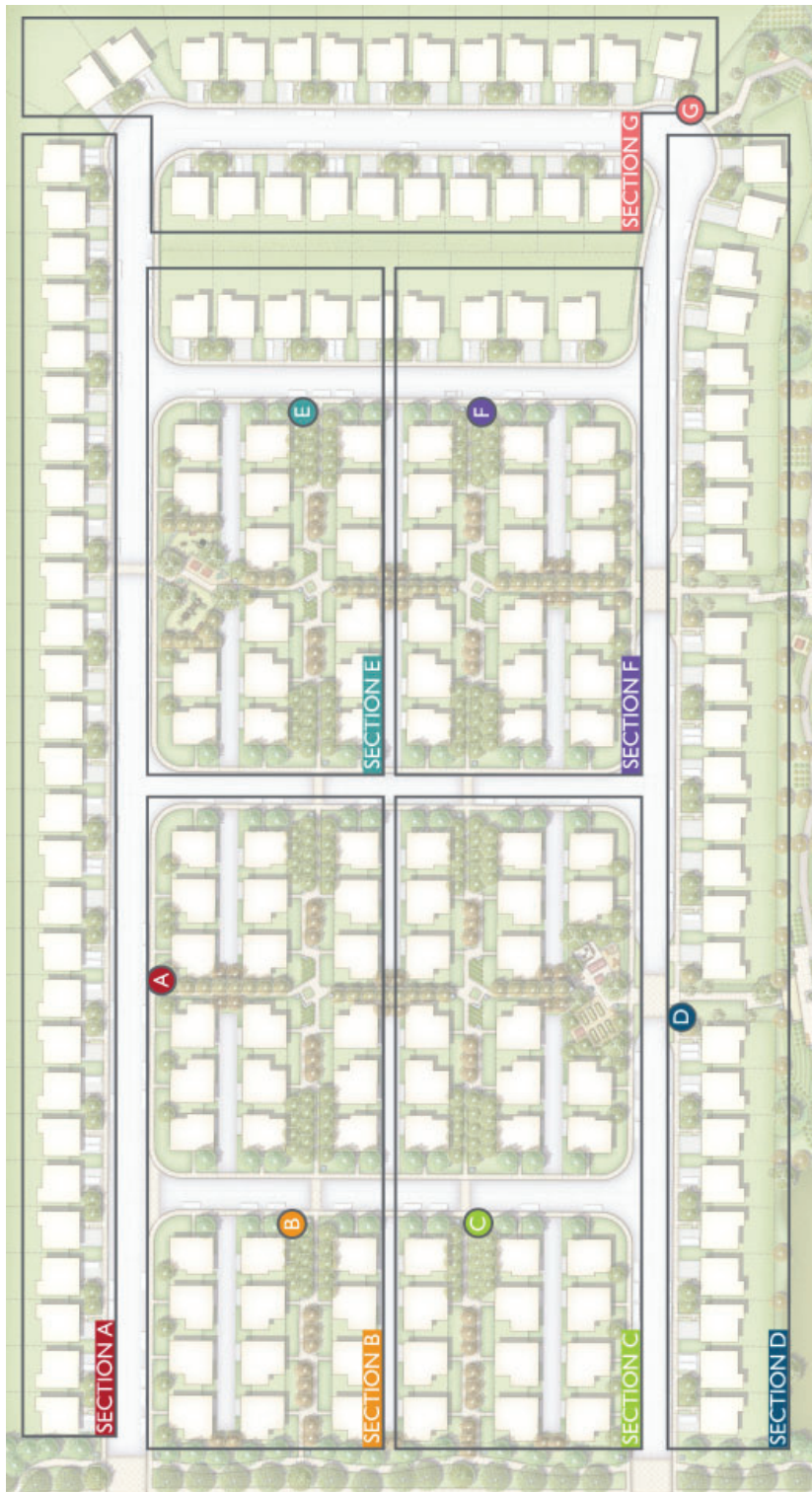
The residential portion of the project shall include lights on all the garages to help illuminate the north/south paseos and alleys. Bollard lights will be placed on the east/west paseos for illumination. Streetlights along Turner Parkway will illuminate the proposed meandering path. The open space and the trail adjacent to it will be unlit to discourage night time activity. Streetlights in the residential portion of the project will be designed to City Standards based off Section 3.1.5 in the 2011 City of Vallejo Standards and Specifications and Standard Drawings.

The commercial entrances and parking area will be illuminated with standard downward pointing lights, each containing two LED fixtures affixed to a 37' foot light pole. The lighting fixtures are of a "shoe-box" style. Parking lot light standards are designed in order to provide even light distribution for vehicle and pedestrian safety. The parking lot lights will be timer controlled to limit lighting up to one hour after the businesses have closed. Parking lot lighting will only remain on to provide security and emergency lighting only along the main driveways. Lighting fixtures will also be located on the buildings approximately every 40 feet around the exterior of the building to provide safety and security. Parking and site lighting will incorporate the use of cutoff lenses to keep light from overflowing beyond the project boundaries.



6.7 MAILBOXES

Community mailboxes will be located throughout the project. There will be 7 locations where residents will be able to pick up mail convenient to their home.



- A** 28 units: one 16 door unit & one 12 door unit
- B** 30 units: two 16 door units
- C** 28 units: one 16 door unit & one 12 door unit
- D** 26 units: two 13 door units
- E** 21 units: one 13 door unit & one 8 door unit
- F** 22 units: two 12 door units
- G** 23 units: two 12 door units

Each mailbox location will include a recycling receptacle



Proposed Mailboxes

6.8 POCKET PARKS

Two Pocket Parks are provided for in the residential development. Both are accessible by safe pathways and walkways located throughout the development.

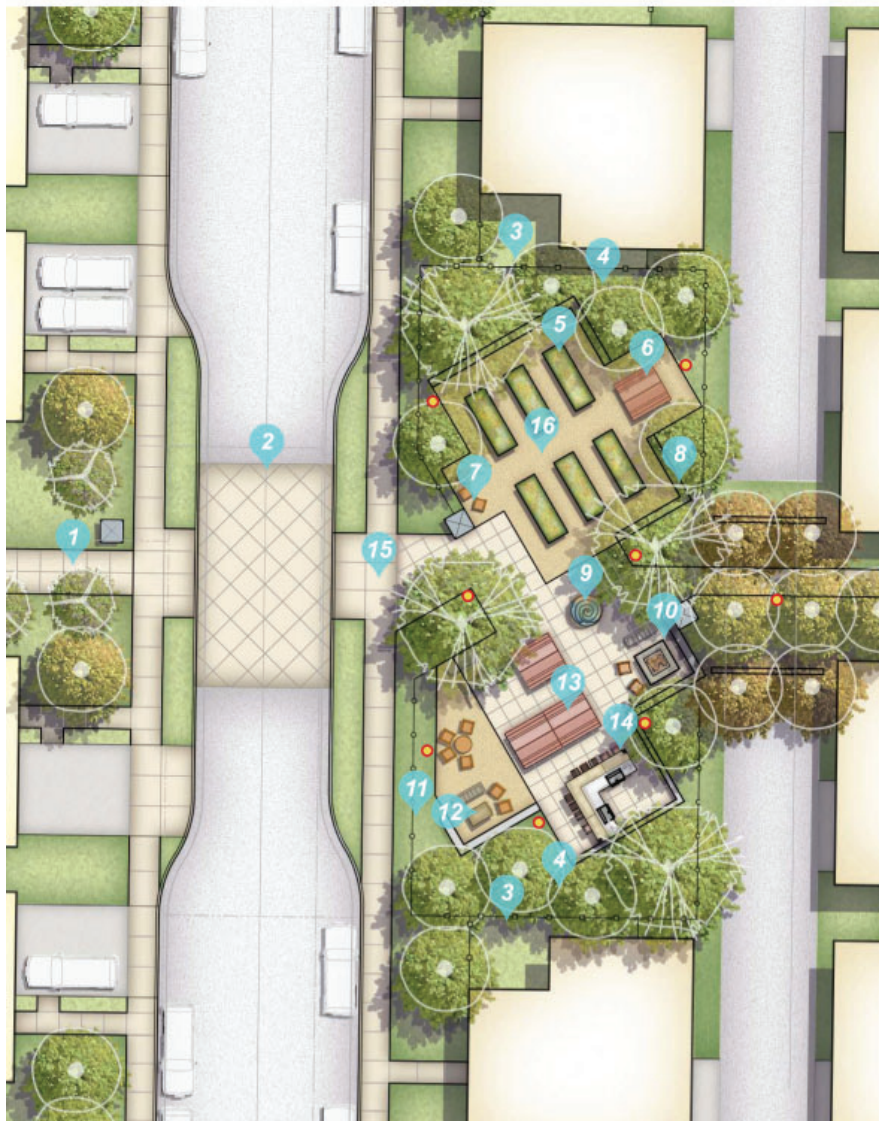
6.8.1 Eastern Residential Play Park

The Eastern pocket park shall be designed to encourage play by children of all ages. Nature inspired play structures and shade trees will be installed to create play and shade for children and parents alike.



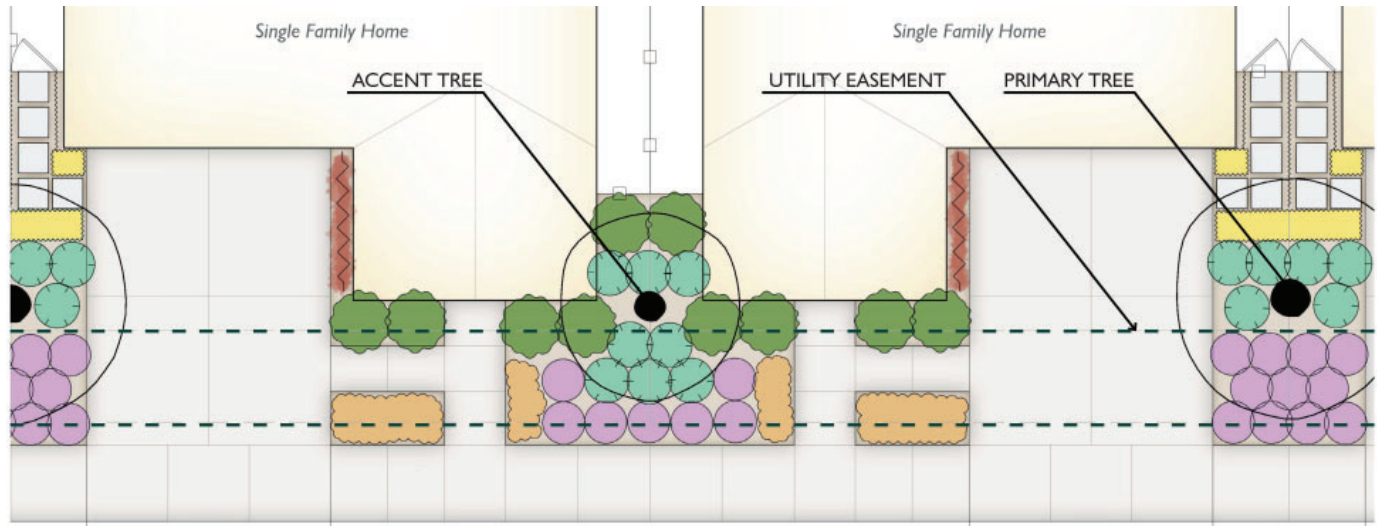
6.8.2 Western Residential Community Park

The Western pocket park shall be designed to allow people to gather. Agri-community theme inspired plants and shade trees will be installed to create space that is fun and activated for all ages.



- 1 Pedestrian connection to linear park
- 2 Bulbout and stamped asphalt at crossing
- 3 Screen fence, typ.
- 4 Landscape buffer adjacent to homes, both sides
- 5 Community garden with raised planter beds
- 6 Picnic table
- 7 Small group lounge seating area
- 8 Concrete seatwall; finish: boardform
- 9 Focal Point: Sculpture, potted plant, or message kiosk
- 10 Fire pit community space
- 11 View fence, typ.
- 12 Large group lounge seating
- 13 Large group dining
- 14 Grilling island with bar-height seating
- 15 Pedestrian concrete
- 16 Decomposed granite
- Rialta Bollard Light
Model: RT4xx
MFR: Sternberg Lighting

6.9 FRONT YARD TYPICAL LANDSCAPE

**ACCENT TREE**

<i>Lagerstroemia indica</i> 'Natchez' Crape Myrtle	12' H x 15' W
<i>Cercis occidentalis</i> Western Redbud	15' H x 15' W

PRIMARY TREE

<i>Olea europaea</i> 'Monher' Majestic Beauty Fruitless Olive	30' H x 25' W
<i>Malus domestica</i> 'Anna' Anna Apple	25' H x 25' W
<i>Acer buergerianum</i> Trident Maple	25' H x 25' W
<i>Pistacia chinensis</i> Chinese pistache	30' H x 25' W

GRASS

<i>Lomandra longifolia</i> Breeze Drawf Mat Rush	3' H x 3' W
<i>Leymus condensatus</i> 'Canyon Prince' Canyon Prince Wild Rye	3' H x 3' W
<i>Muhlenbergia dubia</i> Pine Muhly	3' H x 3' W

FOUNDATION SHRUB

<i>Dietes grandiflora</i> Fortnight Lily	4' H x 3' W
<i>Pittosporum tenuifolium</i> 'Golf Ball' Golf Ball Kohuhu	4' H x 4' W
<i>Loropetalum chinense</i> 'Monraz' Razzleberry Fringe Flower	5' H x 4' W
<i>Rosmarinus officinalis</i> 'Tuscan Blue' Rosmarinus officinalis	5' H x 4' W
<i>Westringia fruticosa</i> 'Smokey' Coast Rosemary	4' H x 4' W

SECONDARY SHRUB

<i>Lavandula angustifolia</i> 'Hidcote Blue' Hidecote English Lavender	2' H x 3' W
<i>Hesperaloe parviflora</i> 'Brakelights' Breaklights Red Yucca	3' H x 2' W
<i>Punica granatum</i> 'Nana' Drawf Pomegranate	3' H x 3' W
<i>Teucrium fruticans</i> 'Compactum' Compact Bush Germander	3' H x 3' W
<i>Bouteloua gracilis</i> 'Blonde Ambition' Blonde Ambition Blue Grama	2' H x 2' W
<i>Zauschneria californica</i> California Fuchsia	3' H x 3' W

GROUND COVER

<i>Lantana sellowiana</i> 'Monswee' Lavender Swirl Trailing Lantana	1' H x 5' W
<i>Myoporum parvifolium</i> 'Fine Leaf Form' Fine-leaf Myoporum	1' H x 6' W
<i>Teucrium chamaedrys</i> Wall Germander	1' H x 2' W
<i>Rosmarinus officinalis</i> 'Huntington Carpet' Huntington Carpet Rosemary	1.5' H x 6' W
<i>Festuca glauca</i> 'Elijah Blue' Blue Fescue	1' H x 1' W

GROUND COVER AT BACK STEPPERS

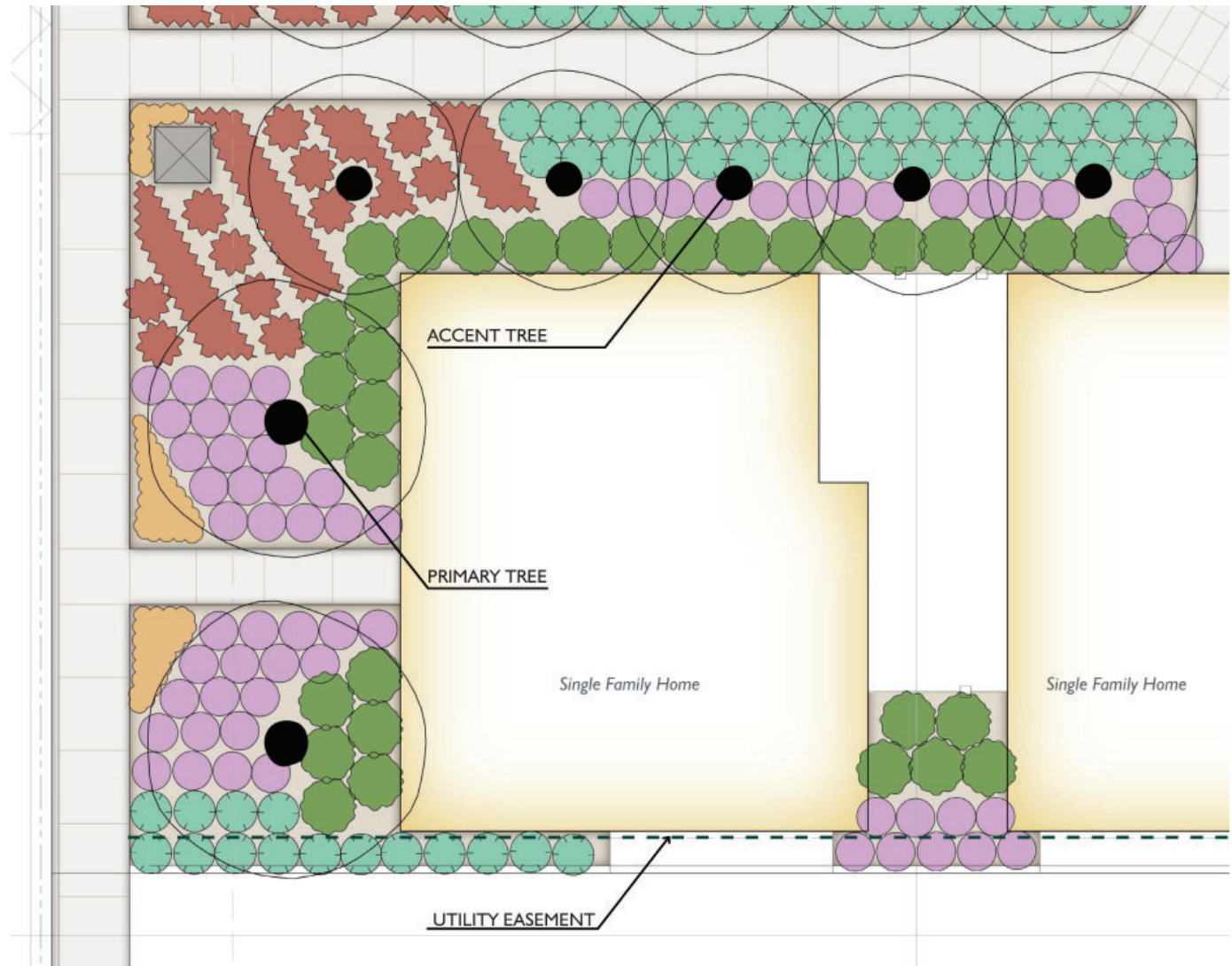
<i>Thymus serpyllum</i> 'Elfin' Elfin Thyme	.25' H x 1' W
<i>Thymus praecox</i> 'Albiflorus' White Moss Thyme	1' H x 1' W
<i>Dymondia margaretae</i> Silver Carpet	.5' H x 2' W

ESPALIER

<i>Malus domestica</i> 'Fuji' Fuji Apple Espalier	
<i>Malus domestica</i> 'Honey crisp' Honey Crisp Apple Espalier	

**colors denote category of planting, not color of specific plant species

6.10 PASEO TYPICAL LANDSCAPE

**ACCENT TREE**

<i>Punica granatum</i> 'Wonderful' Pomegranate	20' H x 15' W
<i>Laurus nobilis</i> Sweet Bay	15' H x 12' W
<i>Ficus carica</i> 'Black Jack' Black Jack Fig	15' H x 15' W
<i>Malus x domestica</i> 'Red Delicious' Red Delicious Apple	15' H x 12' W
<i>Prunus armeniaca</i> 'Tropic Gold' Tropic Gold Apricot	15' H x 15' W

PRIMARY TREE

<i>Quercus agrifolia</i> Coast Live Oak	50' H x 20' W
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GRASS

<i>Lomandra longifolia</i> Breeze Drawf Mat Rush	3' H x 3' W
<i>Muhlenbergia capillaris</i> Pink Muhlygrass	3' H x 3' W
<i>Festuca mairei</i> Atlas Fescue	3' H x 3' W

FOUNDATION SHRUB

<i>Diets grandiflora</i> Fortnight Lily	4' H x 3' W
<i>Pittosporum tenuifolium</i> 'Golf Ball' Golf Ball Kohuhu	4' H x 4' W
<i>Rosmarinus officinalis</i> 'Tuscan Blue' Rosmarinus officinalis	5' H x 4' W
<i>Westringia fruticosa</i> 'Smokey' Coast Rosemary	4' H x 4' W

SECONDARY SHRUB

<i>Hesperaloe parviflora</i> 'Brakelights' Breaklights Red Yucca	3' H x 2' W
<i>Punica granatum</i> 'Nana' drawf pomegranate	3' H x 3' W
<i>Lavandula angustifolia</i> 'Hidcote Blue' Hidecote English Lavender	2' H x 3' W
<i>Teucrium fruticans</i> 'Compactum' Compact Bush Germander	3' H x 3' W
<i>Bouteloua gracilis</i> 'Blonde Ambition' Blonde Ambition Blue Grama	2' H x 2' W

GROUND COVER

<i>Myoporum parvifolium</i> 'Fine Leaf Form' Fine-leaf Myoporum	1' H x 6' W
<i>Teucrium chamaedrys</i> Wall Germander	1' H x 2' W
<i>Rosmarinus officinalis</i> 'Huntington Carpet' Huntington Carpet Rosemary	1.5' H x 6' W

HIGHLIGHT ROWS

<i>Coleonema pulchellum</i> 'Sunset Gold' Golden Breath of Heaven	3' H x 4' W
<i>Lomandra longifolia</i> Breeze Drawf Mat Rush	3' H x 3' W

SECTION 7: SIGNAGE

This section provides the development standards for the signage as part of the Fairview at Northgate Master Plan. Signage is proposed for the commercial portion of this Master Plan. There will be two types of signs on the project, a pylon sign and a sign affixed to the building face. Signage is proposed to be attractive and easily viewed. It shall be seen from the freeway and from the surrounding roads.

7.1 CONSTRUCTION REQUIREMENTS

- All signs and their installation shall comply with all local building and electrical codes.
- All electrical signs will be fabricated by a U.L. approved sign company, according to U.L. specifications and bear U.L. label.
- Sign Company to be fully licensed with the City and State and shall have full Workman's Compensation and general liability insurance.
- All penetrations of building exterior surfaces are to be sealed waterproof in a color and finish to match existing exterior.
- Internal illumination to be led installed and labeled in accordance with the "National Board of Fire Underwriters Specifications"
- Painted Surfaces to have glossy or satin finish. Only paint containing acrylic or polyurethane products may be used.
- Logo and letter heights shall be as specified and shall be determined by measuring the normal capital letter of a type font.
- All sign fabrication shall be of excellent quality. All logo images and type-styles shall be accurately reproduced. Lettering that approximates type styles will not be acceptable. The Owner reserves the right to reject any fabrication work deemed to be below standards.
- All lighting must match the exact specifications of the approved working drawings. No exposed conduit or raceways will be allowed.
- Signs must be made of durable rust-inhibiting materials that are appropriate and complimentary to the building.
- Color coating shall exactly match the colors specified on the approved plans.
- Joining materials (e.g., seams) shall be finished in a way as to be unnoticeable. Visible welds shall be continuous and ground smooth. Rivets, screws, and other fasteners that extend to visible surfaces shall be flush, filled, and finished so as to be unnoticeable.
- Finished surfaces of metal shall be free from oil canning and warping. All sign finishes shall be free from dust, orange peel, drips, and runs and shall have a uniform surface conforming to the highest standards of the industry.
- In no case shall any manufacturer's label be visible from the street from normal viewing angles.
- Exposed raceways are not permitted.
- Exposed junction boxes, lamps, tubing or neon crossovers of any type are not permitted.
- All conduits, etc. installed on rock background, corrugated metal and/or back of parapets to be painted a specific color to be approved by the architect or landlord.
- Premises identification signs (address numerals) are subject to the approval of the City Engineering and Fire Department.

7.2 SIGN TYPES

Creative and imaginative signage is strongly encouraged and will be the standard for Landlords review/approval of all sign design submittals.

There are many acceptable sign treatments, however, a mixed media three-dimensional approach combining several different fabrication and lighting techniques is preferred.

Tenants are strongly encouraged to consider the specific architectural style of their facade, the overall concept of the project, the scale of the proposed sign and the critical viewing angles and sight lines when designing appropriate graphics and signs for the storefront. Note that specific locations and surrounding architectural treatments can limit the maximum sign height and length, which may differ from the general guidelines proposed above. The Landlord reserves the right to approve or reject any proposed sign on the basis of its size and placement.

7.2.1 Acceptable Sign Types

- Front and halo 5" illuminated channel letters.
- 3" deep halo illuminated letters.
- Channel letter 5" deep.
- Mixed media/3 dimensional signs using images, icons, logos, etc.
- Signs painted gold, silver or copper leaf.
- Sand blasted, textured and/or burnished metal-leaf faced dimensional letters, pin mounted from facade.
- Signs mounted to hard canopies, eyebrows or other projecting architectural elements.
- Open face channel letters with exposed neon tubing with clear acrylic faces. Allowed for Major Tenant.
- Metal letters with exterior lighting.
- LED illuminated faux neon channel letters sign.

7.2.2 Prohibited Sign Types

- Flashing Signs: Animated, flashing or audible signs.
- Lettering painted directly on a building surface, including windows.
- Projections above rooftop.
- Sign cabinets (except logo elements in conjunction with approved channel letters, all logos shall be dimensional and shall incorporate push thru lettering).
- Banners attached to the exterior of the buildings.

7.3 SMALL RETAIL WALL SIGNS

1. Approval Required: All signs shall be attached to the building only at a location approved by the Landlord and the City of Vallejo.
2. Primary Wall Sign: The main business identification sign shall be located on the building fascia and/or eyebrow mounted at the location shown on elevation page.
3. Suite Address Number Sign: The suite number or address of the lease space shall be centered above the door per fire department requirement with white vinyl film.
4. Sign type: Tenants signs shall be composed of channel letters, eyebrow mounted: channel letters, channel letters (clear face/neon), and metal letters face lit.
 - a. The aggregate sign area (all signs on one wall) shall not exceed paragraph #5 below.
 - b. Sandblasted or painted signs are not permitted.
5. Tenant Identification Signs:
 - a. The maximum area allowed for the main ID as follows: One and one half (1-1/2) square feet of wall signage per linear foot of primary entry leasehold space
 - b. The maximum size for the main ID sign shall not exceed 100 SF with a maximum height of three (3) feet zero (0) inches for a single-line copy sign and a maximum height of three (3) feet six (6) inches for any double-line copy sign.
 - c. Secondary signs shall not exceed one (1) square foot of wall signage per linear foot of secondary elevation leasehold frontage. One internally illuminated channel letter sign on each visible secondary elevation facing a parking lot or street with a maximum letter height of two (2) feet.
 - d. Location: Landlord shall reasonably approve location of signs which shall be in keeping with the architectural design of the building. Signs to be located only within the space and surface specifically provided for on the building.
 - e. Every business with a drive thru facility is permitted a maximum of two (2) menu/order board signs. The sign shall be adjacent to the drive thru aisle. The sign shall not be located as to impair the vision of the driver of a vehicle traveling either into, out of, or through the drive thru aisle. The area of each sign shall not exceed fifty (50) square feet. The height of the sign including the pole or base shall not exceed eight (8) feet from grade to the top of the sign.
 - f. Exit and Enter signs shall be placed as needed to insure traffic flow and will not be included in the overall square footage allowed. A plot plan showing all signs (Menu Boards and Exit and Enter signs) must be approved by the Owner and City of Vallejo, CA.
6. Materials:
 - a. Sign Face: Acrylic. Landlord must approve colors prior to sign permit submittal.
 - b. Letter return material: Aluminum, painted to match building colors or Landlord approved colors.
 - c. Letter return depth: Not to exceed 7" from the face of the building.
 - d. Trim cap size: 3/4" for 24" letters and 1" for 36" logo elements.
7. Lighting:
 - a. All signs shall be internal LED illuminated
 - b. All signs to be U.L. listed.
 - c. Halo lighting

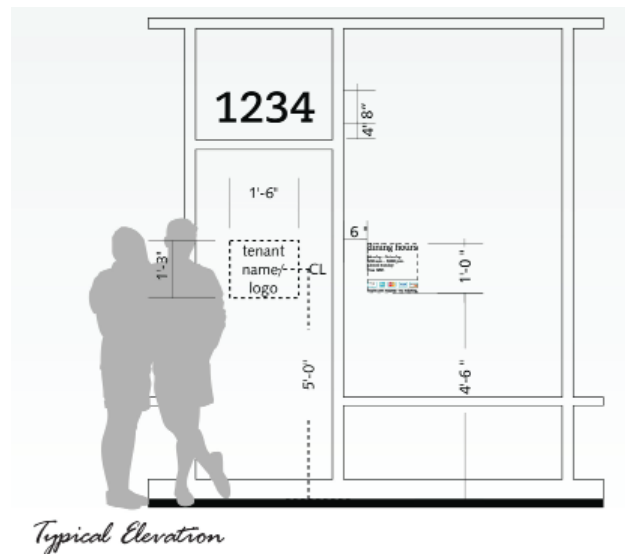
7.4 MAJOR TENANT WALL SIGNS

1. Approval Required: All signs shall be attached to the building only at a location approved by the Landlord and the City of Vallejo.
2. Primary Wall Sign: The main business identification sign shall be located on the building fascia at the location shown on elevation page.
3. Suite Address Number Sign: The suite number or address of the lease space shall be centered above the door per fire department requirement with white vinyl film.
4. Sign type: Tenant signs shall be composed of channel letters, eyebrow mounted: channel letters, channel letters (clear face/neon), and metal letters face lit.
 - a. The aggregate sign area (all signs on one wall) shall not exceed paragraph #5 below.
5. Tenant Identification Signs:
 - a. The maximum area allowed for the main ID as follows: Two (2) square feet of wall signage per linear foot of primary entry leasehold space
 - b. The maximum size for the main ID sign shall not exceed 400 SF with a maximum height of six (6) feet for a single-line copy sign and a maximum height of eight (8) feet for any double-line copy sign. A sublease tenant is allowed one (1) wall sign per sub-establishment, maximum of two (2) sublease businesses, not to exceed 75 square feet
 - c. Secondary signs shall not exceed one (1) square foot of wall signage per linear foot of secondary elevation leasehold frontage. One internally illuminated channel letter sign on each visible secondary elevation with a maximum letter height of four (4) feet for a single-line copy sign and a maximum height of six (6) feet for any double-line copy sign.
 - d. Location : Landlord shall reasonably approve location of signs which shall be in keeping with the architectural design of the building. Signs to be located only within the space and surface specifically provided for on the building.
 - e. Total area of wall signs shall not to exceed 80% of any street or parking lot frontage. Maximum length shall not exceed 80 percent of any street or parking lot frontage.
6. Materials:
 - a. Sign Face: Acrylic. Landlord must approve colors prior to sign permit submittal.
 - b. Letter return material: Aluminum, painted to match building colors or Landlord approved colors.
 - c. Letter return depth: Not to exceed 7" from the face of the building.
 - d. Trim cap size: $\frac{3}{4}$ " for 24" letters and 1" for 36" logo elements.
7. Lighting:
 - a. All signs shall be internal LED illuminated
 - b. All signs to be U.L. listed.
 - c. Halo lighting

7.5 PERMANENT WINDOW AND DOOR SIGNAGE

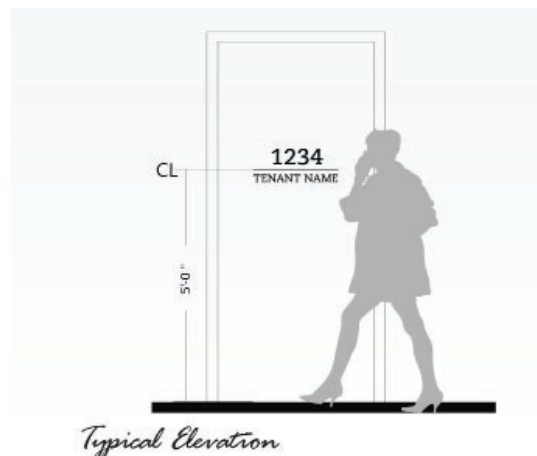
7.5.1 Tenant Entry Information

- Materials: Matte white vinyl letters on entry glass.
- Copy: 8" overall height of suite letter or address numerals Tenant entry / Hours of operation information 12" x 12" Credit card and social media information
- Sign Area: 3.0 square foot maximum sign area
- Typeface: Caecilia 55 Roman, Caecilia 75 Bold or other Property Owner approved corporate standard for typeface
- Location: Address or suite number centered over the main entry door(s). Tenant and/or hours of operation on entry glass panel on the same side as door handle or right side, as applicable.



7.5.2 Rear Entry I.D.

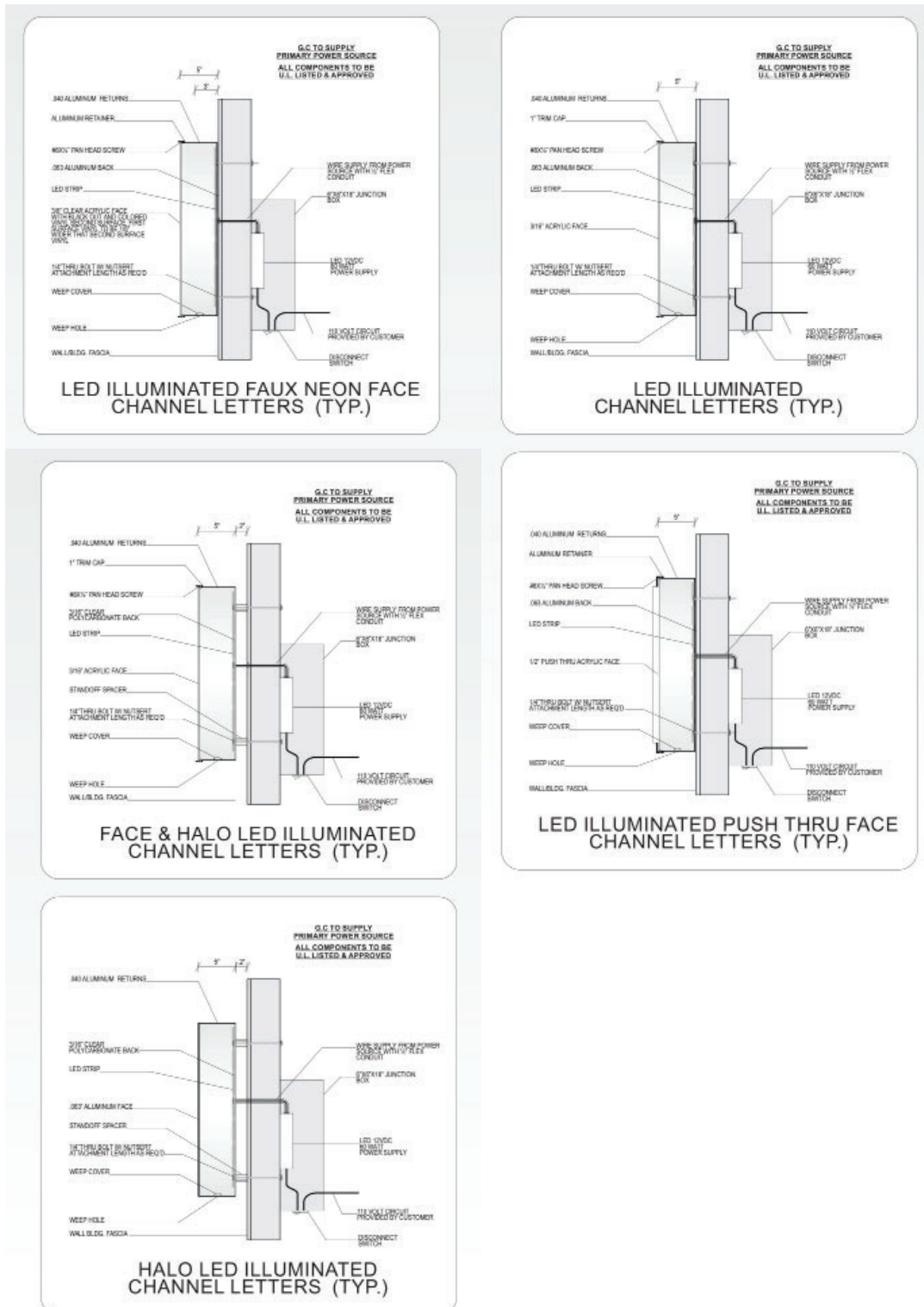
- Materials: Vinyl letters on door in contrasting color.
- Copy: 4" overall height of suite letter or address numerals 2" high Tenant Name
- Sign Area: 2.5 square foot maximum sign area
- Typeface: Caecilia 55 Roman, Caecilia 75 Bold or other Property Owner approved corporate standard for typeface



7.6 APPROVED SIGNS

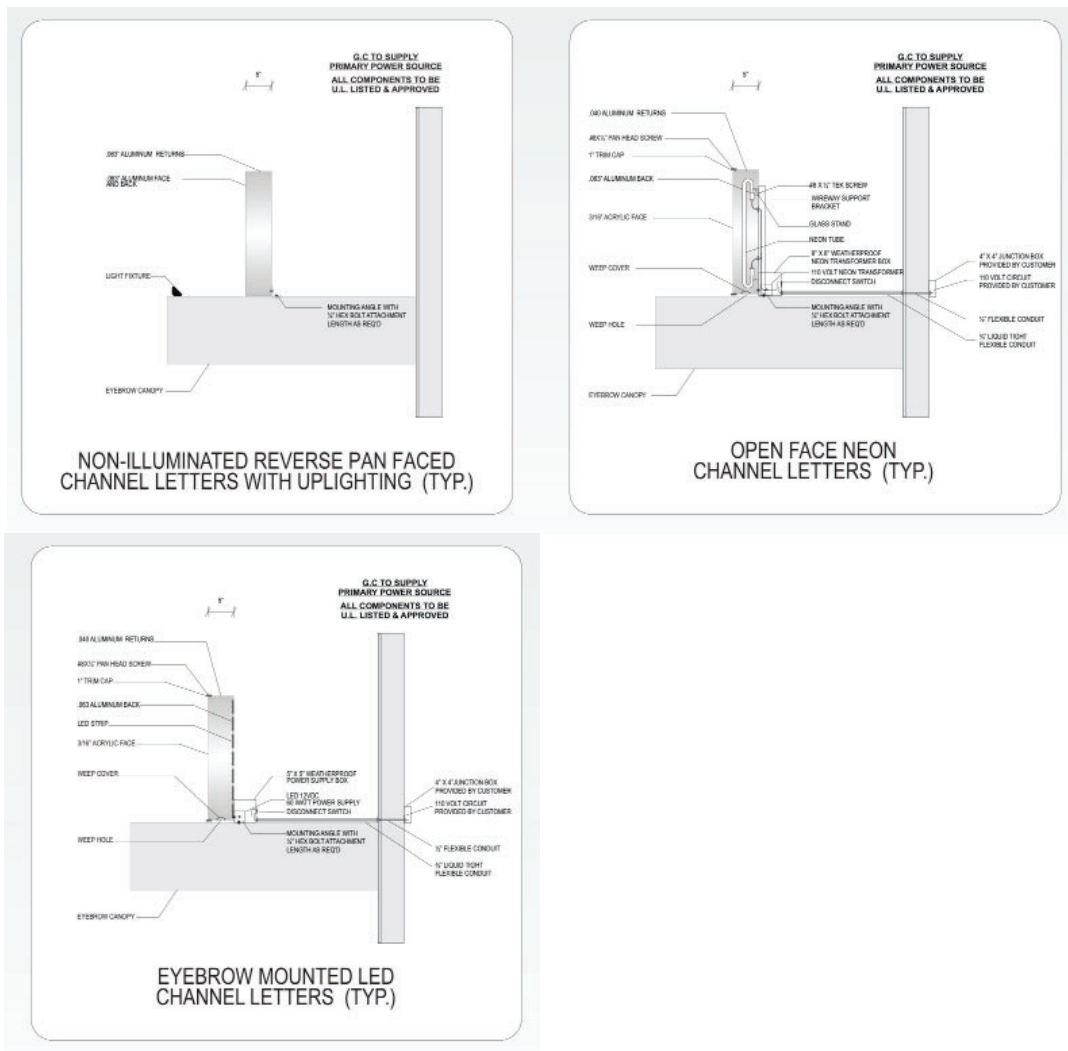
7.6.1 Examples of Wall Mounted Signs

Examples are provided for illustrative purposes only. Other manufacturing may be allowed.



7.6.2 Examples of Eyebrow Mounted Signs

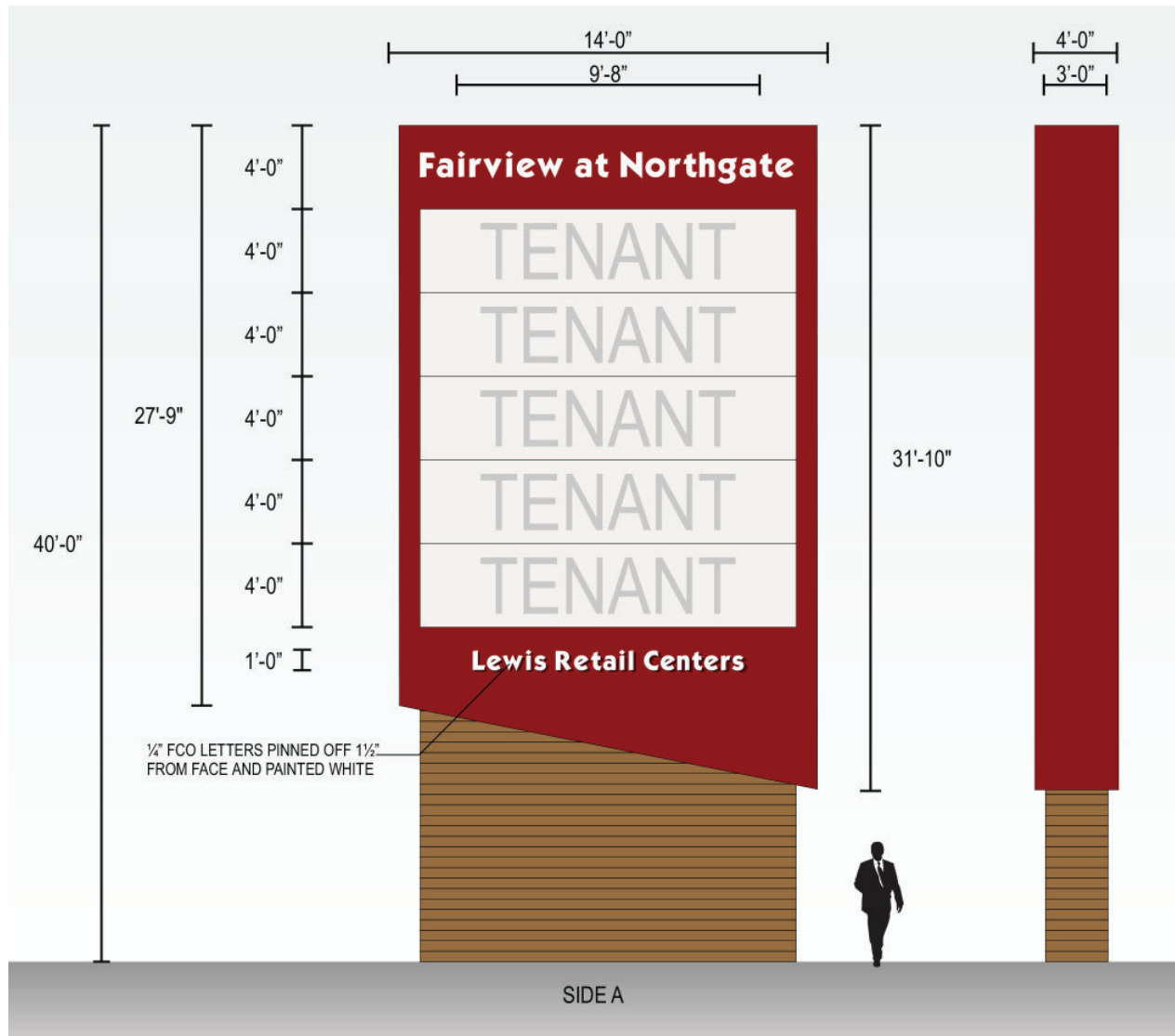
Examples are provided for illustrative purposes only. Other manufacturing may be allowed.



7.7 PROPOSED SIGNS

7.7.1 Multi Tenant Panel Pylon Signs

Examples are provided for illustrative purposes only.



7.8 EXISTING SIGN LOCATIONS

7.8.1 Map of Existing Locations

There are numerous signs in the vicinity of the Project. Some are located along the freeway while others are found along Columbus Parkway. The image below shows the approximate location of the existing signs in the surrounding area of the Project.



7.8.2 Existing Locations Legend

This legend describes the existing signs with images, size and location.



- 1** SOLONO COMMUNITY COLLEGE VALLEJO CENTER
Location: ST Johns Mine Road & Columbus Parkway
Height: 5'
Length: 20'



- 2** LOWES
Location: Lowes Entrance
Height: 12'
Length: 8'



- 3** LOWES
Location: N. Ascot Parkway & Columbus Parkway
Height: 25'
Length: 15'



- 4** CHEVROLET
Location: Northwest of N. Ascot Parkway & Columbus Parkway
Height: 30'
Length: 12'



- 5** HYUNDAI
Location: Mid block between Admiral Callaghan Lane & Columbus Parkway
Height: 30'
Length: 8'



- 6** MAZDA
Location: Mid block between Admiral Callaghan Lane & Columbus Parkway
Height: 10'
Length: 15'



- 7** TOYOTA
Location: Mid block between Admiral Callaghan Lane & Columbus Parkway
Height: 25'
Length: 8'

This legend describes the existing signs with images, size and location.



8 COMMERCIAL COMPLEX

Location: East of Admiral Callaghan Lane & Columbus Parkway

Height: 20'

Length: 12'



9 VALLEJO AUTO MALL

Location: Fork of Admiral Callaghan Lane & Columbus Parkway

Height: 140'

Length: 60'



10 TARGET COMMERCIAL COMPLEX

Location: Northwest of N. Ascot Parkway & Columbus Parkway

Height: 65'

Length: 20'



11 BILLBOARD 1

Location: Fork of Admiral Callaghan Lane & Columbus Parkway; West side of freeway

Height: 35'

Length: 48'



12 80 ELECTRONIC BILLBOARD

Location: Fork of Admiral Callaghan Lane & Columbus Parkway; West side of freeway

Height: 45'

Length: 30'



13 80 BILLBOARD 2

Location: Half way point between Admiral Callaghan Lane & Columbus Parkway fork and Turner Parkway turnout ; West side of freeway

Height: 35'

Length: 48'

7.9 PROPOSED SIGN LOCATION

7.9.1 Map of Proposed Location



7.9.2 Existing and Proposed Locations along Freeway

Below are image perspectives that call out where existing and proposed signs are located along the freeway. Refer to 7.8.1: Map of Existing Locations, 7.8.2: Existing Locations Legend and 7.9.1: Map of Proposed Locations for plan view locations.



SECTION 8: ARCHITECTURE DEVELOPMENT STANDARDS

This section provides the development standards for the architecture as part of the Fairview at Northgate Master Plan.

8.1 GENERAL GUIDELINES

8.1.1 Architectural Styles

Architectural Character: Wine Country Agrarian

The architectural character of the residential, commercial, and retail buildings of the Fairview at Northgate Master Plan draws on the project site's proximity to California's wine country and the community's Harvest theme. The guidelines and standards in the following sections are provided to help guide the development and maintenance of future residential, commercial, and retail buildings of Fairview at Northgate. Building elevation and floor plan examples for Residential Single Family Homes and Cluster Homes are provided in sections 7.3 and 7.4 for reference.

8.2 SINGLE FAMILY HOMES AND CLUSTER HOMES

8.2.1 Development Guidelines and Standards

a. Building Massing

- Variety in building massing and form is encouraged to provide diversity and visual interest to the neighborhood street scene. The following recommendations are encouraged when designing the residential homes of Fairview at Northgate:
 - o Articulation of wall planes
 - o Projections and recesses to provide shadow and depth
 - o Simple forms representative of the building's floor plan
 - o Combinations of one or two story forms
- Building wall planes, particularly on the front elevation, should be staggered to create interest along the street scene, to provide a desirable human scale, and to avoid visual monotony.
- Residential design should provide articulation and detail to the rear and side of the dwelling when adjacent to public spaces within the community.

b. Main Entrances/Porches

- Residential entries, whether front or side entry, that face a street or lane shall be articulated as a focal point of the front elevation through the use of elements that reflect a Wine Country Agrarian character. Elements within this character for consideration include:
 - o Covered Porch/Entry way
 - o Trellis
 - o Recessed entry

c. Roofs

- Roof design and treatment should be varied to provide visual interest to the neighborhood roofscape. This can be achieved through varied roof forms and rooflines. The following roof guidelines and standards help promote an engaging roofscape within the Wine Country Agrarian character.
 - o Pitched roof form: Hip, gable, cross-gable, shed. Gambrel and Mansard roof forms are prohibited.
 - o Multiple plate height are encouraged where applicable.
 - o A variety of roof colors and materials are encouraged and may include concrete tiles and shakes.

d. Window Openings

- Windows are important elements to the building design as they provide both elevation articulation and privacy and openness for the inhabitants. The window guidelines and standards below ensure quality building design and balance between public and private interface.
 - o Window types: Single hung slider and fixed windows; windows with horizontal grid at front elevation may be appropriate.
 - o Window trim elements may be stucco, pre-cast, or wood.
 - Stucco finished trim elements, when used, shall be sand finish.
 - o Aluminum or vinyl frame windows should be appropriately colored to match or complement the house or trim colors for each color scheme.
 - o Reflective glass is prohibited.
 - o Shape and size of shutters, when used, should be proportionate to the window opening.

e. Garage Doors

- The overall design of the building's front elevation should de-emphasize garage doors facing the street to promote a pedestrian friendly streetscape. Examples of techniques that may be used include:
 - o Garage door recesses into surrounding wall planes.
 - o Roof form/vertical wall plan articulation where garage is located.
 - o Architecture forward design that shows either a covered entry/porch or habitable space located forward of the garage door.

f. Exterior Materials and Colors

- Exterior building materials and colors provide variety and richness to a building's design. To ensure the residential homes of Fairview at Northgate achieve the desired Wine Country Agrarian character style and reflect quality design the following guidelines and standards apply:
 - o All surface treatments or materials should be designed to appear as an integral part of the design, and not merely applied. All materials shall wrap columns, porches, or balconies in their entirety.
 - o Colors and materials changes shall occur at inside corners. Materials applied to any elevation shall turn the outside corner of the building and end at a logical termination point related to rooflines, building massing or fence returns when they are available.
 - o Any field color used at the base of the building shall continue down to the finish grade.
 - Likewise, where masonry or stone veneer is used at the base of the building, the visible wall surface below the level of the weep screed, shall be painted a color that closely matches the masonry color directly above.
 - o Exterior materials can include, but is not limited to:
 - Stucco
 - Stone Veneer
 - Cementitious Lap Siding
 - Cementitious Board and Batt Siding

g. Architectural Detailing

- Detail elements such as shutters, eave brackets, corbels, exposed rafter ends or cross beams should be used to provide visual interest and richness to elevations.
- Exposed gutters and downspouts should be colored to match or complement the surface to which they are attached.

8.2.2 SINGLE FAMILY HOME TYPICAL EXAMPLE

Front Elevation 1C

8.2.3 CLUSTER HOME TYPICAL EXAMPLE

Front Elevation 1B

8.3 COMMERCIAL STANDARDS

This section provides the development standards for the architecture of the commercial portion of the site. Both the small retail and the large retail shall be designed with the Agrarian theme in mind. The term agrarian refers to being of the land. This building style tends to focus on incorporating local materials into architecture with farmhouse elements. Often these components are rustic, organic and naturally comfortable. Agrarian-style architecture tends to invoke a communal spirit which will be well placed in current project.

8.3.1 Development Guidelines and Standards

a. Building Massing

Variations in the building form should be used to add interest and break up long wall planes. Suggested techniques include stepping the building height, furring out walls to create offsets in plane, adding reveals to wall surfaces, and insets or other variations in plan. Long facades should be designed with sufficient building articulation and landscaping to break them up into smaller visual elements. Substantial framing or masonry should be used whenever possible to allow for deep recesses and large windows which allow in sunlight throughout the day.

b. Entrances

Provide clearly defined building entries that are in scale with the proposed project, and that relate directly to the street frontage wherever possible.

c. Overhead Design Elements

Awnings, trellises or canopies are encouraged above windows, doors, and entrances to provide shade and architectural relief. Variation in parapet height can add some visual interest

d. Exterior Wall Materials

Building facades should feature high-quality materials and coordinated colors. Most design motifs should utilize multiple materials, color and textures, in a coordinated way. Materials on buildings should be varied in order to create patterns and break up larger masses into smaller forms. Natural elements such as stone and wood shall be promoted within the design. Colors should be used to articulate building design as is consistent with the design motif. Muted tones found inside and outside the buildings will reinforce this sense of agrarian architecture.

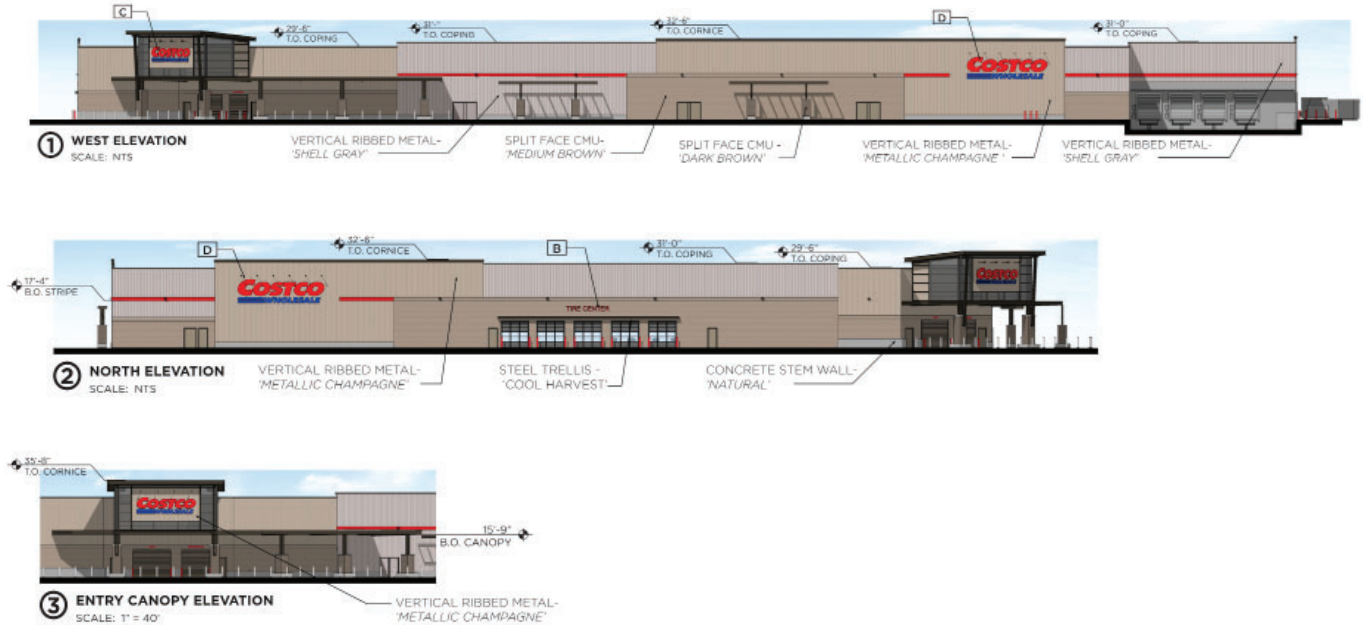
e. Architectural Detailing

Articulation such as cornice detail, insets, windows, reveals, furring, score lines, and/or trim should be used to break up the visual massing of building facades. Elements should be chosen that are appropriate to the overall stylistic treatment.

f. Outdoor Space

Spaces outdoors should feel connected to the indoor spaces that are provided by the architecture. The should be a blending of the indoor and the outdoor spaces to allow for an interconnected design.

8.3.2 MAIN TENANT TYPICAL EXAMPLES



8.3.3 SMALL RETAIL TYPICAL EXAMPLES



SECTION 9: OPEN SPACE

The natural open space in Fairview at Northgate is located between the proposed residential and commercial development. It is approximately 5.7 Acres and will be fenced and posted to prevent trespassing.

9.1 TRAILS

There will be a trail system that is outside of the open space but overlooks and complements it.

9.2 EROSION CONTROL

Erosion control standards shall be used on all disturbed lands during project development. Disturbance to the central open space shall be kept at a minimum. All cut and fill slopes steeper than 5:1 shall be planted with erosion control measures.

9.3 FIRE MANAGEMENT

The open space can be accessed by fire on both the residential side and the commercial side of the project as well as from Turner Parkway.

9.4 WILDLIFE MANAGEMENT

The open space site shall promote and protect wildlife.

9.5 PRESERVATION

The open space shall reasonably preserve existing vegetation in its current condition.

SECTION 10: CONCLUSION

Fairview at Northgate will be a comprehensive development as laid out in this Master Plan. It will develop under the overall theme that has been established within this document.



APPENDIX A**COMMERCIAL USES:****PERMITTED USES:**

- a. Regionally-oriented retail uses including but not limited to:
 - Auto Dealership/Sales
 - Car Wash
 - Discount Center
 - Gas Station
 - Factory Store
 - Furniture Outlet
 - Home Improvement Center
 - Promotional Center
 - Warehouse Club

- b. Community-serving retail uses including but not limited to:
 - Appliance Store
 - Art Gallery/Supply Store
 - Auto Parts
 - Bakery
 - Bicycle Shop
 - Book Store
 - Clothing/Apparel/Accessories Store
 - Day Care
 - Drug Store
 - Electronics/Computers
 - Floor Coverings Store
 - Florist/Plant Shop
 - General Merchandise Store
 - Gift Shop
 - Grocery/Food Store
 - Hardware Store
 - Hobby Shop
 - Home Furnishings
 - Home Appliances
 - Jewelry Store
 - Liquor Store
 - Music Store
 - Newspapers and Magazines
 - Paint, Glass and Wallpaper Store
 - Party Supplies
 - Pet Supplies
 - Photographic Supply Store
 - Picture Framing Shop
 - Shoe Store
 - Sporting Goods
 - Stationary and Office Supplies

Specialty Food/Grocery/Supermarket Store
Toy Store
Variety Store

- c. Business/professional offices and service establishments including but not limited to:
- Administrative Office
 - Bank, Savings and Loan, Credit Union and Other Financial Institutions
 - Barber/Beauty Shop/Nail Salon
 - Copying and Printing
 - Dry Cleaner (No plant permitted on premises)
 - Employment Agency
 - Formal Ware - Rental
 - In-Patient and Out-Patient Health Facilities (licensed)
 - Locksmith
 - Medical Clinic/Office
 - Photographic Studio
 - Professional Offices including: Accounting, Architectural, Dental, Engineering, Legal, etc.
 - Real Estate/Title Office
 - Shoe Repair
 - Tailor
 - Technology Access Center
 - Tele-Commuting Center
 - Travel Agency
 - Watch and Clock Repair
- d. Eating, drinking and entertainment establishments including but not limited to:
- Bagel Shop/Bakery
 - Bar/Cocktail Lounge
 - Cafe
 - Coffee House
 - Delicatessen
 - Fast Food Restaurant with Drive-Through
 - Ice Cream/Yogurt
 - Micro-Brewery
 - Restaurant - Full Service, Sit Down and Take-Out permitted - Outdoor dining permitted
 - Theater - Indoor (Including Dinner, Live Play, etc.)

CONDITIONAL USES:

Animal Sales and Services
Community Center
Dance Floor
Day Care Center
Hotel/Motel
Lodge Hall
Pet Day Care/Boarding
Video Arcade

TEMPORARY USES:

Arts and Crafts Fair
Carnival
Christmas Tree Sales
Farmers Market
Festival/Street Fair
Parking Lot Sales
Sidewalk Sales
Temporary Construction Trailer

PLANNED DEVELOPMENT
FAIRVIEW AT NORTHGATE
VALLEJO, CALIFORNIA

SEPTEMBER 2018
REVISED: APRIL 2020

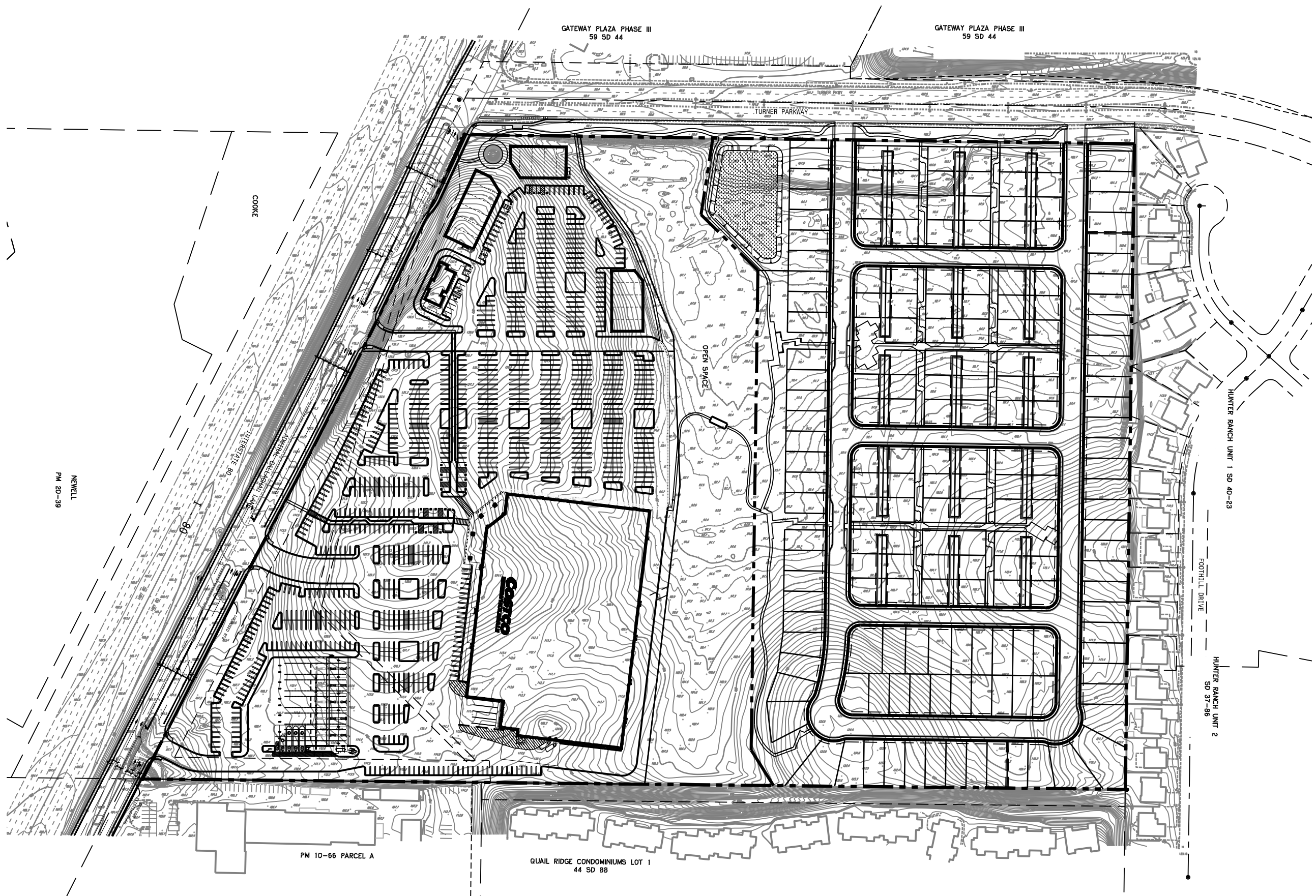
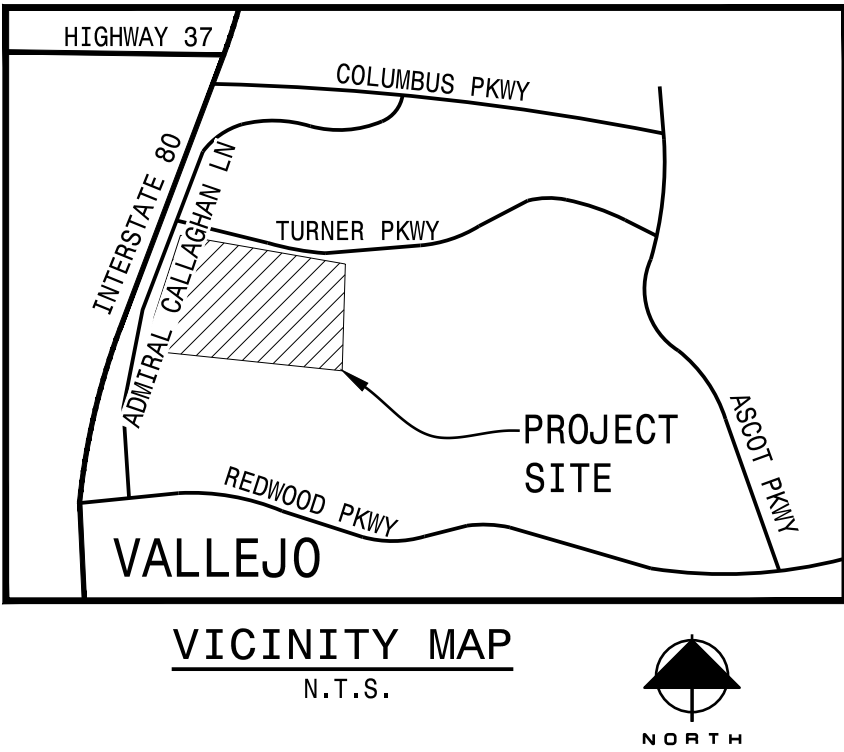


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PROJECT SUMMARY:

LAND USE:
RESIDENTIAL - 23.8± AC
COMMERCIAL - 21.8± AC
OPEN SPACE - 5.7± AC
TOTAL - 51.3± AC

RESIDENTIAL SUMMARY:

LOT COUNT:
86 - 42'x85' SINGLE FAMILY LOTS
92 - 50'x60' ALLEY-LOADED LOTS
178 - TOTAL LOTS

COMMERCIAL SUMMARY:

MAJOR RETAILER: 152,138± SF
SHOPS & RETAIL: 27,490± SF

- ✱ SIGNALIZED INTERSECTION (TWO LOCATIONS)
✱ PROPOSED BUS PULLOUT





GATEWAY PLAZA PHASE III
59 SD 44

TURNER PARKWAY

OPEN SPACE

QUAL RIDGE CONDOMINIUMS LOT 1
44 SD 88

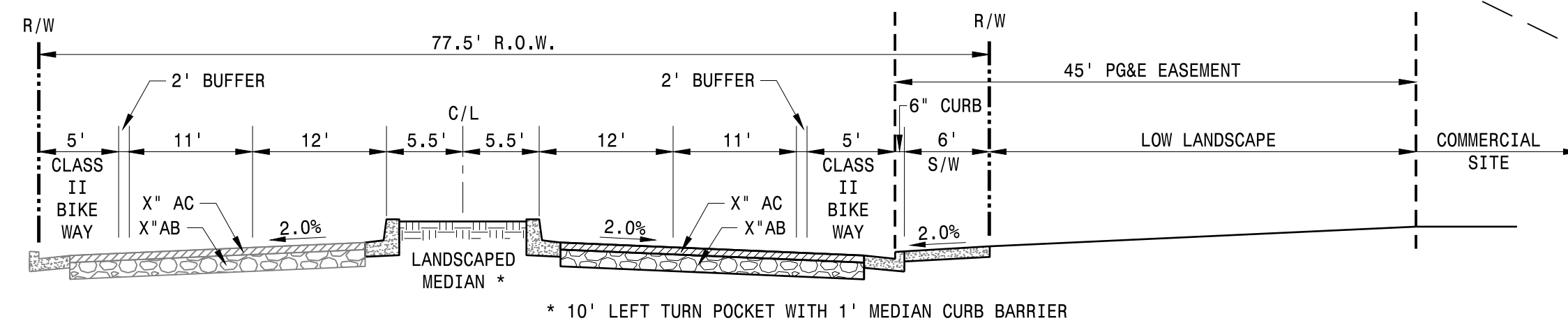
PM 10-66 PARCEL A

PROPOSED PG&E GASLINE EASEMENT

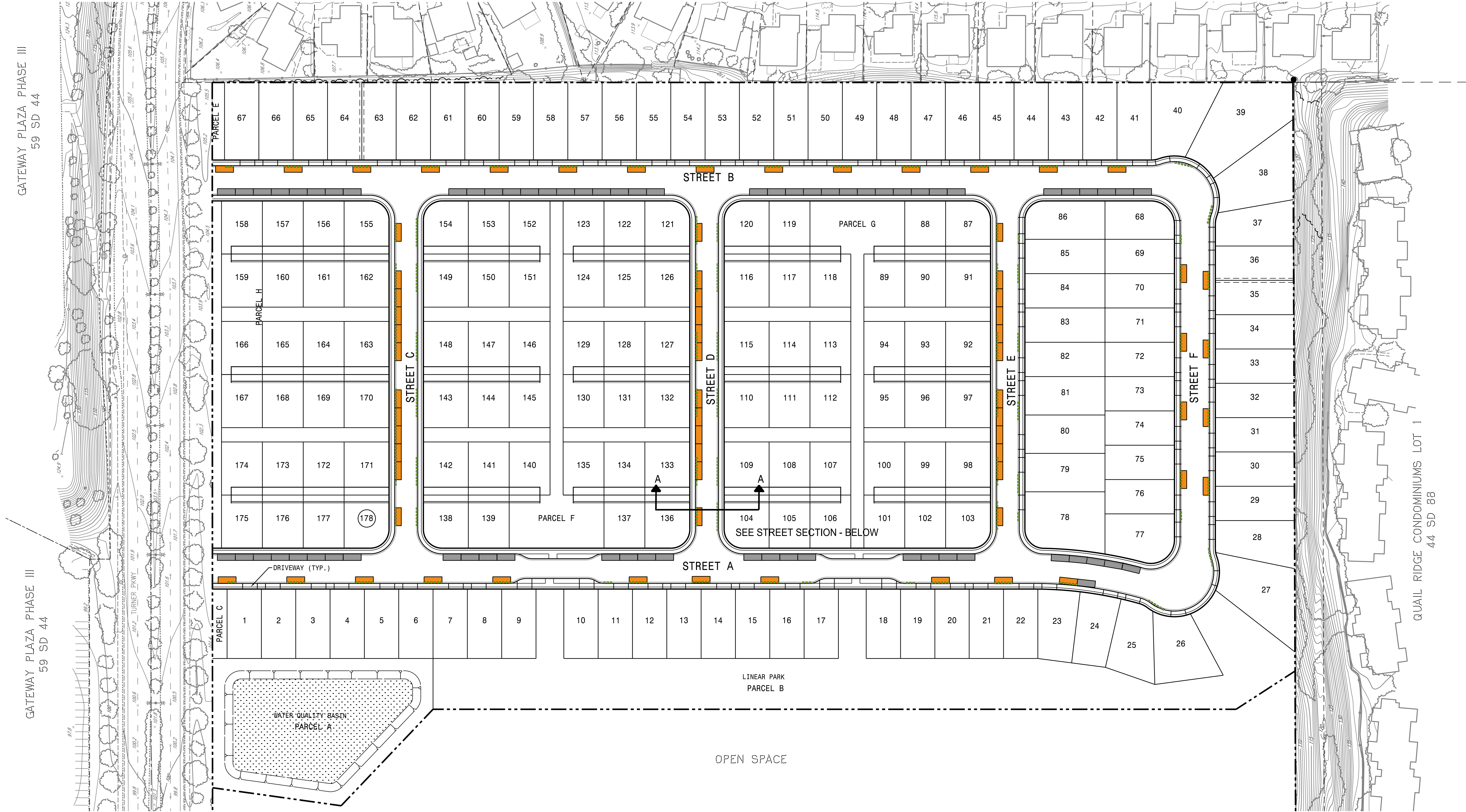
ADMIRAL CALLAGHAN LANE
INTERSTATE
80

NEWELL

PM 20-39



ADMIRAL CALLAGHAN LANE
N.T.S.



LEGEND:

- PARKING SPACE (8' x 22') - 68 SPACES
- RESTRICTED PARKING SPACE (8' x 22') - 69 SPACES
- GARBAGE CAN CLUSTER (3 CANS - 2'SQ WITH 2' BETWEEN)

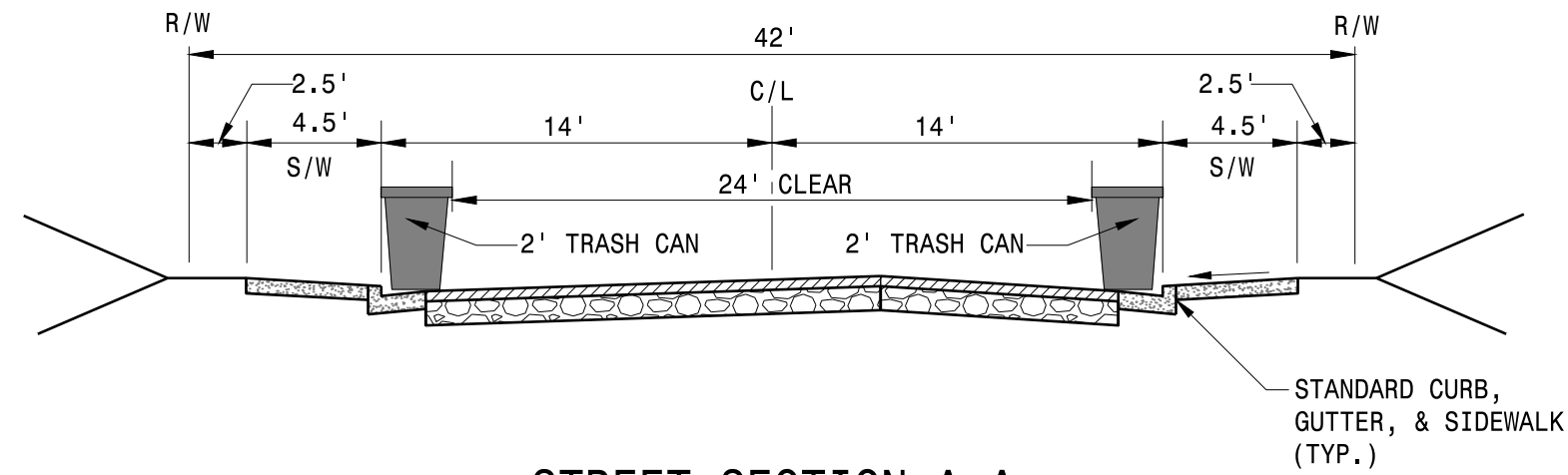
PARKING PROVIDED FOR FAIRVIEW AT NORTHGATE:

RESIDENTIAL PARKING (IN GARAGE):	356 SPACES
RESIDENTIAL VISITOR PARKING (IN DRIVEWAY):	172 SPACES
ON STREET VISITOR PARKING (1:5 UNITS = 35.6 SPACES):	137 SPACES
(RESTRICTED PARKING ON GARBAGE DAY:	80 SPACES)
(REMAINING PARKING ON GARBAGE DAY:	57 SPACES)

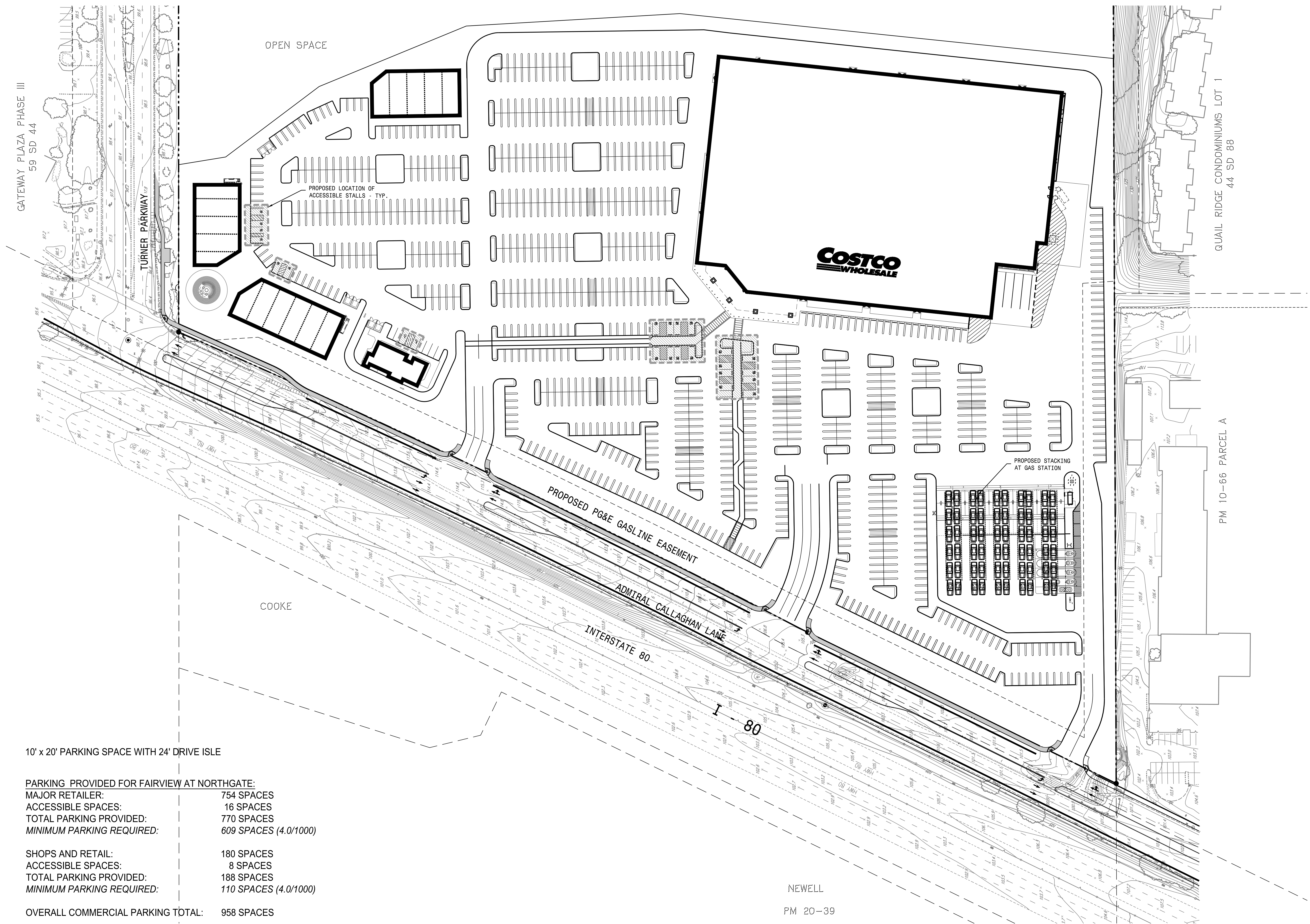
TOTAL PARKING: 665 SPACES
VISITOR PARKING REQUIRED: 36 SPACES (1SPACE:5 UNITS)

NOTES:

- CURBS NOT SHOWING AN 8'x22' PARKING SPACE WILL BE PAINTED RED AND PARKING WILL NOT BE ALLOWED.
- 69 PARKING SPACES WILL BE RESTRICTED ON GARBAGE PICKUP DAYS LEAVING 68 ON-STREET PARKING SPACES. SIGNS WILL BE POSTED IN THE RESIDENTIAL DEVELOPMENT INDICATING WHAT DAYS AND TIMES ARE TO BE RESTRICTED. FINAL LOCATION WILL BE WORKED OUT WITH THE CITY DURING FINAL DESIGN.
- 24' CLEAR MINIMUM WILL BE MAINTAINED ON ALL STREETS ON GARBAGE PICK-UP DAYS.



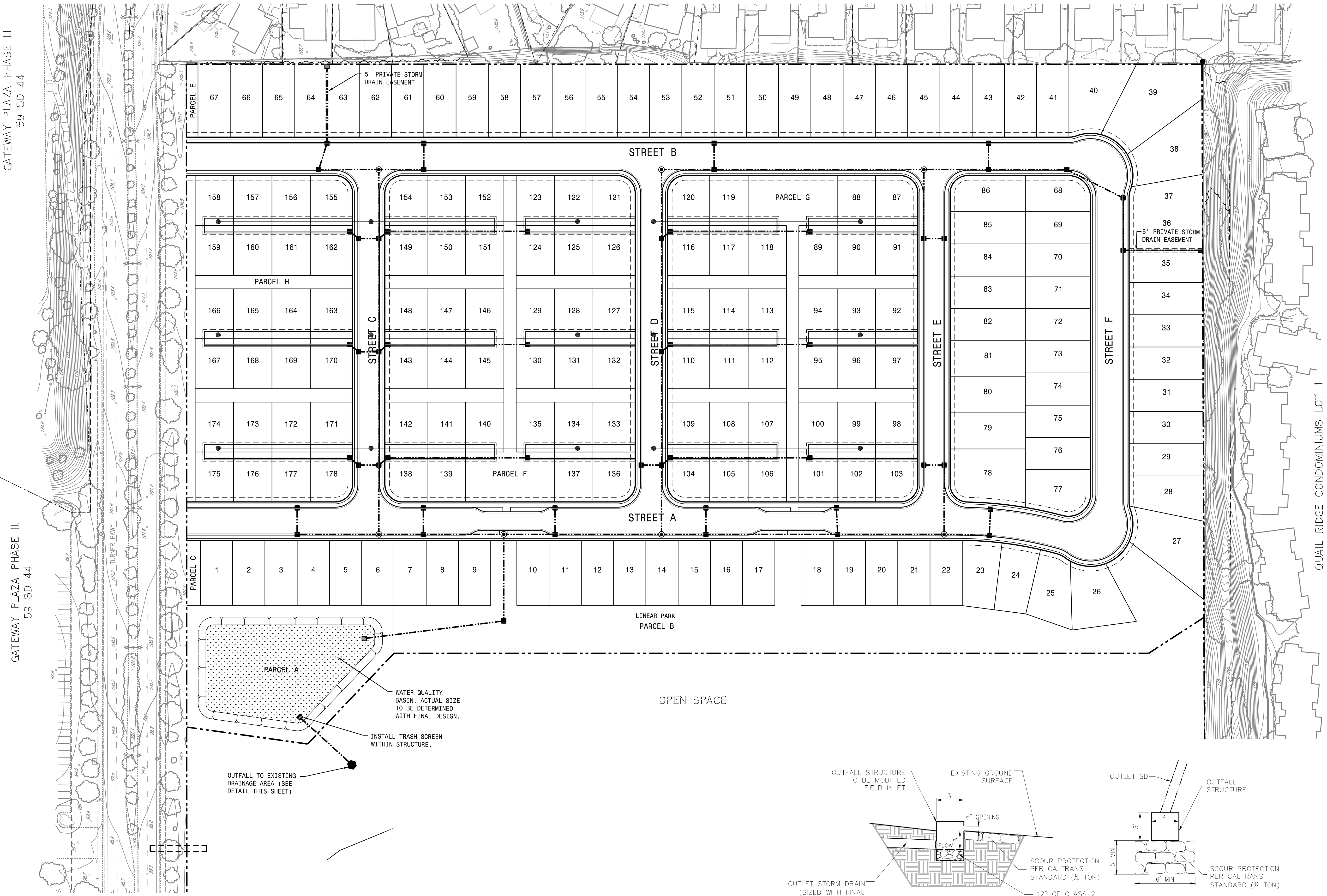
STREET SECTION A-A
N.T.S.
SECTION ON GARBAGE PICK-UP DAY



10' x 20' PARKING SPACE WITH 24' DRIVE ISLE

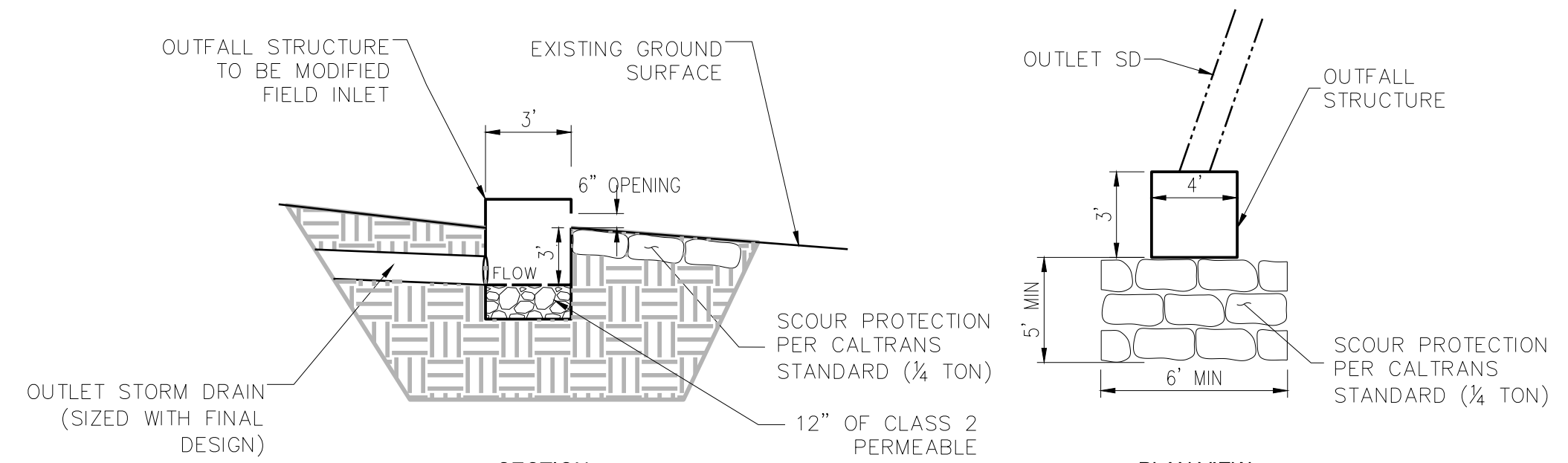
PARKING PROVIDED FOR FAIRVIEW AT NORTHGATE:	
MAJOR RETAILER:	754 SPACES
ACCESSIBLE SPACES:	16 SPACES
TOTAL PARKING PROVIDED:	770 SPACES
MINIMUM PARKING REQUIRED:	609 SPACES (4.0/1000)
SHOPS AND RETAIL:	180 SPACES
ACCESSIBLE SPACES:	8 SPACES
TOTAL PARKING PROVIDED:	188 SPACES
MINIMUM PARKING REQUIRED:	110 SPACES (4.0/1000)
OVERALL COMMERCIAL PARKING TOTAL:	958 SPACES

NOTE: APPLICANT RESERVES THE RIGHT TO MODIFY UP TO 40% OF PARKING STALLS AS COMPACT PARKING STALLS.



APPROXIMATE LOCATION OF PROPOSED WATER QUALITY FEATURE.

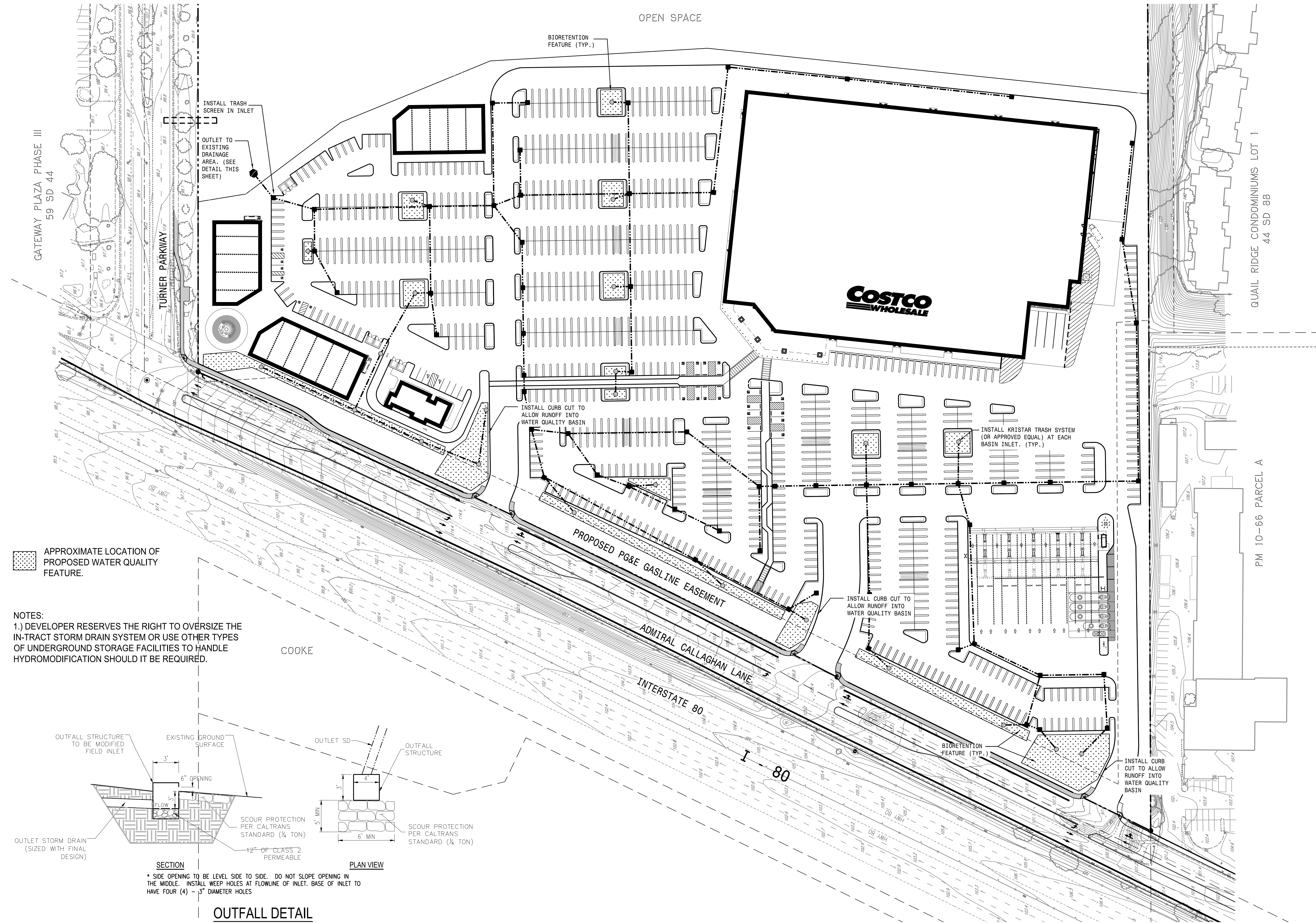
NOTES:
1.) DEVELOPER RESERVES THE RIGHT TO OVERSIZE THE IN-TRACT STORM DRAIN SYSTEM OR USE OTHER TYPES OF UNDERGROUND STORAGE FACILITIES TO HANDLE HYDROMODIFICATION SHOULD IT BE REQUIRED.



SECTION
* SIDE OPENING TO BE LEVEL SIDE TO SIDE. DO NOT SLOPE OPENING IN THE MIDDLE. INSTALL WEEP HOLES AT FLOWLINE OF INLET. BASE OF INLET TO HAVE FOUR (4) - 3" DIAMETER HOLES

PLAN VIEW

OUTFALL DETAIL
N.T.S.

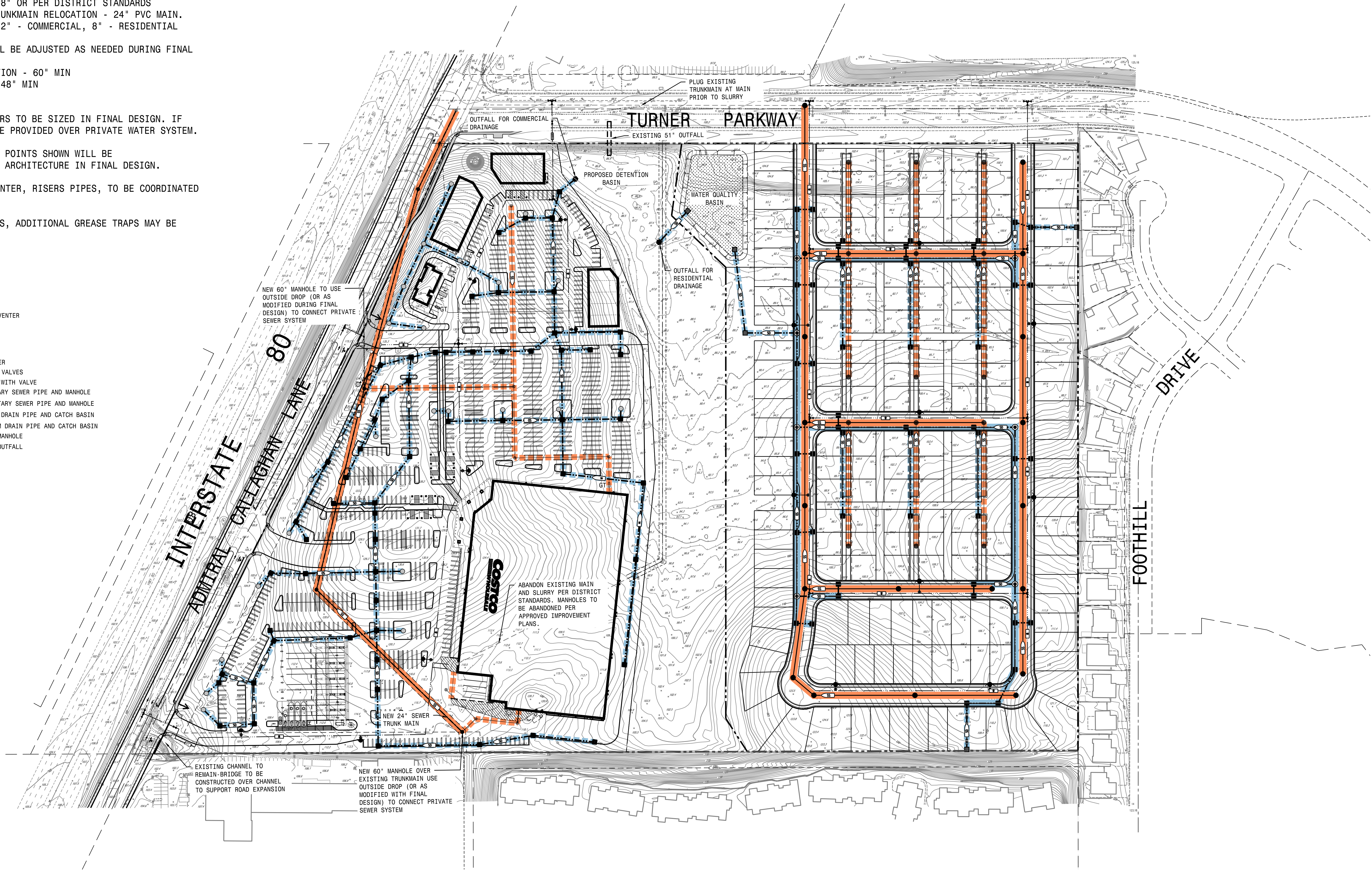


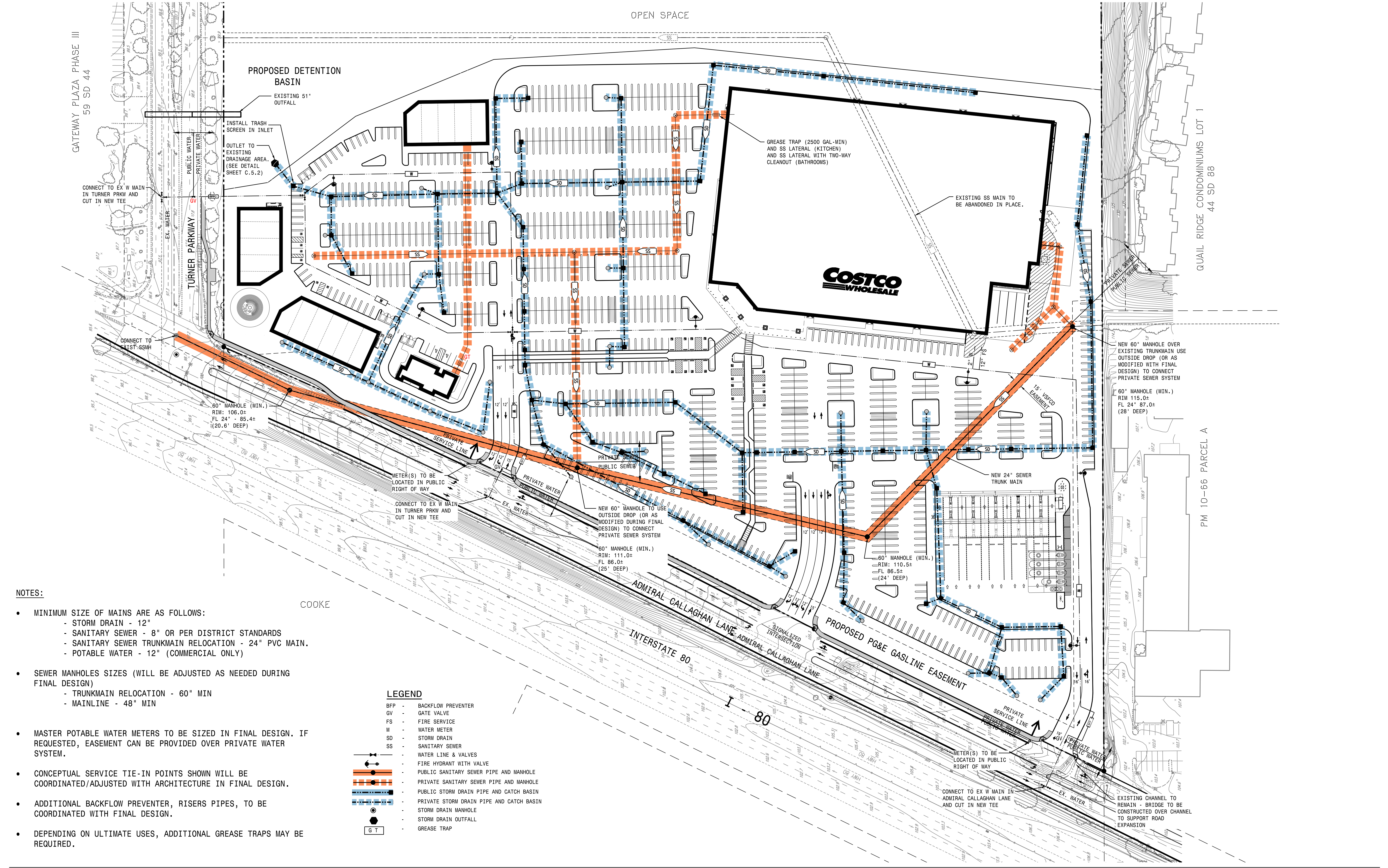
NOTES:

- MINIMUM SIZE OF MAINS ARE AS FOLLOWS:
 - STORM DRAIN - 12"
 - SANITARY SEWER - 8" OR PER DISTRICT STANDARDS
 - SANITARY SEWER TRUNKMAIN RELOCATION - 24" PVC MAIN.
 - POTABLE WATER - 12" - COMMERCIAL, 8" - RESIDENTIAL
- SEWER MANHOLES SIZES (WILL BE ADJUSTED AS NEEDED DURING FINAL DESIGN)
 - TRUNKMAIN RELOCATION - 60" MIN
 - OTHER MAINLINE - 48" MIN
- MASTER POTABLE WATER METERS TO BE SIZED IN FINAL DESIGN. IF REQUESTED, EASEMENT CAN BE PROVIDED OVER PRIVATE WATER SYSTEM.
- CONCEPTUAL SERVICE TIE-IN POINTS SHOWN WILL BE COORDINATED/ADJUSTED WITH ARCHITECTURE IN FINAL DESIGN.
- ADDITIONAL BACKFLOW PREVENTER, RISERS PIPES, TO BE COORDINATED WITH FINAL DESIGN.
- DEPENDING ON ULTIMATE USES, ADDITIONAL GREASE TRAPS MAY BE REQUIRED.

LEGEND

- | | |
|-----|--|
| BFP | BACKFLOW PREVENTER |
| GV | GATE VALVE |
| FS | FIRE SERVICE |
| M | WATER METER |
| SD | STORM DRAIN |
| SS | SANITARY SEWER |
| — | WATER LINE & VALVES |
| — | FIRE HYDRANT WITH VALVE |
| — | PUBLIC SANITARY SEWER PIPE AND MANHOLE |
| — | PRIVATE SANITARY SEWER PIPE AND MANHOLE |
| — | PUBLIC STORM DRAIN PIPE AND CATCH BASIN |
| — | PRIVATE STORM DRAIN PIPE AND CATCH BASIN |
| — | STORM DRAIN MANHOLE |
| — | STORM DRAIN OUTFALL |
| G T | GREASE TRAP |



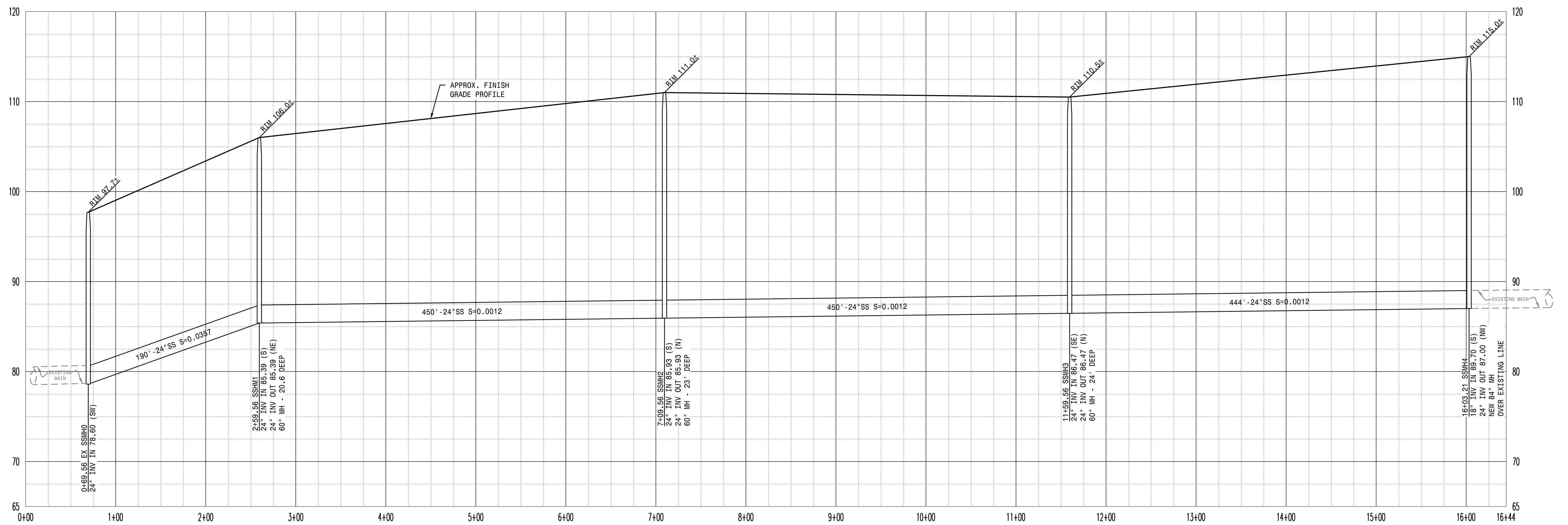
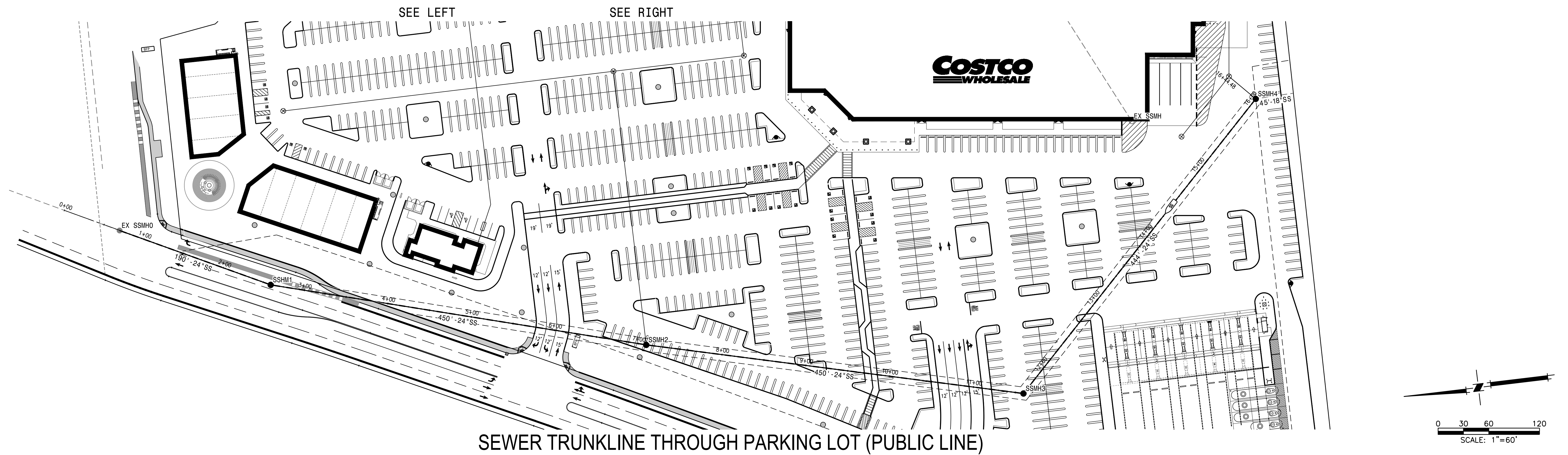


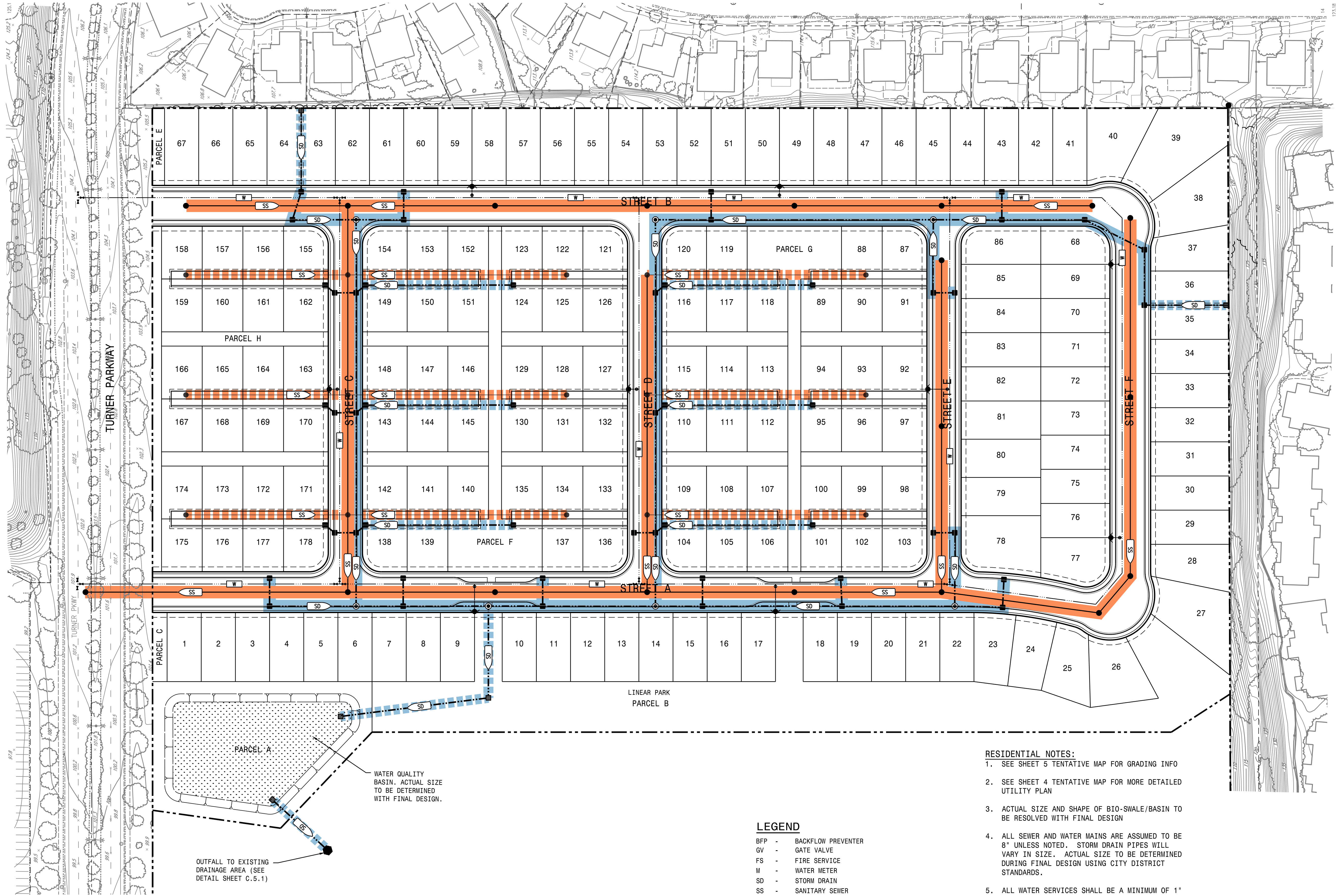
NOTES:

- MINIMUM SIZE OF MAINS ARE AS FOLLOWS:
 - STORM DRAIN - 12"
 - SANITARY SEWER - 8" OR PER DISTRICT STANDARDS
 - SANITARY SEWER TRUNKMAIN RELOCATION - 24" PVC MAIN.
 - POTABLE WATER - 12" (COMMERCIAL ONLY)
- SEWER MANHOLES SIZES (WILL BE ADJUSTED AS NEEDED DURING FINAL DESIGN)
 - TRUNKMAIN RELOCATION - 60" MIN
 - MAINLINE - 48" MIN
- MASTER POTABLE WATER METERS TO BE SIZED IN FINAL DESIGN. IF REQUESTED, EASEMENT CAN BE PROVIDED OVER PRIVATE WATER SYSTEM.
- CONCEPTUAL SERVICE TIE-IN POINTS SHOWN WILL BE COORDINATED/ADJUSTED WITH ARCHITECTURE IN FINAL DESIGN.
- ADDITIONAL BACKFLOW PREVENTER, RISERS PIPES, TO BE COORDINATED WITH FINAL DESIGN.
- DEPENDING ON ULTIMATE USES, ADDITIONAL GREASE TRAPS MAY BE REQUIRED.

LEGEND

- | | | |
|-----|---|--|
| BFP | - | BACKFLOW PREVENTER |
| GV | - | GATE VALVE |
| FS | - | FIRE SERVICE |
| M | - | WATER METER |
| SD | - | STORM DRAIN |
| SS | - | SANITARY SEWER |
| | - | WATER LINE & VALVES |
| | - | FIRE HYDRANT WITH VALVE |
| | - | PUBLIC SANITARY SEWER PIPE AND MANHOLE |
| | - | PRIVATE SANITARY SEWER PIPE AND MANHOLE |
| | - | PUBLIC STORM DRAIN PIPE AND CATCH BASIN |
| | - | PRIVATE STORM DRAIN PIPE AND CATCH BASIN |
| | - | STORM DRAIN MANHOLE |
| | - | STORM DRAIN OUTFALL |
| GT | - | GREASE TRAP |





LEGEND	
BFP	- BACKFLOW PREVENTER
GV	- GATE VALVE
FS	- FIRE SERVICE
M	- WATER METER
SD	- STORM DRAIN
SS	- SANITARY SEWER
-	- WATER LINE & VALVES
-	- FIRE HYDRANT WITH VALVE
-	- PUBLIC SANITARY SEWER PIPE AND MANHOLE
-	- PRIVATE SANITARY SEWER PIPE AND MANHOLE
-	- PUBLIC STORM DRAIN PIPE AND CATCH BASIN
-	- PRIVATE STORM DRAIN PIPE AND CATCH BASIN
-	- STORM DRAIN MANHOLE
-	- STORM DRAIN OUTFALL

- RESIDENTIAL NOTES:**
1. SEE SHEET 5 TENTATIVE MAP FOR GRADING INFO
 2. SEE SHEET 4 TENTATIVE MAP FOR MORE DETAILED UTILITY PLAN
 3. ACTUAL SIZE AND SHAPE OF BIO-SWALE/BASIN TO BE RESOLVED WITH FINAL DESIGN
 4. ALL SEWER AND WATER MAINS ARE ASSUMED TO BE 8" UNLESS NOTED. STORM DRAIN PIPES WILL VARY IN SIZE. ACTUAL SIZE TO BE DETERMINED DURING FINAL DESIGN USING CITY DISTRICT STANDARDS.
 5. ALL WATER SERVICES SHALL BE A MINIMUM OF 1" WITH A 1" METER
 6. FOR LOTS 87-178, WATER SERVICE WILL BE FROM PUBLIC STREET/PASEO, SEWER SERVICE WILL BE FROM MAIN IN ALLEY, OR MAIN IN STREET.
 7. ALL ALLEYS AND UTILITIES WITHIN ARE PRIVATE.
 8. THE WATER SYSTEM SHOWN IS PRELIMINARY IN NATURE. DURING FINAL DESIGN, THE LOCATIONS OF VALVES, ARV, AND OTHER FACILITIES WILL BE DETERMINED IN CONJUNCTION WITH THE CITY'S WATER DEPARTMENT.

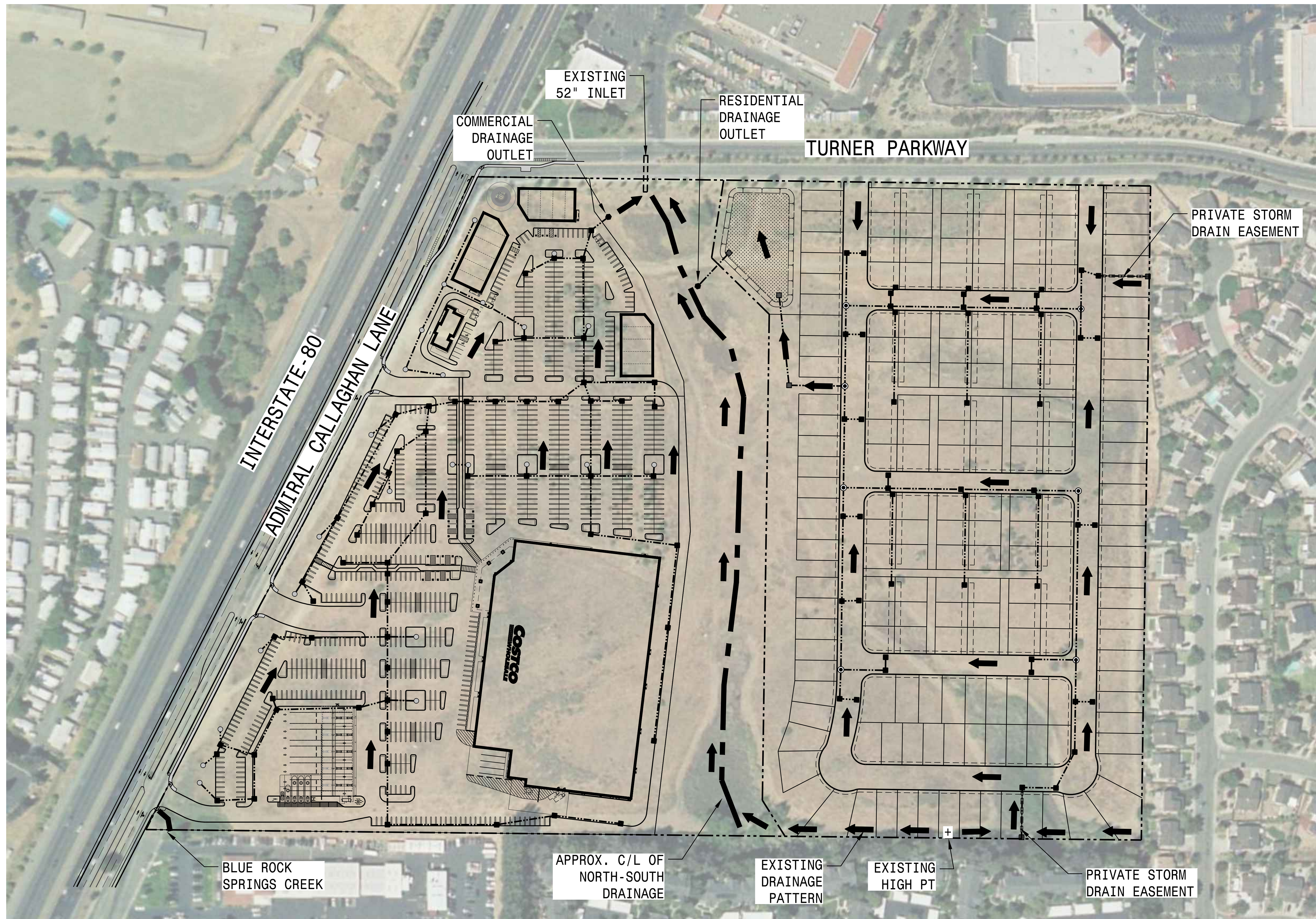
GATEWAY PLAZA PHASE III
59 SD 44

QUAIL RIDGE CONDOMINIUMS LOT 1
44 SD 88

PM 10-66 PARCEL A

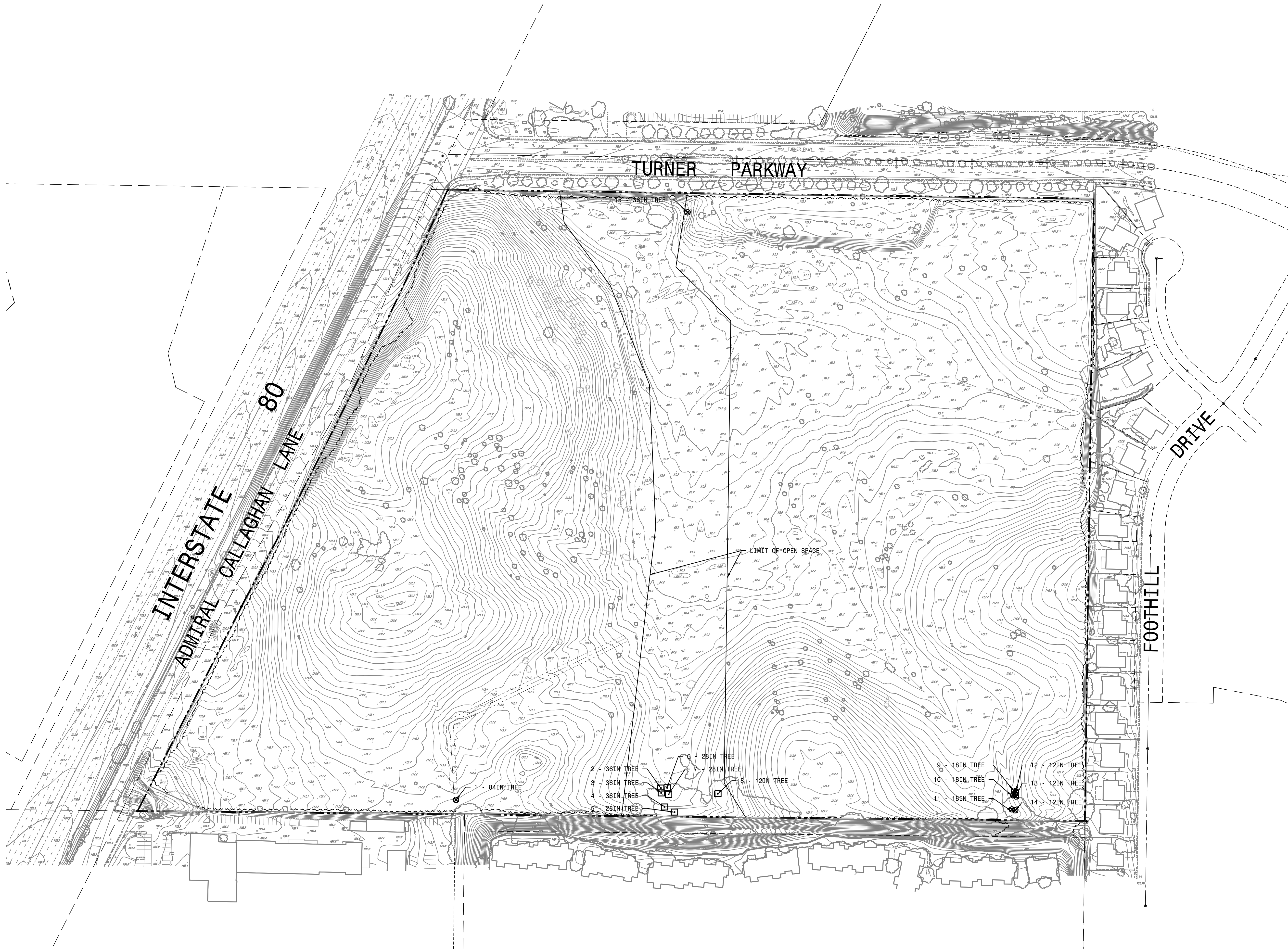
NOTE:

SEE SHEET C.5.2 FOR
WATER QUALITY BASIN
LOCATIONS.

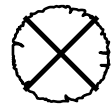


LEGEND

- BOUNDARY LINE
- - - - - PROPOSED STORM PIPE
- ➔ OVERLAND DRAINAGE DIRECTION



LEGEND



EXISTING TREE TO BE
REMOVED



EXISTING TREES TO
REMAIN



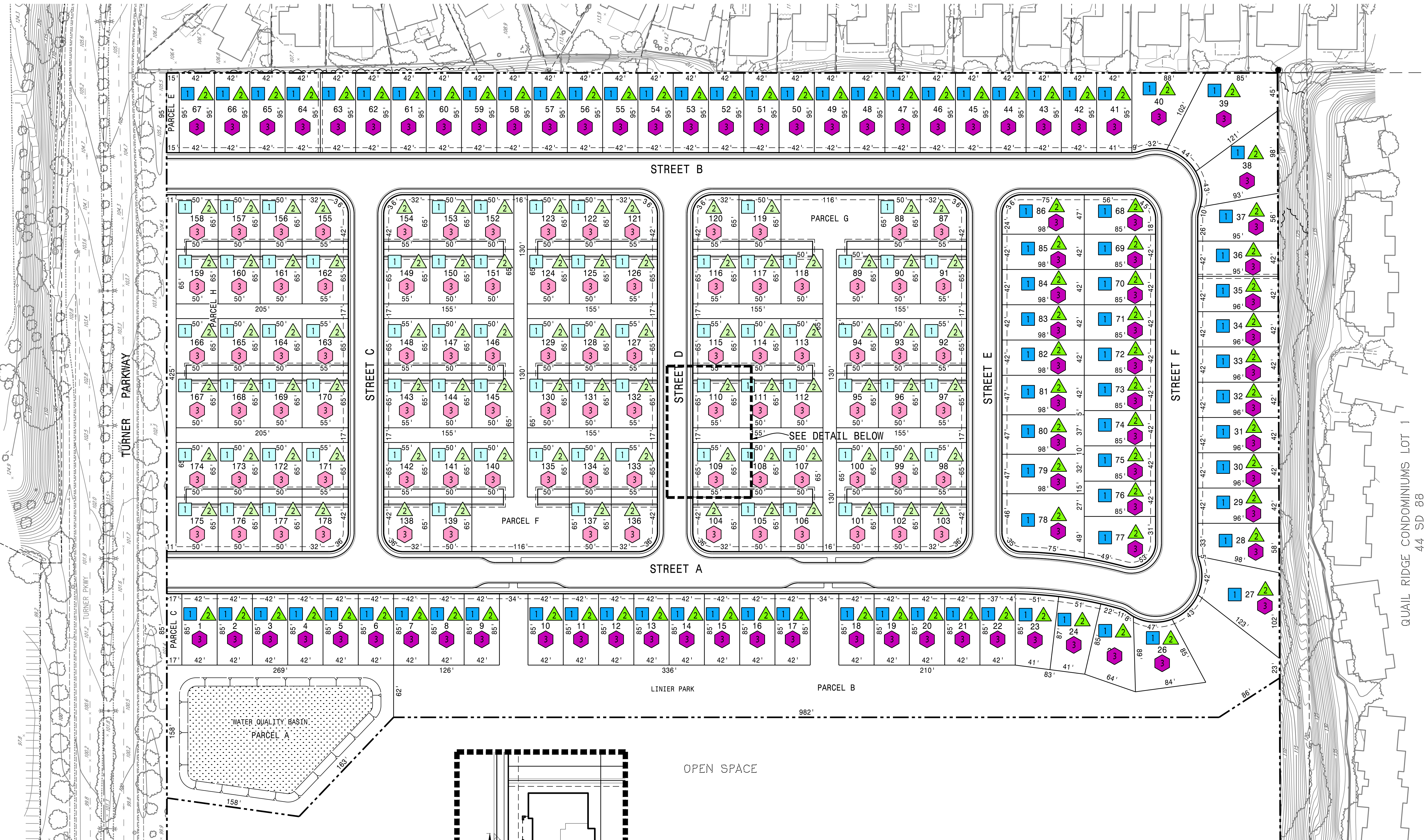
EXISTING PROPERTY
BOUNDARY

TREE NUMBER	BOTANICAL NAME	COMMON NAME	STATUS
1	Eucalyptus globulus	Blue Gum	REMOVE
2	Salix laevigata	Red Willow	REMAIN
3	Salix laevigata	Red Willow	REMAIN
4	Salix laevigata	Red Willow	REMAIN
5	Salix laevigata	Red Willow	REMAIN
6	Salix laevigata	Red Willow	REMAIN
7	Salix laevigata	Red Willow	REMAIN
8	Salix laevigata	Red Willow	REMAIN
9	Salix laevigata	Red Willow	REMOVE
10	Salix laevigata	Red Willow	REMOVE
11	Salix laevigata	Red Willow	REMOVE
12	Salix laevigata	Red Willow	REMOVE
13	Salix laevigata	Red Willow	REMOVE
14	Salix laevigata	Red Willow	REMOVE
15	Salix laevigata	Red Willow	REMOVE

NOTE: TREE SURVEY NOT CONDUCTED BY A LICENSED
ARBORIST.

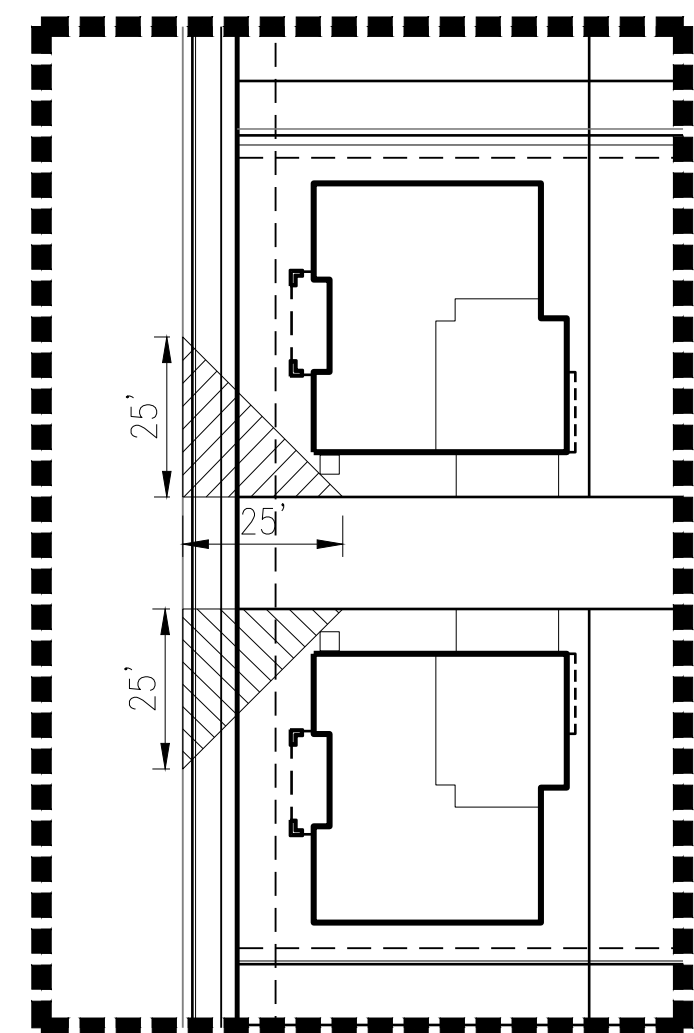
GATEWAY PLAZA PHASE III
59 SD 44

GATEWAY PLAZA PHASE III
59 SD 44



Legend

- All SF Plan 1's fit on this lot
- All Green Court Plan 1's fit on this lot
- All SF Plan 2's fit on this lot
- All Green Court Plan 2's fit on this lot
- All SF Plan 3's fit on this lot
- All Green Court Plan 3's fit on this lot



SITE TRIANGLE (TYP.)

SCALE: 1"=30'

Note:

Individual floor plans may be placed next to or across the street from each other.
Only two of the same individual floor plans may be plotted next to each other without being interrupted by a different floor plan. If two of the same individual floor plans are plotted next to each other, the same individual floor plan may not be plotted across the street from the two. In no case will the same architectural elevation or color scheme be allowed next to or across the street from each other, unless they are a different individual floor plan.



0 30 60 120
SCALE: 1"=60'

04-08-2020 3:51pm C:\19899\PLN\SDR\C10.0-RES-UNIT PLANNING

RESIDENTIAL PLOTTED SITE PLAN

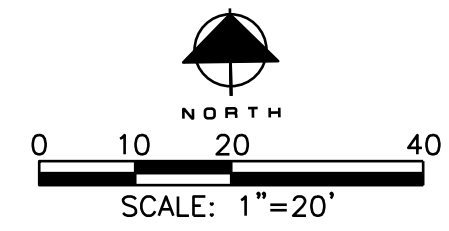
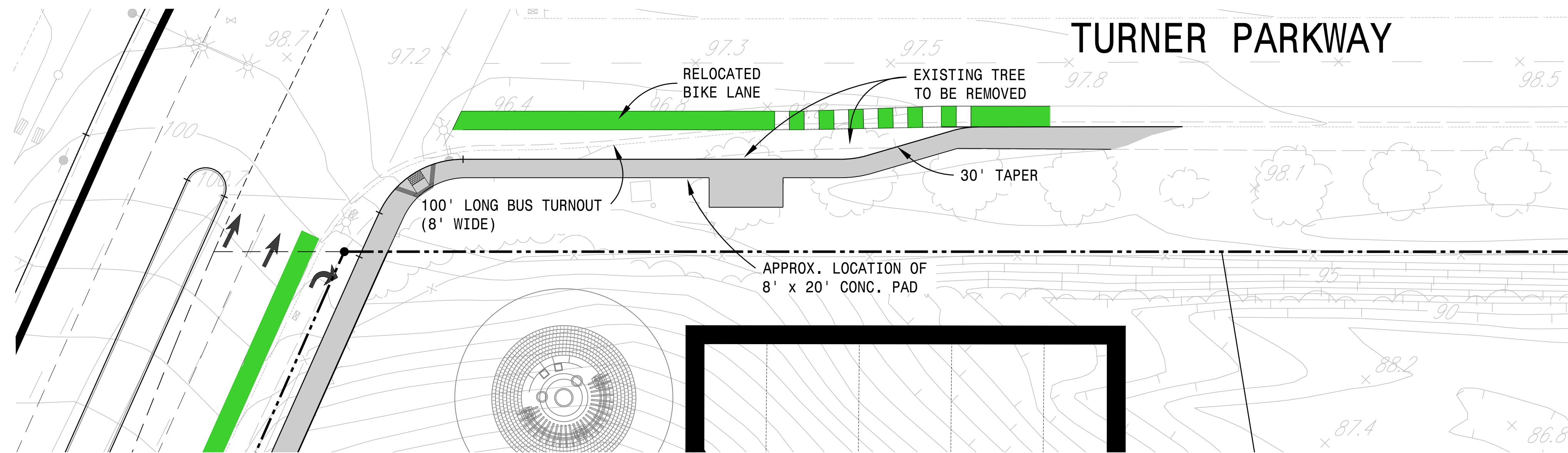
FAIRVIEW at NORTHGATE

Vallejo, California

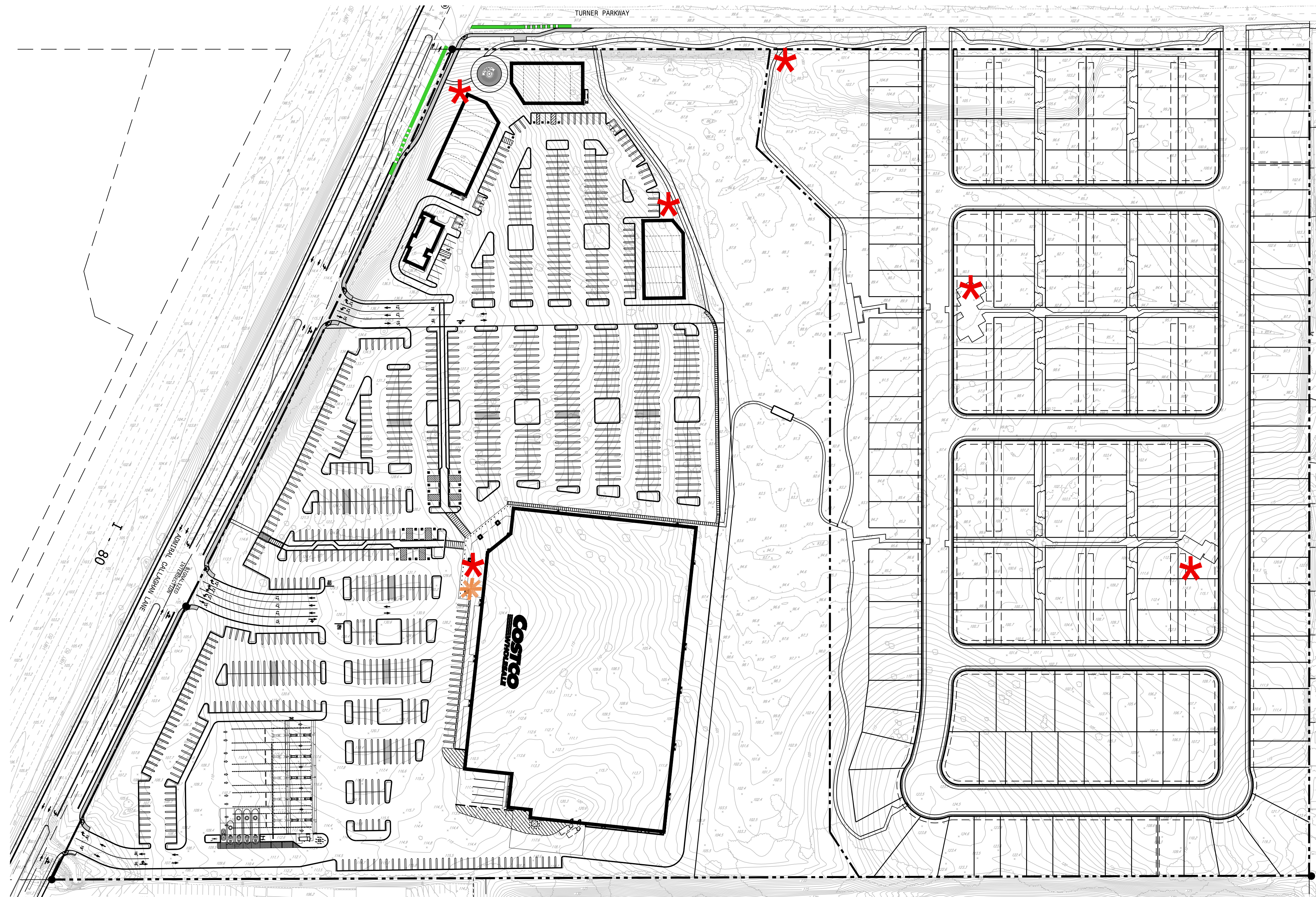
REVISED: APRIL 2020

SEPTEMBER 2018

C.10.0

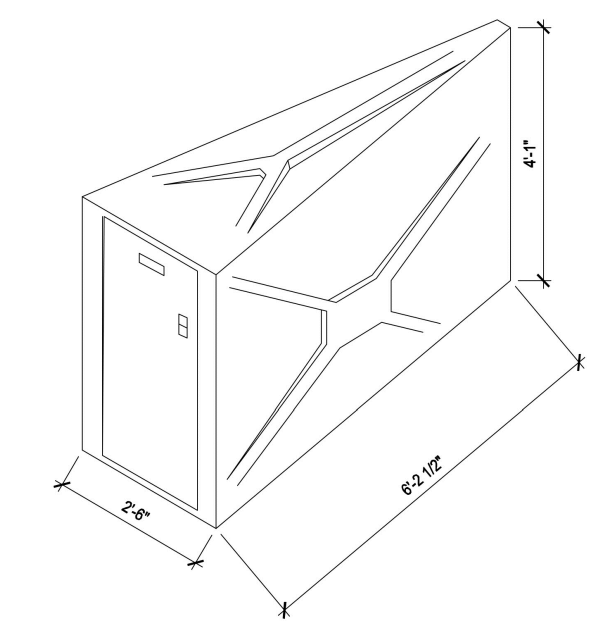


BUS PULLOUT

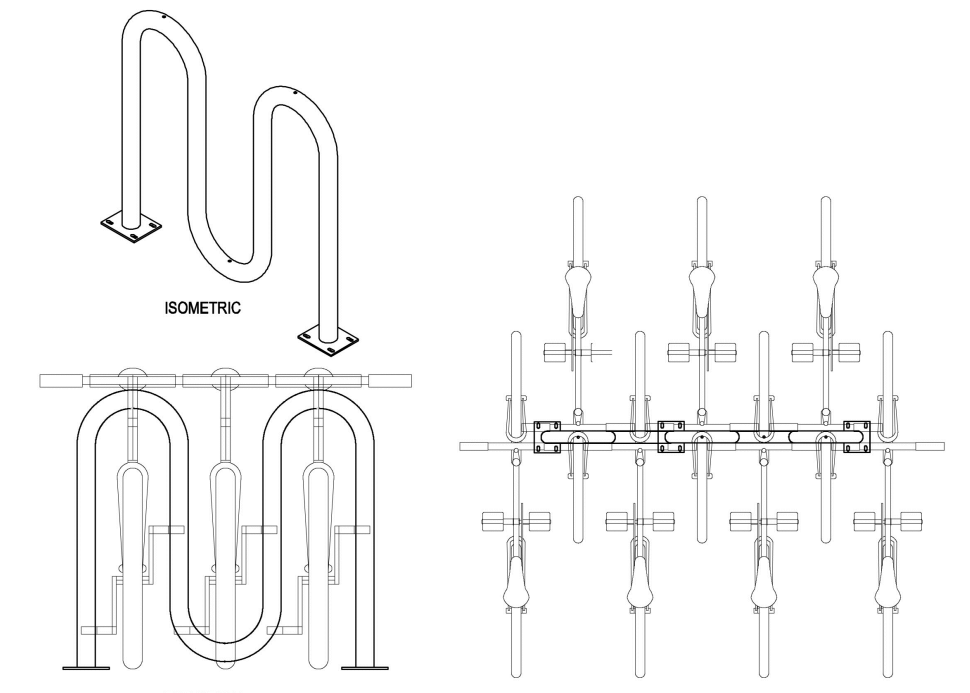


LEGEND:

- ✖ BIKE RACK
- ★ BIKE LOCKER

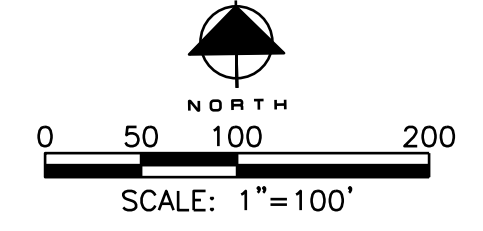


Ⓐ LONG TERM PARKING BICYCLE LOCKER



Ⓑ SHORT TERM PARKING BICYCLE RACK

○ BICYCLE STORAGE (FOR ILLUSTRATIVE PURPOSES ONLY)



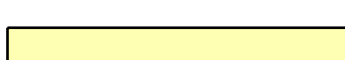
BIKE PARKING LOCATIONS



PARK DEDICATION REQUIRED:

TOTAL: 2.31± AC

PARK DEDICATION PROPOSED:

	N/W POCKET PARK (100%):	0.15± AC
	S/E POCKET PARK (100%):	0.15± AC
	E/W PASEOS (100%):	0.44± AC
	OPEN SPACE (100%):	5.75± AC
	LINEAR PARK (100%):	1.65± AC
TOTAL PARKS DEDICATED:		8.14± AC



0 50 100 200
SCALE: 1"=100'

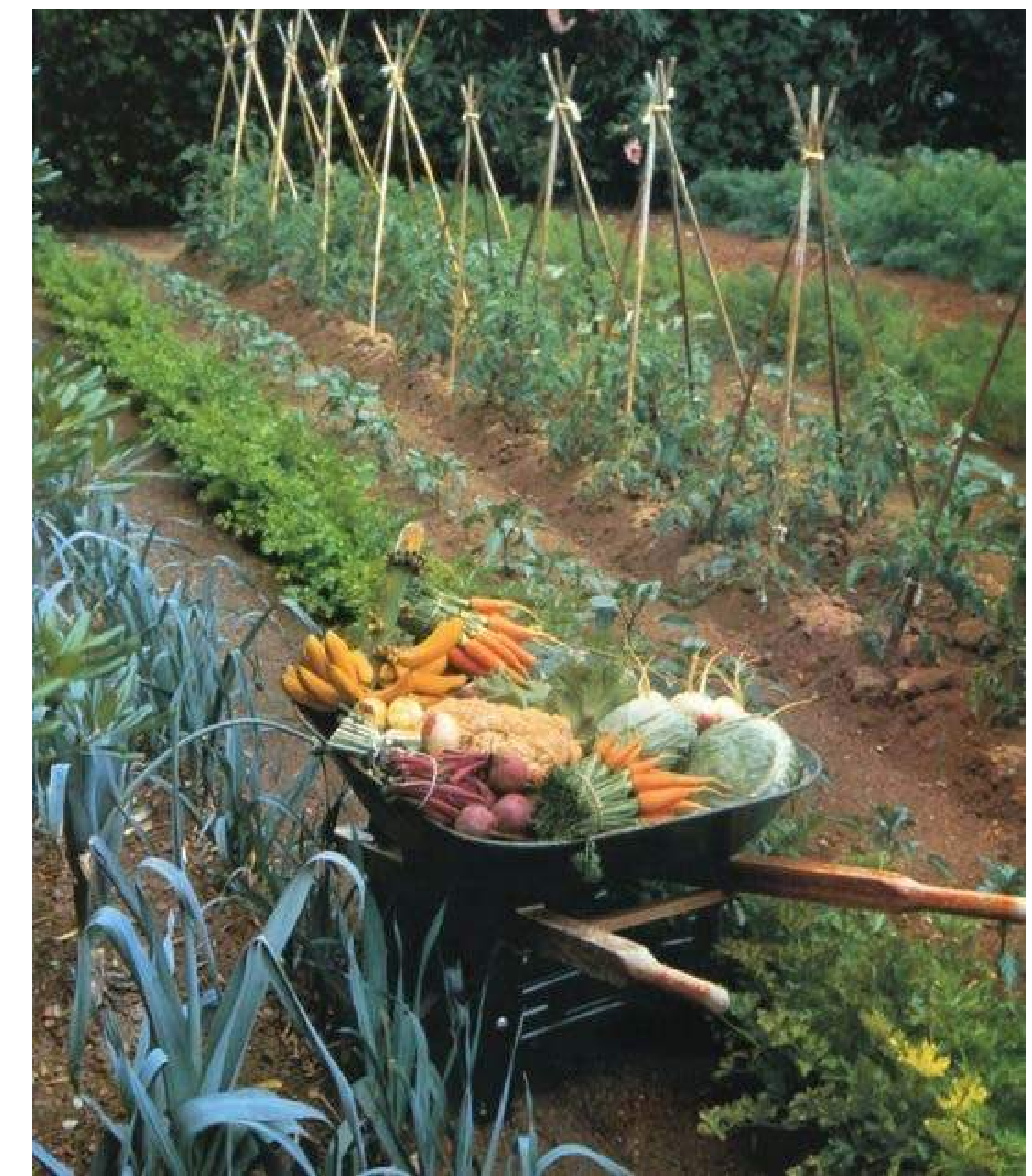


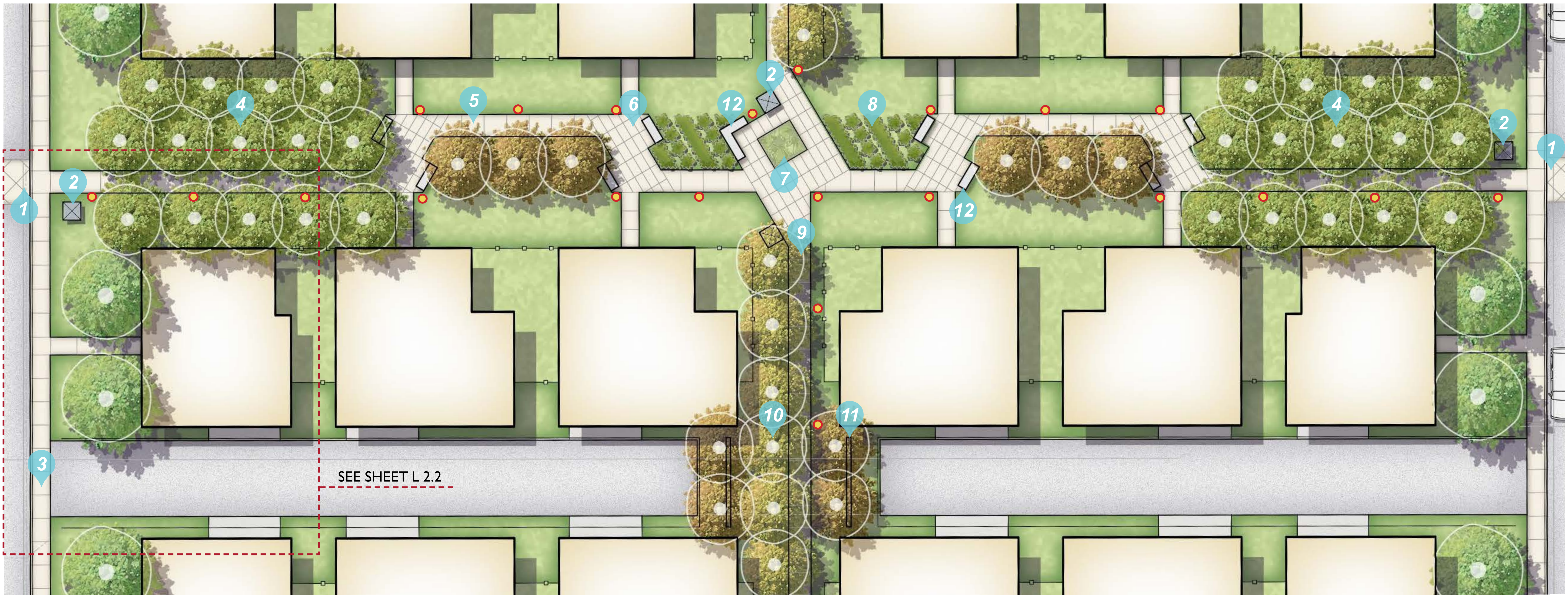
- 1 Retail Plaza, see sheet L4.1
- 2 6' concrete path, see sheet L3.0
- 3 Existing sidewalk, typ.
- 4 Stormwater treatment area, see sheet L3.2
- 5 Stormwater treatment planter, typ.
- 6 Open Space: Linear Park and Wetland, see sheet L3.1
- 7 Western Community Park, see sheet L2.6
- 8 8' Pedestrian connections through parking lot, typical
- 9 Costco Gas Station
- 10 Eastern residential play park, see sheet L2.5
- 11 Single family homes, typ. See L2.3 for typical front yard
- 12 Wetland trail and bridge; see sheet C2.0
- 13 Modified street geometry; see sheet C3.2





- 1 6' concrete path, see sheet L3.0
- 2 Stamped asphalt at vehicular entries
- 3 Most existing street trees along Turner Parkway to remain
- 4 Existing sidewalk, typ.
- 5 Residential paseos, see sheet L2.1
- 6 Western Community Park, see sheet L2.6
- 7 Bulbout and stamped asphalt at primary crossings
- 8 Stormwater treatment area, see sheet L3.2
- 9 Eastern residential play park, see sheet L2.5
- 10 Open Space: Linear Park and Wetland, see sheet L3.1
- 11 Single family homes, typ. See sheet L2.3 for typical front yard
- 12 Wetland setback
- 13 Native tree and shrub planting softens retail development
- 14 Wetland trail and bridge; see sheet C2.0





- 1 Stamped asphalt pedestrian crosswalks
- 2 Stone markers define paseo entries, typ.
- 3 5' wide concrete sidewalk
- 4 Fruit tree orchards at paseo entries, typ.
- 5 Paths alternate providing equal access to green space
- 6 Angled patios at entries to homes with seatwalls
- 7 Community herb garden
- 8 Landscape planting in rows for agrarian style
- 9 East/West pedestrian connection through center of block
- 10 Evergreen orchard planting at ends of auto accessways
- 11 Walls at ends of auto accessways protect pedestrians
- 12 Concrete seatwall; finish: boardform



Rialta Bollard Light
Model: RT4xx
MFR: Sternberg Lighting



ACCENT TREE

<i>Punica granatum</i> 'Wonderful' Pomegranate	20' H x 15' W
<i>Laurus nobilis</i> Sweet Bay	15' H x 12' W
<i>Ficus carica</i> 'Black Jack' Black Jack Fig	15' H x 15' W
<i>Malus x domestica</i> 'Red Delicious' Red Delicious Apple	15' H x 12' W
<i>Prunus armeniaca</i> 'Tropic Gold' Tropic Gold Apricot	15' H x 15' W

PRIMARY TREE

<i>Quercus agrifolia</i> Coast Live Oak	50' H x 20' W
---	---------------

GRASS

<i>Lomandra longifolia</i> Breeze Drawf Mat Rush	3' H x 3' W
<i>Muhlenbergia capillaris</i> Pink Muhlygrass	3' H x 3' W
<i>Festuca mairei</i> Atlas Fescue	3' H x 3' W

FOUNDATION SHRUB

<i>Dietes grandiflora</i> Fortnight Lily	4' H x 3' W
<i>Pittosporum tenuifolium</i> 'Golf Ball' Golf Ball Kohuhu	4' H x 4' W
<i>Rosmarinus officinalis</i> 'Tuscan Blue' Rosmarinus officinalis	5' H x 4' W
<i>Westringia fruticosa</i> 'Smokey' Coast Rosemary	4' H x 4' W

SECONDARY SHRUB

<i>Hesperaloe parviflora</i> 'Brakelights' Breaklights Red Yucca	3' H x 2' W
<i>Punica granatum</i> 'Nana' drawf pomegranate	3' H x 3' W
<i>Lavandula angustifolia</i> 'Hidcote Blue' Hidecote English Lavender	2' H x 3' W
<i>Teucrium fruticans</i> 'Compactum' Compact Bush Germander	3' H x 3' W
<i>Bouteloua gracilis</i> 'Blonde Ambition' Blonde Ambition Blue Grama	2' H x 2' W

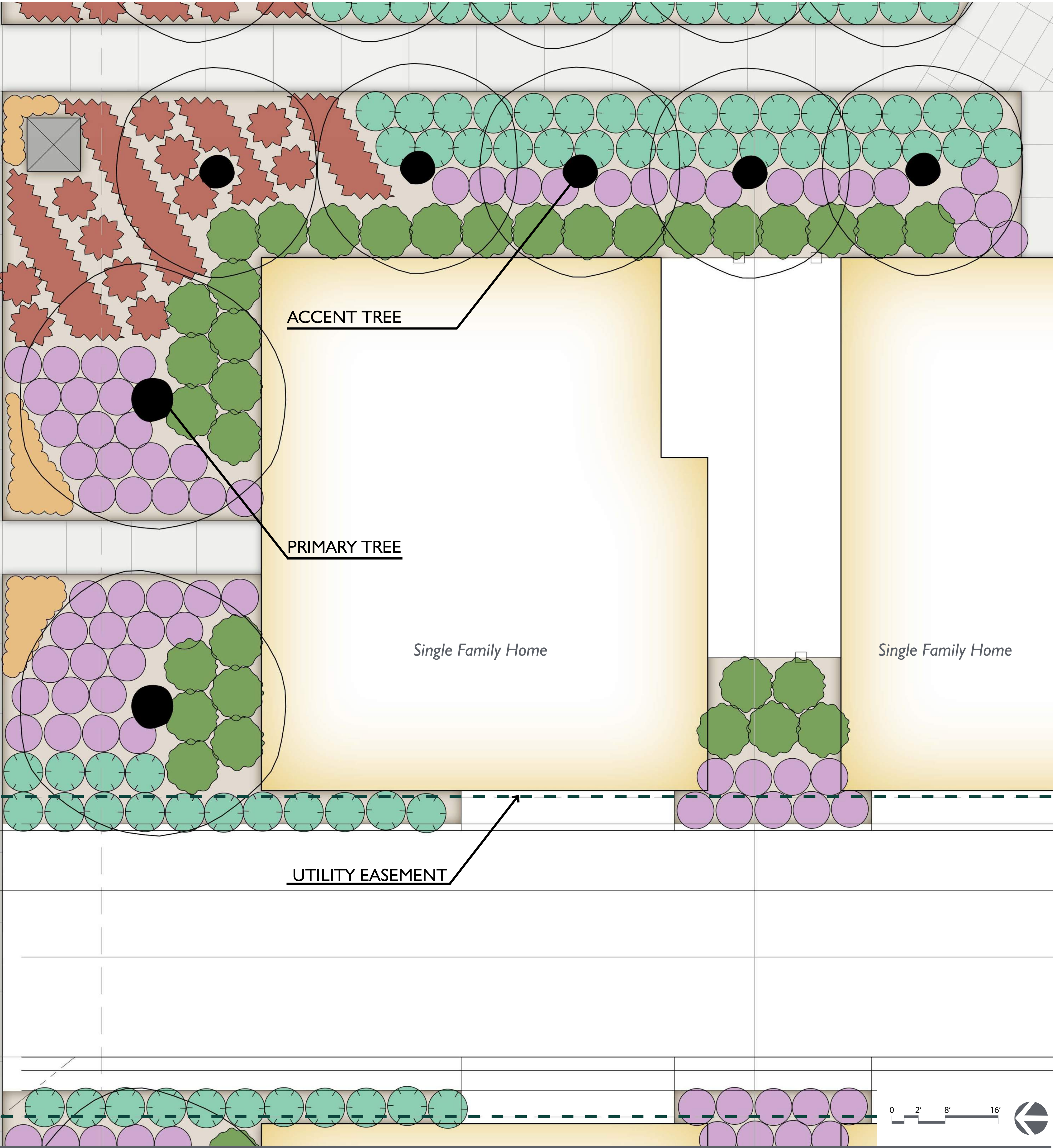
GROUNDCOVER

<i>Myoporum parvifolium</i> 'Fine Leaf Form' Fine-leaf Myoporum	1' H x 6' W
<i>Teucrium chamaedrys</i> Wall Germander	1' H x 2' W
<i>Rosmarinus officinalis</i> 'Huntington Carpet' Huntington Carpet Rosemary	1.5' H x 6' W

HIGHLIGHT ROWS

<i>Coleonema pulchellum</i> 'Sunset Gold' Golden Breath of Heaven	3' H x 4' W
<i>Lomandra longifolia</i> Breeze Drawf Mat Rush	3' H x 3' W

**colors denote category of planting, not color of specific plant species



ACCENT TREE

- Lagerstroemia indica ‘Natchez’ | Crape Myrtle12’ H x 15’ W
- Cercis occidentalis | Western Redbud15’ H x 15’ W

PRIMARY TREE

- Olea europaea ‘Monher’ | Majestic Beauty Fruitless Olive30’ H x25’ W
- Malus domestica ‘Anna’ | Anna Apple25’ H x 25’ W
- Acer buergerianum | Trident Maple25’ H x 25’ W
- Pistacia chinensis | Chinese pistache30’ H x 25’ W

GRASS

- Lomandra longifolia Breeze | Drawf Mat Rush3’ H x 3’ W
- Leymus condensatus ‘Canyon Prince’ | Canyon Prince Wild Rye3’ H x 3’ W
- Muhlenbergia dubia | Pine Muhly3’ H x 3’ W

FOUNDATION SHRUB

- Dietes grandiflora | Fortnight Lily4’ H x 3’ W
- Pittosporum tenuifolium ‘Golf Ball’ | Golf Ball Kohuhu4’ H x 4’ W
- Loropetalum chinense ‘Monraz’ | Razzleberri Fringe Flower5’ H X 4’ W
- Rosmarinus officinalis ‘Tuscan Blue’ | Rosmarinus officinalis5’ H x 4’ W
- Westringia fruticosa ‘Smokey’ | Coast Rosemary4’ H x 4’ W

SECONDARY SHRUB

- Lavandula angustifolia ‘Hidcote Blue’ | Hidecote English Lavender2’ H x 3’ W
- Hesperaloe parviflora ‘Brakelights’ | Breaklights Red Yucca3’ H x 2’ W
- Punica granatum ‘Nana’ | Drawf Pomegranate3’ H x 3’ W
- Teucrium fruticans ‘Compactum’ | Compact Bush Germander3’ H x 3’ W
- Bouteloua gracilis ‘Blonde Ambition’ | Blonde Ambition Blue Grama2’ H x 2’ W
- Zauschneria californica | California Fuchsia3’ H x 3’ W

GROUNDCOVER

- Lantana sellowiana ‘Monswee’ | Lavender Swirl Trailing Lantana1 H x 5’ W
- Myoporum parvifolium ‘Fine Leaf Form’ | Fine-leaf Myoporum1 H x 6’ W
- Teucrium chamaedrys | Wall Germander1’ H x 2’ W
- Rosmarinus officinalis ‘Huntington Carpet’ | Huntington Carpet Rosemary1.5’ H x 6’ W
- Festuca glauca ‘Elijah Blue’ | Blue Fescue1’ H x 1’ W

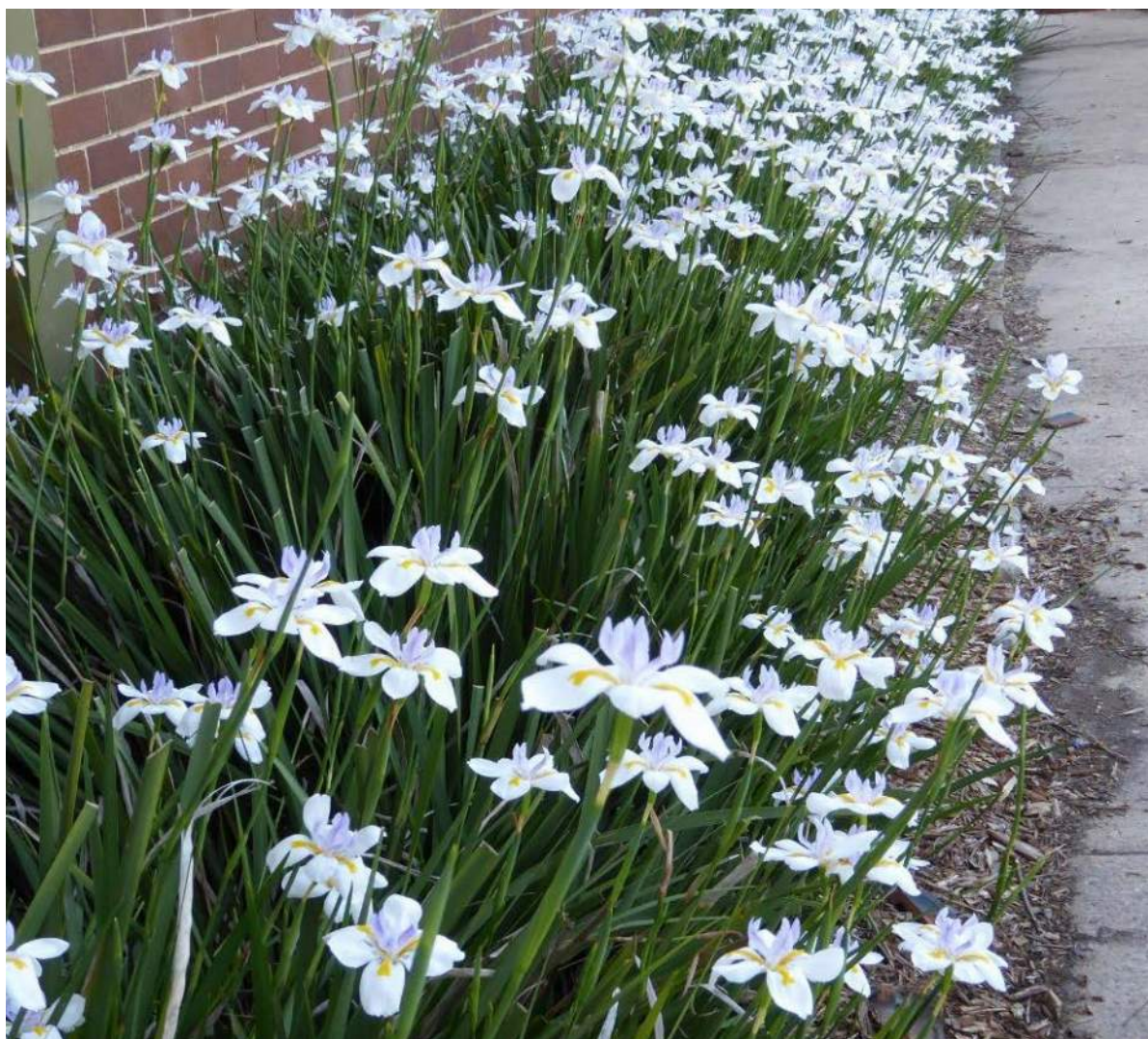
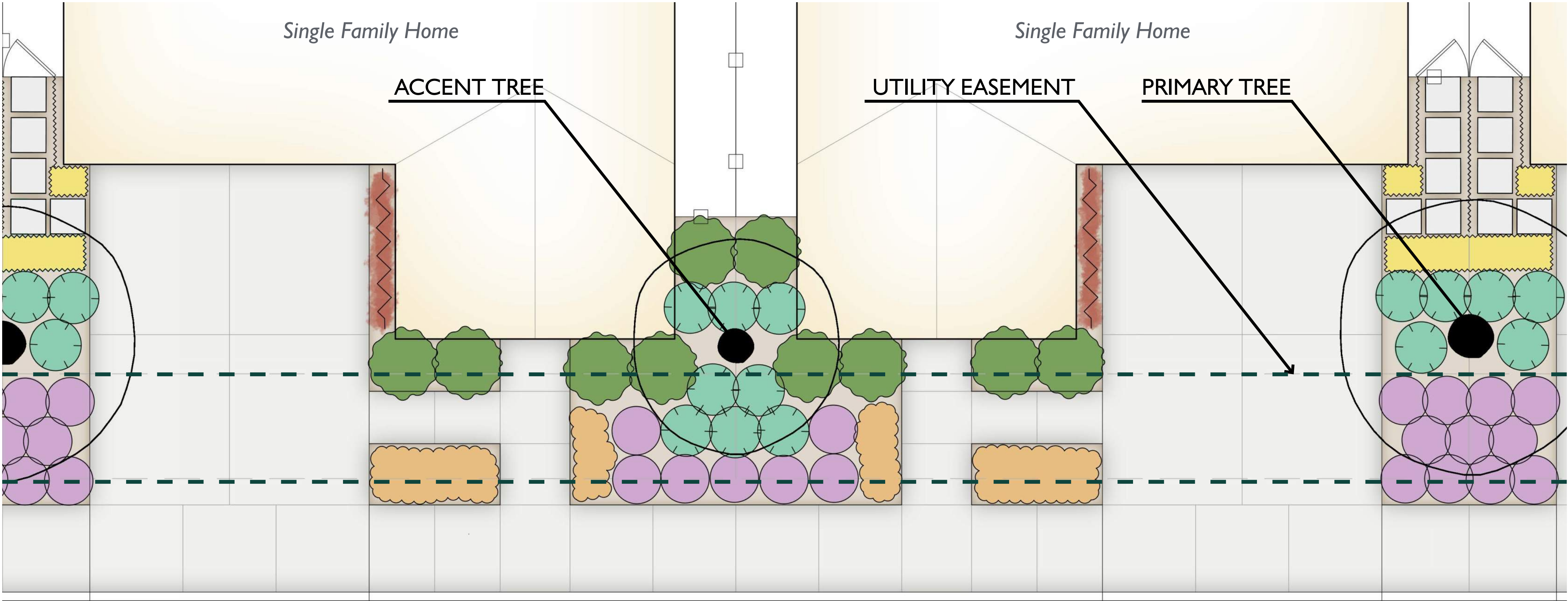
GROUNDCOVER AT BACK STEPPERS

- Thymus serpyllum ‘Elfin’ | Elfin Thyme.25’ H x 1’ W
- Thymus praecox ‘Albiflorus’ | White Moss Thyme1’ H x 1’ W
- Dymondia margaretae | Silver Carpet.5’ H x 2’ W

ESPALIER

- Malus domestica ‘Fuji’ | Fuji Apple Espalier
- Malus domestica ‘Honey crisp’ | Honey Crisp Apple Espalier

**colors denote category of planting, not color of specific plant species



TREES



Malus pumila 'Anna'
Apple



Olea europaea 'Monher'
Fruitless Olive



Quercus agrifolia
Coast Live Oak



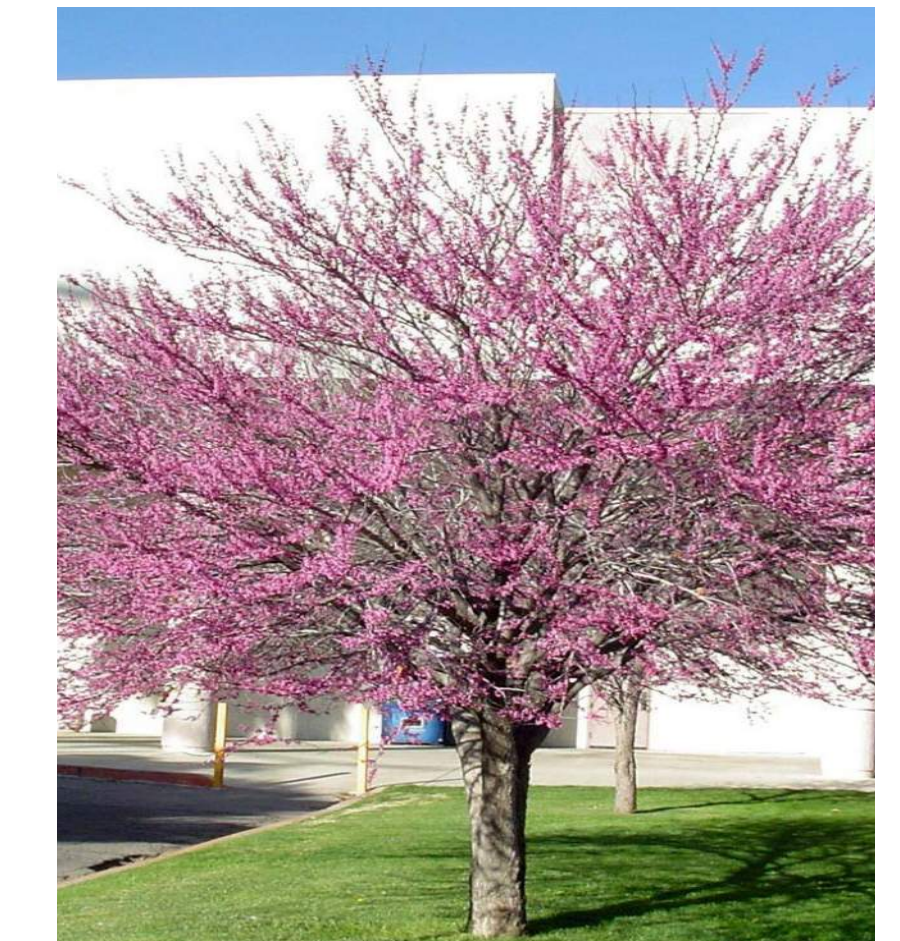
Pistacia chinensis
Chinese Pistache



Acer buergerianum
Trident Maple



Lagerstroemia indica 'Natchez'
Crape Myrtle



Cercis occidentalis
Western Redbud

GRASS



Lomandra longifolia 'Breeze'
Mat Rush



Leymus condensatus 'Canyon Prince'
Canyon Prince Wild Rye



Muhlenbergia dubia
Pine Muhly



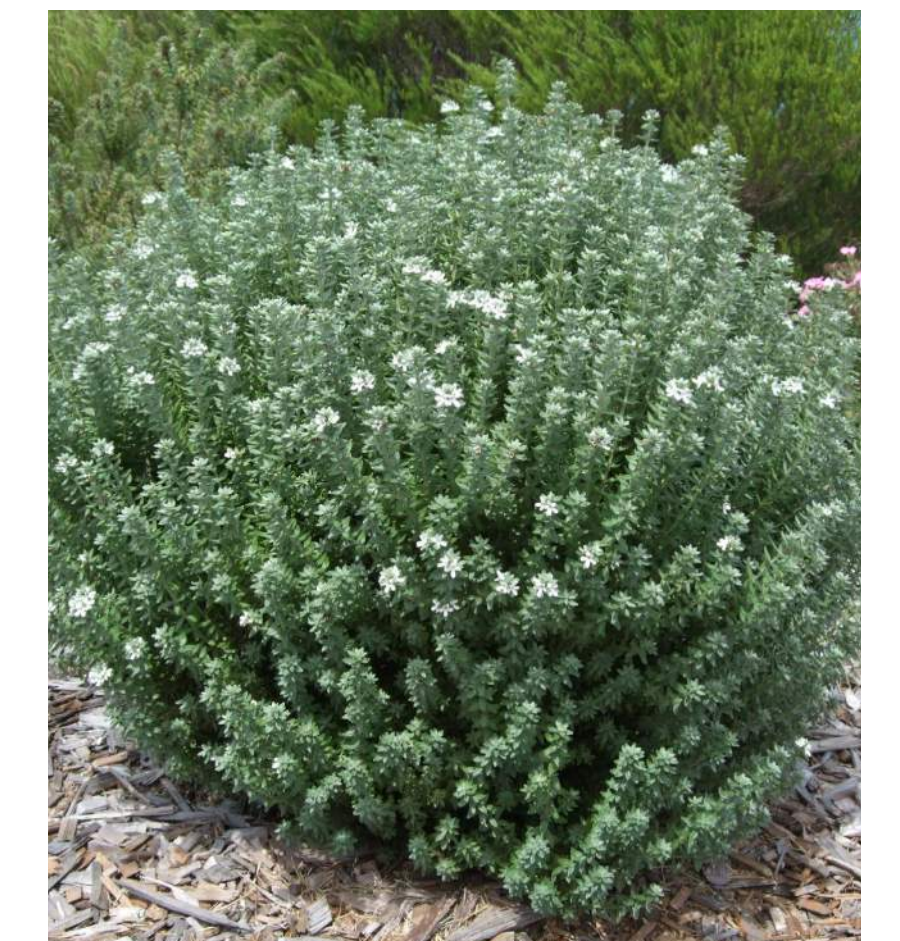
Muhlenbergia capillaris
Pink Muhlygrass



Pittosporum tenuifolium 'Golf Ball'
Golf Ball Kohuhu



Loropetalum chinese 'Monraz'
Razzleberri Fringe Flower



Westringia fruticosa 'Smokey'
Coast Rosemary

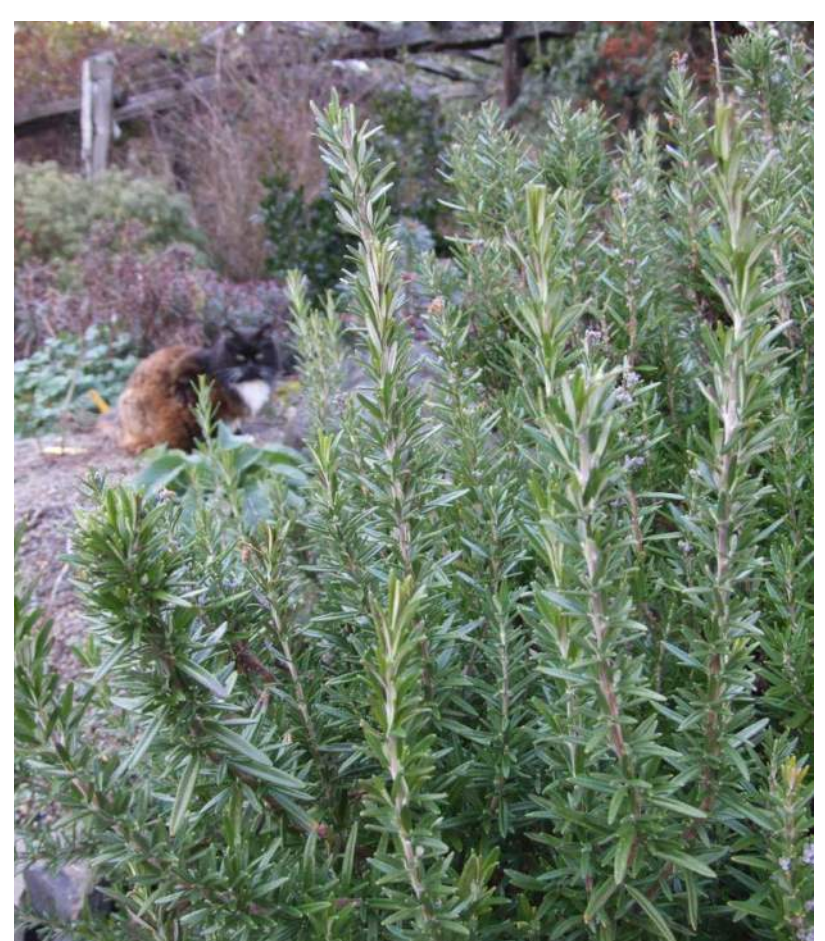
SHRUBS



Punica granatum 'Nana'
Dwarf Pomegranate



Hesperaloe parviflora
Red Yucca



Rosmarinus officinalis
Rosemary



Bouteloua gracilis 'Blonde Ambition'
Blonde Ambition Blue Grama



Zauschneria californica
California Fuchsia



Coleonema pulchellum 'Sunset Gold'
Golden Breath of Heaven



Dieties grandiflora
Fortnight Lily

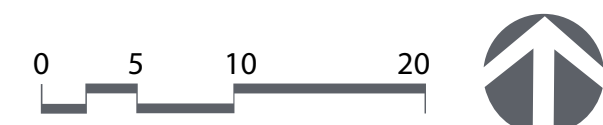
This list represents a sample of trees and shrubs for the residential neighborhood.

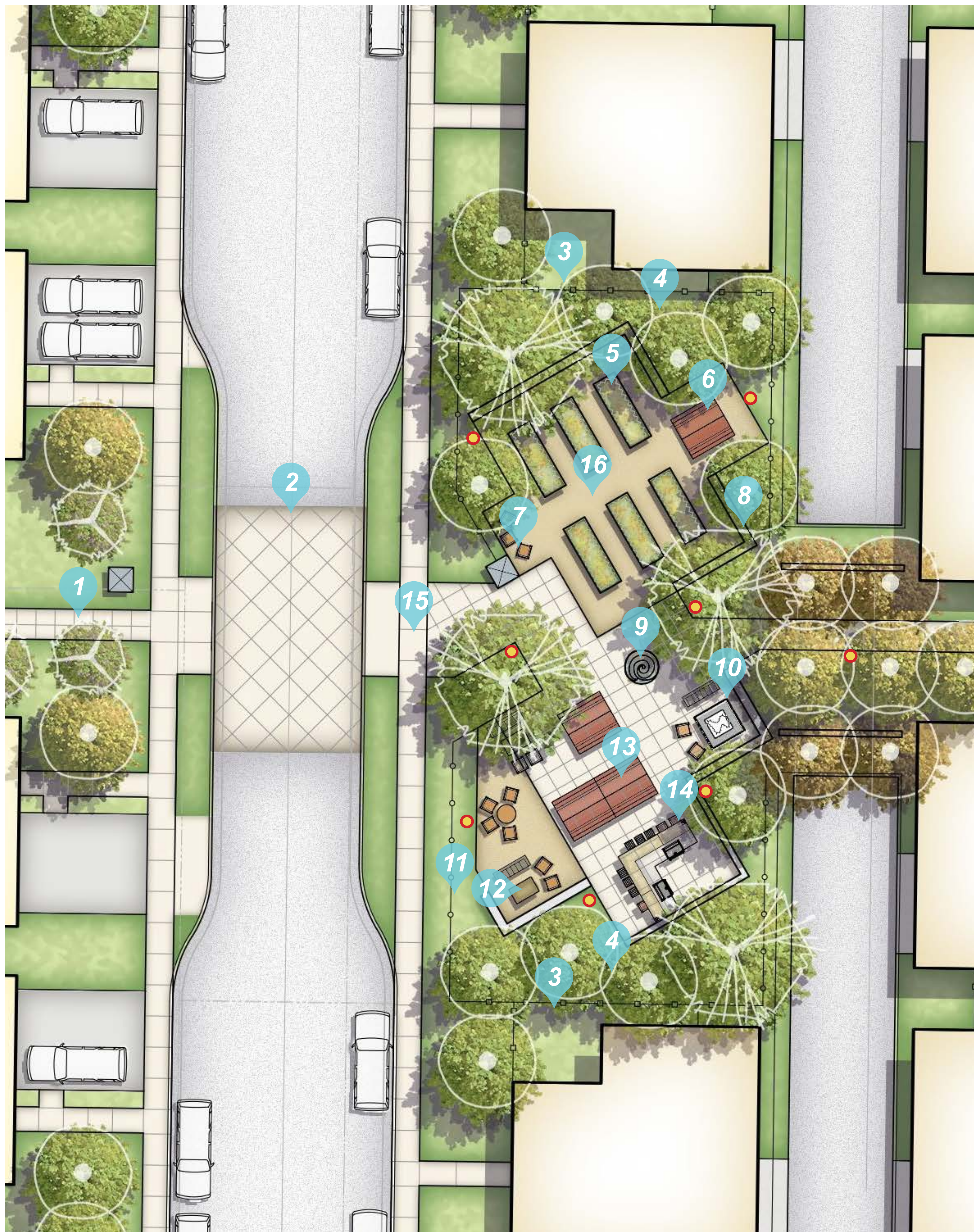


- 1 Buffer planting at homes
- 2 Decomposed granite
- 3 5-12 year old nature-inspired play
- 4 Large shade trees, typical
- 5 Lounge seating
- 6 Picnic tables
- 7 Concrete seatwall; finish: boardform
- 8 2-5 year old nature-inspired play
- 9 View fence
- 10 Screen fence
- 11 Pedestrian concrete



● Rialta Bollard Light
Model: RT4xx
MFR: Sternberg Lighting

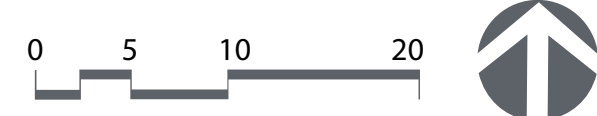




- 1 Pedestrian connection to linear park
- 2 Bulbout and stamped asphalt at crossing
- 3 Screen fence, typ.
- 4 Landscape buffer adjacent to homes, both sides
- 5 Community garden with raised planter beds
- 6 Picnic table
- 7 Small group lounge seating area
- 8 Concrete seatwall; finish: boardform
- 9 Focal Point: Sculpture, potted plant, or message kiosk
- 10 Fire pit community space
- 11 View fence, typ.
- 12 Large group lounge seating
- 13 Large group dining
- 14 Grilling island with bar-height seating
- 15 Pedestrian concrete
- 16 Decomposed granite



● Rialta Bollard Light
Model: RT4xx
MFR: Sternberg Lighting



RESIDENTIAL SITE FURNISHINGS



Harvest Picnic Table (dining height) + Bench
Color: Red Apple
MFR: Landscape Forms



Concrete Seatwall; boardform finish
Poured In Place



Lakeside Bench
Color: DSTMA Wood | Titanium
MFR: Landscape Forms



Cordia Littler & Recycling Receptacle
Color: Argento
MFR: Forms + Surfaces



Rialta Bollard Light
Model: RT4xx
MFR: Sternberg Lighting



Outdoor Adirondack Chair
MFR: Thomas Steele

OPEN SPACE SITE FURNISHINGS



Harvest Picnic Table (dining height) + Bench
Color: Red Apple
MFR: Landscape Forms



Concrete Seatwall; boardform finish
Poured In Place



Cordia Littler & Recycling Receptacle
Color: Argento
MFR: Forms + Surfaces



Rialta Bollard Light
Model: RT4xx
MFR: Sternberg Lighting



Modern Adirondack Chair
Color: Sunset Red
MFR: Polywood

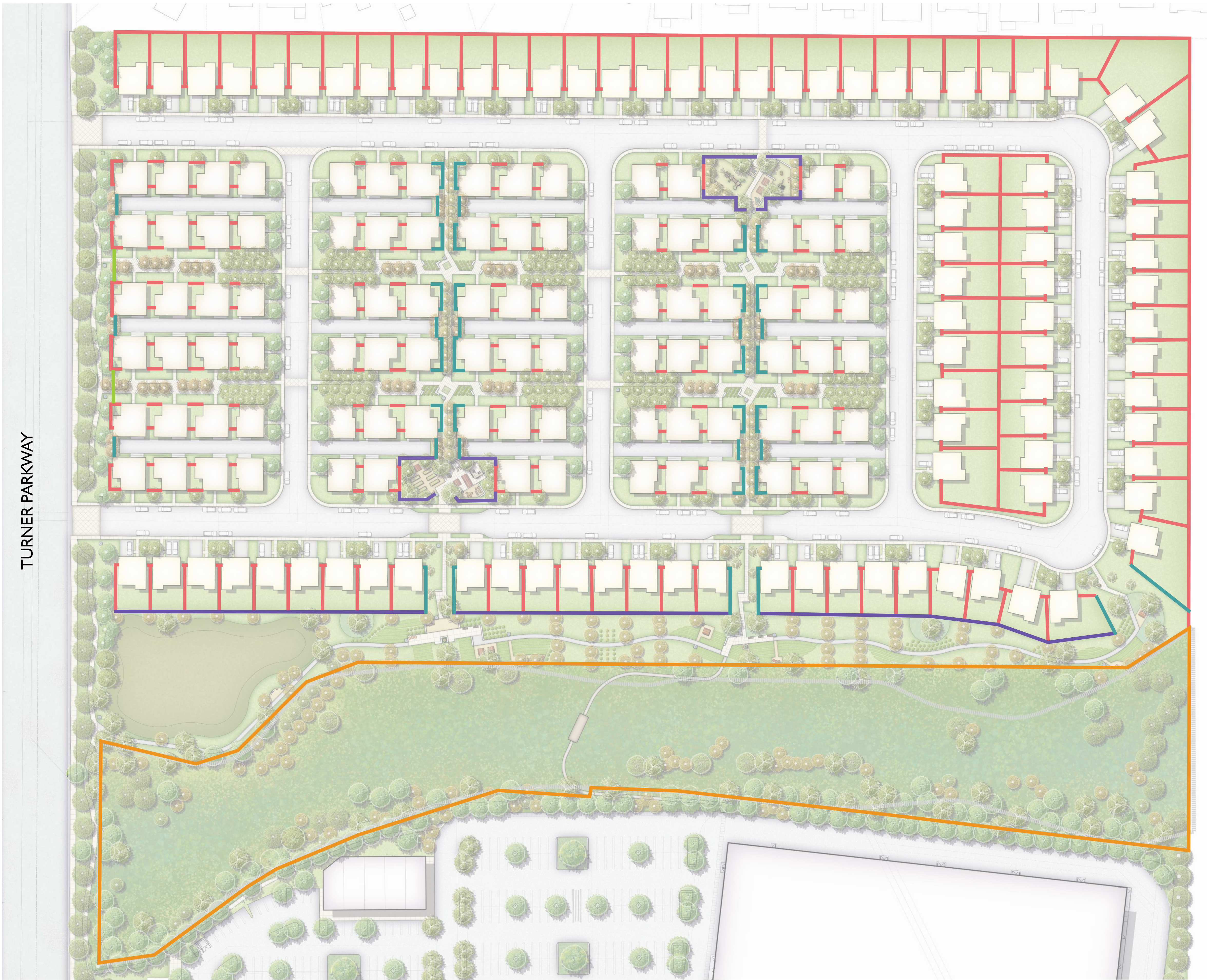


Granite Seat Pads



- A** 28 units: one 16 door unit & one 12 door unit
 - B** 30 units: two 16 door units
 - C** 28 units: one 16 door unit & one 12 door unit
 - D** 26 units: two 13 door units
 - E** 21 units: one 13 door unit & one 8 door unit
 - F** 22 units: two 12 door units
 - G** 23 units: two 12 door units
- Each mailbox location will include a recycling receptacle





Paseo Fence



Horizontal Screen Fence



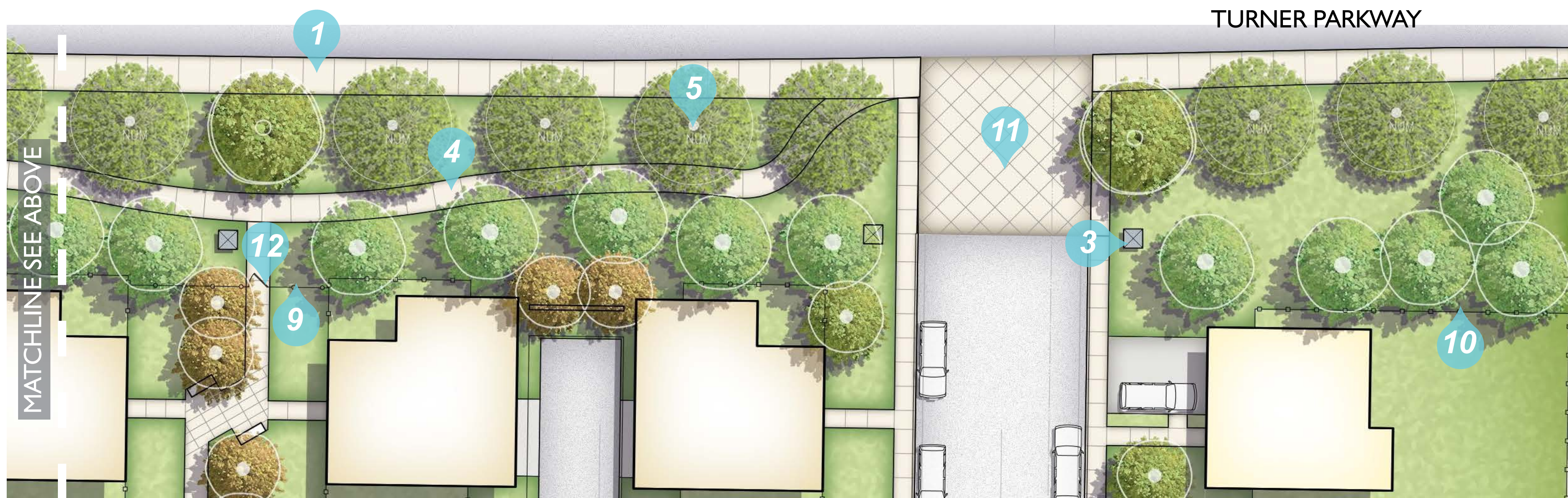
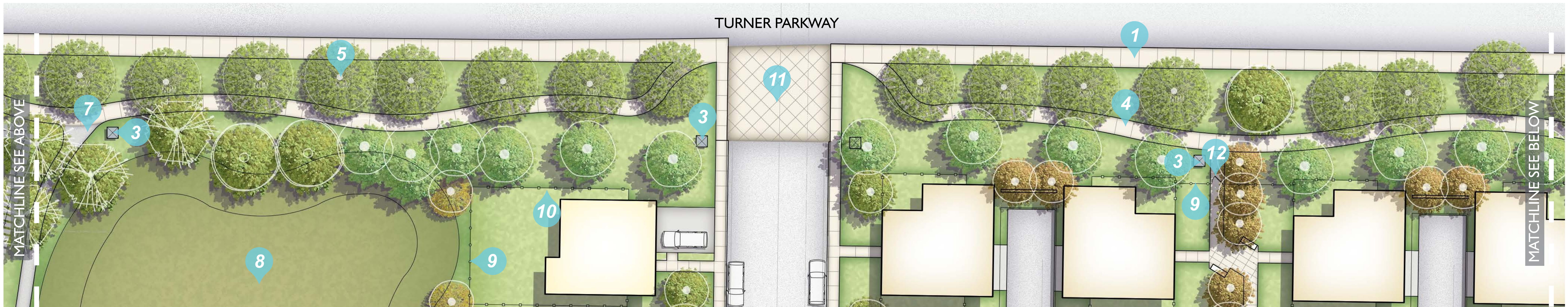
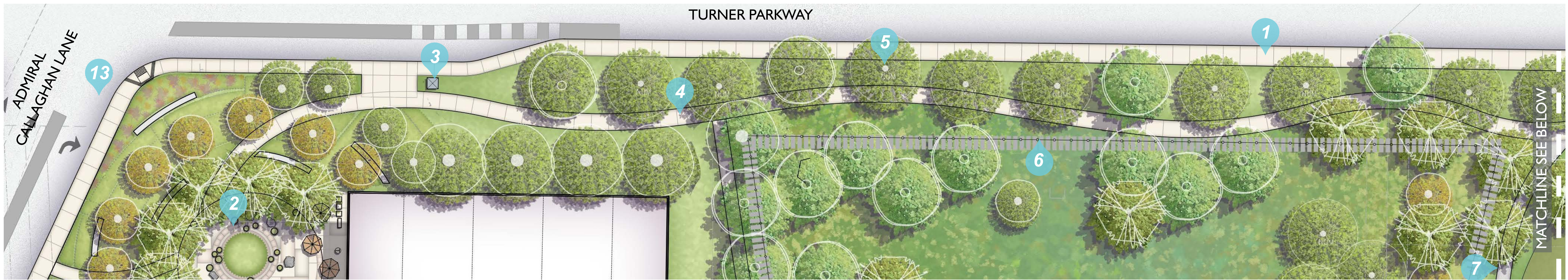
View Fence



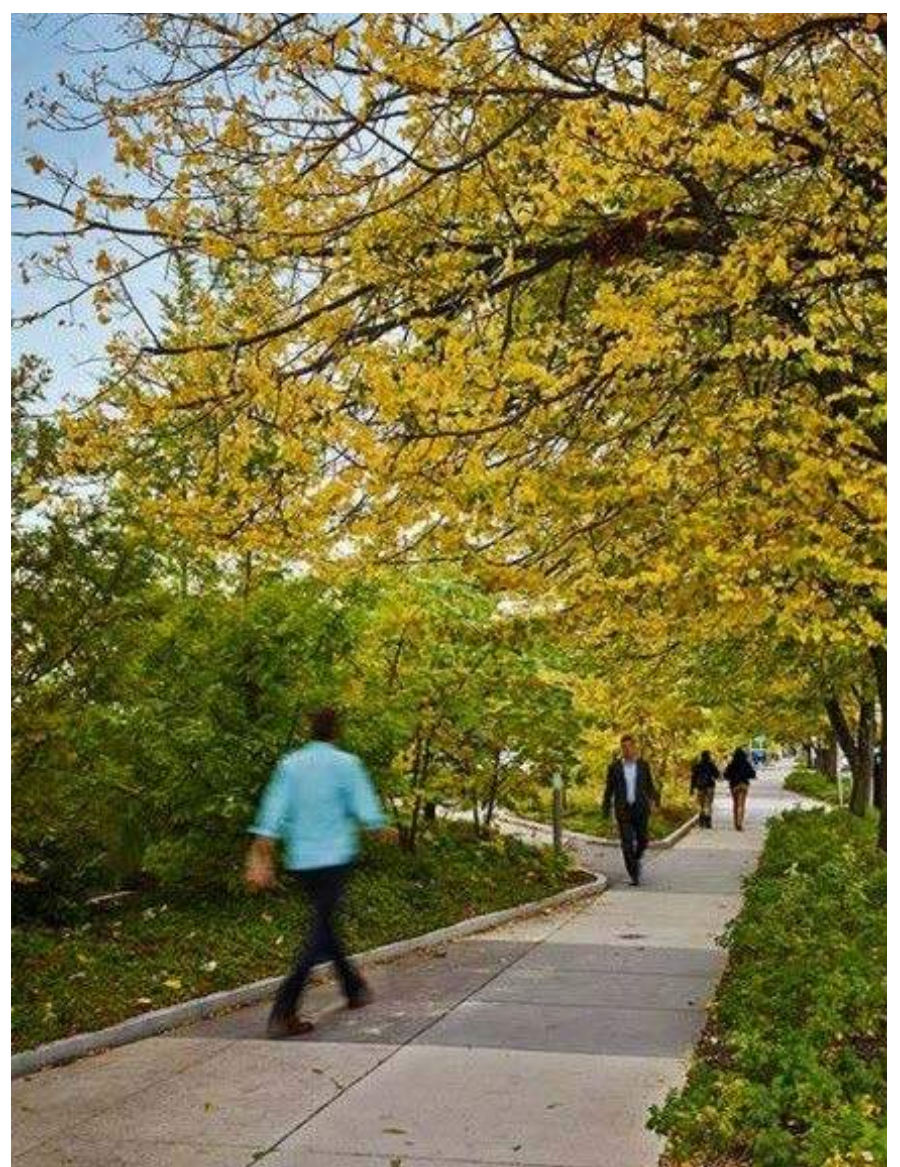
Screen Fence



Split Rail Fence



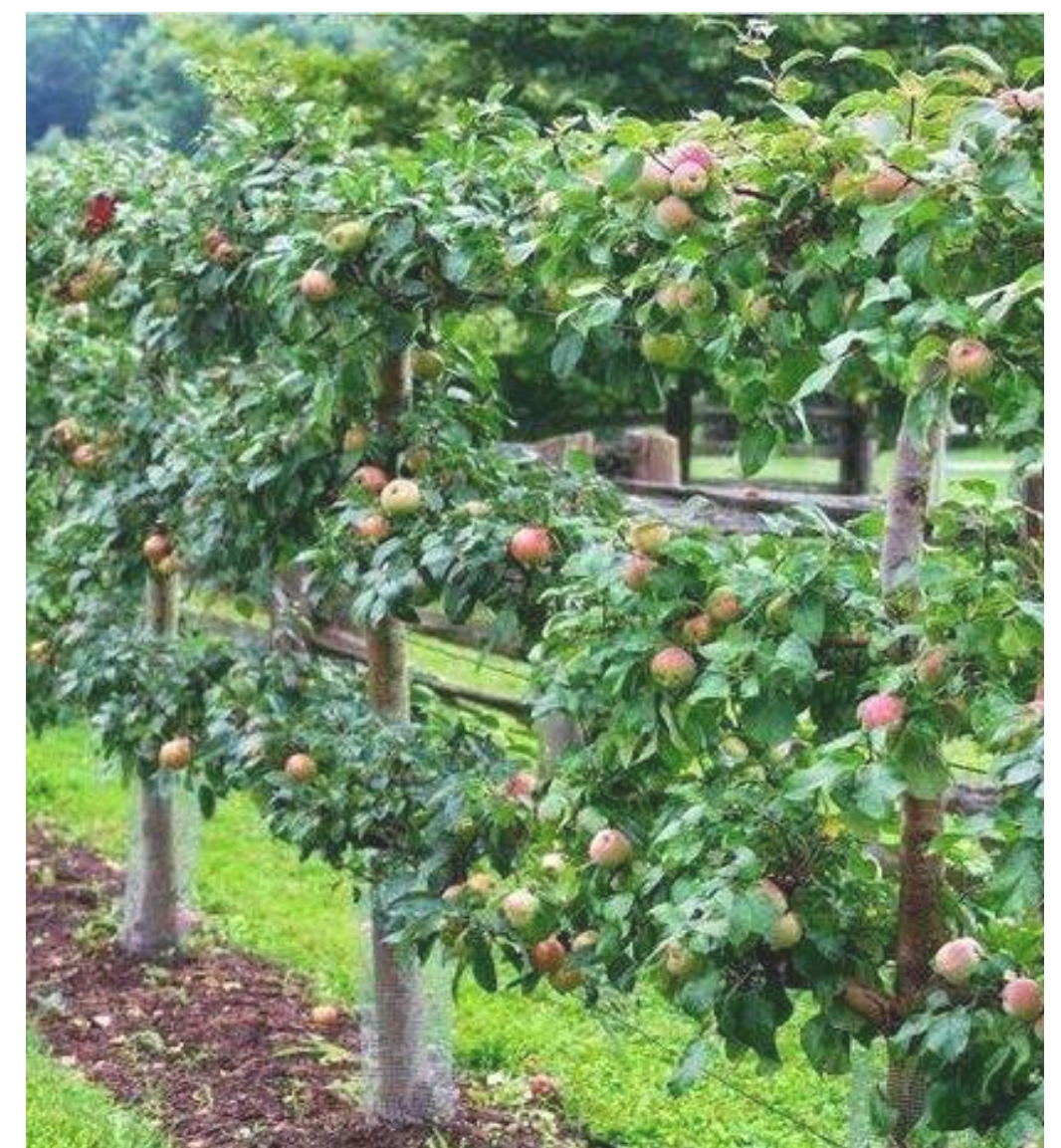
- 1 Existing sidewalk, typ.
- 2 Retail Plaza, See L4.1
- 3 Stone markers define entries, typ.
- 4 6' wide concrete pedestrian path along Turner Parkway
- 5 Most existing street trees along Turner Parkway to remain
- 6 Wood split rail fence at wetland edge
- 7 6' wide pedestrian connection to Linear Park
- 8 Stormwater treatment area, see sheet L3.2
- 9 View fence, typ.
- 10 Screen fence, typ.
- 11 Stamped asphalt at crossing
- 12 Pedestrian entry gate to residential paseos from public walk
- 13 Modified street geometry; see sheet C3.2





- 1** Gateway marker, typ.
- 2** Existing sidewalk
- 3** Wood split rail fence at wetland edge
- 4** 6' concrete path, see sheet L3.0
- 5** Stormwater treatment area, see sheet L3.2
- 6** Stormwater overlook with seat pads, typ.
- 7** 7' wide trail: 5' wide asphalt with 1' wide DG* edges
- 8** Wetland view fence, split rail wood style, typ.
- 9** Tree and shrub planting soften Costco & parking
- 10** 5' wide concrete entry walk to linear park from neighborhood, typ.
- 11** Ornamental & edible planting in agrarian-style rows
- 12** Bench seating, typ.
- 13** Fruit & nut trees at neighbor property lines, typ.
- 14** Gateway focal point
- 15** Picnic tables, typ.
- 16** Lounge seating nodes, typ.
- 17** Wetland open space with native planting
- 18** Wetland setback line
- 19** Concrete seatwall
- 20** View fence at residential edge
- 21** Wetland trail and bridge, see sheet C2.0

* DG is decomposed granite





- 1 Existing sidewalk typ.
- 2 Wetland setback
- 3 7' wide trail: 5' wide asphalt with 1' wide DG edges
- 4 Stone markers define entries, typ.
- 5 6' concrete path, see sheet L3.0
- 6 Wetland open space with native planting
- 7 Wood split rail fence, typ.
- 8 Edges of basin planted with rushes, flaxes, and grasses
- 9 Stormwater treatment area, basin is unplanted
- 10 Screen fence, typ.
- 11 View fence, typ.
- 12 Stormwater treatment area overlook
- 13 Granite seat pads



TREES



Aesculus californica
California Buckeye



Cercis occidentalis
Western Redbud



Prunus ilicifolia
Hollyleaf Cherry



Quercus agrifolia
Coast Live Oak

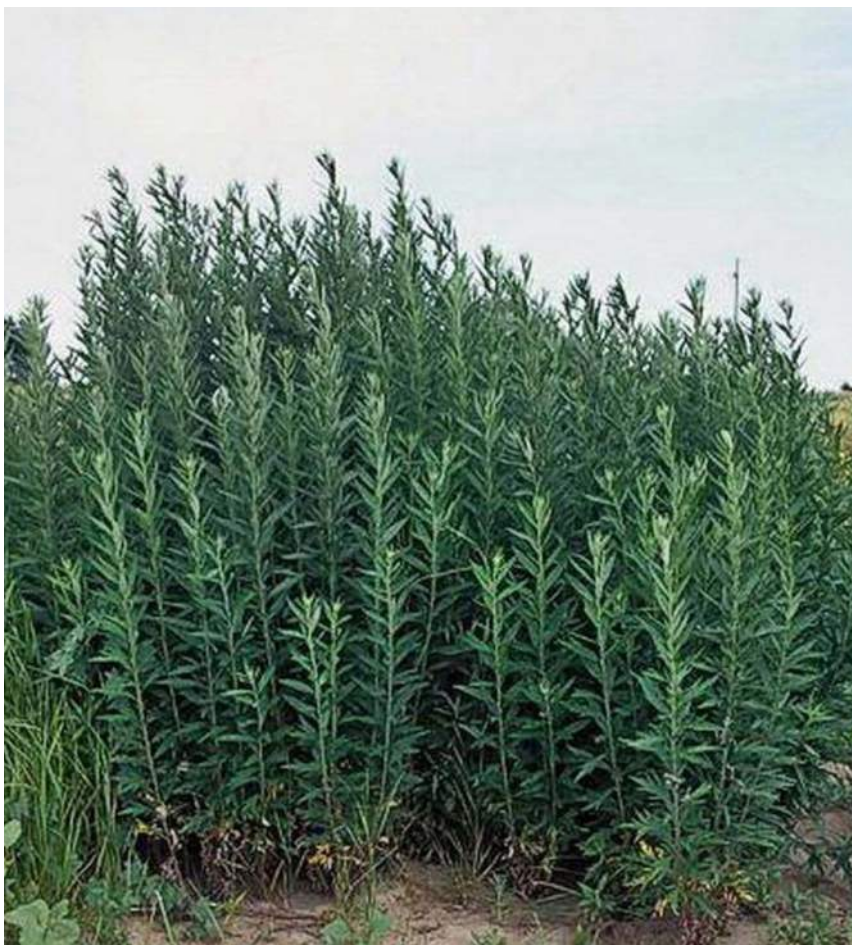


Quercus lobata
Valley Oak



Sambucus nigra ssp. caerulea
Blue Elderberry

SHRUBS



Artemisia douglasiana
California Mugwort



Ceanothus 'Julia Phelps'
Julia Phelps Ceanothus



Ceanothus ray hartman
Mountain Lilac



Diplacus aurantiacus
Sticky Monkey Flower



Epilobium californica bert bluff
Bert Bluff Fuchsia



Festuca californica
California Fescue



Frangula californica 'Mound San Bruno'
Mound San Bruno Coffee



Lupinus arboreus
Bush Lupine



Monardella villosa
Coyote Mint



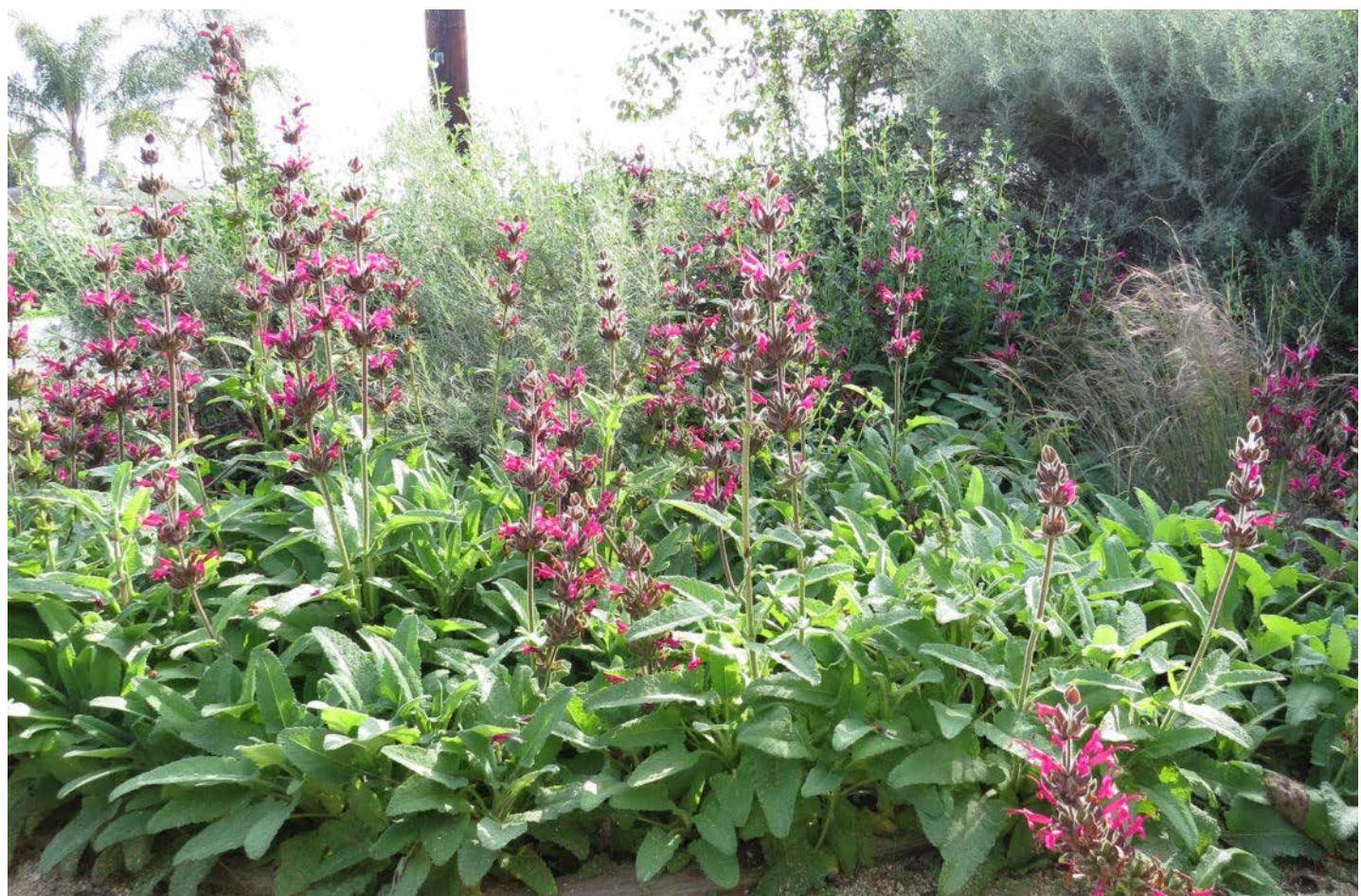
Muhlenbergia rigens
Deer Grass



Penstemon centranthifolius
Scarlet Bugler



Salvia bee's bliss
Creeping Sage

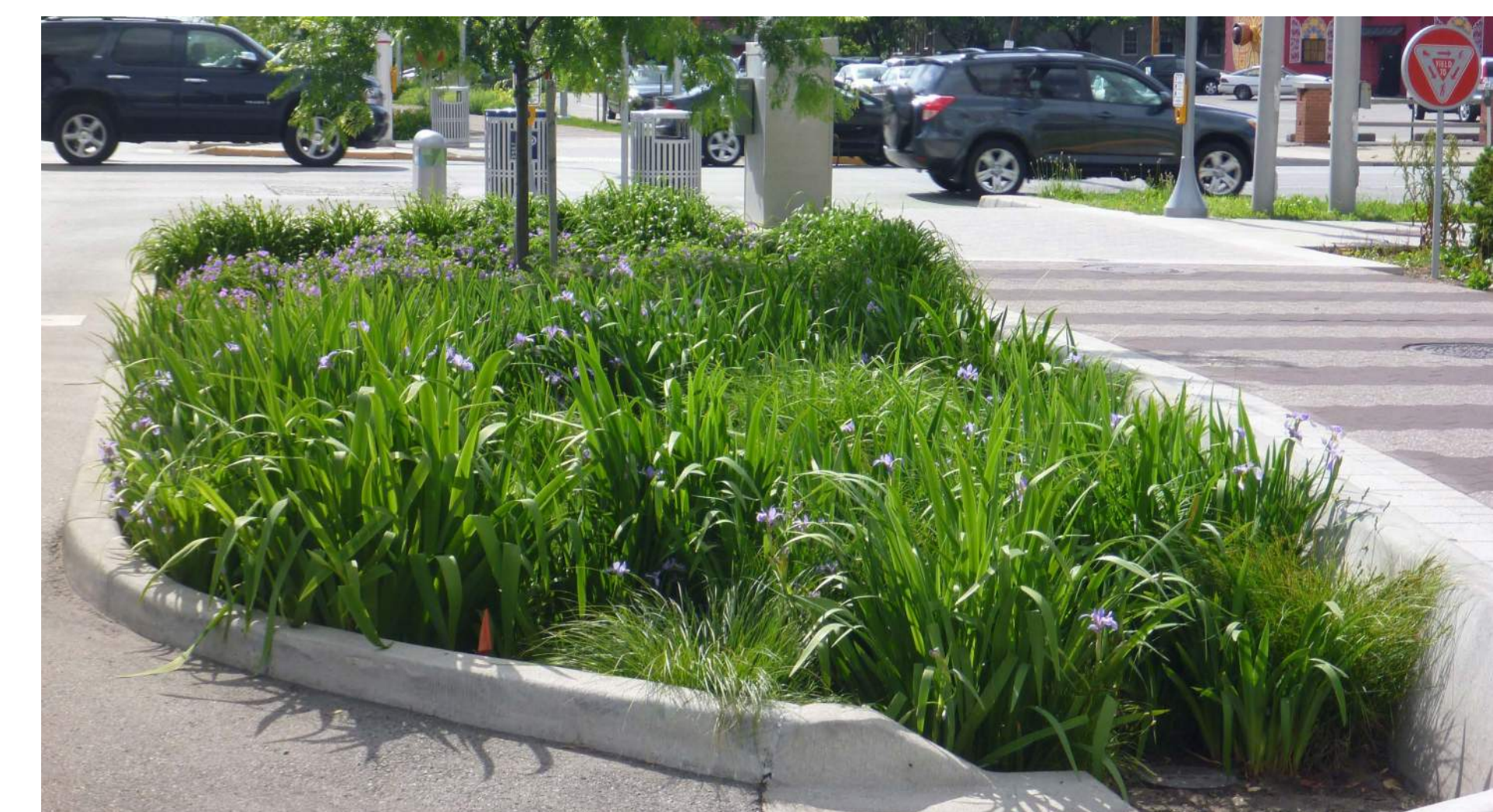


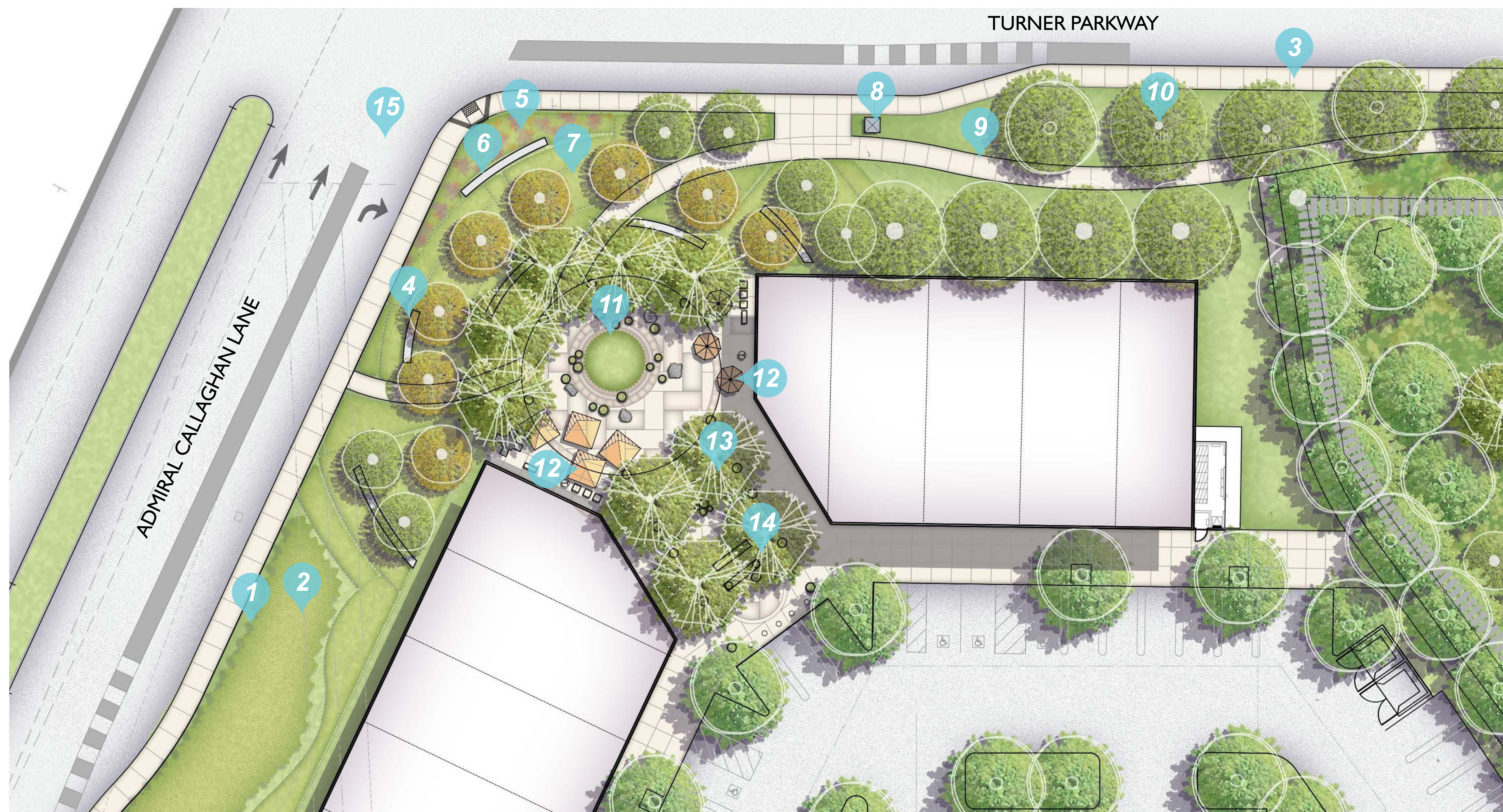
Salvia spathacea
Hummingbird Sage

This list represents species selected by the project environmental consultants: WRA, Inc.

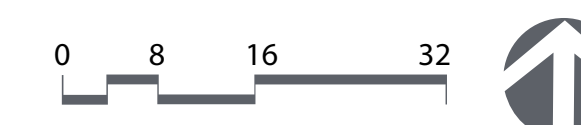


- 1 6' concrete path, see sheet L3.0
- 2 Native Trees screen retail development
Primary: *Aesculus californica* (California Buckeye)
Secondary: *Quercus lobata* (Valley Oak)
- 3 Stormwater treatment planter, typ.
- 4 Existing sidewalk
- 5 Retail Plaza, see sheet L4.1
- 6 Drive-thru is screened from street
- 7 8' wide pedestrian connections through parking lot, typical
- 8 Proposed PG&E gas line easement (shrub planting, no trees)
- 9 Costco Gas Station
- 10 5' concrete path
- 11 Pedestrian connection to wetland open space; see sheet C2.0
- 12 Modified street geometry; see sheet C3.2





- 1 Proposed PG&E gas line easement (no trees)
- 2 Bands of ornamental grasses
- 3 Existing sidewalk, typ.
- 4 Low stone walls
- 5 Colorful planting
- 6 Signage on low stone wall
- 7 Bold planting in circular bands
- 8 Stone marker at pedestrian walk
- 9 6' concrete path, see sheet L3.0
- 10 Most existing street trees to remain on Turner Parkway
- 11 Raised planting with seatwalls
- 12 Tables and umbrellas near cafe entries
- 13 Seating niche with pots, seatwalls, flowering trees
- 14 Focal entry feature with planting
- 15 Modified street geometry; see sheet C3.2



TREES



Acer Buergerianum
Trident Maple



Celtis sinensis
Chinese Hackberry



Fraxinus angustifolia 'Raywood'
Raywood Ash



Gingko biloba (male)
Ginkgo



Olea europaea 'Monher'
Fruitless Olive



Tilia tomentosa
Silver Linden



Zelkova serrata
Zelkova

SHRUBS



Agave attenuata
Soft agave



Chondropetalum elephantinum
Large Cape Rush



Dietes grandiflora
Fortnight Lily



Frangula californica 'Mound San Bruno'
Mound San Bruno Coffee



Hesperaloe parviflora
Red Yucca



Juncus patens 'Elk Blue'
Gray Rush



Lantana montevidensis
Lantana



Leymus condensatus
Canyon Prince Wild Rye



Lomandra longifolia 'Breeze'
Mat Rush



Punica granatum 'Nana'
Dwarf Pomegranate



Salvia bee's bliss
Creeping Sage



Senecio mandraliscae
Blue Chalk Sticks



Teucrium fruticans 'Compactum'
Bush Germander



Zauschneria californica
California Fuschia

This list represents a sample of trees and shrubs for the retail neighborhood. Additional plant species will be utilized.



FRONT ELEVATION 1A

FRONT ELEVATION 2B

FRONT ELEVATION 3C



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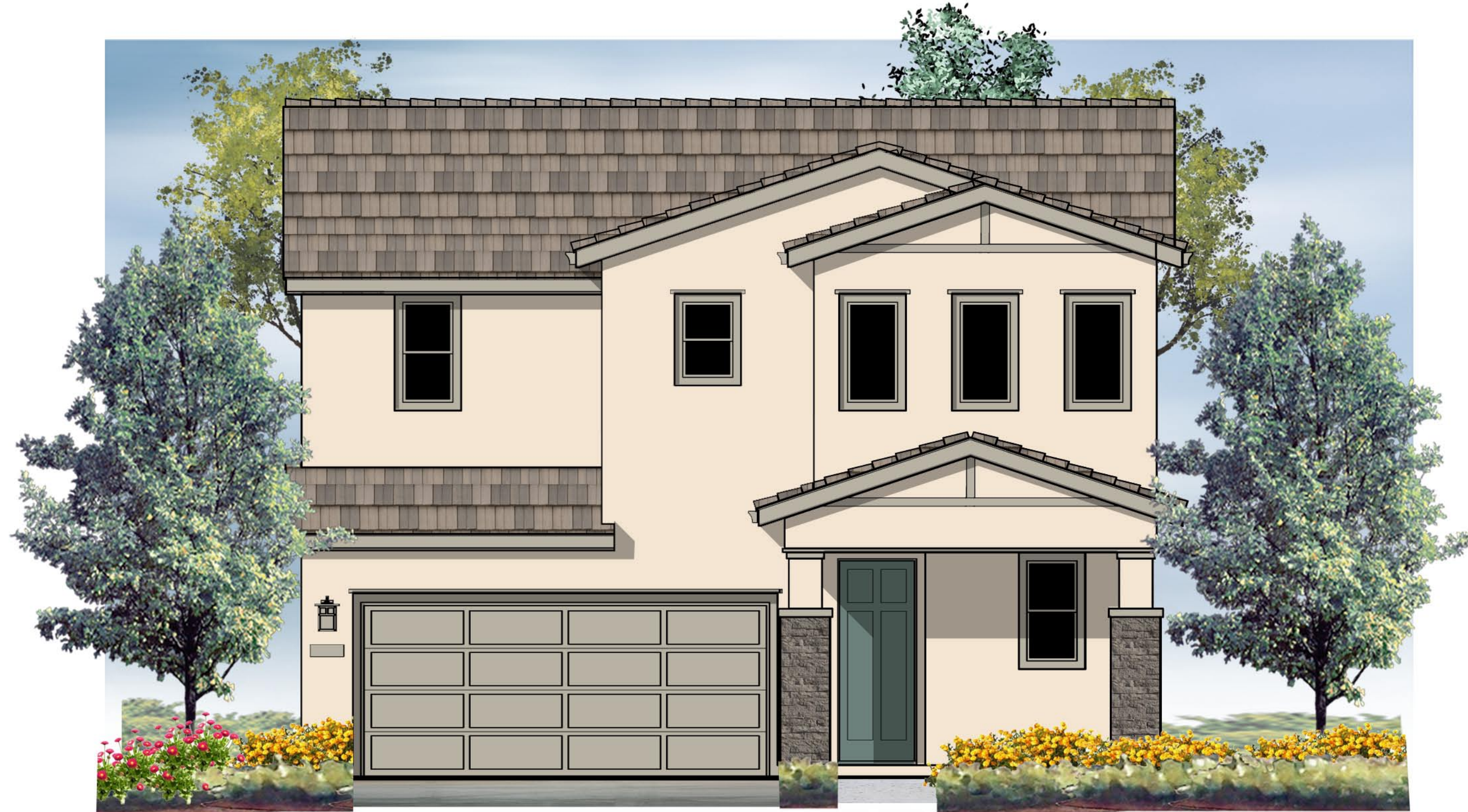
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SCHEMATIC DESIGN
DECEMBER 18, 2019

COVER SHEET

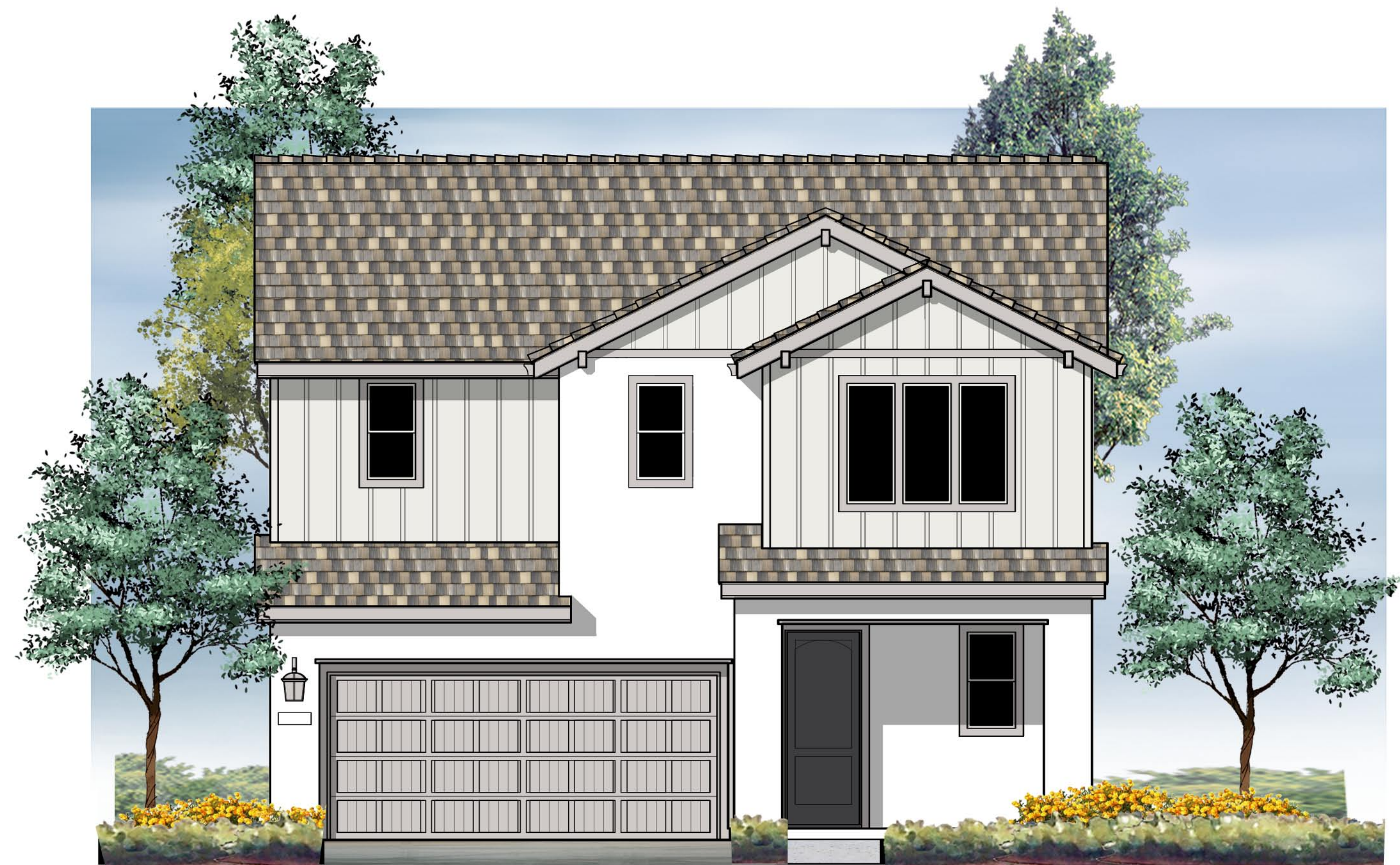
A0.0



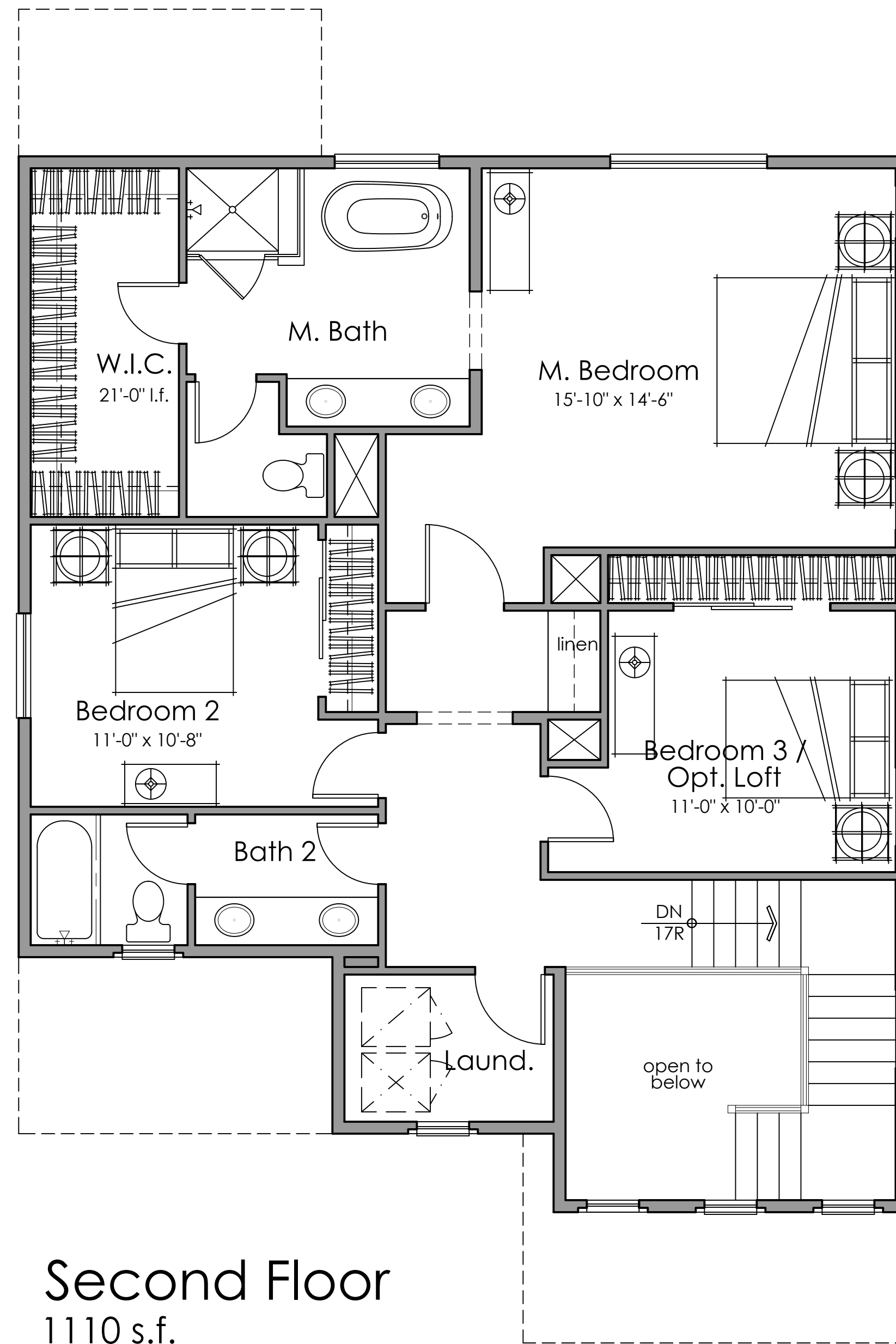
Front Elevation 1A



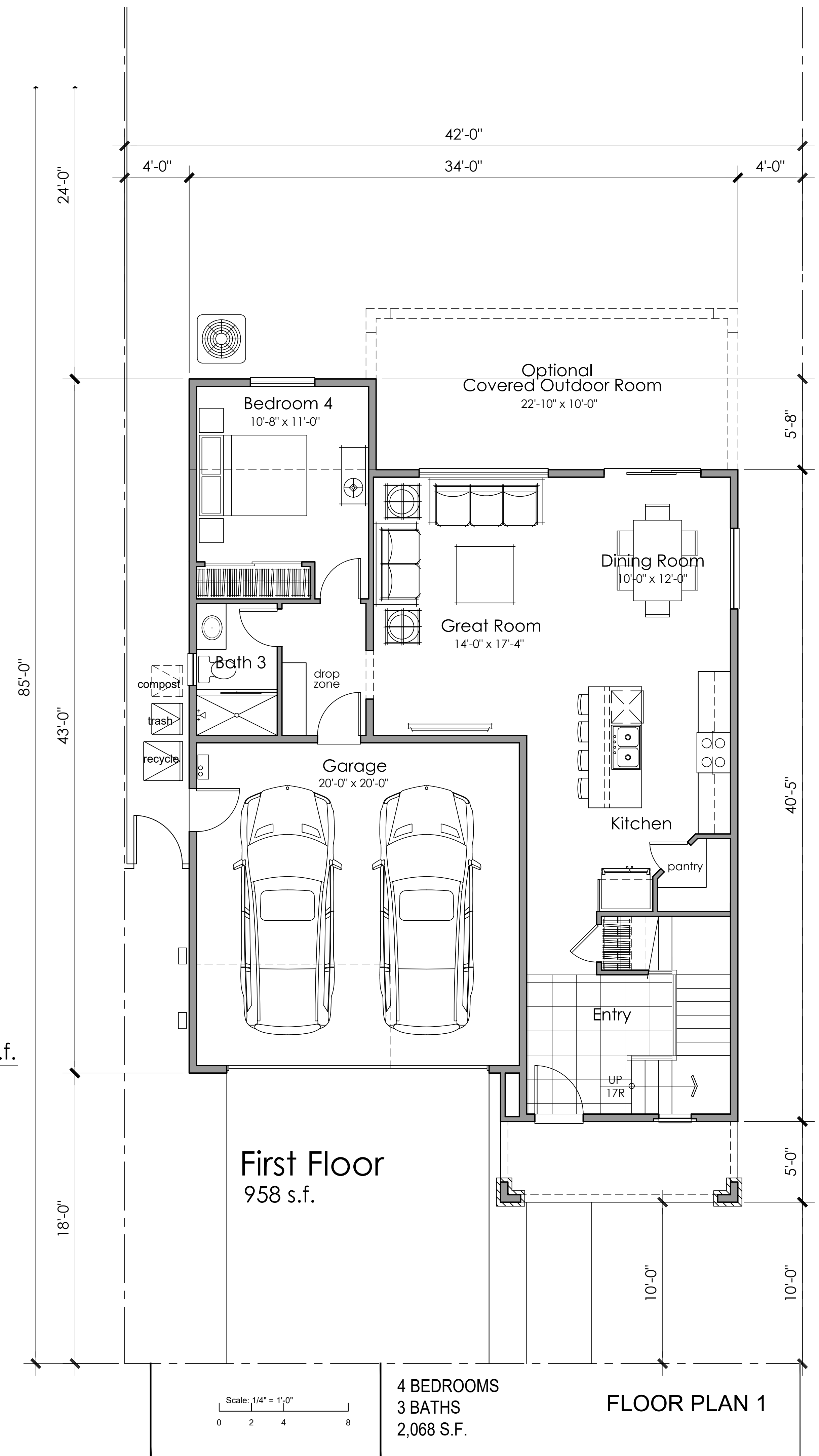
Front Elevation 1B



Front Elevation 1C



Lot Coverage - 42x85 = 3,570 s.f.
 1st Floor: 958 s.f.
 Garage: 419 s.f.
 Porch: 74 s.f.
 Total: 1,451 s.f.
 Lot Coverage: 41%



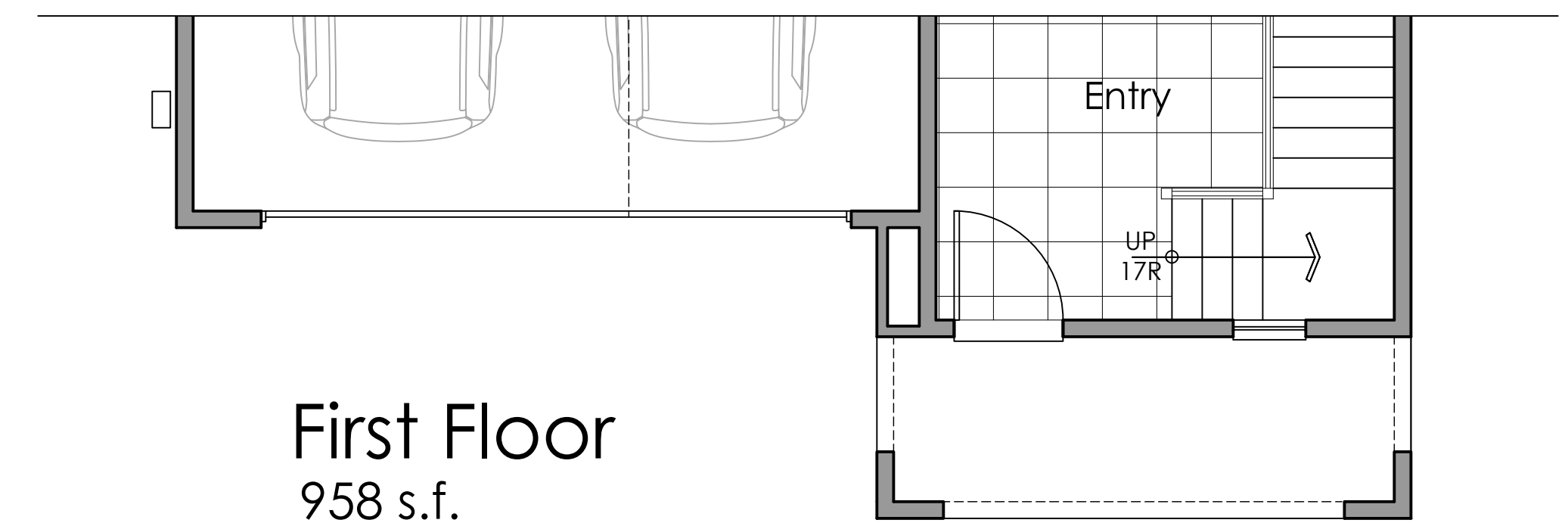
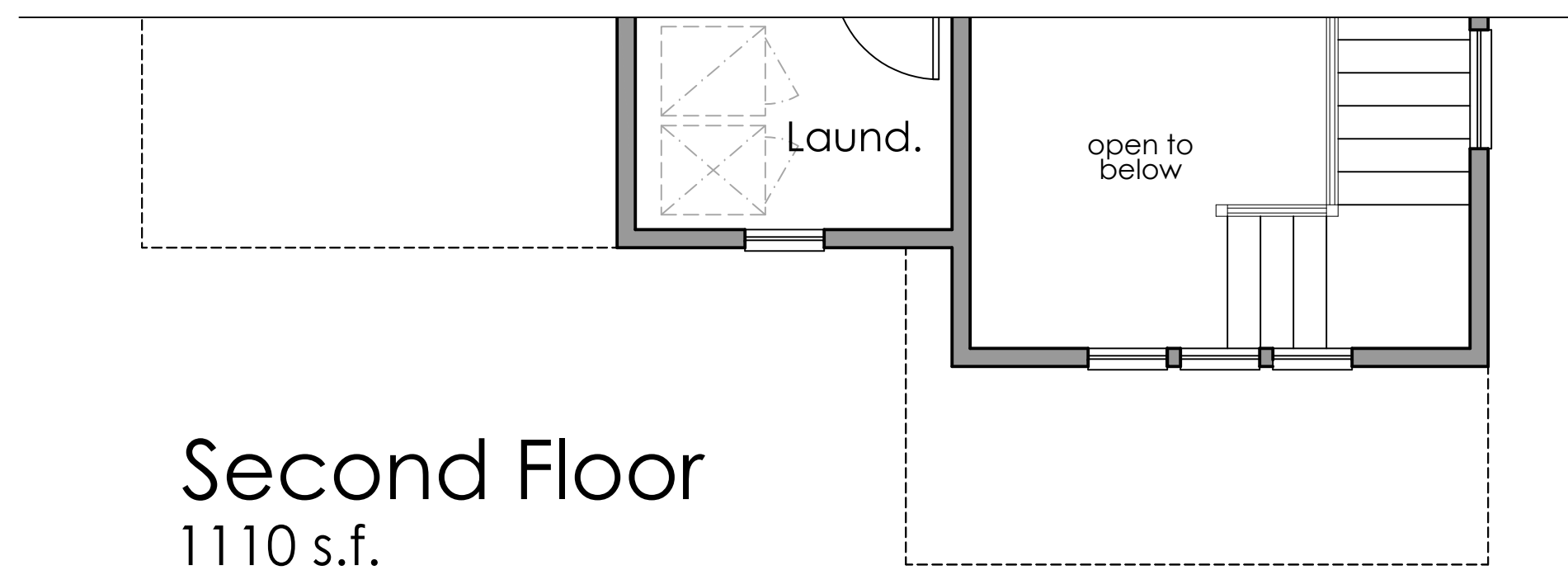
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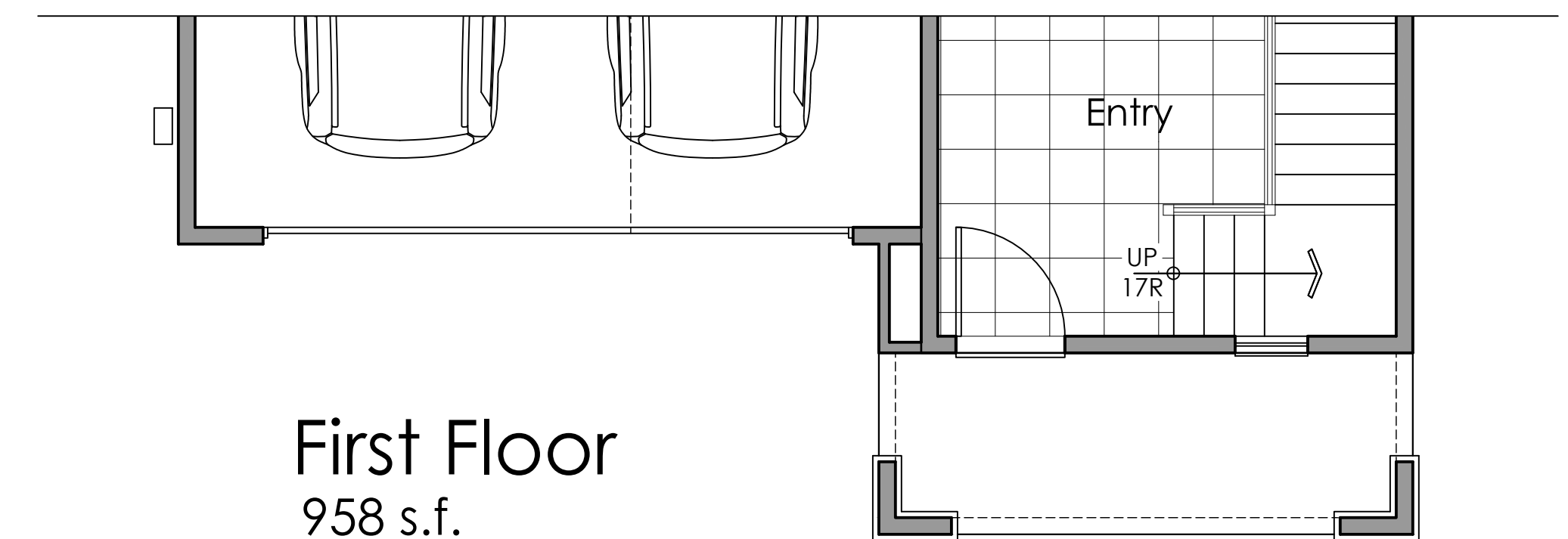
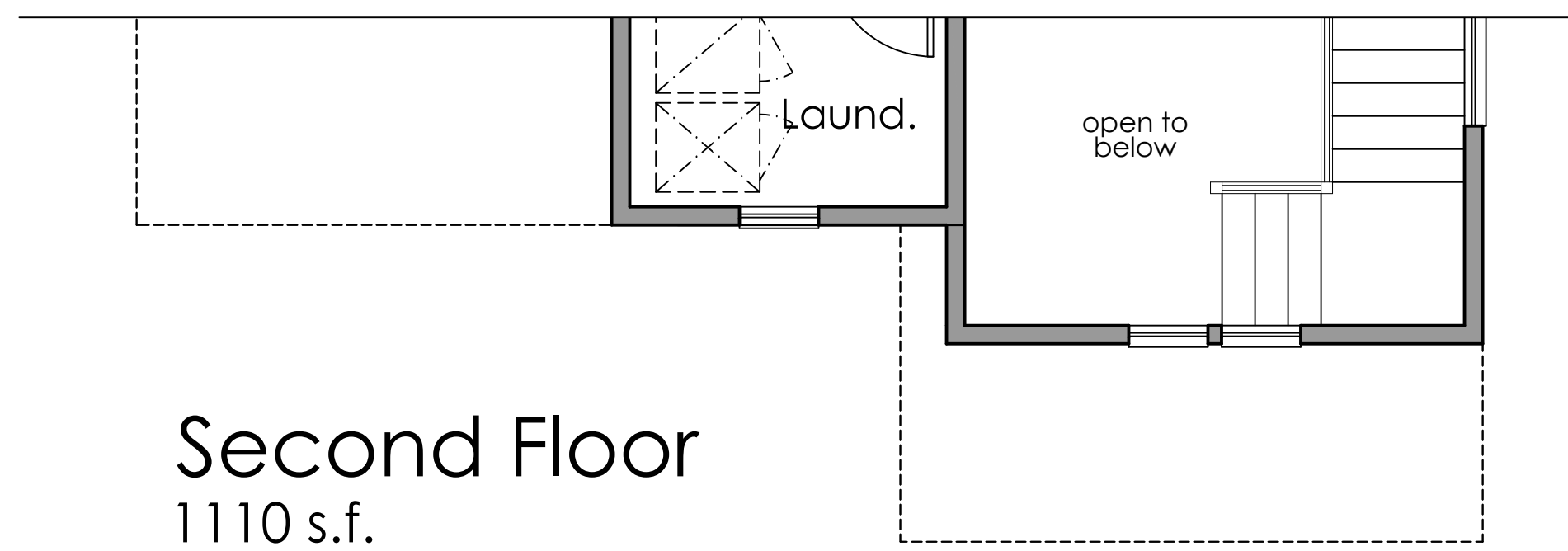
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A1.1



1C - Addenda



1B - Addenda



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Scale: 1/4" = 1'-0"
0 2 4 8

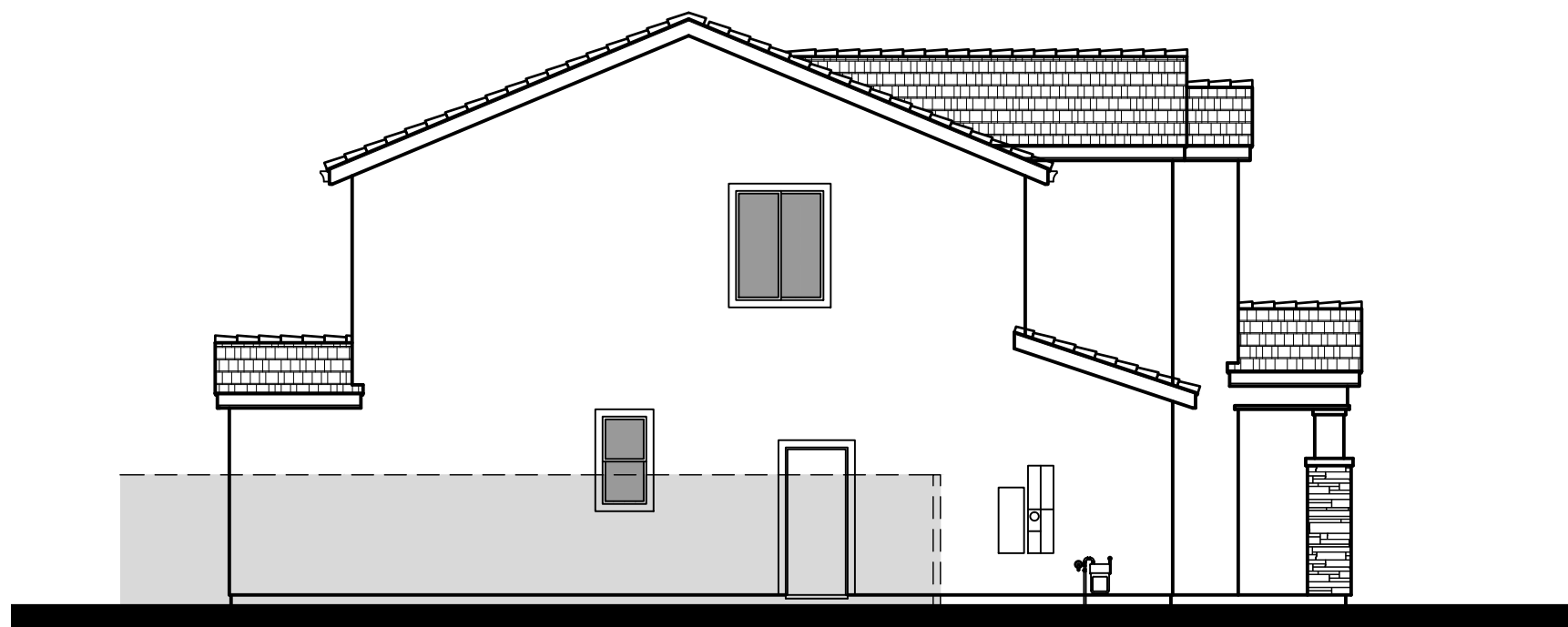
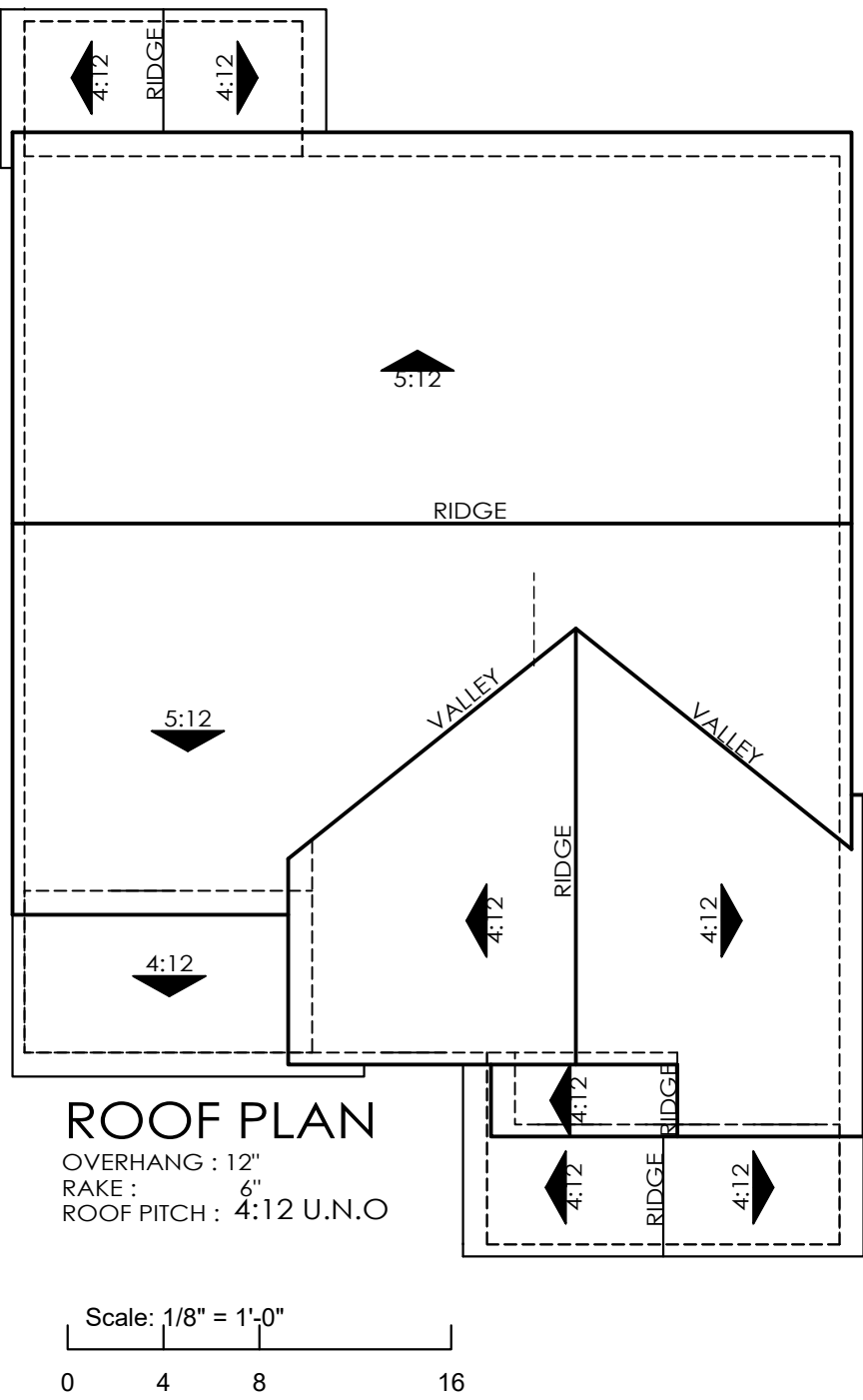
PLAN 1 ADDENDA

A1.1.1

1A
Material Legend:
Flat concrete Tile Roofing
Stucco Finish
Stone Veneer

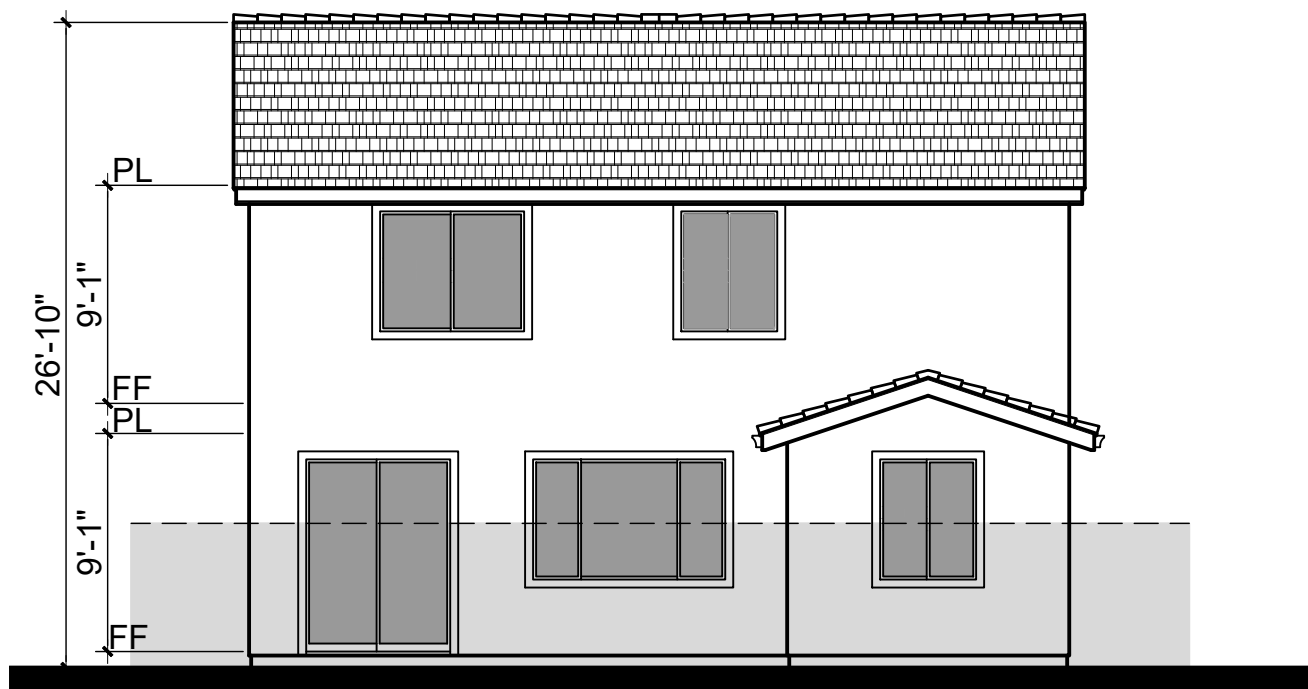


Front Elevation 1A



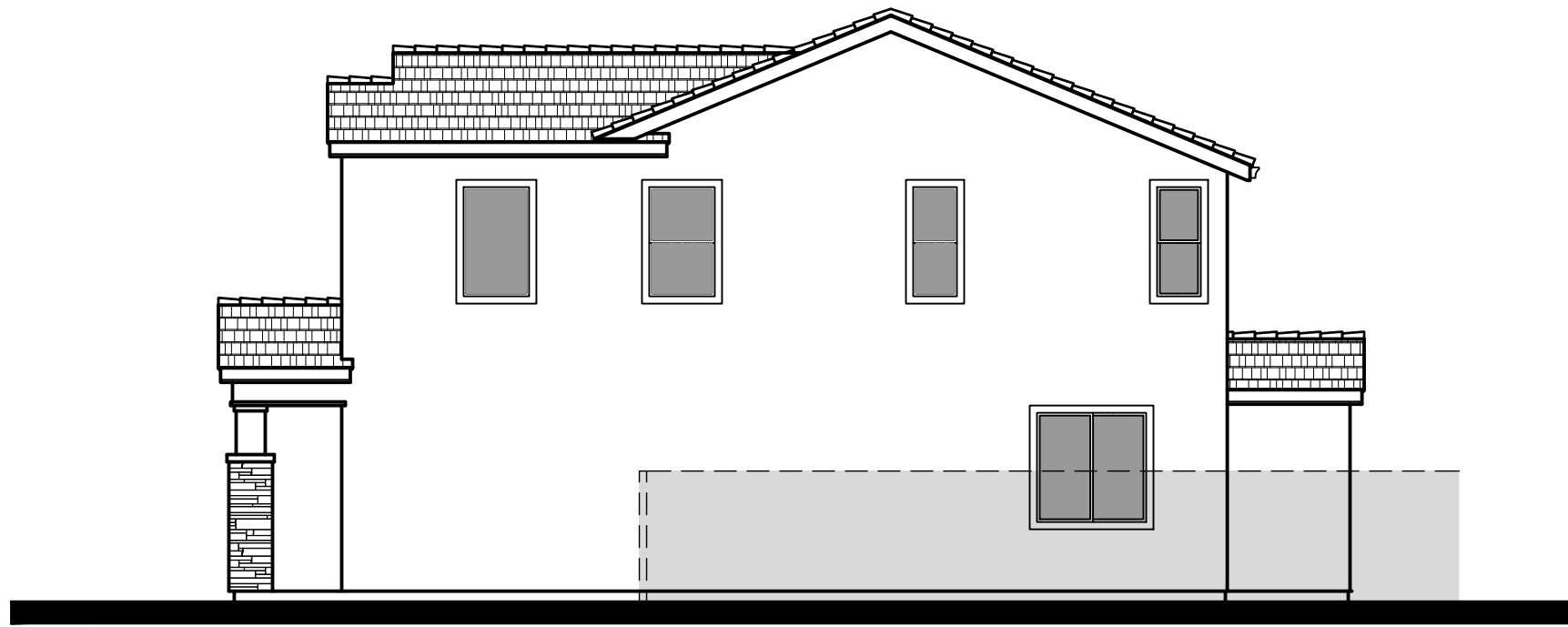
Left Elevation

Scale: 1/8" = 1'-0"
0 4 8 16



Rear Elevation

Scale: 1/8" = 1'-0"
0 4 8 16



Right Elevation

Scale: 1/8" = 1'-0"
0 4 8 16



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Scale: 1/4" = 1'-0"
0 2 4 8

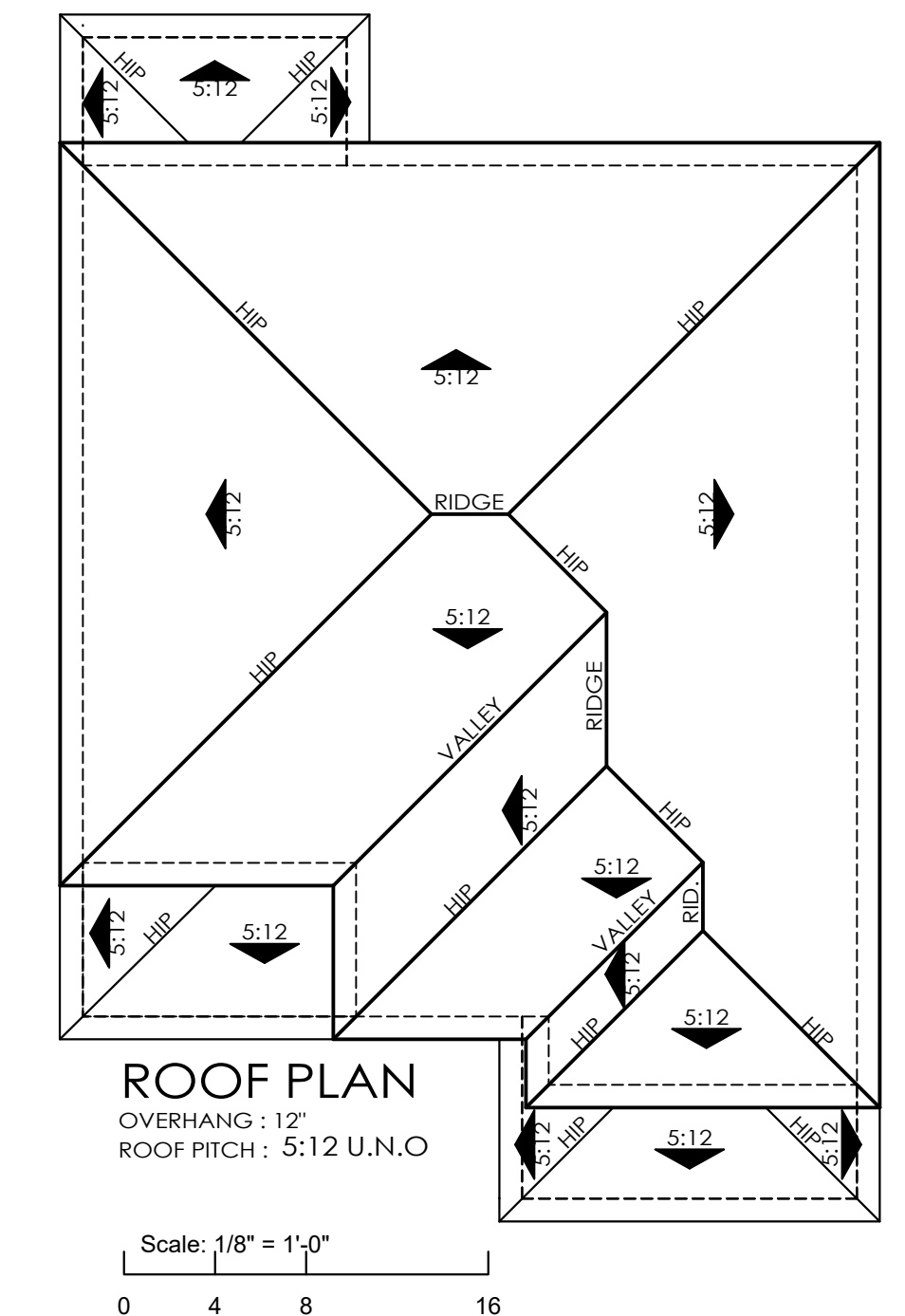
EXTERIOR ELEVATIONS - PLAN 1A

A1.2

1B
 Material Legend:
 Flat concrete Tile Roofing
 Stucco Finish
 Cementitious Lap Siding



Front Elevation 1B



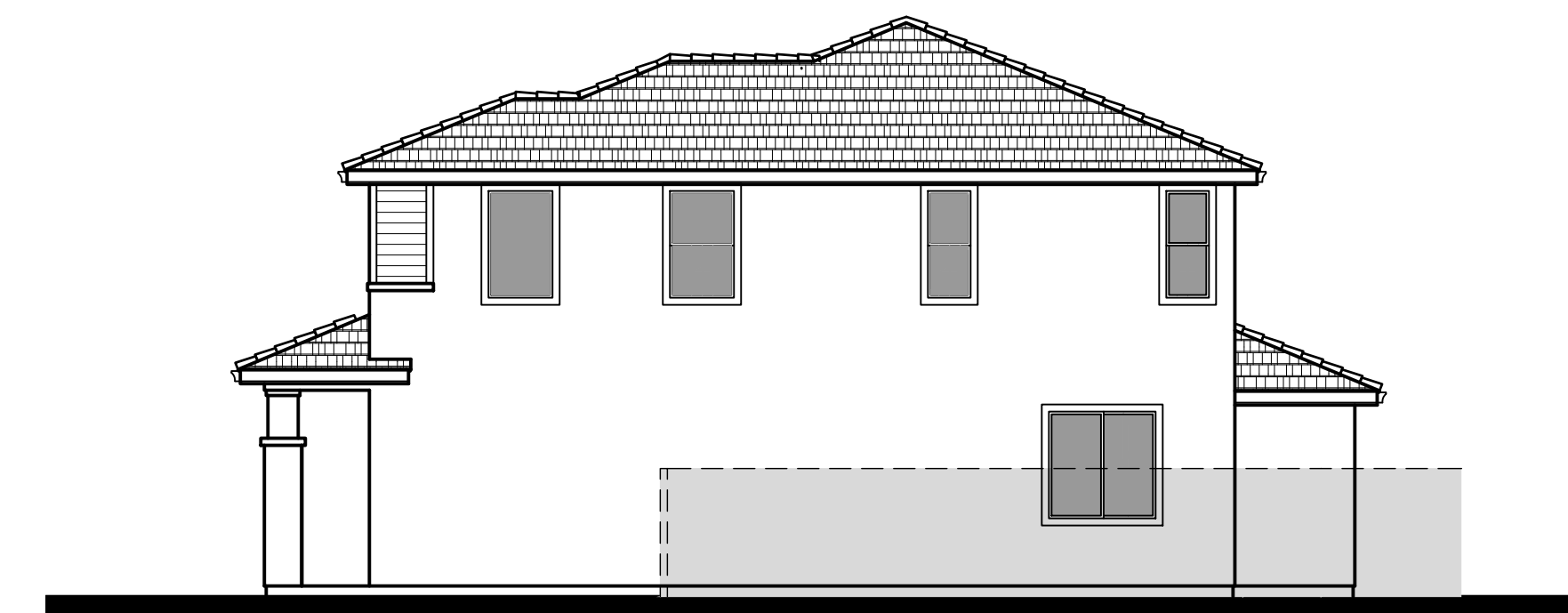
Left Elevation

Scale: 1/8" = 1'-0"
 0 4 8 16



Rear Elevation

Scale: 1/8" = 1'-0"
 0 4 8 16



Right Elevation

Scale: 1/8" = 1'-0"
 0 4 8 16



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Scale: 1/4" = 1'-0"
 0 2 4 8

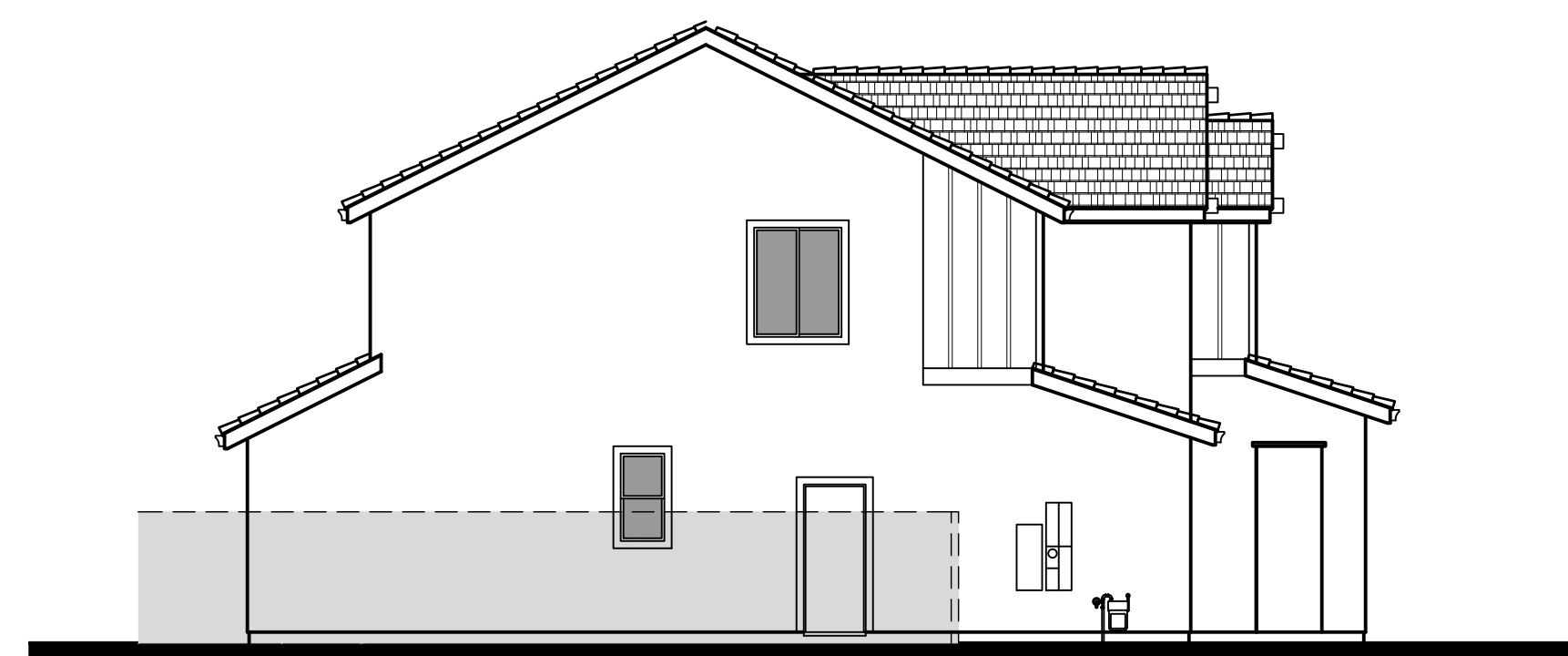
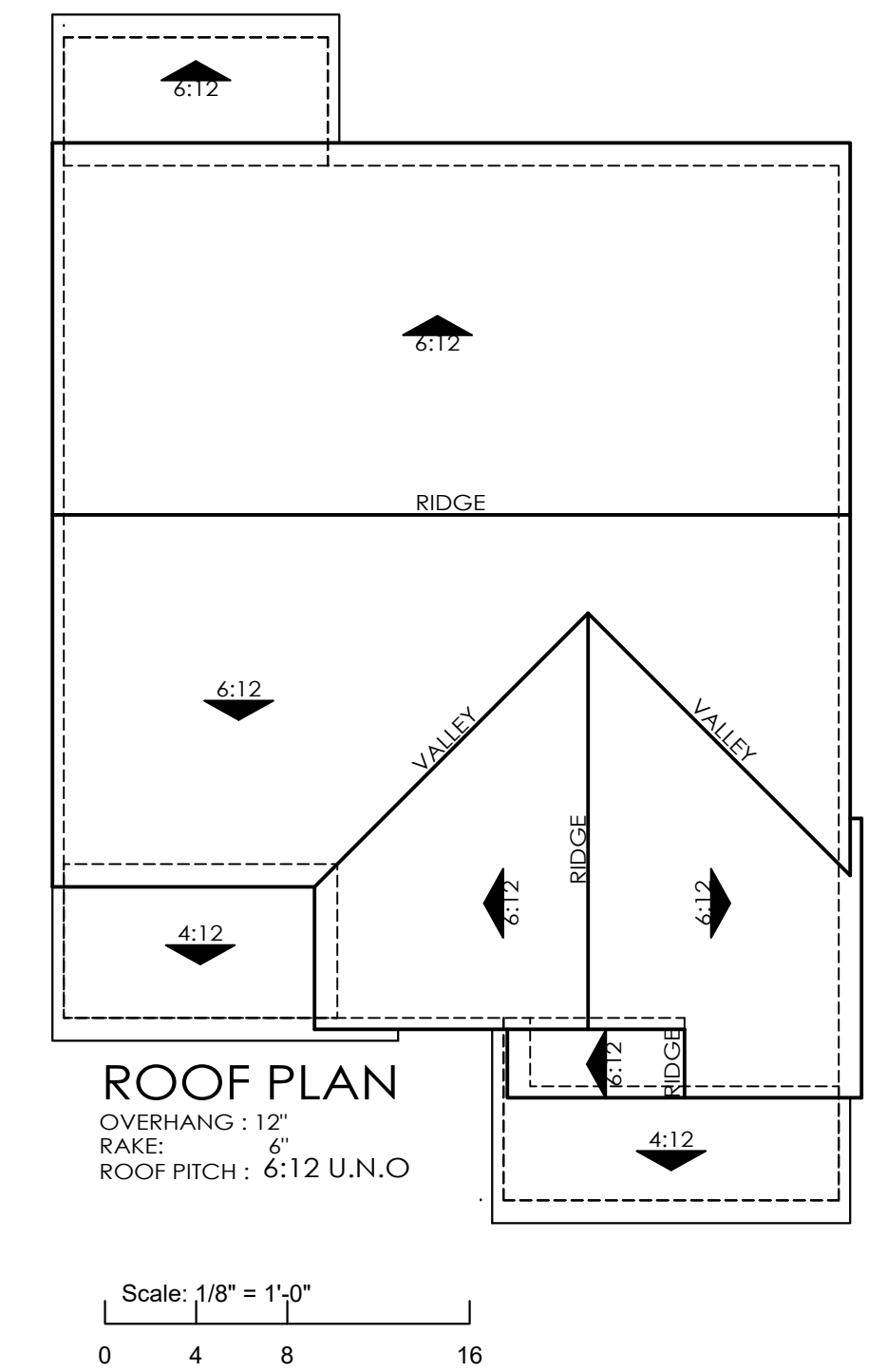
EXTERIOR ELEVATIONS - PLAN 1B

A1.3

1C
 Material Legend:
 Flat concrete Tile Roofing
 Stucco Finish
 Cementitious Board & Batt Siding
 Decorative Outlookers

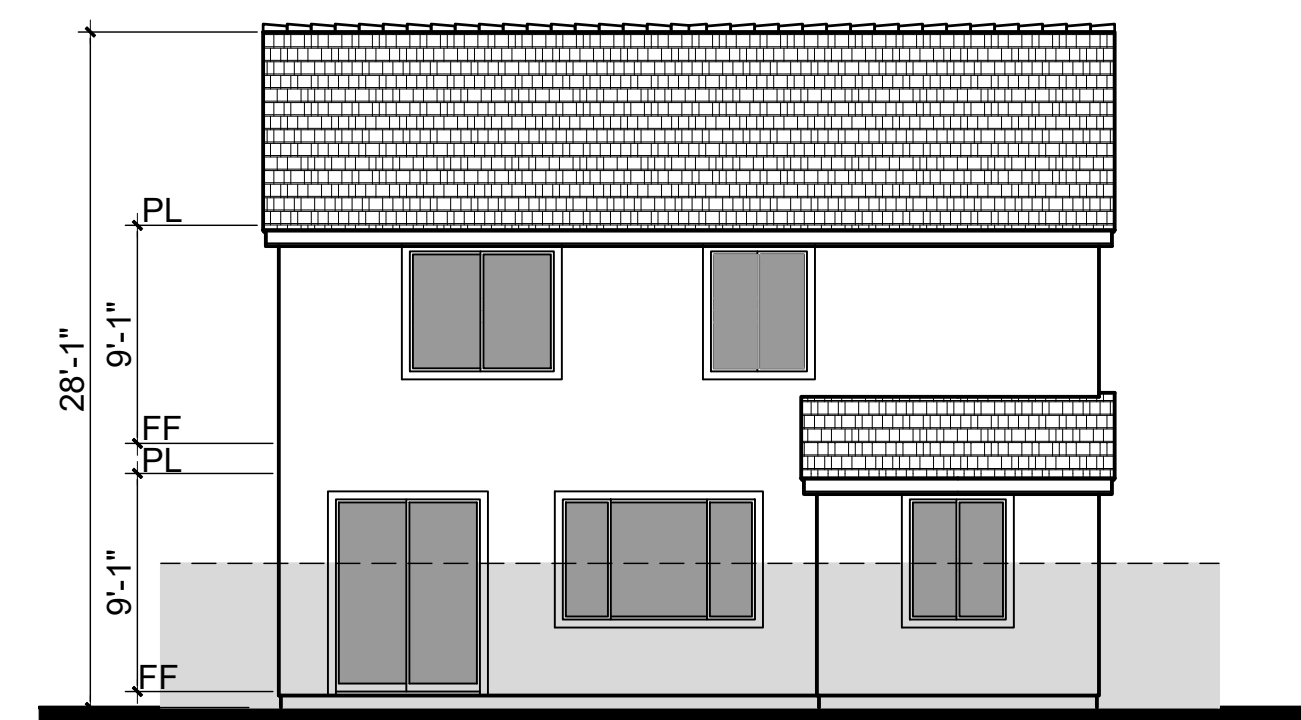


Front Elevation 1C



Left Elevation

Scale: 1/8" = 1'-0"



Rear Elevation

Scale: 1/8" = 1'-0"



Right Elevation

Scale: 1/8" = 1'-0"



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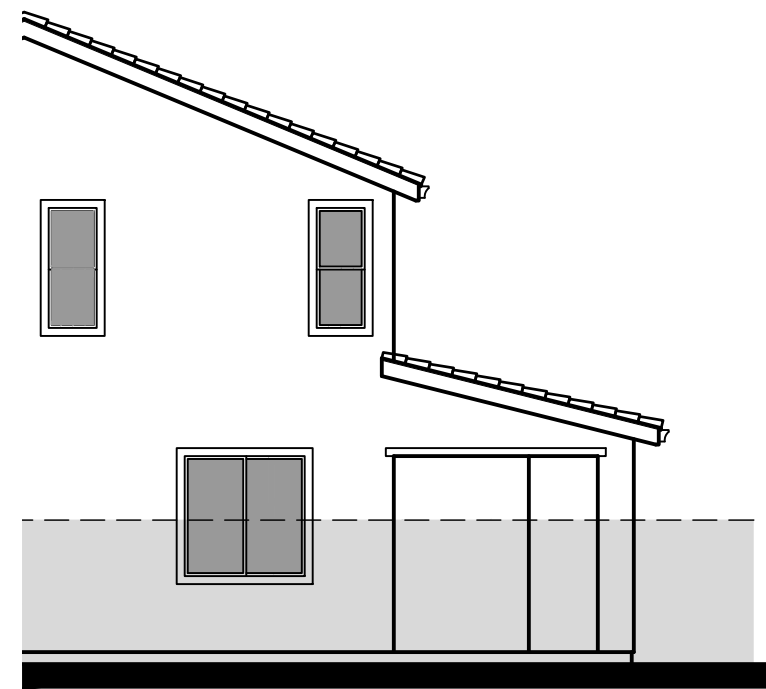
FAIRVIEW 40'x85'
 Vallejo, CA # 2018-0788

SCHEMATIC DESIGN
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Scale: 1/4" = 1'-0"

EXTERIOR ELEVATIONS - PLAN 1C

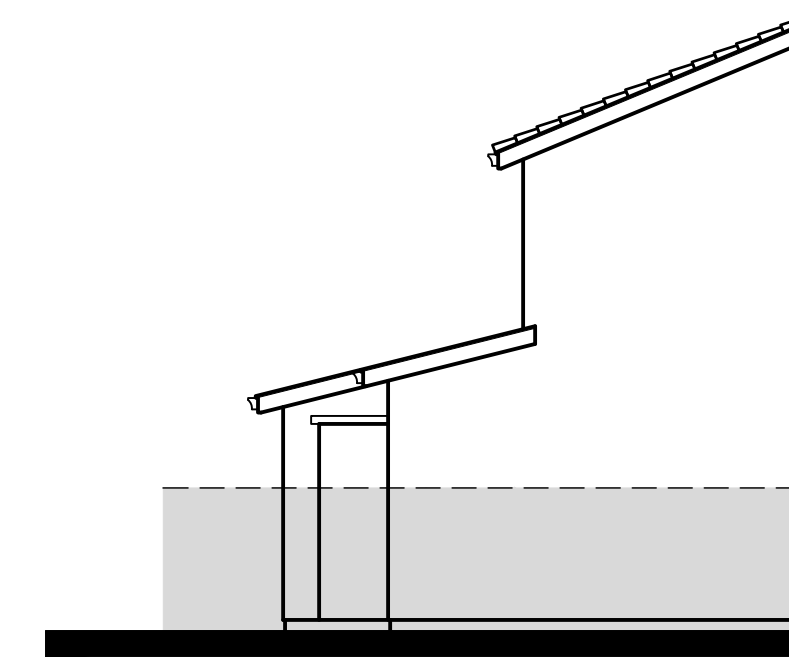
A1.4



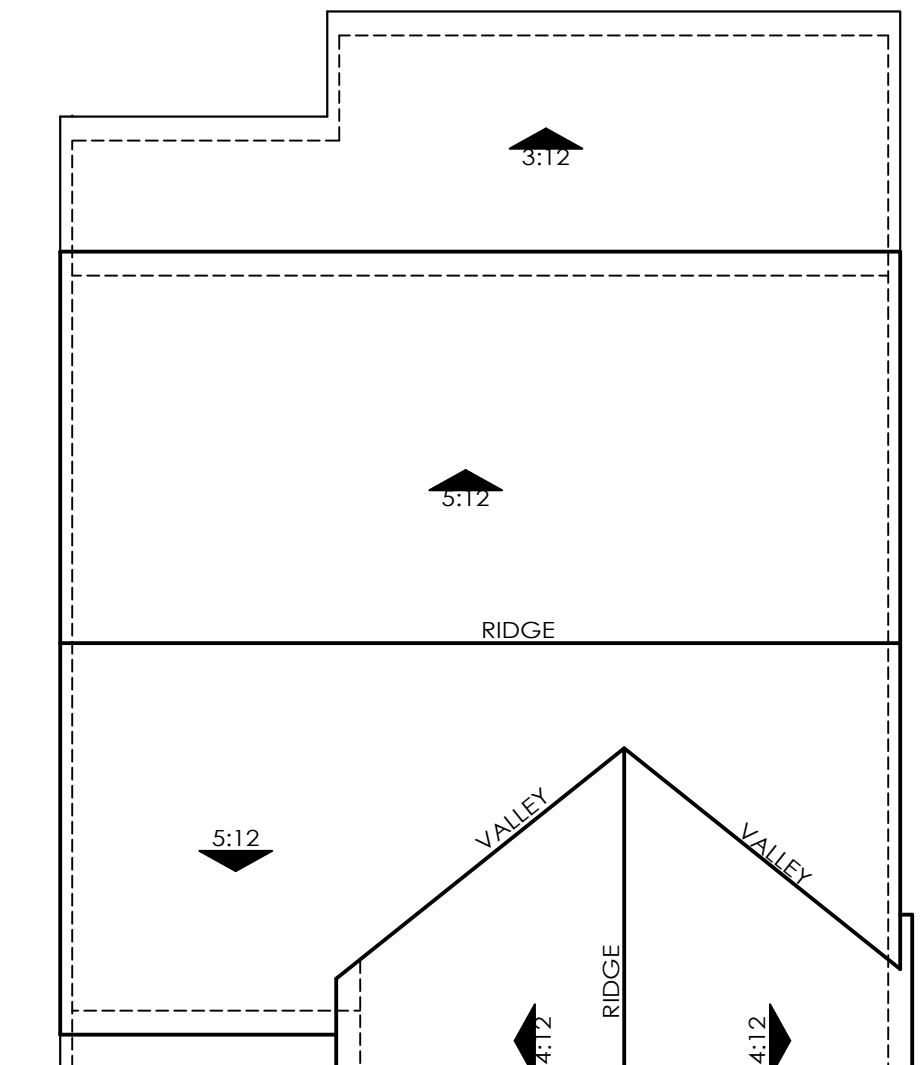
Right Elevation - 1A
Opt. Covered Outdoor Room



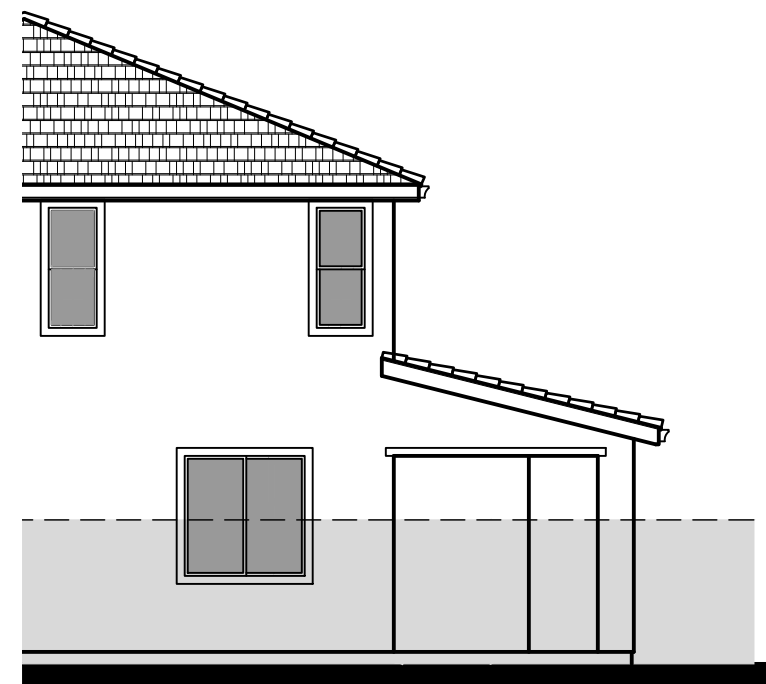
Rear Elevation - 1A
Opt. Covered Outdoor Room



Left Elevation - 1A
Opt. Covered Outdoor Room



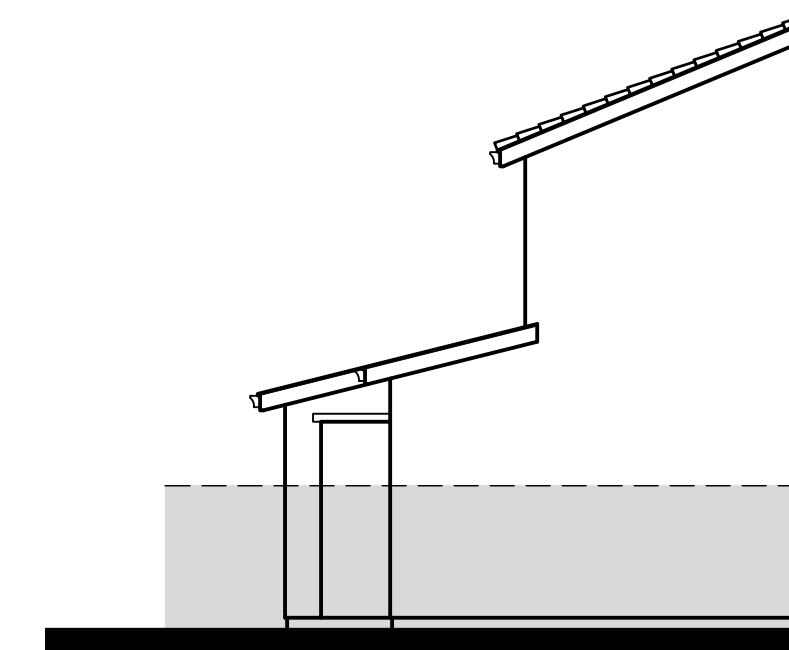
Roof Plan - 1A



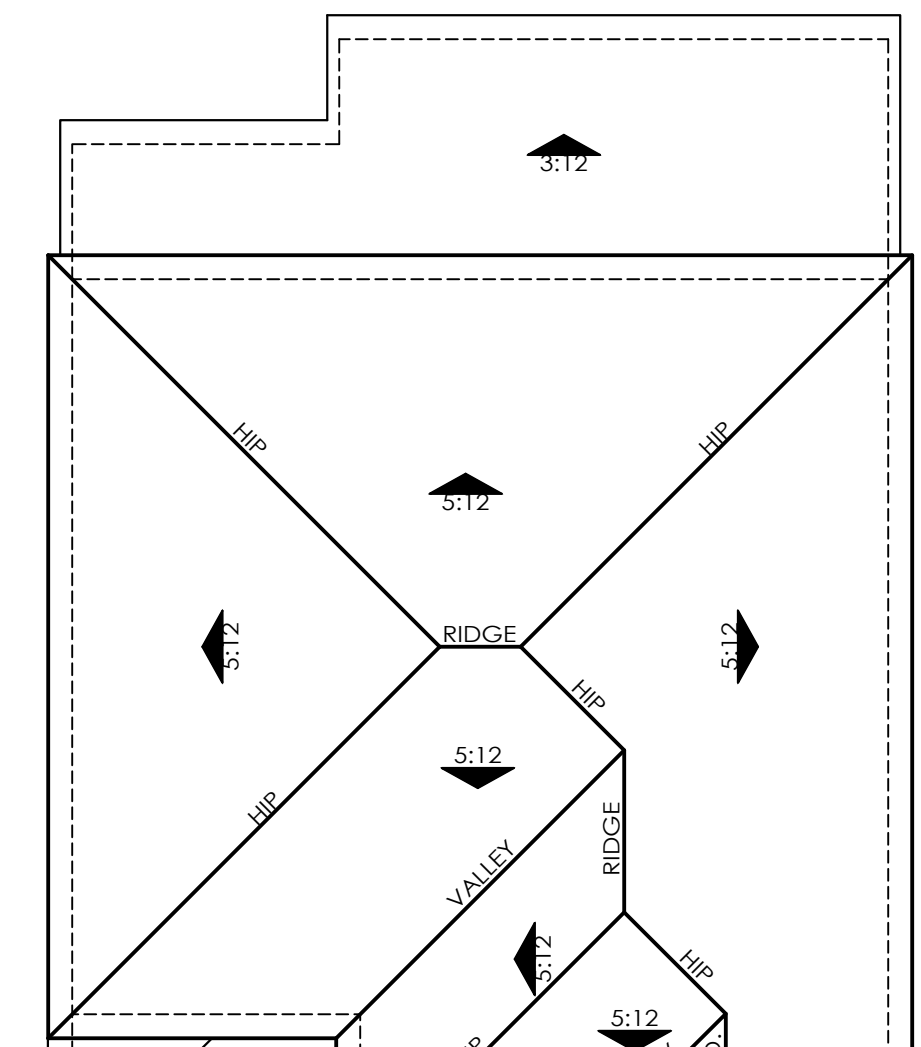
Right Elevation - 1B
Opt. Covered Outdoor Room



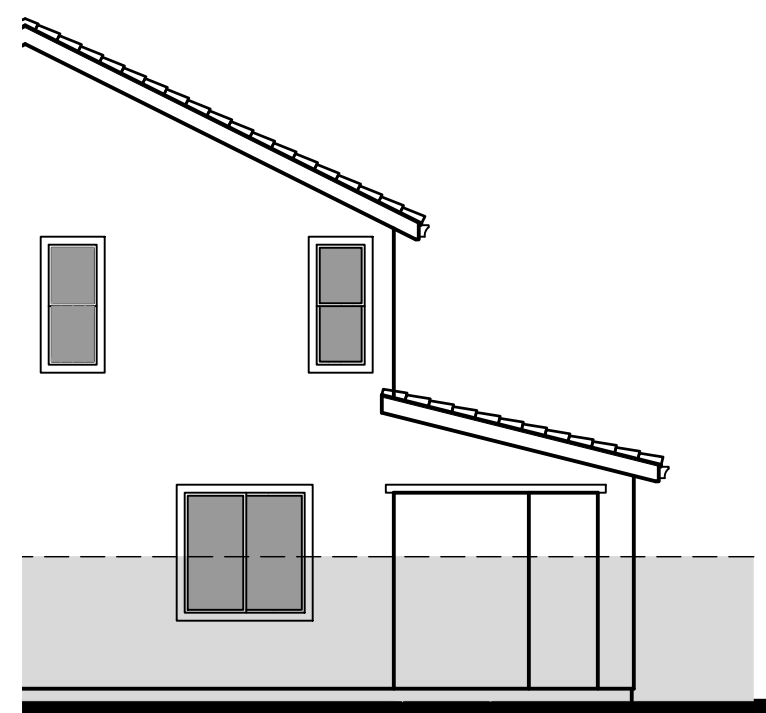
Rear Elevation - 1B
Opt. Covered Outdoor Room



Left Elevation - 1B
Opt. Covered Outdoor Room



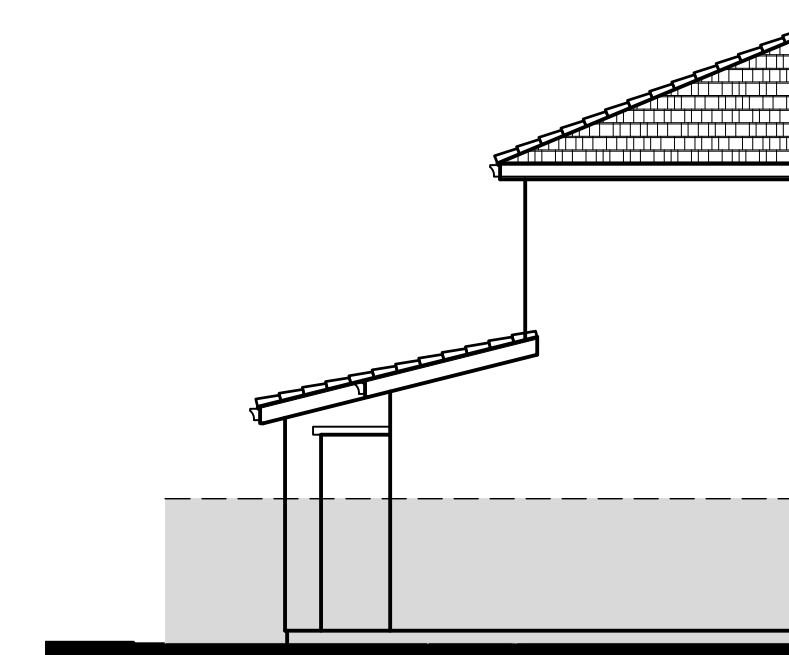
Roof Plan - 1B



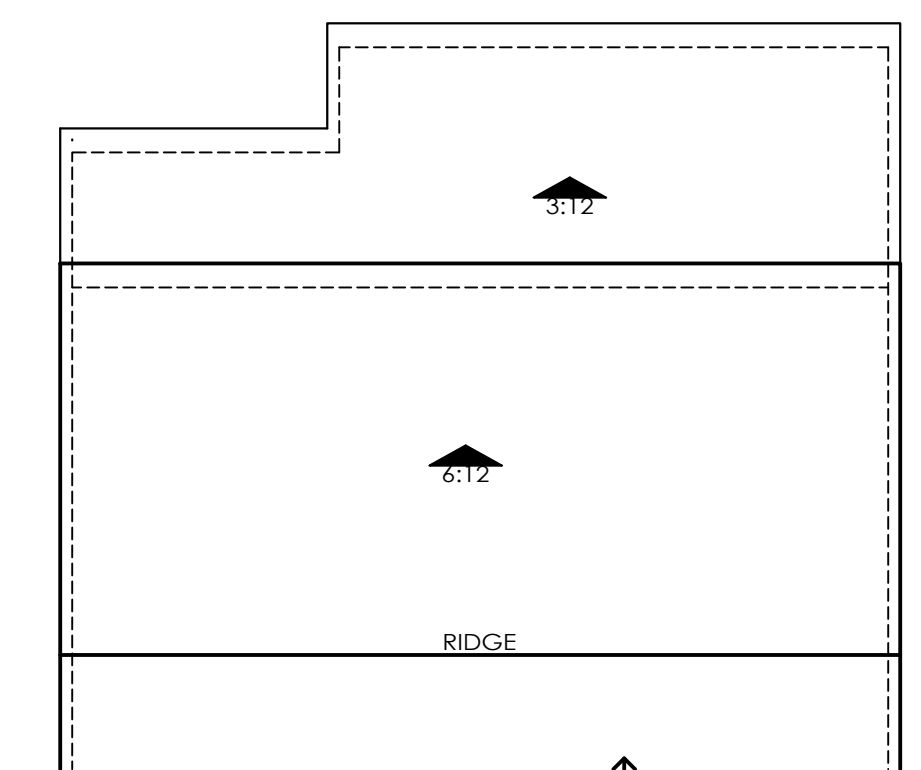
Right Elevation - 1C
Opt. Covered Outdoor Room



Rear Elevation - 1C
Opt. Covered Outdoor Room



Left Elevation - 1C
Opt. Covered Outdoor Room



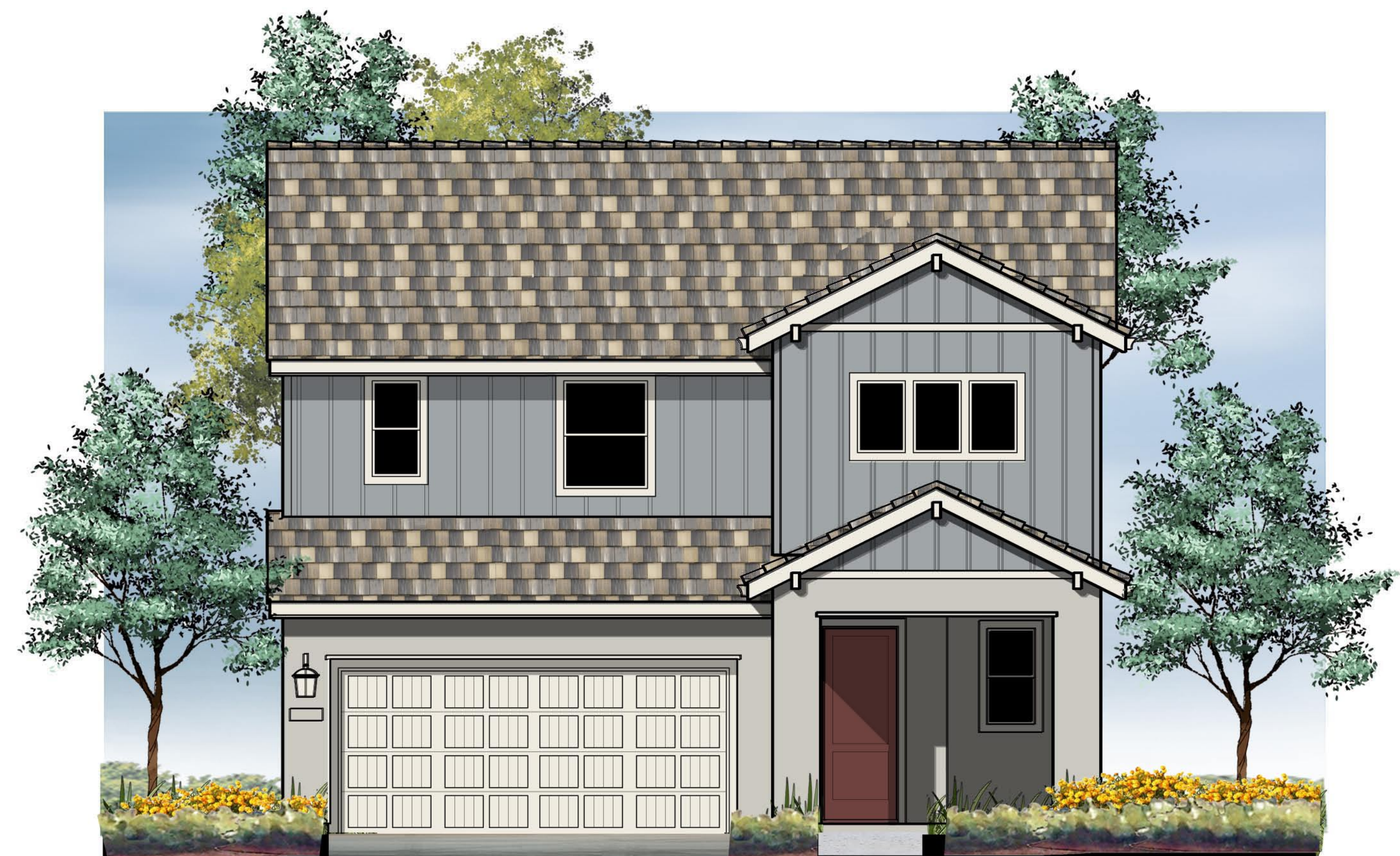
Left Elevation - 1C



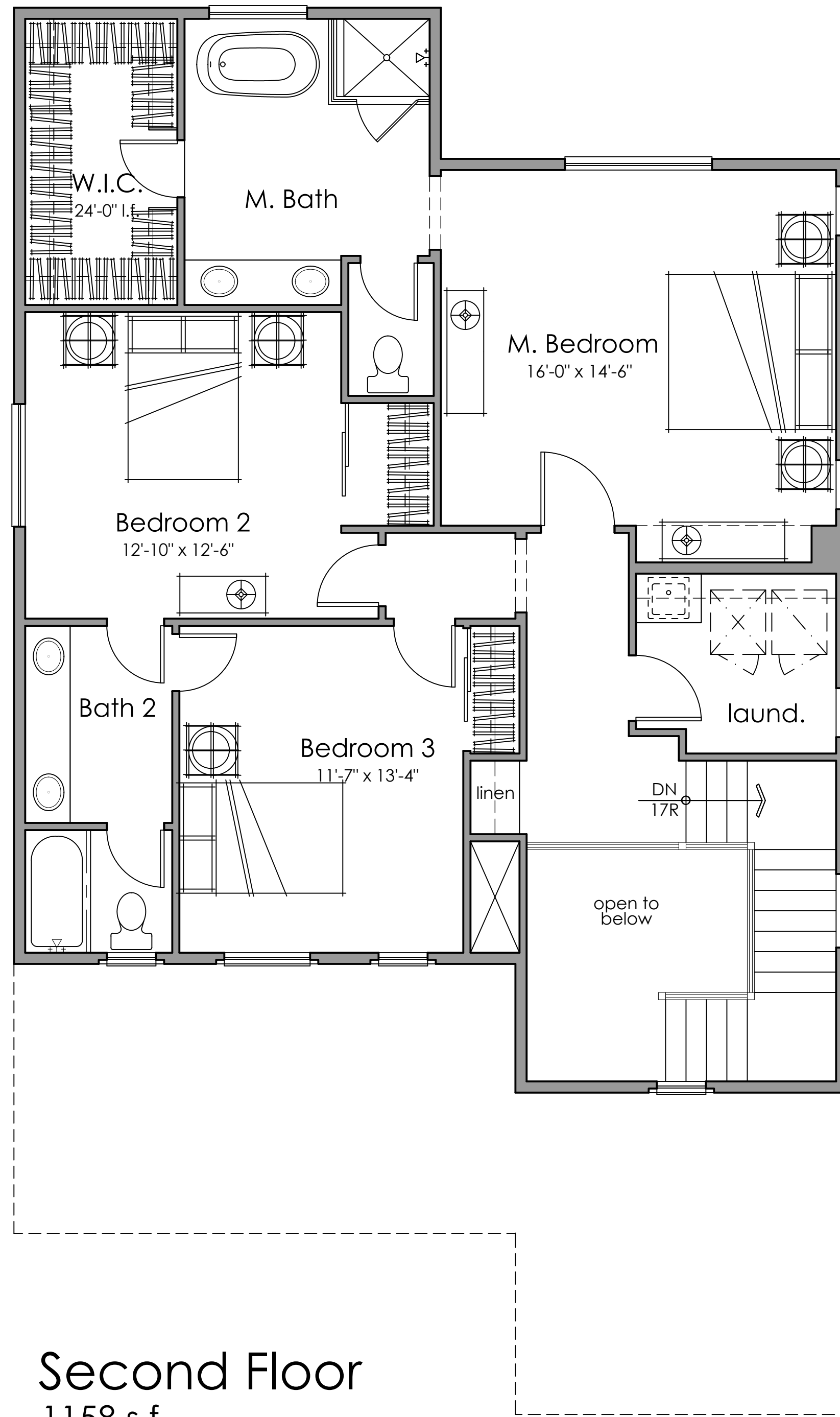
Front Elevation 2A



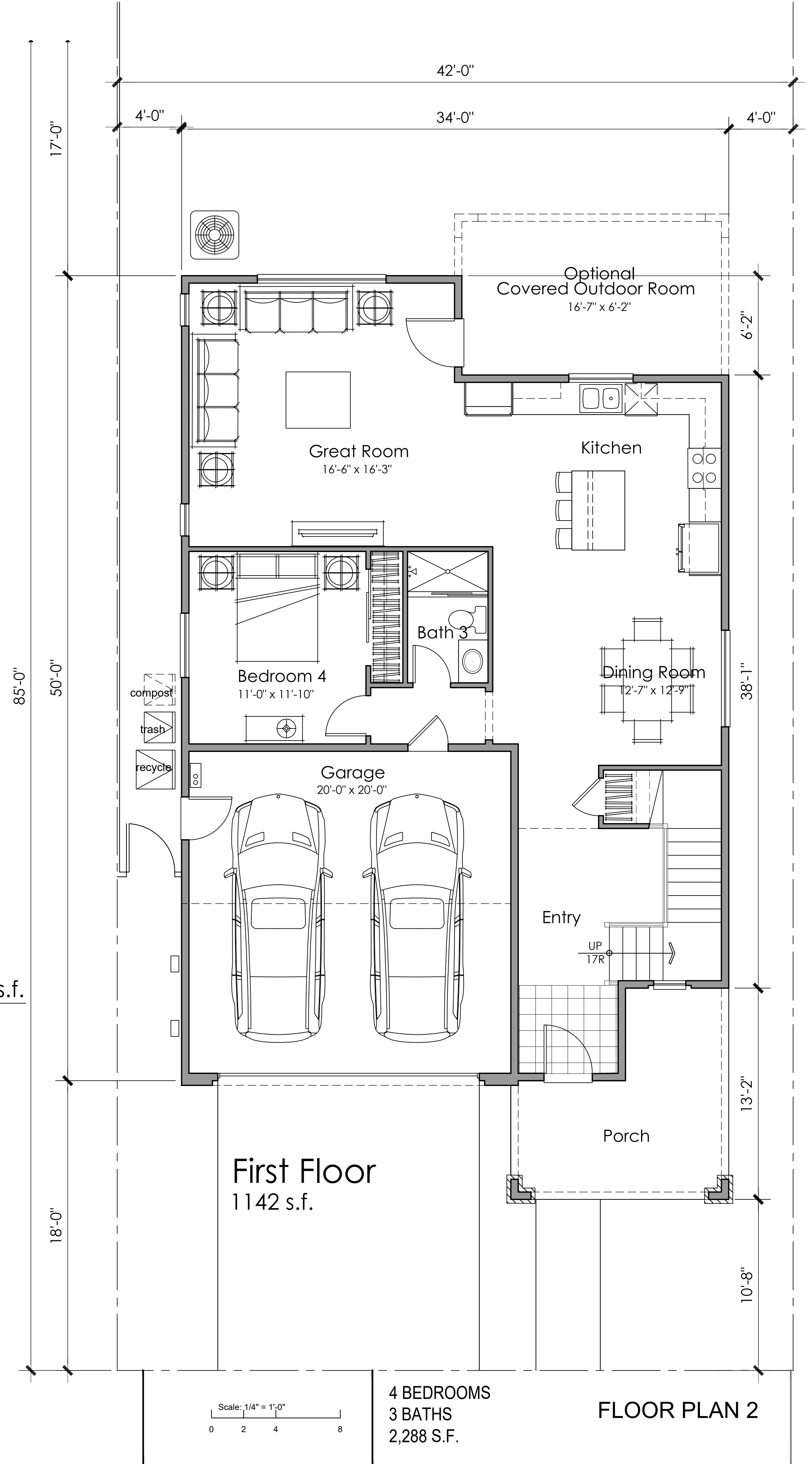
Front Elevation 2B



Front Elevation 2C



Lot Coverage - 42x85 = 3,570 s.f.
 1st Floor: 1,142 s.f.
 Garage: 419 s.f.
 Porch: 137 s.f.
 Total: 1,451 s.f.
 Lot Coverage: 48%



Scale: 1/4" = 1'-0"
 0 2 4 8

4 BEDROOMS
 3 BATHS
 2,288 S.F.

FLOOR PLAN 2



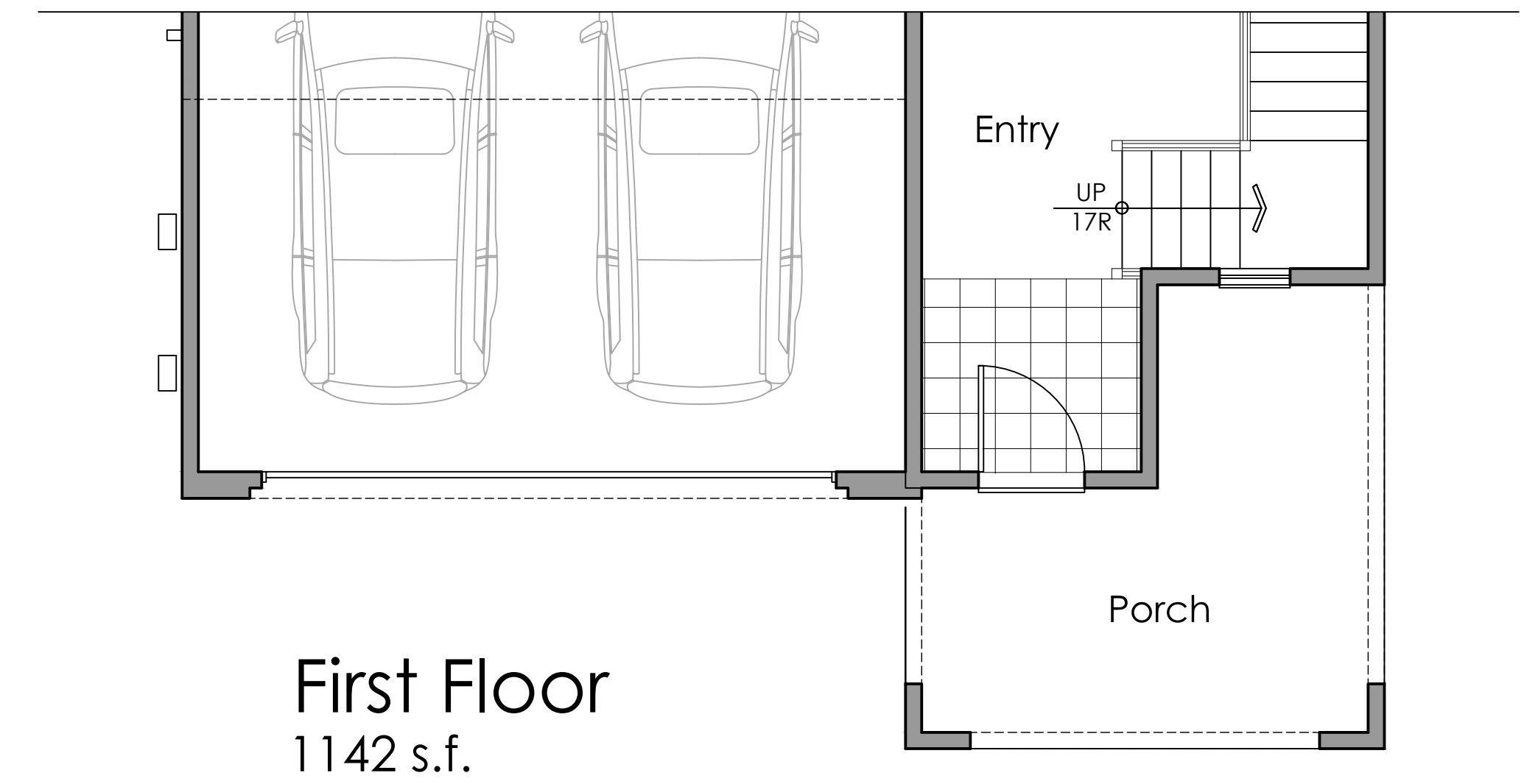
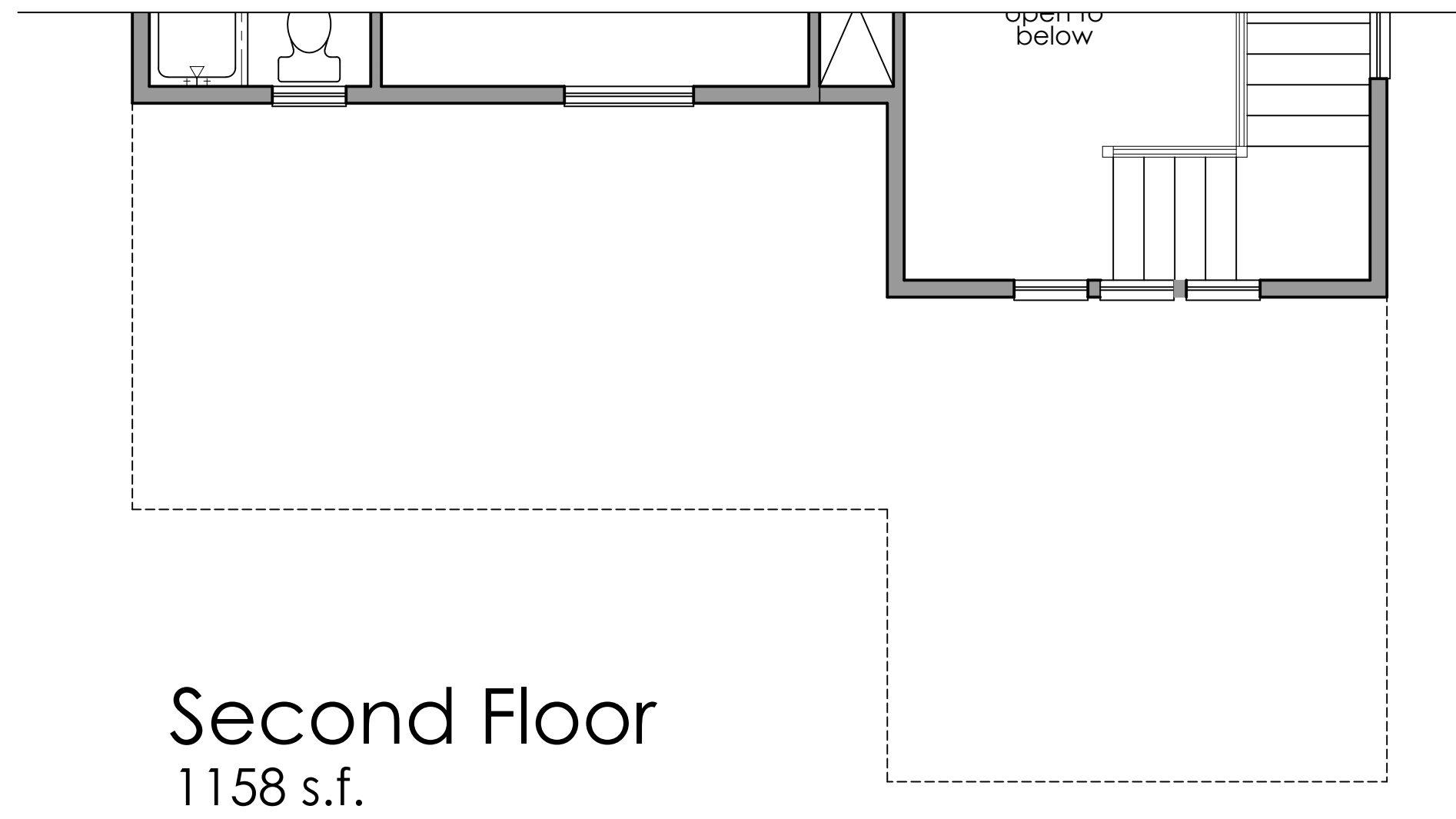
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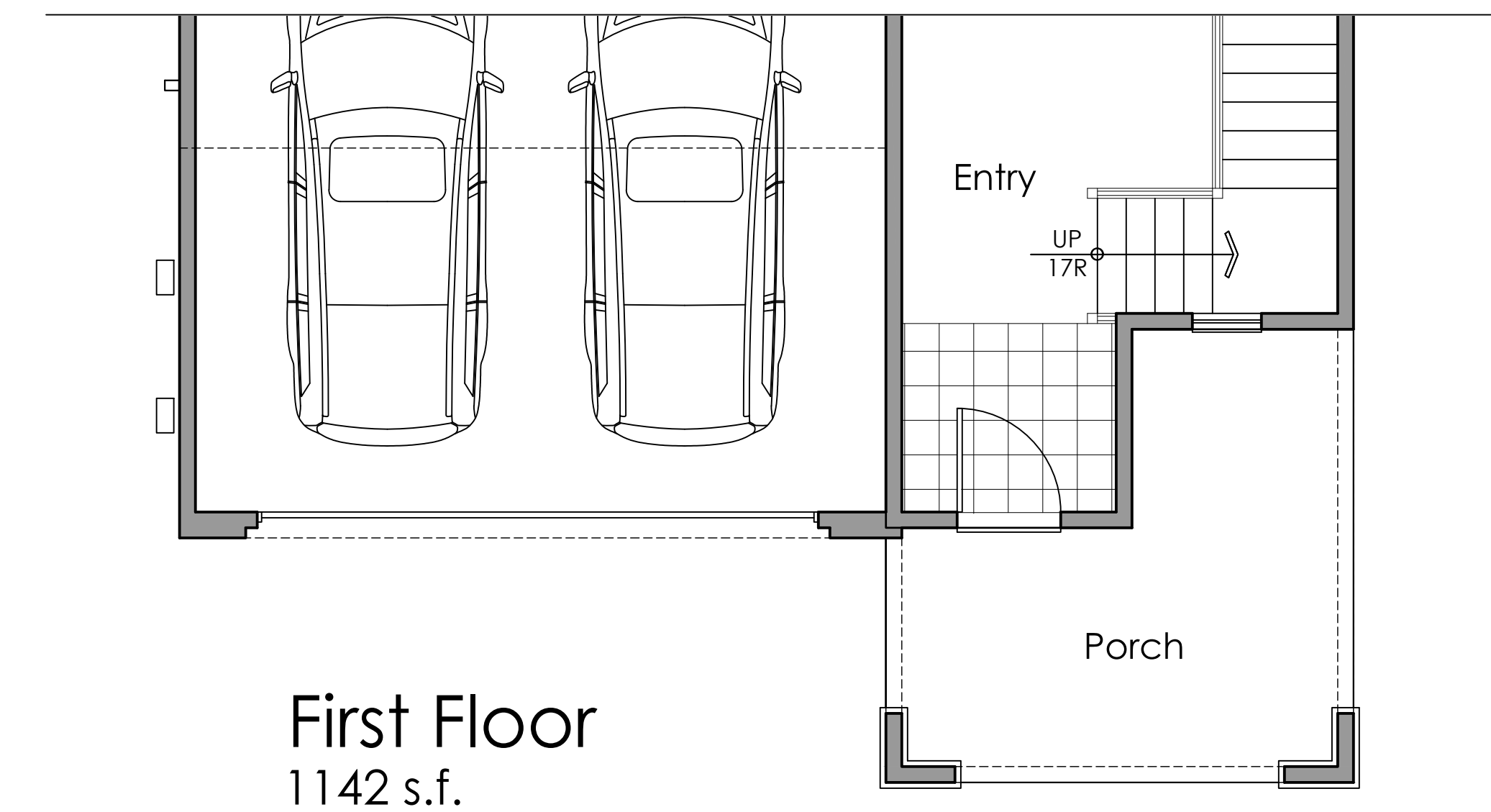
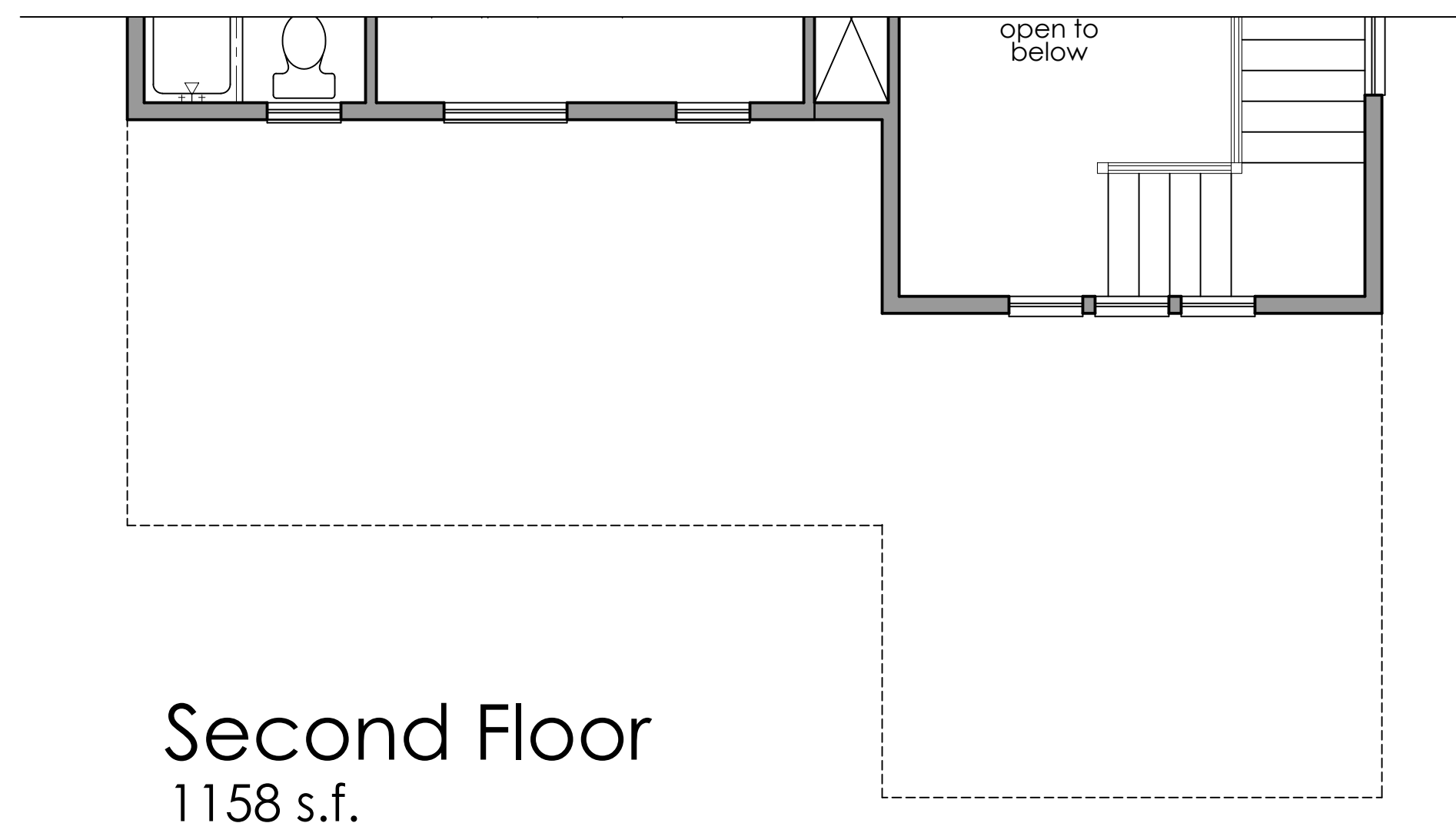
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A2.1



2C - Addenda



2B - Addenda



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Scale: 1/4" = 1'-0"
0 2 4 8

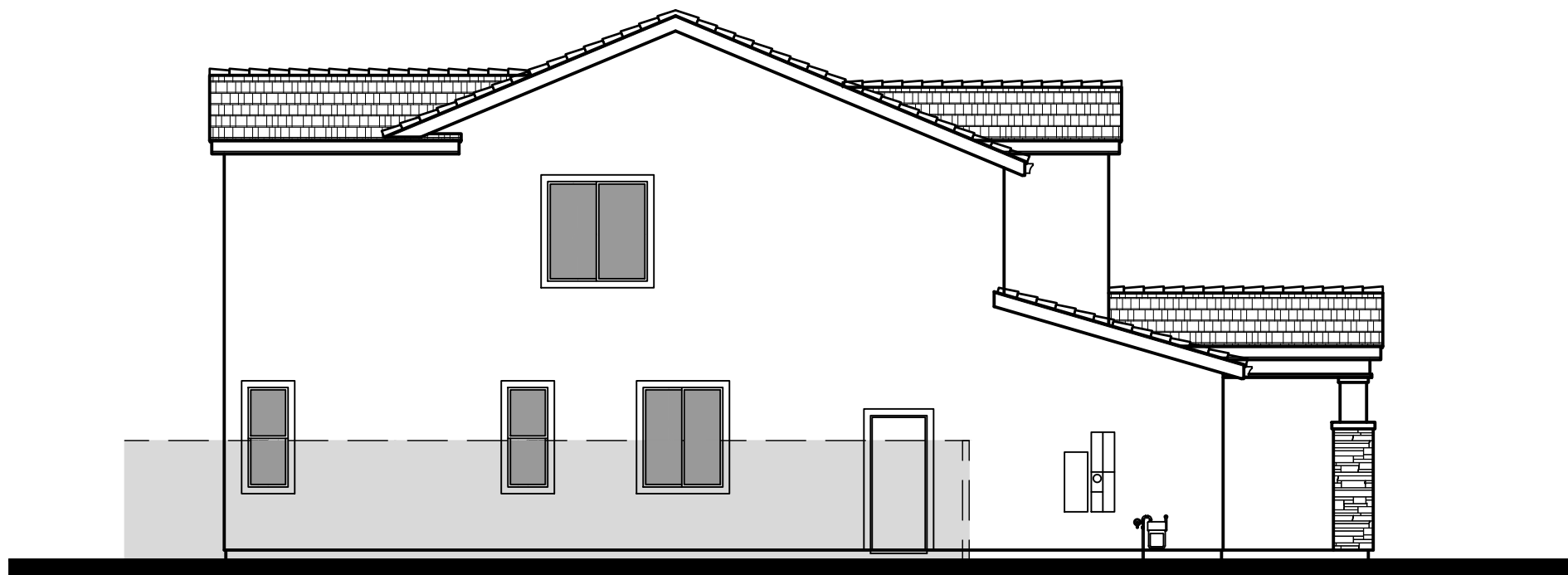
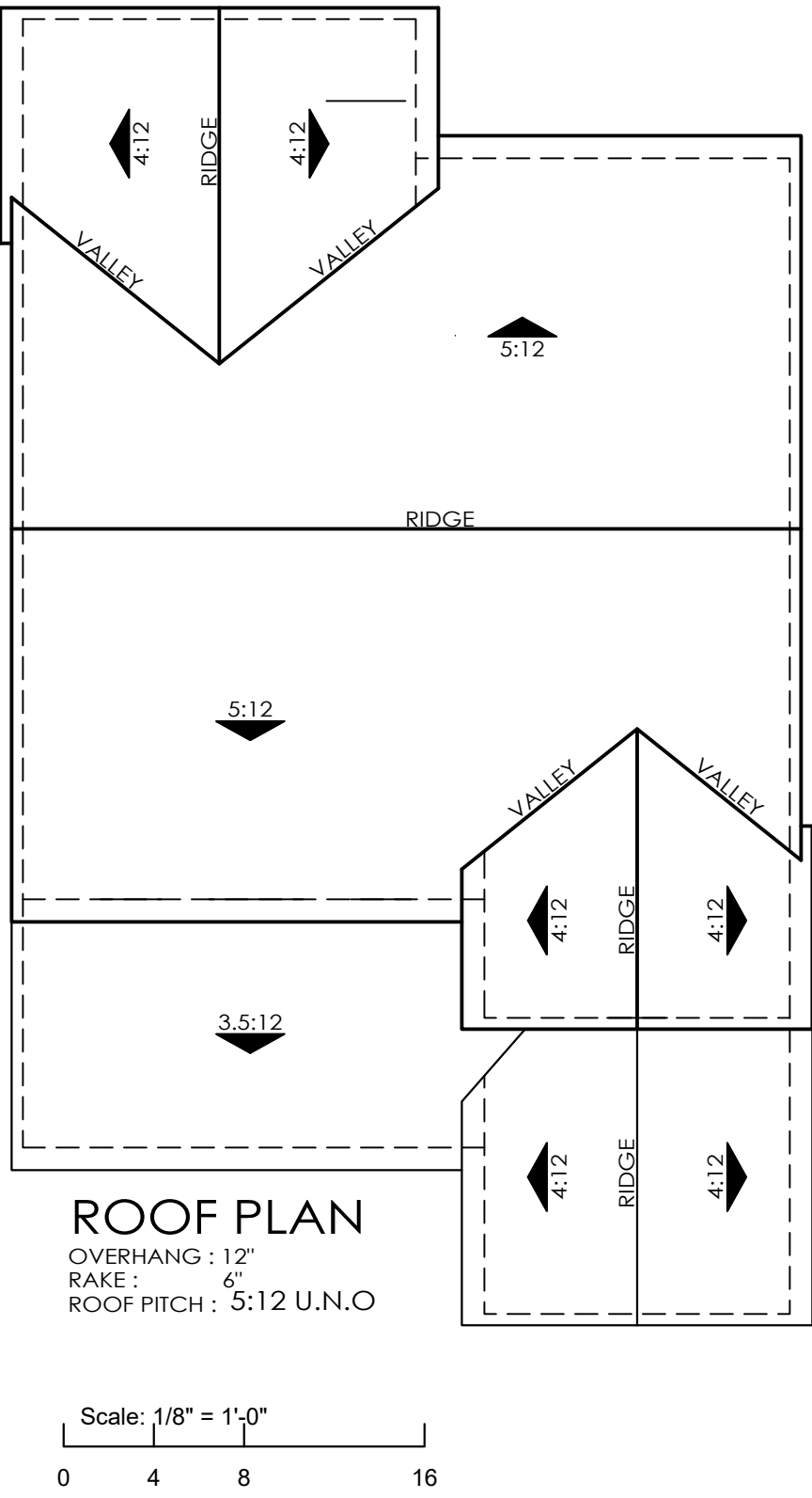
PLAN 2 ADDENDA

A2.1.1

2A
 Material Legend:
 Flat concrete Tile Roofing
 Stucco Finish
 Stone Veneer

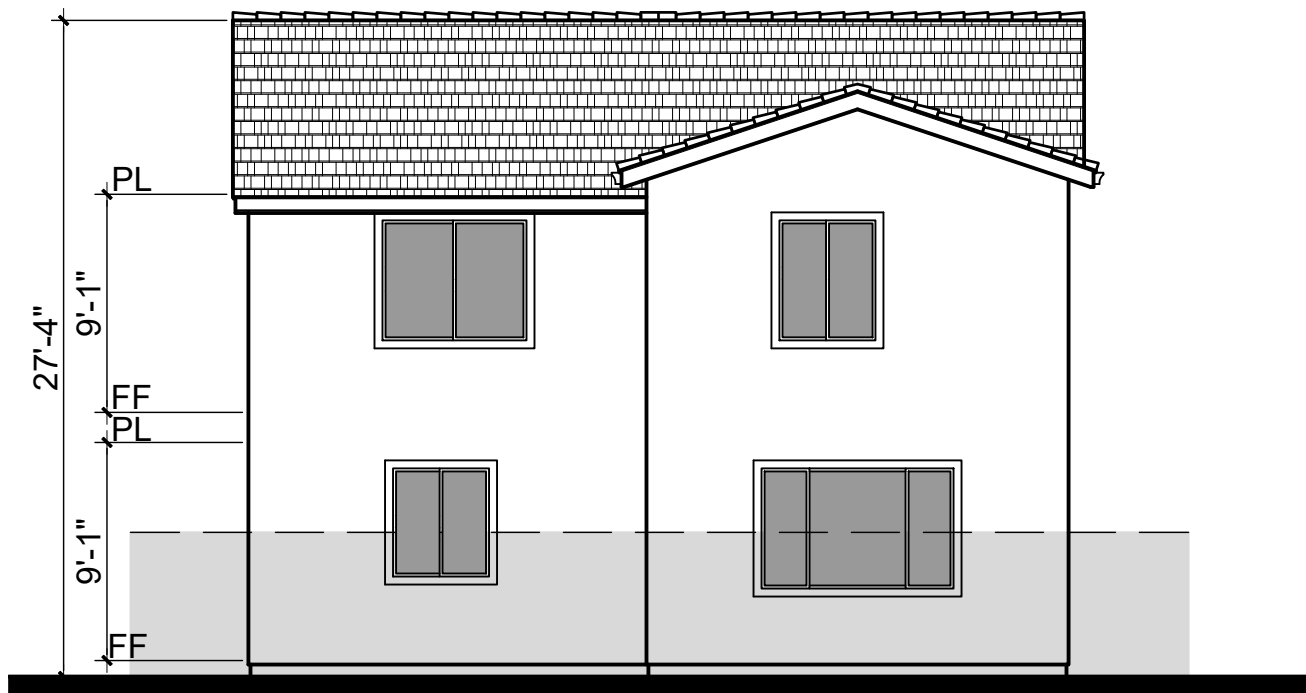


Front Elevation 2A



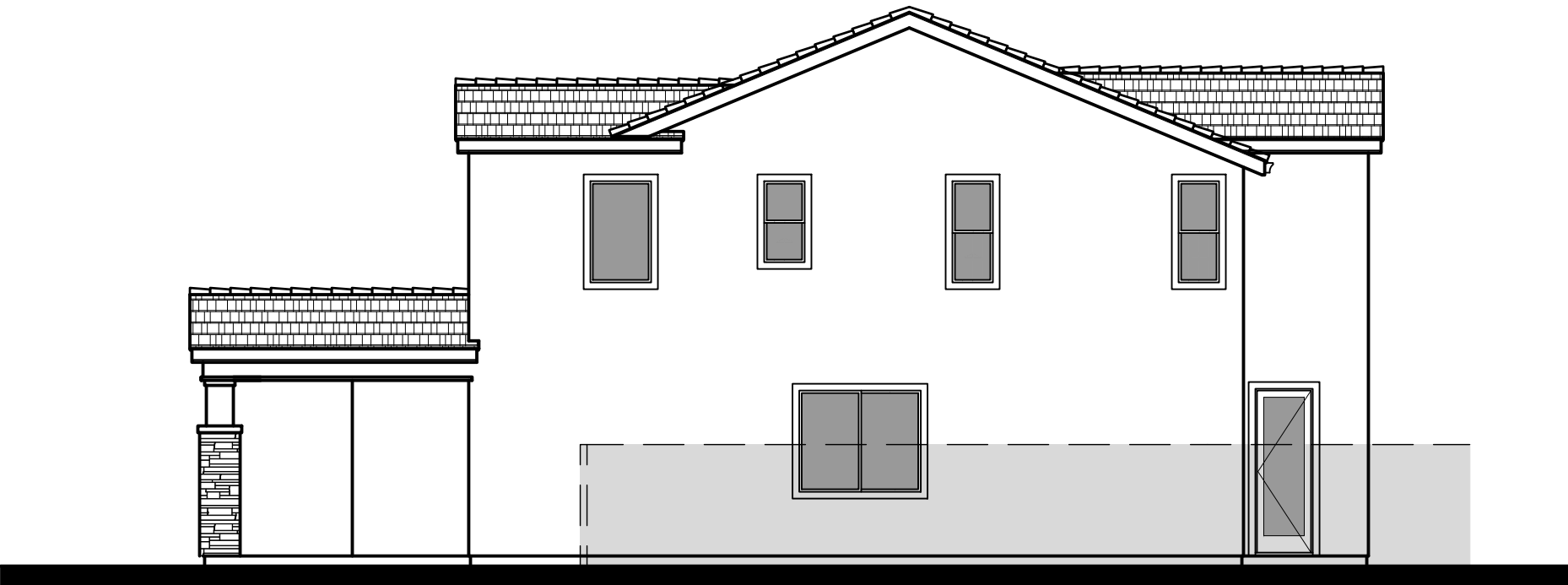
Left Elevation

Scale: 1/8" = 1'-0"



Rear Elevation

Scale: 1/8" = 1'-0"



Right Elevation

Scale: 1/8" = 1'-0"



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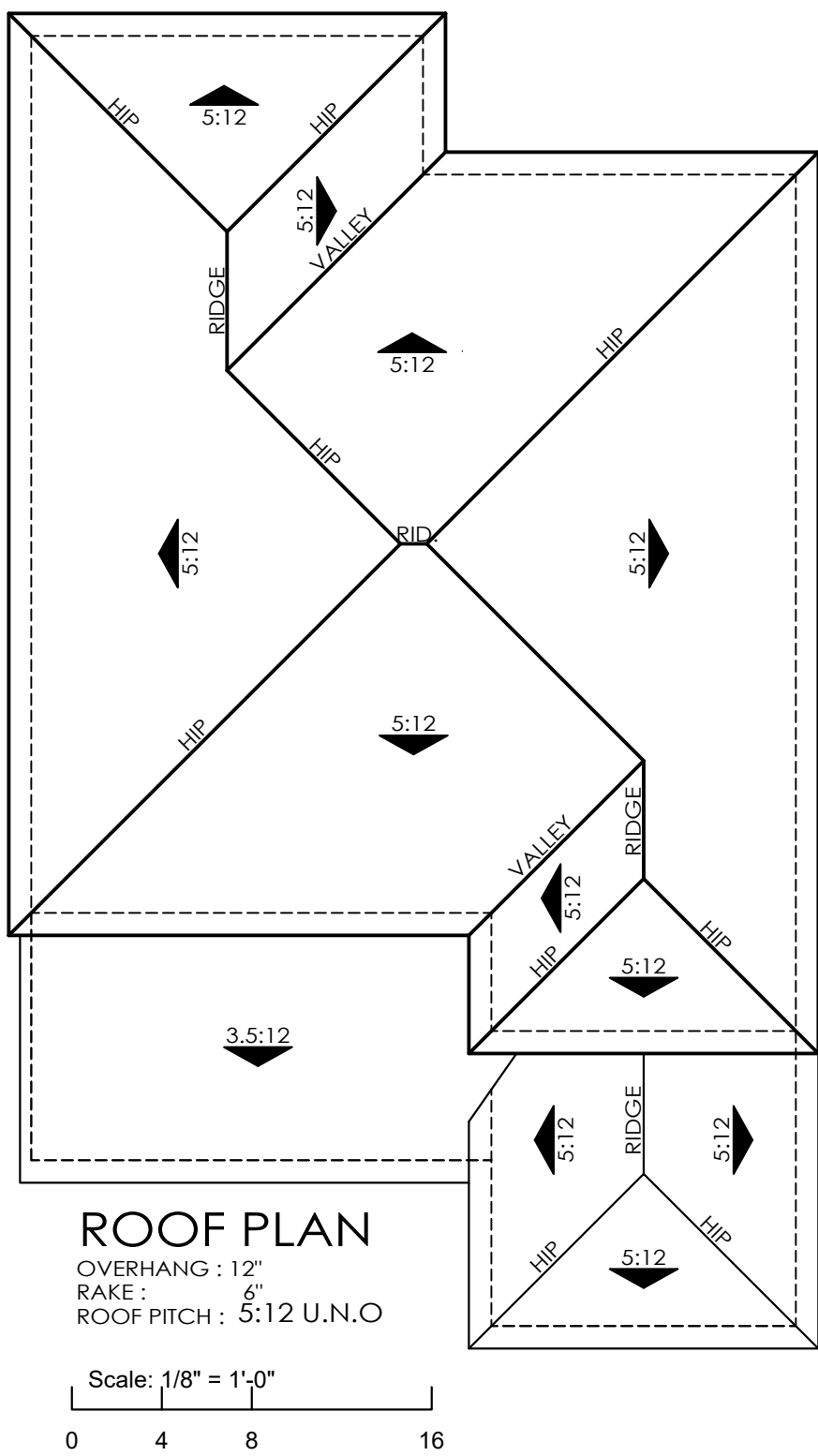
Scale: 1/4" = 1'-0"

EXTERIOR ELEVATIONS - PLAN 2A

2B
 Material Legend:
 Flat concrete Tile Roofing
 Stucco Finish
 Cementitious Lap Siding

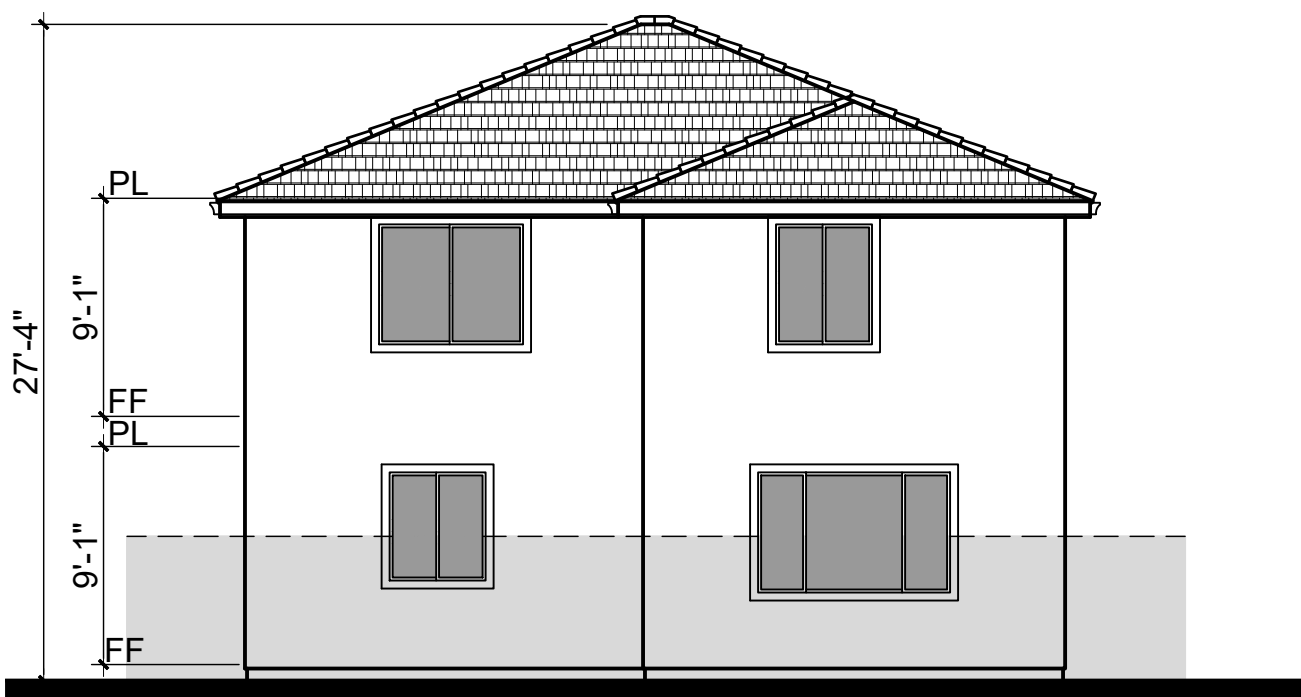


Front Elevation 2B



Left Elevation

Scale: 1/8" = 1'-0"
 0 4 8 16



Rear Elevation

Scale: 1/8" = 1'-0"
 0 4 8 16



Right Elevation

Scale: 1/8" = 1'-0"
 0 4 8 16



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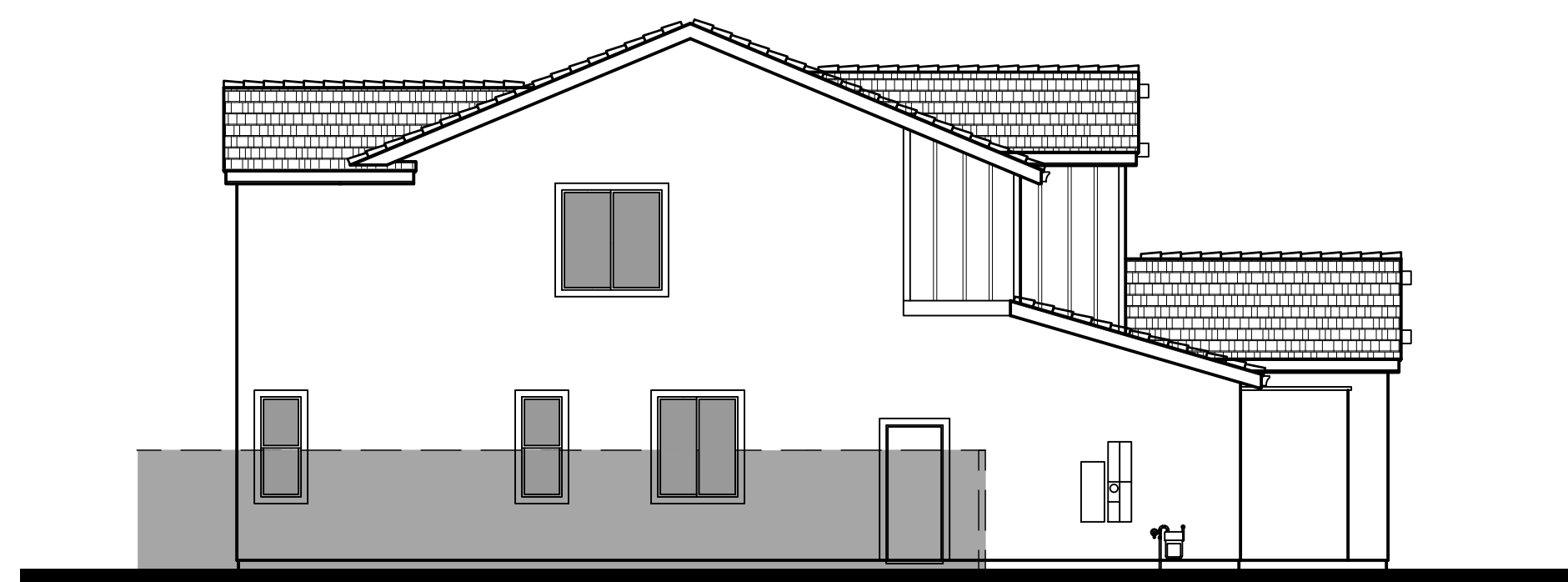
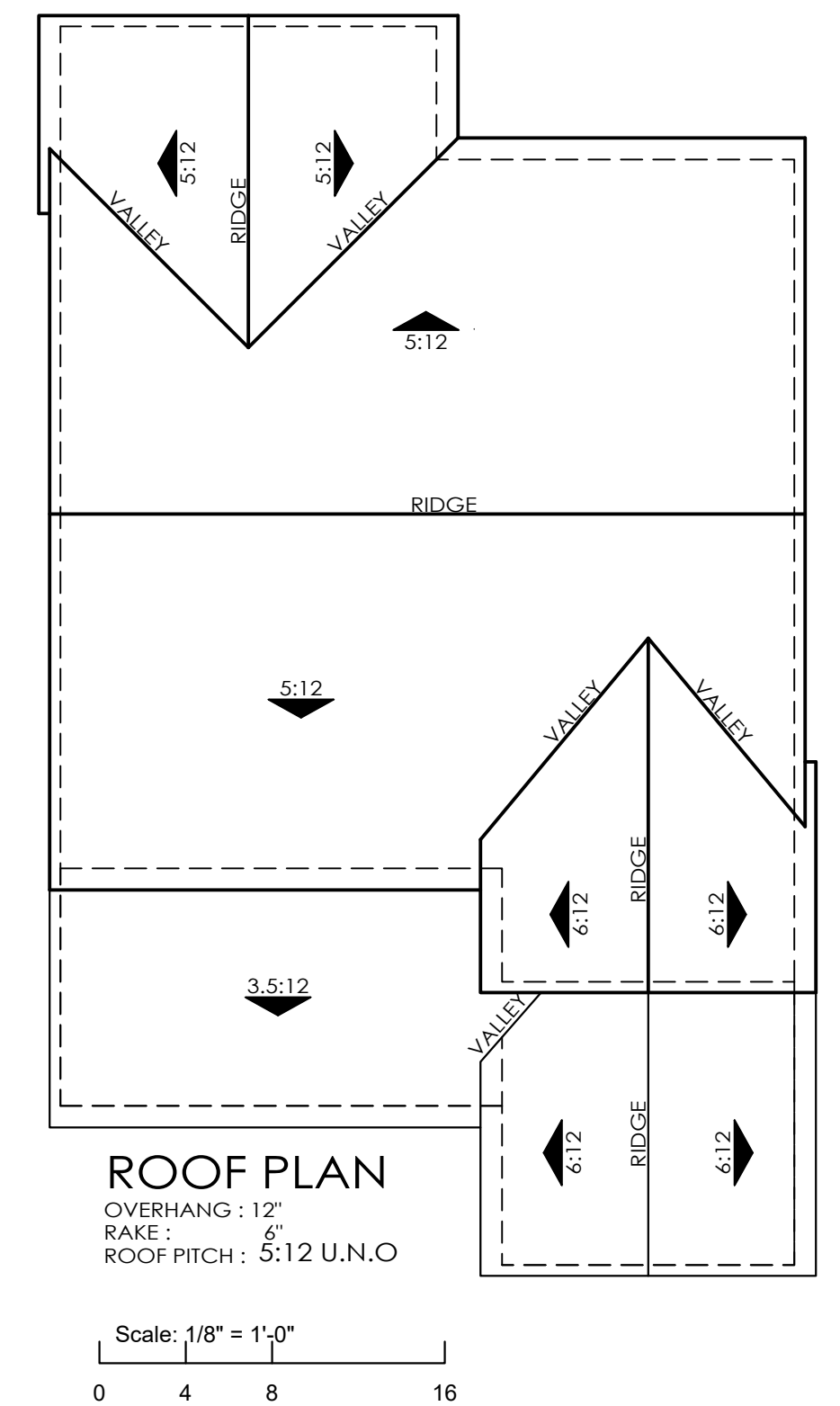
Scale: 1/4" = 1'-0"
 0 2 4 8

EXTERIOR ELEVATIONS - PLAN 2B

2C
 Material Legend:
 Flat concrete Tile Roofing
 Stucco Finish
 Cementitious Board & Batt Siding

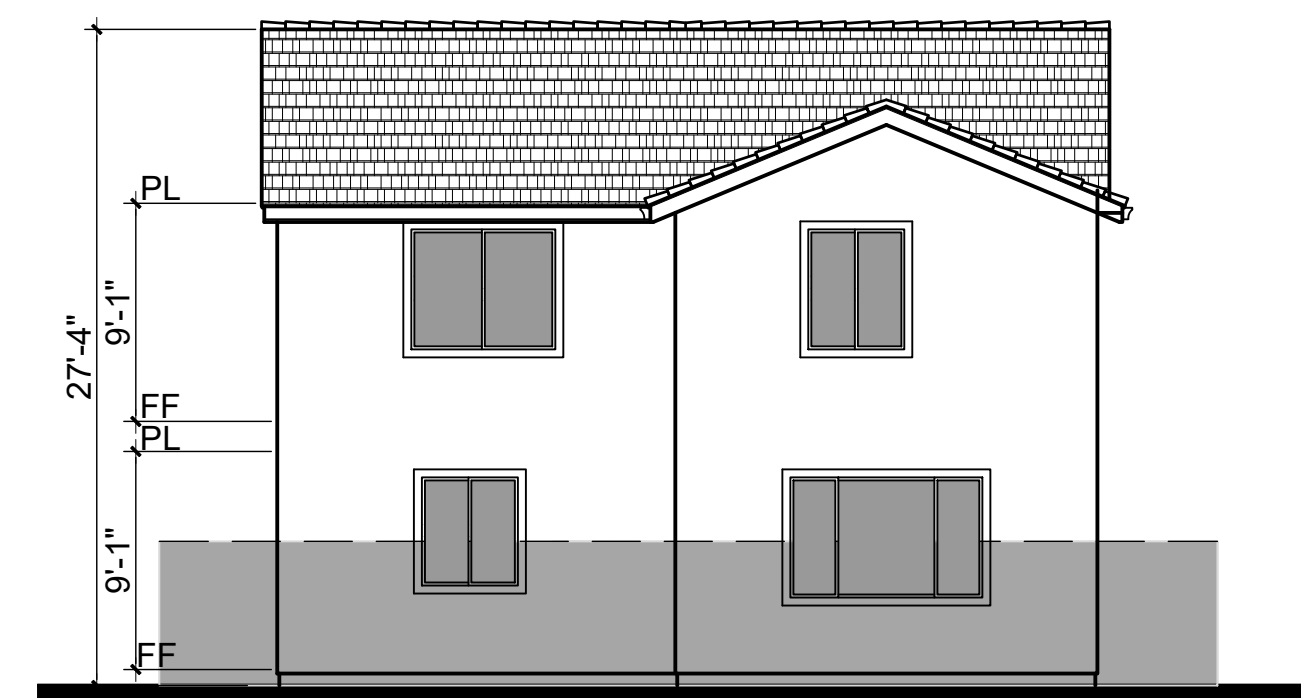


Front Elevation 2C



Left Elevation

Scale: 1/8" = 1'-0"



Rear Elevation

Scale: 1/8" = 1'-0"



Right Elevation

Scale: 1/8" = 1'-0"



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Scale: 1/4" = 1'-0"

EXTERIOR ELEVATIONS - PLAN 2C

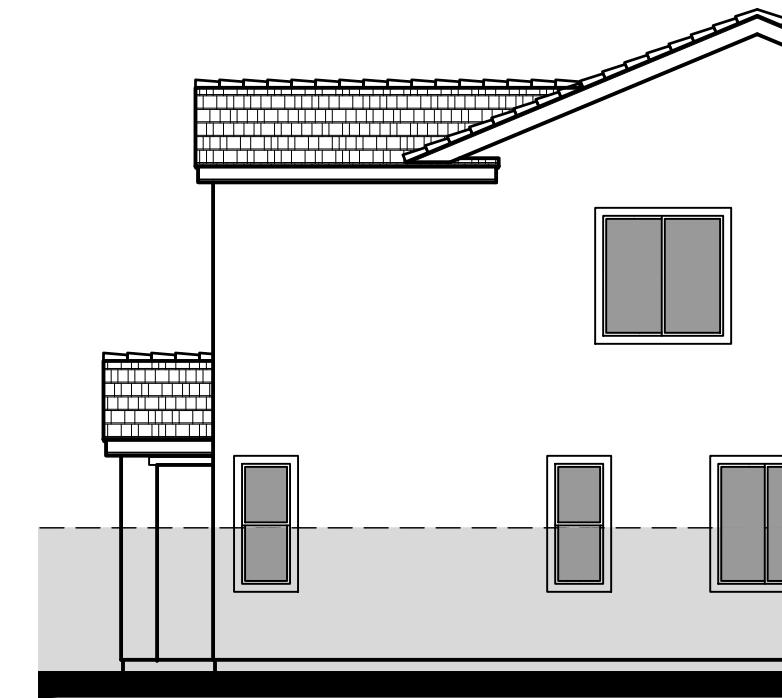
A2.4



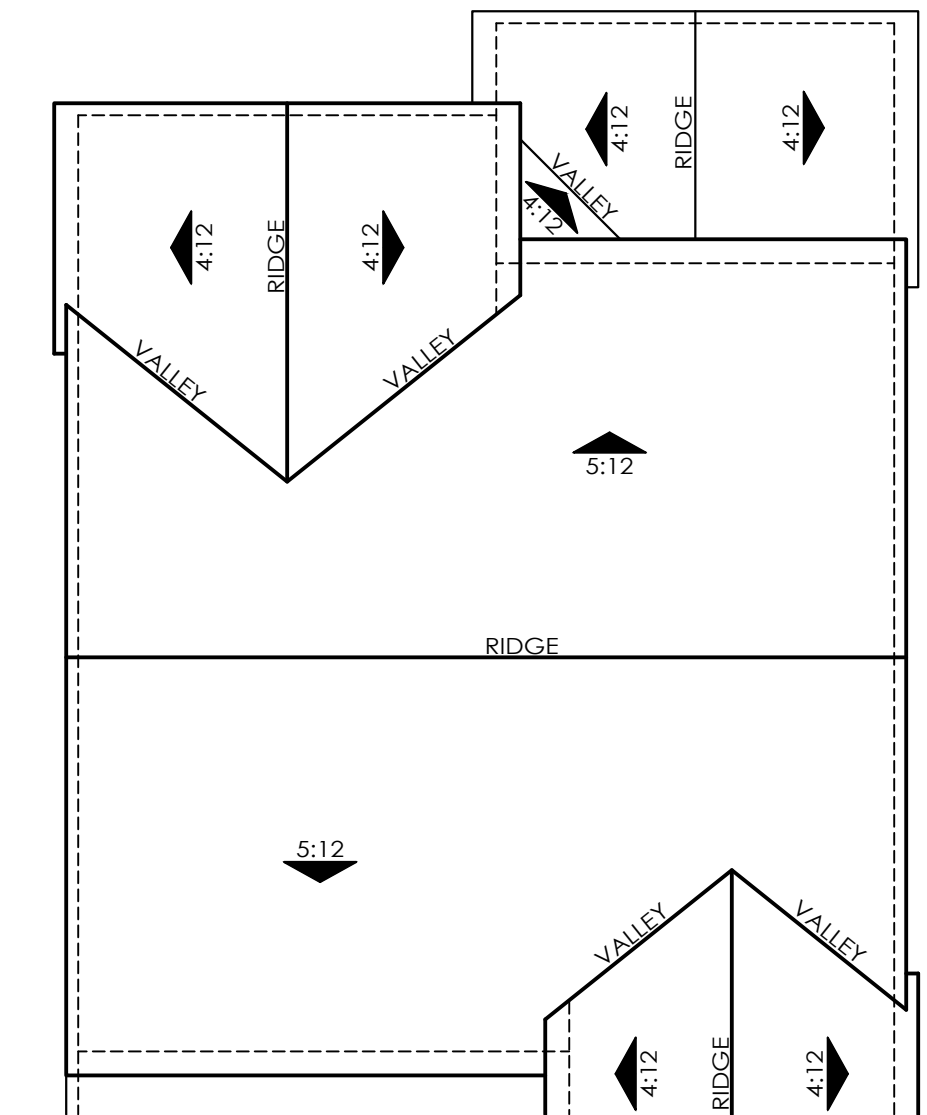
Right Elevation - 2A
Opt. Covered Outdoor Room



Rear Elevation - 2A
Opt. Covered Outdoor Room



Left Elevation - 2A
Opt. Covered Outdoor Room



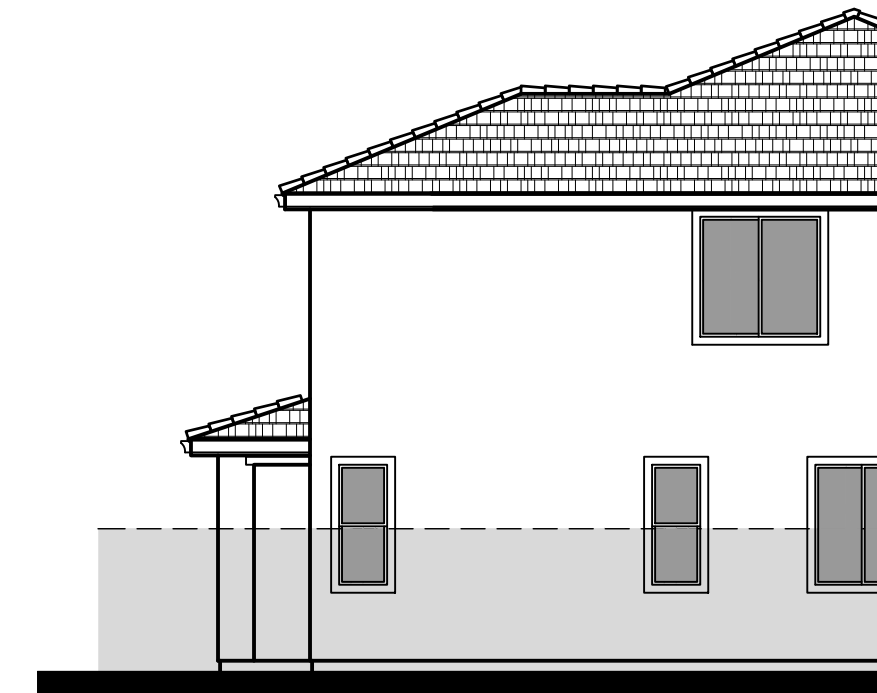
Roof Plan - 2A



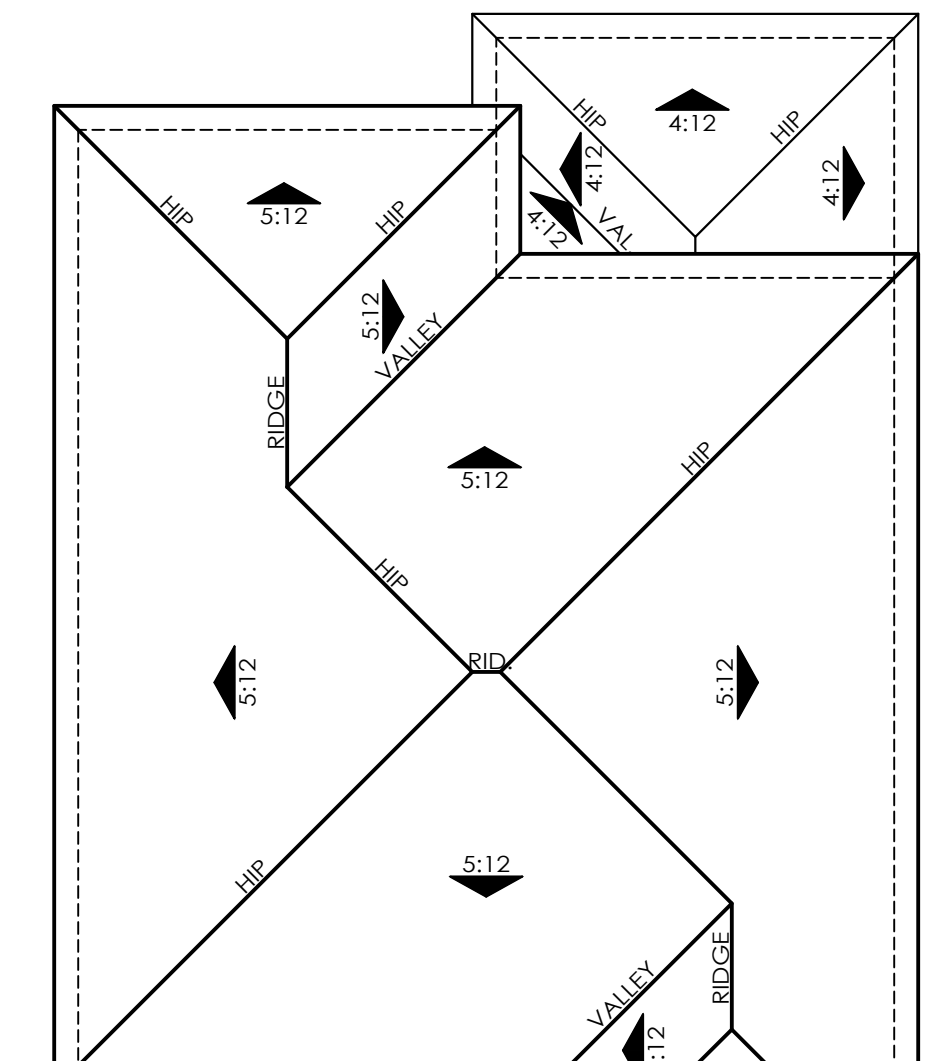
Right Elevation - 2B
Opt. Covered Outdoor Room



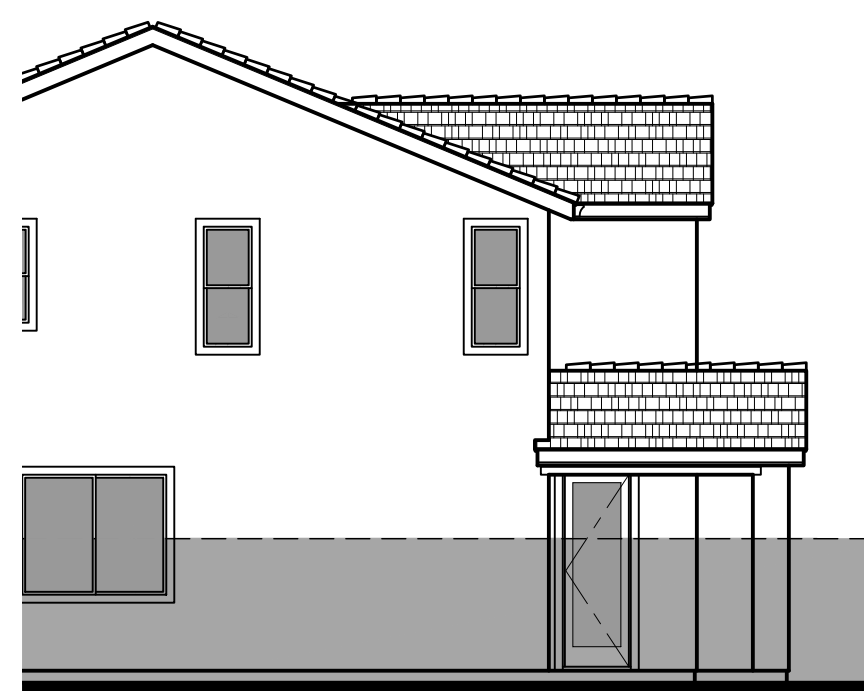
Rear Elevation - 2B
Opt. Covered Outdoor Room



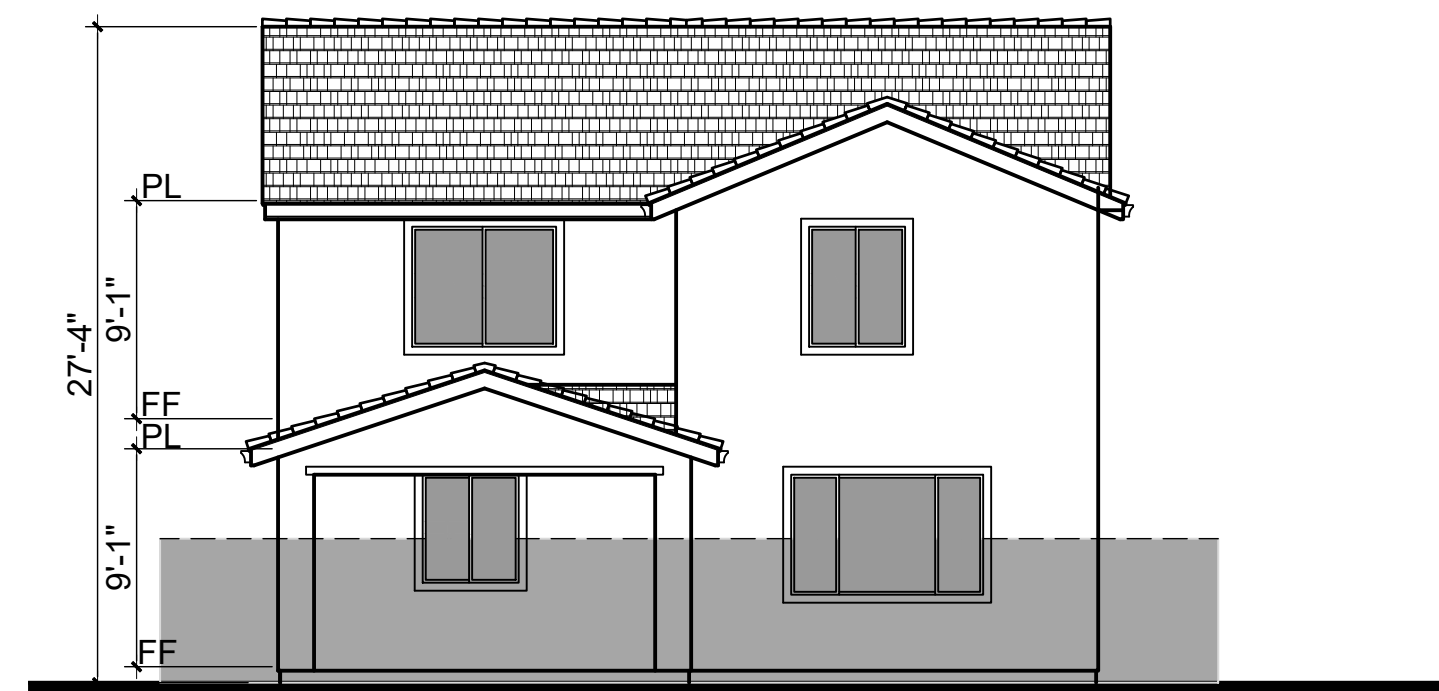
Left Elevation - 2B
Opt. Covered Outdoor Room



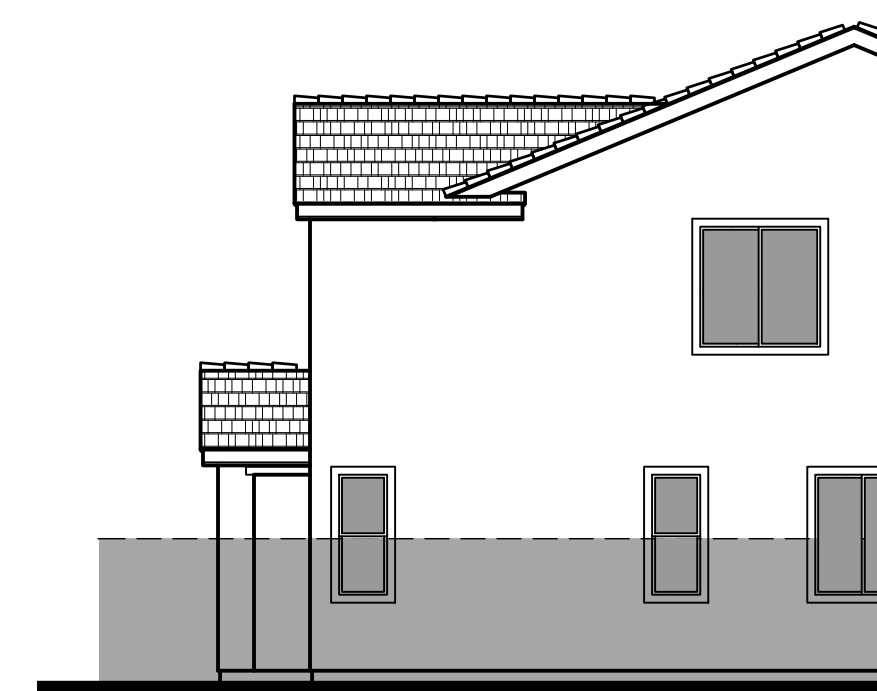
Roof Plan - 2B



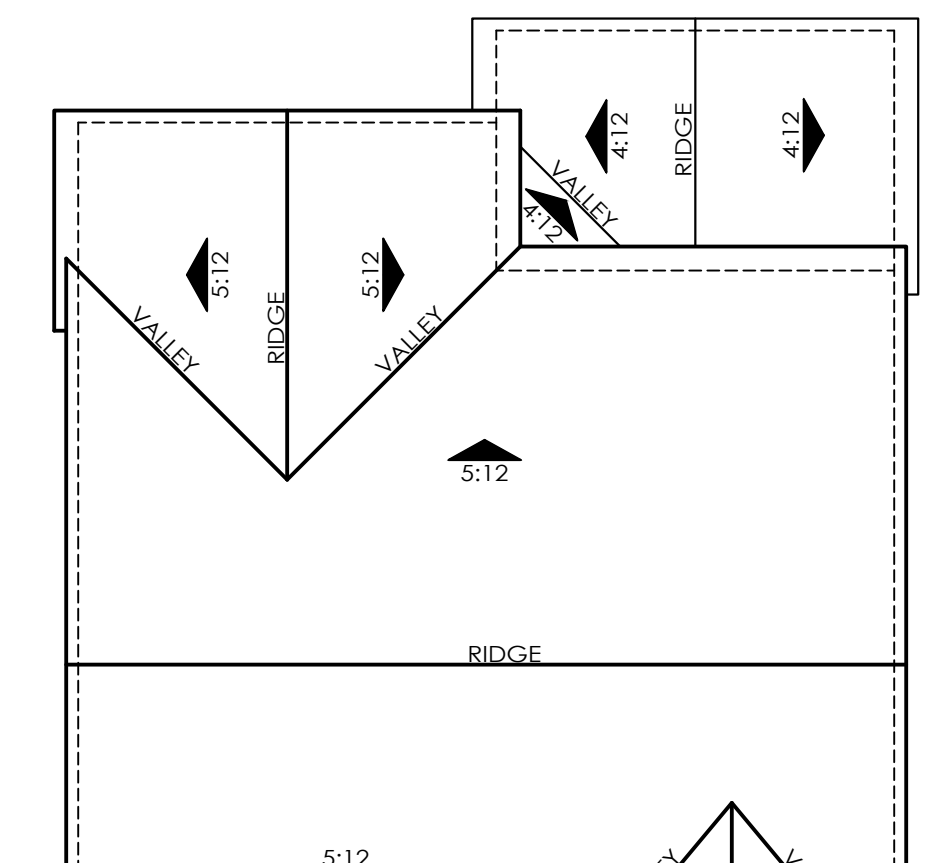
Right Elevation - 2C
Opt. Covered Outdoor Room



Rear Elevation - 2C
Opt. Covered Outdoor Room



Left Elevation - 2C
Opt. Covered Outdoor Room



Left Elevation - 2C



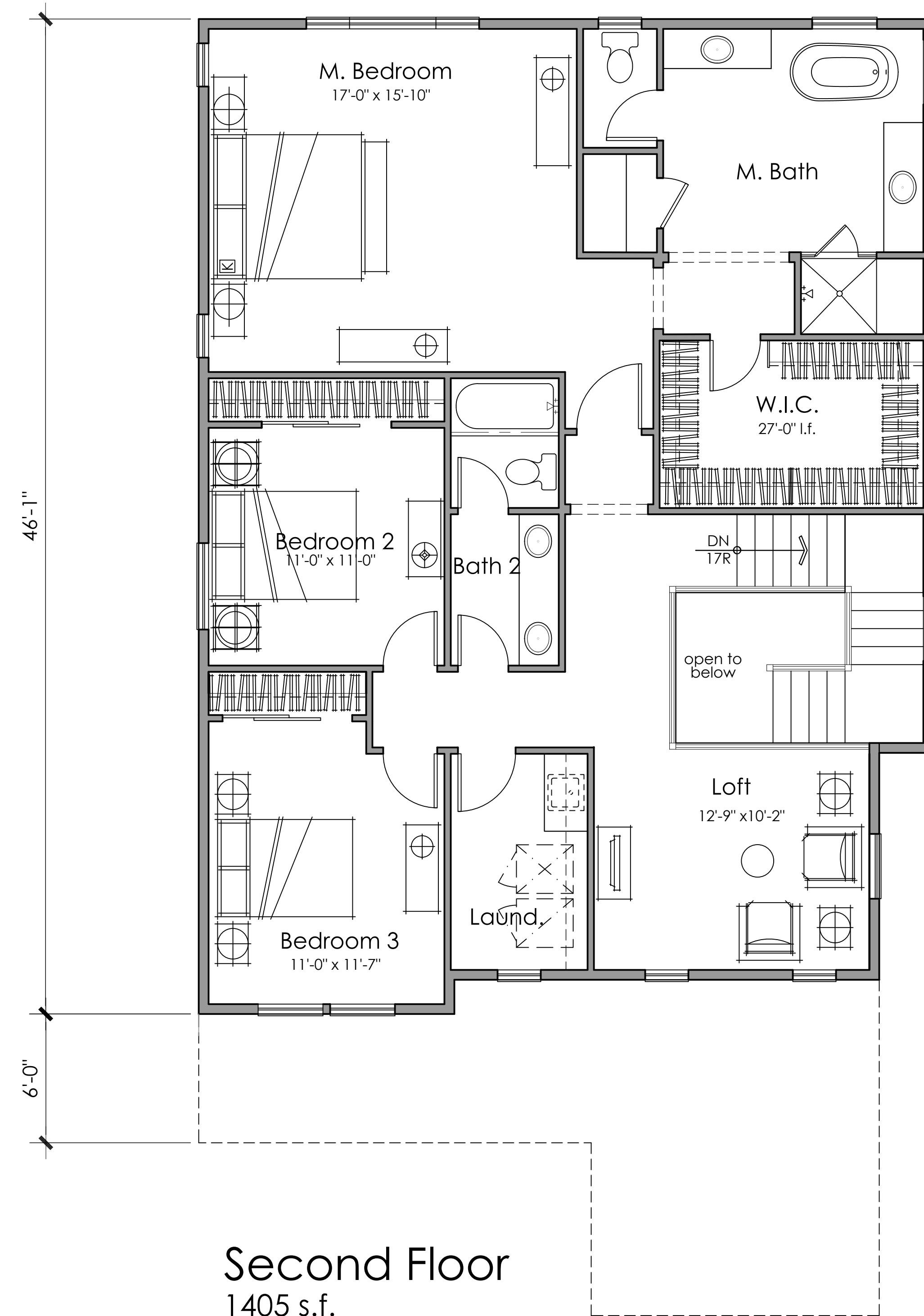
Front Elevation 3A



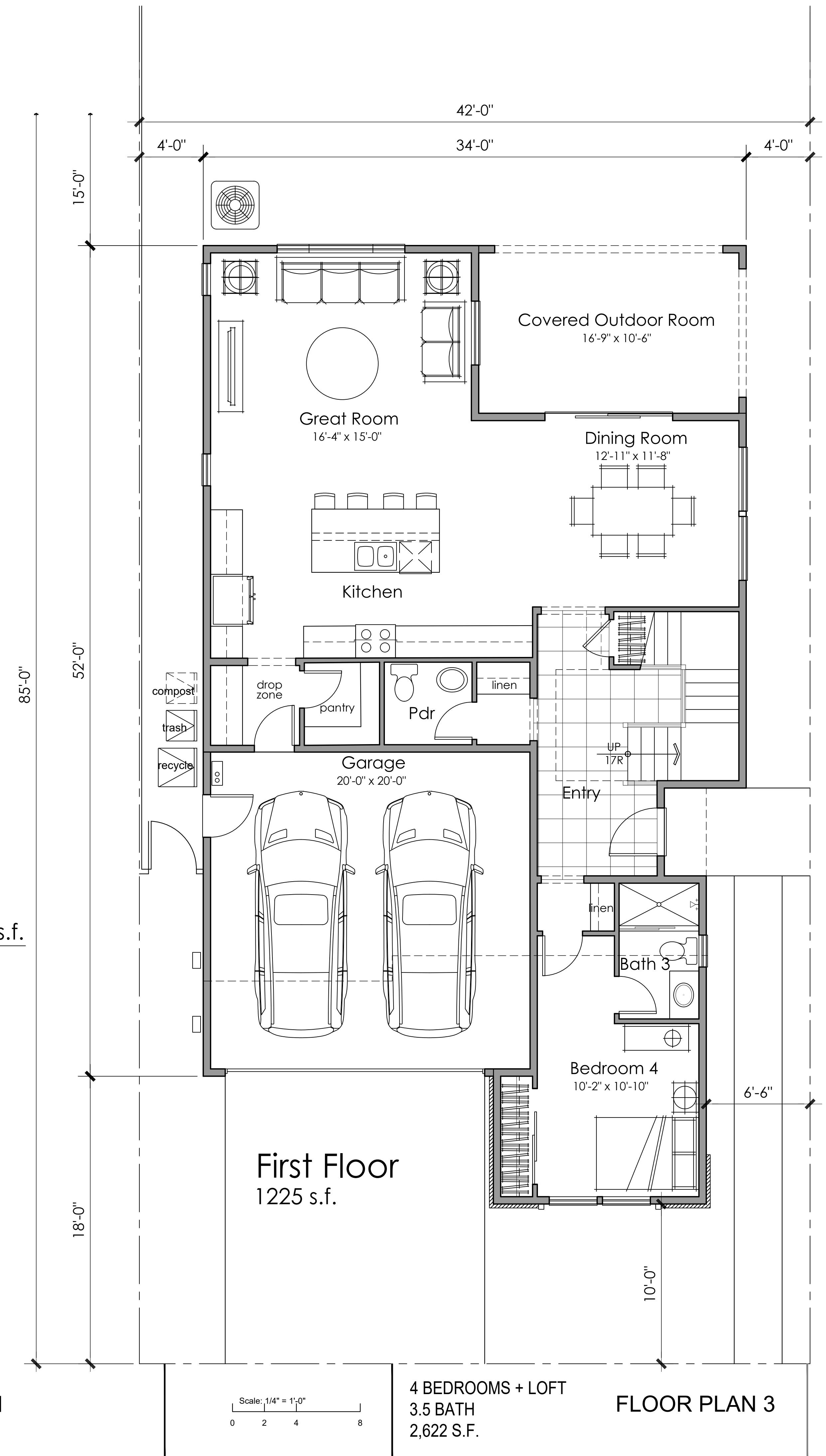
Front Elevation 3B



Front Elevation 3C



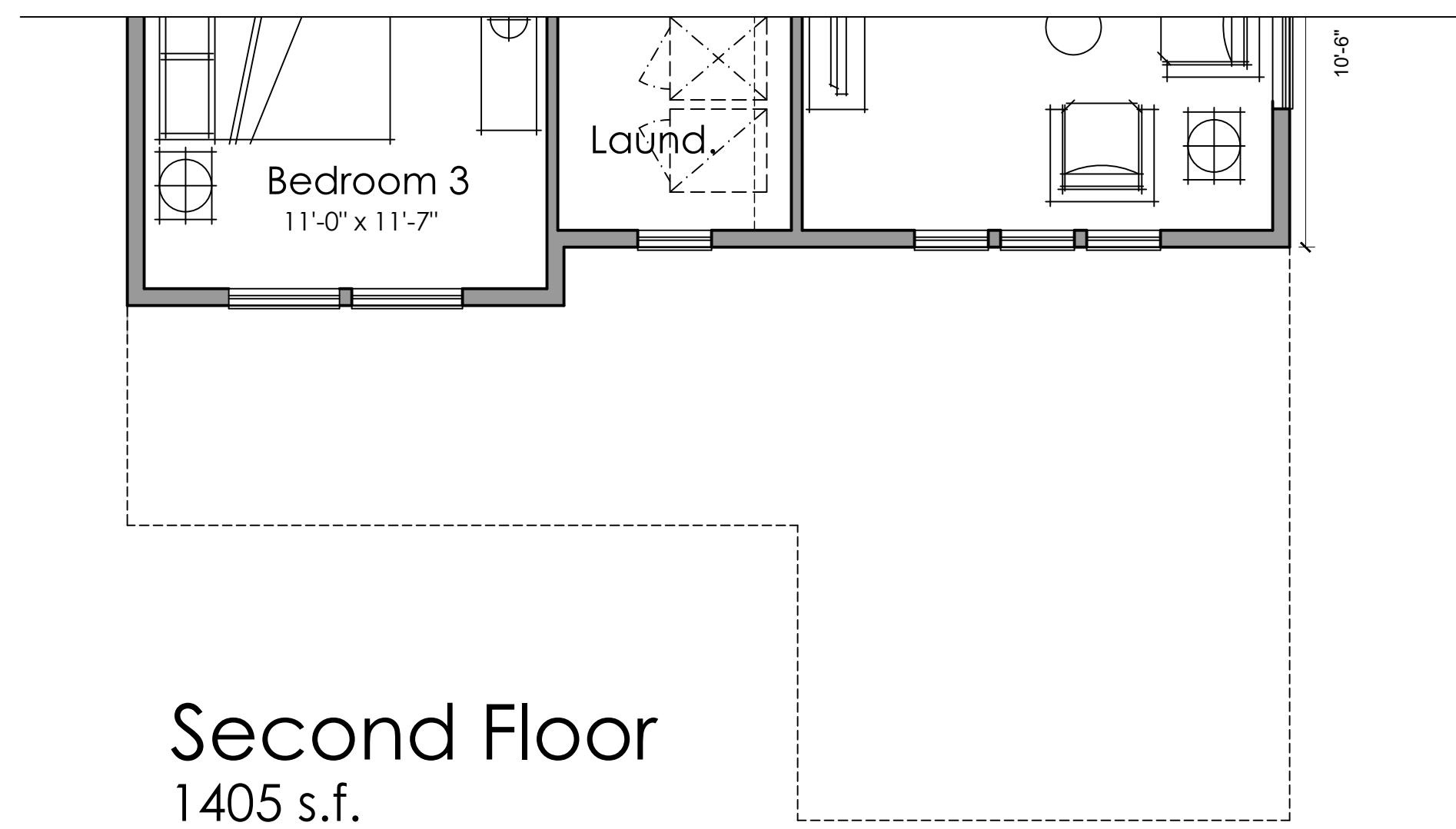
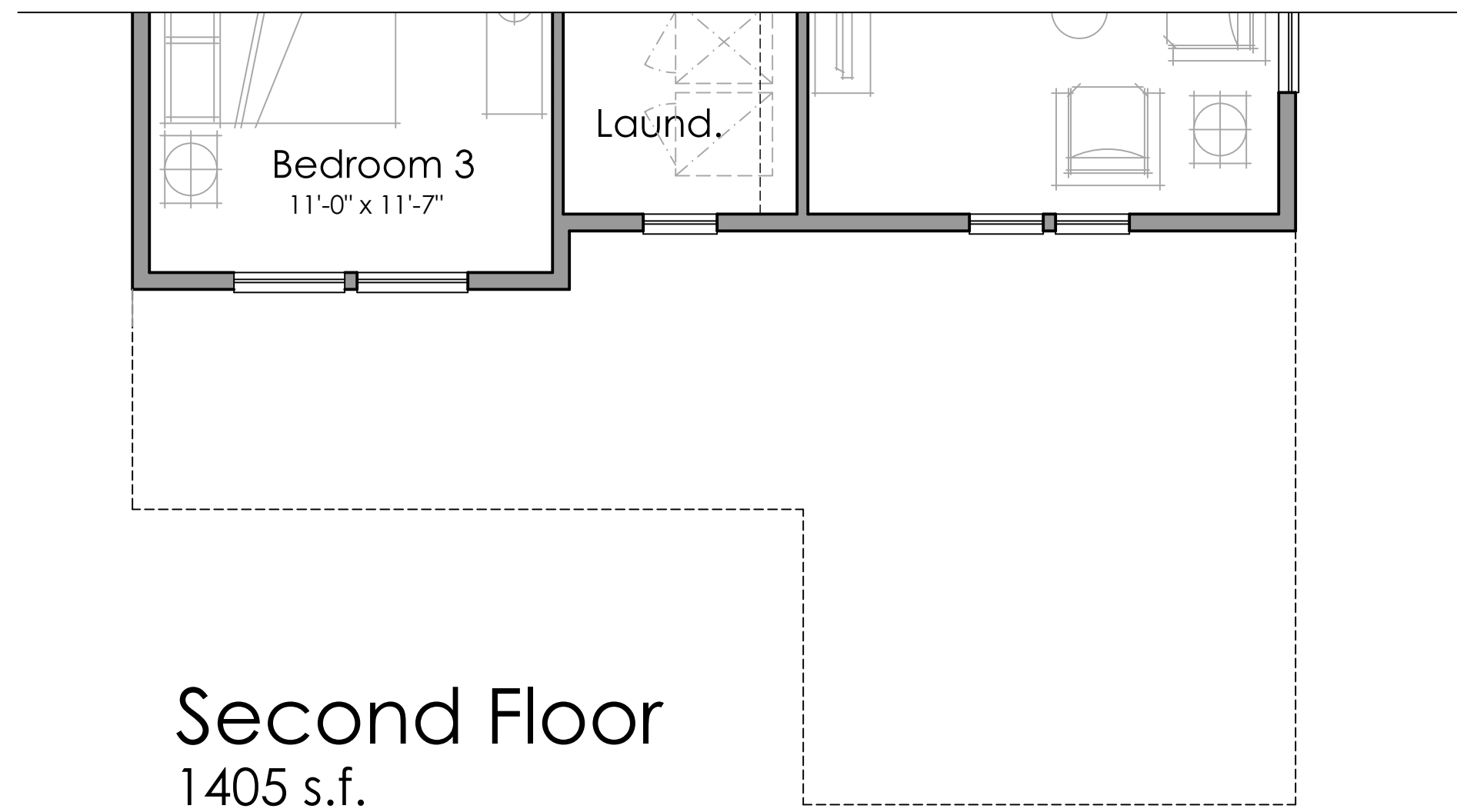
Lot Coverage - 42x85 = 3,570 s.f.
 1st Floor: 1,225 s.f.
 Garage: 415 s.f.
 Porch: 14 s.f.
 Total: 1,654 s.f.
 Lot Coverage: 46%



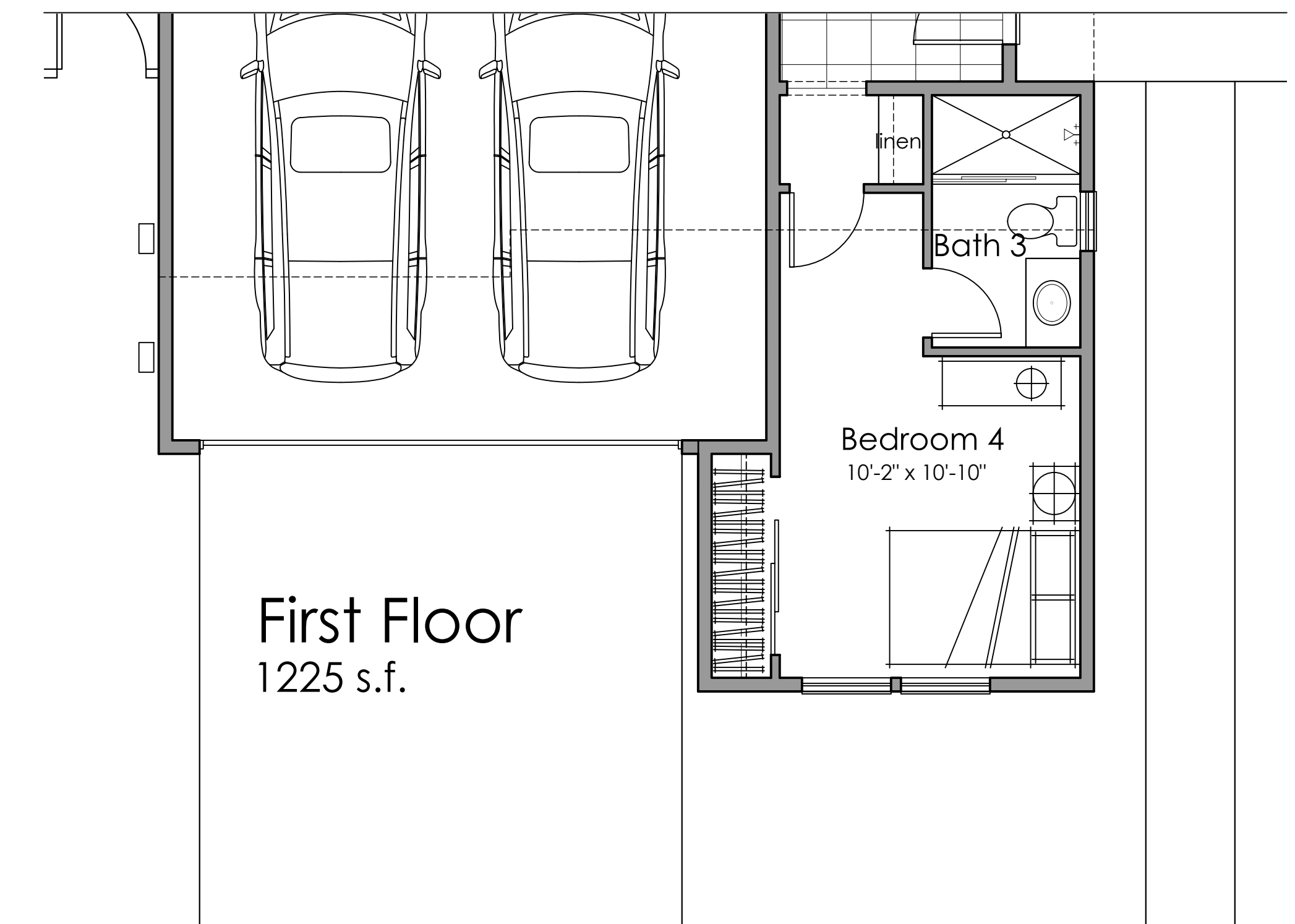
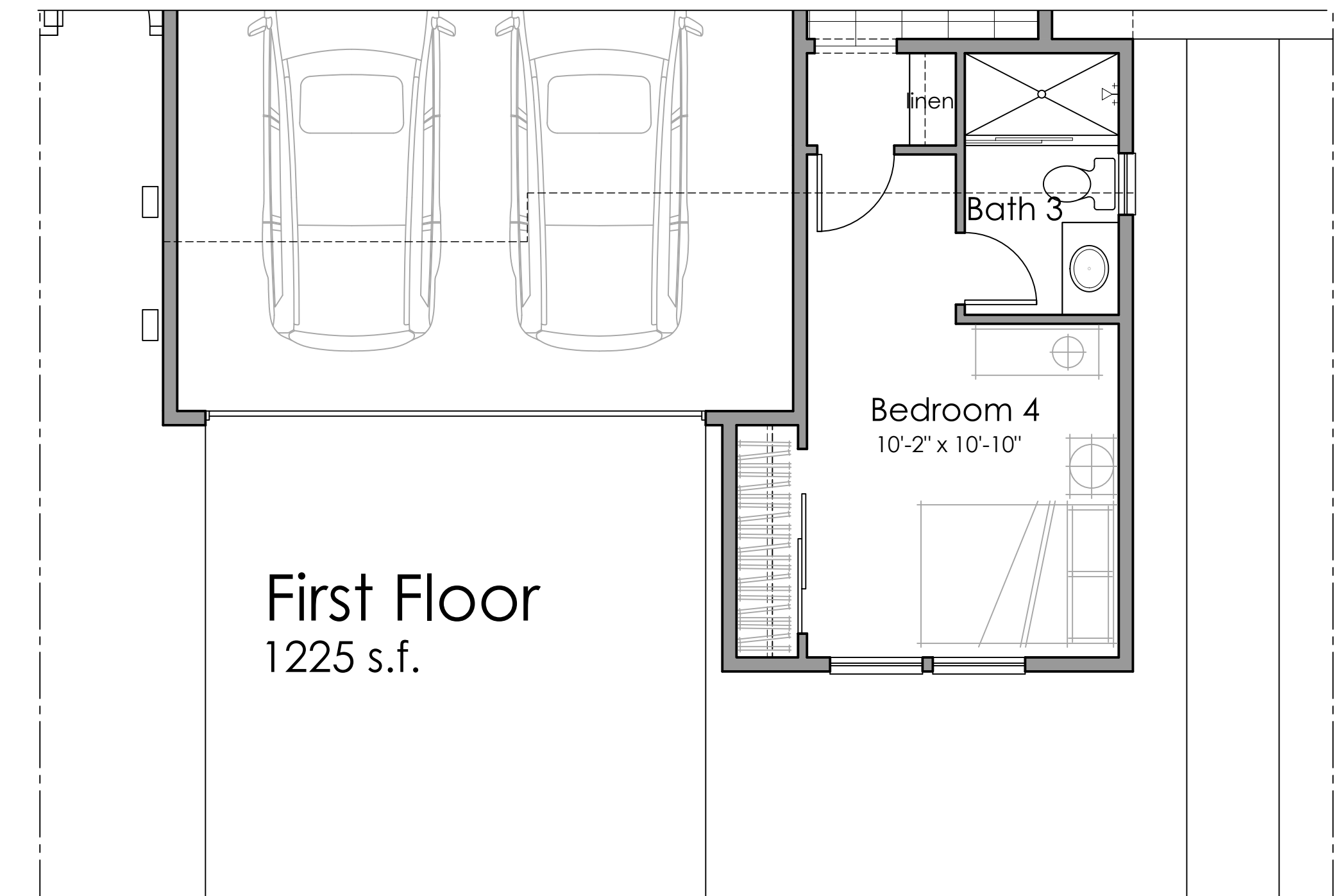
Scale: 1/4" = 1'-0"
 0 2 4 8

4 BEDROOMS + LOFT
 3.5 BATH
 2,622 S.F.

FLOOR PLAN 3



3C - Addenda

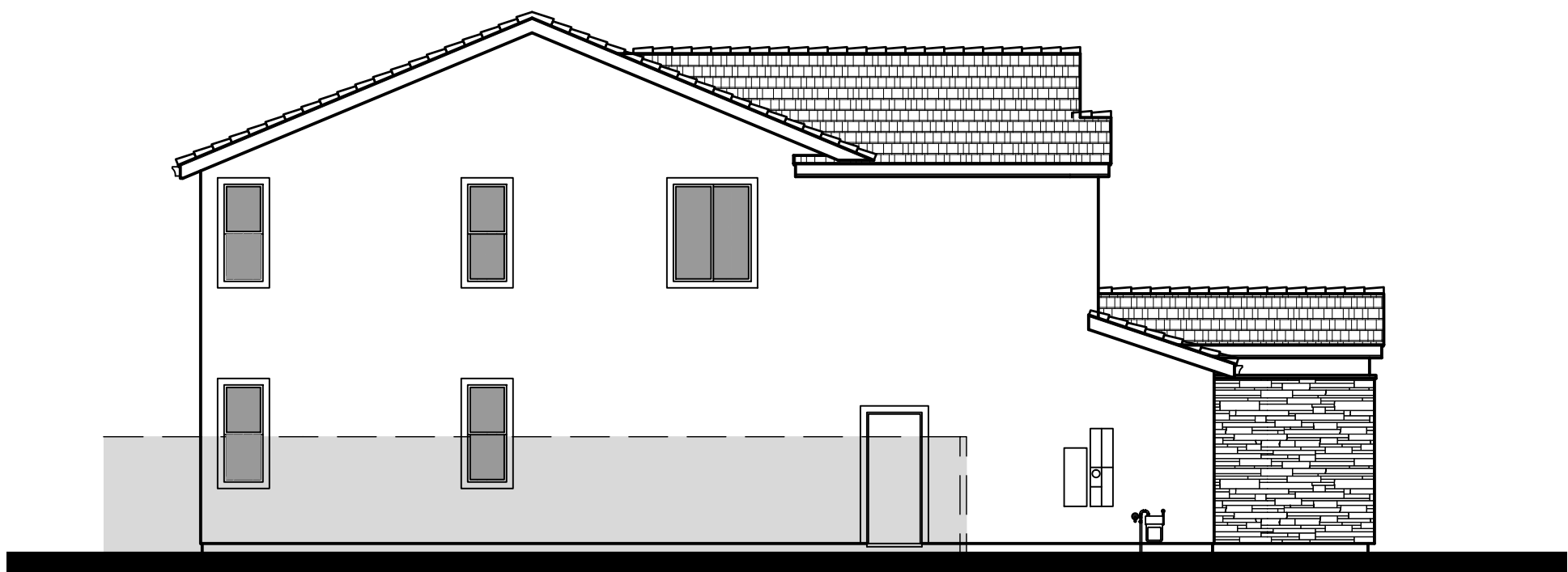
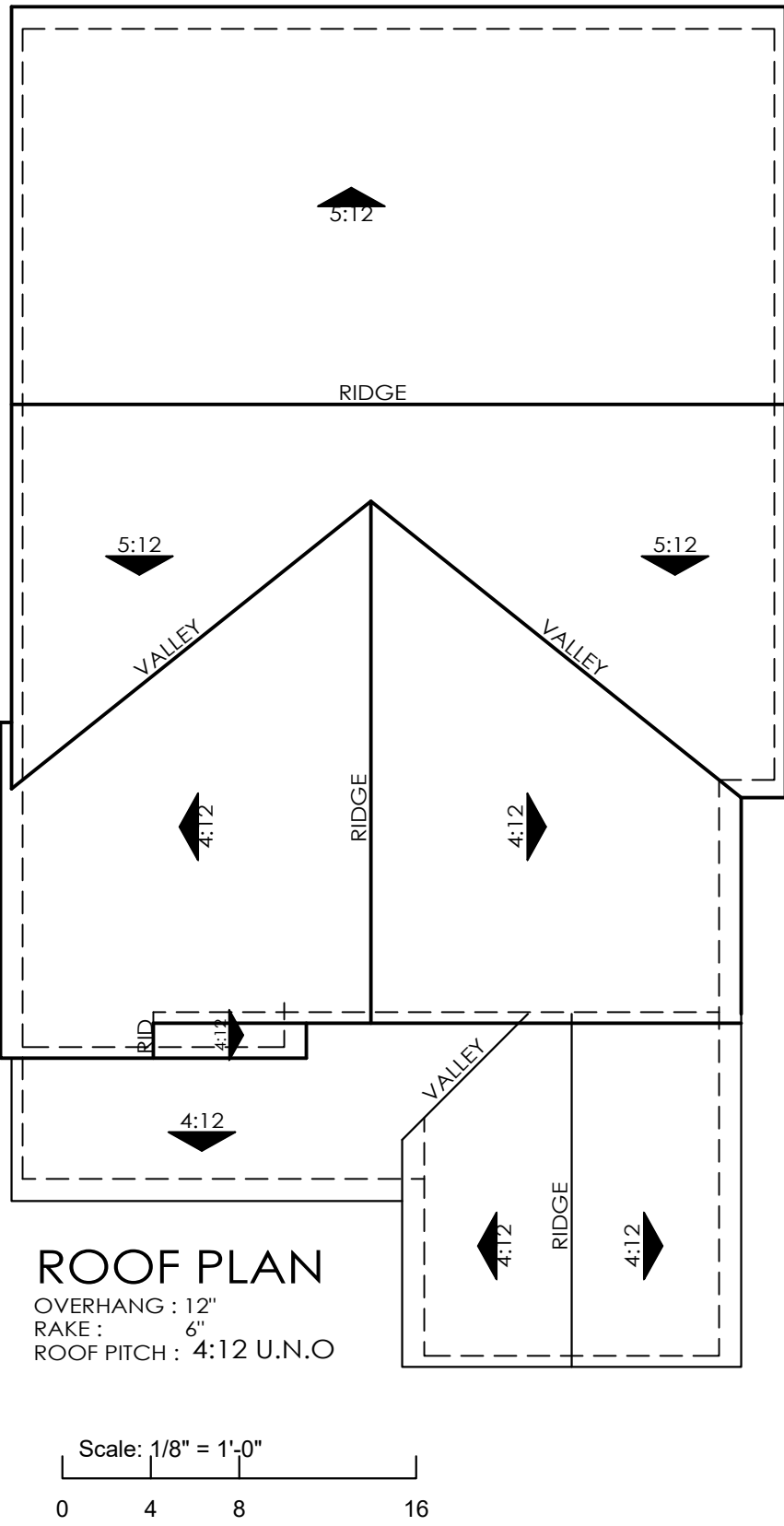


3B - Addenda

3A
 Material Legend:
 Flat concrete Tile Roofing
 Stucco Finish
 Stone Veneer

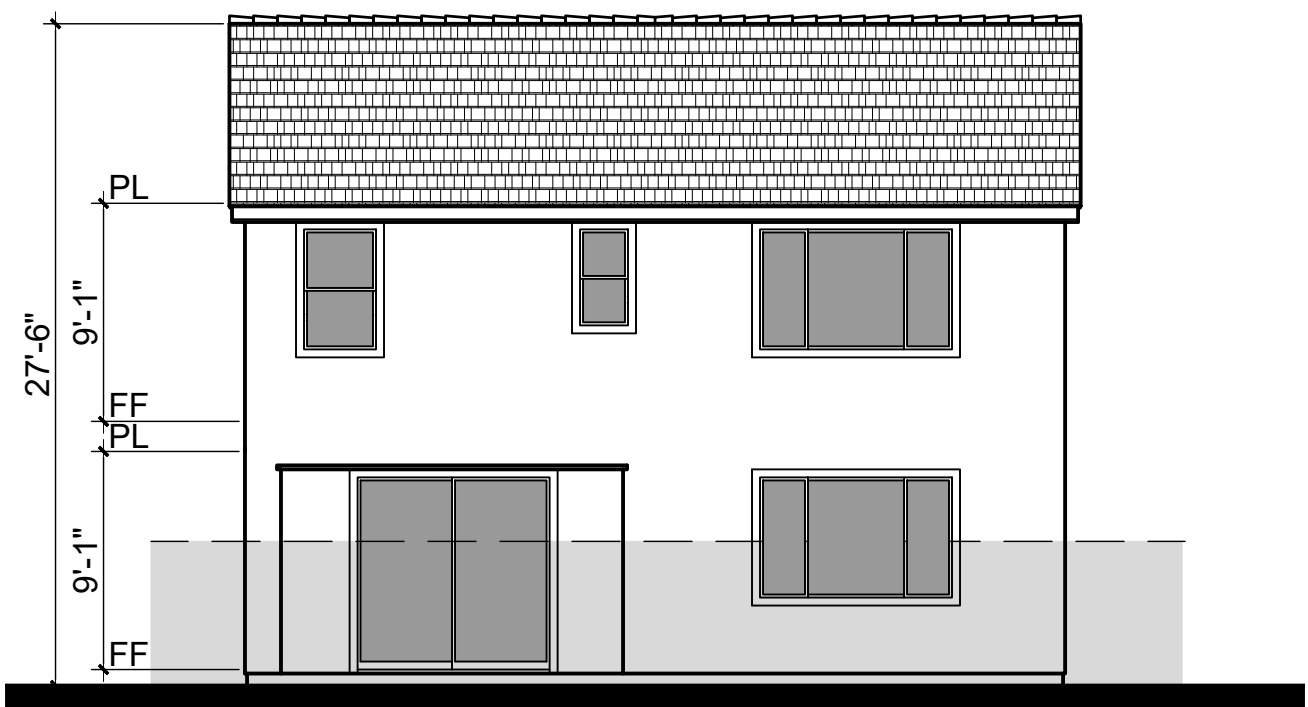


Front Elevation 3A



Left Elevation

Scale: 1/8" = 1'-0"
 0 4 8 16



Rear Elevation

Scale: 1/8" = 1'-0"
 0 4 8 16



Right Elevation

Scale: 1/8" = 1'-0"
 0 4 8 16

Scale: 1/4" = 1'-0"
 0 2 4 8

EXTERIOR ELEVATIONS - PLAN 3A



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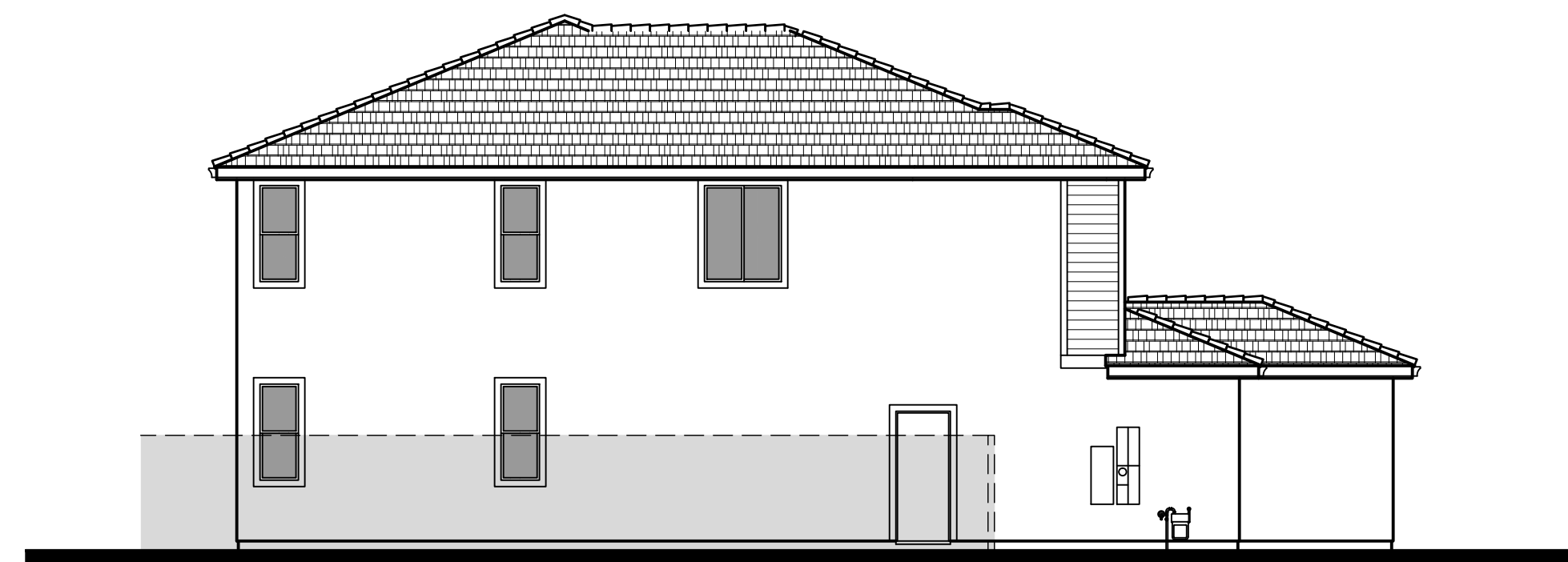
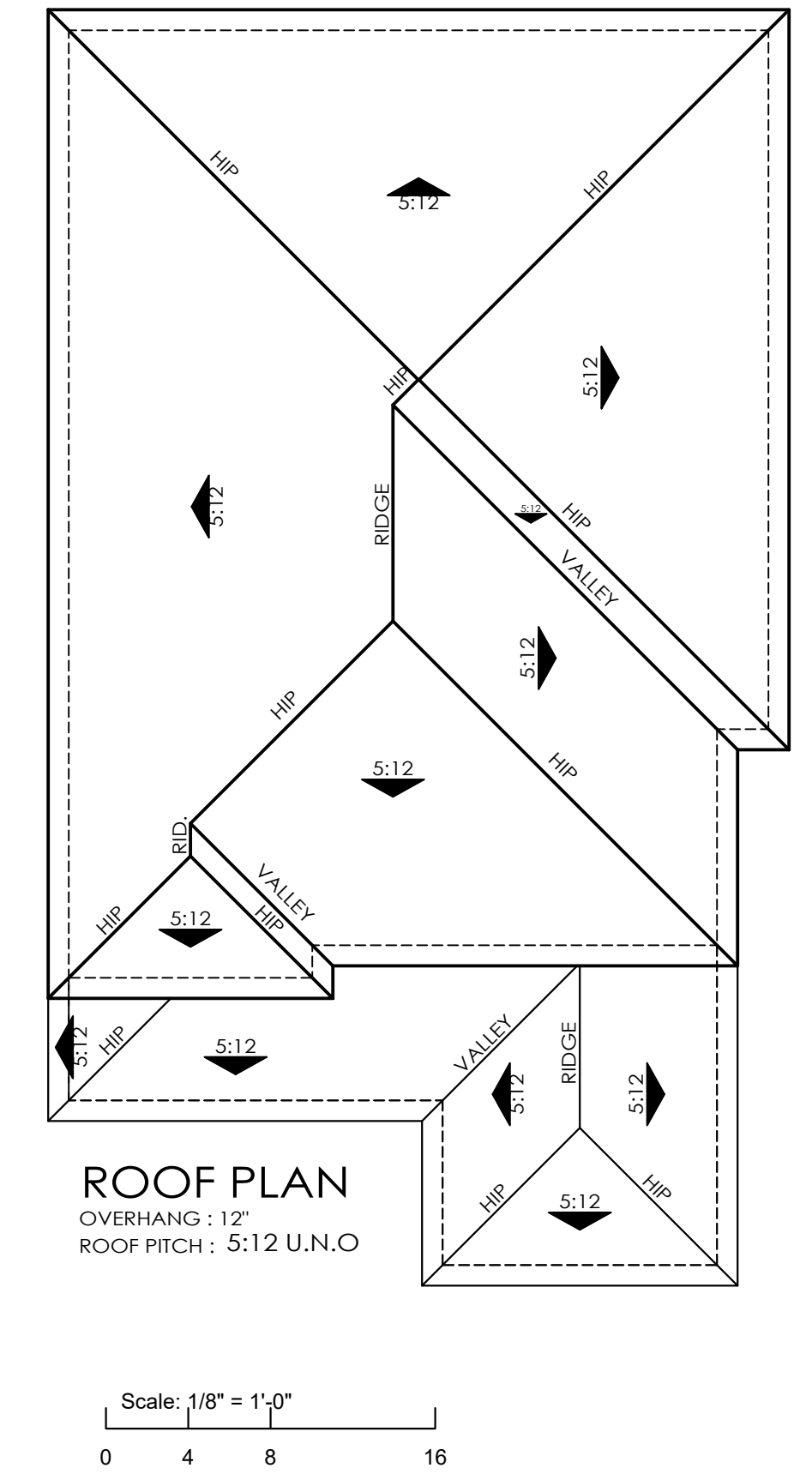
FAIRVIEW 40'x85'
 Vallejo, CA # 2018-0788

SCHEMATIC DESIGN
 DECEMBER 18, 2019

3B
 Material Legend:
 Flat concrete Tile Roofing
 Stucco Finish
 Cementitious Lap Siding



Front Elevation 3B



Left Elevation

Scale: 1/8" = 1'-0"
 0 4 8 16



Rear Elevation

Scale: 1/8" = 1'-0"
 0 4 8 16



Right Elevation

Scale: 1/8" = 1'-0"
 0 4 8 16



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Scale: 1/4" = 1'-0"
 0 2 4 8

EXTERIOR ELEVATIONS - PLAN 3B

A3.3

3C

Material Legend:

Flat concrete Tile Roofing

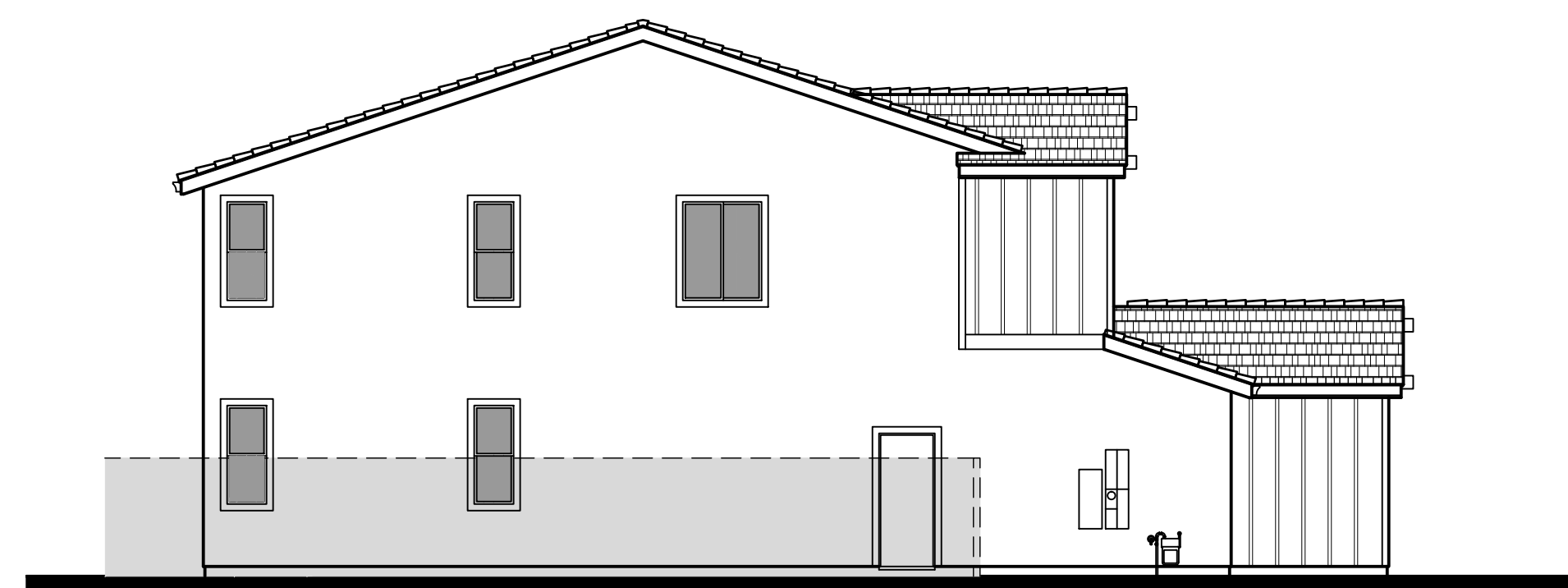
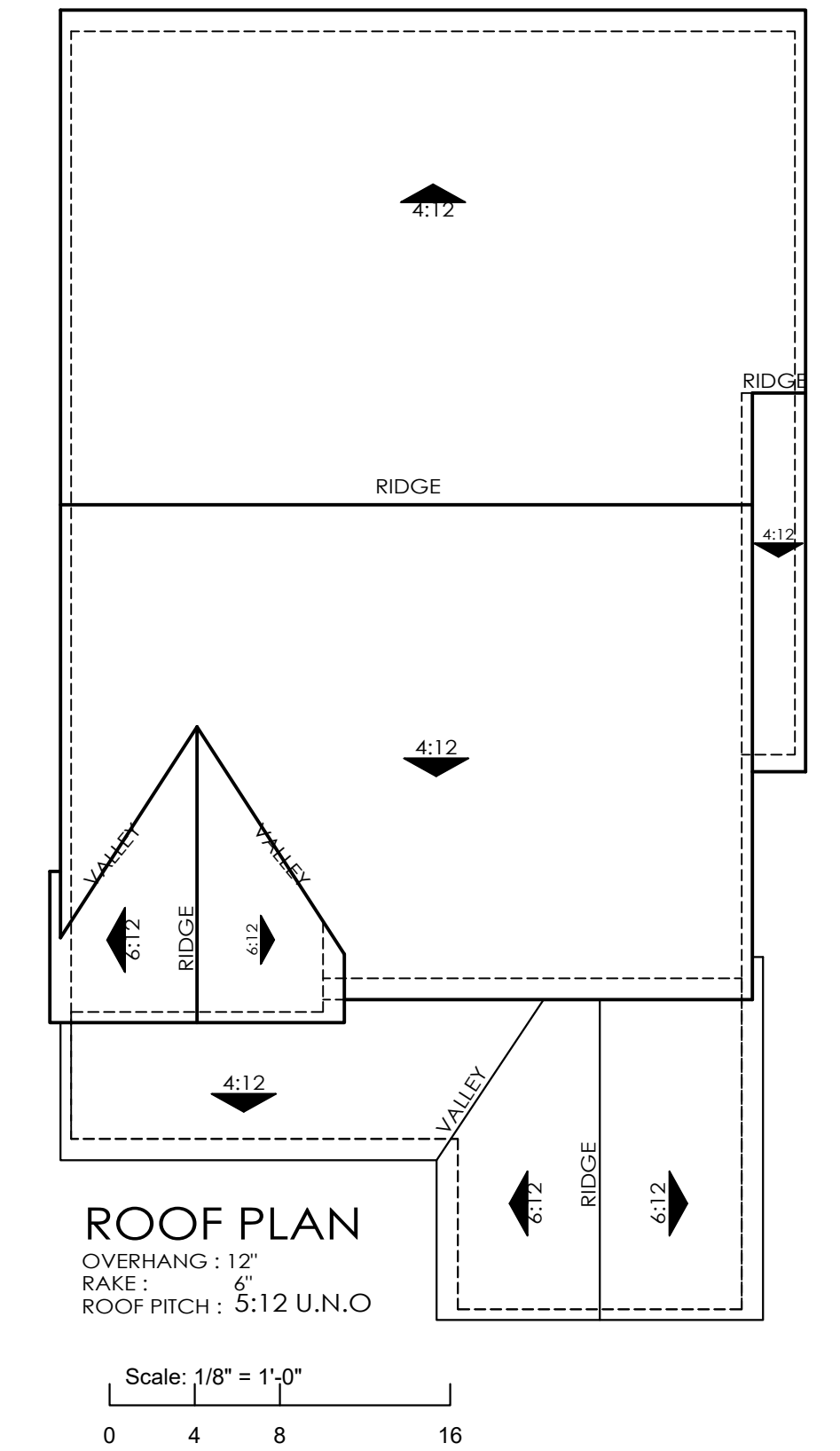
Stucco Finish

Cementitious Board & Batt Siding

Decorative Outlookers



Front Elevation 3C



Left Elevation

Scale: 1/8" = 1'-0"



Rear Elevation

Scale: 1/8" = 1'-0"



Right Elevation

Scale: 1/8" = 1'-0"



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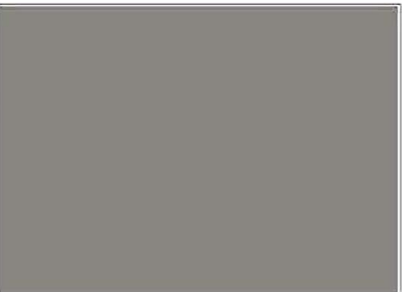
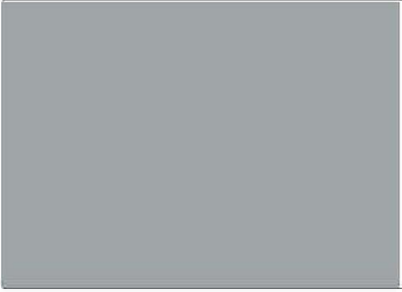
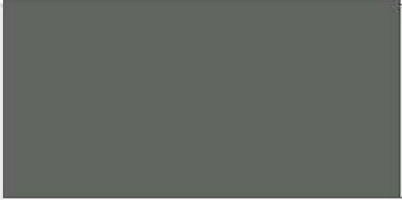
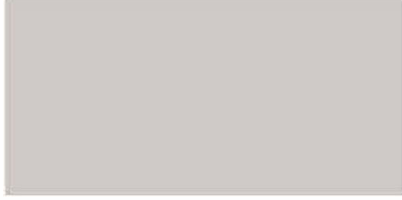
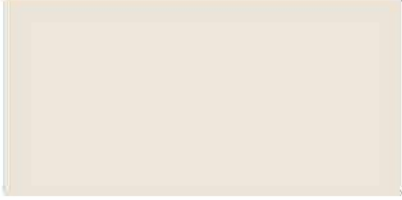
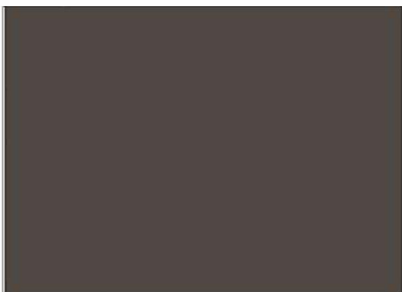
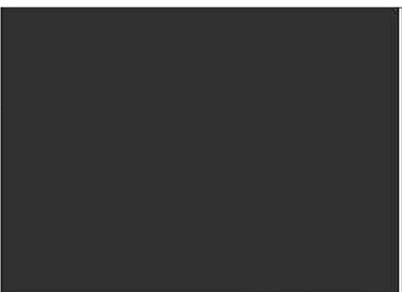
FAIRVIEW 40'x85'
Vallejo, CA # 2018-0788

SCHEMATIC DESIGN
DECEMBER 18, 2019

Scale: 1/4" = 1'-0"

EXTERIOR ELEVATIONS - PLAN 3C

A3.4

	SCHEME 1	SCHEME 2	SCHEME 3		SCHEME 4	SCHEME 5	SCHEME 6		SCHEME 7	SCHEME 8	SCHEME 9
STUCCO BODY				STUCCO BODY				BATTEN SIDING BODY/ CORNER BOARDS			
	SW 0046 WHITE HYACINTH	SW 6170 TECHNO GRAY	SW 7635 PALISADE		SW 7546 PRAIRIE GRASS	SW 0077 CLASSIC FRNCH GRAY	SW 7024 FUNCTIONAL GRAY		SW 7005 PURE WHITE	SW 7073 NETWORK GRAY	SW 7019 GAUNTLET GRAY
FASCIA / EAVES / TRIM / GARAGE DOORS				SIDING BODY/ CORNER BOARDS				STUCCO BODY			
	SW 0049 SILVER GRAY	SW 7637 OYSTER WHITE	SW 6140 MODERN WHITE		SW 7032 WARM STONE	SW 6137 BURLAP	SW 6012 BROWSE BROWN		SW 7100 ARCADE WHITE	SW 7015 REPOSE GRAY	SW 7051 ANALYTICAL GRAY
ENTRY DOOR				FASCIA/EAVES/ TRIM				FACIA/ EAVES /TRIM/ GARAGE DOOR			
	SW 0047 STUDIO BLUE	SW 7595 SOMMELIER	SW 7068 GRIZZLE GRAY		SW 7036 ACCESSIBLE BEIGE	SW 7050 USEFUL GRAY	SW 7634 PEDIMENT		SW 6001 GRAYISH	SW 8917 SHELL WHITE	SW 7013 IVORY LACE
STONE VENEER				GARAGE DOOR/ ENTRY DOOR				ENTRY DOOR			
	SAGE LEDGECUT 33	BIRCH LEDGECUT 33	WHITE CAP LEDGECUT 33		SW 7020 BLACK FOX	SW 6991 CLACK MAGIC	SW 7674 PEPPERCORN		SW 6278 CLOAK GRAY	SW 7594 CARRIAGE DOOR	SW 0014 SHERATON SAGE
ROOF MATERIAL				ROOF MATERIAL				ROOF MATERIAL			
	4087 BROWN GRAY RANGE	4087 BROWN GRAY RANGE	4087 BROWN GRAY RANGE		5699 CHARCOAL RANGE	5699 CHARCOAL RANGE	5699 CHARCOAL RANGE		SCB 8827 TACOMA BLEND	SCB 8827 TACOMA BLEND	SCB 8827 TACOMA BLEND



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SCHEMATIC DESIGN
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COLOR BOARD

A4.0



FRONT ELEVATION 3C

FRONT ELEVATION 2B

FRONT ELEVATION 1A



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SCHEMATIC DESIGN
DECEMBER 18, 2019

COVER SHEET

A0.0



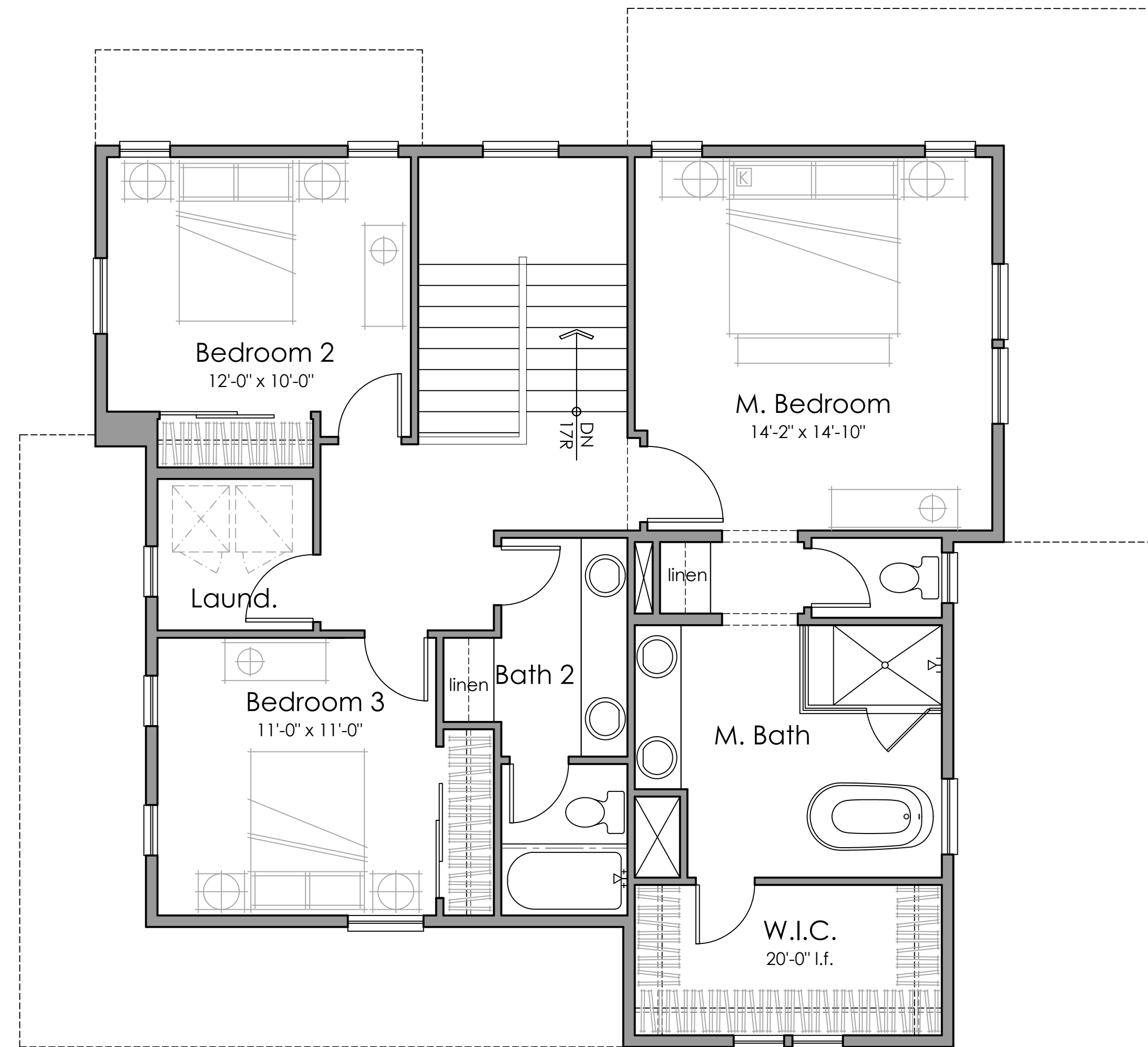
Front Elevation 1A



Front Elevation 1B

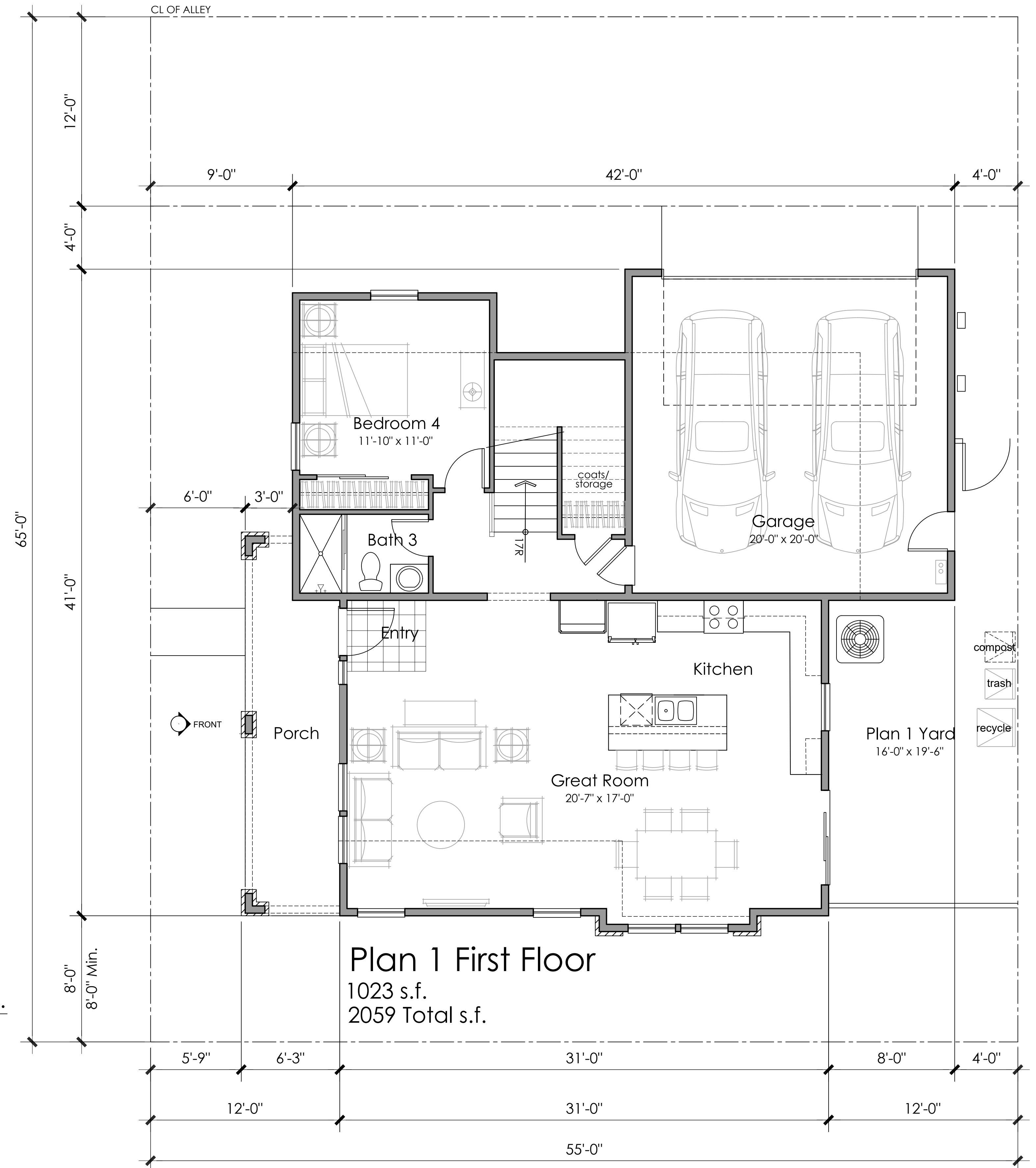


Front Elevation 1C

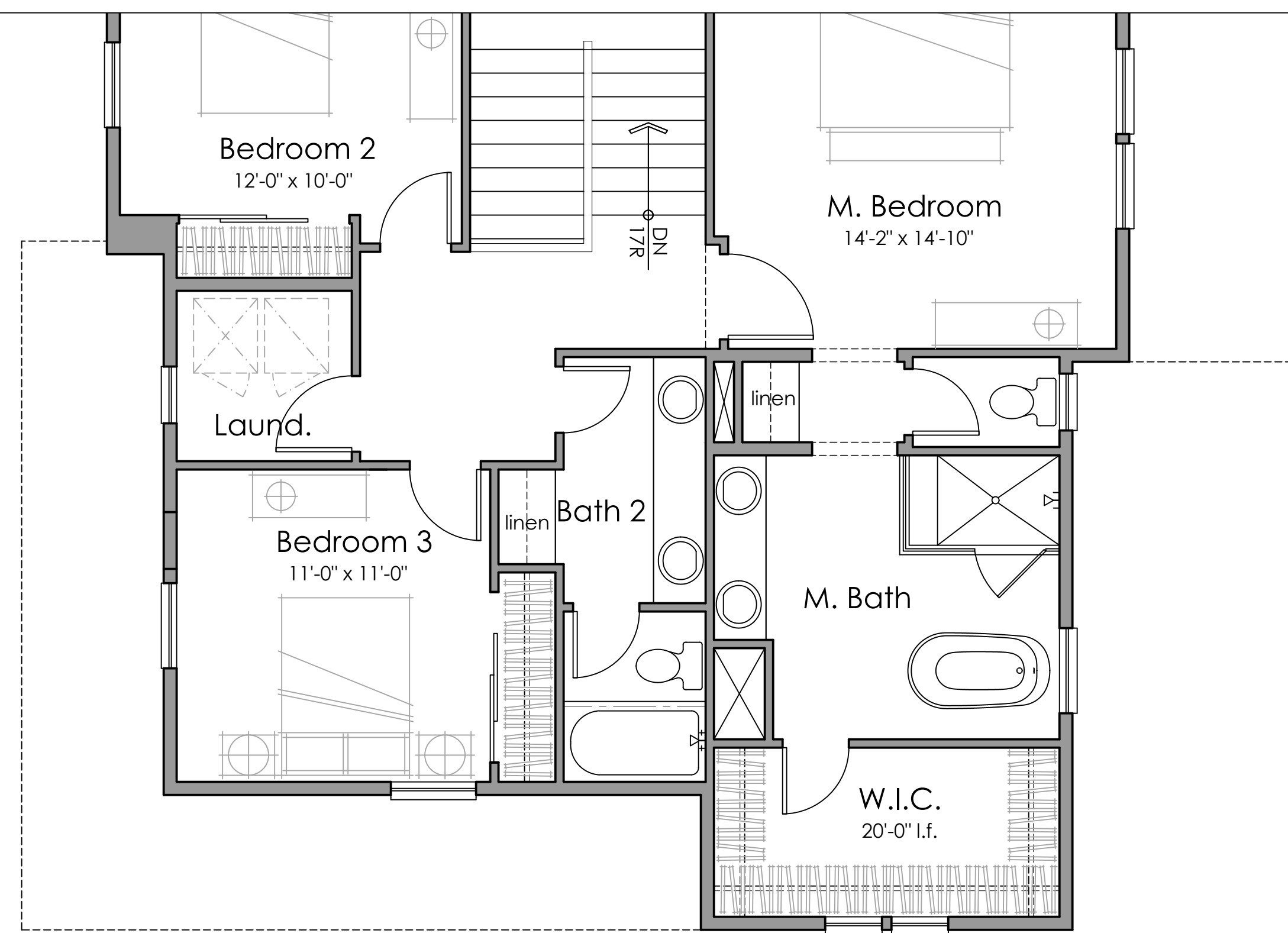


Plan 1 Second Floor
1036 s.f.

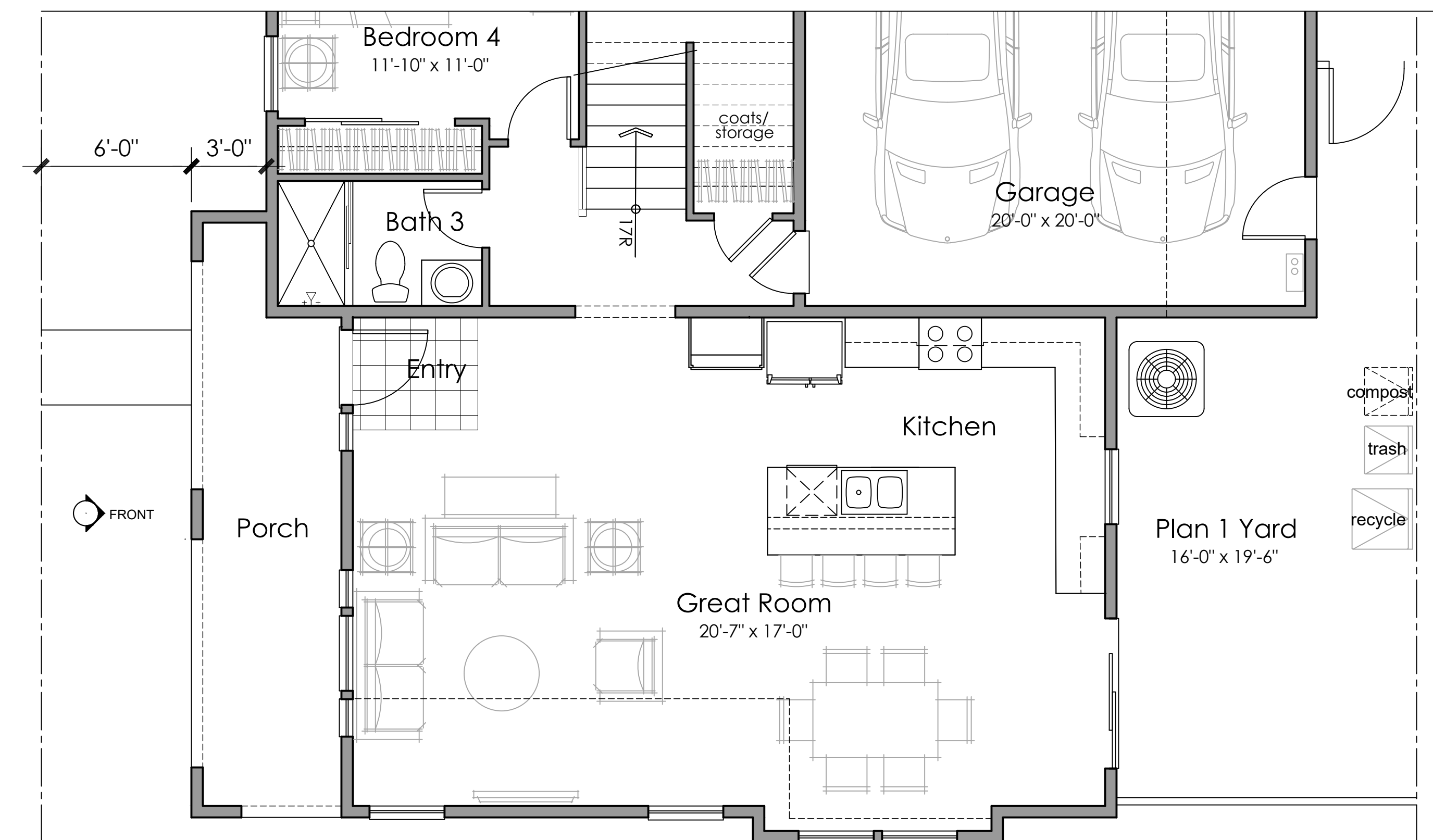
Lot Coverage - 55x65 = 3,575 s.f.	
1st Floor:	1,023 s.f.
Garage:	426 s.f.
Porch:	131 s.f.
Total:	1,580 s.f.
Lot Coverage:	44%



Plan 1 First Floor
1023 s.f.
2059 Total s.f.

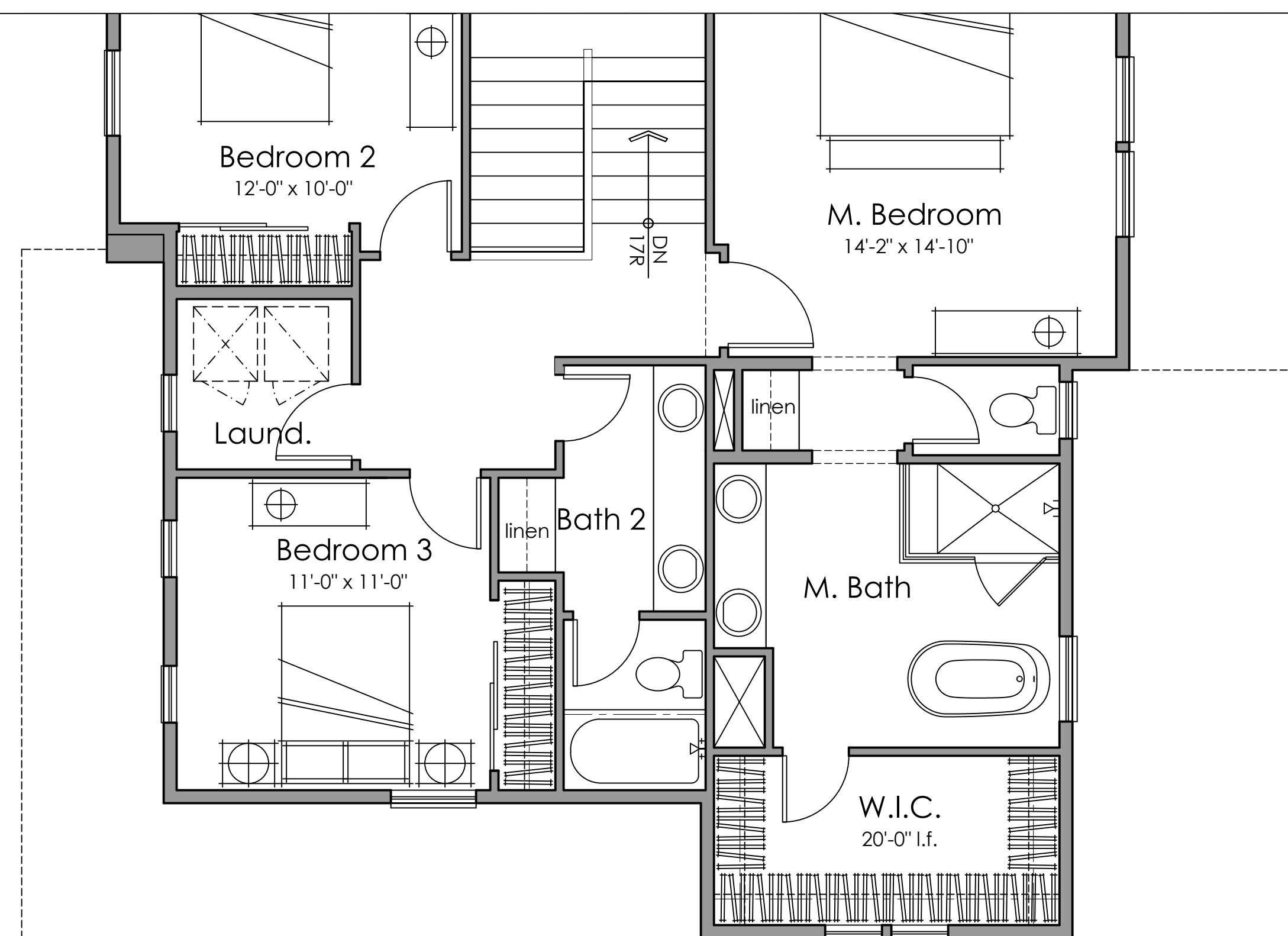


Plan 1 Second Floor
1036 s.f.

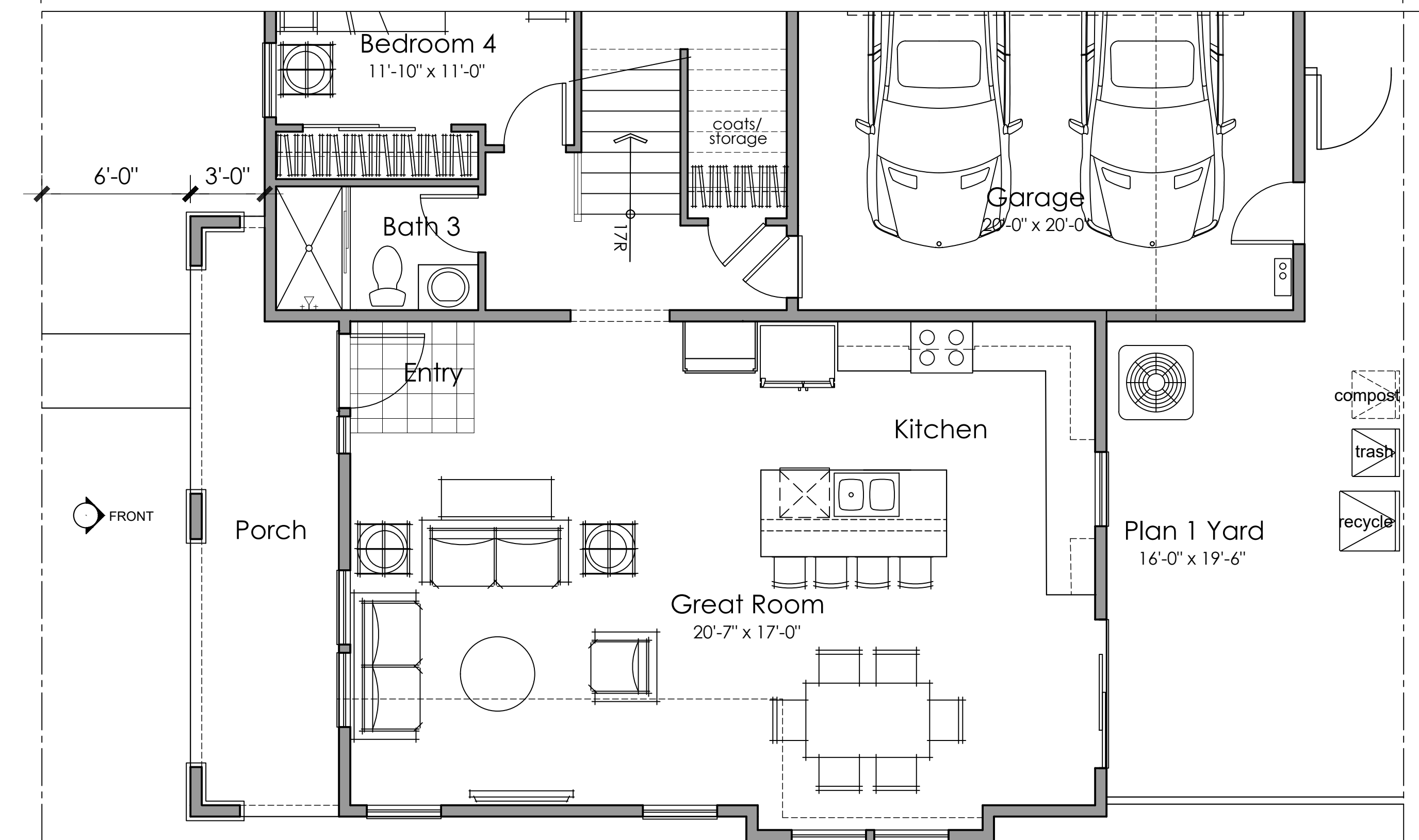


Plan 1 First Floor
1023 s.f.
2059 Total s.f.

1C - Addenda



Plan 1 Second Floor
1036 s.f.



Plan 1 First Floor
1023 s.f.
2059 Total s.f.

1B - Addenda

1A

Material Legend:

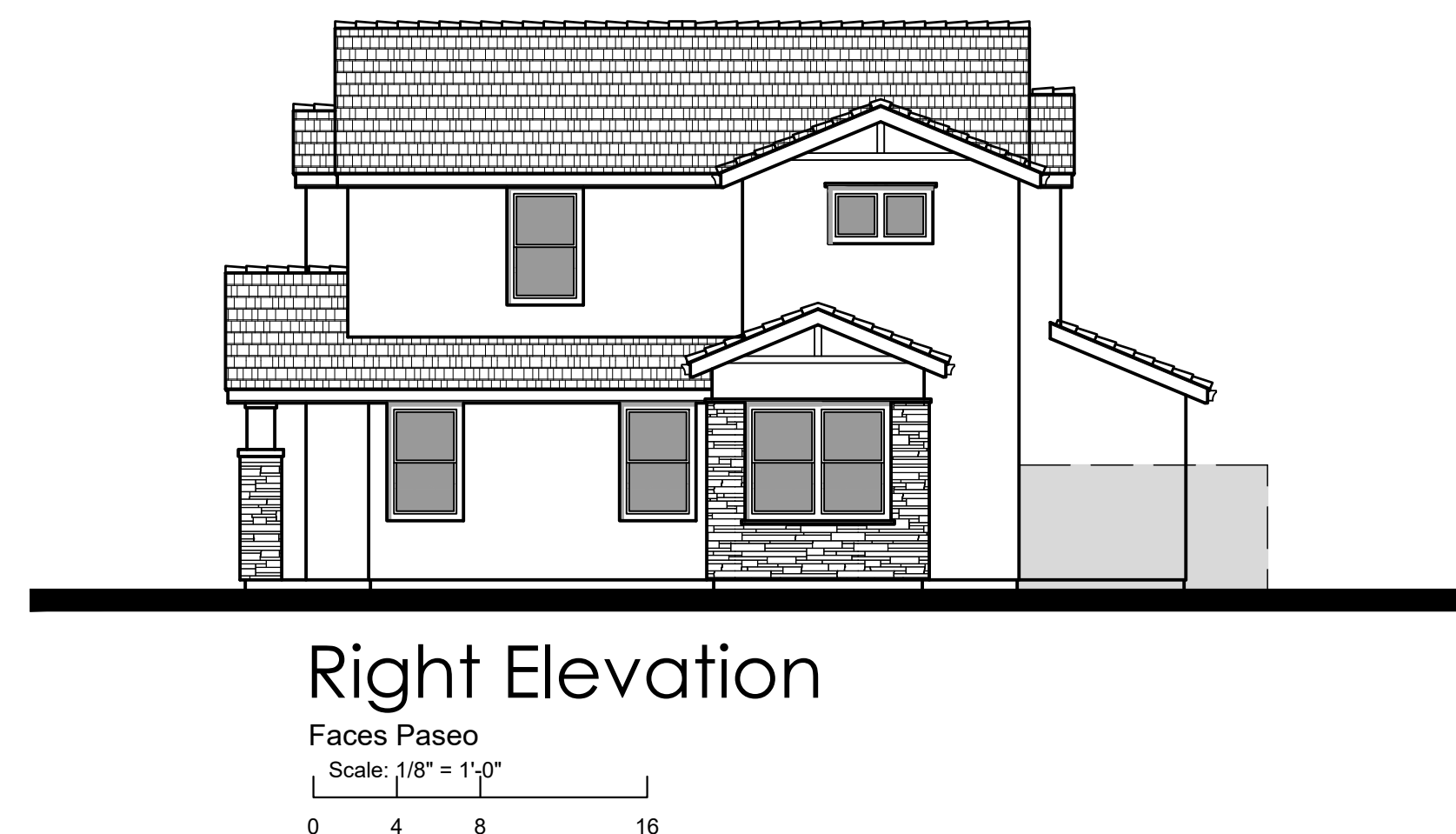
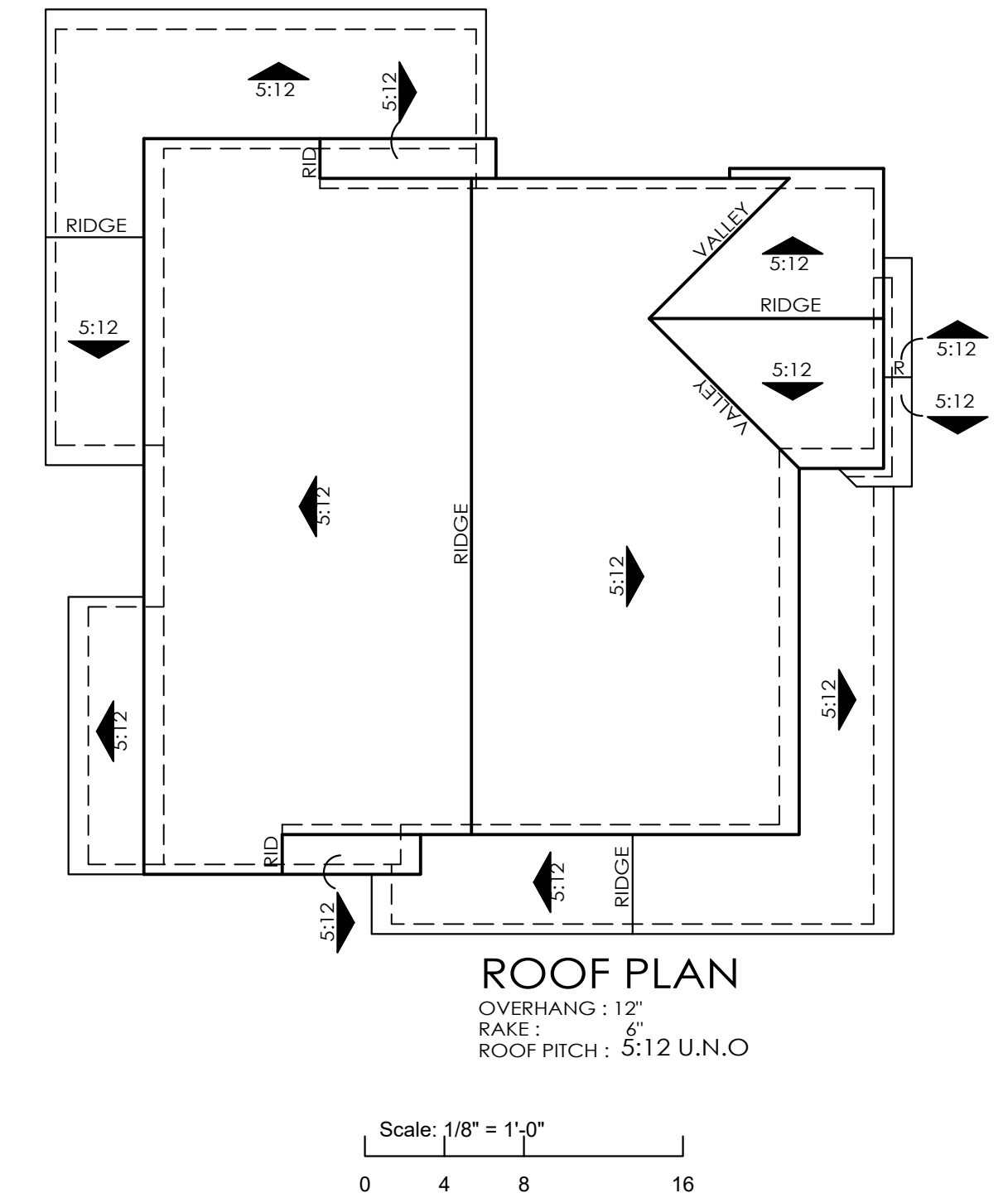
Flat concrete Tile Roofing

Stucco Finish

Stone Veneer

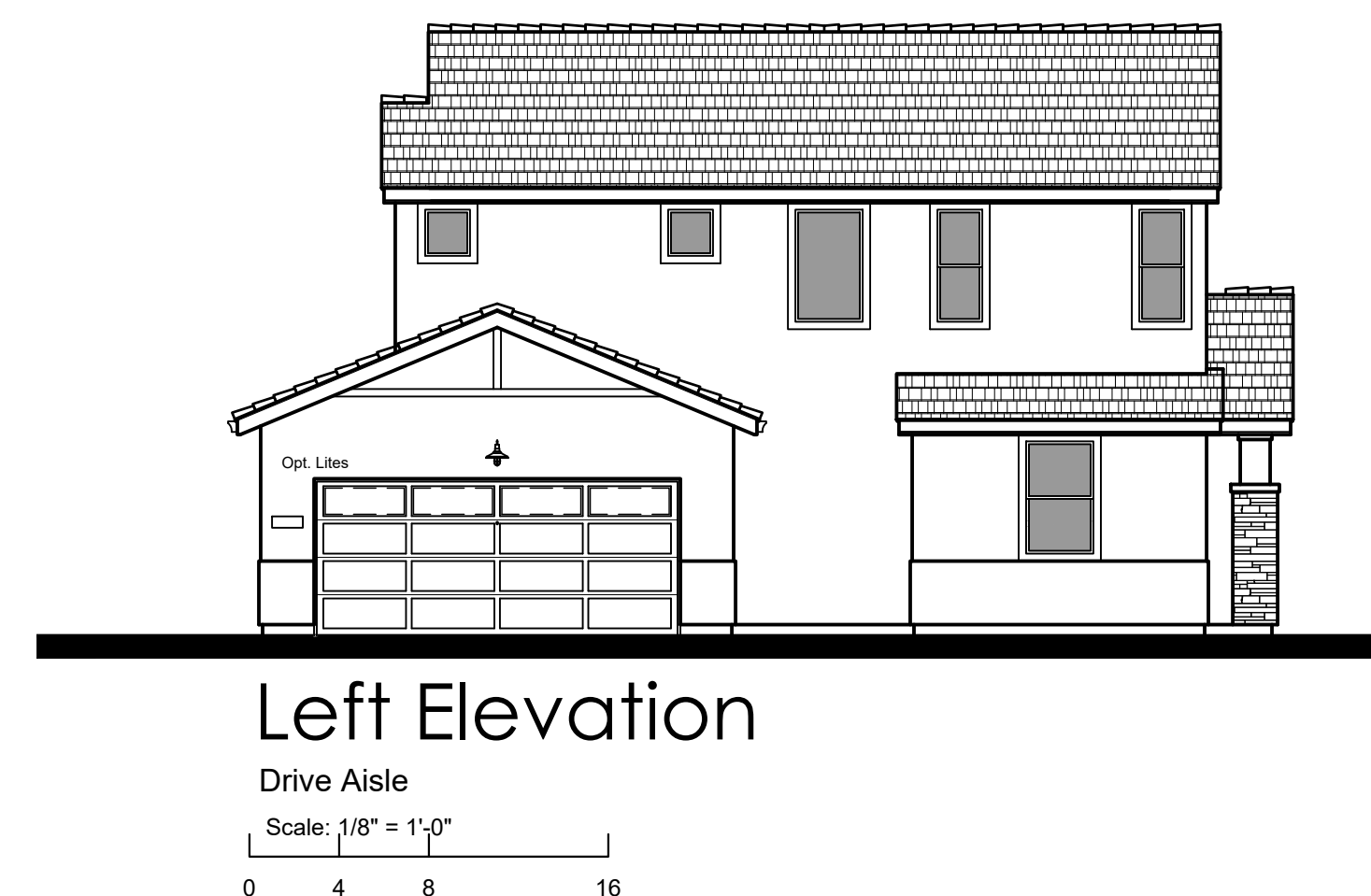


Front Elevation 1A



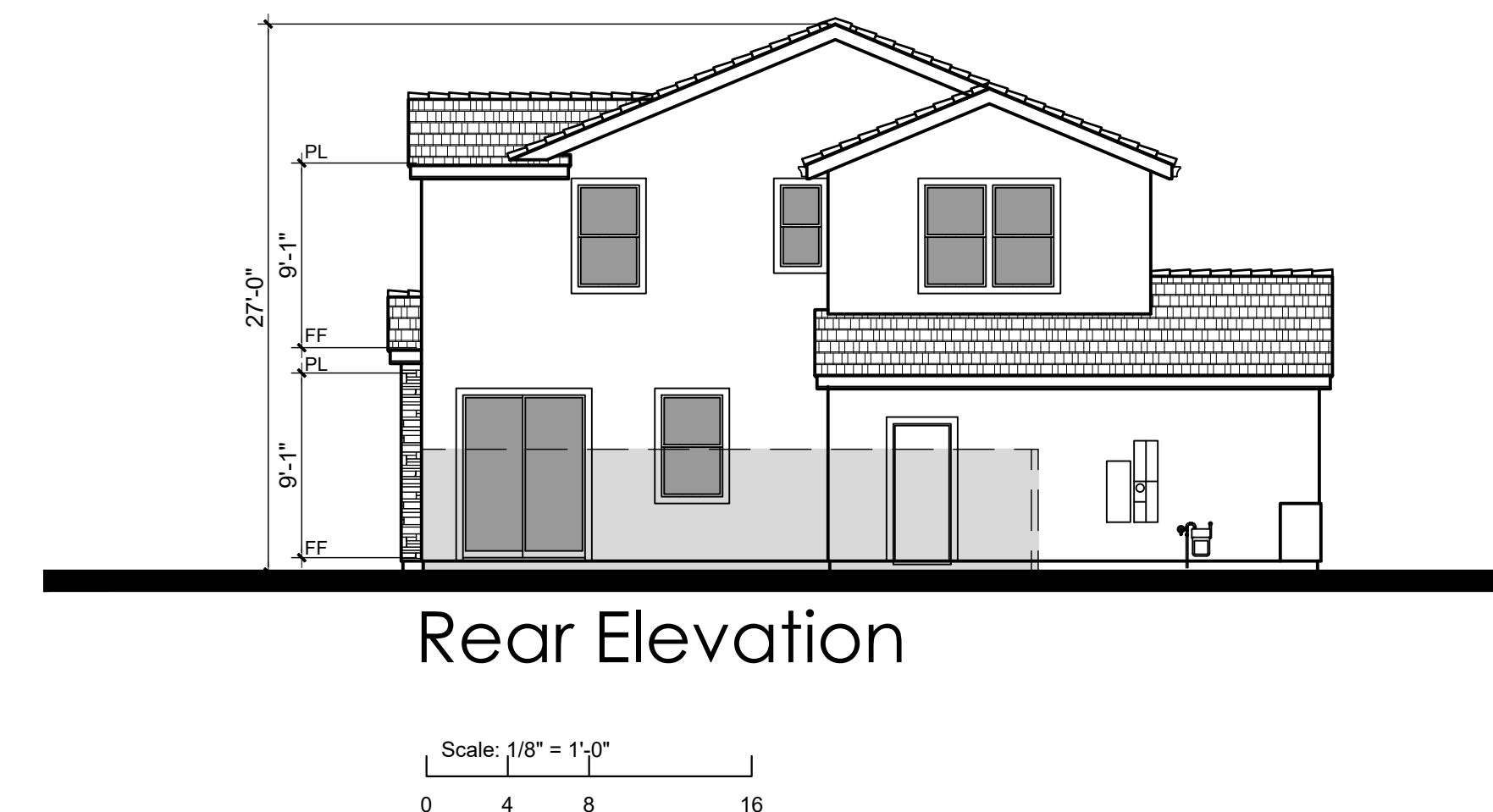
Right Elevation

Faces Paseo
Scale: 1/8" = 1'-0"



Left Elevation

Drive Aisle
Scale: 1/8" = 1'-0"



Rear Elevation

Scale: 1/4" = 1'-0"

EXTERIOR ELEVATIONS - PLAN 1A



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DECEMBER 18, 2019

A1.2

1B

Material Legend:

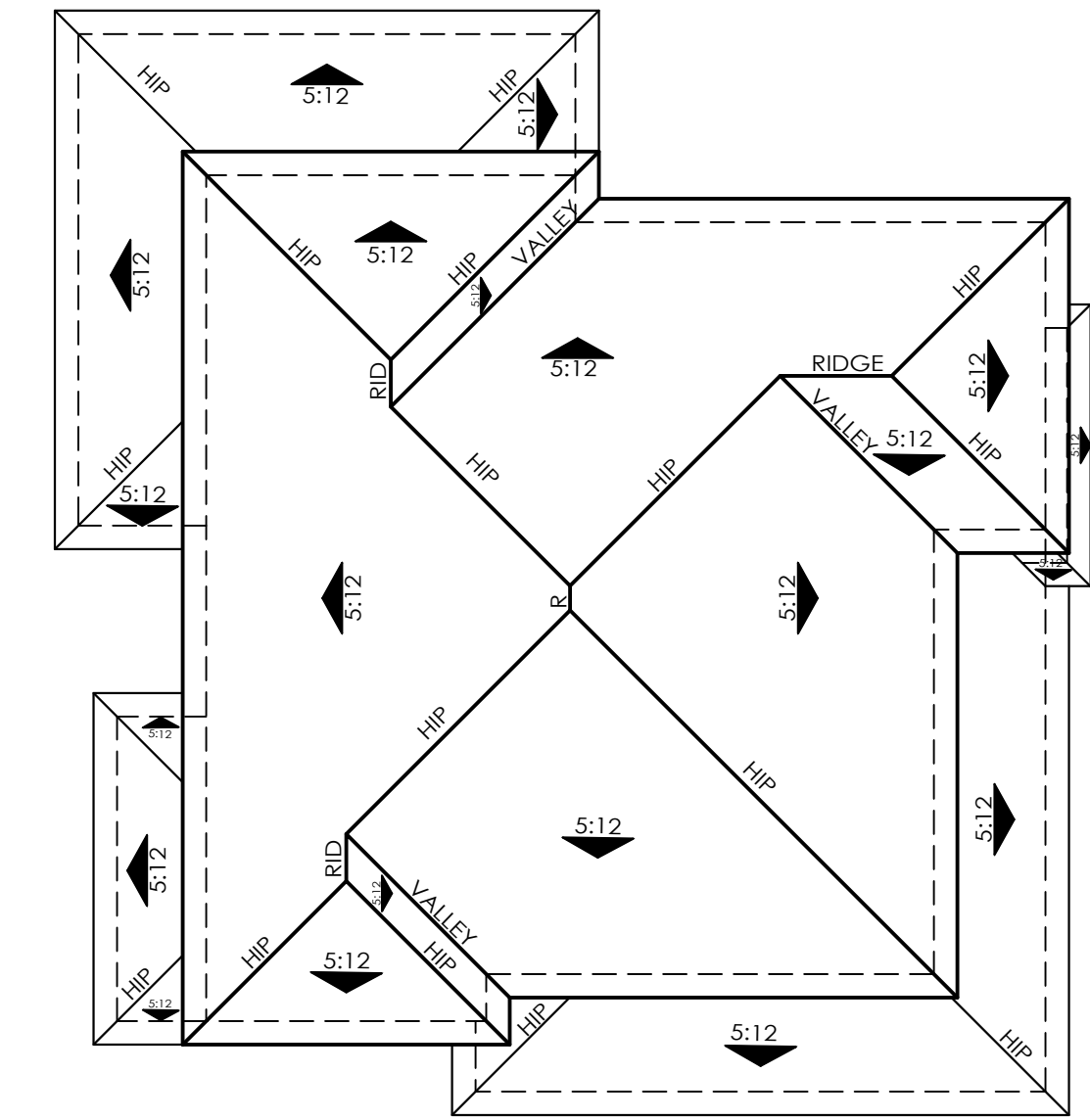
Flat concrete Tile Roofing

Stucco Finish

Cementitious Lap Siding



Front Elevation 1B



ROOF PLAN
OVERHANG: 12"
ROOF PITCH: 5:12 U.N.O

Scale: 1/8" = 1'-0"
0 4 8 16



Right Elevation

Faces Paseo
Scale: 1/8" = 1'-0"
0 4 8 16



Left Elevation

Drive Aisle
Scale: 1/8" = 1'-0"
0 4 8 16



Rear Elevation

Scale: 1/8" = 1'-0"
0 4 8 16



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SCHEMATIC DESIGN
DECEMBER 18, 2019

Scale: 1/4" = 1'-0"
0 2 4 8

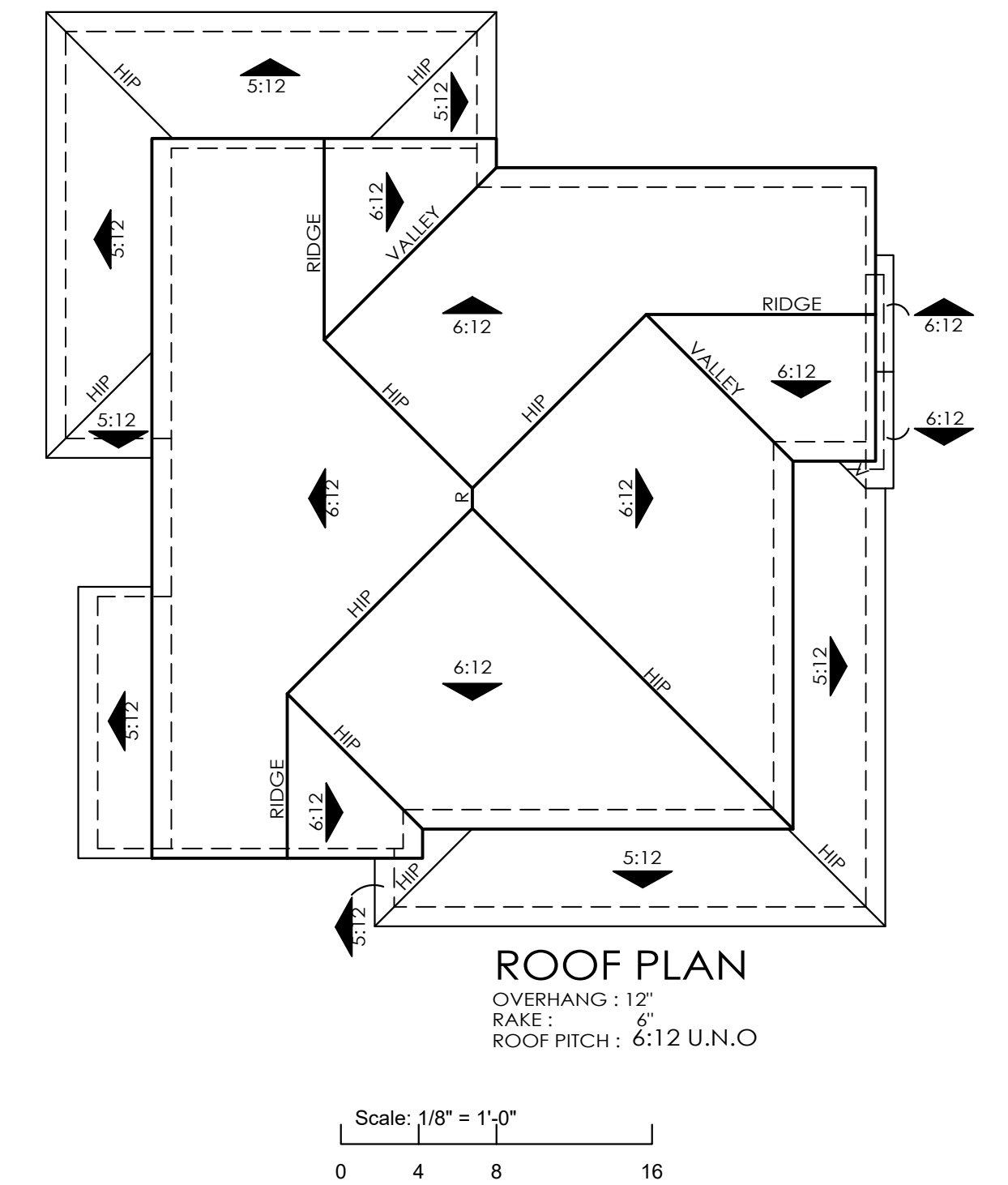
EXTERIOR ELEVATIONS - PLAN 1B

A1.3

1C
 Material Legend:
 Flat concrete Tile Roofing
 Stucco Finish
 Cementitious Board & Batt Siding



Front Elevation 1C



Right Elevation

Faces Paseo
 Scale: 1/8" = 1'-0"



Left Elevation

Drive Aisle
 Scale: 1/8" = 1'-0"



Rear Elevation

Scale: 1/8" = 1'-0"



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Scale: 1/4" = 1'-0"

EXTERIOR ELEVATIONS - PLAN 1C

A1.4



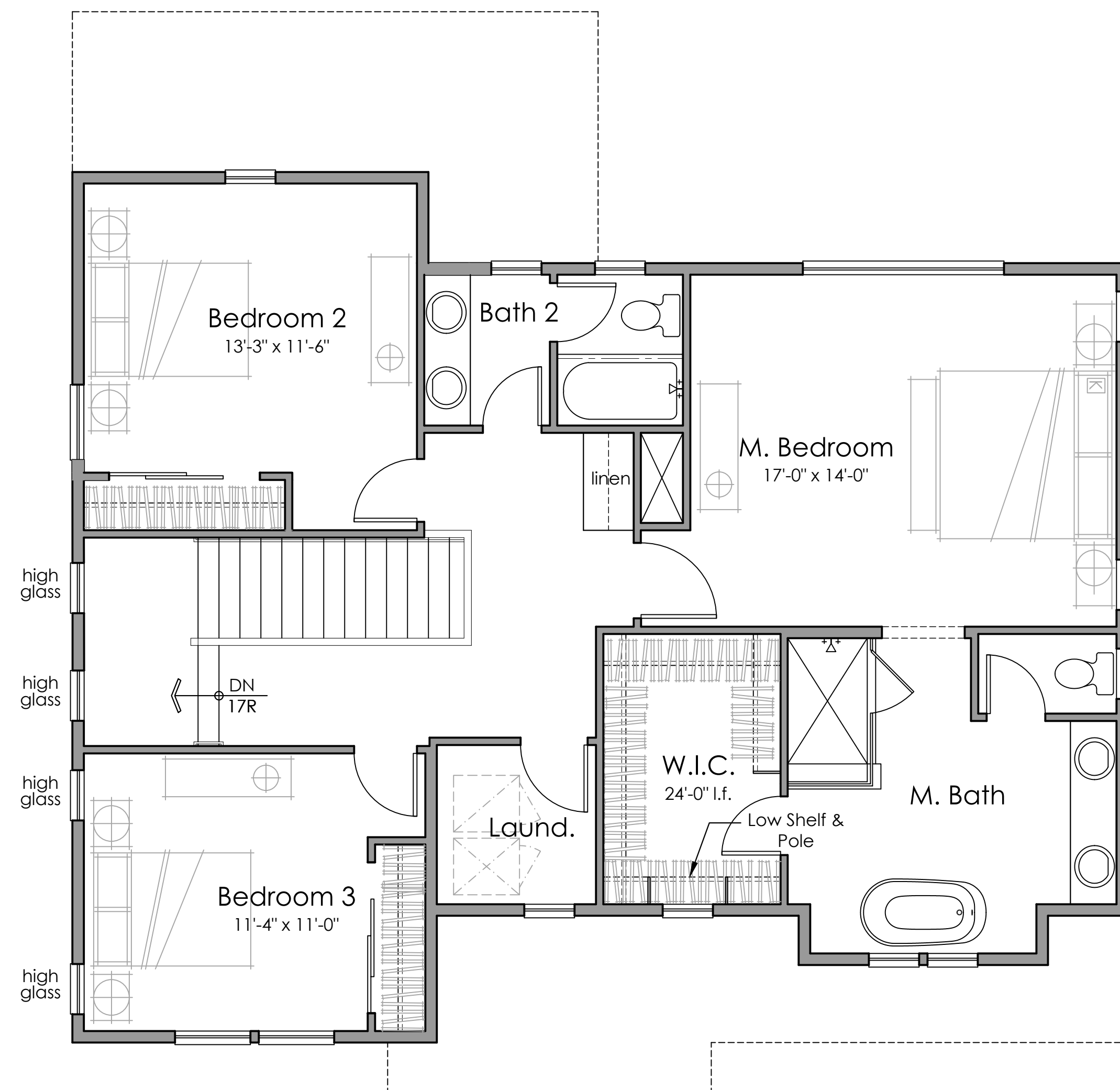
Front Elevation 2A



Front Elevation 2B

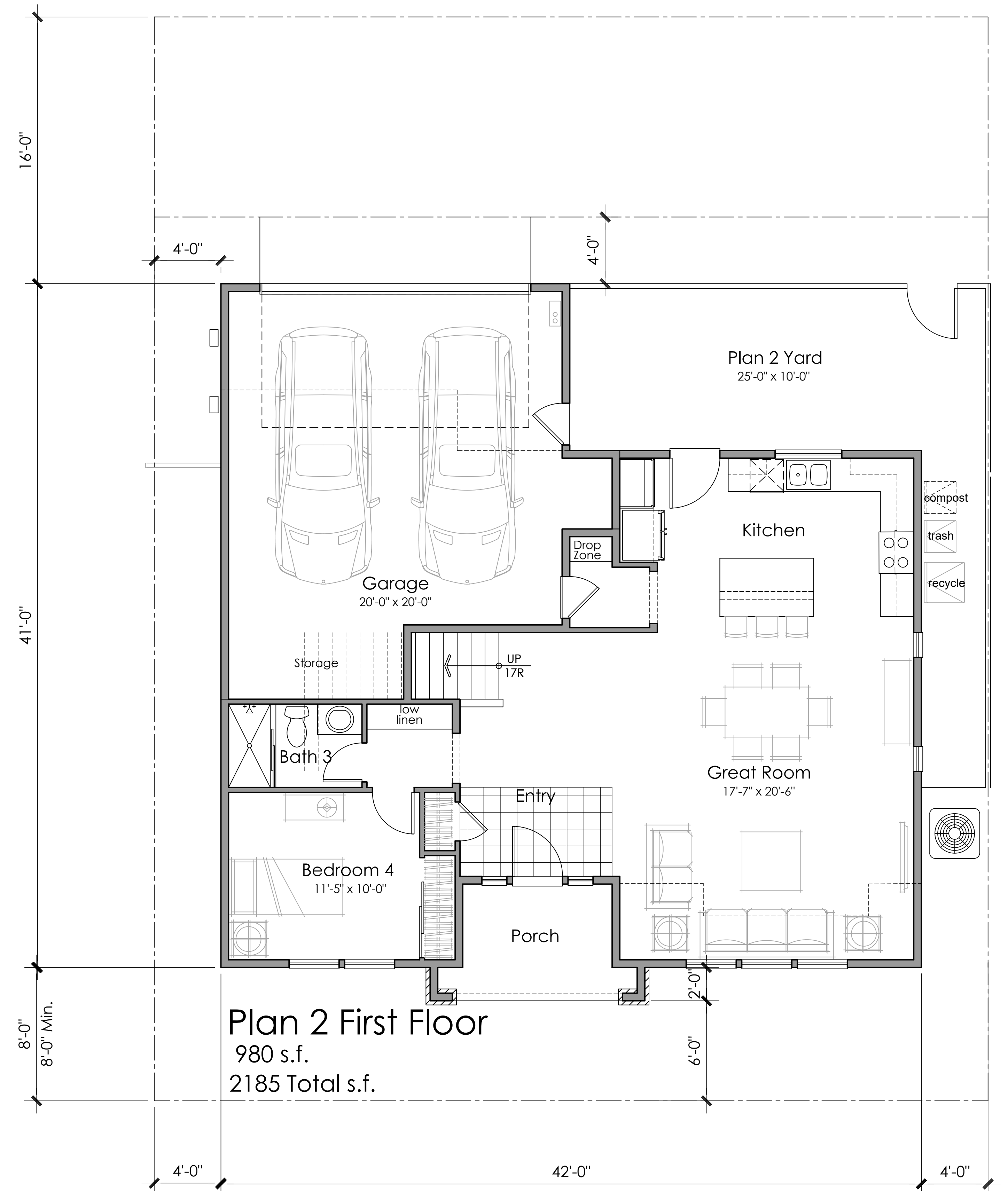


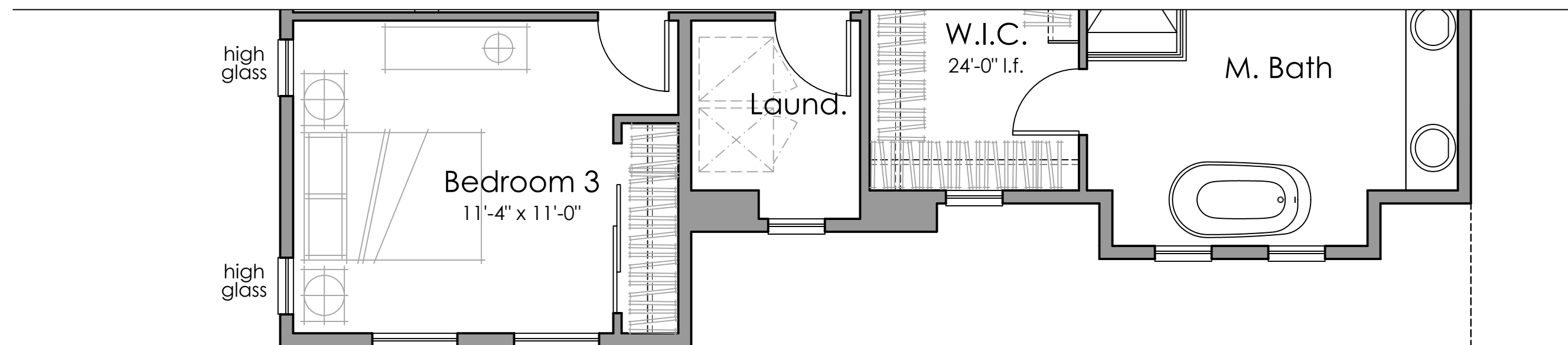
Front Elevation 2C



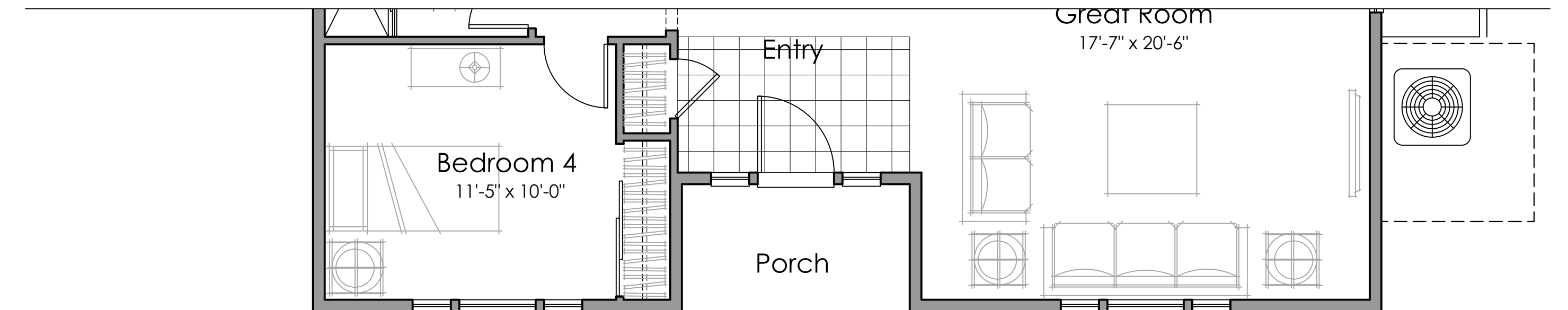
Plan 2 First Floor
1205 s.f.

Lot Coverage - 55x65 = 3,575 s.f.
 1st Floor: 980 s.f.
 Garage: 488 s.f.
 Porch: 71 s.f.
 Total: 1,539 s.f.
 Lot Coverage: 43%



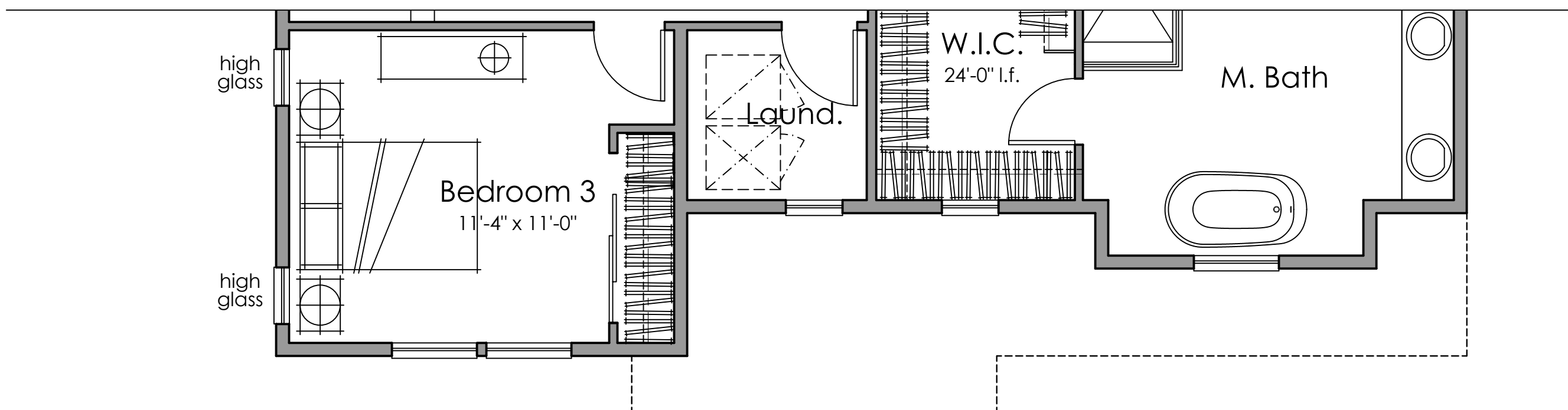


Plan 2 First Floor
1205 s.f.

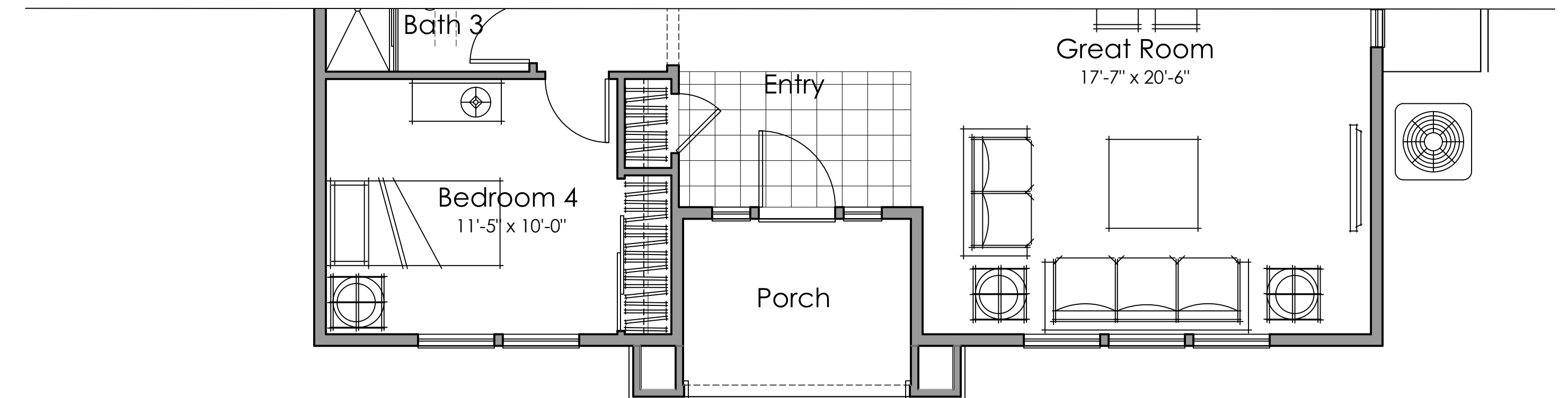


Plan 2 First Floor
980 s.f.
2185 Total s.f.

2C - Addenda



Plan 2 First Floor
1205 s.f.



Plan 2 First Floor
980 s.f.
2185 Total s.f.

2B - Addenda



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Scale: 1/4" = 1'-0"
0 2 4 8

PLAN 2 ADDENDA

A2.1.1

2A

Material Legend:

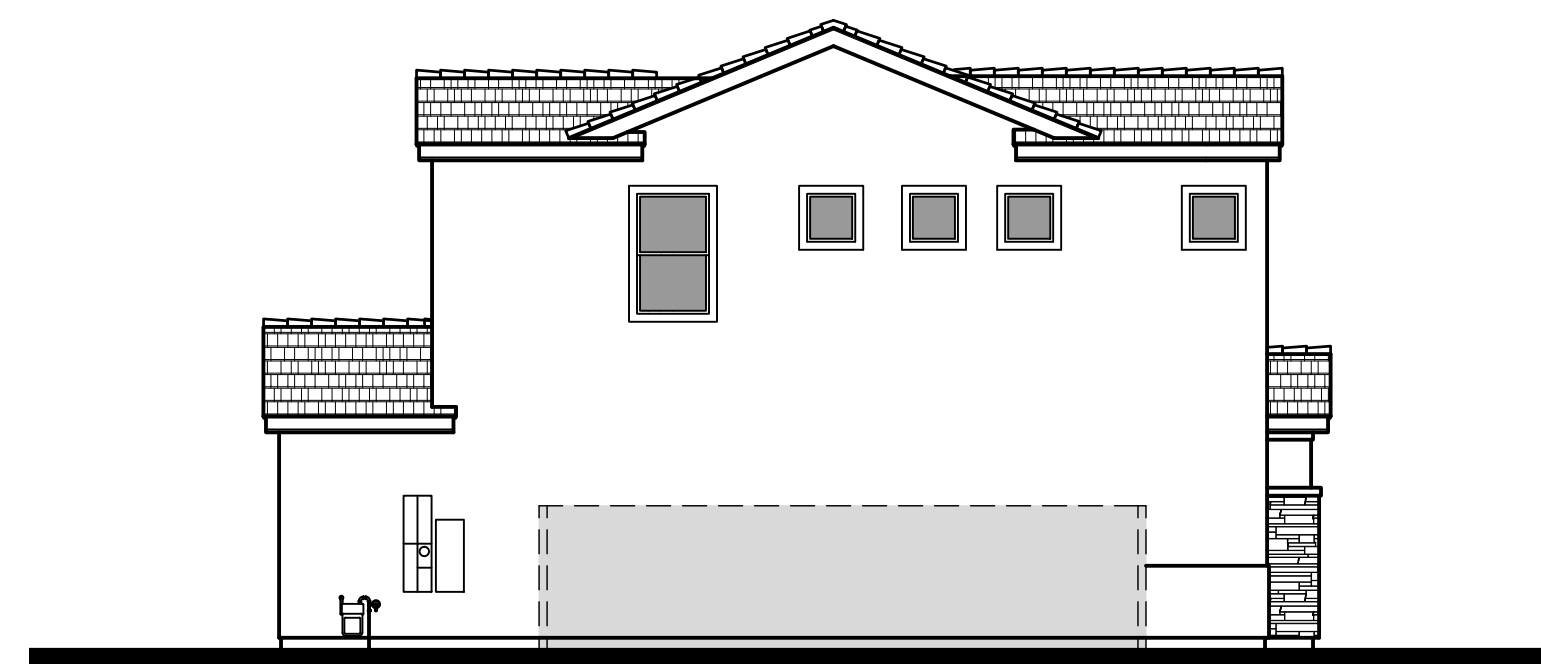
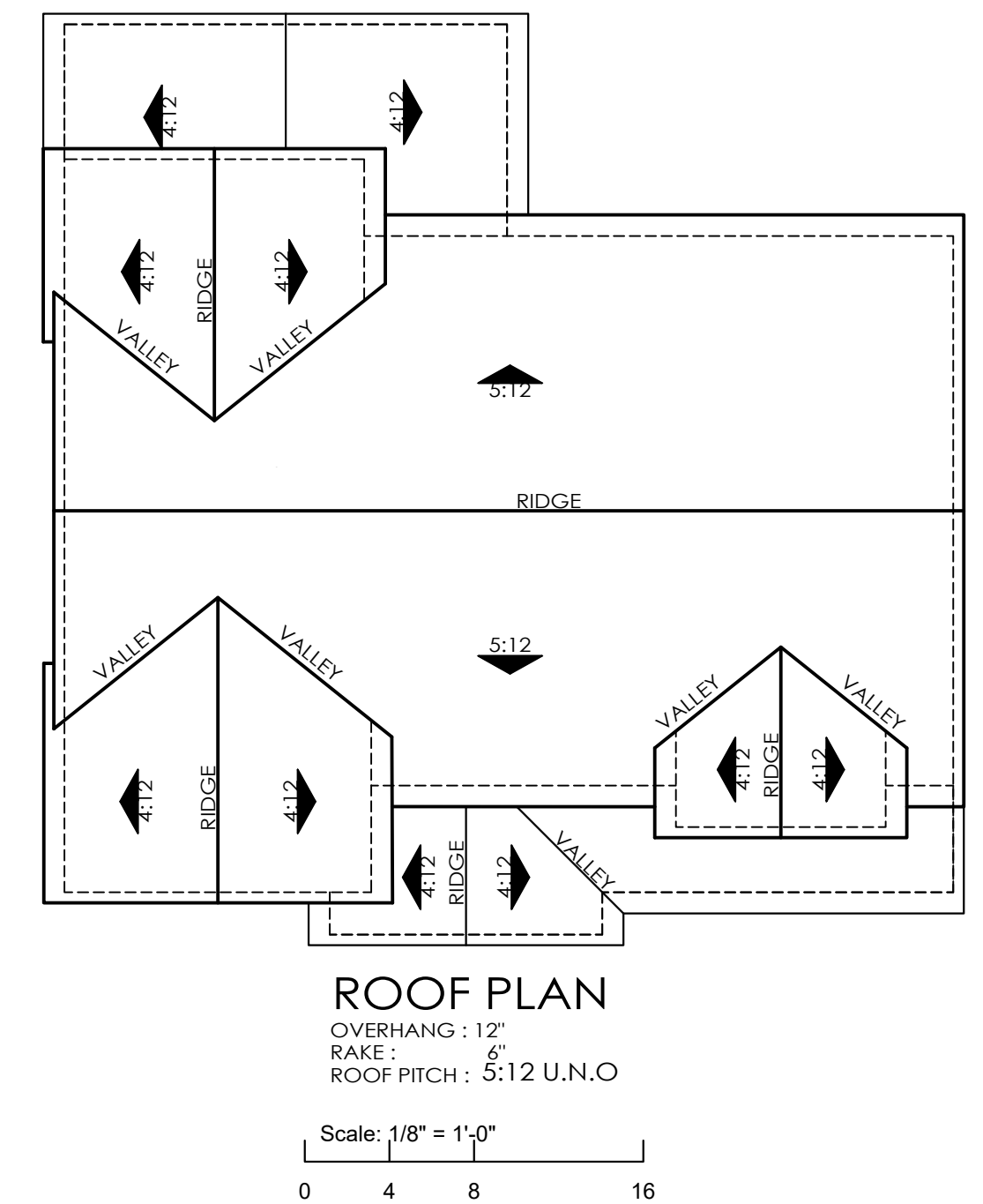
Flat concrete Tile Roofing

Stucco Finish

Stone Veneer

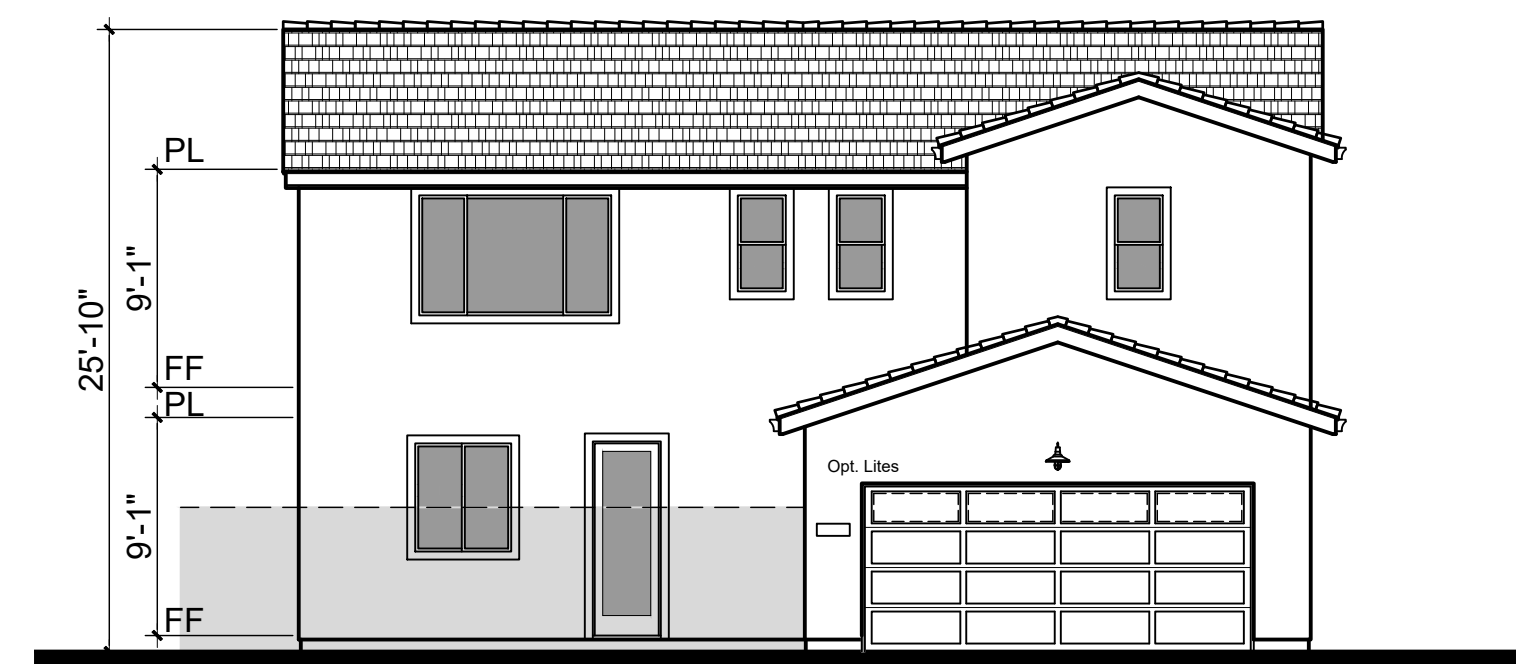


Front Elevation 2A



Left Elevation

Scale: 1/8" = 1'-0"
0 4 8 16



Rear Elevation

Scale: 1/8" = 1'-0"
0 4 8 16



Right Elevation

Scale: 1/8" = 1'-0"
0 4 8 16



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Scale: 1/4" = 1'-0"
0 2 4 8

EXTERIOR ELEVATIONS - PLAN 2A

A2.2

2B

Material Legend:

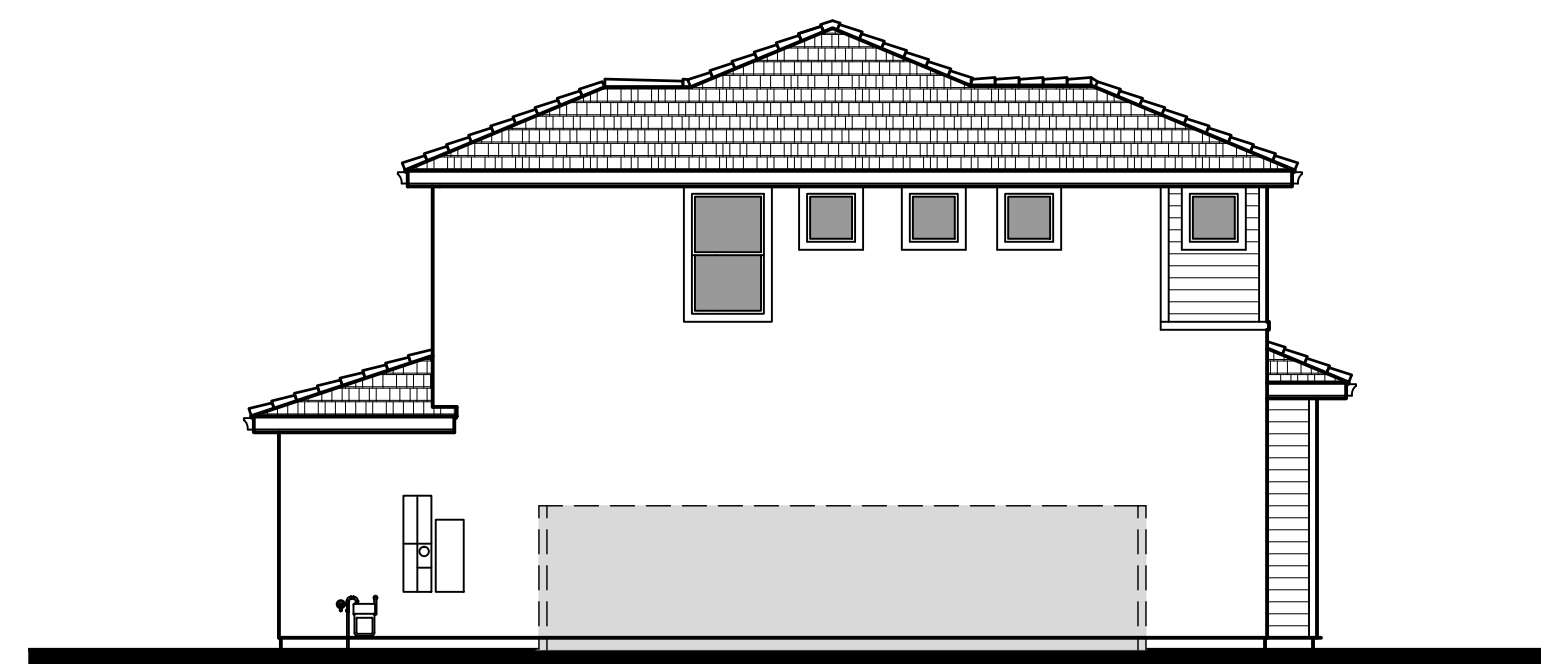
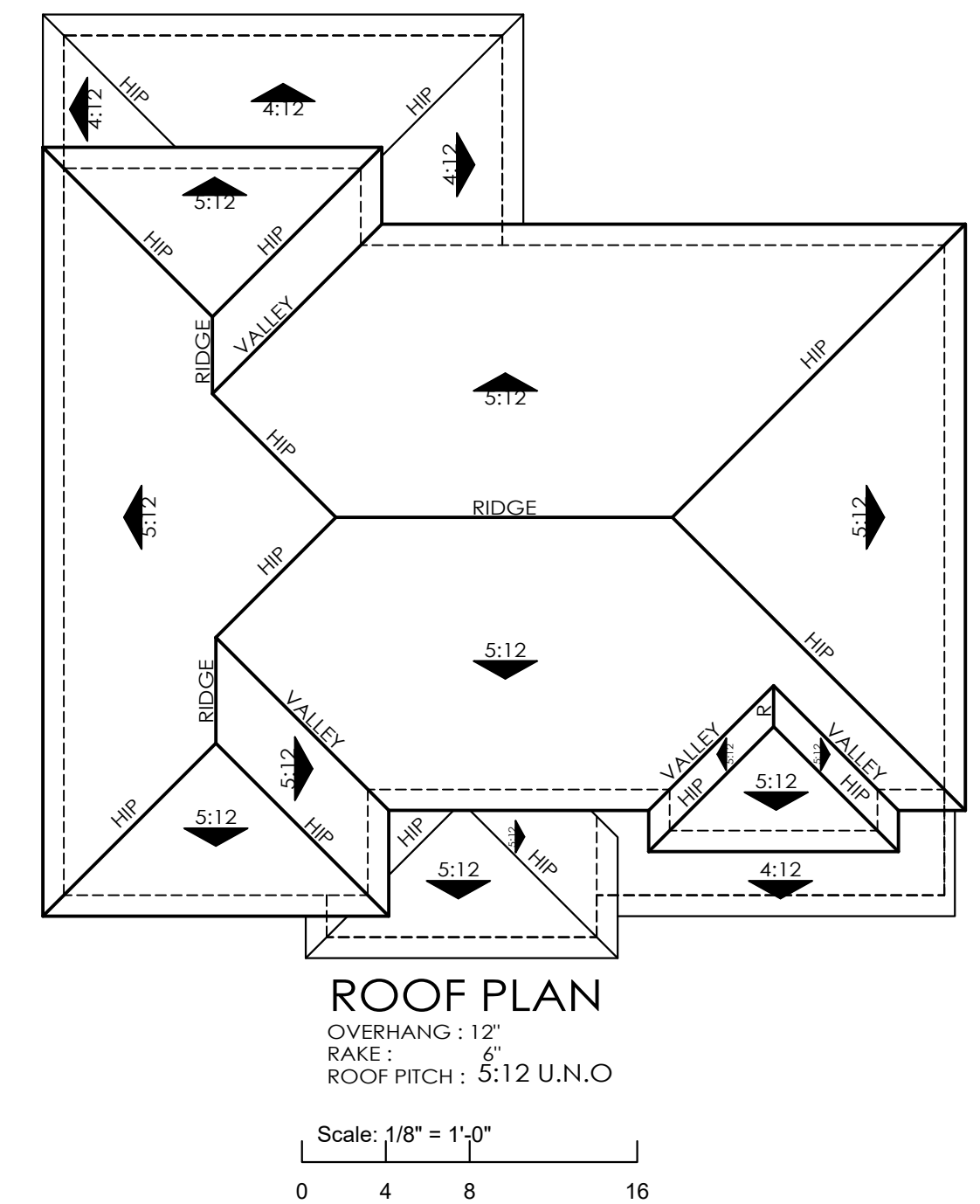
Flat concrete Tile Roofing

Stucco Finish

Cementitious Lap Siding



Front Elevation 2B



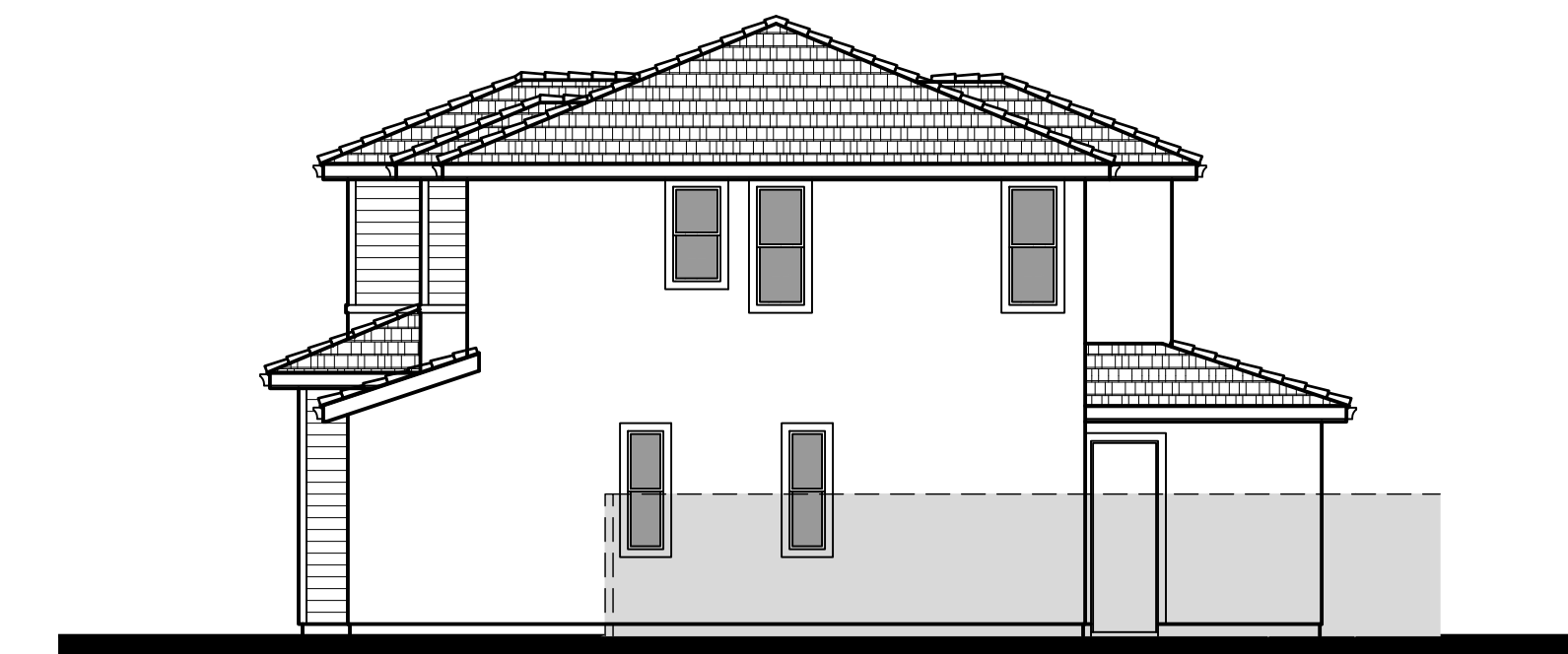
Left Elevation

Scale: 1/8" = 1'-0"



Rear Elevation

Scale: 1/8" = 1'-0"



Right Elevation

Scale: 1/8" = 1'-0"



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Scale: 1/4" = 1'-0"

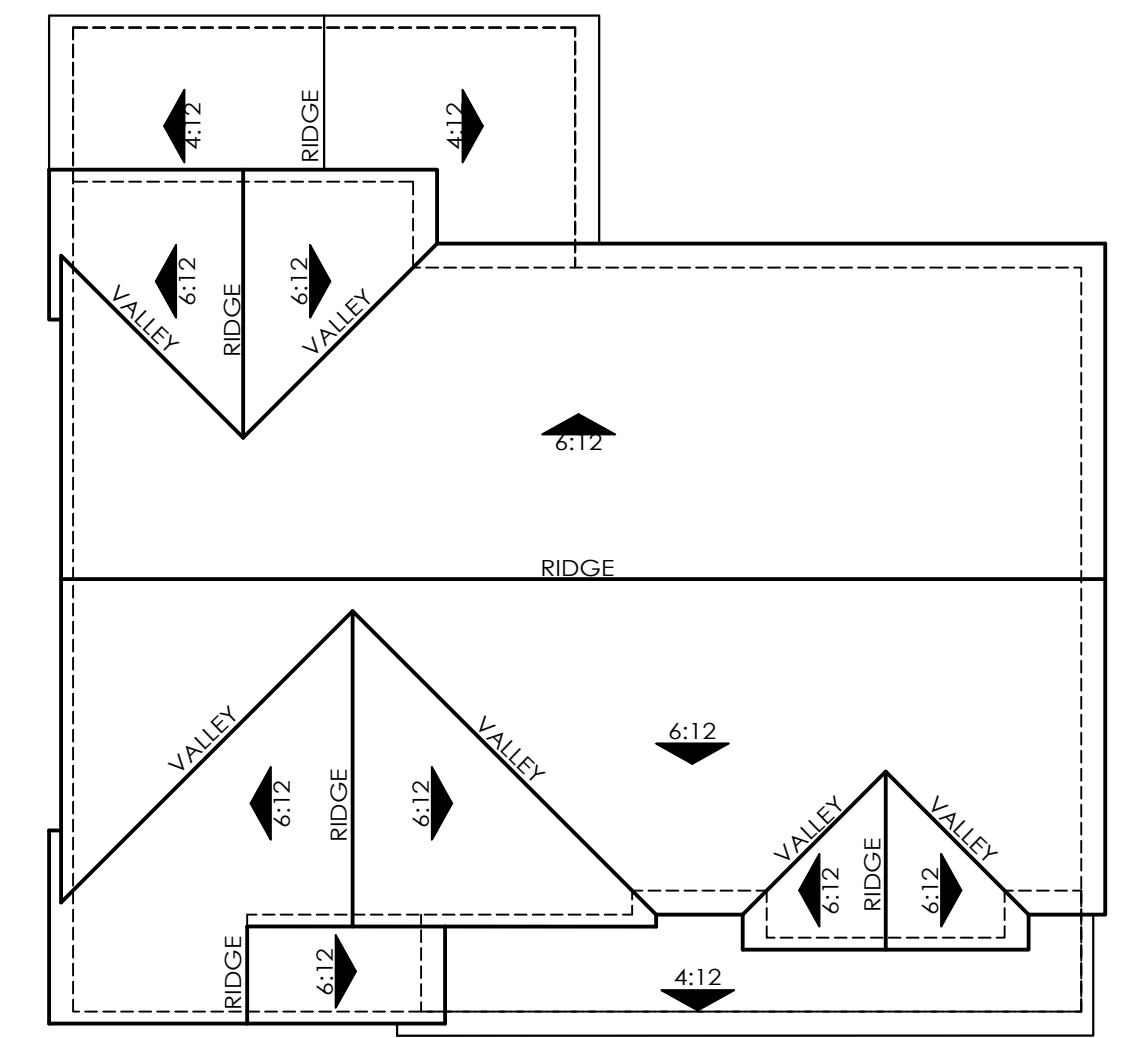
EXTERIOR ELEVATIONS - PLAN 2B

A2.3

2C
 Material Legend:
 Flat concrete Tile Roofing
 Stucco Finish
 Cementitious Board & Batt Siding



Front Elevation 2C



ROOF PLAN
 OVERHANG : 12"
 RAKE : 6"
 ROOF PITCH : 6:12 U.N.O.
 Scale: 1/8" = 1'-0"
 0 4 8 16



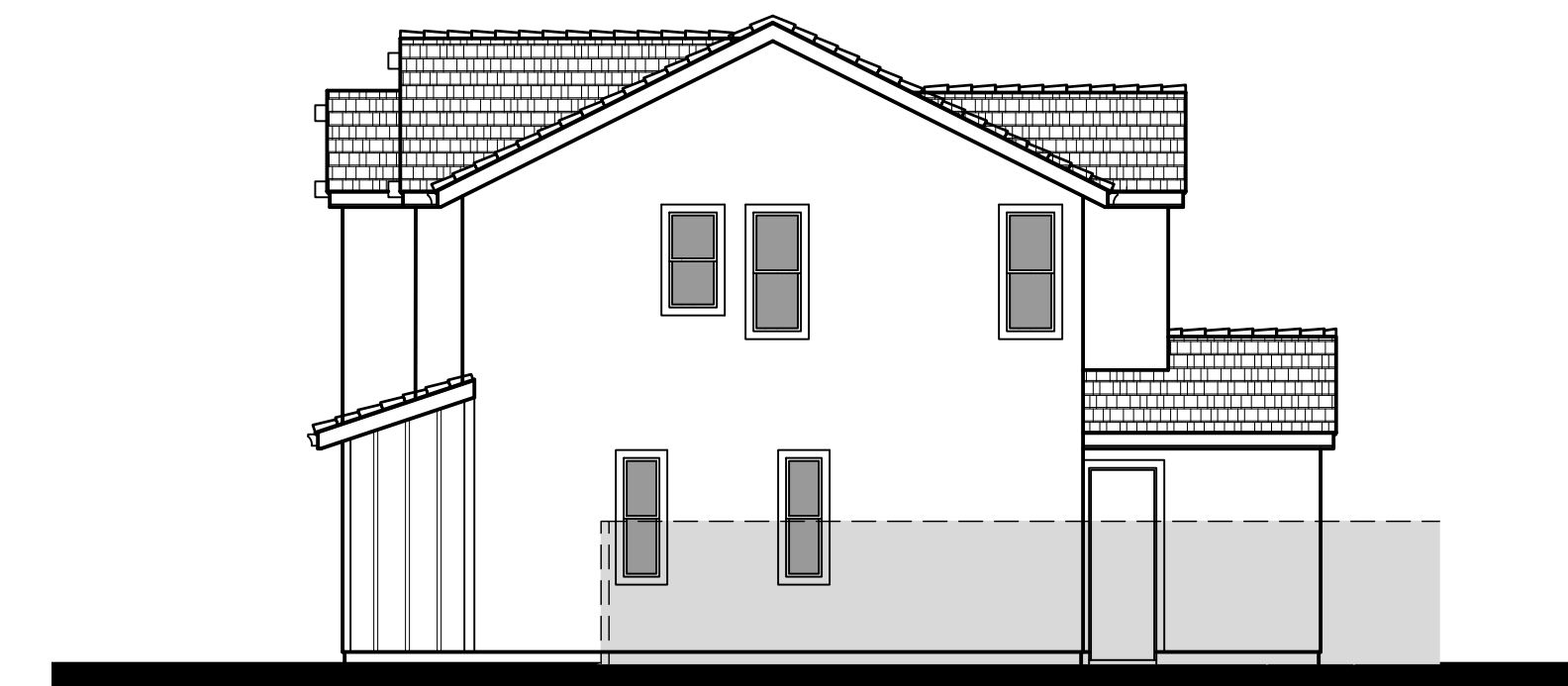
Left Elevation

Scale: 1/8" = 1'-0"
 0 4 8 16



Rear Elevation

Scale: 1/8" = 1'-0"
 0 4 8 16



Right Elevation

Scale: 1/8" = 1'-0"
 0 4 8 16



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Scale: 1/4" = 1'-0"
 0 2 4 8

EXTERIOR ELEVATIONS - PLAN 2C

A2.4



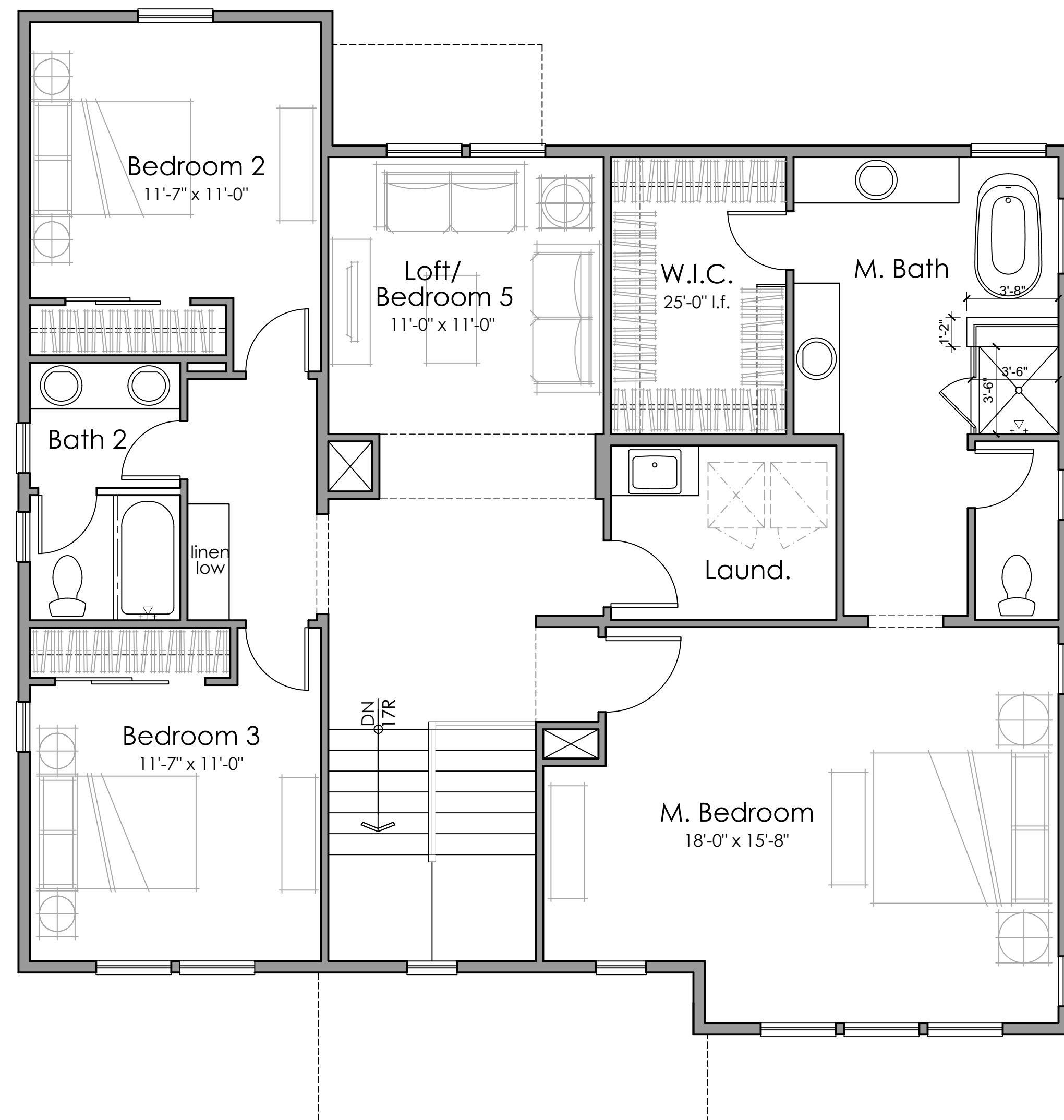
Front Elevation 3A



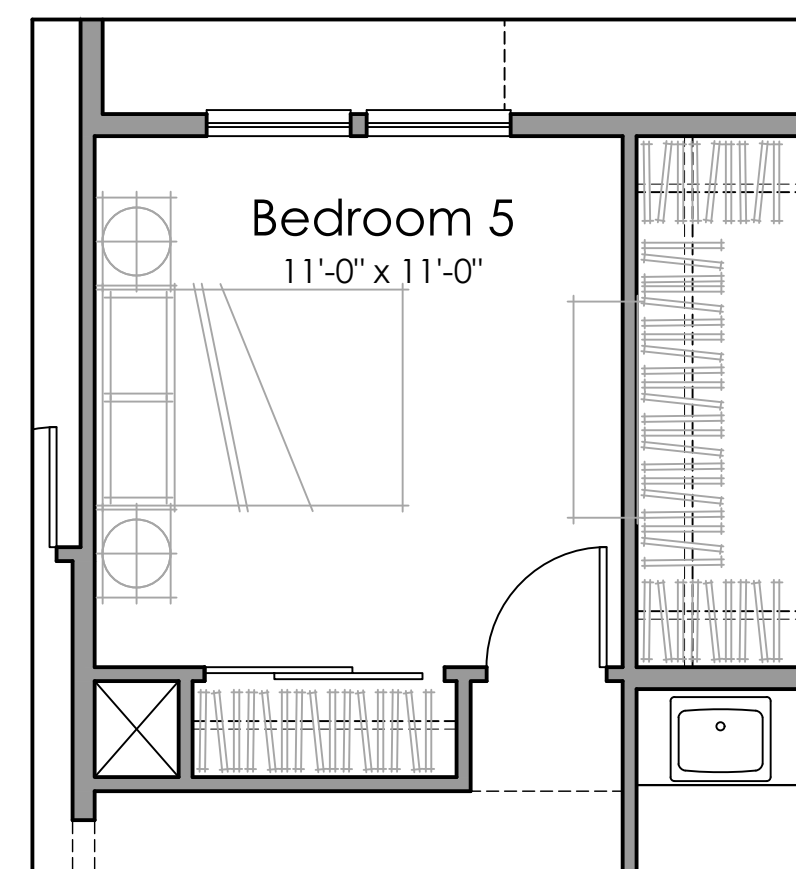
Front Elevation 3B



Front Elevation 3C

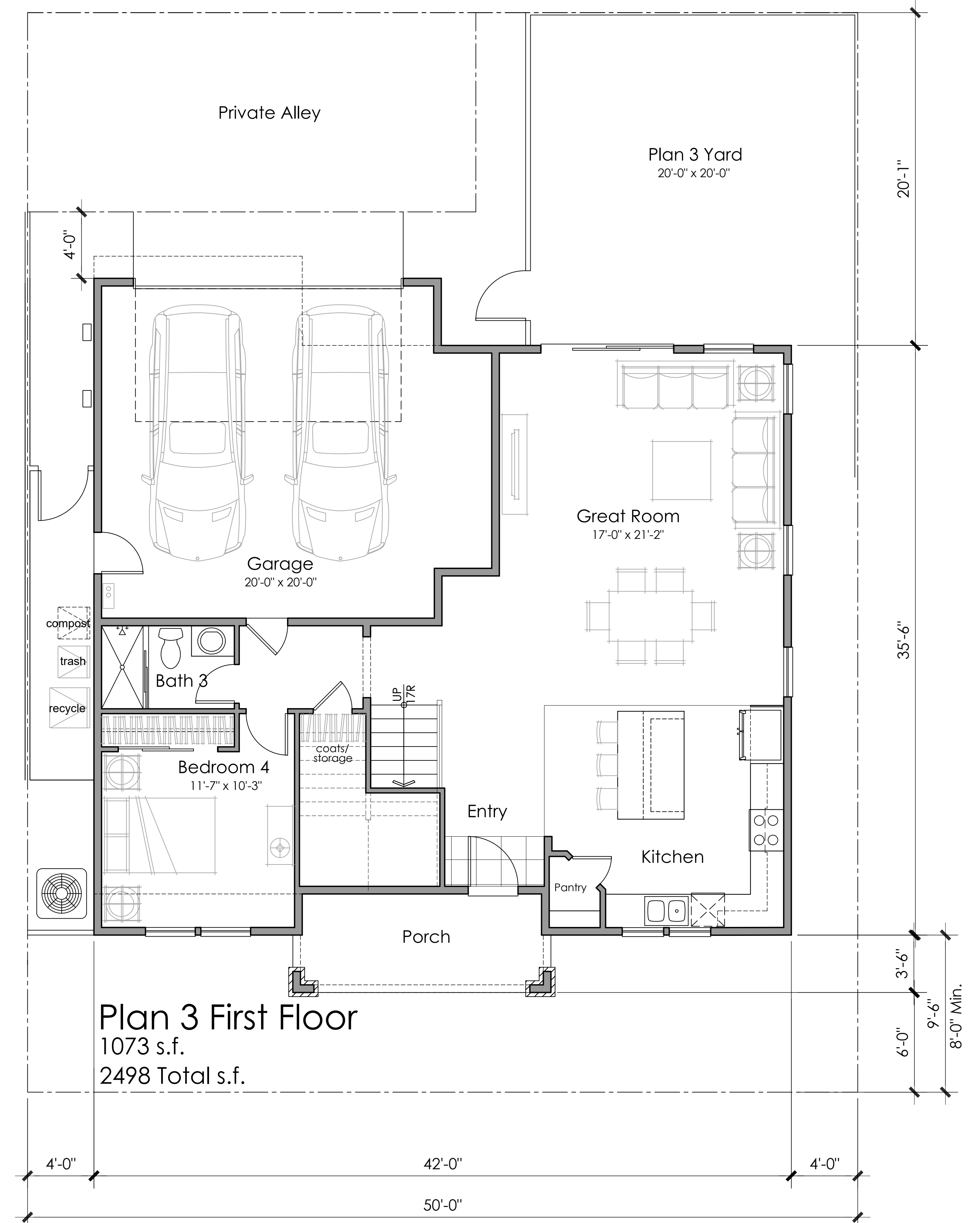


Plan 3 Second Floor
1427 s.f.

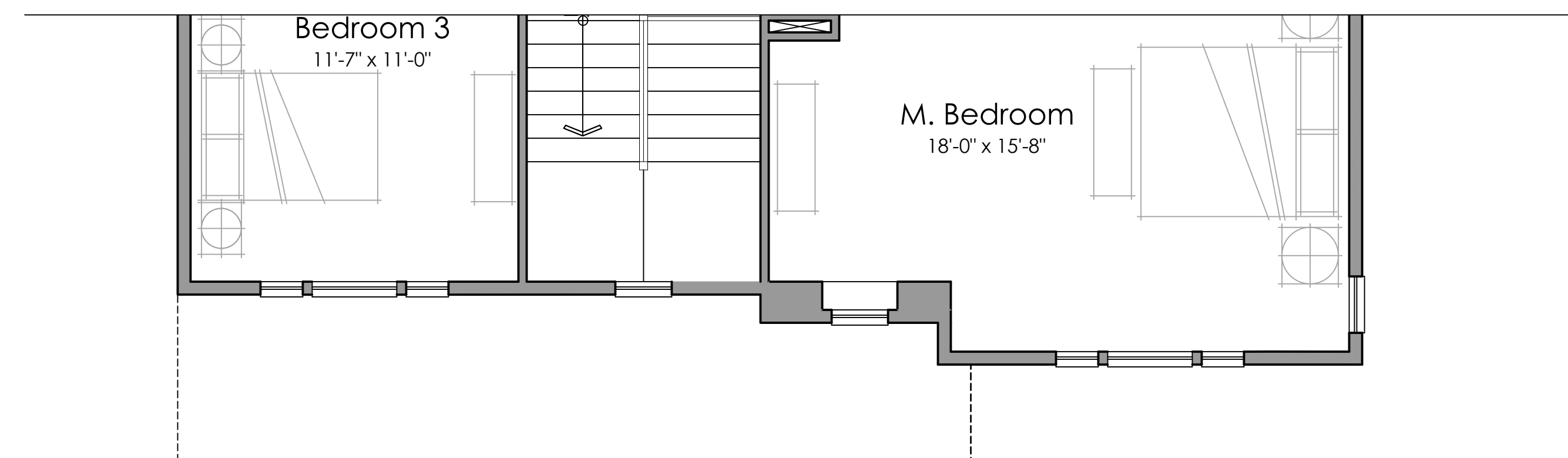


Opt. Bedroom 5

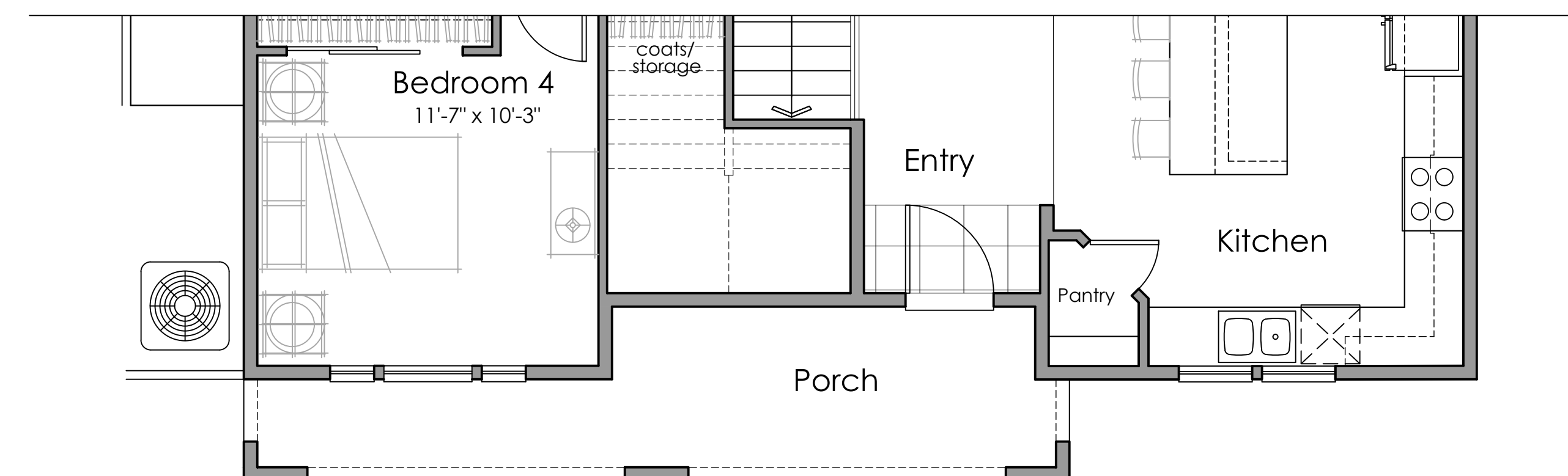
Lot Coverage - 55x65 = 3,575 s.f.
 1st Floor: 1,073 s.f.
 Garage: 468 s.f.
 Porch: 90 s.f.
 Total: 1,631 s.f.
 Lot Coverage: 46%



Plan 3 First Floor
1073 s.f.
2498 Total s.f.

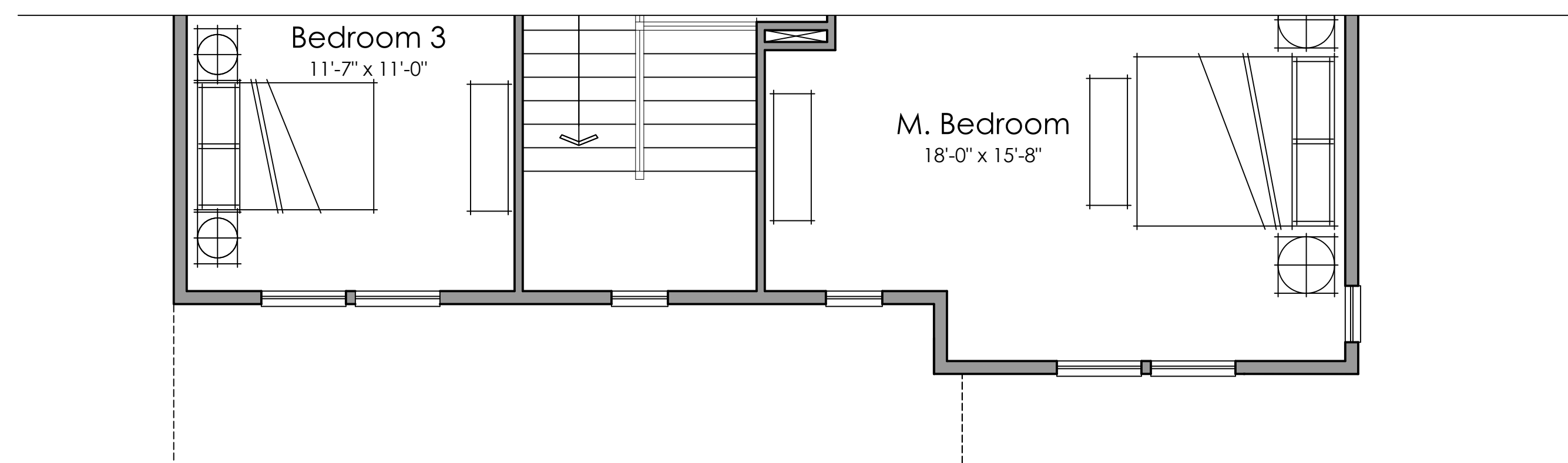


Plan 3 Second Floor
1427 s.f.

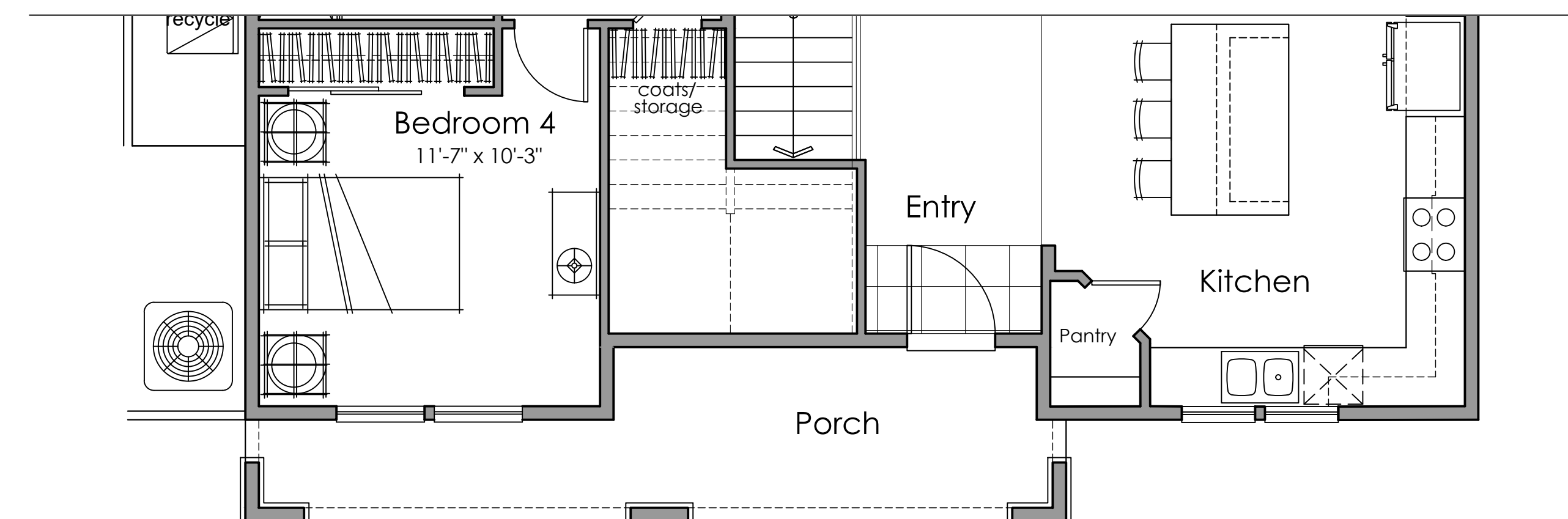


Plan 3 First Floor
1073 s.f.
2498 Total s.f.

3C - Addenda



Plan 3 Second Floor
1427 s.f.



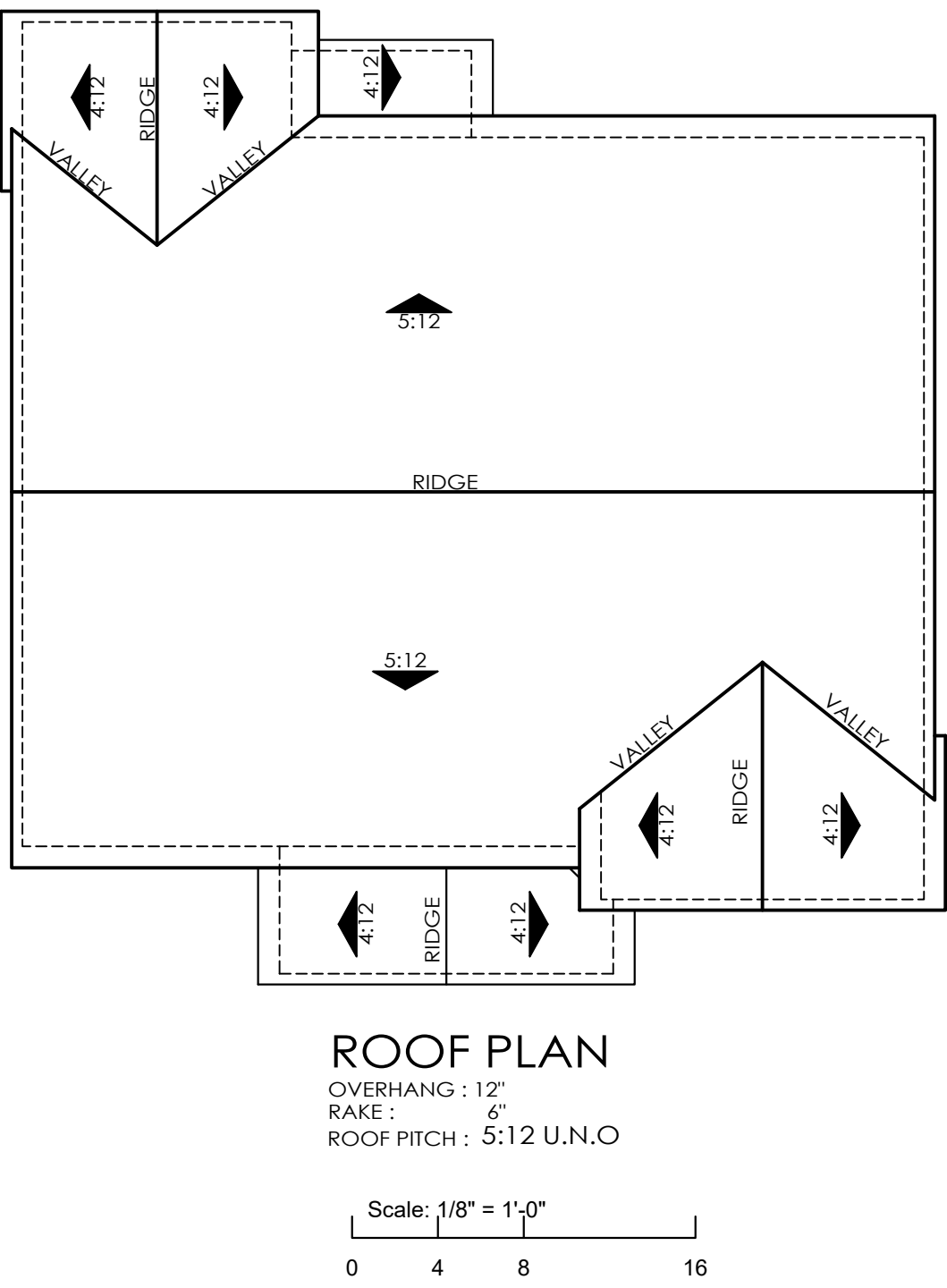
Plan 3 First Floor
1073 s.f.
2498 Total s.f.

3B - Addenda

3A
Material Legend:
Flat concrete Tile Roofing
Stucco Finish
Stone Veneer

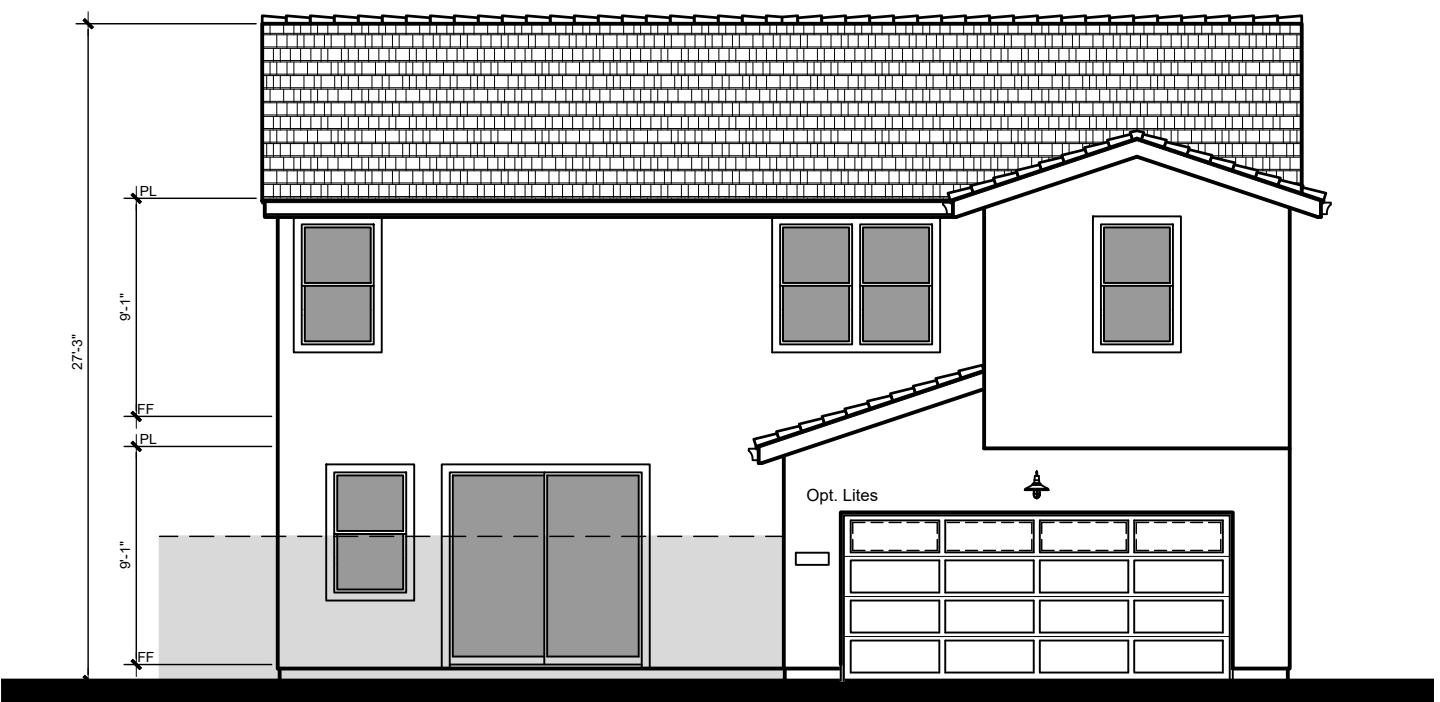


Front Elevation 3A



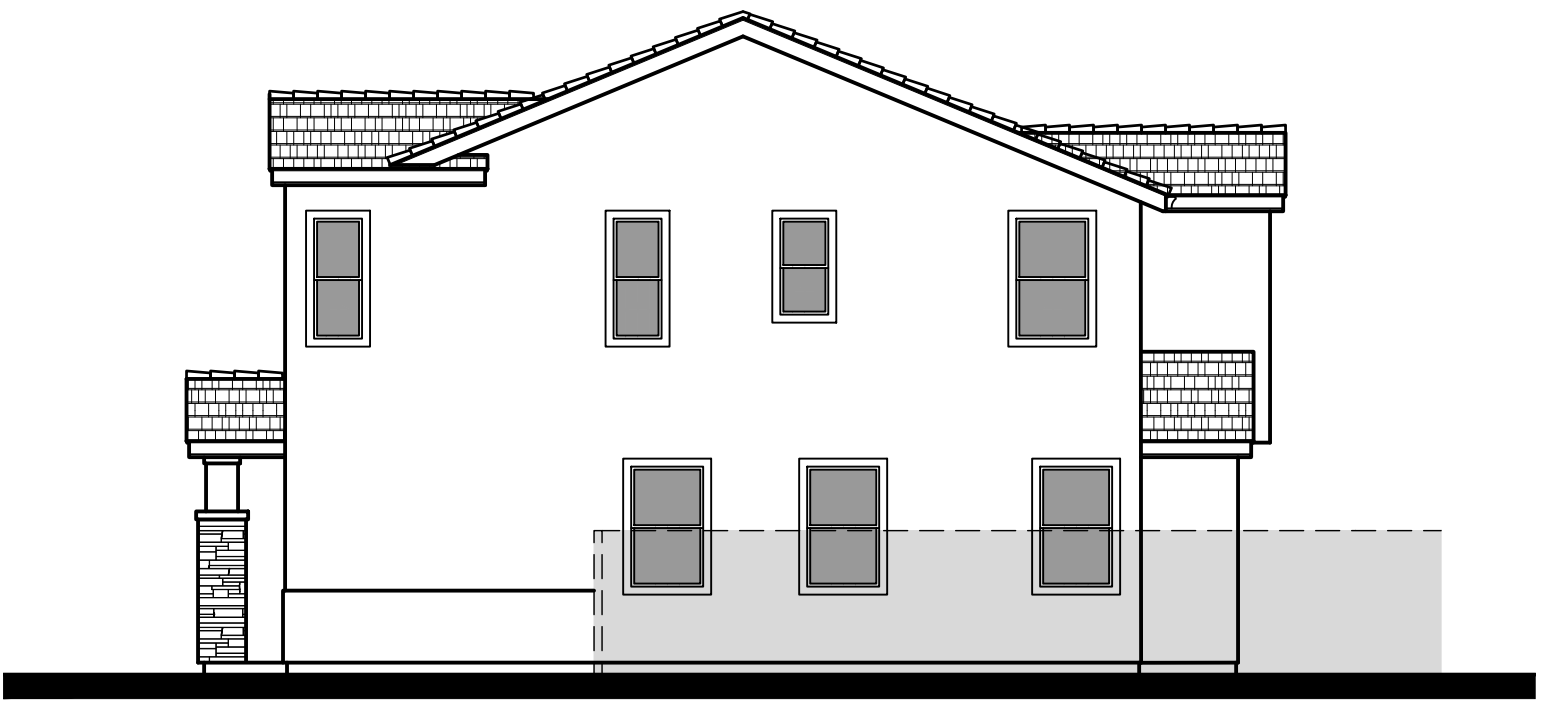
Left Elevation

Scale: 1/8" = 1'-0"



Rear Elevation

Scale: 1/8" = 1'-0"



Right Elevation

Scale: 1/8" = 1'-0"



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SCHEMATIC DESIGN
DECEMBER 18, 2019

Scale: 1/4" = 1'-0"

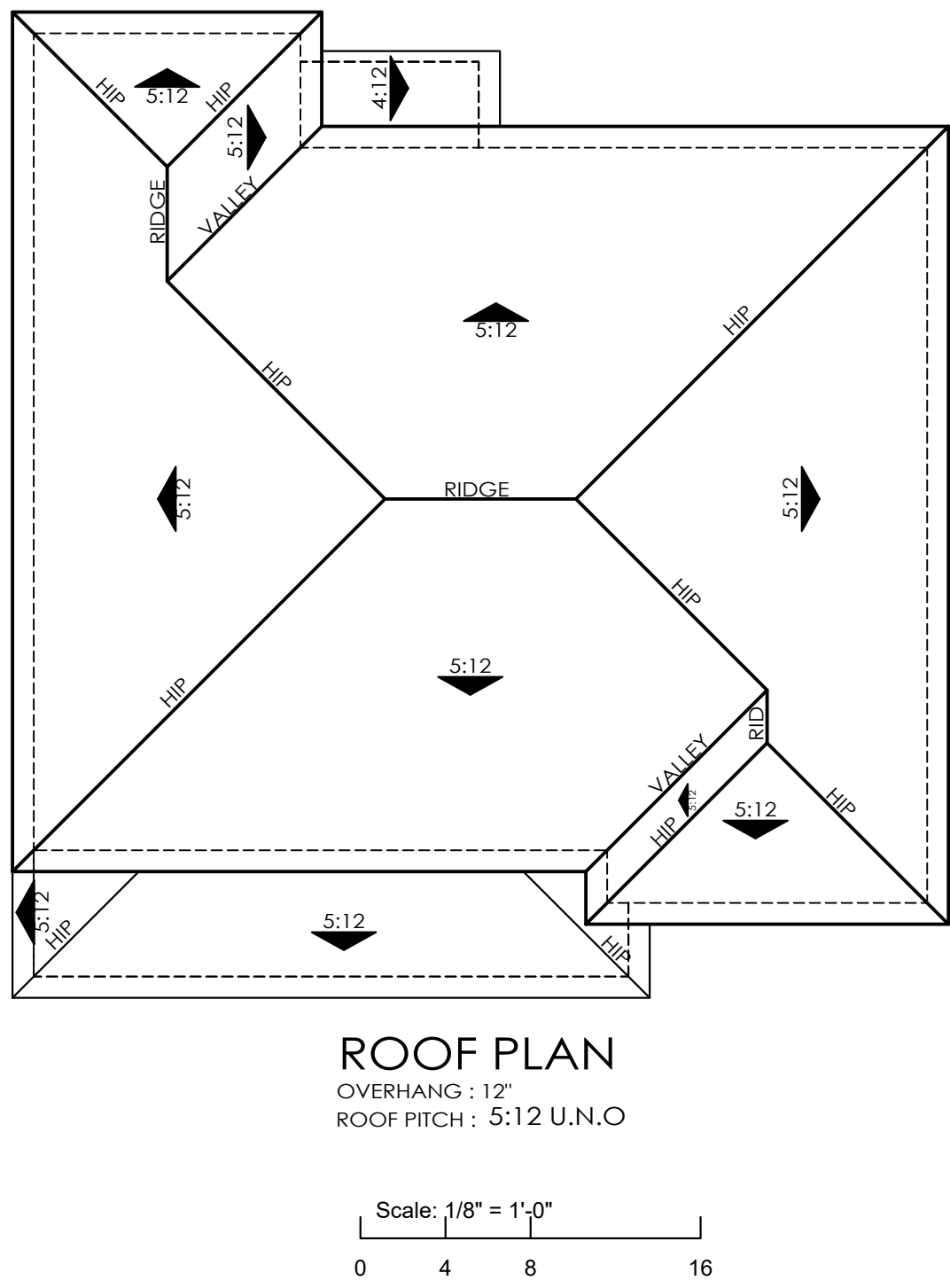
EXTERIOR ELEVATIONS - PLAN 3A

A3.2

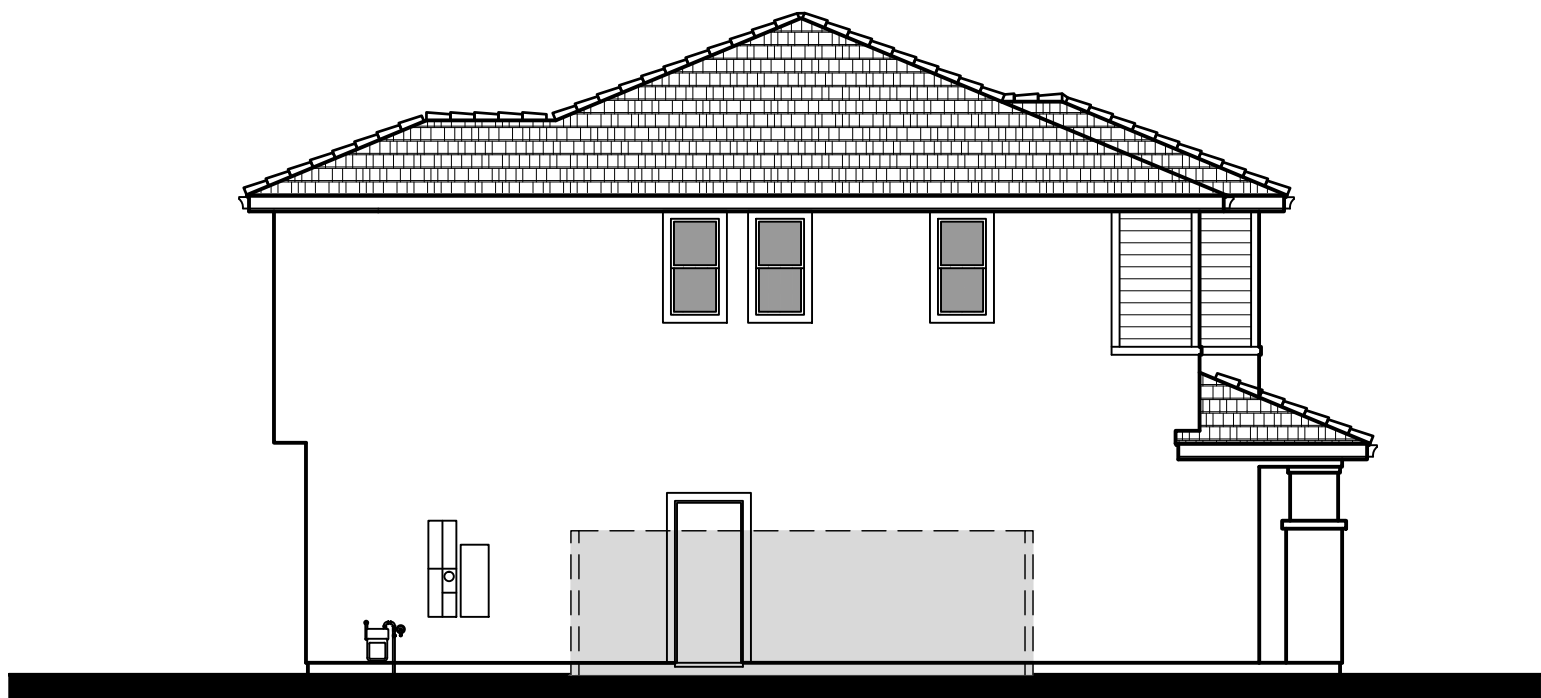
3B
Material Legend:
Flat concrete Tile Roofing
Stucco Finish
Cementitious Lap Siding



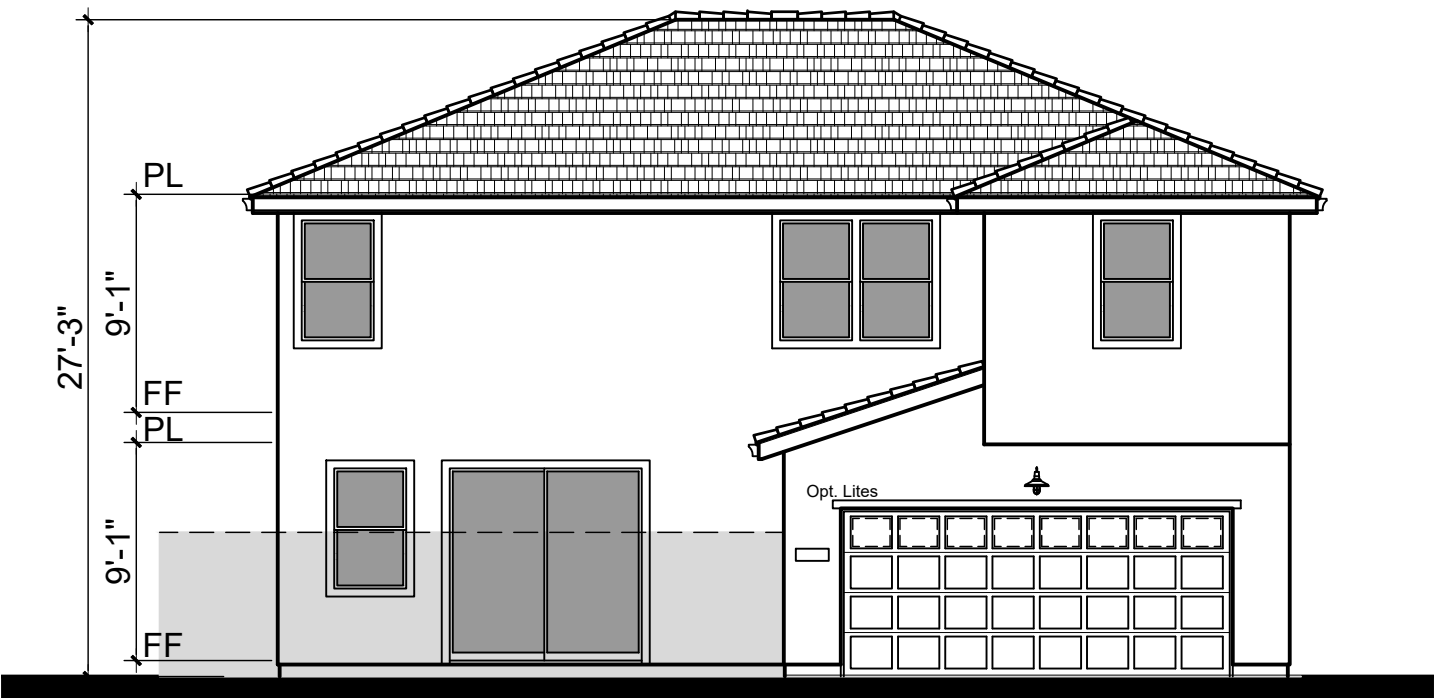
Front Elevation 3B



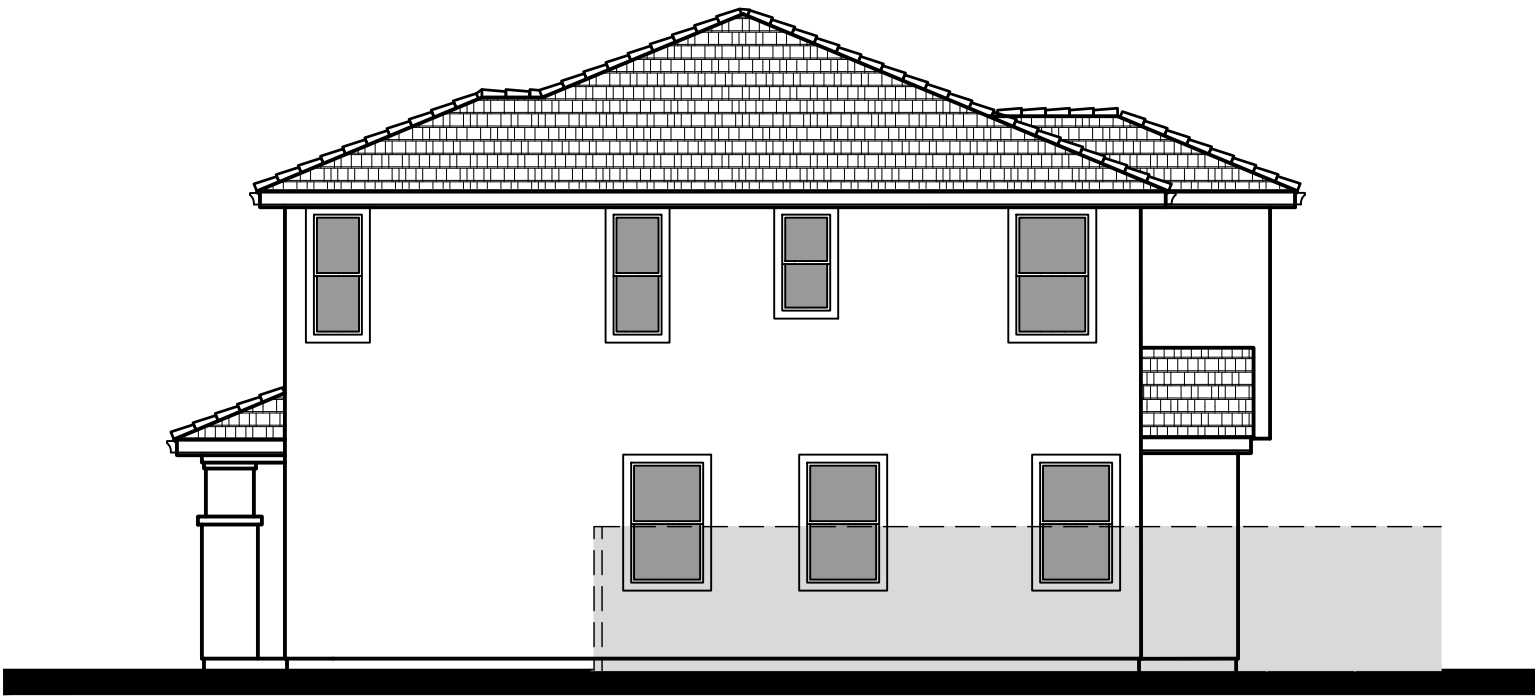
ROOF PLAN
OVERHANG : 12"
ROOF PITCH : 5:12 U.N.O



Left Elevation



Rear Elevation



Right Elevation



Architecture + Planning
The Leamington Building
1814 Franklin St., Suite 400
Oakland, CA 94612
510.272.2910
ktgy.com

Lewis Community Developers
A Member of the Lewis Group of Companies

FAIRVIEW GREEN COURT
Vallejo, CA # 2018-0788

SCHEMATIC DESIGN
DECEMBER 18, 2019

Scale: 1/4" = 1'-0"

EXTERIOR ELEVATIONS - PLAN 3B

A3.3

3C

Material Legend:

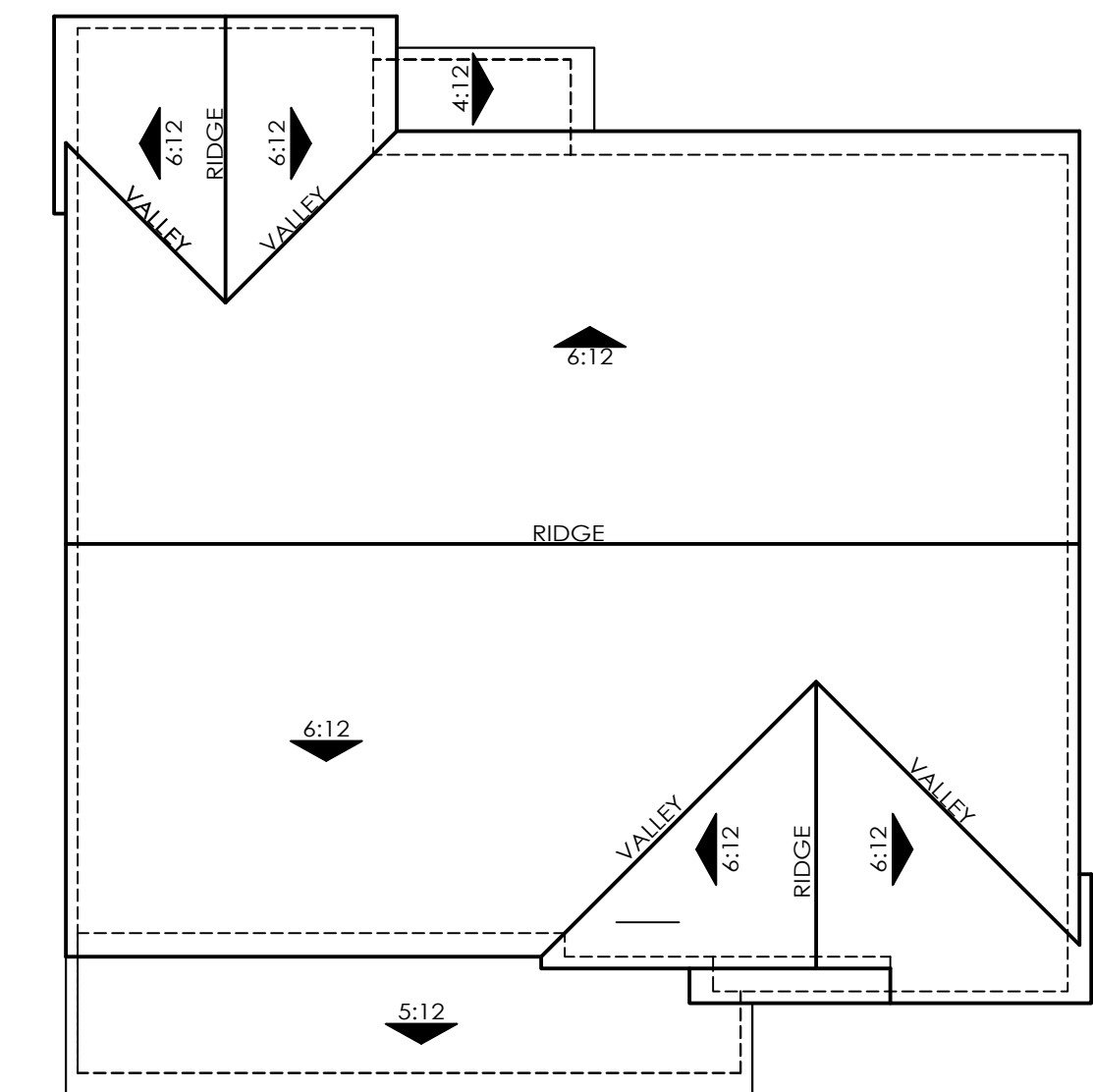
Flat concrete Tile Roofing

Stucco Finish

Cementitious Board & Batt Siding



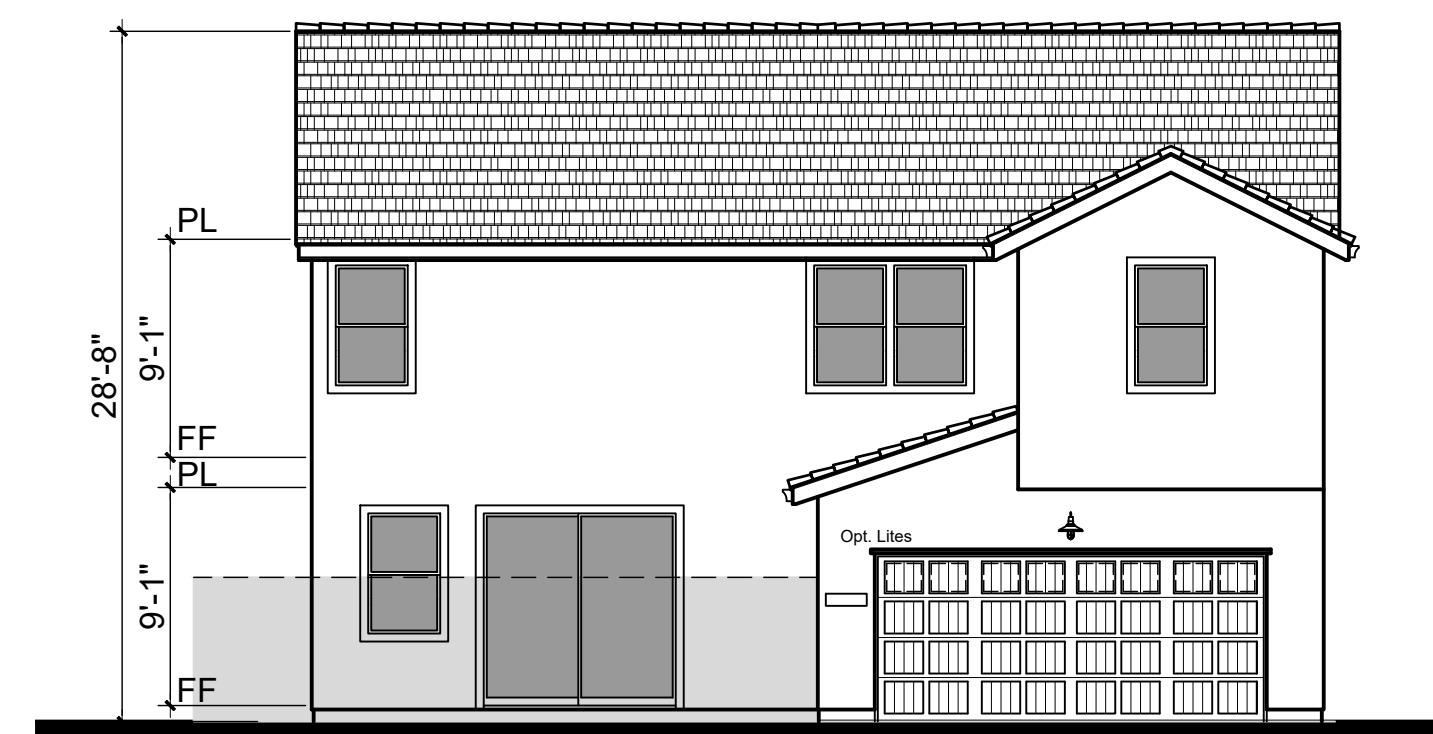
Front Elevation 3C



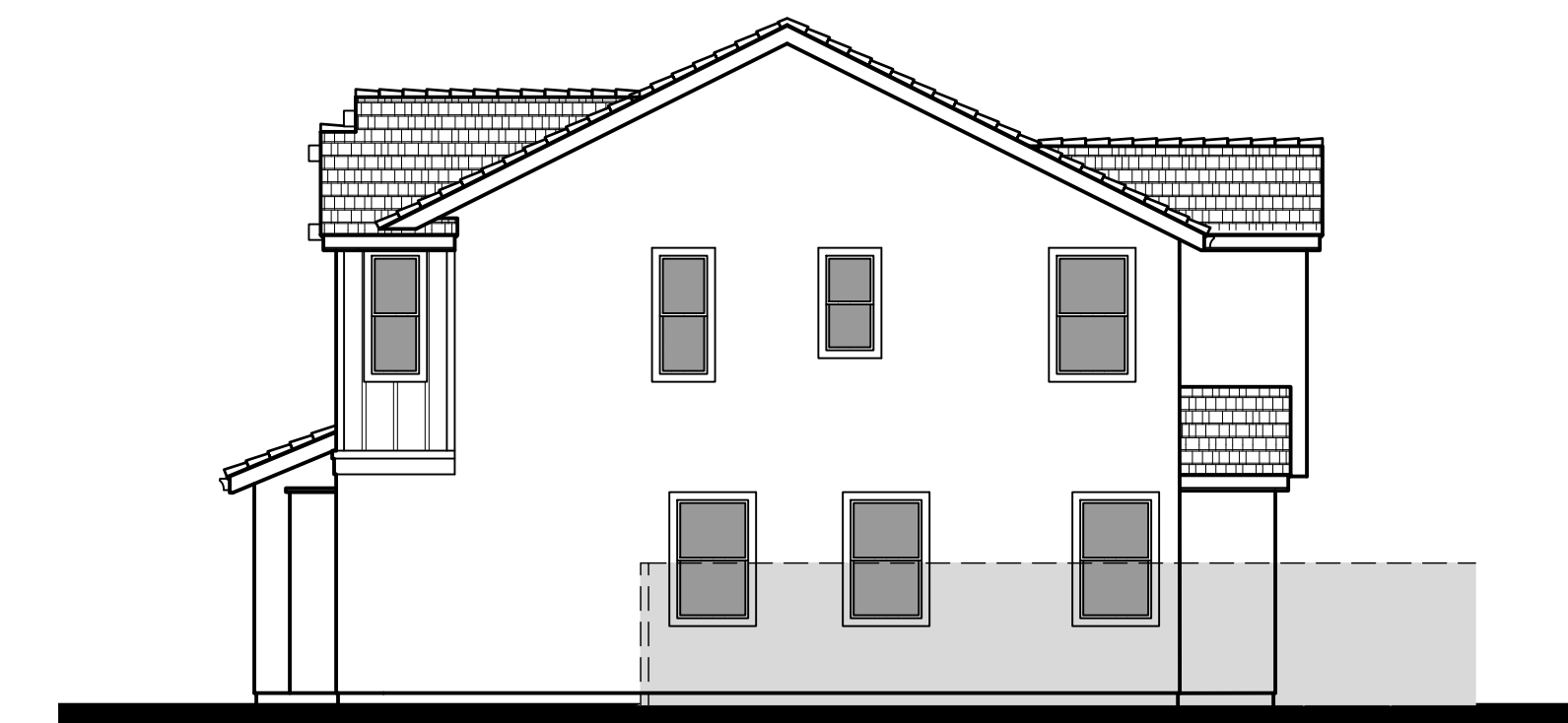
ROOF PLAN
OVERHANG: 12"
RAKE: 6"
ROOF PITCH: 5:12 U.N.O



Left Elevation



Rear Elevation



Right Elevation



Architecture + Planning
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Oakland, CA 94612
510.272.2910
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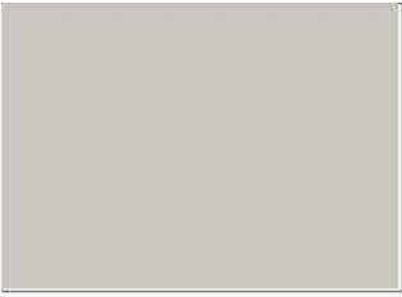
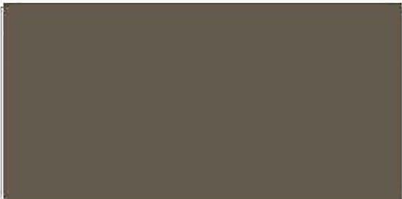
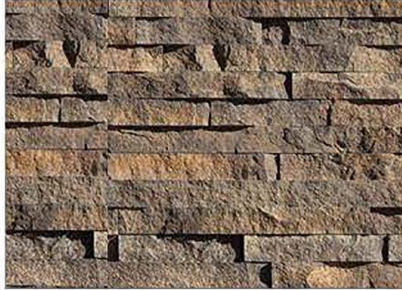
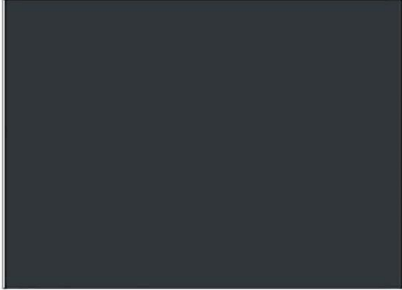
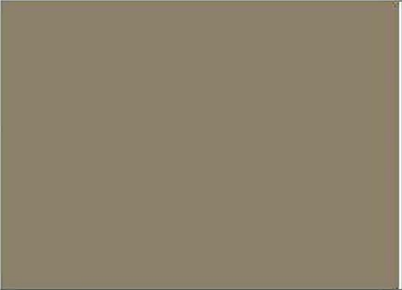
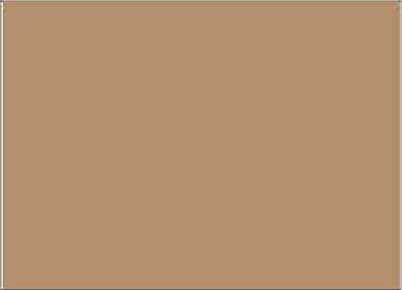
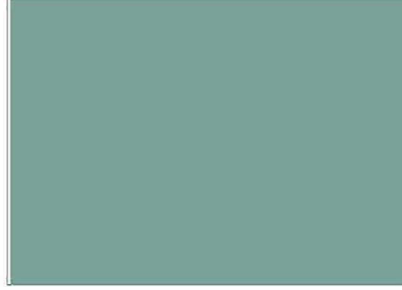
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FAIRVIEW GREEN COURT
Vallejo, CA # 2018-0788

SCHEMATIC DESIGN
DECEMBER 18, 2019

EXTERIOR ELEVATIONS - PLAN 3C

A3.4

	SCHEME 1	SCHEME 2	SCHEME 3		SCHEME 4	SCHEME 5	SCHEME 6		SCHEME 7	SCHEME 8	SCHEME 9
STUCCO BODY				STUCCO BODY				BATTEN SIDING EXCEPT AT GABLES/ CORNER BOARDS			
	SW 7541 GRECIAN IVORY	SW 6197 ALOOF GRAY	SW 7067 CITY SCAPE		SW 7632 MODERN GRAY	SW 6148 WOOL SKEIN	SW 2822 DOWNING SAND		SW 7029 AGREEABLE GRAY	SW 7652 MINERAL DEPOSIT	SW 7705 WHEAT PENNY
FASCIA / EAVES / TRIM / GARAGE DOORS/ ACCENT STUCCO				SIDING BODY/ CORNER BOARDS / WINDOW TRIM 1 AT 1ST FLOOR SIDING INSETS/ GARAGE DOOR				STUCCO BODY			
	SW 7551 GREEK VILLA	SW 7562 ROMAN COLUMN	SW 7044 AMAZING GRAY		SW 6047 HOT COCOA	SW 6151 QUIVER TAN	SW 7743 MOUNTAIN ROAD		SW 7018 DOVETAIL	SW 7568 NEUTRAL GROUND	SW 7638 JOGGING PATH
ENTRY DOOR				FASCIA/EAVES/ TRIM 2				FACIA/ EAVES /TRIM/ GARAGE DOOR GABLE BATTEN SIDING/ POSTS			
	SW 7630 RAISIN	SW 6207 RETREAT	SW 7674 PEPPERCORN		SW 7054 SUITABLE BROWN	SW 7012 CREAMY	SW 6146 UMBER		SW 7005 PURE WHITE	SW 7018 DOVETAIL	SW 7571 CASA BLANCA
STONE VENEER				ENTRY DOOR				ENTRY DOOR			
	IRON MILL EUROPEAN LEDGE	COTTONWOOD EUROPEAN LEDGE	LINEN EUROPEAN LEDGE		SW 6992 INKWELL	SW 7737 MEADOW TRAIL	SW 6123 BAGUETTE		SW 6472 COMPOSED	SW 7680 LANYARD	SW 6256 SERIOUS GRAY
ROOF MATERIAL				ROOF MATERIAL				ROOF MATERIAL			
	4097 SLATE RANGE	4097 SLATE RANGE	4097 SLATE RANGE		5808 TOMBSTONE	5808 TOMBSTONE	5808 TOMBSTONE		SCB 8802 NANTUCKET BLEND	SCB 8802 NANTUCKET BLEND	SCB 8802 NANTUCKET BLEND



STREET SCENE PERSPECTIVE

FAIRVIEW at NORTHGATE

Vallejo, California

REVISED: JANUARY 2020 SEPTEMBER 2018

A.4.1



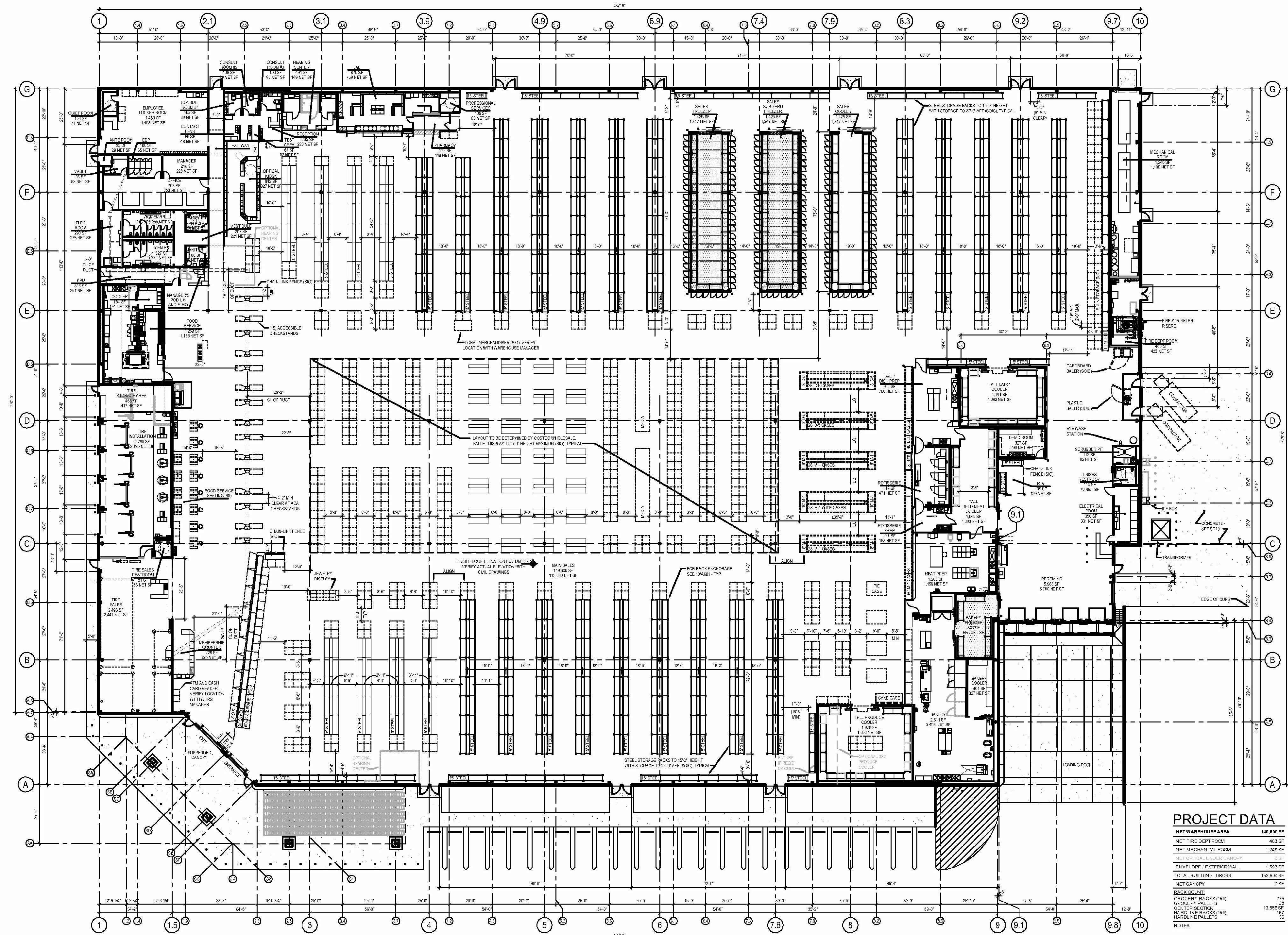
MG2

OCTOBER 16th, 2019
PROJECT # PRELIMINARY
VALLEJO, CA

V. #

ENTRY PERSPECTIVE

COSTCO
WHOLESALE



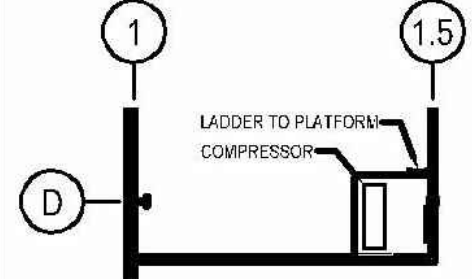
APPROVED BY:

PRESIDENT DATE:

EXECUTIVE VP DATE:

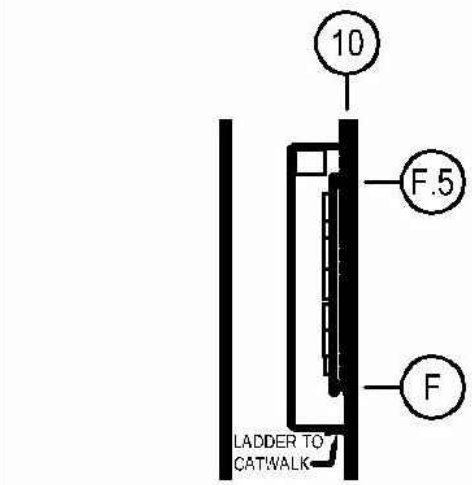
SENIOR VP DATE:

REGIONAL VP DATE:



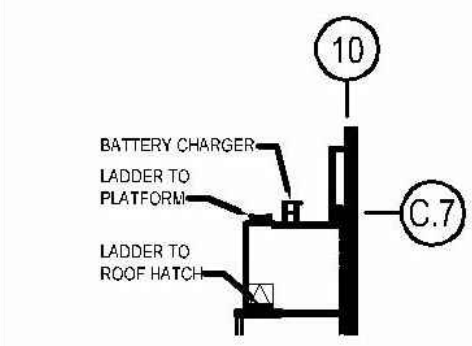
COMPRESSOR PLATFORM

SCALE: 1/16" = 1'-0"



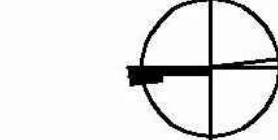
MECHANICAL CATWALK

SCALE: 1/16" = 1'-0"



RECEIVING PLATFORM

SCALE: 1/16" = 1'-0"



SEC OF ADMIRAL CALLAGHAN LN
& TURNER PKWY
VALLEJO, CA

1101 Second Ave, Ste 100
Seattle, WA 98101
206 962 6500
MG2.com



18-5347-01
NOVEMBER 19, 2018

CONCEPT
FLOOR PLAN

DD21-01

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COSTCO WHOLESALE

VALLEJO, CALIFORNIA

CONCEPT FLOOR PLAN

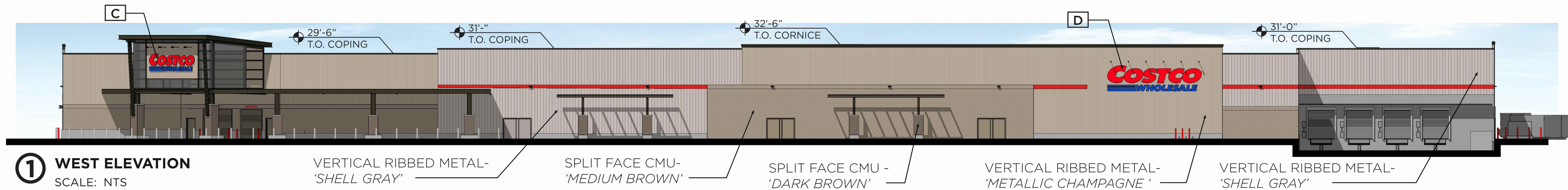
NOVEMBER 19, 2018

COMMERCIAL ARCHITECTURE - COSTCO FOOTPRINT A.5.1

FAIRVIEW at NORTHGATE

Vallejo, California

REVISED: JANUARY 2020 SEPTEMBER 2018



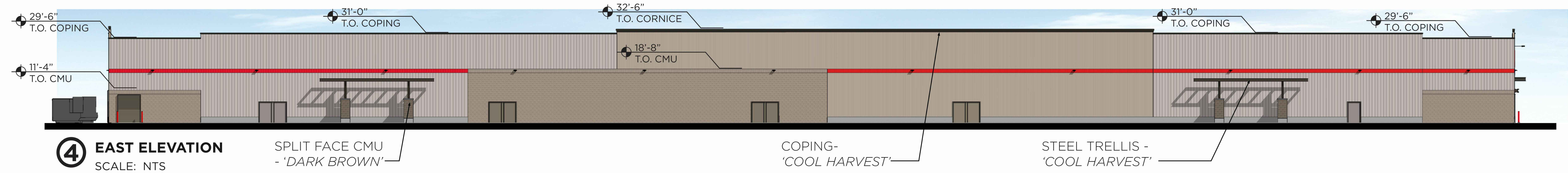
1 WEST ELEVATION
SCALE: NTS



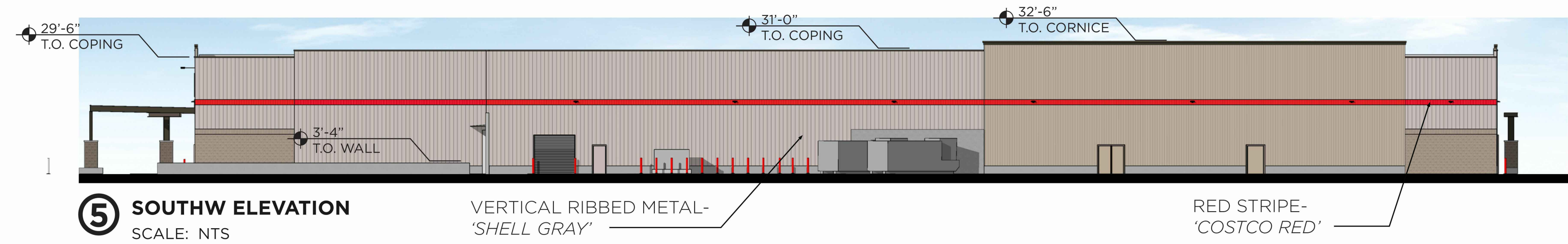
2 NORTH ELEVATION
SCALE: NTS



3 ENTRY CANOPY ELEVATION
SCALE: 1" = 40'



4 EAST ELEVATION
SCALE: NTS

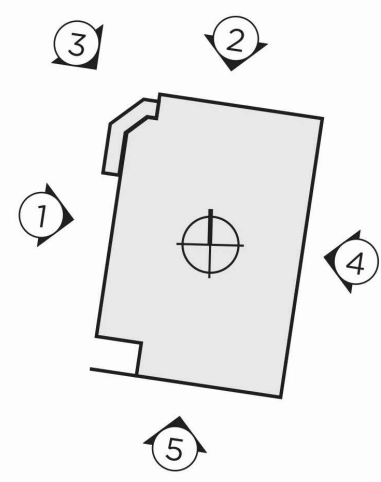


5 SOUTHW ELEVATION
SCALE: NTS

SIGN TABLE					
QUANTITY	SIGN	SIZE	AREA (EACH)	TOTAL SF	
B	1	TIRE CENTER	17'-4" x 1'-9"	31 SF	31 SF
C	1	COSTCO WHOLESALE	4'-6" C	158 SF	158 SF
D	2	COSTCO WHOLESALE	6'-0" C	280 SF	560 SF
TOTAL SIGN AREA				749 SF	



6 WAREHOUSE SIGNS
SCALE: NTS



DECEMBER 12TH, 2019
PROJECT #18-5347-01
VALLEJO, CA

CONCEPT ELEVATIONS



FINISHES:

- A STANDING SEAM METAL ROOF
- B EXTERIOR CEMENT PLASTER FINISH
- C ALUMINUM STOREFRONT SYSTEM
- D METAL TRELLIS
- E COMPOSITE WOOD SIDING
- F STONE VENEER
- G METAL AWNING
- H METAL CANOPY
- J BRAKE METAL, NATURAL FINISH
- K METAL POST/BEAM
- L METAL DOORS
- M SIGNAGE, BY OTHERS

COLORS:

- 1 SW 7563 "RESTFULWHITE" By: Sherwin Williams
- 2 SW 6185 "ESCAPE GRAY" By: Sherwin Williams
- 3 SW 7667 "ZIRCON" By: Sherwin Williams
- 4 SW 7067 "CITYSCAPE" By: Sherwin Williams
- 5 SW 7072 "VERSATILE GRAY" By: Sherwin Williams
- 6 CYPRESS RIDGE "ORCHARD" By: El Dorado Stone
- 7 OLD TOWN GRAY By: AEP Span
- 8 COUNTRYLANE RED JH90-20 By: James Hardie
- 9 SANDSTONE BEIGE JH30-20 By: James Hardie
- 10 CHARLESTON RANCH" By: Reclaimed Wood Source
- 11 PERMAFLUOR: "DOVE GRAY" By: Kawneer



WEST ELEVATION



NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



KEY PLAN



EXTERIOR ELEVATIONS
SHOPS BUILDING 1

COOKE PROPERTY
VALLEJO, CA

Lewis Retail Centers
a member of the Lewis group of companies

DATE: 12.12.2019
MCG JOB #: 17.433.01

DATE	REVISIONS

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250 Sutter, Suite 500
San Francisco, California 94108
① 415.974.6002 ② 415.974.1556
mcgarchitecture.com



- FINISHES:**
- A** STANDING SEAM METAL ROOF
 - B** EXTERIOR CEMENT PLASTER FINISH
 - C** ALUMINUM STOREFRONT SYSTEM
 - D** METAL SIDING
 - E** COMPOSITE WOOD SIDING
 - F** STONE VENEER
 - G** METAL AWNING
 - H** METAL CANOPY
 - J** BRAKE METAL, NATURAL FINISH
 - K** METAL POST/BEAM
 - L** METAL DOORS
 - M** SIGNAGE, BY OTHERS

- COLORS:**
- 1** SW 7563 "RESTFULWHITE"
By: Sherwin Williams
 - 2** SW 6185 "ESCAPE GRAY"
By: Sherwin Williams
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By: James Hardie
 - 10** CHARLESTON RANCH"
By: Reclaimed Wood Source
 - 11** PERMAFLUOR: "DOVE GRAY"
By: Kawneer



WEST ELEVATION



NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



KEY PLAN



PATIO CONCEPTUAL LAYOUT

EXTERIOR ELEVATIONS
SHOPS BUILDING 2

COOKE PROPERTY
VALLEJO, CA

Lewis Retail Centers
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DATE: 12.12.2019
MCG JOB #: 17.433.01

DATE REVISIONS

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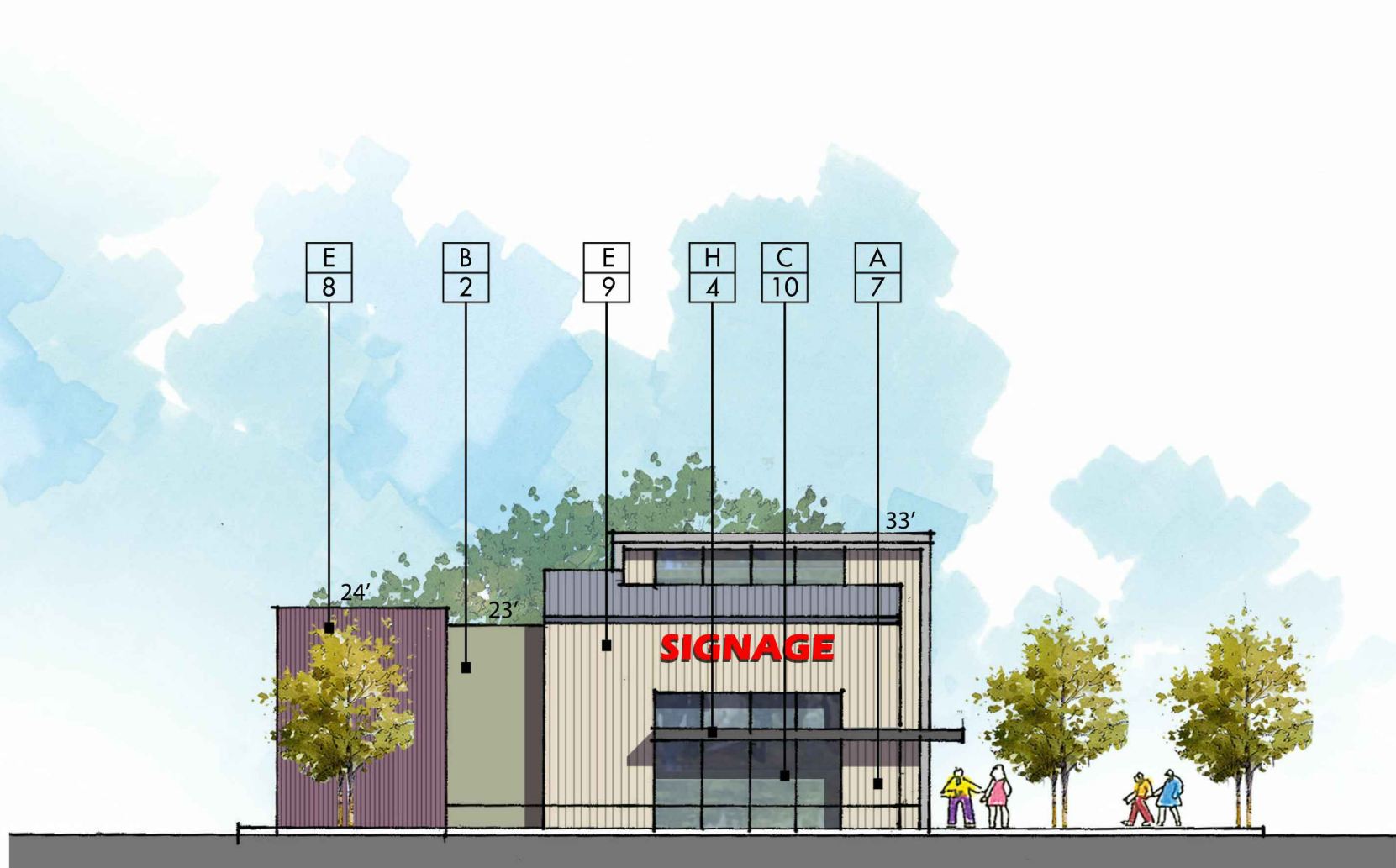
WEST ELEVATION



NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION



KEY PLAN

FINISHES:

- A STANDING SEAM METAL ROOF
- B EXTERIOR CEMENT PLASTER FINISH
- C ALUMINUM STOREFRONT SYSTEM
- D METAL TRELLIS
- E COMPOSITE WOOD SIDING
- F STONE VENEER
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- 10 CHARLESTON RANCH" By: Reclaimed Wood Source
- 11 PERMAFLUOR: "DOVE GRAY" By: Kawneer

EXTERIOR ELEVATIONS
PAD BUILDING 3

COOKE PROPERTY
VALLEJO, CA

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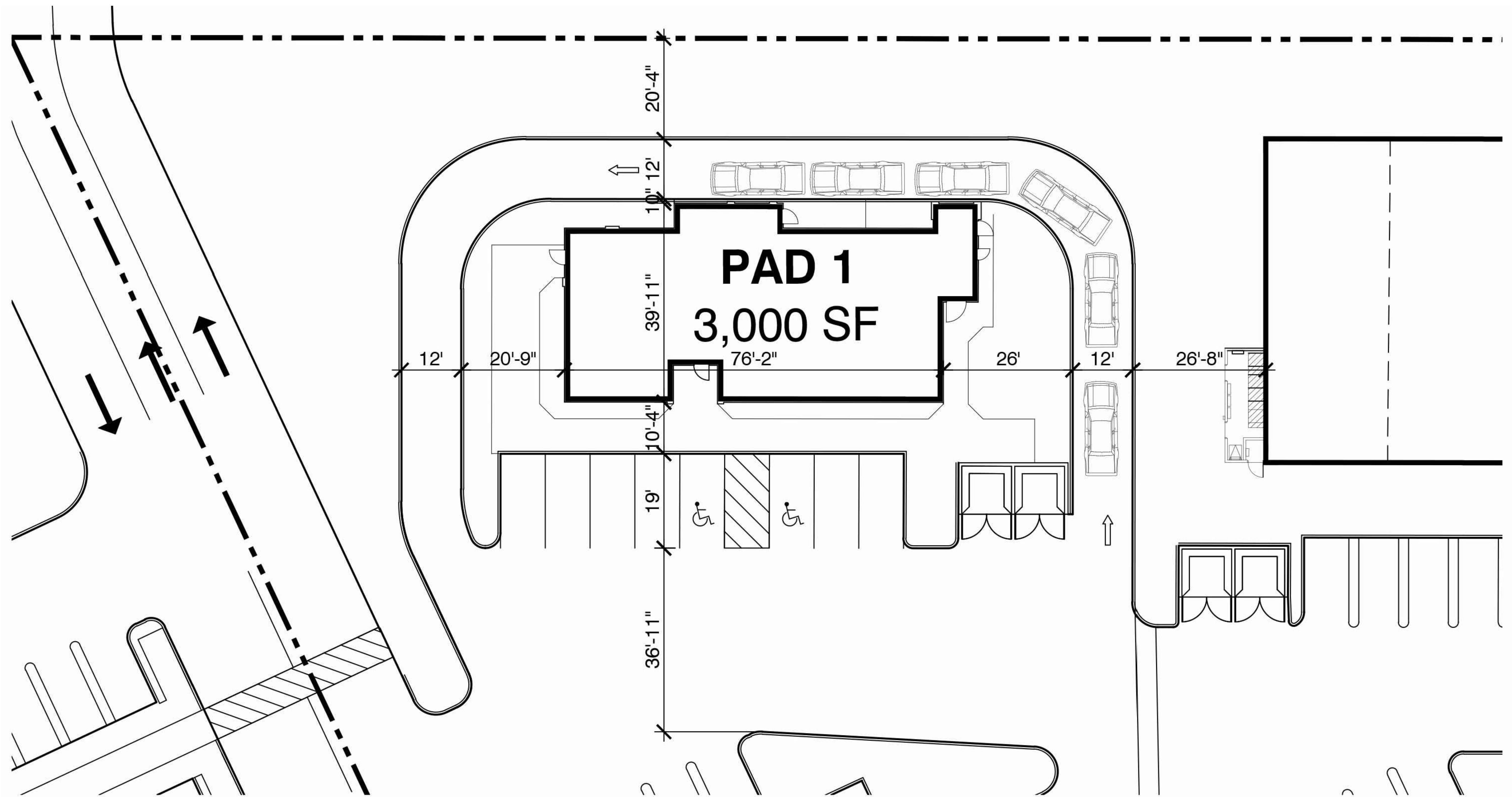
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MCG JOB #: 17.433.01

DATE	REVISIONS

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PAD 1

COOKE PROPERTY

VALLEJO, CALIFORNIA

DATE: DECEMBER, 13 2019
MCG JOB #: 17.344.01

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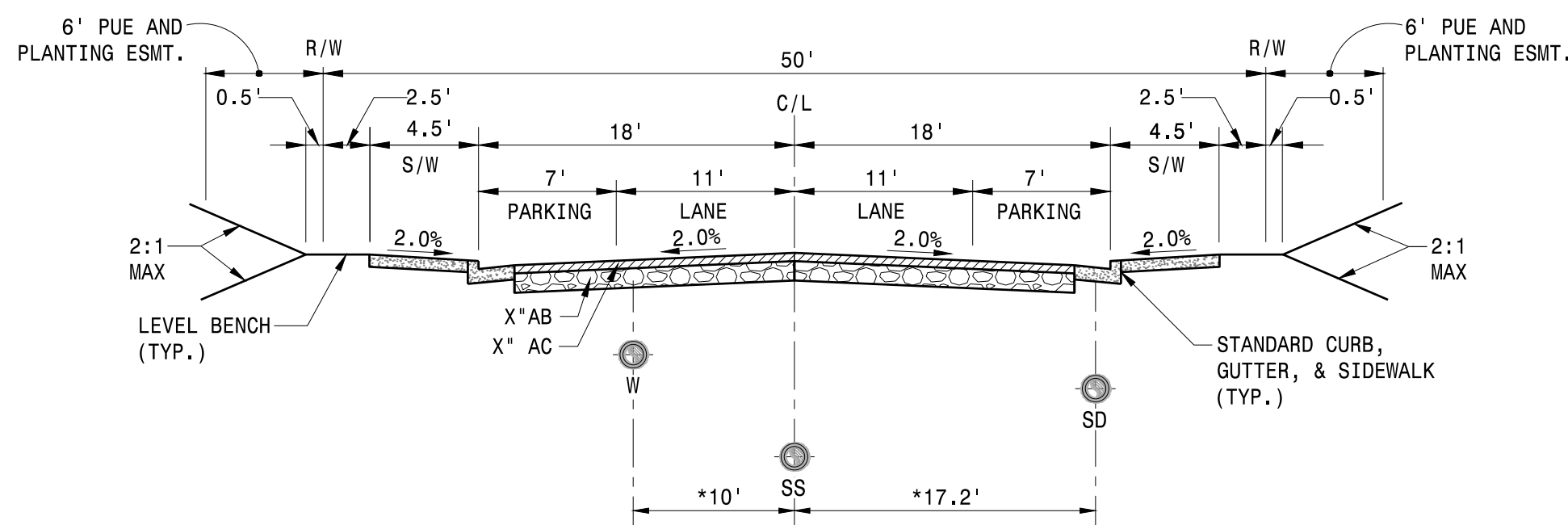
mcgarchitecture.com



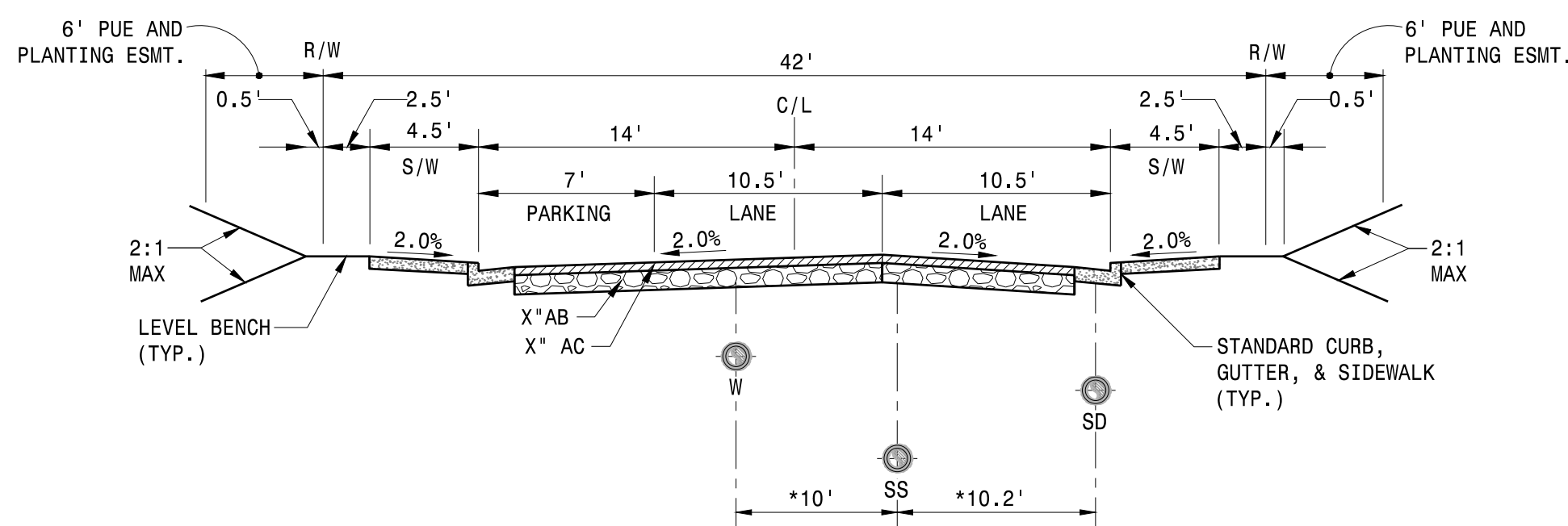
1. OWNER :
MELVIN D. COOKE TRUST
2. APPLICANTS:
VALLEJO-FAIRVIEW DEVELOPERS, LLC
3. PLANNING / ENGINEER / SURVEYOR:
MACKAY & SOMPS CIVIL ENGINEERS
5142 FRANKLIN DRIVE SUITE B
PLEASANTON, CA 94588
CONTACT: JIM TEMPLETON / ABEL GOMEZ
PHONE: (925) 225-0690
4. GEOTECHNICAL ENGINEER:
ENGEO INCORPORATED
2010 CROW CANYON PL #250
SAN RAMON, CA 94583
PHONE: (925) 866-9000

SEPTEMBER 2018
REVISED: APRIL 2020

<u>SHEET</u>	<u>DESCRIPTION</u>
C1	COVER SHEET, GENERAL NOTES, AND VICINITY MAP
C2	LARGE LOT TENTATIVE PARCEL MAP
C3	OPEN SPACE CROSS SECTIONS
C4	RESIDENTIAL UTILITIES AND DETAILS
C5	GRADING PLAN AND DIMENSIONS



N.T.S.
*TYPICAL DIMMENSIONS UNLESS OTHERWISE NOTED IN PLANS
(TO BE REFINED WITH FINAL DESIGN)



N.T.S.
*TYPICAL DIMMENSIONS UNLESS OTHERWISE NOTED IN PLANS
(TO BE REFINED WITH FINAL DESIGN)

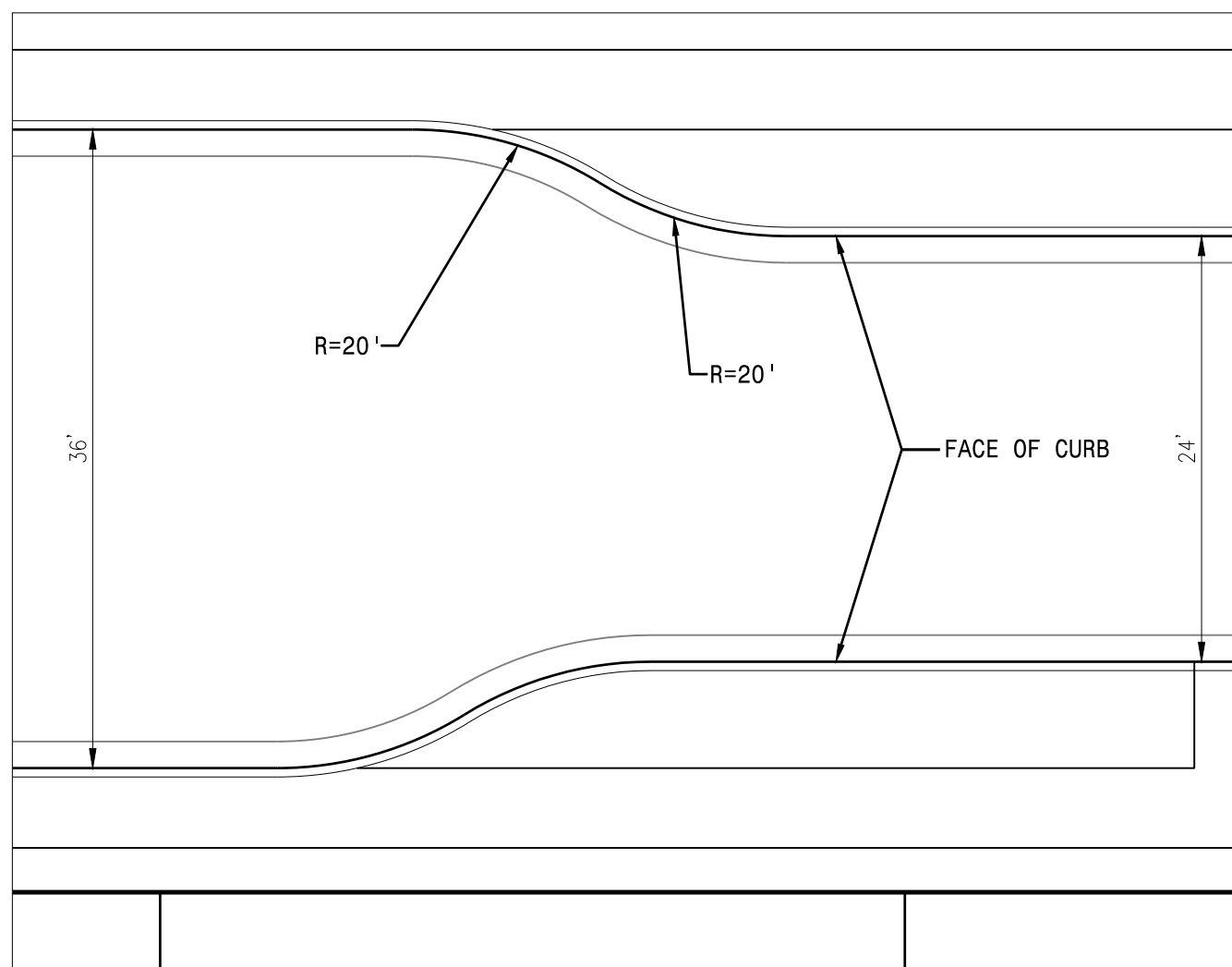
EXISTING	PROPOSED	DESCRIPTION
		SUBDIVISION BOUNDARY
		RIGHT OF WAY / LOT LINE
		CENTERLINE
		FACE OF CURB
		STORM DRAIN & INLET
		STORM MANHOLE
		SANITARY SEWER PIPE
		SANITARY SEWER MANHOLE
		WATER LINE & VALVES
		FIRE HYDRANT WITH VALVE
		BLOWOFF
		AIR RELIEF VALVE

1. THE EROSION CONTROL FACILITIES ARE DESIGNED TO CONTROL THE SEDIMENT DURING THE RAINY SEASON, OCTOBER 15 TO APRIL 15 AFTER ROUGH GRADING HAS BEEN COMPLETED. MEASURES ARE TO BE OPERABLE PRIOR TO OCTOBER 1ST OF ANY YEAR GRADING OPERATIONS HAVE LEFT AREAS UNPROTECTED FROM EROSION.
2. MAINTENANCE IS TO BE PERFORMED AS FOLLOWS:
 - A. REPAIR DAMAGES CAUSED BY SOIL EROSION OR CONSTRUCTION AT THE END OF EACH WORKING DAY.
 - B. SWALES SHALL BE INSPECTED PERIODICALLY AND MAINTAINED AS REQUIRED.
 - C. SILT FENCES, BERMES AND REPAIRS ARE TO BE INSPECTED AFTER EACH STORM AND REPAIRS MADE AS NEEDED.
 - D. SEDIMENT SHALL BE REMOVED AND SEDIMENT TRAPS RESTORED TO ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO WITHIN ONE FOOT OF OUTLET ELEVATION.
 - E. SEDIMENT REMOVED FROM TRAP SHALL BE DEPOSITED IN SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
3. DURING THE RAINY SEASON, ALL PAVED AREAS SHALL BE KEPT CLEAR OF EARTH MATERIAL AND DEBRIS. THE SITE SHALL BE MAINTAINED SO AS TO MINIMIZE SEDIMENT LOADED RUNOFF TO ANY STORM DRAIN SYSTEM.
4. CONSTRUCTION ENTRANCE TO BE PROVIDED AT EACH VEHICLE ACCESS POINT ON EXISTING PAVED AREAS.
5. INLETS NOT USED IN CONJUNCTION WITH EROSION CONTROL TO BE BLOCKED UNLESS THE AREA DRAINED IS UNDISTURBED OR STABILIZED.
6. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL DISTURBED AREAS ARE STABILIZED. CHANGES TO THIS EROSION CONTROL PLAN SHALL BE MADE ONLY WITH THE APPROVAL OF OR AT THE DIRECTION OF THE CITY ENGINEER.
7. SEDIMENT BASINS SHALL BE CLEANED OUT WHENEVER SEDIMENT REACHES THE SEDIMENT CLEANOUT LEVEL.
8. THIS PLAN MAY NOT COVER ALL THE SITUATIONS THAT ARISE DURING CONSTRUCTION DUE TO UNANTICIPATED FIELD CONDITIONS. VARIATIONS MAY BE MADE TO THE PLAN IN THE FIELD SUBJECT TO THE APPROVAL OF CITY.
9. SHADING INDICATES AREAS TO RECEIVE FILL.
10. THE GRADING SHALL BE IN CONFORMANCE WITH THE CITY OF VALLEJO'S HILLSIDE GRADING ORDINANCE UNLESS OTHERWISE APPROVED.
11. PROPOSED GRADES SHOWN ON THE PRELIMINARY GRADING PLAN ARE SUBJECT TO FINAL ENGINEERING DESIGN AND CITY REVIEW AND APPROVAL. ALL GRADING IS TO BE UNDERTAKEN PER THE RECOMMENDATIONS OF A SOILS REPORT AND UNDER THE OBSERVATION OF THE SOILS ENGINEER.
12. ALL LOTS WILL DRAIN TO ADJACENT STREET.
13. EXISTING CONTOUR INTERVAL IS AS SHOWN.
14. SLOPES WITHIN LOT AREAS ARE TO BE GRADED AT A GRADIENT NOT TO EXCEED 2:1 (HORIZONTAL TO VERTICAL).
15. LAKE PADS ARE TO BE BERMED (PER DETAIL) TO PREVENT RUNOFF.
16. SLOPES LESS THAN 10° HIGH WITHIN LOT AREAS, ARE TO BE GRADED AT A GRADIENT NOT TO EXCEED 2:1 (HORIZONTAL TO VERTICAL) UNLESS APPROVED BY THE SOILS ENGINEER.
17. ALL DAYLIGHT CUT/FILLS TO BE ROUNDED TO CONFORM TO EXISTING TERRAIN.

AB	-	AGGREGATE BASE	HP	-	HIGH POINT
AC	-	ASPHALT CONCRETE	INV	-	INVERT
AP	-	ANGLE POINT	IRR	-	IRRIGATION
BN DY	-	BOUNDARY	JT	-	JOINT TRENCH
BW	-	BACK WALK	LP	-	LOW POINT
CB	-	CATCH BASIN	LT	-	LEFT
CL	-	CENTERLINE	MH	-	MANHOLE
C&G	-	CURB AND GUTTER	P	-	PAD
DI	-	DROP INLET	PAE	-	PUBLIC ACCESS EASEMENT
E	-	ELECTRICAL SERVICE	PL	-	PROPERTY LINE
EG	-	EXISTING GROUND	PS	-	PROTECTIVE SLOPE
EL	-	ELEVATION	PSE	-	PUBLIC SERVICE EASEMENT
EP	-	EDGE OF PAVEMENT	PUE	-	PUBLIC UTILITY EASEMENT
ES	-	END OF RETURN	PVC	-	POLYVINYL CHLORIDE
ESMT	-	EASEMENT	RT	-	RIGHT
EVAE	-	EMERGENCY VEHICLE ACCESS EASEMENT	R/W	-	RIGHT OF WAY
EX	-	EXISTING	RW	-	RECYCLED WATER
FC	-	FACE OF CURB	SD	-	STORM DRAIN
FD	-	FINISH GRADE	SS	-	SANITARY SEWER
FH	-	FIRE HYDRANT	S/W	-	SIDEWALK
FI	-	FIELD INLET	TC	-	TOP OF CURB
FL	-	FLOWLINE	TI	-	TRAFFIC INDEX
GB	-	GRADE BREAK	TYP	-	TYPICAL
HDPE	-	HIGH-DENSITY POLYETHYLENE	W	-	WATER
			WS	-	WATER SERVICE

THIS PROJECT PROPOSES THE FOLLOWING FOR TREATMENT OF STORM DRAIN RUNOFF

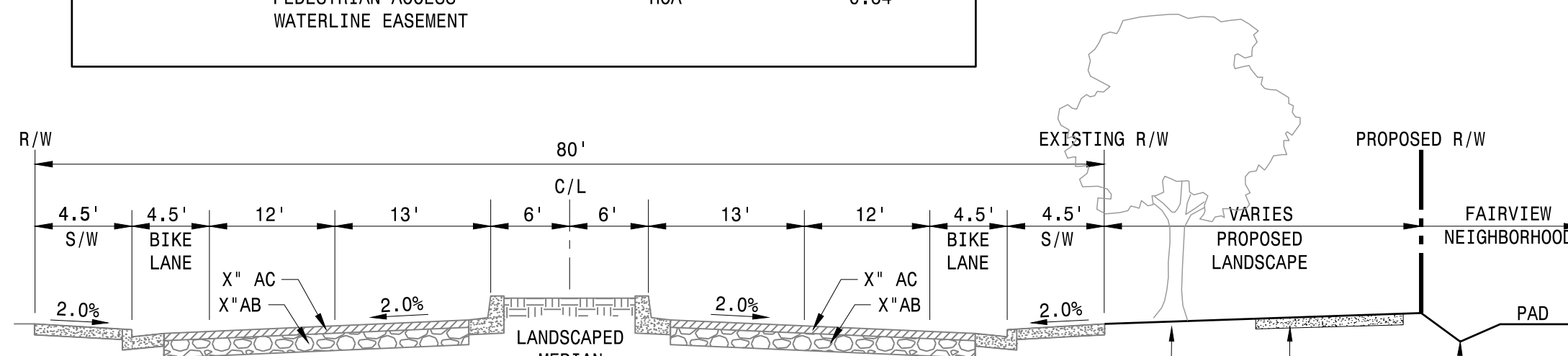
1. RESIDENTIAL AREA: BIO-RETENTION SWALES WITHIN COMMON AREA
2. COMMERCIAL AREA: BIO-SWALES WITHIN PARKING LOTS



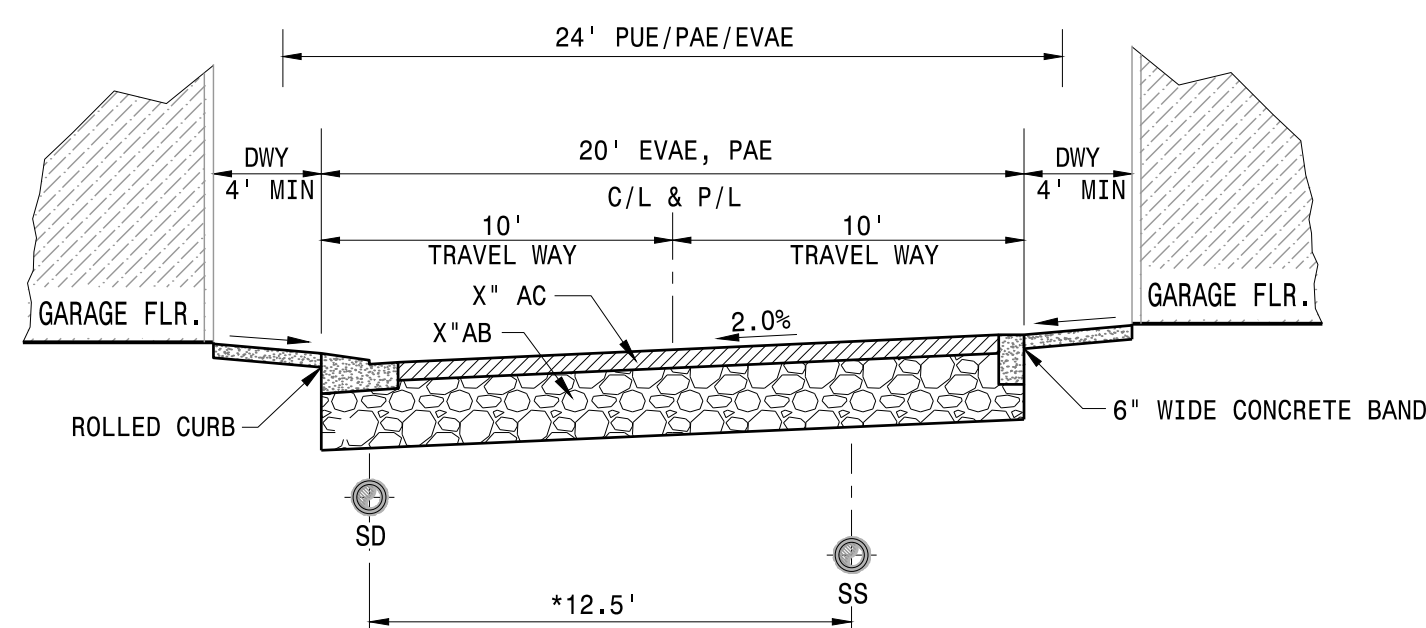
N.T.S.

<u>LAND USE/OWNERSHIP SUMMARY (FOR PARCEL 3):</u>			
LOT/PARCEL	PROPOSED USE	OWNERSHIP	AREA WITHIN LMD (AC±)
PARCEL 3	OPEN SPACE	CITY	5.70

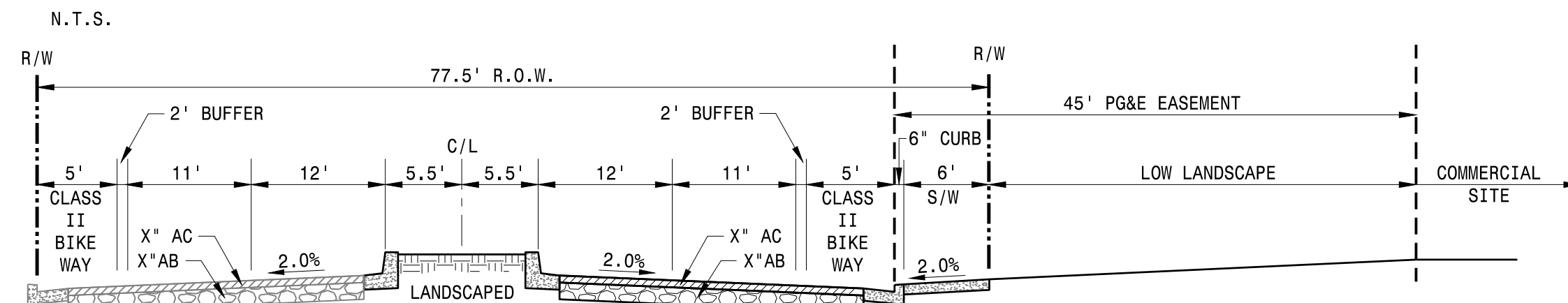
<u>LAND USE/OWNERSHIP SUMMARY (FOR PARCEL 4):</u>			
LOT/PARCEL	PROPOSED USE	OWNERSHIP	AREA WITHIN LMD (AC±)
LOTS 1-86	SINGLE FAMILY DETACHED (85' X 42' MIN)	PRIVATE	VARIES
LOTS 87-178	CLUSTER LOT (50' X 65' MIN)	PRIVATE	VARIES
PARCEL A	BIO-RETENTION BASIN	HOA	0.92
PARCEL B	PARKSITE/LANDSCAPE AREA PEDESTRIAN ACCESS AREA	CITY	1.64
PARCEL C-G	PARKSITE/LANDSCAPE AREA	CITY	0.79
PARCEL H-Q	PARKSITE/LANDSCAPE AREA PEDESTRIAN ACCESS WATERLINE EASEMENT	HOA	0.64



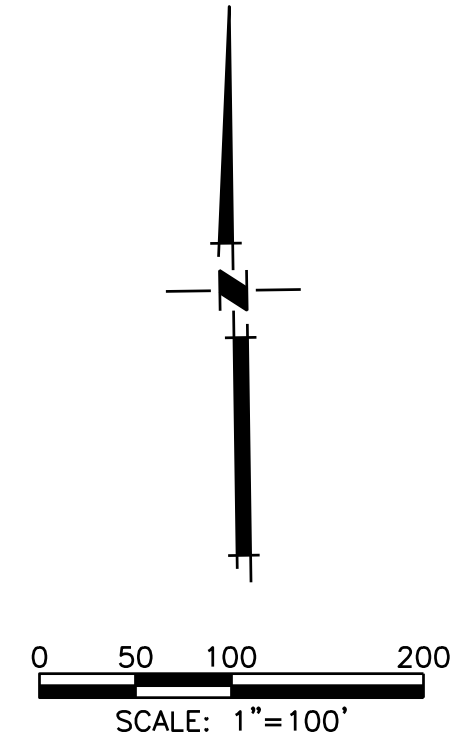
N.T.S.



*TYPICAL DIMMENSIONS UNLESS OTHERWISE NOTED IN PLANS
(TO BE REFINED WITH FINAL DESIGN)



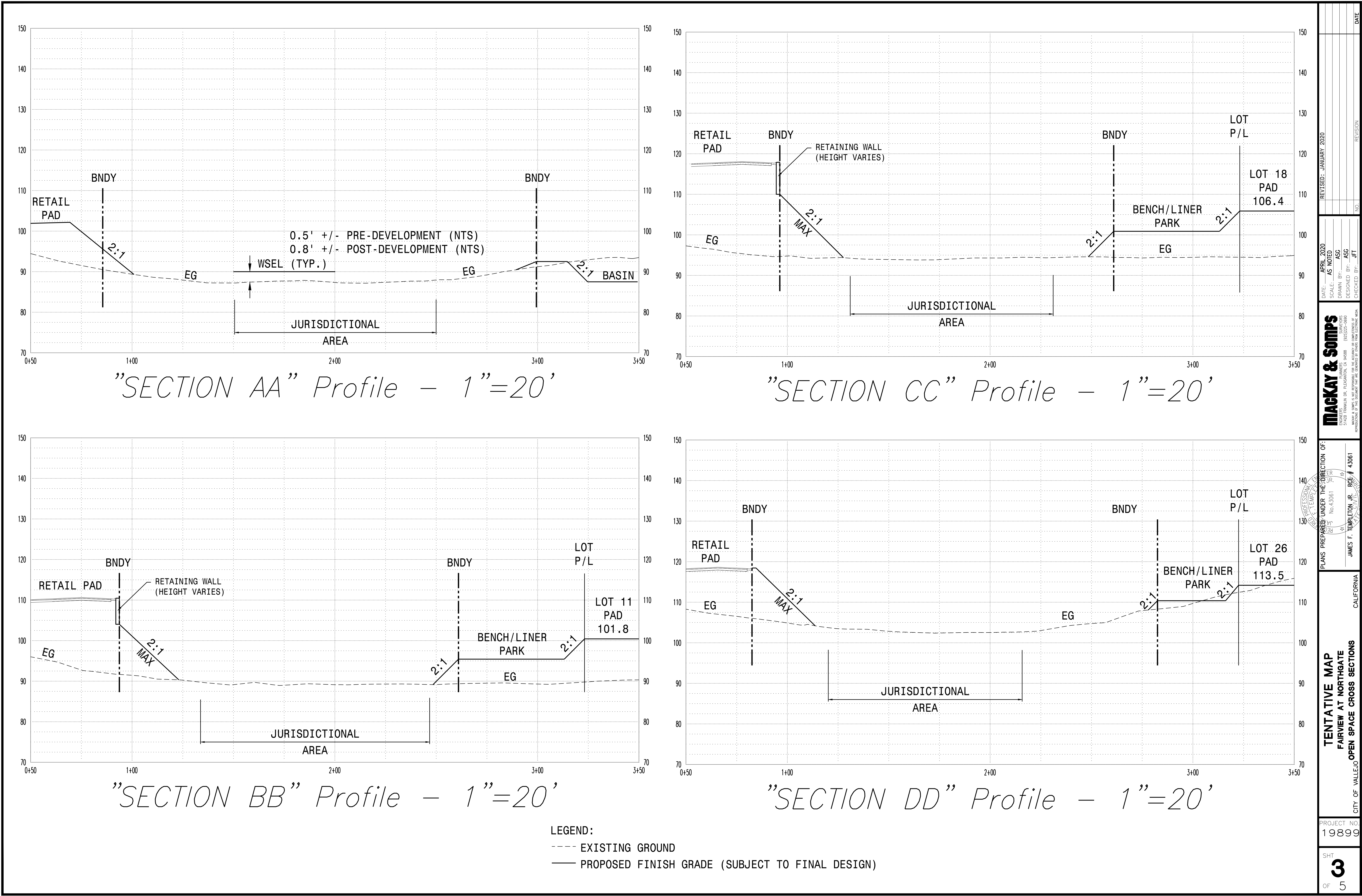
N.T.S



ADJOINING OWNER INFORMATION		
LOT NUMBER	APN NUMBER	OWNER
11	0081-081-070	ARCIBAL MANUELITO S & IV
12	0081-081-080	SHELBY CLARA
13	0081-081-090	FONG TAT
14	0081-081-100	CABLOY MARK J
15	0081-081-110	CAMPOS PRISCA D
16	0081-111-010	DELEON OTTO & MARTHA
17	0081-111-020	ELIAPO ARSENIA
18	0081-111-030	ALVAREZ JENNIFER & RODELL
19	0081-111-040	MENDOZA RUTHERFORD
20	0081-111-050	TIEN MICHAEL & SUMEI

NOTE:

1. DEVELOPER RESERVES THE RIGHT TO ADJUST INTERNAL LOT LINES AND PARCEL SIZE TO ACCOUNT FOR CHANGES IN THE LAND PLANS DURING THE ENTITLEMENT PROCESS.



”SECTION AA” Profile – 1”=20’

”SECTION CC” Profile – 1”=20’

”SECTION BB” Profile – 1”=20’

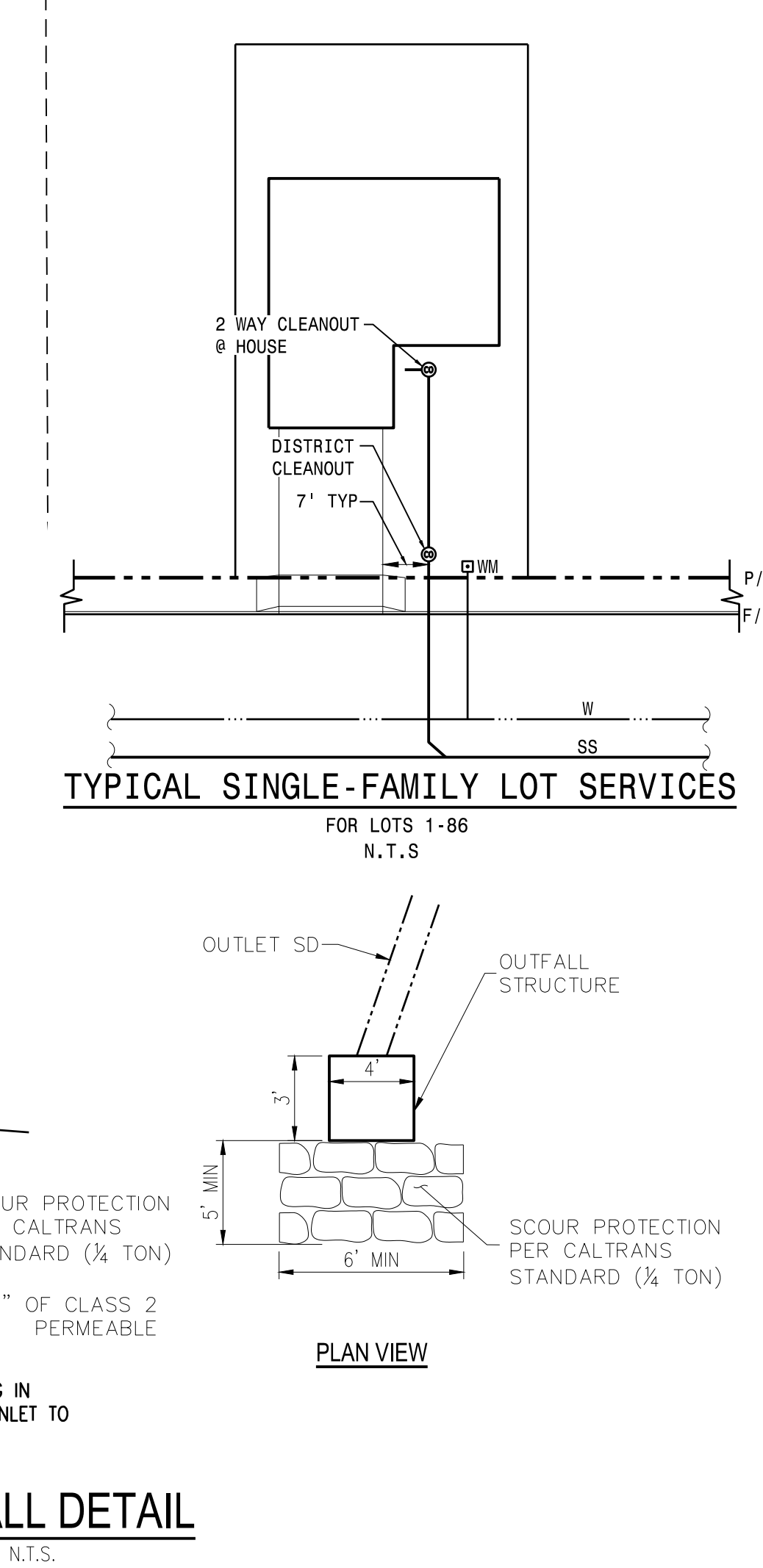
”SECTION DD” Profile – 1”=20’

DATE: APRIL 2020	REVISION: JANUARY 2020
SCALE: AS NOTED	NO.
DRAWN BY: ASG	REVISION
DESIGNED BY: ASG	
CHECKED BY: JFT	

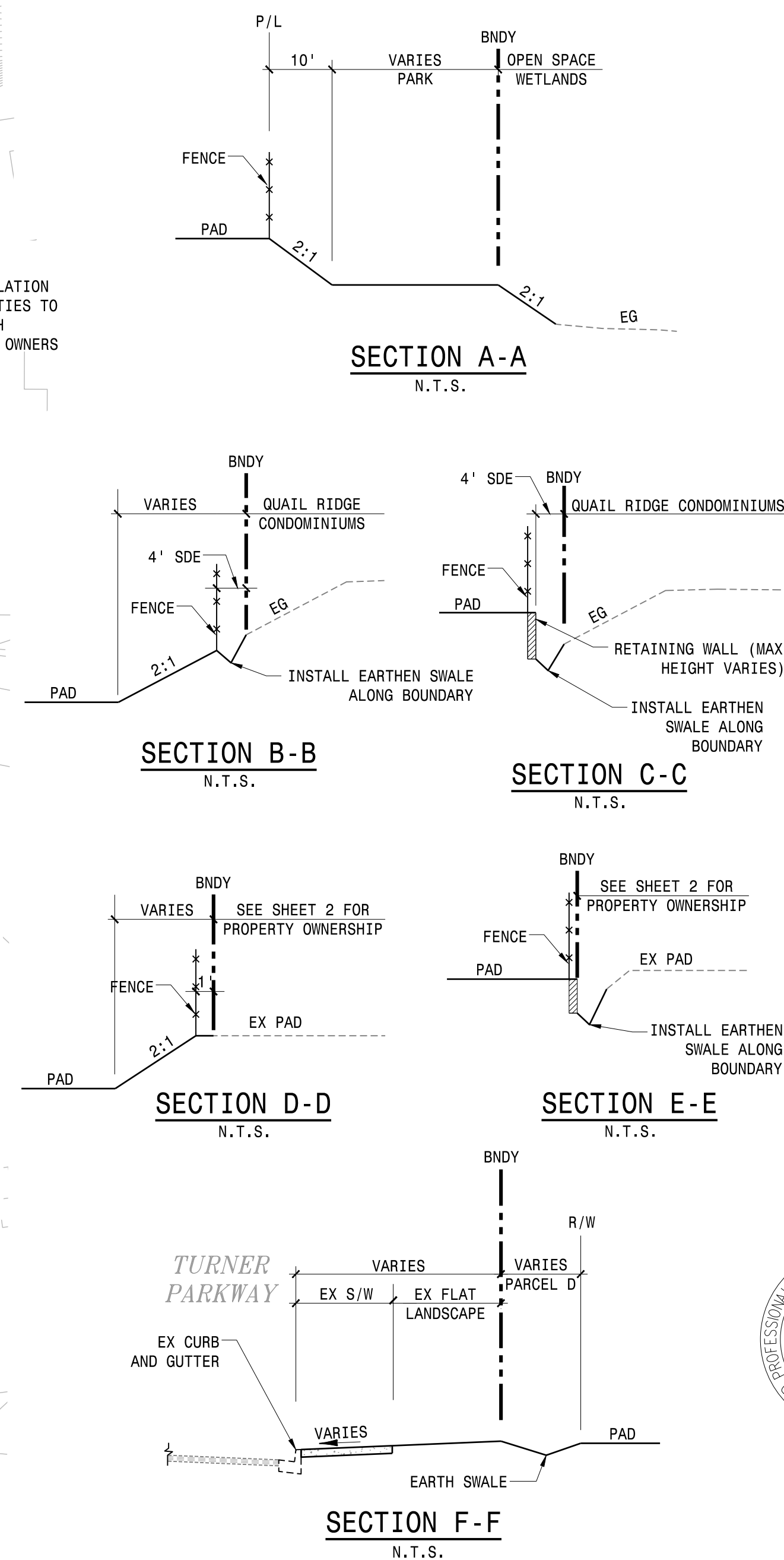
MACKAY & SOMPS
11418 FARMHILL DR., FOLSOM, CA 95688 (916) 222-1000
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PLANS PREPARED UNDER THE DIRECTION OF:
JAMES F. TEMPLETON JR. No. 43061
PROFESSIONAL ENGINEER
CITY OF VALLEJO OPEN SPACE CROSS SECTIONS
TENTATIVE MAP
FARMVIEW AT NORTHGATE
CALIFORNIA

PROJECT NO. 19899
SHT 3 OF 5



- NOTES:**
1. SEE SHEET 5 FOR GRADING INFO
 2. ACTUAL SIZE AND SHAPE OF GROUND/BASIN TO BE RESOLVED WITH FINAL DESIGN
 3. ALL SEWER AND WATER MAINS ARE ASSUMED TO BE 8" UNLESS NOTED. STORM DRAIN PIPES WILL VARY IN SIZE. ACTUAL SIZE TO BE DETERMINED DURING FINAL DESIGN.
 4. ALL WATER SERVICES SHALL BE A MINIMUM OF 1" WITH A 1" METER
 5. FOR LOTS 87-178, WATER SERVICE WILL BE FROM PUBLIC STREET/PASEO, SEWER SERVICE WILL BE FROM MAIN IN ALLEY, OR MAIN IN STREET.
 6. ALL ALLEYS AND UTILITIES WITHIN ARE PRIVATE.
 7. THE WATER SYSTEM SHOWN IS PRELIMINARY IN NATURE. DURING FINAL DESIGN, THE LOCATIONS OF VALVES, ARV, AND OTHER FACILITIES WILL BE DETERMINED IN CONJUNCTION WITH THE CITY'S WATER DEPARTMENT.



SECTION G-G
N.T.S.

FAIRVIEW AT NORTHGATE PROJECT

Final

Environmental Impact Report

PROJECT NUMBERS: TM #17-0002, PD #17-0007, ZMA #17-00001, UP #18-0007

STATE CLEARINGHOUSE NO. 2018102007



City of Vallejo
Planning & Development Services, Planning Division
555 Santa Clara Street
Vallejo, California 94590
Contact: Aaron Sage

APRIL 2020

PREPARED BY:

Kimley»Horn

Contents

1 Introduction and List of Commenters..... 1-1

2 Responses To Comments..... 2-1

3 Revisions To The Draft EIR Text..... 3-1

4 Mitigation Monitoring and Reporting Program 4-1

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1.0 INTRODUCTION AND LIST OF COMMENTERS

1.1 INTRODUCTION

This Final Environmental Impact Report (Final EIR) contains agency, organization, and resident comments received during the public review period of the Fairview at Northgate Project (proposed project) Draft EIR. This document has been prepared by the City of Vallejo, as Lead Agency, in accordance with the California Environmental Quality Act (CEQA) and the CEQA Guidelines, Section 15132. The Introduction and List of Commenters chapter of the Final EIR discusses the background of the Draft EIR and purpose of the Final EIR, identifies the comment letters received on the Draft EIR, and provides an overview of the Final EIR's organization.

1.2 BACKGROUND

The Draft EIR identified the proposed project's potential impacts and the mitigation measures that would be required to be implemented. The following environmental analysis chapters are contained in the proposed project Draft EIR:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural and Tribal Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazardous and Hazardous Materials
- Hydrology and Water Quality
- Land Use
- Noise
- Energy Conservation

- Population and Housing
- Public Services
- Recreation
- Transportation
- Utilities and Service Systems
- Other Required CEQA Sections; and
- Alternatives to the Proposed Project.

In accordance with CEQA, a Notice of Availability (NOA) of the Draft EIR was published on the City of Vallejo Planning & Development Services website, and the Draft EIR was sent to the State Clearinghouse (SCH#:2018102007) for distribution to State agencies on January 17, 2020 for a 45-day public review period, ending on March 2, 2020. Printed copies of the document were made available for review at the Planning & Development Services Counter located at 555 Santa Clara Street, Vallejo, California, 94590. In addition, a public hearing was held on March 2, 2020 to solicit public comments regarding the Draft EIR.

1.3 PURPOSE OF THE FINAL EIR

Under CEQA Guidelines, Section 15132, the Final EIR shall consist of:

1. The Draft EIR or a revision of the Draft.
2. Comments and recommendations received on the Draft EIR.
3. A list of persons, organizations, and public agencies commenting on the Draft EIR.
4. The responses to environmental points raised in the review process.
5. Any other information added by the Lead Agency.

As required by CEQA Guidelines, Section 15090(a)(1)-(3), a Lead Agency must make the following three determinations in certifying a Final EIR:

1. The Final EIR has been completed in compliance with CEQA.

2. The Final EIR was presented to the decision-making body of the Lead Agency, and the decision-making body reviewed and considered the information in the Final EIR prior to approving the project.
3. The Final EIR reflects the Lead Agency’s independent judgment and analysis.

Under CEQA Guidelines, Section 15091, a public agency shall not approve or carry out a project for which an EIR has been certified that identifies one or more significant environmental effects of the project unless the public agency makes one or more written findings (Findings of Fact) for each of those significant effects. Findings of Fact must be accompanied by a brief explanation of the rationale for each finding supported by substantial evidence in the record. The Findings of Fact are included in a separate document that will be considered for adoption by the County’s decision-makers.

In addition, pursuant to CEQA Guidelines, Section 15093(b), when a Lead Agency approves a project that would result in significant and unavoidable impacts, the agency must state in writing the reasons supporting the action (Statement of Overriding Considerations). The Statement of Overriding Considerations shall be supported by substantial evidence.

1.4 LIST OF COMMENTERS

The City of Vallejo received 8 comment letters during the public comment period on the Draft EIR for the proposed project, plus comments during a public hearing. The comment letters were authored by the following agencies:

1.4.1 STATE AGENCIES

Letter A: California Department of Toxic Substances Control

Letter B: California Department of Fish and Wildlife Service

Letter C: California Department of Transportation (Caltrans)

1.4.2 GROUPS AND INDIVIDUALS

Letter D: Patrick Soluri, February 18, 2020

Letter E: Patrick Soluri, March 2, 2020

Letter F: Steven Herum

Letter G: Natalie Mattei, January 21, 2020

Letter H: Natalie Mattei, March 2, 2020

Letter I: Responses to Comments at Planning Commission Hearing

1.5 ORGANIZATION OF THE FINAL EIR

The Final EIR is organized into the following chapters:

Chapter 1: Introduction and List of Commenters

Chapter 1 of the Final EIR provides an introduction and overview of the document, describing the background and organization of the Final EIR. Chapter 1 also provides a list of commenters who submitted letters in response to the Draft EIR.

Chapter 2: Responses to Comments

Chapter 2 of the Final EIR presents the comment letters received and responses to each comment. Each comment letter received has been numbered at the top and bracketed to indicate how the letter has been divided into individual comments. Each comment is given a number with the letter number appearing first, followed by the comment number. For example, the first comment in Letter A would have the following format: A-1. The response to each comment will reference the comment number.

Chapter 3: Revisions to the Draft EIR Text

Chapter 3 of the Final EIR summarizes changes made to the Draft EIR text in response to comment letters.

Chapter 4: Mitigation Monitoring and Reporting Program

CEQA Guidelines, Section 15097, requires lead agencies to adopt a program for monitoring the mitigation measures required to avoid the significant environmental impacts of a project. The intent of the Mitigation Monitoring and Reporting Program (MMRP) is to ensure implementation of the mitigation measures identified within the Draft EIR for the proposed project.

2 RESPONSES TO COMMENTS

This chapter contains responses to each of the comment letters submitted regarding the Fairview at Northgate Project Draft EIR. Each bracketed comment letter is followed by numbered responses to each bracketed comment. The responses amplify or clarify information provided in the Draft EIR and/or refer the reader to the appropriate place in the document where the requested information can be found. Comments that are not directly related to environmental issues (e.g., opinions on the merits of the project that are unrelated to its environmental impacts) are either discussed or noted for the record, as appropriate. Where revisions to the Draft EIR text are required in response to the comments, such revisions are noted in the response to the comment and are also listed in Chapter 3, Revisions to the Draft EIR Text, of this Final EIR. All new text is shown as double underlined and deleted text is shown as ~~struck through~~.

The changes to the analysis contained in the Draft EIR represent only minor clarifications or amplifications and do not constitute significant new information or change any of the conclusions of the Draft EIR. Therefore, in accordance with CEQA Guidelines, Section 15088.5, recirculation of the Draft EIR is not required.

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Letter A - California Department of Toxic Substances Control



Jared Blumenfeld
Secretary for
Environmental Protection



Department of Toxic Substances Control

Meredith Williams, Ph.D., Director
8800 Cal Center Drive
Sacramento, California 95826-3200



Gavin Newsom
Governor

January 31, 2020

Mr. Aaron Sage
City of Vallejo
555 Santa Clara Street
Vallejo, California 94590

DRAFT ENVIRONMENTAL IMPACT REPORT FOR FAIRVIEW AT NORTHGATE EIR
– DATED JANUARY 2020 (STATE CLEARINGHOUSE NUMBER: 2018102007)

Dear Mr. Sage:

The Department of Toxic Substances Control (DTSC) received a Draft Environmental Impact Report for Fairview at Northgate.

The proposed project is the construction of a mixture of commercial, residential, recreational uses, and designated open space. The commercial component of the project would be located on the westerly portion (21.8 acres) of the project area and would include 179,688 square feet of retail space including the relocation and expansion of the existing Costco store and gas station (currently located at 198 Plaza Drive, approximately 0.75-mile to the northeast). The easterly portion of the site will consist of 178 single family units on 23.8 acres. The residential area would be buffered from the commercial area by a centrally located open space area (5.7 acres). The proposed project incorporates sidewalks, paseos, and trails to facilitate pedestrian and bicycle travel between the commercial and residential project elements.

DTSC recommends that the following issues be evaluated in the EIR, Hazards and Hazardous Materials section:

- A-1
1. The EIR should acknowledge the potential for project site activities to result in the release of hazardous wastes/substances. In instances in which releases may occur, further studies should be carried out to delineate the nature and extent of the contamination, and the potential threat to public health and/or the environment should be evaluated. The EIR should also identify the mechanism(s) to initiate any required investigation and/or remediation and the government agency who will be responsible for providing appropriate regulatory oversight.

♻️ Printed on Recycled Paper

Mr. Aaron Sage
January 31, 2020
Page 2

- A-2 2. Refiners in the United States started adding lead compounds to gasoline in the 1920s in order to boost octane levels and improve engine performance. This practice did not officially end until 1992 when lead was banned as a fuel additive in California. Tailpipe emissions from automobiles using leaded gasoline contained lead and resulted in aerially deposited lead (ADL) being deposited on and along roadways throughout the state. ADL-contaminated soils still exist along roadsides and medians and can also be found underneath some existing road surfaces due to past construction activities. Due to the potential for ADL-contaminated soil, DTSC recommends collecting soil samples for lead analysis prior to performing any intrusive activities for the project described in the EIR.
- A-3 3. If buildings or other structures are to be demolished on any project sites included in the proposed project, surveys should be conducted for the presence of lead-based paints or products, mercury, asbestos containing materials, and polychlorinated biphenyl caulk. The removal, demolition and disposal of any of the above-mentioned chemicals should be conducted in compliance with California environmental regulations and policies. In addition, sampling near current and/or former buildings should be conducted in accordance with DTSC's 2006 *Interim Guidance Evaluation of School Sites with Potential Contamination from Lead Based Paint, Termiticides, and Electrical Transformers* (https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/09/Guidance_Lead_Contamination_050118.pdf).
- A-4 4. If any projects initiated as part of the proposed project require the importation of soil to backfill any excavated areas, proper sampling should be conducted to ensure that the imported soil is free of contamination. DTSC recommends the imported materials be characterized according to DTSC's 2001 *Information Advisory Clean Imported Fill Material* (https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/09/SMP_FS_Cleanfill-Schools.pdf).
- A-5 5. If any sites included as part of the proposed project have been used for agricultural, weed abatement or related activities, proper investigation for organochlorinated pesticides should be discussed in the EIR. DTSC recommends the current and former agricultural lands be evaluated in accordance with DTSC's 2008 *Interim Guidance for Sampling Agricultural Properties (Third Revision)* (<https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/09/Ag-Guidance-Rev-3-August-7-2008-2.pdf>).

DTSC appreciates the opportunity to review the EIR. Should you need any assistance with an environmental investigation, please submit a request for Lead Agency Oversight Application, which can be found at: https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/09/VCP_App-1460.doc. Additional information regarding voluntary agreements with DTSC can be found at: <https://dtsc.ca.gov/brownfields/>.

Mr. Aaron Sage
January 31, 2020
Page 3

If you have any questions, please contact me at (916) 255-3710 or via email at Gavin.McCreary@dtsc.ca.gov.

Sincerely,



Gavin McCreary
Project Manager
Site Evaluation and Remediation Unit
Site Mitigation and Restoration Program
Department of Toxic Substances Control

cc: (via email)

Governor's Office of Planning and Research
State Clearinghouse
State.Clearinghouse@opr.ca.gov

Ms. Lora Jameson, Chief
Site Evaluation and Remediation Unit
Department of Toxic Substances Control
Lora.Jameson@dtsc.ca.gov

Mr. Dave Kereazis
Office of Planning & Environmental Analysis
Department of Toxic Substances Control
Dave.Kereazis@dtsc.ca.gov

Response to Letter A – Department of Toxic Substances Control

A-1 The Draft EIR describes the proposed Costco Gas Station in Chapter 3.0, Project Description of the Draft EIR (page 3.0-19). The description includes a list of operational safeguards to minimize and manage the accidental release of hazardous wastes and substances, specifically gasoline. These safeguards include specialized employee training, and communication protocols in the event that an accidental release does occur. For example, each gas station employee will be required to complete the Costco Gasoline training program, which includes an interactive test that all gasoline employees must pass before working at the facility. Employees are trained to identify maintenance requirements and physically inspect the fuel islands regularly during operating hours. Their training includes the proper spill cleanup and emergency response procedures. In addition, the facility will be equipped with a "911" telephone that automatically contacts emergency dispatch in addition to a regular telephone line and roam phones. Closed circuit television monitor cameras aimed to show all fueling positions, the tank slab, and equipment enclosure are mounted on canopy columns adjacent to the fuel islands. A split screen monitor located in the Costco warehouse allows for full-time monitoring of the fueling operation. The tank and piping monitoring system is programmed to activate visual/audible alarms in the event of an alarm condition. An independent security company will monitor the alarm system.

Furthermore, the EIR includes Mitigation Measure HAZ-1 (Draft EIR page 4.7-18) requiring that specific gas station design requirements be incorporated into the project design. These design features included in this mitigation measure include tank and piping monitoring systems, underground storage tank supports, isolated stormwater treatment, fuel dispenser safety devices, and closed-circuit television cameras and monitors all of which would avoid and minimize accidental releases of gasoline.

Page 4.7-20 of the Draft EIR notes that the project is required to prepare a Hazardous Materials Business Plan (HMBP) as required under the California Health and Safety Code (Sections 25531 to 25543.3). The HMBP is required to include an emergency response plan and procedures in accordance with Section 2731 of the California Health and Safety Code. The following text has been included in the Final EIR to add to the existing discussion on page 4.7-20 of the draft EIR:

The Solano County Department of Resource Management, Environmental Health Services Division is the Certified Unified Program Agency (CUPA) for all cities and unincorporated areas within Solano County. The County's HMBP program addresses the preparedness for emergency response to incidents involving hazardous materials. The HMBP includes a chemical inventory of hazardous materials, site diagram, emergency response plan, and employee training plan, and must be reviewed and submitted annually to the California Environmental Reporting System (CERS).

The EIR concluded that potential impacts associated with reasonably foreseeable upset and accidental release of hazardous materials is less than significant with the incorporation of Mitigation Measure HAZ-1. No additional studies or mitigation are required.

A-2 No hazardous materials were identified onsite during the completion of the Phase I Environmental Site Assessment prepared for the project (Draft EIR, Appendix G). The project does not require any import of soil or export of soil offsite. The commercial component of the project would be

located on the western 21.8 acres of the project site adjacent to Admiral Callaghan Lane and grading for the 23.8-acre residential component will be on the easterly portion of the site. The comment notes that aerially deposited lead (ADL) contaminated soils may exist along roadsides and medians that were in use prior to 1992 when the practice of adding lead to gasoline officially ended. According to a DTSC factsheet (available online here: <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/f0004055-caltrans-fs-a11y.pdf>) "lead is found within 30 feet of the edge of the pavement and within the top six inches of the soil." The project site is currently vacant, and the property line is located more than 100 feet from the edge of the I-80 pavement. Development of the project, including widening of Admiral Callahan Lane, does not require any disturbance of soils along or within 30 feet of I-80. The northern property line is approximately 30 feet away from Turner Parkway and the western property line is approximately 30 feet away from the edge of Admiral Callahan Lane. Neither of these roads was heavily travelled prior to 1992 and would not be a significant source of ADL. Therefore, no ADL contaminated soils are expected to be encountered during development of the project. The project includes widening of Admiral Callahan Road from its current width of 30 feet to a total of 80 feet. The existing pavement section is located adjacent to I-80 and will not be disturbed. The new portion of the road will include a 12-foot wide landscaped median and a new 30-foot section of pavement that will be installed adjacent to the project site. Widening of Admiral Callahan Lane will require only minimal grading of soils that are located more than 30 feet from I-80, and none of this soil will be removed from the Admiral Callahan right of way.

Based on preliminary grading plans, the grading required for both the commercial and residential portions of the site is expected to balance within their respective areas. Therefore, no soil from the Admiral Callahan right of way will be used as fill under either the commercial or residential components of the development. The commercial area will be covered with buildings, landscaping, or paved parking lot and there will be no areas with exposed soil. Landscaped areas for water quality treatment or parking lot trees will be planted and irrigated to support bioswale or decorative vegetation.

No new impacts were identified as a result of this comment and no changes were made to the EIR as a result of this comment.

- A-3 The project site is currently undeveloped and does not have any buildings or structures located onsite. Therefore, there are no structures with asbestos or lead based paint, and the project is considered to have no impact from these materials.

No changes were made to the EIR as a result of this comment.

- A-4 No import or export of soil is required for the project. The grading plans have been designed to balance onsite. Furthermore, the soil is expected to balance within the commercial and residential areas.

No changes were made to the EIR as a result of this comment.

- A-5 Historical aerial photos included Phase I Environmental Site Assessment prepared for the project (Draft EIR, Appendix E of Appendix G) show that the project site has not been in any agricultural use since 1974 or more than 45 years. The site has never had any irrigation onsite, so the type of crop that could be grown onsite would have been limited, thereby limiting the potential for pesticide use. This is referred to as dry farming. As explained in the Department of Toxic

Substances Control's (DTSC) Interim Guidance for Sampling Agricultural Property (Third Revision August 2008), <https://dtsc.ca.gov/wpcontent/uploads/sites/31/2018/09/Ag-Guidance-Rev-3-August-7-2008-2.pdf>, which defines dry-land farming as "growing crops without the use of irrigation." The DTSC Guidance further notes the following: "Many dry-land farming fields are not treated with pesticides or infrequently treated, since the lack of water does not provide a desirable habitat for most agricultural pests. Properties that clearly qualify as dry-land farming do not need further investigation for pesticides or metals." With respect to grazing and pasture land, the DTSC guidance notes the following: "Agricultural sampling is not required for property used exclusively as grazing lands or pasture, where the topography is not conducive to pesticide application, or the application of pesticides is not economically feasible." The historical aerial photographs show that the project site has been surrounded by development since 1982 so the use of agricultural pesticides on the surrounding development would have ceased by that time or nearly 40 years ago. Therefore, potential impacts from past agricultural uses are considered less than significant.

No changes to the EIR were made as a result of this comment.

Letter B - California Department of Fish and Wildlife



State of California – Natural Resources Agency
 DEPARTMENT OF FISH AND WILDLIFE
 Bay Delta Region
 2825 Cordelia Road, Suite 100
 Fairfield, CA 94534
 (707) 428-2002
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
 CHARLTON H. BONHAM, Director



February 27, 2020

Mr. Aaron Sage
 City of Vallejo
 555 Santa Clara Street
 Vallejo, CA 94590

Subject: Fairview at Northgate, Draft Environmental Impact Report, SCH #2018102007,
 City of Vallejo, Solano County

Dear Mr. Sage:

California Department of Fish and Wildlife (CDFW) personnel have reviewed the draft Environmental Impact Report (EIR) for the Fairview at Northgate project (Project). CDFW is submitting comments on the draft EIR to inform City of Vallejo, as the Lead Agency, of our concerns regarding potentially significant impacts to sensitive resources associated with the proposed Project.

CDFW is providing comments as both a Trustee Agency, pursuant to the California Environmental Quality Act (CEQA) section 15386, and as a Responsible Agency, pursuant to CEQA section 15381, because a portion of the Project (i.e. the widening of Admiral Callaghan Way over Blue Rock Springs Creek) will require a Lake and Streambed Alteration (LSA) Agreement, pursuant to Fish and Game Code section 1602.

Environmental Setting

The Project will occur on a 51.3-acre parcel located on a vacant lot immediately southeast of the intersection of Turner Parkway and Admiral Callaghan Lane, in the City of Vallejo, Solano County. The parcel consists of approximately 44 acres of non-native annual grassland, interspersed with coyote brush (*Baccharis pilularis*). Approximately 5 acres of the site contain seasonal wetlands, and an approximately 85-linear-foot daylight reach of Blue Rock Springs Creek flows in a westerly direction at the southwest corner of the parcel.

Surrounding land use consists of mixed-use commercial and residential development to the north, east, and west, and Interstate 80 lies immediately to the west of the Project site.

Project Description

The Project includes a mixture of commercial, residential, recreation uses, and designated open space. Development includes an approximately 179,688-square-foot Costco on 21.8 acres of the western portion of the parcel and development of 178 single-family units on 23.8 acres of the eastern portion of the parcel. In between the commercial and residential development, a 5.7-acre open space area will be constructed. Additionally, the Project will require the widening of Admiral Callaghan Lane and the construction of a clear span bridge over a small portion of Blue Rock Springs Creek.

Conserving California's Wildlife Since 1870

Mr. Aaron Sage
 City of Vallejo
 February 27, 2020
 Page 2

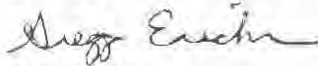
Comments

B-2 *Fish and Game Code section 1602 (Jurisdiction)*
 CDFW received an LSA Notification on April 3, 2018 from Vallejo-Fairview Developers, LLC for the widening of Admiral Callaghan Lane and the construction of a clear-span bridge over a portion of Blue Rock Springs Creek. A draft LSA Agreement (1600-2018-0106-R3) has been signed by the applicant. Currently, CDFW is waiting on 1) completion of the final EIR, 2) the filing of a Notice of Determination by the Lead Agency, and 3) the payment of the required CEQA filing fees to CDFW (Fish and Game Code section 711.4; Public Resources Code, section 21089) before executing the final LSA Agreement for the Project. CDFW, as a Responsible Agency under CEQA, will consider the CEQA document for the Project. The CEQA document should identify the potential impacts to the stream or riparian resources and provide adequate avoidance, mitigation, monitoring, and reporting commitments for completion of the agreement.

B-3 In Section 4.3 Biological Resources: Sensitive Biological Communities (page 4.3-6), the draft EIR states that "areas below the top of bank are expected to be considered jurisdictional by CDFW." CDFW recommends revising the draft EIR to state that the Project will seek a Lake and Streambed Alteration Agreement per Fish and Game Code section 1602. Section 4.3 also references, *A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607*. CDFW recommends removing the guidance and reference to the 1994 document, and reviewing and referencing CDFW's website instead <https://wildlife.ca.gov/Conservation/LSA>.

CDFW appreciates the opportunity to provide comments on the draft EIR for the Project and is available to meet with you to further discuss our comments. If you have any questions, please contact Mr. Garrett Allen, Environmental Scientist, at (707) 428-2076 or at garrett.allen@wildlife.ca.gov; or Ms. Karen Weiss, Senior Environmental Scientist (Supervisor), at (707) 428-2090 or at karen.weiss@wildlife.ca.gov.

Sincerely,



Gregg Erickson
 Regional Manager
 Bay Delta Region

cc: State Clearinghouse

Response to Letter B – California Department of Fish and Wildlife

B-1 This comment provides background information regarding project description and setting. No further response is required. No changes to the Draft EIR were made as a result of this comment.

B-2 Where Blue Rock Springs Creek crosses the southwest corner of the project site, a distance of approximately 90 feet, the proposed road widening would span the creek and would not place fill material in the Creek or extend the existing culverts. The City concurs that a Lake and Streambed Alteration Agreement is required for the project and that the applicant has submitted a draft agreement. Page 3.0-46 of the Draft EIR identifies the California Department of Fish and Wildlife as a responsible agency for issuance of, “Agreements, Permits/Authorizations pursuant to the California Department of Fish and Game Code.”

Potential impacts to wetland resources are evaluated in Chapter 4.3, Biological Resources of the Draft EIR. Wetland habitats onsite are shown in Figure 4.3-5 of the Draft EIR (page 4.3-23) and discussed in detail on pages 4.3-24 through 4.3-26. The wetlands analysis includes a discussion of impacts and requires Mitigation Measures BIO-2 through BIO-5 to be incorporated into the project. These mitigation measures include requirements to demonstrate that wetland regulatory permits have been obtained and, wetland compensation has been purchased/implemented (also to the satisfaction of the regulatory agencies), and protective measures such as construction fencing requirements. Compensatory mitigation is expected to occur at an offsite mitigation bank where monitoring and reporting commitments are included as part of the mitigation bank management and operations.

Potential impacts to wetland habitat are considered less than significant with mitigation incorporated. No changes to the EIR were made as a result of this comment.

B-3 The City concurs with revising the text in the Draft EIR as requested. On page 4.3-6 of the Draft EIR the sentence, “Areas below the top of bank are expected to be considered jurisdictional by CDFW” has been removed in the Final EIR. A statement regarding the project seeking a Lake and Streambed Alteration Agreement has been added to the discussion on page 4.3-25. The text regarding A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607 has been removed and replaced with a reference to the CDFW Lake and Streambed Alteration Program website on page 4.3-18 of the Draft EIR.

No new or more significant impact were identified as a result of these changes. Potential impacts on wetland resources remain less than significant with mitigation incorporated.

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Letter C - California Department of Transportation (Caltrans)

STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY

Gavin Newsom, Governor

DEPARTMENT OF TRANSPORTATION

DISTRICT 4
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*Making Conservation
 a California Way of Life.*

March 6, 2020

SCH #2018102007
 GTS # 04-SOL-2018-00174
 GTS ID: 12919
 Co/Rt/Pm: SOL/80/5.01

Aaron Sage, Principal Planner
 City of Vallejo
 Community Development Department
 555 Santa Clara Street
 Vallejo, CA 94590

Fairview at Northgate- Draft Environmental Impact Report (DEIR)

Dear Aaron Sage:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the Fairview at Northgate Project. We are committed to ensuring that impacts to the State's multimodal transportation system and to our natural environment are identified and mitigated to support a safe, sustainable, integrated and efficient transportation system. The following comments are based on our review of the January 2020 DEIR.

Project Understanding

C-1

The proposed project is planned to include a mixture of commercial, residential, recreation, and designated open space. The commercial element would be located in the westerly portion of the proposed project site bounded by Admiral Callaghan Lane to the west, Turner Parkway to the north, Avery Green Honda car dealership and a portion of the Quail Ridge Condominiums to the south, and the designated open space to the east as a buffer to the planned residential area. The residential element would be located on the eastern portion of the proposed project site, with the designated open space to the west as a buffer to the planned commercial area. The project proposes to incorporate pedestrian infrastructure with sidewalks and a trail designed to promote a pedestrian and bicycle friendly environment, to encourage active transportation between the commercial and residential project elements and improve access to the proposed open space. Regional access is provided via Interstate (I)-80 and State Route (SR)-37.

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Aaron Sage, Principal Planner
 March 6, 2020
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Highway Operations

- C-2 { • Page 2.0-4 of the DEIR: the spacing of the 3 driveways off Admiral Callaghan Lane with the three intersections could create eastbound (EB) queuing along EB Admiral Callaghan Lane that will spill over to the existing EB I-80 on-ramp. Please identify mitigation measures for the EB Admiral Callaghan Lane left turn lane onto the EB I-80 on-ramp and WB Admiral Callaghan Lane traffic onto the EB I-80 on-ramp.
- C-3 { • Page 2.0-55, Table ES-1: Impact TR1- Intersection #9 and 10 will have direct impacts on westbound (WB) #9 and EB #10 off-ramps. It is unclear whether the mitigation measures address queuing onto the I-80 ramps. Please clarify whether the proposed mitigation measures will improve off-ramp queuing.
- C-4 { • Page 4.15-39, Mitigation Measures: The discussion states that the project creates significant and unavoidable impacts at the I-80/Redwood Parkway area. Please discuss other potential mitigations for the I-80 on/off-ramps to and from EB and WB Redwood Pkwy.
- C-5 { • Appendix J (Transportation Impact Analysis), Page 17, Intersection #8: SB Admiral Callaghan Lane right turning traffic onto the EB I-80 Hook on-ramp is missing. Identify and include the EB I-80 on-ramp traffic from SB Admiral Callaghan Lane. Additionally, identify and include this movement to traffic volumes to the Existing with Project Conditions, Near Term Conditions and Cumulative Conditions.

Travel Demand Analysis

- C-6 { Please submit a travel demand analysis that provides a Vehicle Miles Traveled (VMT) analysis resulting from the proposed project. As acknowledged in Section 4.14.5 of the DEIR, the enactment of Senate Bill (SB) 743 utilizes VMT as the primary transportation impact metric. Therefore, Caltrans is focusing on transportation infrastructure that supports smart growth and efficient development to ensure alignment with State policies using efficient development patterns, innovative travel demand reduction strategies, and multimodal improvements.

Please ensure that the travel demand analysis includes:

- A VMT analysis pursuant to the Office of Planning and Research's Draft Guidelines. As the City has not determined its thresholds of significance for VMT analysis, it is advisable to use the thresholds provided by OPR's Draft Guidelines. If the analysis results in automobile VMT per capita greater

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Aaron Sage, Principal Planner
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- C-6 cont'd {
- than 15% below existing (i.e. baseline) city-wide or regional values for similar land use types, this may indicate a significant impact.
 - If necessary, mitigation for increasing VMT should be identified. Mitigation should support the use of transit and active transportation modes. Potential mitigation measures that include the requirements of other agencies such as Caltrans are fully enforceable through permit conditions, agreements, or other legally-binding instruments under the control of the City.

- C-7 {
- Multimodal Planning**
- The project's primary and secondary effects on pedestrians, bicyclists, travelers with disabilities, and transit users should be evaluated, including countermeasures and trade-offs resulting from mitigating VMT increases. Access for pedestrians and bicyclists to transit facilities must be maintained.

- C-8 {
- Vehicle Trip Reduction**
- From Caltrans' *Smart Mobility 2010: A Call to Action for the New Decade*, the project site is identified as **Place Type 4c: Suburban Communities (Dedicated Use Areas)** where location efficiency factors, such as community design, are often weak and regional accessibility varies. Given the place, type and size of the project, it should include a robust Transportation Demand Management (TDM) Program to reduce VMT and greenhouse gas emissions. Such measures are critical to facilitating efficient site access. The measures listed below can promote smart mobility and reduce regional VMT:
- Project design that encourages walking, bicycling and transit access;
 - Transit and trip planning resources such as a commute information kiosk;
 - Transit subsidies on an ongoing basis;
 - Ten percent vehicle parking reductions;
 - Charging stations and designated parking spaces for electric vehicles;
 - Carpool and clean-fuel parking spaces;
 - Designated parking spaces for a car share program;
 - Unbundled parking;
 - Secured bicycle storage facilities;
 - Bicycle route mapping resources; and
 - Aggressive trip reduction targets with Lead Agency monitoring and enforcement.
- TDM programs should be documented with annual monitoring reports by a TDM coordinator to demonstrate effectiveness. If the project does not achieve the

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 March 6, 2020
 Page 4

- C-8
cont'd { VMT reduction goals, the reports should also include next steps to take to achieve those targets. Also, reducing parking supply can encourage active forms of transportation, reduce regional VMT, and lessen future transportation impacts on State facilities.
- { For additional TDM options, please refer to the Federal Highway Administration's *Integrating Demand Management into the Transportation Planning Process: A Desk Reference* (Chapter 8). The reference is available online at: <http://www.ops.fhwa.dot.gov/publications/fhwahop12035/fhwahop12035.pdf>.
- C-9 { **Transportation Impact Fees**
 Please identify project-generated travel demand and estimate the costs of transit and active transportation improvements necessitated by the proposed project; viable funding sources such as development and/or transportation impact fees should also be identified. We encourage a sufficient allocation of fair share contributions toward multi-modal and regional transit improvements to fully mitigate cumulative impacts to regional transportation. We also strongly support measures to increase sustainable mode shares, thereby reducing VMT.
- C-10 { **Landscape Architecture**
 Even without the designation of I-80 as a Scenic Highway, Caltrans recommends to minimize potential visual impacts and adhere to the City of Vallejo General Plan 2040 (Policy NBE-1.5). To obtain this, Caltrans recommends the following:
- Develop visual sims to show impacts to views along I-80 and Admiral Callaghan Lane.
 - Design and implement a buffer/screening zone of trees/vegetation along Admiral Callaghan Lane to reduce visual disturbance along I-80.
- C-11 { **Hydraulics**
 As stated in our March 2018 letter, Caltrans requests to review drainage plans and reports as the project develops to assess any impacts to the State Transportation Network (STN).
- C-12 { **Utilities**
 Any utilities that are proposed, moved or modified within Caltrans' Right-of-Way (ROW) shall be discussed. If utilities are impacted by the project, provide site plans that show the location of existing and/or proposed utilities. These modifications require a Caltrans-issued encroachment permit.

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- C-13 **Construction-Related Impacts**
 Potential impacts to the State ROW from project-related temporary access points should be analyzed. Mitigation for significant impacts due to construction and noise should be identified. As noted in our March 2018, letter, Caltrans is particularly concerned about the construction impacts at the on and off-ramps to I-80 at the Redwood Street Interchange (postmile 4.431).
- Project work that requires movement of oversized or excessive load vehicles on state roadways requires a transportation permit that is issued by Caltrans. To apply, visit: <https://dot.ca.gov/programs/traffic-operations/transportation-permits>.
- Prior to construction, coordination is required with Caltrans to develop a Transportation Management Plan (TMP) to reduce construction traffic impacts to the STN.
- C-14 **Lead Agency**
 As the Lead Agency, the City of Vallejo is responsible for all project mitigation, including any needed improvements to the STN. The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures.
- C-15 **Encroachment Permit**
 Please be advised that any work or traffic control that encroaches onto the State ROW requires a Caltrans-issued encroachment permit. To obtain an encroachment permit, a completed encroachment permit application, environmental documentation, six (6) sets of plans clearly indicating the State ROW, and six (6) copies of signed, dated and stamped (include stamp expiration date) traffic control plans must be submitted to: Office of Encroachment Permits, California DOT, District 4, P.O. Box 23660, Oakland, CA 94623-0660. To download the permit application and obtain more information, visit <https://dot.ca.gov/programs/traffic-operations/ep/applications>.

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Aaron Sage, Principal Planner
March 6, 2020
Page 6

Thank you again for including Caltrans in the environmental review process.
Should you have any questions regarding this letter, please contact Laurel Sears
at laurel.sears@dot.ca.gov or (510) 286-5614.

Sincerely,



Mark Leong
District Branch Chief
Local Development - Intergovernmental Review

c: State Clearinghouse

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system to enhance California's economy and livability"*

Response to Letter C – California Department of Transportation (Caltrans)

- C-1 This comment provides background information regarding project description and setting. No further response is required. No changes to the Draft EIR were made as a result of this comment.
- C-2 The comment refers to the potential for eastbound queueing on Admiral Callaghan Lane created by the three project driveways. It is understood that this comment refers to northbound Admiral Callaghan Lane. It should be noted that only one of the three project driveways on Admiral Callaghan Lane will be signalized, and the other two will allow free flow along Admiral Callaghan Lane. In addition, Admiral Callaghan Lane is currently a two-lane road with one travel lane in each direction with no bike lanes or sidewalks. The project would improve Admiral Callaghan Lane to an approximately 76-foot cross-section with improvements along the project frontage. The new lane configuration for Admiral Callaghan Lane would consist of two travel lanes in each direction, an eleven-foot landscaped center median, a 5-foot wide bike lane in each direction, and a 4.5-foot wide pedestrian sidewalk on the eastern side (northbound direction) of Admiral Callaghan Lane along the project frontage.

On Draft EIR page 4.15-37, the queue analysis for Near-Term With Project condition shows that 95th percentile queues would exceed capacity for the northbound left turn and through movements in certain peak hours. Page 4.15-18 shows that the northbound left turn movement would exceed capacity during all peak hours under existing conditions without the project. As explained in the DEIR, the 95th percentile queues are those that are projected to occur during only 5% or less of the entire peak hour. This condition is a result of back-ups at the intersection of Admiral Callaghan Lane and Rotary Way, which is located about 500 feet north of the ramps intersection, not back-ups from the signalized project access intersection. The results in Appendix J of the Draft EIR show that average queues for the northbound through and left turn movements at the Admiral Callaghan Lane/I-80 Eastbound Ramps intersection would not exceed capacity in most peak hours. These ramps will be demolished when the planned I-80/Redwood Parkway interchange improvements project is constructed. No feasible interim mitigation was identified for the projected 95th percentile queue exceedances in the Near-Term With Project condition because the area surrounding the interchange is developed with urban uses and the City does not have any additional Right-of-Way to add queuing storage in this area. Furthermore, this area is within the Caltrans Right-of-Way which would require Caltrans approval to make improvements and any interim improvements would be removed once the proposed I-80/Redwood Parkway Interchange improvements are constructed. A queue exceeding available storage is not in itself a significant impact based on significant criteria, but rather a condition reflecting the performance of individual movements at an intersection.

No changes to the Draft EIR were made as a result of this comment.

- C-3 As noted in Response C-2 above, no other mitigation measures beyond contributing to the construction of the planned I-80/Redwood Parkway interchange improvements project through payment of the Solano County Regional Transportation Impact Fee, which the City will require of the project as a condition of approval, were identified. Payment of transportation impact fees is discussed on page 4.15-44 of the Draft EIR. The interchange improvements project was developed through a comprehensive design/environmental process involving the Solano Transportation

Authority and Caltrans and is considered the long-term improvement to serve traffic growth at this location.

No changes to the Draft EIR were made as a result of this comment.

- C-4 The Draft EIR discusses the lack of other mitigation options on page 4.15-39 of the Draft EIR. Specifically, that the City lacks Right-of-Way to add additional capacity and that the project area, including study intersections, are located in a developed urban environment where obtaining additional Right-of-Way is not feasible because it would require eminent domain procedures. The Draft EIR identifies the Caltrans improvement project at the I-80/Redwood Parkway interchange that would address current operational deficiencies in this area. Page 4.15-39 of Draft EIR states the following:

Similar to the *Existing With Project Conditions* above, impacts at these four intersections under the Near Term With Project Conditions remain significant and unavoidable after implementation of mitigation because no other feasible mitigation measures have been identified which would further mitigate the impacts. The project area is located in a developed urban area and insufficient right-of-way exists to add capacity to the City of Vallejo intersections which are significantly impacted. Caltrans has prepared an interchange improvement plan for the I-80/Redwood Parkway interchange which will improve operations at the I-80 ramp intersections; however, this Caltrans project is not yet fully funded, and the timing and construction of those improvements are outside the control of the City of Vallejo and there is no guarantee that these improvements would be implemented. Therefore, those improvements cannot be considered feasible mitigation for the Existing With Project impacts at those I-80/Redwood Parkway interchange intersections.

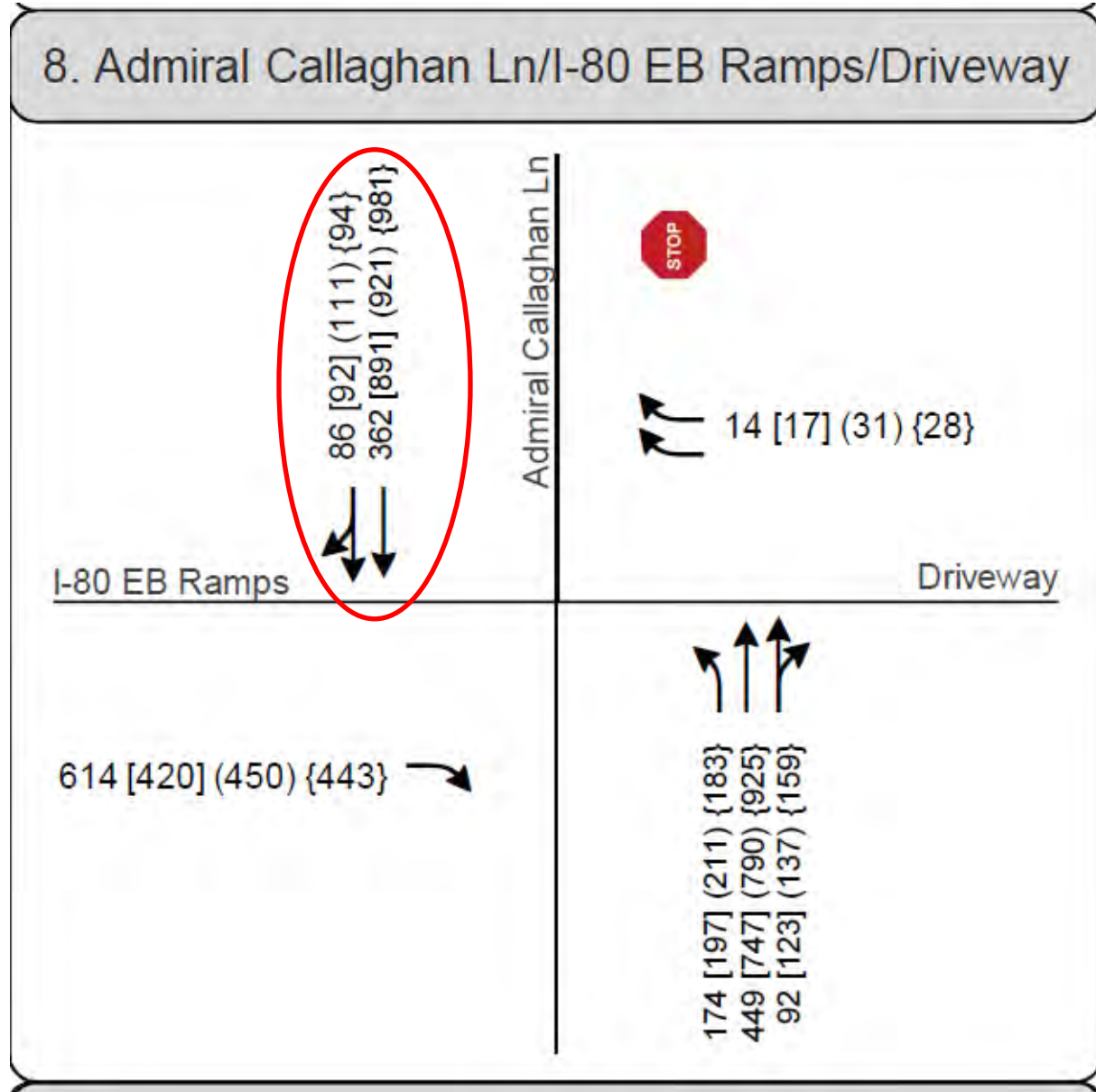
No other feasible mitigation measures were identified. The Caltrans interchange project has a certified environmental document¹ and is identified on the Solano Transportation Authority list of projects for which Regional Transportation Impact Fees (RTIF) are being collected (the project applicant is paying into RTIF). Components of the interchange project are being constructed as funding packages become available. While completion of these improvements is unlikely to occur prior to the completion of the proposed project, completion of the Caltrans improvements by 2040 is reasonably foreseeable. Implementation of these improvements will be scheduled by the Solano Transportation Authority. Constructing alternative roadway or intersection improvements that would conflict with the Caltrans project or would have to be removed when the interchange improvements are constructed would not be an efficient or effective use of resources and hence were removed from consideration.

No changes to the Draft EIR were made as a result of this comment.

¹ Caltrans, Redwood Parkway – Fairgrounds Drive Improvement Project, Final EIR/EA. June 2015

- C-5 The right turning traffic onto the EB I-80 Hook on-ramp is not missing. The southbound right turn traffic volumes that turn onto the I-80 eastbound hook ramp are shown in the volume graphics (Appendix J, page 17); the two sets of traffic volumes shown on that approach are the through movement (right-most set) and the right turn (left-most set). An excerpt from the volume graphic for Intersection #8 is shown at the end of this response. There are no left turns on the southbound approach due to the existing median. The southbound right-turn traffic volumes are included in all the analysis scenarios.

No changes to the Draft EIR were made as a result of this comment.



- C-6 As discussed on page 4.15-20 of the Draft EIR, the project is not required to provide a VMT analysis. Section 15064.3 of the revised State CEQA Guidelines was adopted by OPR on December 28, 2018, and states that VMT is the appropriate measure of transportation

impacts. Sections 15064.3(c) and 15007 also states that the provisions of this section shall apply prospectively, i.e., new requirements in CEQA Guidelines amendments will apply to steps in the CEQA process not yet undertaken by the date when agencies must comply with the amendments. Section 15064.3(c) further states that VMT analyses must be implemented statewide by July 1, 2020. The Notice of Preparation for the Project was issued in October 2018, prior to the adoption of Section 15064.3, and the Draft EIR was released before July 1, 2020. The City has not yet elected to be governed by Section 15064.3 and has not adopted any VMT thresholds. The City notes that Caltrans has not finalized its Draft VMT-Focused Transportation Impact Study Guide (Draft TISG) which was released for a 30-Day informal review period on February 28, 2020. The Draft TISG document acknowledges that public agencies are not required to use VMT to evaluate impact of development until July 1, 2020. (cite to this doc, page 1 of the memo and page 8 lines 168 and 169 - "Many lead agencies are adopting VMT metrics in advance of it becoming the standard CEQA transportation metric on July 1, 2020" <https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-02-26-transmittal-and-draft-vmt-focused-tisg.pdf>). Therefore, because the City has not adopted a VMT metric in advance of it becoming the standard on July 1, 2020 a VMT analysis is not required for the Project. The project includes Mitigation Measure GHG-3 (Draft EIR page 4.6-28) which requires the applicant to prepare a Commute Trip Reduction/Transportation Demand Management Plan to reduce vehicle miles traveled by at least 17.8 percent. Please see Response C-8.

No changes to the Draft EIR were made as a result of this comment.

- C-7 The Draft EIR evaluates potential impacts on pedestrian, bicycle, and transit modes of transportation on pages 4.15-39 through 4.15-41. Please see Response C-6 above regarding VMT analysis. No impacts on existing access to transit facilities has been identified. All improvements associated with the project will be required to meet accessibility design standards required by existing building codes.

The project includes new bike lanes along Admiral Callaghan Lane (in both directions) along the project frontage. The project is constructing a new sidewalk along the Admiral Callaghan Lane project frontage where no sidewalk currently exists. The new sidewalk will connect to an existing sidewalk and crosswalk at Turner Parkway. The sidewalk will also connect to a multi-use pathway is proposed along Turner Parkway (on the project property) that connects the residential and commercial uses. Additionally, the EIR includes Mitigation Measure TR-4 (Draft EIR, page 4.15-41) which requires the applicant to construct a new bus pull-out on Turner Parkway, as requested by Solano County Transit (Soltrans). The new bus pull-out would serve an existing Soltrans bus line. The new bus pull-out would service the proposed commercial and residential components of the project as well as riders to and from the existing commercial shopping center north of Turner Parkway.

Therefore, potential impacts on pedestrian, bicycle, and transit modes of transportation are considered less than significant.

No changes to the Draft EIR were made as a result of this comment.

C-8 The proposed project includes TDM measures to reduce greenhouse gas emissions. Consistency with Transportation Demand Management Policies of the City of Vallejo Climate Action Plan are discussed in Table 4.6-4 of the Draft EIR (page 4.6-37). TDM measures incorporated into the project design include:

- Proximity of proposed residential uses and proposed commercial uses;
- Proximity of proposed residential uses to existing commercial uses
- Multi-use pathway connecting proposed residential and commercial uses
- Construction of new bicycle lanes and sidewalks
- Pathways and open space areas within the residential area.
- Mitigation Measure for new Soltrans bus pull-out

The project also includes Mitigation Measure GHG-3 (Draft EIR page 4.6-28) which requires the applicant to prepare a Commute Trip Reduction/Transportation Demand Management Plan to reduce vehicle miles traveled by at least 17.8 percent. The mitigation measure specifies that the TDM plan shall discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. The TDM plan shall include a requirement for annual reporting to the City Planning Division showing good faith compliance with plan requirements.

No changes to the Draft EIR were made as a result of this comment.

C-9 Payment of transportation impact fees is discussed on page 4.15-44 of the Draft EIR. The applicant is required to pay the Solano County Regional Transportation Impact Fee (as part of the County Public Facilities Fee) at the time building permits are issued. The fees collected are transferred to Solano County and the funds are managed by the Solano Transportation Authority. These fees are used to fund regional capital transit and roadway improvement projects. These projects include ramp improvements to the Redwood Parkway/Interstate 80 interchange; for both for eastbound and westbound directions.

Please see Response C-8 regarding project design features and mitigation measures incorporated into the project to reduce VMT.

No changes to the Draft EIR were made as a result of this comment.

C-10 The City does not concur that additional visual analysis is required for potential visual impacts on I-80 and Admiral Callaghan Lane. Potential visual impacts on I-80 and Admiral Callaghan Lane based on General Plan Policy NBE – 1.5 are evaluated on pages 4.1-12 through 4.1-13 of the Draft EIR. Potential impacts are determined to be less than significant, and no mitigation is required. As noted in the comment, the segment of I-80 in the vicinity of the project site (or within the City of Vallejo) is not designated as a scenic highway. The project does not block or interfere with any scenic views designated in the City's General Plan.

The project includes landscaping along the project frontage. The relocation of the PG&E gas line along the project's frontage restricts the type of vegetation that can be planted in this area. The proposed landscaping within this easement area will consist of

vegetation such as shrubs or other acceptable plants that will contribute to the aesthetics of the project frontage. However, as shown in Figure 3-12 (Draft EIR page 3.0-25) the project does include trees throughout the commercial area parking lots (including a row of trees along the western edge of the parking lot) that will partially screen the development from drivers on I-80 and Admiral Callaghan Drive.

No changes to the Draft EIR were made as a result of this comment.

- C-11 The City agrees to share project drainage reports with the Caltrans as the project design develops. The project does not propose any development within Caltrans Right-of-Way.

No changes to the Draft EIR were made as a result of this comment.

- C-12 The project does not propose any development within Caltrans Right-of-Way. All project utilities will connect to existing utilities located within Turner Parkway or Admiral Callaghan Lane.

No changes to the Draft EIR were made as a result of this comment.

- C-13 The project does not propose any improvements or construction within the Caltrans Right-of-Way. No construction is proposed at the on and off-ramps at the I-80/Redwood Parkway Interchange.

No changes to the Draft EIR were made as a result of this comment.

The City will require the applicant to obtain any required transportation permit issued by Caltrans and to prepare a Transportation Management Plan for construction activities as a condition of approval for the project.

No changes to the Draft EIR were made as a result of this comment.

- C-14 The City concurs that it is the lead agency responsible for project mitigation. Please see Response C-4 regarding impacts to the I-80/Redwood Parkway interchange and Response C-9 regarding the collection of Transportation Impact Fees. The project is not proposing any construction or changes to the State Transportation Network (STN).

No changes to the Draft EIR were made as a result of this comment.

- C-15 The City concurs that an encroachment permit is required for any work within the Caltrans Right-of-Way. The applicant will be required to obtain an encroachment permit from Caltrans following Caltrans' stated procedures for any work within the Caltrans Right-of-Way, although none has been identified at this time.

Letter D - Patrick Soluri, February 18, 2020



tel: 916.455.7300 • fax: 916.244.7300
510 8th Street • Sacramento, CA 95814

February 18, 2020

SENT VIA EMAIL (aaron.sage@cityofvallejo.net)

Aaron Sage
Planning Division
City of Vallejo
555 Santa Clara Street
Vallejo, California 94590

**RE: Fairview at Northgate Project
(SCH No. 2018102007)**

Dear Mr. Sage:

D-1 [We are presently reviewing the Draft Environmental Impact Report ("DEIR") for the Fairview at Northgate project on behalf of our client, Vallejoans United. Our consultant has advised us that the DEIR fails to include a printout of the HARP 2 modeling for operational health risks, fails to provide a health risk isopleth map, and fails to identify the maximum exposed receptor. Instead, the DEIR simply presents a summary of health risks in Table 4.2-9 without disclosing input parameters.

Please provide us with the HARP 2 inputs and results so that we may adequately review the DEIR's methodology for assessing health risk from air emissions. Thank you for your assistance with this matter.

Very truly yours,

SOLURI MESERVE
A Law Corporation

By: 
Patrick M. Soluri

PMS/mre

Response to Letter D – Patrick Soluri, February 18, 2020

- D-1 The City does not concur that the EIR failed to provide printouts of the Health Risk Assessment (HRA) analysis. Appendix C of the draft EIR contained all of the air quality and greenhouse gas emissions modeling including approximately 350 pages of modeling results of the HRA analysis. Table 4.2-9 does provide the maximum exposure levels. All of the Toxic Air Contaminant Levels are well below the BAAQMD thresholds. The modeling parameters are discussed on page 4.2-37 of the Draft EIR. The HARP2 and isopleth maps were provided to the commenter from the City on February 24, 2020.

No changes to the EIR were made as a result of this comment.

Letter E - Patrick Soluri, March 2, 2020



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510 8th Street / Sacramento, CA 95814

March 2, 2020

SENT VIA EMAIL (aaron.sage@cityofvallejo.net)

Aaron Sage
Planning Division
City of Vallejo
555 Santa Clara Street
Vallejo, California 94590

**RE: Fairview at Northgate Project
(SCH No. 2018102007)**

Dear Mr. Sage:

E-1 { On behalf of our client, Vallejoans United, this letter provides comments on the Draft Environmental Impact Report ("DEIR") for the Fairview at Northgate Project ("Project"). As explained more fully below, numerous flaws in the DEIR exist that make it defective as an informational document under the California Environmental Quality Act ("CEQA"). This letter also transmits preliminary expert comments on the DEIR's health risk assessment ("HRA") by Ray Kapahi and comments on biological resources by Scott Cashen, which are attached to this letter as Exhibits 1 and 2, respectively, and incorporated by this reference. As a result of these flaws, the DEIR will need to be substantially revised and recirculated for public comment pursuant to CEQA Guidelines section 15088.5.

1. Human Health Impacts from Toxic Air Emissions

A. The DEIR fails to adequately analyze and disclose operational TAC emissions.

E-2 { Existing residential dwellings are located directly adjacent to the Project site to the south. These apartments are in close proximity to both the Costco fuel center and loading dock, which are major sources of toxic air contaminants ("TAC"). The loading dock is a source of major diesel particulate matter ("DPM") emissions, and the fuel center is a

Aaron Sage
 Planning Division, City of Vallejo
 March 2, 2020
 Page 2 of 13

E-2
 cont'd { major source of benzene.¹ The DEIR fails to analyze the total health risk to on-site and off-site sensitive receptors resulting from all sources of TAC emissions from the Project, as well as the Project's exacerbation of existing sources of TAC emissions as required by *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369 ("CBLA"). As a result, potentially significant human health impacts, including cancer and even childhood leukemia, are not adequately disclosed.

E-3 { As a threshold matter, The DEIR attempts to rely on the *CBLA* decision to argue that CEQA does not require an analysis of health risks to future Project occupants from TAC emissions. (DEIR, p. 4.2-36-37.) This position is refuted by the uncontroverted fact that the Project will exacerbate existing conditions. The Project's TAC emission sources include, but are not limited to: (i) the massive Costco fuel station that would emit benzene, (ii) DPM emissions from fuel delivery trucks for the Costco fuel center and diesel trucks unloading at the Costco loading dock, and (iii) DPM emissions from diesel-powered customer vehicles traveling to and from the Costco and idling in its parking lot. These TAC emissions will exacerbate the TAC emissions from the I-80. Indeed, the DEIR plainly states:

The proposed project includes a gasoline dispensing facility, which would be a source of gasoline vapors that would include TACs.....Additionally, DPM emissions would be emitted from diesel-fueled trucks traveling along the designated delivery truck routes for the Costco warehouse and major retail buildings and emitted from trucks idling at loading docks and truck bays.

(DEIR, p. 4.2-38.) In light of this admission, the DEIR inexplicably: (i) fails to identify these obvious TAC emission sources when considering whether the Project exacerbates TAC emissions from the I-80, and (ii) only considers these TAC emission sources in assessing "off-site impacts." The DEIR's obvious attempt to segment the Project's various TAC emission sources into arbitrary categories for purpose of reducing health risk to both on-site and off-site residential receptors is inexcusable.

E-4 { The California Air Resources Board ("CARB"), the state agency charged with addressing air contaminant modeling and associated health risk, provides *land use guidance* to local agencies in its Air Quality and Land Use Handbook ("CARB Handbook"). The CARB Handbook, an excerpt of which is attached as Exhibit 3,

¹ The DEIR states that the Costco fuel center would serve gasoline, but does not expressly exclude diesel. If the fuel center also serves diesel—as many other Costco fuel centers do—then it would also be a significant source of DPM emissions.

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E-4
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directly addresses the issue of an appropriate location for gas stations, and provides in relevant part: "Avoid siting new sensitive land uses within 300 feet of a large gasoline dispensing facility (defined as a facility with a throughput of 3.6 million gallons per year or greater)." (Exhibit 3, pp. 4, 32.)

Here, the proposed Costco fuel center is purportedly located "approximately 320 feet northwest of existing residences." (DEIR, 4.2-38.) This might appear, at first blush, to be a safe distance because it is more than the minimum 300-foot buffer recommended in the CARB Handbook. Any comfort is eliminated, however, when considering the massive volume of gasoline that the Costco fuel station would handle. The fuel station would serve up to 36 million gallons per year (DEIR, p. 4.2-38), which is ten times the throughput triggering CARB's recommended 300-foot minimum buffer.

E-5

This additional throughput is significant because the CARB Handbook plainly states, "[A]s the throughput increases, the potential risk increases." (CARB Handbook, p. 31.) Put simply, this massive amount of gasoline volume will require a much larger buffer than the 300-foot buffer recommended in the CARB Handbook. The CARB Handbook specifically noted a concern about high-throughput gas stations, stating in relevant part, "The emergence of very high gasoline throughput at large retail or wholesale outlets makes this a concern as these types of outlets are projected to account for an increasing market share in the next few years." (CARB Handbook, pp. 30-31.) Yet even the CARB Handbook contemplated only "throughputs as high as 19 million gallons," and not, as here, nearly twice that volume at 36 million gallons per year. (CARB Handbook, p. 32.)

In short, locating the Costco fuel station only 320 feet away from the nearest residential dwelling offers no assurance that nearby residents will be safe from the health impacts from TAC emissions. And further exacerbating the health risk to these residents is the I-80, vehicles idling in the Costco parking lot and fuel station, and Costco loading docks, which all emit TACs that are additive to the fuel center.²

E-6

² The City purported to perform an HRA analyzing at least some of these TAC emissions. (DEIR, p. 4.2-38.) However, the DEIR does not include HARP2 outputs or isopleths in the DEIR, which were only prepared for the first time on February 24, 2020. Further, the City has not yet provided AERMOD information in a usable native, electronic format. This delay presents the submission of final expert technical comments on the HRA, which will be prepared and submitted when the data underlying the DEIR's HRA is obtained. (See Exhibit 1.)

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B. The DEIR fails to disclose construction TAC emissions.

The DEIR also fails as an informational document with respect to construction TAC emissions. The DEIR's purported analysis, contained on pages 4.2-35 and -36, generally refers to BAAQMD guidance, but then does not actually follow that guidance. BAAQMD's guidance with respect to construction TAC emissions provides in relevant part:

The analysis shall disclose the following about construction-related activities:

1. Types of off-site receptors and their proximity to construction activity within approximately 1,000 feet;
2. Duration of construction period;
3. Quantity and types of diesel-powered equipment;
4. Number of hours equipment would be operated each day;
5. Location(s) of equipment use, distance to nearest off-site sensitive receptors, and orientation with respect to the predominant wind direction;
6. Location of equipment staging area; and
7. Amount of on-site diesel-generated PM_{2.5} exhaust (assuming that all on-site diesel PM_{2.5} exhaust is diesel PM) if mass emission levels from construction activity are estimated.

In cases where construction-generated emissions of diesel PM are anticipated to occur in close proximity to sensitive receptors for extended periods of time, lead agencies are encouraged to consult with BAAQMD.

(Exhibit 4, BAAQMD CEQA Guidelines, pp. 8-7, -8.)

The DEIR violates CEQA by not providing the information required by BAAQMD's CEQA Guidelines. A lead agency has a duty to inform itself about available methodologies for assessing an impact. (*Berkeley Keep Jets Over the Bay Comm. v. Board of Port Comm'rs* (2001) 91 Cal.App.4th 1344, 1367 (*Berkeley Keep Jets*)). Further, it is noted that the DEIR generally refers to the "AERSCREEN" model, but never states that the AERSCREEN model utilizes the information required by the BAAQMD Guidelines or even where the AERSCREEN model report can be found. As a result of the DEIR failure to disclose mandated information, the decision-makers and public have no way to confirm the DEIR's conclusory assertion of a less than significant construction-related impact to TAC emissions and resulting human health impacts.

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C. The DEIR fails to correlate TAC emissions to human health impacts.

E-8

TAC (i.e. “toxic” air contaminant) emissions are within the scope of CEQA precisely because they can result in negative human health conditions. The California Supreme Court recently addressed the need to correlate air emissions to human health conditions in *Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, 516 (*Sierra Club*). *Sierra Club* explains:

The EIR’s discussion of health impacts of the named pollutants provides only a general description of symptoms that are associated with exposure to the ozone, particulate matter (PM), carbon monoxide (CO), and nitrogen dioxide (NO_x), and the discussion of health impacts regarding each type of pollutant is at most a few sentences of general information. The disclosures of the health effects related to PM, CO, and sulfur dioxide *fail to indicate the concentrations at which such pollutants would trigger the identified symptoms*.

(*Id.* at 519, emphasis added.)

The same criticism applies here, but worse. Although acknowledging that there are more than 200 different TACs, the DEIR provides a brief, generalized discussion of the health impacts associated with just one TAC compound, diesel particulate matter (“DPM”). (DEIR, p. 4.2-5.) As in *Sierra Club*, this generalized discussion “fail[s] to indicate the concentrations at which such pollutants would trigger the identified symptoms” from DPM emissions. Our Supreme Court in *Sierra Club* held that this failed to comply with CEQA’s duty to inform, stating in relevant part:

The EIR must provide an adequate analysis to inform the public how its bare numbers translate to create potential adverse impacts or it must adequately explain what the agency does know and why, given existing scientific constraints, it cannot translate potential health impacts further.

(*Id.* at 522, emphasis added.) As in *Sierra Club*, the EIR fails to adequately correlate DPM emissions to identified health impacts and thus violates CEQA.

E-9

That said, the situation is even worse with respect to other TAC compounds such as benzene, the primary TAC emitted from the Costco fuel station, because the DEIR makes no attempt to even discuss health impacts. Several peer-reviewed, scientific studies have linked residential proximity to gas stations to an increased risk of adverse

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health outcomes³—including increased risk for cancer⁴ and, specifically, leukemia in children.⁵ Living next to a gas station quadruples the risk of acute leukemia in children and increases the risk of developing acute non-lymphoblastic childhood leukemia by seven times, compared with children who do not live near a gas station.⁶ Moreover, a significant exposure-response relationship exists between the likelihood of childhood leukemia and the number of gasoline stations per square mile.⁷ A link between childhood leukemia and residence within 328 feet of a gas station has been reported by one group of researchers.⁸ Safe distances between gas stations and sensitive receptors depend on the number of gas pumps, the amount of fuel drawn from them, and the traffic intensity.

E-10

A number of scientific studies have found that environmental exposure to gasoline and automobile exhaust are associated with significant elevations in the risk of childhood cancers (leukemia and central nervous system tumors).⁹ Childhood leukemia has been

³ See Exhibit 5, J. D. Brender et al., “Residential Proximity to Environmental Hazards and Adverse Health Outcomes,” *American Journal of Public Health* 101, no. S1 (2011): S37–S52.

⁴ See Exhibit 6, E. O. Talbot, “Risk of Leukemia as a Result of Community Exposure to Gasoline Vapors: A Follow-Up Study,” *Environmental Research* 111, no. 4 (2011): 597–602.

⁵ See Exhibit 7, P. Brosselin et al., “Acute Childhood Leukaemia and Residence Next to Petrol Stations and Automotive Repair Garages: The ESCALE Study (SFCE),” *Occupational and Environmental Medicine* 66, no. 9 (2009): 598–606; See Exhibit 8, P. F. Infante, “Residential Proximity to Gasoline Stations and Risk of Childhood Leukemia,” *American Journal of Epidemiology* 185, no. 1 (2017); See Exhibit 9, C. Steffen et al., “Acute Childhood Leukaemia and Environmental Exposure to Potential Sources of Benzene and Other Hydrocarbons: A Case-Control Study,” *Occupational and Environmental Medicine* 61, no. 9 (2004): 773–778; See Exhibit 10, C. Steinmaus and M. Smith, “Parental, In Utero, and Early-Life Exposure to Benzene and the Risk of Childhood Leukemia: A Meta-Analysis,” *American Journal of Epidemiology* 183, no. 1 (2016).

⁶ See Exhibits 7 and 9.

⁷ See Exhibit 11, H. H. Weng et al., “Childhood Leukemia and Traffic Air Pollution in Taiwan: Petrol Station Density as an Indicator,” *Journal of Toxicology and Environmental Health A* 72, no. 2 (2009): 83–87.

⁸ See Exhibit 9.

⁹ See Exhibit 12, A. E. Janitz et al., “Benzene and Childhood Acute Leukemia in Oklahoma,” *Environmental Research* 158 (2017): 167–173; See Exhibit 13, O. Raaschou-Nielsen et al., “Ambient Benzene at the Residence and Risk for Subtypes of

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significantly associated with living near gasoline stations.¹⁰ Not surprisingly, the USEPA publishes School Siting Guidelines that recommend careful evaluation for any potential school location within 1,000 feet of a large gas station (defined as dispensing more than 3.6 million gal/yr).¹¹

In light of this extensive scientific study linking gasoline station benzene emissions to various cancers including childhood leukemia, the DEIR must determine whether it is feasible to correlate benzene emissions to these health impacts.

2. **Noise Generation and Resulting Human Health Impacts**

As with air emissions, noise emissions can result in human health impacts that must be correlated if feasible to do so. (*Sierra Club, supra*, 6 Cal.5th at 516.) Here, however, the DEIR fails to even disclose sound levels that will be perceived at the nearest sensitive receptors, much less correlate those noise levels to human health effects. (*Sierra Club, supra*, 6 Cal.5th 502, 516.)

E-11

The Project site is bounded on the east and south by residential dwellings. All of these dwellings will be impacted to some degree by the Project's construction activities. Incredibly, however, the DEIR never actually discloses what the construction noise levels will be at these homes.

Even though construction equipment would emit noise up to 90 decibels, a level at which hearing loss can occur in just a few hours, the EIR relies on an exemption contained in the City's noise ordinance to avoid performing an actual assessment of this construction noise on apartments located merely 150 feet away. But the fact that the City's noise ordinance may allow unlimited construction noise during certain hours of the day does not allow the City to comply with its duty under CEQA to analyze and disclose those noise levels—particularly when they may result in physical discomfort and even health impacts to existing City residents. This legal conclusion is consistent with the federal government's technical guidance that is cited as authority in the DEIR's noise section, which provides in relevant part:

Childhood Leukemia, Lymphoma and CNS Tumor," International Journal of Cancer 143, no. 6 (2018): 1367–1373.

¹⁰ See Exhibits 7 and 9.

¹¹ See Exhibit 14, U.S. EPA, School Siting Guidelines, p. 59

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E-11
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Generally, local noise ordinances are not very useful for evaluating construction noise impact. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project.

(See Exhibit 15, Federal Transit Administration (2018) *Transit Noise and Vibration Impact Assessment Manual*, p. 172.)

E-12

The City has a duty under CEQA to analyze and disclose the severity of a potentially significant impact. (*Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th 1099, 1109 (“[I]n preparing an EIR, the agency must consider and resolve every fair argument that can be made about the possible significant environmental effects of a project”).) Here, the DEIR fails to disclose whether construction noise at the nearest sensitive receptors will be 65, 75, 85, or even 95 dB. This is critical because health impacts can occur at these higher noise levels. (See Exhibits 16, 17, 18, 19) One report concerning health impacts from noise emissions explains:

You can listen to sounds at 70 dBA or lower for as long as you want.

Sounds at 85 dBA can lead to hearing loss if you listen to them for more than 8 hours at a time. Sounds over 85 dBA can damage your hearing faster. The safe listening time is cut in half for every 3-dB rise in noise levels over 85 dBA. For example, you can listen to sounds at 85 dBA for up to 8 hours. If the sound goes up to 88 dBA, it is safe to listen to those same sounds for 4 hours. And if the sound goes up to 91 dBA, your safe listening time is down to 2 hours.

...
 Loud noise does not just hurt your hearing. It can cause other problems that you may not think of as being noise related.

Noise can make you more tired and cranky. Loud noise can cause other health problems, like:
 high blood pressure
 faster heart rate
 upset stomach
 problems sleeping, even after the noise stops
 problems with how babies develop before birth

(See Exhibit 17, Loud Noise Dangers, pp. 1, 4.) Another study states:

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“Mark Stephenson, a Cincinnati, Ohio–based senior research audiologist at the National Institute for Occupational Safety and Health (NIOSH), says his agency’s definition of hazardous noise is sound that exceeds the time-weighted average of 85 dBA, meaning the average noise exposure measured over a typical eight-hour work day.”

(Exhibit 18, p. A-36 (emphasis added).)

E-13

The DEIR fails as an informational document because it never discloses the actual construction noise levels that will be perceived by adjacent residential receptors. This omission prevents the public from knowing whether construction activities will be an “annoyance” to residents—and acknowledged significant impact—or result in more severe health impacts such as high blood pressure or hearing loss.

E-14

The DEIR also fails to set forth any meaningful significance standard against which to measure the significance of construction noise impacts. Again, compliance with a city’s zoning standard is distinct from CEQA’s informational mandates. The fact that a given noise level may be allowed under a particular zoning code provision does not mean that it is necessarily a less than significant impact. “[A] threshold of significance cannot be applied in a way that would foreclose the consideration of other substantial evidence tending to show the environmental effect to which the threshold relates might be significant.” (*Amador Waterways, supra*, 116 Cal.App.4th at p. 1109; see also *East Sacramento Partnerships for a Livable City v. City of Sacramento* (2016) 5 Cal.App.5th 281, 2016 (disallowing bare reliance on a General Plan policy to dismiss a potentially significant impact).) This is particularly true where, as here, an environmental impact can result in human health consequences.

E-15

The DEIR also fails to adequately analyze operational noise impacts. Although loading activities at the Costco loading dock would “typically occur during the hours of 2:00 am and 10:00 am” only 150 feet away from existing apartments, the DEIR fails to include an actual acoustic study. The purely hypothetical discussion contained in the DEIR acknowledges that the nighttime loading dock noise level at these apartments would be right at “the threshold at which a substantial percentage of people being to report annoyance.” (DEIR, 4.10-6.)

In light of the Project’s proximity to existing residential dwellings, the DEIR’s noise chapter will need to be substantially revised and recirculated for public comment.

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4. Biological Resources

The DEIR's analysis of biological resources was reviewed by an expert, Scott Cashen, whose comments are attached to this letter as Exhibit 2. As explained more fully by Mr. Cashen in Exhibit 2, the DEIR's defects in its analysis of biological resources include, but are not limited to, the following:

E-16

- The DEIR fails to provide sufficient information demonstrating that its analysis is based on the work of experts who have followed established methodologies for analyzing impacts to biological resources.
- Of the 67 special-status plant species have been documented within the vicinity of the Project site, the DEIR claims that 29 of those species are unlikely to occur based on rationale that is not scientifically sufficient and/or refuted by scientific evidence.
- The DEIR claims that four animal species are unlikely to occur on the Project site based on scientifically-improper rationale.
- The DEIR claims that the Project would have a less-than-significant impact to eight special-status animal species without even considering the Project's impact on habitat loss.
- The DEIR fails to analyze the Project's indirect impact to acknowledged wetlands on the Project site.
- Limiting the scope of cumulative projects is not scientifically supportable.

Correcting the above deficiencies will require major revision to the DEIR's analysis of biological resources and, in turn, recirculation pursuant to CEQA Guidelines section 15088.5

5. Energy Consumption

E-17

The DEIR's analysis of energy consumption suffers from at least two separate informational defects. First, the DEIR's disclosure of "transportation" energy use and conservation ignores that gasoline and diesel-powered customer vehicles idle while waiting for the Costco fueling station and even for parking spaces at the Costco itself. The revised DEIR will need to disclose this wasteful use of gasoline and diesel, and determine whether this is a significant impact under CEQA.

E-18

Second, the DEIR impermissibly dismisses the Project's impact on diesel and gasoline consumption through the long-repudiated "ratio theory" analysis. (*San Francisco Baykeeper, Inc. v. State Lands Com.* (2015) 242 Cal.App.4th 202, 223.) The DEIR states, "Project operational consumption of gasoline and diesel would represent

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0.005 percent of gasoline and 0.006 percent of diesel consumption statewide. Project operational consumption of gasoline and diesel would represent 0.427 percent of gasoline and 0.350 percent of diesel consumption in the County. Therefore, project operations would not substantially affect existing energy or fuel supplies or resources.” (DEIR, p. 4.11-14 -15.) The percentage statewide or even countywide gasoline and diesel consumption is irrelevant, and indeed even misleading, since it can be used—as the DEIR here attempts—to dismiss Project impacts. (*Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 721.)

In sum, the revised and recirculated DEIR will need to honestly disclose wasteful energy consumption, and analyze that information in the context of a meaningful standard that is not designed to minimize Project impacts.

6. Water Supply

E-19

The California Supreme Court has established the criteria for adequate water supply analysis under CEQA. (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412 (*Vineyard*)). Water supplies must be reasonably likely to be available, and not speculative or unrealistic allocations. (*Id.* at 432.) “The ultimate question under CEQA” is whether an EIR “adequately addresses the reasonably foreseeable impacts of supplying water to the project.” (*Ibid.*) An EIR must discuss “the reasonably foreseeable alternatives—including alternative water sources and the option of curtailing the development if sufficient water is not available for later phases—and” disclose “the significant foreseeable environmental effects of each alternative, as well as mitigation measures to minimize each adverse impact.” (*Ibid.*) The DEIR here is inadequate under *Vineyard* because Table 4.16-5 acknowledges there is an inadequate supply of water for the Project during multiple dry years, but the DEIR fails to identify an alternate supply, much less the environmental impacts of any such alternative supply.

7. Wastewater

E-20

The DEIR fails to provide any meaningful analysis supporting its conclusions regarding impacts to wastewater facilities. Regarding project level impacts, the DEIR states, “The City Water Department and VFWD have reviewed the project plans and determined that the existing offsite water and sewer mains have adequate capacity to serve the project and that no offsite improvements, including those to increase the service capacity of existing facilities are required.” (DEIR p. 4.16-4.) Without providing any information regarding the sewer mains and their capacities, however, this conclusion is not supported by substantial evidence.

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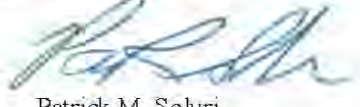
E-21 { The DEIR's analysis of cumulative wastewater impacts is similarly defective. The DEIR states, "The General Plan EIR determined that the increase in wastewater generation would be well within the currently available excess dry weather design flow capacity of greater than 5.0 mgd." (DEIR, p. 4-16-24.) The DEIR does not state whether anticipated cumulative wastewater demand is within wet weather flow capacity, much less support that conclusion with any analysis.

* * *

Thank you for considering these comments. As demonstrated above, the DEIR is woefully inadequate in many areas and requires significant revision and recirculation in order to comply with CEQA's informational disclosure mandates. Please feel free to contact my office with any questions.

Very truly yours,

SOLURI MESERVE
 A Law Corporation

By: 

Patrick M. Soluri

PMS/mre

Attachments:

- Exhibit 1: Preliminary DEIR comments by Ray Kapahi
- Exhibit 2: DEIR comments by Scott Cashen
- Exhibit 3: Excerpt from the California Air Resources Board Air Quality and Land Use Handbook
- Exhibit 4: Excerpt from the Bay Area Air Quality Management District CEQA Guidelines
- Exhibit 5: J. D. Brender et al., "Residential Proximity to Environmental Hazards and Adverse Health Outcomes," American Journal of Public Health 101, no. S1 (2011): S37-S52.
- Exhibit 6: E. O. Talbot, "Risk of Leukemia as a Result of Community Exposure to Gasoline Vapors: A Follow-Up Study," Environmental Research 111, no. 4 (2011): 597-602.

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- Exhibit 7: P. Brosselin et al., “Acute Childhood Leukemia and Residence Next to Petrol Stations and Automotive Repair Garages: The ESCALE Study (SFCE),” *Occupational and Environmental Medicine* 66, no. 9 (2009):598–606.
- Exhibit 8: P. F. Infante, “Residential Proximity to Gasoline Stations and Risk of Childhood Leukemia,” *American Journal of Epidemiology* 185, no. 1 (2017).
- Exhibit 9: C. Steffen et al., “Acute Childhood Leukemia and Environmental Exposure to Potential Sources of Benzene and Other Hydrocarbons: A Case-Control Study,” *Occupational and Environmental Medicine* 61, no. 9 (2004): 773–778.
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- Exhibit 12: A. E. Janitz et al., “Benzene and Childhood Acute Leukemia in Oklahoma,” *Environmental Research* 158 (2017): 167–173.
- Exhibit 13: O. Raaschou-Nielsen et al., “Ambient Benzene at the Residence and Risk for Subtypes of significantly associated with living near gasoline stations.
- Exhibit 14: U.S. EPA, School Siting Guidelines, p. 59.
- Exhibit 15: Federal Transit Administration (2018) *Transit Noise and Vibration Impact Assessment Manual*, p. 172.
- Exhibit 16: King, Gavin & Roland-Mieszkowski, Marek & Jason, Timothy & Rainham, Daniel. (2012). Noise Levels Associated with Urban Land Use. *Journal of urban health : bulletin of the New York Academy of Medicine*. 89. 10.1007/s11524-012-9721-7.
- Exhibit 17: Loud Noise Dangers, pp. 1, 4.
- Exhibit 18: Decibel Hell
- Exhibit 19: Noise and Children

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Letter E Exhibits

Letter E Exhibits 1 and 2 are included within this document.

Exhibits 3 through 19 are provided under separate cover. These attachments can be found on CD on the back cover of the hard copy Final EIR or on the City's website:

https://www.cityofvallejo.net/city_hall/departments_divisions/planning_and_development_services/community_development_projects.

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EXHIBIT 1

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TECHNICAL MEMORANDUM

To: Patrick Soluri
Soluri & Meserve Law Firm

Date: March 1, 2020

From: Ray Kapahi *RK*
Tel: 916-687-8352
Tel: 916-687-8352
E-Mail: ray.kapahi@gmail.com

Subject: Review of Health Risks Analysis Presented in the Draft EIR for the Fairview at Northgate Project, Vallejo, California

I have reviewed the health risk analyses for the Fairview at Northgate project located in Vallejo, CA. I reviewed the Draft Environmental Impact Report dated January 2020 including Appendix C. The later contains the Air Quality and Greenhouse Gas Study Modeling Data.

The risk analyses provide separate risk estimates associated with the construction and operational phases. The DEIR concluded that project level and cumulative public health risks would be less than significant for both phases.

The risk calculations rely on the use of HARP 2 risk model developed by the California Air Resources Board (CARB)¹. The model includes an air dispersion model and a risk model that incorporates all the toxicity data and risk calculations.

My comments are as follows:

- E-22 { 1. The HARP modeling results presented in Table 4.2-9 could not be verified as no electronic files or any HARP model reports were provided in Appendix C. HARP model provides a variety of model results and reports, including the export of risk data into

¹ HARP Model available at: <https://ww2.arb.ca.gov/our-work/programs/hot-spots-analysis-reporting-program>

E-22 cont'd Google Earth or similar mapping programs. Without this information, it is not possible to view the spatial distribution of risk around the project site. The DEIR did include spatial distribution of annual PM-10 concentrations but not cancer risk values.

2. Mitigated and emissions were provided for both the construction and operational phases. However, I could not verify if these emissions actually were input into HARP 2. Appendix C did not contains any HARP modeling results. See sample below of the HARP Model screenshot from another project showing the emissions inventory input into HARP

Emission Inventory

Add	Import	Export	Delete All	Options	Filter	
SrcID	StkID	ProID	PolID	PolAbbrev	Multiplier	Annual Ems (lbs/yr)
TRCK_J...	0	0	9901	DieselExhPM	1	1.7
LINE_H...	0	0	9901	DieselExhPM	1	3.3
OVG_B...	0	0	9901	DieselExhPM	1	315.2
SWTC_...	0	0	9901	DieselExhPM	1	161.3
OVG_T...	0	0	9901	DieselExhPM	1	37.7
TUG_T...	0	0	9901	DieselExhPM	1	75.6
TUG_B...	0	0	9901	DieselExhPM	1	13.4
TRK_T...	0	0	9901	DieselExhPM	1	8.2

Without such basic information, it is impossible to verify the risk calculations presented in the DEIR.

- E-24 3. The annual concentration of PM-10 presented in Table 4.2-9 is incorrect. The annual concentration presented in this table was averaged over 5 years. The BAAQMD threshold referenced in this table (0.3 ug/m3) applies to the maximum annual concentration. The modeling analysis should have calculated the annual PM-10 concentration for each of the 5 years and presented the highest annual concentration in Table 4.2-9. As a result, the annual concentration was underestimated.

- E-25 4. The PM-10 isopleth maps all show 5 year averaged annual concentration. Not the maximum annual concentration. As a result, the results presented in the isopleth maps cannot be compared with the BAAQMD CEQA threshold.

EXHIBIT 2

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Scott Cashen, M.S. – Independent Biological Resources Consultant

February 26, 2020

Mr. Patrick M. Soluri
Soluri Meserve
510 8th Street
Sacramento, CA 95814

Subject: Comments on the Draft Environmental Impact Report for the Fairview at Northgate Project

Dear Mr. Soluri:

This letter contains my comments on the Draft Environmental Impact Report (“DEIR”) prepared by the City of Vallejo (“City”) for the Fairview at Northgate Project (“Project”). The Project proponent (“Applicant”) proposes a mixture of commercial, residential, recreation, and designated open space on 51.3 acres of undeveloped, vacant land in the City of Vallejo.

I am an environmental biologist with 26 years of professional experience in wildlife ecology and natural resources management. I have served as a biological resources expert for over 125 projects in California. My experience and scope of work in this regard has included assisting various clients with evaluations of biological resource issues, reviewing environmental compliance documents prepared pursuant to the California Environmental Quality Act (“CEQA”) and the National Environmental Policy Act (“NEPA”), and submitting written comments in response to CEQA and NEPA documents. My work has included the preparation of written and oral testimony for the California Energy Commission, California Public Utilities Commission, and Federal courts. My educational background includes a B.S. in Resource Management from the University of California at Berkeley, and a M.S. in Wildlife and Fisheries Science from the Pennsylvania State University. A copy of my current curriculum vitae is attached hereto.

The comments herein are based on my review of the environmental documents prepared for the Project, a review of scientific literature pertaining to biological resources known to occur in the Project area, consultations with other biological resource experts, and the knowledge and experience I have acquired during my 26-year career in the field of natural resources management.

3264 Hudson Avenue, Walnut Creek, CA 94597

1

EXISTING CONDITIONS

Special-Status Plants

E-26 WRA biologists visited the Project site on March 18 and May 3, 2017.¹ During the May visit, the biologists conducted: (1) a biological resources assessment, (2) a special-status plant survey, and (3) a wetland delineation (which involved evaluation of vegetation, soils, and hydrology at 16 sampling points).² According to WRA's Biological Resources Assessment ("BRA"), the special-status plant survey was conducted simultaneously with the biological resources assessment, and it involved walking meandering transects throughout all grassland and coyote brush scrub habitat in the Study Area (i.e., at the Project site).³ The BRA provides no information on: (a) the professional expertise of the investigating biologists, or (b) the level of effort (person-hours) those individuals devoted to the special-status plant survey. As a result, the BRA fails to provide evidence that the biologists had the expertise, and devoted the level of effort necessary, to make valid inferences on the potential for various special-status plant species to be present at the Project site.

E-27 Sixty-seven special-status plant species have been documented within the vicinity of the Project site.⁴ WRA determined that 37 of those species have no potential to occur at the site, 29 are unlikely to occur, and one has moderate potential to occur (although it was not detected during the survey).⁵ According to the BRA:

For the 29 species determined to be unlikely to occur at the site, some elements of suitable habitat may be present (e.g., grassland, seasonal wetland, coastal scrub); however, because of the high disturbance levels surrounding the site and the generally degraded condition of habitat, these species are unlikely to occur within the Study Area.⁶

This is not sufficient rationale to conclude the species are unlikely to occur at the site. Special-status plants can occur in degraded habitats and areas that have been subject to disturbance.^{7,8} Furthermore, even if it is "unlikely" that the 29 species occur at the Project site, their presence cannot be ruled out entirely. This is important because some of the special-status plants that may occur at the site would not have been evident and identifiable during WRA's survey (i.e., in May). For example, the following species are annual herbs that have the potential to occur at the Project site,⁹ and that generally are not evident and identifiable in early May:¹⁰

- Big tarplant (known to occur along roadside and in degraded habitats).¹¹

¹ BRA, p. 6.

² DEIR, Appendix D (Biological Resources Assessment and Delineation of Waters of the U.S. Report).

³ BRA, pp. 9 and 17.

⁴ BRA, p. 14.

⁵ BRA, p. 14.

⁶ BRA, p. 17.

⁷ California Natural Diversity Database. 2020 Feb 4. RareFind 5. California Department of Fish and Wildlife.

⁸ Based on Google Earth imagery, the site is now fenced and has been recovering from prior disturbance activities.

⁹ BRA, Appendix B.

¹⁰ Data provided by the participants of the Consortium of California Herbaria. Available at: ucjeps.berkeley.edu/consortium/. (Accessed 24 Feb 2020).

¹¹ California Natural Diversity Database. 2020 Feb 4. RareFind 5. California Department of Fish and Wildlife.

- E-27 cont'd
- Pappose tarplant (known to occur in degraded habitats and disturbed areas).¹²
 - Napa bluecurls
- E-28
- In addition, WRA's rationale for eliminating some species is inconsistent with scientific evidence. For example, WRA concluded dwarf downingia and legenera have no potential to occur at the Project site because: "[t]he Study Area does not contain vernal pool habitat."¹³ This is inconsistent with the Solano HCP, which identifies the Study Area as an area that supports vernal pool habitats.¹⁴ Nevertheless, dwarf downingia and legenera are not limited to vernal pools; they can occur in seasonal wetlands, mesic grasslands, and other seasonally wet areas (including roadside ditches and ruts).¹⁵
- E-29
- WRA eliminated Baker's navarretia because: "[t]he Study Area does not contain vernal pools or vernal swale habitats."¹⁶ WRA's rationale is unsupported because the Project site does indeed contain vernal swales and other habitat features (e.g., wet depressions)¹⁷ associated with occurrences of Baker's navarretia.¹⁸

Special-Status Animals

Pallid bat

- E-30
- The BRA suggests there is no potential for the pallid bat to roost in the Study Area because there are no suitable roost structures such as buildings, rock outcrops, or caves.¹⁹ Pallid bats exhibit plasticity in roost site selection and are known to roost in trees, including bole cavities in oaks.²⁰ The Project entails removal of trees,²¹ and according to the BRA: "the Study Area contains oaks and other trees that may contain cavities."²² Because WRA did not inspect the trees to determine whether they provide potential roost sites for the pallid bat, and because the DEIR does not incorporate mitigation, Project impacts on the pallid bat remain potentially significant.

Ferruginous hawk

- E-31
- The BRA states that the Project site provides winter foraging habitat for the ferruginous hawk.²³ However, it concludes the species is "unlikely" to occur at the site. The basis for this determination is: "this species does not nest in northern California."²⁴ The fact that ferruginous hawks do not nest in California is irrelevant because the special-status designation applies to

¹² *Ibid.*

¹³ BRA, Appendix B.

¹⁴ LSA, 2012 Oct. Solano Habitat Conservation Plan. Final Administrative Draft. p. 6-49 and Figure 4-8.

¹⁵ California Natural Diversity Database. 2020 Feb 4. RareFind 5. California Department of Fish and Wildlife.

¹⁶ BRA, Appendix B.

¹⁷ See Delineation of Waters of the U.S. Report, p. 9: "there is also a large swale complex and several small depressions that were characterized by hydrophytic vegetation."

¹⁸ California Natural Diversity Database. 2020 Feb 4. RareFind 5. California Department of Fish and Wildlife.

¹⁹ BRA, Appendix B.

²⁰ Western Bat Working Group. 2015. Species accounts. Available at: <<http://wbwg.org/western-bat-species/>>.

²¹ See DEIR, p. 4.3-28.

²² BRA, p. 20.

²³ BRA, Appendix B.

²⁴ *Ibid.*

E-31 cont'd { birds on their *wintering* grounds.²⁵ Therefore, the lack of nesting habitat on the Project site has no influence on the potential for ferruginous hawks to occur at the site, and thus, the potential for the Project to have a significant impact on this special-status species.

Western bumble bee

E-32 { The western bumble bee is a State candidate for listing as Endangered.²⁶ The BRA states this subspecies is “unlikely” to occur at the Project site; however, it fails to provide the rationale for that determination.²⁷

According to the BRA: “[t]his insect may be occasionally found within the Study Area, however, the Study Area does not contain communities of flowering plants whose removal would constitute a significant loss of habitat for the species.”²⁸ This conclusion is not supported by scientific evidence or analysis. Furthermore, habitat for the western bumble bee is not limited to flowering plants; it also includes habitat that supports nests. Western bumble bees primarily nest underground, although they will nest on the surface (e.g., in clumps of grass).²⁹ Nesting colonies have become scarce and now appear to be largely restricted to high elevation sites in the Sierra Nevada and a few scattered areas along the California coast.³⁰ Therefore, impacts to a nesting colony at the Project site would constitute a significant impact that was not analyzed in the DEIR or BRA.

Vernal pool branchiopods

E-33 { WRA concluded there is no potential for the vernal pool fairy shrimp, vernal pool tadpole shrimp, and California linderiella to occur at the Project site because: “[w]etlands within the Study Area are not vernal pools with underlying hardpan soils necessary to support this species.”³¹ WRA’s conclusion is inconsistent with soils data, which indicate portions of the Project site do indeed contain the clay pan soils necessary to support vernal pool branchiopods.^{32,33} Furthermore, vernal pool fairy shrimp, vernal pool tadpole shrimp, and California linderiella are not limited to “vernal pools;” they also occur in seasonal pools (wetlands) comparable to those found on the Project site.³⁴ As a result, the WRA’s conclusion

²⁵ See California Department of Fish and Wildlife, California Natural Diversity Database. 2018 Nov. Special Animals List.

²⁶ California Fish and Game Commission. 2019 Jun 18. Notice of Findings. Available at: <<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=170351&inline>>.

²⁷ BRA, Appendix B.

²⁸ *Ibid*.

²⁹ California Department of Fish and Wildlife. 2019 Apr 4. Evaluation of the Petition from the Xerces Society, Defenders of Wildlife, and the Center for Food Safety to List Four Species of Bumble Bees as Endangered Under the California Endangered Species Act. p. 30. Available at: <<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=166804&inline>>.

³⁰ *Ibid*, pp. 28 through 35.

³¹ BRA, Appendix B.

³² Wetland Delineation Report, p. 10.

³³ Clear Lake clay (0 to 2 percent slopes) has the highest “Ponding Frequency Class.” See Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available at: <<https://websoilsurvey.sc.egov.usda.gov/>>. Accessed 24 Feb 2020.

³⁴ California Natural Diversity Database. 2020 Feb 4. RareFind 5. California Department of Fish and Wildlife.

E-33 cont'd { that the Project site lacks suitable habitat for vernal pool branchiopods is not supported by any evidence. Because the DEIR does not incorporate mitigation, Project impacts on vernal pool branchiopods remain potentially significant.

PROJECT IMPACTS

Impact BIO-1 (Special-status birds)

E-34 { The DEIR identifies eight special-status bird species that have the potential to occur at the Project site. The DEIR's analysis of impacts to these species is limited to the potential for the Project to disturb or remove active nests (which would violate the Migratory Bird Treaty Act and California Fish and Game Code). The DEIR fails to analyze (or mitigate) the permanent habitat loss that would be caused by the Project. This is important because habitat loss is the primary threat to most of the special-status birds that occur (or may occur) at the Project site.³⁵

Impact BIO-2 (Wetlands and other jurisdictional waters)

E-35 { The Project has been designed to avoid approximately 2.5 acres of seasonal wetlands in the central portion of the Project site. However, there would be no (or minimal) buffer between these wetlands and the developed portions of the Project. As a result, the Project will have indirect impacts on the physical, chemical, and biological elements of the "avoided" wetlands. For example, it is inevitable that the Project will affect the hydrogeomorphology of the site's wetlands and their habitat functions (i.e., due to urbanization of the surrounding landscape). In addition, although the Project includes bioretention facilities, it is inevitable that at least some pollutants associated with the Project (e.g., pesticides and heavy metals, among others) will reach the wetlands.³⁶ Because the DEIR does not analyze indirect impacts, it fails to provide a complete assessment of potentially significant impacts on the site's wetlands (in accordance with state and federal guidelines).³⁷

Cumulative Impacts

E-36 { The DEIR states: "[t]he cumulative discussions in Chapters 4.1 through 4.16 of this Draft EIR explain the geographic scope of the area affected by each cumulative effect (e.g., immediate project vicinity, county, watershed, or air basin)."³⁸ The Biological Resources chapter of the DEIR does not define, or provide the rationale for, the geographic scope that was used to assess cumulative impacts to biological resources. However, the geographic scope appears to have

³⁵ For example, see: Shuford WD, T Gardali, editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

³⁶ Trombulak SC, CA Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. Conservation Biology 14:18–30.

³⁷ State Water Resources Control Board. 2020 Feb. Draft Guidance for the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. 68 pp. See also US Army Corps of Engineers, South Pacific Division. 2017. Regulatory Program Standard Operating Procedure for Determination of Mitigation Ratios, Attachment 12501.2-SPD.

³⁸ DEIR, p. 4.0-2.

E-36 cont'd { been limited to other projects within one mile of the Project site.³⁹ The DEIR's rationale for this geographic scope is:

A one-mile radius was chosen because given the built-out nature of the surrounding area, it provided a reasonable opportunity to capture reasonable foreseeable development that would be likely to use similar resources such as freeway and roadway capacity, similar biological resources, similar surface water drainage patterns, and similar public services and utilities.⁴⁰

This rationale is inconsistent with the DEIR's statement that: "[o]ther cumulative projects within the cumulative impact area for biological resources have been identified to have a less than significant impact because they are located within an urban area and there is no native habitat on or adjacent to the cumulative project sites."⁴¹ In other words, the one-mile radius used for the City's analysis does not capture reasonably foreseeable development that would impact "similar biological resources."

E-37 { In accordance with guidance issued by the U.S. Army Corps of Engineers and State Water Resources Control Board, the geographic scope of the City's assessment of cumulative impacts to wetlands (and other jurisdictional waters) should be the watershed.⁴² For special-status species, the geographic scope should be the Solano HCP Plan Area. As noted in the DEIR: "[a]lthough the Solano HCP has not been adopted, project impacts were considered in connection with the Solano HCP, which is a regional effort to offset significant cumulative biological impacts, and development in the County."⁴³

MITIGATION ISSUES

E-38 { The City is a participating member agency in the preparation and approval process for the Solano HCP (which is now in the final stages). Although the Solano HCP has not yet been adopted, it establishes the standard for mitigation needed to conserve species and habitats within the approximately 585,000-acre Plan Area. As described further below, the mitigation measures incorporated into the DEIR are not consistent with those in the Solano HCP.⁴⁴

MM BIO-3 (Wetland Compensation)

E-39 { MM BIO-3 requires the Applicant to mitigate impacts to wetlands through purchase of credits at a qualified wetland mitigation bank. According to the DEIR, the compensatory mitigation ratio can be as low as 1:1. This violates the terms of the Solano HCP. Under the HCP, Member

³⁹ *Ibid.*

⁴⁰ *Ibid.*

⁴¹ DEIR, p. 4.3-29.

⁴² State Water Resources Control Board. 2020 Feb. Draft Guidance for the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. 68 pp. *See also* U.S. Army Corps of Engineers. 2015. Final 2015 Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division USACE.

⁴³ DEIR, p. 4.3-29.

⁴⁴ DEIR, pp. 4.3-28 and -29.

E-39
cont'd

Agencies agree to: “preserve vernal pool [or seasonal wetlands] and swale habitats at a ratio of 1:1, and restore vernal pool [or seasonal wetlands] and swale habitats at a ratio of 1:1.”⁴⁵

The Project will cause indirect impacts that will diminish the functions and values of the wetlands that are “avoided.” However, it appears MM BIO-3 only requires compensation for direct impacts to wetlands. This violates the terms of the HCP, which require compensation for indirect impacts to all vernal pools or seasonal wetlands within 100 feet of proposed development.⁴⁶ In addition, it violates the Vallejo General Plan, which requires: “adequate replacement mitigation be provided to ensure there is no net loss in habitat acreage *or values*.”⁴⁷

Swainson’s Hawk

E-40

The Project lies within the “Inner Coast Range Conservation Area.”⁴⁸ According to the Solano HCP: “[l]ong-term impacts to grassland and oak savanna habitat in the Inner Coast Range Conservation Area (Figure 4-21) shall be mitigated through the preservation and management of foraging habitat at a ratio of 1:1 (mitigation-to-impact) and subject to species management requirements specified in Section 10.5.3.”⁴⁹ The DEIR violates the terms of the Solano HCP because it does not require mitigation for the loss of Swainson’s hawk foraging habitat from the Project site.

This concludes my comments on the DEIR.

Sincerely,



Scott Cashen, M.S.
Senior Biologist

⁴⁵ LSA. 2012 Oct. Solano Habitat Conservation Plan. Final Administrative Draft. p. 6-51.

⁴⁶ *Ibid.*

⁴⁷ DEIR, p. 4.3-19. [emphasis added].

⁴⁸ LSA. 2012 Oct. Solano Habitat Conservation Plan. Final Administrative Draft. Figure 4-21.

⁴⁹ *Ibid.*, p. 6-68.

Scott Cashen, M.S.
Senior Wildlife Ecologist

Scott Cashen has 25 years of professional experience in natural resources management. During that time he has worked as a field biologist, forester, environmental consultant, and instructor of Wildlife Management. Mr. Cashen focuses on CEQA/NEPA compliance issues, endangered species, scientific field studies, and other topics that require a high level of scientific expertise.

Mr. Cashen has knowledge and experience with numerous taxa, ecoregions, biological resource issues, and environmental regulations. As a biological resources expert, Mr. Cashen is knowledgeable of the various agency-promulgated guidelines for field surveys, impact assessments, and mitigation. Mr. Cashen has led field investigations on several special-status species, including ones focusing on the yellow-legged frog, red-legged frog, desert tortoise, steelhead, burrowing owl, California spotted owl, northern goshawk, willow flycatcher, Peninsular bighorn sheep, red panda, and various forest carnivores.

Mr. Cashen is a recognized expert on the environmental impacts of renewable energy development. He has been involved in the environmental review process of over 80 solar, wind, biomass, and geothermal energy projects. Mr. Cashen's role in this capacity has encompassed all stages of the environmental review process, from initial document review through litigation support. Mr. Cashen has provided expert witness testimony on several of the Department of the Interior's "fast-tracked" renewable energy projects. His testimony on those projects helped lead agencies develop project alternatives and mitigation measures to reduce environmental impacts associated with the projects.

Mr. Cashen was a member of the independent scientific review panel for the Quincy Library Group project, the largest community forestry project in the United States. As a member of the panel, Mr. Cashen was responsible for advising the U.S. Forest Service on its scientific monitoring program, and for preparing a final report to Congress describing the effectiveness of the Herger-Feinstein Forest Recovery Act of 1998.

AREAS OF EXPERTISE

- CEQA, NEPA, and Endangered Species Act compliance issues
- Comprehensive biological resource assessments
- Endangered species management
- Renewable energy development
- Scientific field studies, grant writing and technical editing

EDUCATION

M.S. Wildlife and Fisheries Science - The Pennsylvania State University (1998)

Thesis: Avian Use of Restored Wetlands in Pennsylvania

B.S. Resource Management - The University of California, Berkeley (1992)

PROFESSIONAL EXPERIENCE

Litigation Support / Expert Witness

Mr. Cashen has served as a biological resources expert for over 100 projects subject to environmental review under the California Environmental Quality Act (CEQA) and/or the National Environmental Policy Act (NEPA). As a biological resources expert, Mr. Cashen reviews CEQA/NEPA documents and provides his clients with an assessment of biological resource issues. He then submits formal comments on the scientific and legal adequacy of the project's environmental documents (e.g., Environmental Impact Statement). If needed, Mr. Cashen conducts field studies to generate evidence for legal testimony, or he can obtain supplemental testimony from his deep network of species-specific experts. Mr. Cashen has provided written and oral testimony to the California Energy Commission, California Public Utilities Commission, and U.S. district courts. His clients have included law firms, non-profit organizations, and citizen groups.

REPRESENTATIVE EXPERIENCE

Solar Energy

- Abengoa Mojave Solar Project
- Avenal Energy Power Plant
- Beacon Solar Energy Project
- Blythe Solar Power Project
- Calico Solar Project
- California Flats Solar Project
- Calipatria Solar Farm II
- Carrizo Energy Solar Farm
- Catalina Renewable Energy Project
- Fink Road Solar Farm
- Genesis Solar Energy Project
- Heber Solar Energy Facility
- Imperial Valley Solar Project
- Ivanpah Solar Electric Generating
- Maricopa Sun Solar Complex
- McCoy Solar Project
- Mt. Signal and Calxico Solar
- Panoche Valley Solar
- San Joaquin Solar I & II
- San Luis Solar Project
- Stateline Solar Project
- Solar Gen II Projects
- SR Solis Oro Loma
- Vestal Solar Facilities
- Victorville 2 Power Project
- Willow Springs Solar

Geothermal Energy

- Casa Diablo IV Geothermal Project
- East Brawley Geothermal
- Mammoth Pacific 1 Replacement
- Orni 21 Geothermal Project
- Western GeoPower Plant

Wind Energy

- Catalina Renewable Energy Project
- Ocotillo Wind Energy Project
- SD County Wind Energy Ordinance
- Searchlight Wind Project
- Shu'luuk Wind Project
- Tres Vaqueros Repowering Project
- Tule Wind Project
- Vasco Winds Relicensing Project

Biomass Facilities

- CA Ethanol Project
- Colusa Biomass Project
- Tracy Green Energy Project

Other

- DRECP
- Carnegie SVRA Expansion Project
- Lakeview Substation Project
- Monterey Bay Shores Ecoresort
- Phillips 66 Rail Spur
- Valero Benecia Crude By Rail
- World Logistics Center

Project Management

Mr. Cashen has managed several large-scale wildlife, forestry, and natural resource management projects. Many of the projects have required hiring and training field crews, coordinating with other professionals, and communicating with project stakeholders. Mr. Cashen's experience in study design, data collection, and scientific writing make him an effective project manager, and his background in several different natural resource disciplines enable him to address the many facets of contemporary land management in a cost-effective manner.

REPRESENTATIVE EXPERIENCE

Wildlife Studies

- Peninsular Bighorn Sheep Resource Use and Behavior Study: (CA State Parks)
- "KV" Spotted Owl and Northern Goshawk Inventory: (USFS, Plumas NF)
- Amphibian Inventory Project: (USFS, Plumas NF)
- San Mateo Creek Steelhead Restoration Project: (Trout Unlimited and CA Coastal Conservancy, Orange County)
- Delta Meadows State Park Special-Status Species Inventory: (CA State Parks, Locke)

Natural Resources Management

- Mather Lake Resource Management Study and Plan – (Sacramento County)
- Placer County Vernal Pool Study – (Placer County)
- Weidemann Ranch Mitigation Project – (Toll Brothers, Inc., San Ramon)
- Ion Communities Biological Resource Assessments – (Ion Communities, Riverside and San Bernardino Counties)
- Del Rio Hills Biological Resource Assessment – (The Wyro Company, Rio Vista)

Forestry

- Forest Health Improvement Projects – (CalFire, SD and Riverside Counties)
- San Diego Bark Beetle Tree Removal Project – (SDG&E, San Diego Co.)
- San Diego Bark Beetle Tree Removal Project – (San Diego County/NRCS)
- Hillslope Monitoring Project – (CalFire, throughout California)

Biological Resources

Mr. Cashen has a diverse background with biological resources. He has conducted comprehensive biological resource assessments, habitat evaluations, species inventories, and scientific peer review. Mr. Cashen has led investigations on several special-status species, including ones focusing on the foothill yellow-legged frog, mountain yellow-legged frog, desert tortoise, steelhead, burrowing owl, California spotted owl, northern goshawk, willow flycatcher, Peninsular bighorn sheep, red panda, and forest carnivores.

REPRESENTATIVE EXPERIENCE

Biological Assessments/Biological Evaluations ("BA/BE")

- Aquatic Species BA/BE – Reliable Power Project (*SF Public Utilities Commission*)
- Terrestrial Species BA/BE – Reliable Power Project (*SF Public Utilities Commission*)
- Management Indicator Species Report – Reliable Power Project (*SF Public Utilities Commission*)
- Migratory Bird Report – Reliable Power Project (*SF Public Utilities Commission*)
- Terrestrial and Aquatic Species BA – Lower Cherry Aqueduct (*SF Public Utilities Commission*)
- Terrestrial and Aquatic Species BE – Lower Cherry Aqueduct (*SF Public Utilities Commission*)
- Terrestrial and Aquatic Species BA/BE – Public Lands Lease Application (*Society for the Conservation of Bighorn Sheep*)
- Terrestrial and Aquatic Species BA/BE – Simon Newman Ranch (*The Nature Conservancy*)

Avian

- Study design and Lead Investigator - Delta Meadows State Park Special-Status Species Inventory (*CA State Parks: Locke*)
- Study design and lead bird surveyor - Placer County Vernal Pool Study (*Placer County: throughout Placer County*)
- Surveyor - Willow flycatcher habitat mapping (*USFS: Plumas NF*)
- Independent surveyor - Tolay Creek, Cullinan Ranch, and Guadacanal Village restoration projects (*Ducks Unlimited/USGS: San Pablo Bay*)
- Study design and Lead Investigator - Bird use of restored wetlands research (*Pennsylvania Game Commission: throughout Pennsylvania*)
- Study design and surveyor - Baseline inventory of bird species at a 400-acre site in Napa County (*HCV Associates: Napa*)

- Surveyor - Baseline inventory of bird abundance following diesel spill (*LFR Levine-Fricke: Suisun Bay*)
- Study design and lead bird surveyor - Green Valley Creek Riparian Restoration Site (*City of Fairfield: Fairfield, CA*)
- Surveyor - Burrowing owl relocation and monitoring (*US Navy: Dixon, CA*)
- Surveyor - Pre-construction burrowing owl surveys (*various clients: Livermore, San Ramon, Rio Vista, Napa, Victorville, Imperial County, San Diego County*)
- Surveyor - Backcountry bird inventory (*National Park Service: Eagle, Alaska*)
- Lead surveyor - Tidal salt marsh bird surveys (*Point Reyes Bird Observatory: throughout Bay Area*)
- Surveyor - Pre-construction surveys for nesting birds (*various clients and locations*)

Amphibian

- Crew Leader - Red-legged frog, foothill yellow-legged frog, and mountain yellow-legged frog surveys (*USFS: Plumas NF*)
- Surveyor - Foothill yellow-legged frog surveys (*PG&E: North Fork Feather River*)
- Surveyor - Mountain yellow-legged frog surveys (*El Dorado Irrigation District: Desolation Wilderness*)
- Crew Leader - Bullfrog eradication (*Trout Unlimited: Cleveland NF*)

Fish and Aquatic Resources

- Surveyor - Hardhead minnow and other fish surveys (*USFS: Plumas NF*)
- Surveyor - Weber Creek aquatic habitat mapping (*El Dorado Irrigation District: Placerville, CA*)
- Surveyor - Green Valley Creek aquatic habitat mapping (*City of Fairfield: Fairfield, CA*)
- GPS Specialist - Salmonid spawning habitat mapping (*CDFG: Sacramento River*)
- Surveyor - Fish composition and abundance study (*PG&E: Upper North Fork Feather River and Lake Almanor*)
- Crew Leader - Surveys of steelhead abundance and habitat use (*CA Coastal Conservancy: Gualala River estuary*)
- Crew Leader - Exotic species identification and eradication (*Trout Unlimited: Cleveland NF*)

Mammals

- Principal Investigator – Peninsular bighorn sheep resource use and behavior study (*California State Parks: Freeman Properties*)
- Scientific Advisor – Study on red panda occupancy and abundance in eastern Nepal (*The Red Panda Network: CA and Nepal*)
- Surveyor - Forest carnivore surveys (*University of CA: Tahoe NF*)
- Surveyor - Relocation and monitoring of salt marsh harvest mice and other small mammals (*US Navy: Skagg's Island, CA*)
- Surveyor – Surveys for Monterey dusky-footed woodrat. Relocation of woodrat houses (*Touré Associates: Prunedale*)

Natural Resource Investigations / Multiple Species Studies

- Scientific Review Team Member – Member of the scientific review team assessing the effectiveness of the US Forest Service's implementation of the Herger-Feinstein Quincy Library Group Act.
- Lead Consultant - Baseline biological resource assessments and habitat mapping for CDF management units (*CDF: San Diego, San Bernardino, and Riverside Counties*)
- Biological Resources Expert – Peer review of CEQA/NEPA documents (*various law firms, non-profit organizations, and citizen groups*)
- Lead Consultant - Pre- and post-harvest biological resource assessments of tree removal sites (*SDG&E: San Diego County*)
- Crew Leader - T&E species habitat evaluations for Biological Assessment in support of a steelhead restoration plan (*Trout Unlimited: Cleveland NF*)
- Lead Investigator - Resource Management Study and Plan for Mather Lake Regional Park (*County of Sacramento: Sacramento, CA*)
- Lead Investigator - Biological Resources Assessment for 1,070-acre Alfaro Ranch property (*Yuba County, CA*)
- Lead Investigator - Wildlife Strike Hazard Management Plan (*HCV Associates: Napa*)
- Lead Investigator - Del Rio Hills Biological Resource Assessment (*The Wyro Company: Rio Vista, CA*)
- Lead Investigator – Ion Communities project sites (*Ion Communities: Riverside and San Bernardino Counties*)
- Surveyor – Tahoe Pilot Project: Validation of California's Wildlife Habitat Relationships (CWHR) Model (*University of California: Tahoe NF*)

Forestry

Mr. Cashen has five years of experience working as a consulting forester on projects throughout California. Mr. Cashen has consulted with landowners and timber operators on forest management practices; and he has worked on a variety of forestry tasks including selective tree marking, forest inventory, harvest layout, erosion control, and supervision of logging operations. Mr. Cashen's experience with many different natural resources enable him to provide a holistic approach to forest management, rather than just management of timber resources.

REPRESENTATIVE EXPERIENCE

- Lead Consultant - CalFire fuels treatment projects (*SD and Riverside Counties*)
- Lead Consultant and supervisor of harvest activities – San Diego Gas and Electric Bark Beetle Tree Removal Project (*San Diego*)
- Crew Leader - Hillslope Monitoring Program (*CalFire: throughout California*)
- Consulting Forester – Forest inventories and timber harvest projects (*various clients throughout California*)

Grant Writing and Technical Editing

Mr. Cashen has prepared and submitted over 50 proposals and grant applications. Many of the projects listed herein were acquired through proposals he wrote. Mr. Cashen's clients and colleagues have recognized his strong scientific writing skills and ability to generate technically superior proposal packages. Consequently, he routinely prepares funding applications and conducts technical editing for various clients.

PERMITS

U.S. Fish and Wildlife Service Section 10(a)(1)(A) Recovery Permit for the Peninsular bighorn sheep

PROFESSIONAL ORGANIZATIONS / ASSOCIATIONS

The Wildlife Society
Cal Alumni Foresters
Mt. Diablo Audubon Society

OTHER AFFILIATIONS

Scientific Advisor and Grant Writer – *The Red Panda Network*
Scientific Advisor – *Mt. Diablo Audubon Society*
Grant Writer – *American Conservation Experience*

TEACHING EXPERIENCE

Instructor: Wildlife Management - The Pennsylvania State University, 1998

Teaching Assistant: Ornithology - The Pennsylvania State University, 1996-1997

PUBLICATIONS

Gutiérrez RJ, AS Cheng, DR Becker, S Cashen, et al. 2015. Legislated collaboration in a conservation conflict: a case study of the Quincy Library group in California, USA. Chapter 19 *in*: Redpath SR, et al. (eds). *Conflicts in Conservation: Navigating Towards Solutions*. Cambridge Univ. Press, Cambridge, UK.

Cheng AS, RJ Gutiérrez RJ, S Cashen, et al. 2016. Is There a Place for Legislating Place-Based Collaborative Forestry Proposals?: Examining the Herger-Feinstein Quincy Library Group Forest Recovery Act Pilot Project. *Journal of Forestry*.

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Letter E – Patrick Soluri, March 2, 2020

- E-1 Responses to comments submitted by Ray Kapahi and Scott Cashen are provided in Responses E-22 through E-25 and E-26 through E-40, respectively.
- E-2 The City does not concur that the Draft EIR fails to analyze the total health risk to onsite and offsite sensitive receptors. Table 4.2-9 of in Section 4.2, Air Quality of the Draft EIR (page 4.2-38) list the operational maximum exposure of both the offsite and onsite receptors. The dispersion modeling performed for the project included receptor grids for both existing offsite receptors and proposed onsite receptors. As noted on Table 4.2-9 the maximum concentration of diesel particulate matter from delivery trucks is $0.002 \mu\text{g}/\text{m}^3$ (micrograms per cubic meter) and the maximum concentration of benzene from the proposed gas station is $0.078 \mu\text{g}/\text{m}^3$ resulting in a maximum cancer risk of 1.35 and 6.12 per million, respectively, or a total risk of 7.47 per million. Additionally, under an extreme worst-case scenario (because construction is not anticipated to occur at the same time as operation of the project), with the construction risk level of 1.77 per million, a total combined construction and operational risk levels would be 9.24 in one million. These values are below the Bay Area Air Quality Management District (BAAQMD) threshold of 10 in one million. Therefore, impacts would be less than significant.

Note that the concentration estimate developed using the methodology in the Draft EIR is conservative and is not a specific prediction of the actual concentrations that would occur at the project site any one point in time. Actual 1-hour and annual average concentrations are dependent on many variables, particularly the number and type of vehicles and equipment operating at specific distances during time periods of adverse meteorology. A health risk computation was performed to determine the risk of developing an excess cancer risk calculated on these worst-case exposure duration scenarios. The chronic and carcinogenic health risk calculations are based on the standardized equations contained in the California Office of Environmental Health Hazard Assessment (OEHHA) *Air Toxics Hot Spots Program Risk Assessment Guidance Manual for Preparation of Health Risk Assessments* (2015). Only the risk associated with the worst-case location of the project was assessed.

As noted on page 4.2-38, the analysis takes into account the proposed gas station through put as well as delivery trucks coming to the site and shows that the health risks of each are below the BAAQMD threshold. To help show the results of the analysis, the isopleth maps depicting levels of concentrations of toxic air contaminants are provided at the end of this response as Exhibits E-1 through E-3. Please see Exhibit E-3 at the end of this response regarding onsite and offsite concentrations of benzene levels onsite and offsite. The maximum concentration that the risk calculations are based on are generally located onsite in the area of the proposed Costco. The isopleth maps also show that the dispersed concentrations decrease farther away from the project site (i.e., concentrations are lower at the sensitive receptors).

The footnote in the comment also incorrectly states that the fueling station would be a significant source of diesel particulate matter (DPM). In fact, DPM emissions from both the loading docks and idling during queuing at the fueling station were included in the calculations for the health risk assessment for the project. The proposed gas station does not include any diesel fueling

stations. As described in the Draft EIR and above, risk from DPM concentrations would not exceed BAAQMD thresholds.

The HRA analysis is based on conservative inputs regarding maximum throughput, maximum number of delivery trucks, and based on a conservative estimate of total traffic volume used in the Traffic Impact Analysis; please see Response H-7 regarding the calculation of traffic volumes. The comment incorrectly states that operational toxic air contaminants (TACs) are not disclosed in the Draft EIR. Furthermore, the risk calculations described above conservatively used age sensitivity factors and 95th percentile breathing rates, as recommended by the BAAQMD and consistent with the OEHHA 2015 risk assessment guidance manual.

Page 4.6-14 of the Draft EIR accurately describes the California Supreme Court's holding in *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369 (CBIA) in that it "confirmed that CEQA, with several specific exceptions, is concerned with the impacts of a project on the environment, not the effects the existing environment may have on a project." Here, and explained in more detail in response E-3, the Draft EIR analyzed the total health risk to onsite and offsite sensitive receptors resulting from all sources of TAC emissions from the project, as well as the Project's exacerbation of existing sources of TAC emissions as required by CBIA including delivery trucks travelling on the project site and surrounding roadways as well as diesel vehicles on the freeway.

Potential impacts from toxic air contaminants are less than significant, and no mitigation is required. All potential impacts were fully disclosed within the Draft EIR. No changes to the Draft EIR were made as a result of this comment.

- E-3 The City does not concur with this comment. The project does address potential impact from off-site sources. Page 4.2-37 states:

The project would place sensitive receptors within 1,000 feet of I-80 (mobile TAC sources). Potential risks from traffic emissions generated along these roadways were evaluated using an analysis methodology that considers local traffic conditions, site-specific meteorology, and future exposures.

The discussion of pages 4.2-36 and 4.2-37 speaks specifically to impacts onsite from offsite sources. Pages 4.2-37 and 4.2-38 state:

The highest calculated carcinogenic risk as a result of the project is 3.07 per million for 30-year exposure, which is below the 10 in one million threshold; refer to *Table 4.2-9, Operational Health Risk*.

Furthermore, Draft EIR Table 4.2-10 provides the cumulative operational health risk (i.e., the risk from existing sources and the proposed project) and demonstrates that cumulative cancer risk would be 12.19, which is far below the BAAQMD's 100 in one million threshold. As such, the project would not exacerbate existing conditions.

While the commenter asserts that the DEIR is inadequate, the comment letter provides no details or technical analysis to substantiate this claim. The DEIR has been prepared in compliance with CEQA and the 2019 CEQA Guidelines. Its impact analysis and conclusions are supported by technical studies including computer modeling of air quality, health risk assessment, greenhouse gases, and noise effects of the project.

No changes to the Draft EIR were made as a result of this comment.

- E-4 The City does not concur with this comment. The CARB Handbook offers a definition of a large gas station as “a facility with a throughput of 3.6 million gallons per year or greater.” The Handbook notes that facilities of this size are likely to be less than 10 in one million at 50 feet and that the health risks from gasoline dispensing facilities indicate that the impact from the facilities decreases rapidly as the distance from the facility increases. The Handbook was published in April 2005 and provides generic information for local elected officials and land use agencies to consider regarding the siting of new sensitive uses near pollution sources, when site-specific air quality information is not available.

The Handbook also notes that, “These recommendations are advisory. Land Use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues” (page 4). Nonetheless, the project exceeds the 300-foot buffer recommended in the Handbook. It should be noted that 320 feet was used as a conservative number for use in the EIR. Project plans show that the gas station will be closer to approximately 400 feet to the closest existing residences. Please see attached Exhibit E-4 at the end of this response letter showing the distances to the nearest residences. Additionally, the residences would be separated from the proposed project by terrain and vegetation. The loading dock would also be shielded by an 8-foot wall on the south side of the loading dock. It should be noted that the analysis conservatively does not take credit for reductions in pollutant concentrations from the dense vegetation and barrier wall along the loading dock.

Additionally, CARB’s guidance (page 5) again acknowledges that the recommendations are in fact “advisory” and “to determine the actual risk near a particular facility, a site-specific analysis would be required. Risk from diesel PM will decrease over time as cleaner technology phases in.”² In this regard, cleaner technology has already been implemented through California Air Resource Board (CARB) requirements for low sulfur diesel fuel, diesel particulate filters, and clean diesel engine requirements for 2007 and newer diesel engines. The Handbook further states that “these recommendations are designed to fill a gap where information about existing facilities may not be readily available and are not designed to substitute for more specific information if it exists.”³

Therefore, the Draft EIR and underlying technical documents do not ignore the Handbook; rather, the Draft EIR and underlying technical documents are actually consistent with the Handbook. The Draft EIR includes a site-specific health risk assessment based on the geospatial location of the

² CARB (California Air Resources Board). 2005. Air Quality and Land Use Handbook: A Community Health Perspective. April 2005. Accessed March 2020. <https://www.arb.ca.gov/ch/handbook.pdf>

³ CARB (California Air Resources Board). 2005. Air Quality and Land Use Handbook: A Community Health Perspective. April 2005. Accessed March 2020. <https://www.arb.ca.gov/ch/handbook.pdf>

project, local meteorological conditions, existing sensitive land uses in the vicinity of the Project site, and the truck travel routes that are expected to be utilized. As discussed in the Draft EIR and noted above, the calculated health risk values as a result of toxic air contaminants are below the BAAQMD threshold of 10 in one million and impacts would be less than significant and no mitigation is required.

No changes to the Draft EIR were made as a result of this comment.

- E-5 The City does not concur with this comment. The Draft EIR evaluated toxic air contaminants from a variety of sources including Interstate 80, delivery trucks, and the maximum possible throughput for the proposed gas station. Please see Responses E-2 and E-3 above. The proposed project exceeds the recommended 300-foot buffer in the CARB Handbook. As noted above, CARB's buffer zones identified in the handbook are intended to be advisory when site-specific information is not available. However, site specific analyses are required for projects within the buffer zones or that may not fit all of the criteria. As noted above, the Draft EIR includes a site-specific health risk assessment that includes all sources of TACs from the project, including the gas station. Additionally, the CARB Handbook notes on page 31 that, "A well-maintained vapor recovery system can decrease emissions of benzene by more than 90% compared to an uncontrolled facility." Further the CARB website notes:

[T]he CARB adopted the Airborne Toxic Control Measure (ATCM) for Emissions of Benzene from Retail Service Stations. The ATCM reflects the use of best available control technology which requires the installation of CARB-certified Phase I and II vapor recovery control equipment at all retail service stations. The ATCM is designed to reduce benzene and total hydrocarbon emissions from uncontrolled stations by 95 percent.⁴

The Draft EIR includes Mitigation Measure HAZ-1 (Draft EIR page 4.7-18) which compels specific requirements for the gas station which include in relevant part:

- o All product, vapor, and vent piping shall be non-corrosive and provide three levels of protection.
- o All fiberglass piping shall be additionally monitored under vacuum per California 2481 regulations such that if a breach is detected in the vacuum, the product delivery system will shut down and the system will sound an audible alarm.
- o All tanks and dispensers shall be equipped with the latest Phase I and Phase II Enhanced Vapor Recovery (EVR) air pollution control equipment technology per the CARB regulations and associated Executive Orders.

⁴ CARB (California Air Resources Board); <https://ww2.arb.ca.gov/resources/documents/benzene-retail-service-stations>; accessed March 2020.

As stated above the analysis of toxic air contaminants provided on pages 4.2-35 through 4.2-40 of the Draft EIR demonstrates that all project related toxic air contaminant emissions are below the established BAAQMD thresholds and that potential impacts are less than significant.

No changes to the Draft EIR were made as a result of this comment.

- E-6 Please see Response D-1. The HRA analysis was included in Chapter 4.2 of the Draft EIR with modeling outputs included in Appendix C of the Draft EIR. The isopleth maps have been included at the end of this response letter. The methodology and model inputs are fully described in the Draft EIR. There is no CEQA requirement that lead agencies are required to provide modeling data in a useable format for manipulation by others as part of the Draft EIR public review process. The analysis was prepared as part of the analysis included of the Draft EIR. The February 24, 2020 date shown on the exhibits provided to the commenter were the dates those specific copies were printed. This analysis was performed prior to circulation of the Draft EIR, and the results were disclosed and summarized in the Draft EIR.

No changes to the Draft EIR were made as a result of this comment.

- E-7 The City does not concur with this comment. While the commenter asserts that the DEIR is inadequate, the comment letter provides no details or technical analysis to substantiate this claim. The Draft EIR has been prepared in compliance with CEQA and the 2019 CEQA Guidelines. Its impact analysis and conclusions are supported by technical studies including computer modeling of air quality, health risk assessment, greenhouse gases, and noise effects of the project. The Draft EIR includes an analysis of construction emissions that is consistent with BAAQMD guidelines and provides the following explanation of the results on page 4.2-36:

Results of this assessment indicate that the maximum concentration of $PM_{2.5}$ during construction would be $0.002 \mu\text{g}/\text{m}^3$, which is below BAAQMD threshold of $0.3 \mu\text{g}/\text{m}^3$. The highest calculated carcinogenic risk from project construction is 1.77 per million based on a PM_{10} annual average concentration of $0.00263 \mu\text{g}/\text{m}^3$, which is below BAAQMD threshold of 10 in one million. Non-cancer hazards for DPM would be below BAAQMD threshold of 1.0, with a chronic hazard index computed at 0.0004 and an acute hazard index of 0.0008. As described above, worst-case construction risk levels based on screening-level modeling (AERSCREEN) and conservative assumptions would be below BAAQMD's thresholds. Therefore, construction risk levels would be less than significant.

The Draft EIR identifies sensitive receptors within 1,000 feet to the site in Table 4.2-3 on page 4.2-7. The duration of the construction period is discussed on page 3.4-44 and on page 4.2-21 of the Draft EIR. The quantity and types of diesel-powered equipment are and provided in detail in Appendix C. Appendix C also details the number of hours equipment would be operated each day. The analysis conservatively assumes that equipment could be operating as close as along the property lines, and the distances from the property lines to sensitive receptors are provided in Draft EIR Table 4.2-3 on page 4.2-7. Staging areas would occur within the project site. The Draft EIR notes that the maximum (worst case) $PM_{2.5}$ exhaust construction emissions over the entire construction period were used in AERSCREEN to approximate construction DPM emissions. The AERSCREEN model outputs are provided in Draft EIR Appendix C. It should be noted that

AERSCREEN uses the minimum wind speed and therefore produces conservative results because higher wind speeds disperse pollutants (i.e., reduce pollutant concentrations). The analysis is therefore consistent with BAAQMD Guidelines. The Draft EIR was submitted to BAAQMD for review during the public comment period, and BAAQMD did not comment on the project.

The City fully informed itself about available methodologies for assessing an impact, and as explained above, followed the BAAQMD Guidelines. The commenter's citation to *Berkeley Keep Jets Over the Bay Comm. V. Board of Port Comm'rs* (2001) 91 Cal.App.4th 1344, 1367 is inapplicable here. In that case, the court held that the Port violated CEQA because the EIR used data extrapolated from an outdated CARB speciation profile and failed to disclose CARB's opinion that the older profile was not accurate. Here, there is no question that AERSCREEN is an appropriate and conservative model to analyze health impacts from construction impacts, and the City did not use either outdated or questionable data in its analysis.

Page 4.2-1 of the Draft EIR discloses that the air quality data and calculations are included in Appendix C of the Draft EIR. The AERSCREEN model analysis is included in the EIR. As noted in the Draft EIR, AERSCREEN is a screening level model that produces estimates of worst-case pollutant concentrations. According to the U.S. EPA Support Center for Regulatory Atmospheric Modeling (SCRAM) website, AERSCREEN is intended to produce concentration estimates that are equal to or greater than the estimates produced by AERMOD with a fully developed set of meteorological and terrain data.

Additionally, the BAAQMD CEQA Guidelines state that the implementation of the BAAQMD *Basic Construction Mitigation Measures* would reduce diesel PM exhaust emissions page 8-7 of BAAQMD CEQA Guidelines). The project includes these construction mitigation measures in Mitigation Measures AIR-1 and AIR-2.

Potential impacts from construction toxic air contaminants are less than significant because they are below established BAAQMD thresholds and do not pose a health hazard to surrounding sensitive receptors. No changes to the Draft EIR were made as a result of this comment.

- E-8 The City does not concur with this comment. The comment states that the DEIR fails as an informational document and fails to address toxic air contaminants. The comment incorrectly confuses health impacts from TAC emissions with health impacts from criteria pollutants (e.g., ozone, particulate matter (PM), carbon monoxide (CO), and nitrogen oxides (NO_x). As noted above, TAC health impacts are fully addressed within Draft EIR impact statement AQ-3. Additionally, criteria pollutant health impacts are discussed within impact statement AQ-2 on pages 4.2-27 through 4.2-32. While the commenter asserts that the DEIR is inadequate, the comment letter provides no details or technical analysis to substantiate this claim. The DEIR has been prepared in compliance with CEQA and the 2019 CEQA Guidelines. Its impact analysis and conclusions are supported by technical studies including computer modeling of air quality, health risk assessment, greenhouse gases, and noise effects of the project.

The Draft EIR contains a lengthy discussion of the *Sierra Club v. County of Fresno* court decision regarding criteria pollutant emissions on pages 4.2-27 through 4.2-32. Further information regarding this court case is provided below.

Pursuant to Rule 8.520(f) of the California Rules of Court, the South Coast Air Quality Management District (SCAQMD) and the San Joaquin Valley Unified Air Pollution Control District (SJVAPCD) filed Amicus Curiae Briefs (amicus briefs) in regard to this case.⁵ In both amicus briefs, SCAQMD and SJVAPCD provided technical explanations as to why it may not be feasible or reliable for a project to relate the expected adverse air quality impacts to likely health consequences. As summarized below, for the reasons set forth in the SCAQMD and SJVAPCD amicus briefs, the proposed Project's significant air quality impacts currently cannot feasibly be related to likely health consequences in an accurate or reliable manner. Although methods are being developed to determine health effects from large regional scale projects, the technical demands to feasibly and accurately relate the adverse air quality impacts to likely health consequences are too high for this small local project at this time. The technical challenges are listed below, with the SCAQMD and SJVAPCD amicus briefs providing support on the findings for the project:

- Ozone is not formed at the location of sources/emissions, which necessitates the use of complex and more sophisticated modeling that is not reasonably feasible for this small of a project at this time.

"For the so-called criteria pollutants, such as ozone, it may be more difficult to quantify health impacts. Ozone is formed in the atmosphere from the chemical reaction of the nitrogen oxides (NOx) and volatile organic compounds (VOC) in the presence of sunlight... It takes time and the influence of meteorological conditions for these reactions to occur, so ozone may be formed at a distance downwind from the sources." [SCAQMD p.11]

- The quantity of precursor emissions is not proportional to local ozone and secondary PM concentration, which necessitates the use of complex and more sophisticated modeling that is not reasonably feasible for the proposed small project at this time.

"Ground level ozone (smog) is not directly emitted into the air, but is formed when precursor pollutants such as oxides of nitrogen (NOx) and volatile organic compounds (VOCs) are emitted into the atmosphere and undergo complex chemical reactions in the process of sunlight. Once formed, ozone can be transported long distances by wind. Because of the complexity of ozone formation, a specific tonnage amount of NOx or VOCs emitted in a particular area does not equate to a particular concentration of ozone in that area." [SJVAPCD p.4]

"Secondary PM, like ozone, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur dioxides (SOx) and NOx. Because of the complexity of secondary PM formation, the tonnage of PM-

⁵ Both amicus briefs are provided in their entirety in Appendices A and B at the end of this Response to Comments chapter of the Final EIR.

forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary PM in that area.” [SJVAPCD p.5]

- Emissions do not cause health effects – it is the resulting concentration of criteria pollutants, which is influenced by sunlight, complex reactions, and transport, which necessitates the use of complex and more sophisticated modeling that is not reasonably feasible for this small project at this time.

“The disconnect between the tonnage of precursor pollutants (NO_x, SO_x and VOCs) and the concentration of ozone or PM formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects, but the concentration of resulting ozone or PM.” [SJVAPCD p.5]

- Currently available modeling tools are appropriate for regional evaluations such as the large Specific Plan at issue in the Friant Ranch case, but not individual small projects like the project.

“For instance, the computer models used to simulate and predict an attainment date for the ozone or particulate matter NAAQS in the San Joaquin Valley are based on regional inputs, such as regional inventories of precursor pollutants (NO_x, SO_x and VOCs) and the atmospheric chemistry and meteorology of the Valley... the models simulate future ozone or PM levels based on predicted changes in precursor emissions Valley wide... The goal of these modeling exercises is not to determine whether the emissions generated by a particular factory or development project will affect the date that the Valley attains the NAAQS. Rather, the Air District's modeling and planning strategy is regional in nature and based on the extent to which all of the emission-generating sources in the Valley (current and future) must be controlled in order to reach attainment.” [SJVAPCDF p.6-7]

“Thus, the CEQA air quality analysis for criteria pollutants is not really a localized, project level impact analysis but one of regional, "cumulative impacts."” [SJVAPCD p.8]

“...the currently available modeling tools are equipped to model the impact of all emission sources in the Valley on attainment... Running the photochemical grid model used for predicting ozone attainment with the emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NO_x and VOC in the Valley) is not likely to yield valid information given the relative scale involved.” [SJVAPCD p.9-10]

- The SJVAPCD indicates that it is currently impossible to accurately correlate project level emissions to specific health impacts.

“Finally, even once a model is developed to accurately ascertain local increases in concentrations of photochemical pollutants like ozone and some particulates, it remains impossible, using today's models, to correlate that increase in

concentration to a specific health impact. The reason is the same: such models are designed to determine regional, population-wide health impacts, and simply are not accurate when applied at the local level.” [SJVAPCD p.10]

- SCAQMD highlights that CARB indicated that a CARB methodology of analysis for PM2.5 health impacts is not suited for small projects such as this one.

“Also, the California Air Resources Board (CARB) has developed a methodology that can predict expected mortality (premature deaths) from large amounts of PM2.5... SCAQMD used the CARB methodology to predict impacts from three very large power plants (e.g., 731-1837 lbs/day) Again, this project involved large amounts of additional PM2.5 in the District, up to 2.82 tons/day (5,650 lbs/day of PM2.5, or, or 1029 tons/year... However, the primary author of the CARB methodology has reported that this PM2.5 health impact methodology is not suited for small projects and may yield unreliable results due to various uncertainties.” “Among these uncertainties are the representativeness of the population used in the methodology, and the specific source of PM and the corresponding health impacts.” [SCAQMD p.14]

- SCAQMD indicates that the CARB PM2.5 methodology would provide unreliable findings for a small project with a small population and that a lead agency should be able to decide if and when it may be appropriate.

“Therefore, when SCAQMD prepared a CEQA document for the expansion of an existing oil production facility, with very small PM2.5 increases (3.8 lb/day) and a very small affected population, staff elected not to use the CARB methodology for using estimated PM2.5 emissions to derive a projected premature mortality number and explained why it would be inappropriate to do so... SCAQMD staff concluded that use of this methodology for such a small source could result in unreliable findings and would not provide meaningful information” [SCAQMD p.15]

“This CEQA document was not challenged in court.” [SCAQMD p.15]

- The development of new technical approaches in the future may change the feasibility determination. To date, BAAQMD has not developed or approved a method to predict health impacts from criteria pollutants.

“Moreover, what is reasonably feasible may change over time as scientists and regulatory agencies continually seek to improve their ability to predict health impacts. For example, CARB staff has been directed by its Governing Board to reassess and improve the methodology for estimating premature deaths.” [SCAQMD p.16]

For the reasons set forth above, it is not currently feasible to relate the project’s air quality NOx impacts to likely health consequences. Both SCAQMD and SJVAPCD are responsible for assessing ozone and PM impacts regionally, and the potential health consequences from those on a regional

basis. The relevant air district here (BAAQMD) was sent the Draft EIR for review during the public comment period and did not comment on the project. The current evaluation on the limitations and uncertainties of existing tools is consistent with SCAQMD and SJVAPCD findings. Currently available regional modeling tools are not designed to capture changes in pollutant concentrations for this project that would be meaningful. This is due in part to a relatively coarse spatial resolution (e.g., greater than 4-kilometer x 4 kilometer) which makes it speculative to discern local project impacts on air quality. For this project, mass operational emissions operation for NO_x would only slightly exceed the applicable threshold. NO_x impacts cannot be mitigated to less than significant and are considered significant and unavoidable. Annual operational emissions of NO_x are approximately 63 tons per year, primarily from mobile sources. This is approximately 62 percent of the annual NO_x emissions estimated for the Friant Ranch project [SJVAPCD p.8], even smaller than the quantity emitted for the project for which the SJVAPCD argued it was not feasible at this time to quantify the health impacts.

We note that after publication of the Draft EIR for public review, the Sacramento Metropolitan Air District (Sac Metro Air District) released a DRAFT Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District on January 31, 2020 (available online here: <http://www.airquality.org/Residents/CEQA-Land-Use-Planning/CEQA-Guidance-Tools>). Although this project is not in the Sac Metro Air District, their Draft Guidance “provides insight on the health effects that may result from a Project emitting at the maximum thresholds of significance (TOS) levels in the SFNA for oxides of nitrogen (NO_x), volatile organic compounds (VOCs), and PM, in addition to levels of CO and oxides of sulfur (SO_x) calculated proportional to NO_x (as described in **Section 4.1**). This information can be used in environmental documents to provide a conservative estimate the health effects of the emissions of criteria pollutants at levels at or below the significance thresholds.” BAAQMD has not published a similar guidance document. Notably, the project’s emissions of criteria pollutants are well below the maximum thresholds of significance used in the Sac Metro Guidance:

	NO _x	ROG	PM ₁₀	PM _{2.5}
Thresholds used in Sac Metro Guidance	82	82	82	82
Project emissions	63.3	25.24	0.67	0.64

According to the Sac Metro Guidance, because this project has estimated emissions of well below the thresholds of significance used in the Draft Sac Metro Guidance, the project’s health impacts from criteria pollutants would not be significant or substantial.

- E-9 The City does not concur with this comment. Please see Response E-2 regarding impacts from benzene and Response E-8 regarding a discussion of health impacts. Additionally, the comment incorrectly states that the Draft EIR does not discuss health impacts of benzene. In fact, the Draft EIR generally discusses benzene concentration trends on page 4.2-29 and emissions regulations and trends on page 4.2-30, and specifically discusses the health impacts of benzene on page 4.2-38. It should be noted that the primary health effect of benzene is that it is a carcinogen, and as such, the cancer risk impacts were fully evaluated and disclosed within the Draft EIR to be below the BAAQMD’s threshold. As noted in Response E-9, the risk calculations in the Draft EIR

conservatively used age sensitivity factors and 95th percentile breathing rates, as recommended by the BAAQMD and consistent with the latest OEHHA risk assessment guidance manual (2015).

The comment provides a list of attached studies but does not provide technical analysis to substantiate the claim the project would result increased risk for cancer and leukemia. It also provides no explanation of how the results of the studies relate to this particular project. Each of the attached studies was reviewed for its applicability to the adequacy of the Draft EIR. None of the studies were conducted in California, and none of the studies provided a recommendation with what would be considered an acceptable distance from a gas station. Nor do the studies take into account current technologies to control vapor emissions to reduce benzene emissions. For the purposes of the analysis in the Draft EIR, the CARB recommendations remain the guiding authority for safe distances from surrounding land uses and technological controls for gas station storage tanks and fuel dispensers.

Exhibit 5 – This study does not address the adequacy of the Draft EIR. This study considers a wide range of studies related to hazardous waste sites, industrial sites, cropland with pesticide applications, highly traffic roads, nuclear power plants, and gas stations and repair shops. Most of those land uses do not apply to the project. The study does not make any recommendations with regard to a buffer from a gas station. The study also does not offer any discussion on the effectiveness of improved technologies with regard to CARB-certified Phase I and II vapor recovery control equipment at gas stations. As noted above, Table 4.2-9 Draft EIR identifies the maximum concentration of benzene from the proposed gas station is 0.078 µg/m³ (micrograms per cubic meter) which is well below (approximately one-quarter) the BAAQMD threshold of 0.3 µg/m³. The project exceeds the 300-foot buffer recommended in the Handbook. Please see Response E-5 regarding required vapor controls for the project.

Exhibit 6 – This study is not related to the adequacy of the Draft EIR. This study is related to a gasoline spill in northeastern Pennsylvania and is not similar to the existing conditions of the project site. Please see Response E-5 regarding Mitigation Measure HAZ-1 addressed in the Draft EIR requiring specific controls on the gas station fueling equipment.

Exhibit 7 – This study is not related to the adequacy of the Draft EIR. This study was conducted in France and focused on residences adjoining businesses such as repair garages, petrol (gas) stations, car bodywork repair shops, and printing plants. With the exception of the gas station, none of these businesses are part of the project and there are no residences immediately adjoining the gas station. The study does not offer any discussion on the effectiveness of improved technologies with regard CARB-certified Phase I and II vapor recovery control equipment at gas stations. As noted above, Table 4.2-9 Draft EIR identifies the maximum concentration of benzene from the proposed gas station as 0.078 µg/m³ (micrograms per cubic meter), which is well below (approximately one-quarter) the BAAQMD threshold of 0.3 µg/m³. The project exceeds the 300-foot buffer recommended in the CARB Handbook. Please see Response E-5 regarding required vapor controls for the project.

Exhibit 8 – This study is not related to the adequacy of the Draft EIR. This study was conducted to assess the risk of childhood leukemia associated with environmental exposure to gasoline; aromatic hydrocarbons from refinery pollution, petroleum waste sites, and mobile sources (automobile exhaust); paints, paint products, and thinners; and secondary cigarette smoke in the home. The study does not make any recommendations with regard to a buffer from a gas station.

The study also does not offer any discussion on the effectiveness of improved technologies with regard to CARB-certified Phase I and II vapor recovery control equipment at gas stations. As noted above, Table 4.2-9 Draft EIR identifies the maximum concentration of benzene from the proposed gas station as $0.078 \mu\text{g}/\text{m}^3$ (micrograms per cubic meter), which is well below (approximately one-quarter) the BAAQMD threshold of $0.3 \mu\text{g}/\text{m}^3$. The project exceeds the 300-foot buffer recommended in the CARB Handbook. Please see Response E-5 regarding required vapor controls for the project.

Exhibit 9 – This study is not related to the adequacy of the Draft EIR. This study was conducted in France and exclusively evaluated benzene levels in children who were in utero or lived at a young age in a residence adjoining an automobile repair shop or gas station. The project does not include any residences adjoining a gas station or automobile repair shop. The study does not make any recommendations with regard to a buffer from a gas station. The study also does not offer any discussion on the effectiveness of improved technologies with regard to CARB-certified Phase I and II vapor recovery control equipment at gas stations. As noted above, Table 4.2-9 Draft EIR identifies the maximum concentration of benzene from the proposed gas station we $0.078 \mu\text{g}/\text{m}^3$ (micrograms per cubic meter), which is well below (approximately one-quarter) the BAAQMD threshold of $0.3 \mu\text{g}/\text{m}^3$. The project exceeds the 300-foot buffer recommended in the CARB Handbook. Please see Response E-5 regarding required vapor controls for the project.

Exhibit 10 – This study is not related to the adequacy of the Draft EIR. This study evaluated previous childhood leukemia-related studies conducted in France and the United Kingdom. The study does not make any recommendations with regard to a buffer from a gas station. The study also does not offer any discussion on the effectiveness of improved technologies with regard to CARB-certified Phase I and II vapor recovery control equipment at gas stations. As noted above, Table 4.2-9 Draft EIR identifies the maximum concentration of benzene from the proposed gas station as $0.078 \mu\text{g}/\text{m}^3$ (micrograms per cubic meter), which is well below (approximately one-quarter) the BAAQMD threshold of $0.3 \mu\text{g}/\text{m}^3$. The project exceeds the 300-foot buffer recommended in the CARB Handbook. Please see Response E-5 regarding required vapor controls for the project.

Exhibit 11 – This study is not related to the adequacy of the Draft EIR. This study was conducted in Taiwan and evaluated the density of gas stations in certain municipalities. The study does not make any recommendations with regard to a buffer from a gas station. The study also does not offer any discussion on the effectiveness of improved technologies with regard to CARB-certified Phase I and II vapor recovery control equipment at gas stations. As noted above, Table 4.2-9 Draft EIR identifies the maximum concentration of benzene from the proposed gas station as $0.078 \mu\text{g}/\text{m}^3$ (micrograms per cubic meter), which is well below (approximately one-quarter) the BAAQMD threshold of $0.3 \mu\text{g}/\text{m}^3$. The project exceeds the 300-foot buffer recommended in the CARB Handbook. Please see Response E-5 regarding required vapor controls for the project.

Exhibit 12 - This study is not related to the adequacy of the Draft EIR. The analysis in the Draft EIR was prepared in accordance with BAAQMD and OEHHA guidance and shows that cancer risk would not exceed BAAQMD thresholds. Moreover, this study was conducted in Oklahoma and evaluated acute myeloid leukemia cases associated with benzene levels by birth year between the years of 1997-2012. The study does not make any recommendations with regard to a buffer from a gas station. The study also does not offer any discussion on the effectiveness of improved

technologies with regard to CARB-certified Phase I and II vapor recovery control equipment at gas stations. As noted above, Table 4.2-9 Draft EIR identifies the maximum concentration of benzene from the proposed gas station as 0.078 µg/m³ (micrograms per cubic meter), which is well below (approximately one-quarter) the BAAQMD threshold of 0.3 µg/m³. The project exceeds the 300-foot buffer recommended in the CARB Handbook. Please see Response E-5 regarding required vapor controls for the project.

Exhibit 13 - This study is not related to the adequacy of the Draft EIR. This study was conducted in Denmark and evaluated acute myeloid leukemia cases associated with benzene levels in children born after 1960 and were diagnosed between the years for 1968-1991. The study does not make any recommendations with regard to a buffer from a gas station. The study also does not offer any discussion on the effectiveness of improved technologies with regard to CARB-certified Phase I and II vapor recovery control equipment at gas stations. As noted above, Table 4.2-9 Draft EIR identifies the maximum concentration of benzene from the proposed gas station as 0.078 µg/m³ (micrograms per cubic meter), which is well below (approximately one-quarter) the BAAQMD threshold of 0.3 µg/m³. The project exceeds the 300-foot buffer recommended in the CARB Handbook. Please see Response E-5 regarding required vapor controls for the project.

- E-10 The City does not concur with this comment. Please Response E-9 regarding the studies attached to the comment. The project does not propose a new school, and therefore the school siting guidelines do not apply. Please see Response E-8 regarding evaluating health effects of TACs at the project level.
- E-11 The City does not concur with this comment. While the commenter asserts that the DEIR is inadequate, the comment letter provides no details or technical analysis to substantiate this claim. The DEIR has been prepared in compliance with CEQA and the 2019 CEQA Guidelines.

Page 4.10-18 of the Draft EIR provides an analysis of construction equipment. Table 4.10-7, Typical Construction Noise Levels (Draft EIR page 4.10-20) list the typical noise levels of associated with individual pieces of construction equipment at maximum power at distances of at 50 feet and 100 feet from the source. It should be noted that Draft EIR pages 4.10-10 and 4.10-19 explain that although the closest sensitive receptor property line approximately 15 feet away, the actual sensitive receptors would be approximately 96 feet away. The Draft EIR discusses the types of equipment and the perception of construction noise from the receptor. The following text is provided in the Draft EIR from page 4.10-18:

During construction, exterior noise levels could affect the residential neighborhoods near the construction site. At the nearest, project construction would occur adjacent to existing single-family residences. It should be noted that only a limited amount of equipment can operate near a given location at a particular time. Equipment typically used during this stage includes heavy-duty trucks, backhoes, bulldozers, excavators, front-end loaders, and scrapers. During construction, the equipment typically travels around the project site. From the perspective of a sensitive receptor, the equipment approaches, passes by, and then recedes into the distance. Peak noise levels would thus be periodic, intermittent, and temporary during brief pass-by periods when construction equipment operates at the far extent of the grading limits. Construction activities

would occur throughout the project site and would not be concentrated at the point closest to the sensitive receptors.

Grading and excavation phases of project construction tend to be the shortest in duration and create the highest construction noise levels due to the operation of heavy equipment required to complete these activities. It should be noted that only a limited amount of equipment can operate near a given location at a particular time. Equipment typically used during this stage includes heavy-duty trucks, backhoes, bulldozers, excavators, front-end loaders, and scrapers. Operating cycles for these types of construction equipment may involve one or two minutes of full-power operation followed by three to four minutes at lower power settings. Other primary sources of noise would be shorter-duration incidents, such as dropping large pieces of equipment or the hydraulic movement of machinery lifts, which would last less than one minute. According to the applicant, no pile-driving would be required during construction.

There is no evidence provided in the comment that sensitive receptor would be exposed to noise levels of 90 decibels for more than a few hours at a time. As stated in the Draft EIR, construction equipment would be used in different portions of the site, so no single receptor would be exposed to all the construction noise generated. As also stated in the Draft EIR, the equipment used near the existing residences include heavy-duty trucks, backhoes, bulldozers, excavators, front-end loaders, and scrapers. The highest noise level from these types of equipment is 85 dBA at 50 feet. Construction activities would generally be limited to weekday daytime hours when most people would typically be out of their houses, and grading activities would conform to the time-of-day restrictions of VMC Section 12.040.070.

As described in the Draft EIR, noise impacts from project-related construction activities occurring within or adjacent to the project site would be a function of the noise generated by construction equipment, the location of the equipment, the timing and duration of the noise-generating construction activities, and the relative distance to the noise-sensitive receptors. Construction activities for the proposed project would generally include site preparation, grading, building construction, and paving. As noted on Draft EIR page 4.10-18, the grading and excavation phases generally have the highest noise levels but the shortest duration of all construction phases.

Equipment associated with anticipated project construction is identified on Draft EIR page 4.10-18. Site preparation, grading and excavation typically requires the use of earth-moving equipment, such as graders, scrapers, dozers, tractors, and excavators. Building construction typically involves the use of cranes, forklifts, concrete trucks, and delivery trucks. Paving typically requires the use of pavers, rollers, mixers, and heavy-duty trucks. Noise from construction equipment would generate both steady-state and episodic noise that could be heard within and adjacent to the project site. Construction noise is difficult to quantify because of the numerous variables involved, including the specific equipment types, size of equipment used, percentage of time each piece is in operation, condition of each piece of equipment, and number of pieces that would operate on the site.

Individual pieces of construction equipment anticipated to be used during construction of the proposed project could produce maximum noise levels (L_{max}) of between 77 dBA to 90 dBA at a

reference distance of 50 feet from the noise source, as shown in Draft EIR Table 4.10-7. These maximum noise levels are the highest individual sound occurring at an individual time period and would occur when equipment is operating under full power conditions (i.e., the equipment engine at maximum speed). However, equipment used on construction sites typically operates under less than full power conditions, or part power. To more accurately characterize construction-period noise levels, the average (hourly L_{eq}) noise level associated with each construction stage is calculated based on the quantity, type, and usage factors for each type of equipment that would be used during each construction stage.⁶ These noise levels are typically associated with multiple pieces of equipment operating on part power, simultaneously.

A reasonable worst-case assumption is that the three loudest pieces of equipment would operate simultaneously within a focused area and occur continuously over at least one hour. The combined sound level of a grader, scraper, and concrete saw is 92 dBA L_{max} when measured at 50 feet from the noise source. It should be noted that a hydraulic break ram and mounted impact hammer would not be used near the project property line and are not anticipated to be used for project construction. Although the closest sensitive receptors are located approximately 15 feet east of the property line, the distance from the closest area where heavy equipment would operate to the sensitive receptor's area of frequent human use would be 96 feet. Based on distance attenuation alone, this maximum noise level would be reduced to 86 dBA L_{max} at the closest receptor, and the combined L_{eq} would be 81 dBA. Actual construction-related noise activities would be lower than these conservative levels and would cease upon completion of construction. Due to the variability of construction activities and equipment for the project, overall construction noise levels would be intermittent and would fluctuate over time.

These assumptions represent the worst-case noise scenario because construction activities would typically be spread out throughout the project site, and thus some equipment would be farther away from the affected receptors. In addition, the noise modeling assumes that construction noise is constant, when, in fact, construction activities and associated noise levels would fluctuate and generally be brief and sporadic, depending on the type, intensity, and location of construction activities.

As discussed on Draft EIR pages 4.10-5, the Occupational Safety and Health Administration (OSHA) has a noise exposure standard that is set at the noise threshold where hearing loss may occur from long-term exposures. OSHA's maximum permissible noise exposure standard is 90 dBA for an eight-hour period, 105 dBA for a one-hour period, and up to 115 dBA for a 15-minute period or less. As noted above, the maximum noise levels of construction would be 86 dBA L_{max} , which is below OSHA's continuous noise exposure standard. Furthermore, as detailed above, construction noise would not be continuous over an 8-hour period. The conservative maximum 1-hour (L_{eq}) project construction noise level would be 81 dBA L_{eq} , which is far below the 115 dBA 1-hour standard. Furthermore, a typical building attenuates outdoor noise levels by approximately 25 dBA with windows closed and approximately 15 dBA with windows open, which would reduce maximum indoor noise exposure to 56 dBA, which is even further below any health-based noise exposure limits.

⁶ The FHWA Roadway Construction Noise Model User's Guide (2006) defines the usage factor as the percentage of time during a construction noise operation that a piece of construction equipment is operating at full power.

Although the City does not have a threshold for construction noise, Mitigation Measure NOI-1 has been included in the Draft EIR to minimize construction noise. The mitigation measure limits the hours of construction activity and requires the contractor to reduce construction noise by using tuned equipment, locate delivery and storage areas away from existing residences, limit engine idling, and use smart back-up alarms that adjust to the background noise level. As such, potential impacts from construction noise is considered less than significant with mitigation incorporated.

No changes to the Draft EIR were made as a result of this comment.

- E-12 The City does not concur that the DEIR fails to disclose construction noise levels. Please see Response E-11 above. The City analyzed and disclosed the severity of potential impact from construction noise on nearby sensitive receptors. As noted in the Draft Table 4.10-7, Typical Construction Noise Levels (Draft EIR page 4.10-20) the highest noise level of the anticipated construction equipment is 90 dBA (Lmax) at 50 feet. As such, individual construction equipment may create momentary noise levels of up to approximately 90 dBA (Lmax) at 50 feet from the equipment. Additionally, as discussed above in Response E-11, a reasonable worst-case condition could generate maximum noise levels that would not exceed human health-protective standards. These occurrences – although audible for a few minutes – would generally be short in duration and intermittent. Additionally, these occurrences would also be distributed throughout the 51.3-acre project site and would not be adjacent to a sensitive receptor for an extended period of time. Due to its relatively short-lived duration, construction equipment noise would be temporary and less than significant with mitigation incorporated. No additional mitigation is required.

The Draft EIR is entirely consistent with the commenter's citation to *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th 1099, 1109 (*Protect Amador*). In that case, the court was merely explaining that an EIR must evaluate each impact area that could potential result in a significant impact. The Draft EIR includes a 36-page chapter on potential noise impacts and fully analyzed the potential construction noise impacts based on established thresholds in the Appendix G checklist. In *Protect Amador*, the court did not disagree with the use of the Appendix G thresholds, but instead found that a bare conclusion that "the change in local hydrology associated with dewatering the Amador Canal and eliminating all leakage is not considered to be a significant hydrological impact *per se*" violated CEQA because it was not a statement of reasons. As explained above, the Draft EIR includes detailed statements of reasons why there is a less than significant impact from construction noise.

No changes to the Draft EIR were made as a result of this comment.

- E-13 The City does not concur with this comment. Please see Response E-11 and 12.

No changes to the Draft EIR were made as a result of this comment.

- E-14 The City does not concur with this comment. The question from the State CEQA Guidelines asks:

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

The City does not have construction noise standards in the General Plan or noise ordinance. In fact, the City's Municipal Code (VMC Section 16.072.050(c)) specifically exempts construction noise from specific noise limits. No substantial evidence regarding a significant effect from construction noise has been included in the comment or otherwise. Please see Responses E-11 and E-12 regarding the Draft EIR analysis of construction noise. Specifically, as discussed above in Response E-11, a reasonable worst-case condition could generate maximum noise levels that would not exceed human health-protective standards.

No changes to the Draft EIR were made as a result of this comment.

- E-15 The City does not concur with this comment. The Draft EIR (page 4.10-26) provides the following analysis regarding noise from the loading area:

The loading dock area of the proposed Costco store is located approximately 90 feet north of the southern property boundary and approximately 150 feet north of the closest existing multi-family residences. While there would be temporary noise increases during truck maneuvering and engine idling, these impacts would be of short duration and infrequent. Typically, heavy truck operations generate a noise level of 68 dBA Leq at a distance of 30 feet. At 150 feet, noise levels would attenuate to 54 dBA, which is below the City's 60 dBA standard for residential areas and below the ambient noise levels [56 dBA, from Table 4.10-4, page 4.10-8] from the adjacent roadways in this location. Loading area noise levels would be further attenuated by an 8-foot noise wall on the south side of the loading area. The truck ramps that serve Costco warehouse trucks descend approximately 6-8 feet. The noise attenuation wall is located at the same elevation as the parking lot thereby attenuating noise from the loading docks. As noise levels associated with trucks and loading/unloading activities would be below City standards and ambient levels, impacts would be less than significant. Furthermore, as previously discussed, VMC Section 16.072.050(C) identifies "sounds from transportation equipment used exclusively in the movement of goods and people to and from a given premises" as sounds that can exceed the City's noise standard of 60 dBA for the project site.

As discussed in Response E-14, the State CEQA Guideline asks if the project would exceed standards established in the local general plan or noise ordinance. The analysis shows that operation of the project, including the use of the loading dock would not exceed the City's noise standard of 60 dBA. It should be noted that the closest point of the loading dock and drive aisle where trucks will be maneuvering and idling are 150 and 190 feet away from sensitive receptors, respectively. The Draft EIR conservatively analyzed all truck noise levels at 150 feet away as this is the distance from the drive aisle. Truck noise at the loading docks would be lower as they are further away. If two trucks were to operate either simultaneously or within the same hour, noise levels would be 71 dBA Leq at 30 feet which is 57 dBA at 150 feet and below the 60-dBA standard. Additionally, the distance to the loading dock is 190 feet away, resulting in loading dock outdoor noise level of 55 dBA. Furthermore, it should be noted that Section 16.72.040 of the Vallejo Municipal Code provides a correction factor of plus 5 dB to the 60-dBA noise standard for noise levels emitted between 7 a.m. and 10 p.m. As described in the Draft EIR and above, noise levels would not exceed 60-dBA noise standard, or the 65-dBA adjusted daytime noise standard.

The U.S. EPA document, *Protective Noise Levels* (1974) document notes that a typical building attenuates outdoor noise levels by approximately 25 dBA with windows closed and 15 dBA with windows open, which would reduce maximum indoor noise exposure from 57 dBA to 32 dBA with windows closed and 42 dBA with windows open. Therefore, the 45-dBA interior and nighttime standard would also not be exceeded. Further, the Draft EIR conservatively did not take credit for the 8-foot barrier (i.e., masonry wall) along the south side of the loading dock, which would lower noise levels by another approximately 5 dBA. The noise levels described above and in the Draft EIR are the noise levels that would occur from activities occurring closest to sensitive receptors and other activities, such as trucks driving through other areas of the parking lot, access roads, or for gas station deliveries would be lower and would also not exceed the City's standards.

Also, noted in the analysis is the City's Municipal Code (VMC Section 16.072.050(C)) specifically exempts "sounds from transportation equipment used exclusively in the movement of goods and people to and from a given premises" which would include deliveries to and from the proposed Costco warehouse. As described in the Draft EIR and above, potential impacts from the proposed loading area are considered less than significant, and no mitigation is required.

No changes were made to the Draft EIR as a result of this comment.

- E-16 The City does not concur that the EIR is deficient with regards to the analysis of biological resources. Each of the bulleted items is discussed in detail in response to the comments made in Exhibit 2 to the comment letter in Responses E-26 through E-40 below.

No changes were made to the Draft EIR as a result of the comment.

- E-17 The City does not concur with this comment. The proposed gas station is the relocation of an existing Costco gas station from approximately 0.75-mile away and a Costco membership is required to purchase gas at the gas station. As such, most of the gas station customers will be customers who currently visit the existing gas station. Therefore, most the fuel consumed in connection with idling at the project gas station is already being consumed and is thus a part of the environmental baseline. Additionally, the proposed gas station includes additional fueling lanes and dispensers, so the wait time at the proposed gas station is anticipated to decrease compared to the existing gas station. It should be noted that Costco has designed the proposed gas station to operate efficiently for the convenience of its members. Based on the operations of other Costco gas stations with a similar gas station configuration, Costco has experienced that that increasing the number of fueling positions helps reduce vehicle queues. With 30 fueling positions at this proposed gas station lengthy queues are not anticipated. The proposed gas station will have approximately an 80-vehicle queue capacity (15 at the pumps, plus 65 in the queueing lanes). Costco has not experienced vehicles queuing outside the fuel facility queue area with this configuration. Nonetheless, a queuing plan to keep the vehicles onsite in the unlikely event that queues exceed the available storage will be required as a condition of approval for the project.

Furthermore, the Draft EIR fuel energy consumption calculations are based on outputs from CalEEMod, which include vehicle idling. Therefore, fuel consumption from idling is accounted for in the Draft EIR. No evidence that the project would result in a wasteful use of gasoline and diesel has been identified. Potential impacts are considered less than significant, and no mitigation is required.

No changes to the Draft EIR have been made as a result of this comment.

- E-18 The City does not concur with this comment. The analysis specifically responds to the guidance for energy analysis in the State CEQA Guidelines Appendix F, which requires a determination on if the project would increase the need for new energy supplies. As such, the comparison to regional consumption is provided for that purpose. The comparison to state consumption is for information purposes and is not the basis of the less than significant impact conclusion. Page 4.11-15 and 4.11-16 lists the energy efficiency measures that will reduce the project's energy use and avoid the wasteful or inefficient use of energy. No evidence is provided in the comment or otherwise that the project would result in a wasteful or inefficient use of energy. The Draft EIR discloses the project's energy usage in compliance with CEQA and the CEQA Guidelines and does not need to be recirculated.

The commenter's citation to *San Francisco Baykeeper, Inc. v. State Lands Com.* (2015) 242 Cal.App.4th 202, 223 does not support the claim that the Draft EIR relied on a "ratio theory" to diminish the impacts from energy use of this project. In *San Francisco Baykeeper*, the court explained that *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692 and other relevant case law holds that a "project's cumulative environmental impact cannot be deemed insignificant solely because its individual contribution to an existing environmental problem is relatively small." However, in *San Francisco Baykeeper*, the court upheld the State Lands Commissions analysis of cumulative impacts of bay mining on erosion that included a finding that the "incremental impact was relatively insignificant by comparing it to the overall problem of coastal erosion." *San Francisco Baykeeper, Inc. v. State Lands Com.* (2015) 242 Cal.App.4th 202, 222. Here, the Draft EIR does not deem the energy impacts less than significant solely because its individual contribution to an existing environmental problem is relatively small, but instead compares the project's gasoline and diesel usage to statewide usage to conclude that the incremental increase in fuel consumption would not substantially affect existing energy or fuel supplies or resources. This is entirely consistent with the holding in *San Francisco Baykeeper*.

- E-19 The City does not concur with this comment. The Draft EIR's analysis of available water supply is consistent with the California Supreme Court's holding in *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412 and describes the water conservation measures to reduce demand if water curtailment measures are necessary. Page 4.16-16 of the Draft EIR includes the following quote from the City of Vallejo Urban Water Management Plan: "the City's combined projected water supplies are anticipated to be sufficient to meet projected future demands during normal, single-dry and multiple-dry water year conditions." Page 1-2 of the UWMP states "Looking ahead to the City's development and water needs, the City's current plan positions it well to meet any future demands regardless of water year type."

In addition, the City of Vallejo Water Department reviewed the project water demand in March 2020 when issuing a renewed Will Serve letter for potable water from the City of Vallejo. City staff confirmed that over the short- and long- term adequate water supply is available to serve the project. The updated Will Serve letter and City correspondence is included in Appendix C at the end of this Response to Comments chapter of the Final EIR. Therefore, no new or alternate supplies of water is required to serve the proposed project and the Draft EIR was not required to identify an alternative source of water or the environmental impacts of this unnecessary alternative supply.

Page 4.16-18 of the Draft EIR provides the following analysis regarding water supply.

The water supply analysis in the Propel Vallejo 2040 General Plan EIR concluded that buildout of the General Plan would not result in a significant impact on water supply as a result of known available water supplies, the City's water shortage contingency planning, and implementation of General Plan goals and policies. The proposed project is consistent with the land use designations identified in the Propel Vallejo 2040 General Plan for the project site. Per the Propel Vallejo 2040 General Plan EIR, the City's water shortage contingency plan includes a five-stage response plan which is triggered at prescribed levels. Water shortage stages are monitored, reported, and acted upon according to the plan set out in the reduction-measuring mechanism for each stage. Each stage consists of specific prohibitions, regulations, fines, penalties and rate structure to encourage the appropriate level of water conservation. The City's analysis of available supply and demand has indicated that the City is not anticipated to have to implement any conservation above Stage II. Following the guidelines set forth in the City's UWMP, in instances where water demand has exceeded 90 percent of available supply, Stage II water shortage requirements are necessary.

The Propel Vallejo 2040 General Plan EIR also noted that the "following goals, policies, and actions presented in the proposed General Plan would help ensure that new development and redevelopment projects would not have an adverse impact on water supply:

- Goal NBE-1: *Beautiful City*. Preserve and enhance the natural, historic, and scenic resources that make Vallejo special.
- Policy NBE-1.14: *Water Conservation*. Promote water conservation through a range of proactive City efforts.
- Action NBE-1.14A: Continue the Community-wide Water Conservation Program, including free residential water use surveys and audits, and water-use efficiency education in local schools.
- Action NBE-1.14B: Continue to provide water customers with information on conservation techniques, services, devices, and rebates (including greywater use), including online and through in- person community outreach.
- Action NBE-1.14C: Update the Green Building Standards Code to require the use of low flow plumbing fixtures, low volume irrigation systems, and drought-tolerant plant palettes.
- Goal EET-4: *Sustainable Economic Development*. Pursue economic development that enhances equitable local wealth growth, improves quality of life, and respects the natural environment.
- Action EET-4.2A: Continue to incorporate sustainable design elements such as solar panels and water efficient landscaping into the construction of City-owned and operated facilities.
- Goal CP-1: *Healthy Community*. Promote the health of All Vallejoans

- Policy CP-1.13: *Clean Water*. Provide a safe, adequate water supply citywide.
- Action CP-1.13A: Periodically assess the need to repair or replace aging water supply infrastructure and incorporate upgrades and improvements into the Capital Improvement Plan Program as needed.
- Action CP-1.13D: Continue to provide information on water conservation best practices to residents and businesses in Vallejo.

Additionally, on page 4.16-10 the Draft EIR discusses the feasibility of reducing water demand:

Reduction of water demand, as necessary, has been shown to be readily achievable in Vallejo. Vallejo currently is required to conserve 16 percent compared to 2013 in accordance with the SWRCB's emergency regulations to achieve 25 percent water savings statewide. Vallejo's reports to the SWRCB show that the cumulative amount saved from June 2015 through February 2016 (as compared to 2013) is 18.7 percent, which betters the conservation standard set by the SWRCB by 2.7 percent.

No changes to the Draft EIR have been made as a result of this comment.

- E-20 The City does not concur with this comment. Page 4.16-1 of the Draft EIR states that Appendix K of the Draft EIR contains information regarding sewer capacity evaluation. This study, prepared by the applicant and reviewed by the Vallejo Flood and Wastewater District (VFWD), evaluated wastewater impacts associated with the project (for both residential and commercial areas) based on the VFWD sanitary sewer model. As noted in the comment, page 4.16-14 of the Draft EIR notes that VFWD has reviewed these calculations and confirmed that the existing sanitary sewer mains have adequate capacity based on the City's hydraulic model used to determine available capacity. As such, the project is not required to construct new sewer lines replace any existing sewer lines offsite. Potential impacts on sewer infrastructure are considered less than significant.

No changes to the Draft EIR have been made as a result of this comment.

- E-21 The City does not concur that the Draft EIR's analysis of cumulative wastewater impacts is defective. The analysis from in the Draft EIR incorporates the analysis from the City's General Plan EIR that was certified in 2017. The following text is added to the Final EIR to amplify and clarify the discussion on page 4.16-24 of the Draft EIR regarding cumulative wastewater treatment capacity:

RWQCB Order No. R2-2012-0017 (NPDES Permit No CA0037699), adopted February 8, 2012, prescribes treatment requirements and discharge flow capacity limits. This NPDES Order currently specifies dry weather facility permitted capacity (and design flow) of up to 15.5 [million gallons per day (mgd)], and wet weather design flow of up to 60 mgd. The current average dry weather flow is less than 10 mgd and the maximum daily wet weather flow between October 2006 and December 2010 was 43.3 mgd average wet weather flow.

The project is consistent with the land uses evaluated in the Propel Vallejo 2040 General Plan EIR, which concluded that buildout of the General Plan would not exceed the capacity of the City's wastewater treatment system.

This comment does not change the conclusions of the EIR, and potential impacts are considered less than significant.

- E-22 Please see Response D-1. The comment incorrectly indicates that HARP modeling was conducted for the Draft EIR. As a point of clarification, construction dispersion modeling was conducted with AERSCREEN, operational dispersion modeling was conducted with AERMOD, and the CARB HARP2 Risk Assessment Stand Alone Tool (RAST) was used for the risk calculations. All AERSCREEN and AERMOD output files were provided in Draft EIR Appendix C. The HARP2 RAST output files provide only the risk values, which were reported in the Draft EIR. The HARP2 RAST input/output files and AERMOD isopleth maps were provided by the City to Patrick Soluri on February 24, 2020. These files do not have substantially more detail than what is provided in the Draft EIR, and not including the files in the Draft EIR did not deprive the public or the commenter of a meaningful opportunity to review the analysis and provide comments. It should be noted that the Draft EIR reported the maximum pollutant concentrations. The maximum concentration that the risk calculations are based on are generally located onsite in the area of the proposed Costco and that concentrations at the closest sensitive receptors are lower. It should be noted that the risk values follow the pollutant concentrations in the isopleth maps and the spatial distribution of risk values would be the same. Appendix C of the draft EIR contained all of the air quality and greenhouse gas emissions modeling, including approximately 350 pages of modeling results of the HRA analysis. The HRA isopleth maps are provided at the end of this response letter as Exhibits E-1 through E-3 for reference. There is no CEQA requirement that lead agencies are required to provide modeling data in a useable format for manipulation by others as part of the Draft EIR public review process.
- E-23 Please see Response E-22 regarding the assessment tools used in the analysis and the HARP 2 modeling information provided to the commenter.
- E-24 The annual concentration averaged over 5 years is consistent with USEPA guidance. Concentrations are averaged over 5 years because USEPA guidance requires dispersion modeling to use 5 years of meteorological data in order to ensure that concentrations are representative of actual conditions. In Appendix W to 40 CFR Part 51 (Guideline on Air Quality Models) USEPA's definition of preferred meteorological data includes the most recent five years of National Weather Service (NWS) data. The USEPA document, Minimum Meteorological Data Requirements for AERMOD - Study and Recommendations (1998), requires a minimum of 5 years of most recent readily available representative meteorological data to be used. Additionally, the USEPA has issued recommendations (Guidance for PM_{2.5} Permit Modeling Memorandum, dated May 20, 2014) regarding appropriate modeling procedures for use in modeling demonstrations of compliance with the PM_{2.5} NAAQS, which include a recommendation to use the concentrations across the number of years modeled. There is no requirement to use the highest annual concentration for health risk purposes. The fact that health risks are based on long term exposure (i.e., 30 years) also makes the use of the 5-year average concentration appropriate. Additionally, the concentrations reported in the Draft EIR are conservatively based on emissions factors from California Air Pollution Control Officers Association gasoline service station industrywide guidance from 1997 (latest available), which does not take into account the latest vapor recovery methods and standards. It is further noted that the project's modeled PM_{2.5} concentration, as disclosed in the Draft EIR, would be 0.002 µg/m³ which is far below the 0.3 µg/m³ annual average threshold.

- E-25 Refer to Response E-24. As discussed above, the use of 5-year averaged concentrations is appropriate for the evaluation of health risk impacts and for PM_{2.5} concentrations as this is the recommended methodology by the USEPA. Concentrations are averaged over 5 years because USEPA guidance requires dispersion modeling to use 5 years of meteorological data in order to ensure that concentrations are representative of actual conditions. Furthermore, the BAAQMD's threshold is specifically 0.3 µg/m³ annual average, and the BAAQMD's CEQA Air Quality guidelines do not characterize this threshold as a maximum annual concentration. It is further noted that the project's modeled PM_{2.5} concentration, as disclosed in the Draft EIR, would be 0.002 µg/m³ which is far below the 0.3 µg/m³ annual average threshold.
- E-26 The City does not concur with this comment. The resumes of the qualified biologists who prepared the Biological Resources Assessment are included in Appendix D at the end of this Response to Comments chapter of the Final EIR. The resumes demonstrate that the project biologists advanced degrees (Masters and Doctorate) in biological sciences and have the professional experience and training to perform the biological assessment.

No changes to the Draft EIR were made as a result of this comment.

- E-27 The City does not concur with this comment. Appendix A-1 of the Biological Resources Assessment (BRA) (Appendix D of the Draft EIR) contains an extensive list of all of the plants observed during a pedestrian field survey of the project site. The project site is an isolated piece of undeveloped land that is surrounded by existing urban development and major roadway infrastructure. There is no connectivity to offsite habitat. The habitat value of the property has been degraded as a result of removal of native vegetation, fires as a result of illegal uses on the property, vehicular activity, and homeless encampments.

Appendix B of the BRA provides a table of all of the plant species that have the potential to occur onsite and provides a rationale for why specific plant species would be unlikely to occur onsite. The Big Tarplant, Pappose Tarplant, and Napa bluecurls were not identified during onsite during the special status species plant survey, and as documented in Appendix B, were determined unlikely to be onsite due to a lack of suitable habitat. Figure 3 of the BRA also provides a visual of special-status plant occurrences in relation to the Study Area. Habitat, historical occurrences and site visit observations were all analyzed to make potential special-status species determinations. Though site visits occurred in March and May, no special-status plants were observed during the survey and bloom schedules were not a limiting factor for making professional determinations.

Habitat at the Project site is a major limiting factor due to severe anthropogenic disturbance, such as prolonged vehicle activity. The level of use by off-road vehicles and informal camping has increased populations of non-native and invasive grasses and other weedy species, making the occurrence of special-status plants unlikely. Though some sensitive plant species such as big tarplant (*Blepharizonia plumosa*) and pappose tarplant (*Centromadia parryi* ssp. *parryi*) are known to occur in disturbed habitat, these were determined to have an unlikely potential to occur onsite upon analysis of historical occurrence data and survey results. Potential impacts to sensitive plant species are considered less than significant, and no mitigation is required.

No changes to the Draft EIR were made as a result of this comment.

- E-28 The BRA was prepared by qualified biologists familiar with the flora and fauna of Solano County and who conducted an onsite field survey and special status species plant survey. The biologists did not identify any vernal pool habitat on the project site. The Solano County Habitat Conservation Plan is not an adopted plan and there is no known timeframe of when it will be implemented. Therefore, reliance on the plan is not appropriate for the evaluation and assessment of biological resource impacts. It should be noted that the project site is designated in the draft HCP as “General Plan Designated Planned Development,”⁷ indicating that the project site is planned for development consistent with the City adopted General Plan.

Dwarf downingia (*Downingia pusilla*) can occur in valley and foothill grassland and is threatened by urbanization, development, agriculture, grazing, non-native plants, and vehicles. This species was determined to have no potential in the Study Area due to the high level of vehicle disturbance, informal human use of the site, and non-native plants onsite. It was also assessed that the species has no historical occurrences within a 5-mile radius of the Study Area.

Legenere (*Legenere limosa*) habitat is limited to vernal pool habitat which does not occur onsite. Many historical occurrences of legenere have been extirpated by development. There are no historical occurrences of Legenere occurring within a 5-mile radius of the Study Area and therefore has no potential to occur.

Potential impacts to sensitive plant species are considered less than significant, and no mitigation is required.

No changes to the Draft EIR were made as a result of this comment.

- E-29 The BRA was prepared by qualified biologists familiar with the flora and fauna of Solano County and who conducted an onsite field survey and special status species plant survey. The comment does not provide any evidence that wet depressions onsite have the biological equivalency of a vernal pool. Soil type, site visit observations, wetland delineation data and historical occurrences were all factored into the potential for occurrence determinations. Though portions the site supports wetlands with hardpan soils, this does not constitute the presence of vernal pools. No Baker’s navarretia was identified onsite during the project field survey and special status plant survey. There are no historical occurrences of Baker’s navarretia within a 5 mile radius of the Study Area and none were observed onsite during the project field survey and special status plant survey, therefore this species was given no potential to occur within the Study Area. Potential impacts to sensitive plant species are considered less than significant and no mitigation is required.

No changes to the Draft EIR were made as a result of this comment.

- E-30 The City does not concur with this comment. Appendix B of the BRA incorporates the findings of the qualified biologists who conducted the field study. The BRA states that the pallid bat has an unlikely potential to occur within the Study Area due to the site lacking suitable roost structures which include old buildings, rocky outcrops and caves which are necessary for the bat to be protected from high temperatures. This species does not historically roost in trees therefore the

⁷ Solano County Water Agency, <http://www.scwa2.com/Home/ShowDocument?id=494>, Accessed March, 2020.

potential is unlikely. Moreover, the reference cited by the commenter is consistent with this, and states that the pallid bat “inhabits low elevation (< 1,830 m / 6,000 feet) rocky arid deserts and canyonlands, shrub-steppe grasslands, karst formations, and higher elevation coniferous forests (> 2,100 m / 7,000 feet).” This species therefore would not roost in trees at the site’s low elevation.

The comment therefore does not provide credible evidence that the trees onsite would be considered suitable roosting habitat. Potential impacts on pallid bats are considered less than significant and no mitigation is required.

No changes to the Draft EIR were made as a result of this comment.

- E-31 The BRA was prepared by qualified biologists familiar with the flora and fauna of Solano County and who conducted an onsite field survey and special status species plant survey. The project site is an isolated piece of undeveloped land that is surrounded by existing urban development. The habitat value of the property has been degraded as a result of removal of native vegetation, fires as a result of illegal uses on the property, vehicular activity, and homeless encampments. As discussed in Appendix B of the BRA, the ferruginous hawk is determined to be unlikely to be present onsite for nesting. In fact, nesting is highly unlikely in Northern California in general given that this species typically nests in the northern prairies of the US and Canada. The site also has only low potential for winter foraging. The species may occasionally use adjacent larger trees for perching and periodically hunting on the Study Area, although no populations of California ground squirrels or other small mammals were observed during site visits to suggest that a strong prey base exists. Per the 2019 BRA, ferruginous hawk has not been documented within five miles of the project and does not typically nest in Northern California, and recent re-examination of the CNDDDB suggests it has not been documented within 10-miles.

With regard to specific protections for this species, the only status this species possesses is that it is a USFWS Bird of Conservation Concern (BCC). Although species with this designation are documented in the CNDDDB, this status does not infer any specific protections to species that are given it. In other words, ferruginous hawk do not receive any additional protections beyond those given to all native nesting birds and raptors by the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGF). Typical nesting bird measures mandate nesting bird surveys only during the nesting season (generally February 1 - August 15), and do not provide any specific measures or protections for wintering or foraging habitat without additional status designations (e.g. CDFW Species of Special Concern, State/Federal Listing). Potential impacts on ferruginous hawk, along with all other nesting birds that receive identical protections, are considered less than significant with the implementation of nesting bird measures recommended in the BRA, and therefore no mitigation is required. Potential impacts on ferruginous hawk are considered less than significant and no mitigation is required.

No changes to the Draft EIR were made as a result of this comment.

- E-32 The City does not concur that the BRA is not supported by scientific evidence. The BRA was prepared by qualified biologists familiar with the flora and fauna of Solano County and who conducted an onsite field survey to observe the existing conditions on the site. No bee nests were observed during the BRA site visit. As discussed in Appendix B of the BRA, the Western bumble is determined to be unlikely to be present onsite due to lack of flowering plants and no further actions were recommended for this species. The comment merely state that bees can nest in the

ground and provides no substantial evidence that there is a nesting colony of Western bumble bee at this location. Potential impacts on Western bumble bee are considered less than significant, and no mitigation is required.

No changes to the Draft EIR were made as a result of this comment.

- E-33 The BRA was prepared by qualified biologists familiar with the flora and fauna of Solano County and who conducted an onsite field survey. The presence of clay pan soils does not mean that vernal pools or vernal pool branchiopods are present on site. WRA took into account necessary factors to determine the potential of vernal pool branchiopods occurring onsite. Soil type, site visit observations, wetland delineation data and historical occurrences were all factored into the potential for occurrence determinations. Though portions the site supports wetlands with hardpan soils, this does not constitute the presence of vernal pools nor branchiopods. Historical occurrence data shows that none of the vernal pool branchiopod species has occurred within a 5-mile radius of the Study Area. The comment provides no evidence that vernal pool branchiopods are present onsite. This comment does not change the conclusions of the EIR, and potential impacts on special status species are less than significant.

No changes to the Draft EIR were made as a result of this comment.

- E-34 The City does not concur with this comment. The project site is an isolated piece of undeveloped land that is surrounded by existing urban development and major roadway infrastructure. There is no connectivity to offsite habitat. The habitat value of the property has been degraded as a result of removal of native vegetation, fires as a result of illegal uses on the property, vehicular activity, and homeless encampments. Furthermore, the small patch size makes the site not regionally significant in terms of providing foraging habitat. There is no need to mitigate for a permanent loss of habitat for the eight special- status species that have the potential to occur on site. The EIR includes Mitigation Measure BIO-1 which requires pre-construction surveys for nesting birds to ensure that active nests are not disturbed during bird surveys. The project will preserve 5.7 acres of habitat onsite within a permanent open space area. The project site has been designated for development in both the Vallejo General Plan and the draft HCP and the proposed project does not conflict with either document. The City does not have any requirements to compensate for the loss of non-native grassland habitat. Potential impacts on special status bird species are less than significant with the incorporation of Mitigation Measures BIO-1.

It should be further noted that impacts to non-native grassland is not required by the U.S. Army Corps of Engineers or the California Department of Fish and Wildlife as part of their Section 404 Clean Water Act Permits or Lake and Streambed Alteration Agreements, respectively as it is not considered sensitive habitat under their regulatory guidelines that requires protective measures.

No changes to the Draft EIR were made as a result of this comment.

- E-35 The City does not concur with this comment. The 2.5 acres of preserved wetlands are within the larger 5.7-acre open space area. The open space area provides a buffer on either side of the delineated wetland areas within the open space area. Page 3.0-21 of the Draft EIR states that the, “[Open Space] area would be subject to protective restrictions that would not allow for public or

private use and the open space would be secured by attractively designed perimeter fencing consistent with the appearance of open space.”

The residential component of the development includes a linear park that buffers the open space area from the proposed homes. Both the U.S. Army Corps of Engineers or the California Department of Fish and Wildlife have reviewed preliminary plans of the project through the applicant’s wetland permit application to those agencies, and the agencies have not required additional buffer area beyond what is currently proposed.

Surface water quality is addressed in the EIR in Chapter 4.8, Hydrology and Water Quality. Mitigation Measure HYD-2 requires the preparation of a Stormwater Quality Control Plan to address incorporation of water quality design and source control features into the project. This includes direction of surface water runoff to biofiltration swales (commercial area) and a retention basin where water will infiltrate into the soil instead of flowing directly into the wetland areas. Therefore, pesticides, heavy metals, and other potential pollutants from the project would not reach the wetland area.

This comment did not change any conclusion on the Draft EIR. Potential indirect impacts on wetlands are considered less than significant with the mitigation measures in the Draft EIR incorporated.

No changes to the Draft EIR were made as a result of this comment.

- E-36 The City does not concur with this comment. As noted, the comment the Draft EIR does provide a rationale for the one-mile radius as quoted on page 4.0-2. As previously discussed, the project site is a geographically isolated piece of undeveloped land that is surrounded by existing urban development and major roadway infrastructure. The site does not contain suitable habitat for special status species, and there is no connectivity to offsite habitat. Given the urban and built-out nature of the surrounding area, none of the identified cumulative projects have significant cumulative impacts. The comment does not provide any evidence of cumulative impacts on biological resources.

No changes to the Draft EIR were made as a result of this comment.

- E-37 The City does not concur with this comment. The watershed of the project site has been significantly altered as a result of the previous development surrounding the project site. All of the water that comes on or off the site is from existing culverts. Blue Rock Springs enters the site from an underground culvert from the south and exits by way of an existing culvert that conveys the water under Admiral Callaghan Way and Interstate 80. Surface water entering the site from the south flows to culverts on the northside of the property that convey water through the City’s stormdrain system under Turner Parkway and other existing development north of the project site. There are no natural open water ways, channels, or riparian habitat connected to or surrounding the project site. The project site is geographically isolated from any other native habitat area.

Cumulative impacts on wetland impacts are considered less than significant, and no mitigation is required.

No changes to the Draft EIR were made as a result of this comment.

- E-38 The HCP is not adopted at this time and is therefore not applicable to this or any other project. The project is consistent with the plan as the project site is identified as a General Plan Designated Planned Development site which indicates that the site is planned for future development. As such, the project is consistent with the buildout anticipated in the HCP. Therefore, the project would not conflict or hinder the approval or implementation of the HCP once it is adopted.

No changes to the Draft EIR were made as a result of this comment.

- E-39 The City does not concur with this comment. Please see Response 38. Until the HCP is adopted the City and the applicant will not receive the coverage benefits of the HCP and similarly the mitigation requirements do not apply. The 1:1 ratio identified in the Mitigation Measure BIO-3 is stated as the minimum ratio for compensatory mitigation. Please see Response E-33 regarding the absence of vernal pools on the project site. The applicant is currently seeking regulatory wetland permits from the U.S. Army Corps of Engineers and the Regional Water Quality Control Board at which time mitigation ratios will be confirmed as noted in Mitigation Measure BIO-3. These regulatory agencies have the authority to required increased mitigation ratios greater than 1:1 if it is determined appropriate by the agencies. Potential impacts on wetland as less than significant and no mitigation is required. As to the HCP, the document is not adopted and is not anticipated to be adopted before the certification of the Final EIR for the proposed project. The habitats onsite are not those habitats identified as rare or sensitive in the General Plan (page 4-2). The wetlands onsite are seasonal, degraded, and not connected any natural waterways or wetlands. Surface water from offsite sources drains onto the site through existing culverts. For these reasons, the wetlands onsite were considered to be low quality and a 1:1 ratio is considered appropriate. Other habitats onsite consist mainly of Coyote Brush Scrub and non-native grassland habitats which are not considered sensitive or to have value that merits additional mitigation. Impacts are considered less than significant with the incorporation of Mitigation Measure BIO-3, and no additional mitigation is required.

No changes to the Draft EIR were made as a result of this comment.

- E-40 The City does not concur with this comment. The project could not violate the Solano County HCP because the HCP has not been adopted at this time. Until the HCP is adopted, the City and the applicant will not receive the coverage benefits of the HCP and similarly the HCP's mitigation requirements do not apply. The City does not have mitigation requirements for the loss of non-native grassland. Please see Response E-34. Potential impacts on special status bird species are less than significant with the incorporation of Mitigation Measures BIO-1.

No changes to the Draft EIR were made as a result of this comment.

Exhibit E-1: Diesel Particulate Matter from Interstate 80

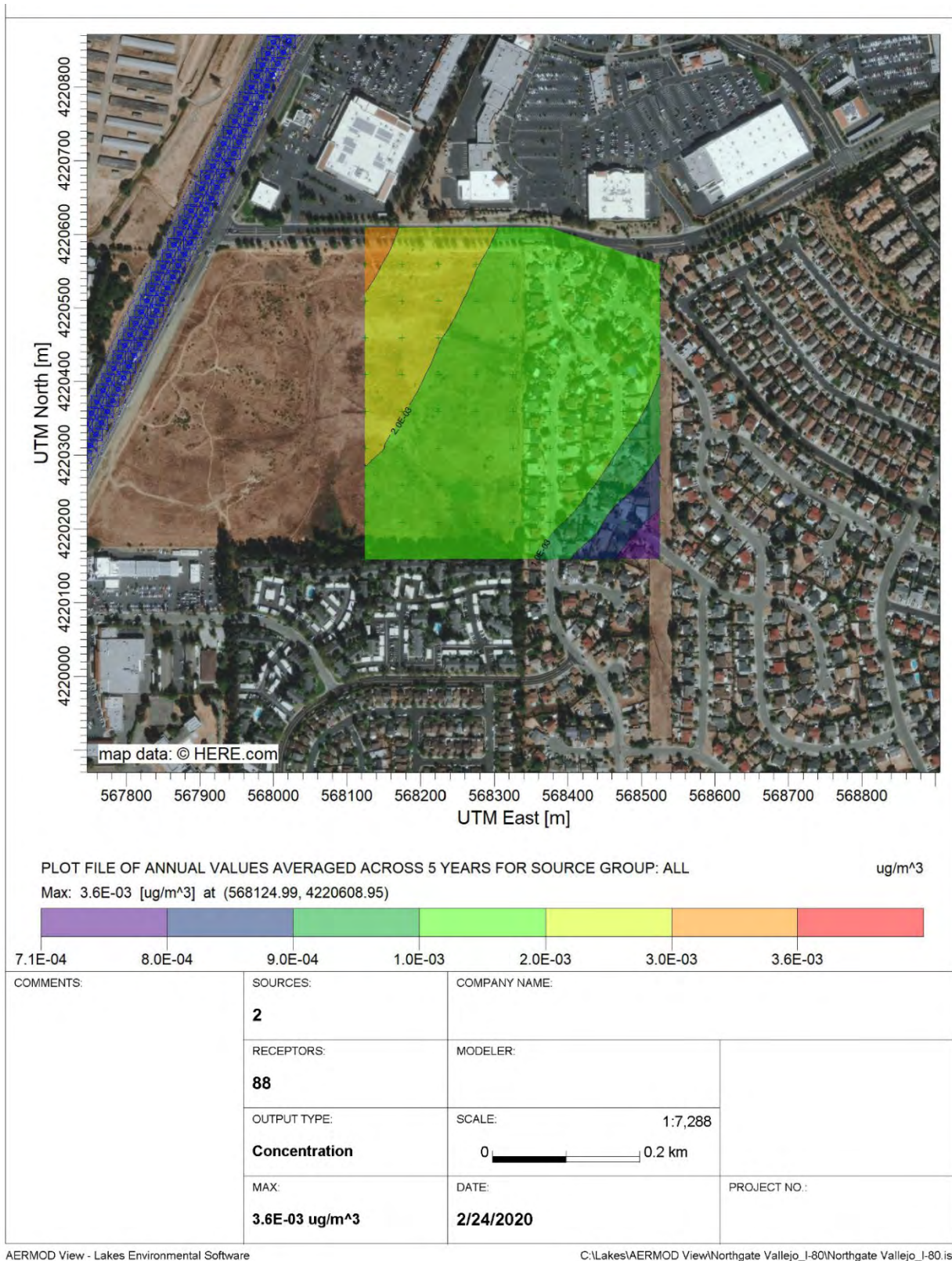


Exhibit E-2: Particulate Matter from Truck Travel and Idling

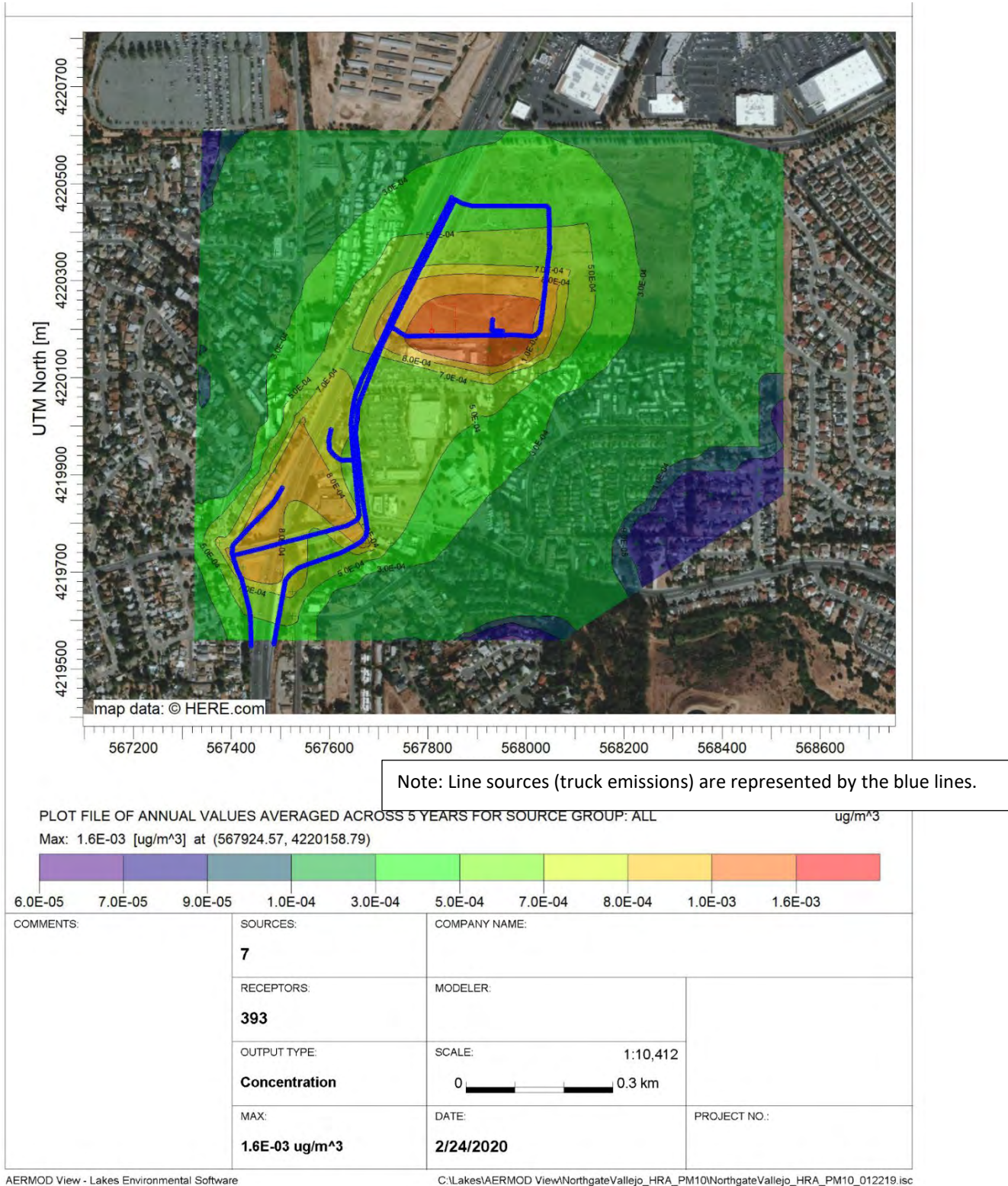
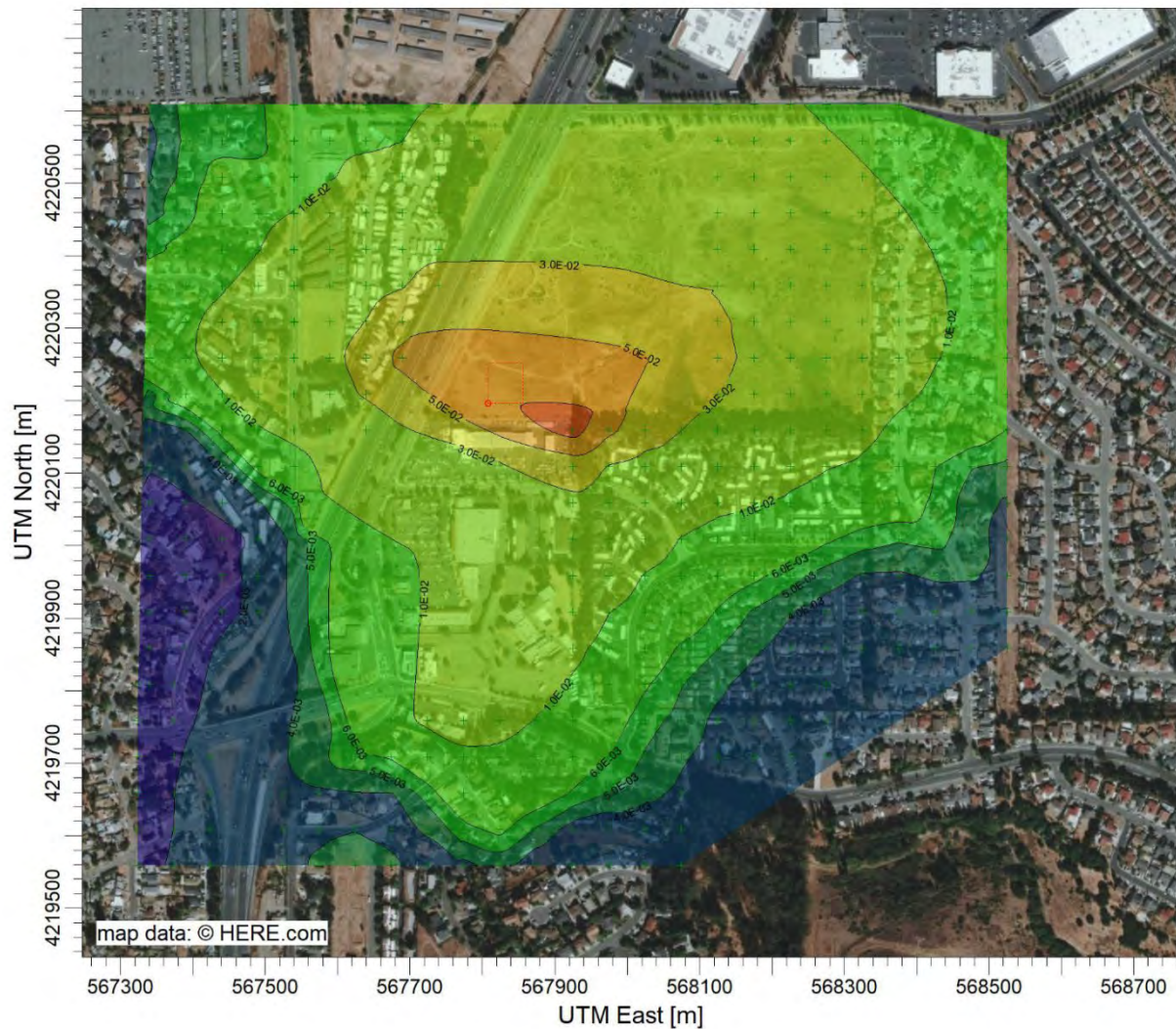


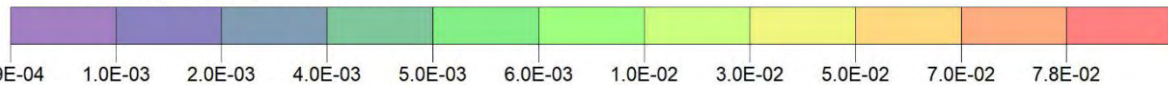
Exhibit E-3: Gas Station Emissions (Benzene)



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL

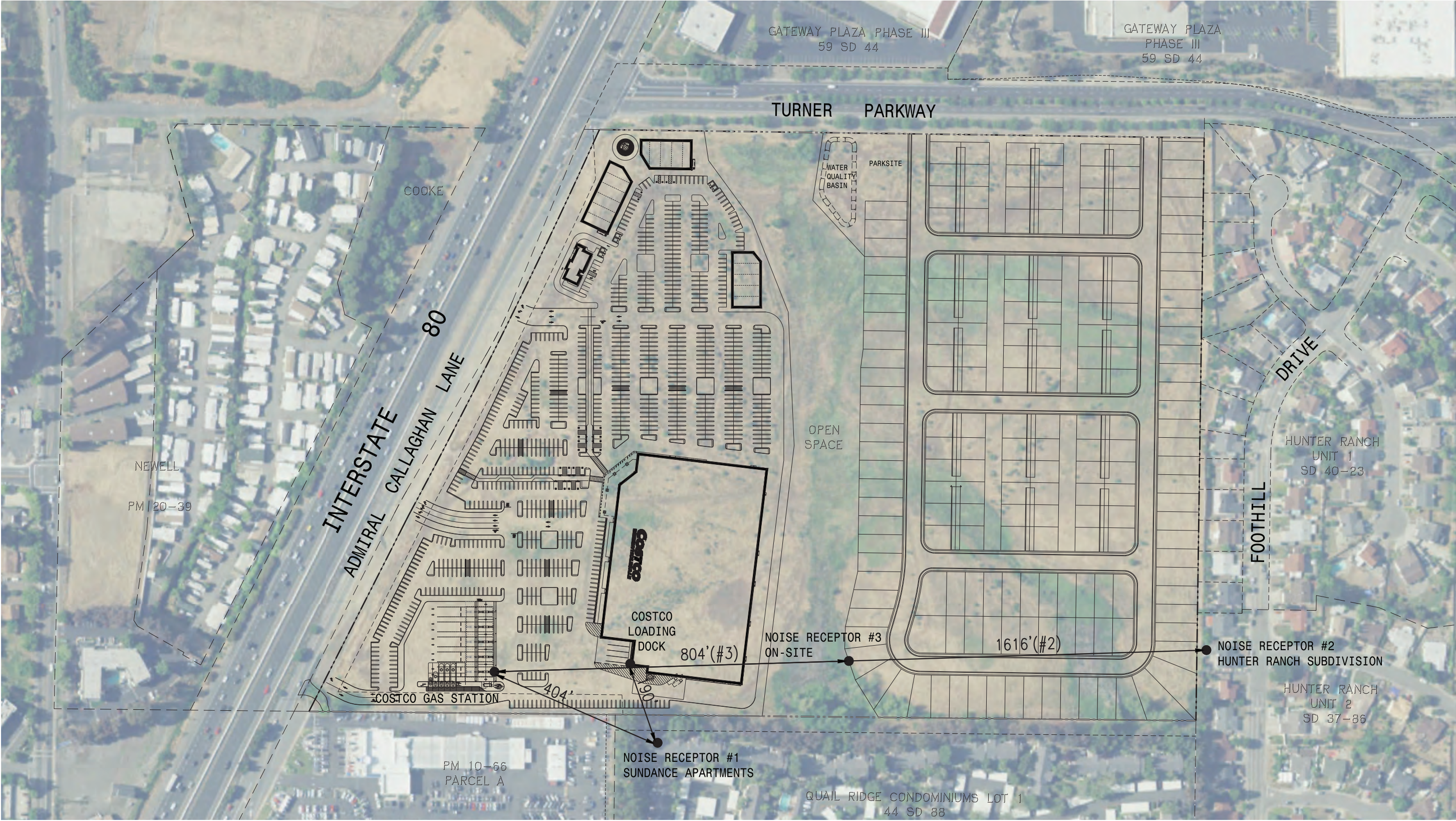
ug/m³

Max: 7.8E-02 [ug/m³] at (567924.57, 4220158.79)



COMMENTS:	SOURCES:	COMPANY NAME:	
	1		
	RECEPTORS:	MODELER:	
	393		
	OUTPUT TYPE:	SCALE:	1:9,527
	Concentration	0  0.3 km	
	MAX:	DATE:	PROJECT NO.:
	7.8E-02 ug/m³	2/24/2020	

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NOTES:

- RECEPTOR # 1 (SUNDANCE APARTMENTS)
 - 404 LINER FEET FROM COSTCO GAS STATION
 - 190 LINER FEET FROM COSTCO LOADING DOCK
- RECEPTOR # 2 (HUNTER RANCH SUBDIVISION)
 - 1616 LINER FEET FROM COSTCO GAS STATION
- RECEPTOR # 3 (ON-SITE - CLOSEST LOT)
 - 804 LINER FEET FROM COSTCO GAS STATION

Exhibit 4

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Letter F - Steven Herum

HERUM CRABTREE SUNTAG
ATTORNEYS

Steven A. Herum
sherum@herumcrabtree.com

February 21, 2020

Chairman Schussel and Honorable Members of the City of Vallejo Planning Commission
City of Vallejo
555 Santa Clara Street
Vallejo, CA 94590

Re: Fairview at Northgate: Vacant site at southeast corner of Admiral
Callaghan Lane and Turner Parkway (APN: 0081-490-010) Planned
Development (PD) 17-0007, Tentative Map (TM) 17-0002 Major Use Permit
(UP) 18-0007, Zoning Map Amendment (ZMA) 17-0001

Dear Chairman Schussel and Honorable Members of the City of Vallejo Planning
Commission:

This office represents Safeway Inc., which leases and operates a grocery store at 774 Admiral Callaghan Lane ("Store #989") in the Redwood Plaza shopping center, owns and operates a freestanding grocery store and gas station at 709 Lincoln Road W ("Store #968"), and leases and operates a grocery store at 122 Robles Way ("Store 1631 ") in the Glen Cove shopping center, in the City of Vallejo ("City"). This letter responds to the proposed Fairview at Northgate project ("Project"), which includes new residential units, retail shops, Costco store ("Proposed Costco") and Costco gas station ("Proposed Gas Station"). Unfortunately, due to a prior obligation that cannot be rescheduled, I am unable to attend your meeting on March 2, 2020 concerning the Draft Environmental Impact Report (DEIR) and personally present to the Commission these comments about the DEIR.

1. Safeway Operates Three Union Grocery Stores and One Union Gas Station in the City of Vallejo.

F-1

As background, Safeway is a proud member of UFCW Local 5 and Local 8 (Clerks and Meat, respectively), BCTGM Local 24 (Bakery), and Teamsters Local 439 (Distribution Center). The three Safeway locations collectively employ approximately 450 employees, of whom an estimated 65% are Vallejo residents.

Safeway opened Store #989 in the 7.5 acre Redwood Plaza in 1981. The 46,980 square foot store is a full-service supermarket with pharmacy and located 408 feet south of the Project. Safeway opened its full-service, 32,744 square foot Store #968 on Lincoln Road W, 1.9 mile south of the Project, in 1979. Its accompanying Safeway gas

5757 PACIFIC AVENUE SUITE 222 STOCKTON, CA 95207 PH 209.472.7700 MODESTO PH 209.525.8444 FX 209.472.7700 APC

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station opened in 2002. Safeway opened Store # 1631 in 1998. The 50,360 square foot store is a full-service supermarket with pharmacy located 3.25 miles south of the Project.

2. The California Environmental Quality Act ("CEQA")

To start with, the "EIR requirement is the heart of CEQA." (CEQA Guideline § 15003(0); *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795.) When preparing the environmental impact report ("EIR"), CEQA is to be expansively interpreted in order to provide maximum evaluation and consideration of potential direct and indirect environmental effects. (Title 14 California Code of Regulation § 1 5003(f) [hereinafter CEQA Guideline]; *Friends of Mammoth v. Board of Supervisors* (1972) 8 Cal.3d 247, 259.)

F-2

"Economic and social changes may be addressed under CEQA if they, in turn, will produce changes in the physical environment." (*Friends of Davis v. City of Davis* (2000) 83 Cal.App.4th 1004, 1019) More specifically, an EIR must consider both direct and indirect environmental effects (CEQA Guideline § 1 5064(e)) including secondary environmental effects resulting from direct economic effects. The expansive interpretation of this rule was presented in *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1205-1206 (*Bakersfield Citizens*)¹ and illustrates a meaningful relationship between socio-economic direct effects, such as store closure due to excessive retail competition, to secondary or indirect environmental effects, such as urban decay.²

Case law already has established that in appropriate circumstances CEQA requires urban decay or deterioration to be considered as an indirect environmental effect of a proposed project. The relevant line of authority begins with *Citizens Assn. for Sensible Development of Bishop Area v. County of Inyo* (1985) 172 Cal.App.3d 151, 217 Cal.Rptr. 893 (*Bishop*). There, the appellate court held that adoption of multiple negative declarations for different aspects of the same large regional shopping center violated CEQA. (*Id.* at p. 167, 217 Cal.Rptr. 893.)

The court also agreed with appellant that on remand "the lead agency must consider whether the proposed shopping center will take business away from the downtown shopping area and thereby cause business closures and eventual physical deterioration of downtown Bishop." (*Id.* at p. 169, 217 Cal.Rptr. 893.) Citing CEQA Guidelines section 15064, the court found that the lead agency had an affirmative duty to consider whether the new shopping center would start an economic chain reaction that would lead to physical deterioration of the downtown area. (*Id.* at p. 170, 217

¹ The undersigned represented the successful petitioners at the Bakersfield city council hearing, trial court and appeal court levels of this dispute. *Bakersfield Citizens* represents the first time a court concluded that direct economic effects-economic competition-could lead to indirect environmental effects that must be comprehensively studied and mitigated as part of an environmental impact report.

² Guidelines section 15131, subdivision (a) provides, "An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes in turn caused by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes."

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cont'd

Cal.Rptr. 893.) Therefore, "[o]n remand the lead agency should consider physical deterioration of the downtown area to the extent that potential is demonstrated to be an indirect environmental effect of the proposed shopping center." (*Id.* at p. 171, 217 Cal.Rptr. 893.)

Accordingly, in *Bakersfield Citizens* the socio-economic impact of store closures required the two EIRs to study in depth the potential that this direct non-environmental effect could start a "chain of events" leading to urban decay, a recognized indirect environmental effect.

3. **The DEIR Does Not Evaluate the Potential that the Project Causes a Chain Of Events Resulting in Urban Decay.**

F-3

As a preliminary matter, the Taussig Study dated December 16, 2019 asked and answered the wrong question. An operating Safeway store is located immediately south of the Proposed Costco. Yet in determining whether the Proposed Costco could start a chain of events resulting in the closure of the Safeway store and/or any other retailers, the Taussig Study focuses on the so-called retail leakage from a seven mile market area. This is the wrong question and results in the wrong answer. The customers of a local Safeway grocery store typically do not encompass a seven mile market radius. Instead, according to retail grocer statistics, the customers for a local grocery store are generally located within two miles of that store. Thus, ascertaining that there is a retail leakage within a seven mile radius is irrelevant to determining whether the Proposed Costco will adversely affect an adjoining Safeway with a trade area of under two miles. Simply stated, concerning Safeway, excess retail more than two miles from the Safeway does not influence the chain of events leading to urban decay.

F-4

Hence the Taussig Study's lengthy and turgid evaluation of a seven mile market area offers no information or data about the potential urban decay consequence to local retailers, such as Safeway, Target, and Shell, located in proximity to the Proposed Costco. Instead it was designed to demonstrate the Proposed Costco would be economically successful. After reading the Taussig Study, a reader has no better idea of whether the Proposed Costco has the potential to start a chain of events leading to urban decay among retail users proximately located near the Proposed Costco site.

F-5

Second, the Taussig Study relied upon an implied future baseline to determine if a chain of events leading to urban decay existed. Indeed at page 22 the Study expressly labels the analysis as: "Determination of Retail Demand under Future Conditions within the Trade Area." (Bolding added.) For example, at one point the Study writes: "Projected future retail demand versus retail supply in 2024, under Future Conditions assuming completion of the Project for each of the Trade Areas, was calculated to determine if future retail leakage or retail supply surplus is expected to occur". Taussig Study at 7. (Bolding added.) Applying an implied future baseline to study the potential for urban decay violates well-understood CEQA rules.

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cont'd

The Supreme Court offers important guidance to illustrate this fatal approach by the Taussig Study. First, the DEIR cannot opt to discard an existing condition baseline and apply a future projected baseline when evaluating environmental effects: "The use of a single future conditions baseline was per se a violation of CEQA; it was not a discretionary choice that could be justified by substantial evidence." (*Neighbors For Smart Rail v. Exposition Metro Line Constr. Auth.* (2013) 304 P.3d 450 (*Smart Rail*), balding added). Second, "a departure from the norm stated in CEQA Guidelines section 15125(a)-is justified by unusual aspects of the project or surrounding conditions. That the future conditions analysis would be informative is insufficient ... " (/d. at 451, balding added). Just as the current baseline cannot be discarded for a future baseline, it is equally improper to discard an existing baseline for a hypothetical average baseline of past conduct.

The Supreme Court offered example when an "appropriate factual circumstances" supports employing a future conditions baseline. (/d. at 453, text and footnote 5). The hypothetical "unusual aspects" are not present here and, anyway, the City has the burden of producing evidence in the record of proceedings to justify this substantial departure from the normal process. (/d. at 454). Essentially this deviation prejudices CEQA's primary objective to disclose information and data about environmental effects because a future conditions baseline omits "short- and medium-term environmental costs of achieving that desirable improvement... (/d. at 455 and) ...sanction the unwarranted omission of information on years or decades of a project's environmental impacts and open the door to gamesmanship in the choice of baselines." (/d. at 456.)

F-6

Third, the Taussig Study did not take into account significant sources of non-traditional retail sales and non-traditional sources of the grocery dollar. Taussig Study at pages 8-10. By way of illustration, Taussig ignores retail sales through online channels such as Amazon and Farm Fresh to You. It also ignored ethnic markets such as Cardenas and Seafood City, and non-traditional sources of grocery sales such as 99 Cents, Dollar Tree, Dollar General, Trader Joe's or Whole Foods.³ Incorporating online retail sales, ethnic markets, and non-traditional grocery sources would substantially change the Taussig analysis and conclusions.

F-7

Fourth, the Taussig Study makes erroneous assumptions regarding future supply and demand. The basis for the Taussig Study conclusion that the Project will not start a chain of events leading to urban decay is that, in the future, population increases will fill in the disequilibrium between the demand for retail goods and the number of outlets providing retail goods. The Taussig Study writes:

³ While no Trader Joe's or Whole Foods are located within the seven mile trade area outlined by Taussig, there are proximately located Trader Joe's and Whole Foods with trade areas intruding into Taussig's seven mile trade area established for the Proposed Costco. The Taussig Study must take these overlapping trade areas into account when considering the significance of oversaturated grocery operations starting a chain of events resulting in urban decay.

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F-7
cont'd

Based on data provided by the Nielsen Company and the Association of Bay Area Governments ("ABAG"), DTA assumes that between 2019 and 2024 the population in the Trade Areas will grow, and this will translate into greater demand for retail in 2024.

Taussig Study at page 2. However, while Taussig assumes significant population growth to fill demand created by excessive retail outlets currently in the market area, Taussig also assumes, without a scintilla of evidentiary support, that no new retail outlets or online services will locate within or provide service to the trade area during the same period. In other words, according to Taussig, population is elastic while retail outlets are static. Common sense and actual experience tells us this predicate is false and impeaches Taussig's conclusion.

F-8

Fifth, Taussig never answered the question of whether proximately located retailers such as Safeway and FoodMaxx may end up as part of a chain of events leading to urban decay. Instead of answering this question, Taussig's analysis ignores the question, acknowledges the existing problem, and claims it didn't find evidence that the Proposed Costco makes the problem worse. Taussig writes:

\$52.9 million in the Food category, however, given the fact that only half of the additional square feet being added to the new location will be used for grocery items, as confirmed by the Proponent, there is no evidence to indicate that the Project would exacerbate the already existing surplus.

Taussig Study at page 25. The Taussig Study purpose is to produce information and data to support or deny a claim that the Project may start a chain of events leading to urban decay. Instead of accomplishing this purpose, Taussig dodges this responsibility by stating "there is no evidence". The absence of evidence is not evidence.

F-9

Anyway, it is a public agency's duty and not a judicial *[Stanislaus Audubon Society, Inc. v. County of Stanislaus (1995) 33 Ca 1.App. 4th 144, 159 n.6]* or public *[Sunstrom v. County of Mendocino (1988) 202 Cal.App.3d 296,311]* duty to specify what should be in an EIR. The City's duty under CEQA here is not fulfilled by merely concluding it did not locate evidence concerning a potential environmental effect.

F-10

Sixth, a land use proposal capable of creating environmental harm in the form of urban decay is not a compatible land use. (DEIR at 4-9-6. General Plan Policy EET-4.2.) This DEIR supports land use compatibility "by other specific discussions in this EIR." (DEIR at 4.9-13). Yet the DEIR dispenses with a "specific discussion" of the chain of events leading to urban decay and thus fails to fulfill its statutory obligation as an information document. The potential urban decay impact is discarded rather than discussed.

F-11

Seventh, the DEIR did not comply with the City's Municipal Code. Municipal Code section 16.76.040 requires a survey and consideration of existing stores, including

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F-11
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their current average retail sales for the cities of Vallejo, Benicia and American Canyon. There is substantial evidence that American Canyon is suffering from urban decay. See the October 13, 2004 memorandum from Dr. Phillip King to Brett Jolley attached hereto. The memorandum concludes American Canyon would experience the chain of events leading to urban decay after a Super Wal-Mart opened at 7011 Main Street. In fact, the memorandum concluded Vallejo retailers would be negatively affected by the superstore operation, the first event in the chain of events resulting in urban decay.⁴

F-12

We highlight the fact that the Dr. King analysis correctly predicted that operation of the American Canyon Wal-Mart would start a chain of events leading to the closure of the Vallejo Food 4 Less at 5184 Sonoma Blvd. and a circumstance of urban decay. This also underscores the deep interrelationship between retail and grocery activities in each community and how retail activity can affect urban decay in the other community. In contrast, the Taussig Study did not assemble the minimum facts and data as required by section 16.76.040 of the Municipal Code nor does it examine which American Canyon retail operations affect Vallejo retail operations and how, conversely, which Vallejo retail operations affect American Canyon retail operations.⁵

F-13

Eighth, the Taussig Study and DEIR fail to examine the potential chain of events leading to urban decay from the plan to shutter the existing Costco store at 198 Plaza Drive in Vallejo ("Existing Costco") upon the opening of the Proposed Costco. The failure to study indepth the consequences of vacating a current location presented a partial basis for setting aside two massive shopping centers in the *Bakersfield Citizens* case:

Furthermore, the retail analysis fails to meaningfully address the question whether the building on the White Lane that currently houses a Wal Mart store will experience a long-term vacancy when this store is closed. No facts are offered in support of the retail analysis's conclusion that the building can be leased to another tenant. "Can" is not equivalent to "will" and the difference in the two words is crucial when assessing whether the store closure will result in an adverse environment impact.

Bakersfield Citizens at 1212 (balding added). Rather, the Taussig Study states that the Existing Costco will be re-tenanted immediately with a retail tenant generating sales of \$300 per square foot. While the DEIR traffic study assumes the Existing Costco would be vacant for a time, Taussig brazenly assumes there will be no down time or vacancy between the cessation of the Existing Costco's operation and a new tenant, nor does

⁴ Dr. King's analysis was confirmed when the First District Court of Appeals overruled the City of American Canyon's approval of the Super Wal-Mart due to the potential for urban decay. See *American Canyon Community United for Responsible Growth v. City of American Canyon* (2006) 145 Cal. App. 4th 1062.

⁵ The proposed Napa Costco located at 1025 Kaiser Road in unincorporated Napa County and estimated to open in spring 2022, akin to the situation with Trader Joe's and Whole Foods, while outside the Vallejo Costco trade area drawn by Taussig nevertheless affects American Canyon and northern Vallejo in combination or cumulatively with the Proposed Costco in Vallejo. The Taussig Study omits these facts and information when determining whether the chain of events resulting in urban decay is present here.

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cont'd

Taussig evaluate the likelihood of obtaining a retail tenant generating sales of \$300 per square foot given Costco would be placing a deed restriction on the Existing Costco property.

4. The DEIR Failed to Study Traffic Impacts in a Sufficient or Lawful Manner

A. Legal problems with the Baseline and/or Environmental Setting.

To attain CEQA's "fundamental goal...an EIR must delineate environmental conditions prevailing absent the project, defining a 'baseline' against which predicted effects can be described and quantified." (*Smart Rail* at 439, 447). Based "on Guidelines section 15125(0) and CEQA case law... [the baseline] must ordinarily be the *actually* existing physical conditions rather than *hypothetical* conditions that could have existed under applicable permits or regulations." (*Smart Rail* at 448, italics in original).⁶

F-14

The traffic analysis presented in this DEIR is inaccurate and distorted and this results in each subsequent step in the traffic analysis becoming mere casuistry, misguided and heading in the wrong direction.⁷ At a bare minimum, the baseline omits all of the relevant generators of traffic on a road system that already exceeds capacity and is the status of failure.

For instance, for purposes of illustration, it appears the traffic counts were taken piecemeal in 2017, 2018, and 2019, and do not provide a uniform picture of existing conditions. Only three of the eighteen (18) intersections studied, # 16 Redwood Parkway /Foothill Drive, # 17 Redwood Parkway /Oakwood Drive, and # 18 Redwood Parkway/ Ascot Parkway, include weekday am/midday /pm and Saturday midday counts that take into account the opening of In-N-Out Burger in Redwood Plaza in January 2019, installation of a traffic signal at Rotary and Admiral Callahan, and the seasonal operation of nearby Six Flags Discovery Kingdom. "Six Flags Discovery Kingdom, (is) an amusement park in Vallejo, California that features rides as well as animal attractions. Its attendance can reach more than 15,000 patrons daily." (Park Mgmt. Corp. v. *In Defense of Animals* (2019) 36 Cal.App.5th 649, 653) Located one half mile west of the Project as the crow flies, or 2.25 miles west by city streets, the amusement park "accommodates up to 2,900 cars." (*Id.* at 653) In short, the physical setting as described in the baseline and environmental setting of the DEIR, are each meaningfully different than the actual existing physical conditions present when the 2017 and 2018 traffic counts were conducted.

⁶ Section 15125(a) reads in relevant part: "An EIR must include a description of the physical environmental conditions in the vicinity of the project. This environmental setting will normally be the baseline physical condition...The purpose of this requirement is to give the public the most accurate and understandable picture practically possible of the project's likely near-term and long-term impacts."

⁷ "If you board the wrong train it is no use running along the corridor in the opposite direction." Metaxas, Bonhoeffer: Pastor, Martyr, Prophet, Spy at 176.

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F-15 { The exact location of the strips used to count vehicles along Admiral Callahan at the Hwy 80 ramps, the intersection of Admiral Callahan and Redwood Parkway, and intersection of Redwood Parkway and southbound exit of Hwy 80 is not clear in the graphics used in the DEIR. The location of the counts is critical to understanding the impacts of the Project. These locations have unique access points and if not reviewed properly, the conclusions about the impacts in these areas will be erroneous, affirmatively misstating the intensity of the traffic impact and disguising the actual feasible mitigation measures that should be imposed by the City.

F-16 { It is highly unusual and affirmatively distorts the environmental baseline and environmental setting to present and then rely upon an over two year old traffic study in a draft EIR as the predicate to examine traffic impacts to an already over-congested major arterial road, especially given the opening of In N Out Burger in Redwood Plaza in January 2019. Using a stale traffic study invariably omits relevant data and information and results in an agency not proceeding in a manner required by law.

F-17 { Notwithstanding a stale notice of preparation, a project's environmental effects must be measured against actual physical conditions on the ground. (*City of Carmel-by-the-Sea v. Board of Supervisors* (1986) 183 Cal.App.3d 180, 186-187.) In *Woodward Park Homeowners Assoc., Inc. v. City of Fresno*, (2007) 150 Cal.App.4th 683 the court determined an EIR for a shopping center that used operation of an authorized but non-existent office building as its baseline was "legally inadequate as an informational document because it failed to analyze consistently and coherently the impacts of the project relative to leaving the land in its **existing physical condition**." (*Id.* at 710, balding added). The court ultimately held the EIR was deficient because it "**failed to use the existing physical environment** as the environmental baseline" and inappropriately compared the project's environmental effects to a hypothetical project and not the existing conditions on the ground. (*Id.* at 711, balding added).

In *Smart Rail*, the Supreme Court essentially upheld an existing rule concerning baselines as expressed by lower courts. See, for instance, *Pfeiffer v. City of Sunnyvale City Council* (2011) 200 Cal.App.4th 1552; *Madera Oversight Coalition, Inc. v. County of Madera* (2011) 199 Cal.App.4th 48; *Sunnyvale West Neighborhood Assoc. v. City of Sunnyvale City Council* (2010) 190 Cal.App.4th 1351. The point of these citations is simple: the City and the EIR author could not be surprised by a 2013 Supreme Court opinion endorsing a commonly held view of three recent appellate court opinions about appropriate EIR baselines.

F-18 { The Supreme Court offered example when an "appropriate factual circumstances" supports employing a future conditions baseline. (*Id.* at 453, text and footnote 5). The hypothetical "unusual aspects" are not present here and, anyway, Vallejo has the burden of producing evidence in the record of proceedings to justify this substantial departure from the normal process. (*Id.* at 454). Essentially this deviation is prejudicial to CEQA's primary objective to disclose information and data about environmental effects because a future conditions baseline omits "short- and medium-

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F-18
cont'd { term environmental costs of achieving that desirable improvement... (*Id.* at 455 and) ...sanction the unwarranted omission of information on years or decades of a project's environmental impacts and open the door to gamesmanship in the choice of baselines." (*Id.* at 456.) Thus, the rule returns to an overarching CEQA principle that an EIR should be based on the existing conditions in order to satisfy its informational purpose.

F-19 { The DEIR misunderstands a rule clearly articulated by the Supreme Court:

"We do not hold or imply agencies enjoy equivalent discretion under CEQA and the CEQA Guidelines to *omit* all analysis of the project's impacts on existing conditions". (*Id.* at 456, italics in original).

Failing to apply a correct baseline is a fatal flaw in this DEIR and constitutes a prejudicial abuse of discretion. The City cannot hide behind a dated notice of preparation to omit supplying an accurate and appropriate baseline of "existing conditions" before evaluating traffic impacts. This omission of baseline data abuses CEQA and thwarts any ability to provide true and accurate information and data on the environmental impact in relationship to existing conditions. ("(A)n inappropriate baseline may skew the environmental analysis flowing from it, resulting in an EIR that fails to comply with CEQA." *Citizens for East Shore Parks v. California State Lands Comm'n* (2012) 202 Cal.App.4th 549, 557)

B. The DEIR understudied and thus underreported traffic impacts thereby omitting feasible mitigation measures.

F-20 { The Economic Impact Analysis (Phase I) dated December 16, 2019 (Taussig Study) stated the Primary market area for the Proposed Costco was a three mile radius from the store's location. Taussig Study at page 1. It then tells us sixty to eighty percent of Costco customers live within the primary area with twenty to forty percent of them living in the Secondary market area, which is four to seven miles from the store's location. Taussig Study at page 2. Indeed Taussig concedes but the traffic report ignores that: "It is important to consider a Secondary Trade Area." Taussig Study at 5 (balding added).

Yet the scope of the traffic study does not take into account the vehicle miles driven from customers living within seven miles from the Proposed Costco thereby omitting vehicle miles traveled by up to forty percent of the store's customers. Nor does the traffic study identify and evaluate intersections outside the primary area potentially impacted by Proposed Costco customers. As a result, the truncated geographic area employed to study traffic underreports vehicle miles traveled (a problem implicating the legal sufficiency of the traffic report, the air quality analysis and the energy study in the DEIR), ignores potential impacts to intersections not located near the Proposed Costco location and dispenses with mitigation measures that should be imposed to

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F-20 cont'd { reduce traffic congestion at intersections not directly next to the Proposed Costco. This constitutes a failure to proceed in a manner required by law.

F-21 { Using this flawed analysis omits relevant data and information and prevents the DEIR from operating as an informational document. In short, the DEIR's analysis is limited to a series of evidence-based conclusions offering incomplete or erroneous analysis or information. Failing to proceed in a manner required by law is fatal to the DEIR's legal sufficiency.

F-22 { When evaluating an agency's failure to meaningfully consider a potential impact due to omitted relevant information, "[t]he relevant question is whether the lead agency failed to proceed in the manner required by law." (*Bakersfield* at 1208). After reviewing the DEIR, neither the public nor decision makers will know the extent to which the *entire* Project's traffic impacts can be reduced or mitigated to less-than-significant levels and whether the Proposed Costco will trigger a chain of events leading to urban decay among retailers in its primary and secondary trade areas.

Safeway expresses its appreciation for this opportunity to comment on the draft Environment Impact Report.

Very truly yours,



STEVEN A. HERUM
Attorney-at-Law

SAH:lac

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October 13, 2004

Memo

To: Mr. Brett Jolley

From: Philip King, Ph.D.

Re: Proposed Wal-Mart Supercenter in American Canyon

Opinions affirmed and
independently formed.
Philip C. King Oct 13, 2004

I have read the Fiscal Impact Report prepared by Mark Joseph for the American Canyon City Council as well as the Memo sent to Mr. Joseph by Mr. Brett Jolley. Mr. Jolley has retained my services and asked for an expert opinion on the matter of the proposed Supercenter. I concur with his analysis and offer the following additional comments. I visited American Canyon and parts of Vallejo on October 11, 2004. In particular I made a site visit to the following:

1. the current Safeway in American Canyon;
2. the shopping center anchored by Food 4 Less and Wal-Mart in Vallejo;
3. the shopping center anchored by Harbor Freight tools and the Vineyard Christian Fellowship in Vallejo;
4. the Canyon Plaza center in American Canyon.

Based on all of this information it is my professional opinion that there is a potential for significant negative environmental impact in the area, created by the proposed new Supercenter. My opinion is based on past empirical studies as well as a brief analysis of the demographics of American Canyon. In particular, it is likely that Wal-Mart will close its current store in Vallejo which is only a 5-10 minute drive away from the current site. Wal-Mart has typically closed older stores in preparation for a new Supercenter. As the *Wall Street Journal* recently documented (Sept. 15, 2004, p. B1), many of these stores remain closed for years. Wal-Mart currently has 152 vacant stores representing over 13 million square feet of retail space. This figure does not include vacant stores not owned by Wal-Mart (roughly half of all Wal-Marts are leased from other companies). Given the large size of these spaces, it is often difficult to find new tenants. In cases where Wal-Mart owns the building, they have been reluctant to lease the space to competitors such as K-Mart (WSJ article, Sept. 15, 2004). Closing the current Wal-Mart in Vallejo will put enormous pressure on the mall, since Wal-Mart is a co-anchor.

I concur with Mr. Joseph's analysis that the Safeway and the Food-4-Less would compete with the new Supercenter and that the Food-4-Less would likely lose more business than the Safeway. However, I am less optimistic than Mr. Joseph about the likely fate of both stores after a Supercenter opens. Without a more detailed analysis (which takes some

time) it is impossible to determine what percentage of Safeway's sales would be lost or if this loss would be enough to close the store. I can say, however, that empirical studies of other small towns (see below for more detail) indicate that store closings are likely. American Canyon's relatively small population of just over 13,000 and median income of just under \$60,000 is sufficient to support one or at most two large grocery stores (which would include the current Safeway and the Food-4-Less, even though it is located in Vallejo). According to recent reports by the *Progressive Grocer*, which is the main source of information on industry trends, new Supercenters sell in excess of \$40 million in groceries per year, which exceeds the entire demand for groceries in the City of American Canyon (which is \$26 million according to Claritas¹). This is the equivalent of two typical chain supermarkets—thus the rule of thumb that a Supercenter will close two existing supermarkets.

I would also point out that while Mr. Joseph's suggestion that Safeway move upscale to compete with the new Wal-Mart sounds reasonable, I believe there are two reasons why it may not be feasible:

1. Newer Wal-Mart Supercenters also cater to a more affluent clientele as well. Numerous studies indicate that middle income families with children represent a significant component of the Supercenter's sales.²
2. Like most chain stores, Safeway benefits from economies of scale, which implies that all Safeways carry similar (though not identical) items. The current Safeway is typical of most newer stores and already caters to a relatively upscale clientele.

The Food-4-Less appears to serve a lower income (and more Hispanic) demographic. Currently store sales appear quite healthy, but I would anticipate substantial losses, potentially greater than 50% of current sales, should Wal-Mart close its current store and open a Supercenter with groceries. A substantial loss in sales at the Food-4-Less would likely lead to eventual store closing. If the Wal-Mart was also closed and neither store was re-tenanted, this would almost certainly lead to urban decay.

Existing Decay near the Proposed Site

The area nearby the proposed site, at Rancho Square on Sonoma Blvd. already contains a marginal mall which could become deteriorated. The mall currently is anchored by Harbor Freight tools and also contains the Vineyard Christian Fellowship. The mall is in a state of disrepair and my visit indicated that business is poor. I also visited the Canyon Plaza in American Canyon, which is a mixed use center containing public agencies and some shopping. Traffic here was also quite light.

Negative Consequences of Urban Decay

This pattern of store closings and subsequent decay has been observed in many other cities. Numerous studies of the impacts of retail superstore development have been

¹ Claritas analysis of Retail demand, 2004.

² For example see Retail Forward, "Wal-Mart Food: Big and Getting Bigger," September 2003.

conducted. The Shils Report (Edward B. Shils, *Measuring the Economic and Sociological Impact of the Mega-Retail Discount Chains on Small Enterprise in Urban, Suburban and Rural Communities*, The Wharton School, University of Pennsylvania, 1997) cites predatory pricing and **overall economic decline among the possible impacts**. Kenneth E. Stone studied superstore development in a large sample of Iowa cities and found that the location of a superstore can have delayed impacts on the viability of commerce in the surrounding area (a loss of 7,326 businesses in small Iowa towns between 1983 and 1993).

Two studies of Supercenters in California conducted by Ph.D. economists also concluded that Supercenters are, at best, a mixed blessing. One study, conducted for the Orange County Business Council by professors at UC Irvine and UCLA,³ concluded that:

- The economic loss due to lower wages and benefits paid by Wal-Mart would create a negative economic impact on southern California equal to \$2.8 billion per year.
- "The fiscal impacts of a facility are often seen as clear-cut, but they are not, particularly when a big box retailer expands into food sales. This threatens to lower the taxable sales per square feet for a land use that is already riddled with inefficiencies and great risks should market conditions become unfavorable" (p.93).

Another similar study of San Diego County⁴ also came up with similar conclusions, including the following:

- "Wages and benefits can be expected to decline in San Diego County by \$105 million to \$221 million annually" (p. i).
- "Lost pension and retirement benefits will impact the region negatively by an additional \$80-170 million per year" (p. i).
- Taking into account multiplier effects, this loss could amount to \$440 million a year (p. i).
- "Fiscal benefits, in the form of sales and property taxes, are frequently less than originally expected and are not likely to cover the costs of traffic, police, fire protection, among others. **Ultimately the net cost of these public services for Supercenters could exceed \$700,000 per year**" (p. ii).

The report also concludes that a number of other negative results may result from poor land use planning and the closing down of other businesses; we will discuss these issues later in this report.

³ "The Impact of Big Box Grocers on Southern California: Jobs, Wages and Municipal Finance," by Marlon Boernet and Randall Crane, prepared for the Orange County Business Council, September 1999.

⁴ "The Potential Economic and Fiscal Impact of Supercenters in San Diego," by Rea and Parker Research, prepared for the San Diego Taxpayers Association.

Urban Decay

For all of the reasons stated above, I believe there is a serious and significant possibility that the commercial space created by this proposed plan would create physical deterioration and decay in the immediate area surrounding the site as well as lead to a less healthy business climate in the rest of the City.

Decay in urban areas can include several possible adverse impacts on the quality of life in the local community. This includes visible symptoms of physical deterioration, capital stock and buildings in impaired condition, and involves aspects of "broken window" theory—that run-down, abandoned buildings signal lack of public policy concern and invite vandalism, loitering, graffiti, high crime rates, and arson for profit. They signal hopelessness for nearby residents who may lose faith in local government. Such sites also pose significant policing problems and fire protection issues. They could become sites for dangerous rodent infestation and avoidable public health issues. The outward manifestations and visual evidence of urban environmental decay, but are not limited to, such markers as:

- Large building vacancies
- Plywood boarded doors and windows;
- Parked trucks and long term unauthorized use of property and parking lot;
- Extensive gang graffiti and offensive words painted on the buildings;
- Dumping of refuse on site;
- Overturned dumpsters;
- Broken parking barriers;
- Broken glass, litter of liquor or beer bottles;
- Dead trees and shrubbery together with weeds;
- Unsightly and permanent "For Lease" signs;
- Homeless encampments on the property or doorways; and
- Lack of building maintenance, paint peeling, or property encased in an unsightly chain-link fence.

Another sign of decay are "brownfields"—abandoned, urban industrial sites that have become little more than neighborhood eyesores and that are typically accompanied by pollution. In cities throughout the country, dark factories tower over lots littered with garbage and scrap, neglected by their owner until the Environmental Protection Agency (EPA) takes notice. Through a unique urban renewal program, the EPA is targeting 50 brownfields it wants to clean up. It plans to provide the seed money, the expertise, and a legal green-light to cities looking to restore life to these dying urban areas. The EPA's website provides insight and definitions/guidelines to urban decay and brownfield conditions.

I would also like to add that evidence indicates Wal-Mart will probably close its existing store in Vallejo, and the current negative declaration does not analyze this possibility.

The result of closing the existing store (approximately 80,000 sq. ft.) significantly increases the probability that the Vallejo Food-4-Less will close and significantly expands the potential for urban decay in American Canyon/Vallejo.

Conclusion

In short, it is my professional opinion that the creation of a Wal-Mart Supercenter in American Canyon has the potential to create a significant negative economic and physical environmental impact in the form of store closings and likely urban decay. I understand American Canyon's enthusiasm for more tax revenues as well as the perverse incentives created by the State of California. However, I would urge the City of American Canyon to consider the consequences. While I am sure Mr. Joseph's Fiscal Impact Report will help the City resolve some of these issues, it does not address the issues required by CEQA. Consequently, the potential physical impacts of the Supercenter should be evaluated fully in an Environmental Impact Report—as cities such as Lodi, Chico, Hanford, and Selma are doing for their Supercenter projects—before this project is approved. The potential for these impacts is too great too be ignored. I also concur with Mr. Jolley that the Supercenter represents a significant departure from the previously proposed plans and warrants further analysis.

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Books: *International Economics and International Economic Policy*, 4th Edition, McGraw-Hill, 2004.
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Economic Analysis of a Proposed Hanford Station Planned Commercial Development Project in Hanford, California, May 2004.

Economic Analysis of a Proposed Wal-Mart in Yuba City, California, April 2004.

Economic Analysis of a Proposed Wal-Mart in Gilroy, California, March 2004.

Economic Analysis of a Proposed Wal-Mart in Redding, California, 2003.

Economic Analysis of a Proposed Wal-Mart in Anderson, California, 2003.

"The (Economic) Benefits of California's Beaches," prepared for the California State Resources Agency, 2002, <http://dbw.ca.gov/beachreport.htm>.

"The Economic and Fiscal Impact of Beach Recreation in San Clemente," presented as part of Hearings on Congressional Appropriations for California Coastal Projects, US House of Representatives, April 2002. Also completed similar projects for Cities of Carpinteria, Encinitas, and Solana Beach.

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San Francisco's Economic Growth 1995-2000: The Fiscal Health of the City and Implications for the Future," prepared for the San Francisco Committee on Jobs Summer 2001, available at <http://online.sfsu.edu/~pgking/newpage22.htm>. This report was widely cited in the San Francisco press including front page articles by the *Chronicle* and *Examiner*.

"The Demand for Beaches in California," prepared for the California Dept. of Boating and Waterways, Spring 2001.

"Cost Benefit Analysis of Shoreline Protection Projects in California," prepared for the California Dept. of Boating and Waterways, Spring 2000.

"The Fiscal Impact of Beaches in California," prepared for the *Public Research Institute*, San Francisco State University, Fall 1999, available at <http://online.sfsu.edu/~pgking/beaches.htm>.

"An Economic Analysis of Coastal Resources on the Majuro Atoll," prepared for the *United Nations Development Program* Project MAS 95/001/D01/99 and the *Majuro Atoll Local Government*, September, 1997.

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"Are Minimum Quotas Inefficient?" presented at the *Western Economics Association Conference*, Los Angeles, July 1988.

"The Debt crisis and LDC leaders," presented at the *Public Choice* meetings, San Francisco, March 1988.

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"Adverse Selection and Competitive Health Care," presented at the *American Economic Association Meetings*, New Orleans, December 1986.

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Response to Letter F – Steve Herum Letter

- F-1 This comment provides background information regarding Safeway locations in Vallejo. No further response is required. No changes to the Draft EIR were made as a result of this comment.
- F-2 This comment provides background information regarding CEQA case law which simply explains that an EIR must analyze urban decay. The Draft EIR analyzed urban decay consistent with the case law. No further response is required. No changes to the Draft EIR were made as a result of this comment.
- F-3 The City does not concur that the Taussig Study is inadequate or asked and answered the wrong question. The comment does not provide evidence that Safeway will lose business as a result of the project.

As discussed in the Draft EIR (page 4.1-3), the Taussig Study evaluates two trade areas – a Primary Trade Area (3-mile radius) and a Secondary Trade Area (7-mile radius, inclusive of the Primary Trade Area). Both trade areas include the Safeway stores referenced in Comment F-1. More specifically, Safeway is not the focal point of this analysis. The Taussig Study evaluated the Primary and Secondary Trade Areas, which is the most comprehensive way to look at the net impact of the Costco site, as it is the focal point of this analysis. The Primary Trade Area picks up all those “more local” and “more adjacent” competitors, which is the reasoning for breaking up the supply and demand into multiple categories.

The project includes the relocation of an existing Costco store to a new site located approximately 3,000 feet or 0.75 miles from its current location. As noted on page 4.1-17 of the Draft EIR, approximately half of the additional 26,701 square feet added to the proposed Costco store would be used for grocery items or 13,350 square feet, which is about two extra aisles of groceries. The already-existing surplus of \$52.9 million in the Food category only accounts for approximately 3.51% of the total supply (\$1.5 billion) in the Primary Trade Area, which does not represent a significant portion of the total available supply to result in a substantial change in market conditions.

Furthermore, while Costco sells many food items, these are mostly in bulk. Thus, the Safeway store (#989 in Redwood Plaza) is well located to capture demand from Costco shoppers seeking single items or smaller quantities than available at Costco. Moreover, Costco offers a very limited range of goods. Each type of good is referred to as a stock keeping unit (SKU). Safeway typically has 40,000 SKUs, while a Costco warehouse only carries 4,000 SKUs. As such, Costco only offers customers a limited range of products – most of which people buy in bulk like toilet paper and paper towels. Additionally, Costco is a members only store requiring a Costco membership card in order to purchase any item from the store, whereas Safeway has no such restrictions.

It should be noted that CEQA case law established in the Chico Advocates for a Responsible Economy⁸ case confirmed that an Urban Decay Analysis under CEQA was related to physical

⁸ Chico Advocates for a Responsible Economy v. City of Chico (2019)40 Cal.App.5th 839 (CARE)

impacts to the environment. Impacts such as introducing competition to existing businesses or even the closure of a business do not amount to urban decay. Specifically, the ruling noted:

The Court distinguished *Bakersfield Citizens for Local Control v. City of Bakersfield*, [124 Cal.App.4th 1184] (2004) as a “case involv[ing] a complete failure to consider urban decay impacts” and “not [one] hold[ing] that the absence of close and convenient shopping, by itself, constitutes an environmental impact [as opposed to a possible social problem].” In a footnote, it further challenged the factual premise of CARE’s argument that possible elimination of a Food Maxx less than a mile to the west would “deprive[] the neighborhood of “close and convenient shopping” as opposed to simply “substitut[ing] one “close and convenient” shopping option for another.”⁹

Similar to the project here, the *CARE* case involved the expansion of facilities in an existing retail space. In *CARE*, an existing Walmart proposed to expand by approximately 64,000 sf. *CARE*, 40 Cal.App.5th at 841. The *CARE* EIR included analysis of the project’s potential to lead to urban decay, supported by an economic impact analysis of the project. *Id.* at 843. Based on the economic impact analysis of the proposed Walmart, the *CARE* EIR found that the project would have some impact on sales of competing retailers, but that the impacts were within expected norms for market competition. The EIR concluded that the project could potentially lead to the closure of one existing full-service grocery store that was in the project vicinity, but that this closure was not blight as that term is defined under CEQA. *Id.* at 851. Project opponents challenged the EIR arguing that the loss of a grocery store was a significant environmental impact, as it was the loss of “close and convenient shopping.” *Id.* at 846. The court of appeal rejected that argument. Under CEQA, the court held, the closure of a single grocery store due to market pressures from a new store is not urban decay, nor is it necessarily evidence of a downward spiral of store closures and long-term vacancies. Therefore, the closure of a single store was not a significant impact, and the EIR was justified in its conclusion that, despite the predicted grocery store closure, the project would not lead to urban decay. *Id.* at 849-50.

Here, as described above, the Taussig study analyzed the existing retail needs in a primary (3-mile radius) and secondary (7-mile radius) study area and found an existing excess of demand in the combined study area that is not being fulfilled by existing retail. The study further concluded that the expected sales of the project are not expected to exceed that consumer retail demand. The comment argues that impacts to the existing Safeway were improperly studied as the commenter claims that Safeway tends to draw customers from a smaller radius. However, there is no evidence in the study that the project would lead to the closure of the Safeway, and even in the event that the project did result in a single store closure, the overall retail demand of the area would remain strong, and there is no evidence that Safeway’s closure would begin a “downward spiral” of store closures and long-term vacancy. *CARE* instructs that a single store closure due to competition is not an impact within the meaning of CEQA, but that urban decay looks at the

⁹ Miller Star Regalia, https://www.ceqadevelopments.com/2019/10/09/third-district-rejects-ceqa-challenges-to-chico-walmart-expansion-project-eirs-urban-decay-analysis-and-citys-statement-of-overriding-considerations/?utm_source=Miller+Starr+Regalia+-+CEQA+Developments&utm_campaign=576a24b313-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_2b3a24553f-576a24b313-72899433 accessed March 6, 2020

economic trend of an area. The analysis in the Draft EIR concluded potential impacts as a result of urban decay are less than significant and no mitigation is required. No changes to the Draft EIR were made as a result of this comment.

- F-4 The City does not concur with this comment. The comment does not provide evidence that the Draft EIR analysis did not study urban decay consequences or that the project would cause urban decay. As noted above, it did include a 3-mile radius.

Both the Taussig Study and the Draft EIR evaluate the existing retail supply and demand in the Primary and Secondary Trade Areas (Draft EIR page 4.1-6) and existing surplus/leakage in the Primary and Secondary Trade Areas (Draft EIR pages 4.1-16 through 4.1-17). The analysis concludes that sufficient demand exists in the combined trade areas that the relocation and minor expansion of the existing Costco, and the reuse of the existing Costco site, would not trigger a downward spiral of retail closures and consequent long-term vacancies due to a surplus of retail market supply such that urban decay and related adverse significant visual impacts would occur. The comment also provides no evidence that Safeway, Target, or Shell will lose business as a result of the project. As previously noted, the proposed project is the relocation of an existing Costco store in a new site located approximately 3,000 feet or 0.75 miles from its current location. The project does not create new competition with neighboring grocery stores, as the existing one (1) Costco is already competing with neighboring grocery stores. Potential impacts from urban decay are considered less than significant and no mitigation is required (Draft EIR page 4.1-18).

No changes were made to the Draft EIR as a result of this comment.

- F-5 The City does not concur the analysis is based on an implied future baseline. The comment cherry picks quotes that analyze the projected future demand of the study area (Taussig Study at 7, 22 (cumulative impacts under projected future conditions) to suggest that the Taussig study solely analyzed speculative future conditions, but the comment ignores the study analysis of existing retail conditions (e.g., Taussig Study at 8-18). Likewise, the Draft EIR provides analysis of existing supply and demand of both the primary and secondary Retail Trade areas (Draft EIR at 4.1 - 16-17). If approved, the new Costco is not anticipated to open until 2023 (based on projected construction time frames) and the study allows one (1) year for their sales to stabilize. The existing Costco store operations would continue until the opening of the relocated store. Additionally, this time frame includes new retail or residential pipeline projects within the Primary and Secondary Trade Areas.

The comment misstates the Supreme Court's holding in *Neighbors for Smart Rail v Exposition Metro Line Constr. Auth.* (2013) 57 Cal.4th 439 (*Smart Rail*). In *Smart Rail*, the Court confirmed that the baseline for impact analysis may incorporate projected future environmental conditions expected to be in existence before the project begins operations. The Court held that a lead agency "exercises its discretion on how best to define such a baseline under the circumstance of rapidly changing environmental conditions." *Id.* at 452. The Court thus extended an earlier ruling that there is no "uniform, inflexible rule for determination of the existing conditions baseline," so the agency has discretion to decide the method of "measuring the existing environmental conditions upon which the project will operate." *Id.* at 453, citing *Communities for a Better Env't v South Coast Air Quality Mgmt. Dist.* (2010) 48 Cal.4th 310, 328. Further, the Court held that while an agency should provide reasoning for using only a future baseline, no such justification is required where the agency analyzes both existing conditions and future conditions. *Smart Rail*,

57 Cal.4th at 454; Guidelines § 15125 (in addition, a lead agency may use both existing conditions and projected future conditions).

The urban decay analysis included in the Draft EIR is entirely consistent with CEQA. As explained by the court in *Pfeiffer v. City of Sunnyvale City Council* (2011) 200 Cal.App.4th 1552, 1572, “[T]he date for establishing baseline cannot be a rigid one. Environmental conditions may vary from year to year and in some cases it is necessary to consider conditions over a range of time periods.’ The Taussig Study and Draft EIR analyze the Project’s potential economic impacts in both the short- and long- term, including analysis of existing retail conditions and a conservative assumption that the Project’s retail and residential components will open in 2022 and 2023, and that stabilized sales will first occur in 2024.

The comment provides summaries of previous court cases but does not identify a deficiency in the Draft EIR. The Draft EIR concludes impacts from urban decay are considered less than significant and no mitigation is required. No changes to the Draft EIR were made as a result of this comment.

- F-6 The City does not concur that the analysis did not take into account significant sources of non-traditional retail sales. The Taussig and Draft EIR analysis includes all retail within the Primary and Secondary Trade Areas. As seen in Table 6 (Draft EIR Appendix B), existing retail of greater than 10,000 square feet was included. The comment acknowledges there are no Trader Joes or Whole Foods in the seven mile radius; in fact, the nearest Trader Joes are in Concord and Pinole and the nearest Whole Foods in in San Pablo and Concord. With regard to ethnic markets, these stores compete with the existing Costco and offer a different variety of products than Costco. As discussed in Response F-3, approximately half of the additional 26,701 square feet added to the proposed Costco store would be used for grocery items or 13,350 square feet, which is about two extra aisles of groceries. These “non-traditional retail sales” are included in the supply and demand conclusions, with the exception of online retailers because online retail sales are difficult to track within a specific primary trade area. For example, many brick and mortar retailers (e.g., Target, Costco, and Safeway [see below regarding Safeway’s local online presence]) have a percentage of sales that come e-commerce or online sales. As such, retailers are adapting to competition by having a presence both online and in physical stores. Further complications in reconciling the accounting of online sales within a specific trade area include whether the sales are counted locally or at a company’s centralized corporate location outside of the trade area, this often referred to as the “point of sale” issue or problem. Depending on the type of merchandise, stores can offer direct shipping or in-store pick-up which could result in additional sales in the brick and mortar physical location. For these reasons, the analysis evaluates in-store sales, not the impact from online sales. The commenter speculates that including such data, if it were available, would change the conclusions of the Taussig analysis, but provides no evidence that it would. The analysis does utilize Capture Rates and Displacement Factors in the Sales Tax analysis to account for some online retail.

Please see Response F-3 above regarding the status of the existing Costco and nature and intent of the Urban Decay Analysis and that the project is the relocation of an existing Costco store. It should be noted that Safeway is a participant in the online retail market. For example, the Safeway store closest to the existing and proposed Costco stores (Safeway #989 in Redwood Plaza) participates in online retail in a number of ways:

Grocery Delivery and Pick-up:

https://www.safeway.com/?icmpid=swy_yxt_r6_delc_ih

Online Bakery and Deli Ordering:

<https://www.safeway.com/orderahead/store/3132>

Albertsons/Safeway Marketplace:

https://marketplace.albertsons.com/?icmpid=swy_yxt_r6_marc_ih

Additionally, Safeway works with third-party online retailers such as Instacart to provide online shopping to customers:

<https://www.instacart.com/fairfield-vallejo-ca/safeway>

Impacts from urban decay are found to be less than significant. No changes to the Draft EIR were made as a result of this comment.

- F-7 The City does not concur that the Taussig Study makes erroneous assumptions regarding future supply and demand. The future assumptions are based off data provided by the Association of Bay Area Governments ("ABAG"), City of Vallejo demographics, and Nielsen Company. The comment does not provide any evidence that the assumptions are incorrect. The Taussig study shows, based on actual data, that there is a current excess of consumer demand, not supply. The Taussig study does indicate that population growth will occur that will translate in greater demand. However, with respect to future supply, the comment states that, "Taussig also assumes, without a scintilla of evidentiary support, that no new retail outlets or online services will locate within or provide service to the trade area during the same period". Table 13 of the Taussig study shows retail supply under future conditions, and it projects the same amount of additional retail from both the re-tenanting of the existing Costco site (125,437 sf) and that added by the Fairview at Northgate project (54,251 sf) for both Trade Areas. No new reasonably foreseeable future retail project have been identified and any other such projects are speculative.

Page 13 of the Taussig Study (Appendix B of the Draft EIR) notes the following: "DTA (Taussig) also surveyed the Cities of American Canyon and Benicia and learned that there are no proposed and/or pending superstores within those communities." Additionally, the City of Vallejo's Economic Development Division was surveyed regarding pipeline projects. No changes to the Draft EIR were made as a result of this comment.

- F-8 The City does not concur with this comment. As discussed in Response F-3, the project includes the relocation of an existing Costco store in a new site located approximately 3,000 feet or 0.75 miles from its current location. As noted on page 4.1-17 of the Draft EIR, approximately half of the additional 26,701 square feet added to the proposed Costco store would be used for grocery items and as explained in F-3 Costco only sells a limited range of items as shown by the limited number of SKUs it sells. The already-existing surplus of \$52.9 million in the Food category only accounts for approximately 3.51% of the total supply (\$1.5 billion) in the Primary Trade Area, which does not represent a significant enough portion of the total available supply to result in a substantial change in market conditions such that urban decay might occur. Also discussed in Response F-3 is that the Urban Decay Analysis does not evaluate the effects of competition on specific stores. The project does not create new competition with neighboring grocery stores, as the existing one (1) Costco is already competing with neighboring grocery stores. The comment that the statement "there is no evidence" that urban decay will occur does not constitute an analysis is illogical. No changes to the Draft EIR were made as a result of this comment.

- F-9 The City does not concur with this comment. The cited case law does say is the City's job to analyze impacts, not the public or the judiciary; the Draft EIR did just that, consistent with the stated case law. While the comment asserts that the Taussig Study and Draft EIR is inadequate, the comment letter provides no facts, expert opinion, or technical analysis to substantiate this claim. The Draft EIR has been prepared in compliance with CEQA, the 2019 CEQA Guidelines, and the City of Vallejo Municipal Code. Its impact analysis and conclusions are supported by technical studies (e.g., Economic Impact Analysis) and established methodologies for an Urban Decay Analysis based on nationally and internationally recognized sources such as the Urban Land Institute, Nielsen Company, and the US Census Bureau. No changes to the Draft EIR were made as a result of this comment.
- F-10 The City does not concur with this comment. While the comment asserts that the Draft EIR fails as an informational document, the comment provides no facts, expert opinion, or technical analysis to substantiate this claim. Please see Response F-3 regarding the project's potential to create urban decay. The project does not create any land use incompatibilities. As discussed in Chapter 4.9, Land Use, in the Draft EIR, the project is consistent with the existing General Plan designations assigned to the project property (Draft EIR page 4.9-12). The project includes the relocation of an existing Costco from its current location approximately 0.75 miles to the northeast. Other retail uses proposed within the project are compatible with existing retail uses located immediately north and south of the project site. The project includes residential uses that are compatible with the existing residential uses adjacent to the project site to the east and south.

As discussed in Chapter 4.1, Aesthetics, of the Draft EIR, the analysis demonstrates (based on the Taussig Study (Appendix B of the Draft EIR)) through the use of commercial market research tools (Costar and Nielsen Company, among others) that the existing retail market is strong enough to accommodate the proposed 26,701 additional square feet proposed within the relocated Costco store and other proposed retail commercial.

The Draft EIR concludes impacts from urban decay are considered less than significant and no mitigation is required. No changes to the Draft EIR were made as a result of this comment.

- F-11 The City does not concur with this comment. Page 13 of the Taussig Study (Appendix B of the Draft EIR) notes the following: "DTA (Taussig) also surveyed the Cities of American Canyon and Benicia and learned that there are no proposed and/or pending superstores within those communities." Additionally, the City of Vallejo's Economic Development Division was surveyed regarding pipeline projects.

The City has reviewed the Dr. Phillip King memo and notes that the existing Costco has been in continuous operation at its current location since 1989, approximately 15 years before the Dr. King Memo was prepared. Please see Response F-3 regarding the difference in the number of types of products available at a Costco and a grocery store or Super Walmart. As previously noted, the proposed project includes the relocation of the existing Costco to a new location approximately 0.75 miles from its current location. Based on the technical analysis provided in the Taussig Study, the additional 26,701 square feet of retail space included within the relocated Costco does not create a surplus in the non-grocery retail categories and does not contribute to an oversaturated market that would lead to a chain of events resulting in urban decay.

The City of American Canyon also expects significant residential growth of just over 1,200 homes over the next 20 years due to the Watson Ranch development as well as additional growth under the Broadway Specific Plan, which will create demand and further reduce the potential for any possible urban decay in that area.

The Draft EIR concludes impacts from urban decay are considered less than significant and no mitigation is required. No changes to the Draft EIR were made as a result of this comment.

- F-12 The City does not concur with this comment. As previously noted, the existing Costco has been in continuous operation at its current location since 1989, approximately 15 years before the Dr. King Memo was prepared. The Taussig Study surveyed the existing retail market area. The Taussig report did include surveys of the Cities of American Canyon and Benicia. As shown in Figure 4.1-2 of the Draft EIR (Map ES-1 of the Taussig Study (Appendix B of the Draft EIR)) the Secondary Trade Area includes the Cities of American Canyon and Benicia, thus the comment did comply the facts as required by the Municipal Code.

It should be further noted that the location of the existing Costco store differs from the locations of the now vacant Vallejo Food 4 Less at 5184 Sonoma Boulevard and Walmart at 5180 Sonoma Boulevard with respect to existing vacancy rates and income demographics. The table below provides a comparison of vacancy rates and income demographics between the existing Costco location and the Walmart store located at 5180 Sonoma Boulevard. The information provided is based on a one-mile radius from each location. As a result, the existing Costco building location represents a better location with respect to its potential for reuse. Additionally, the existing Costco location benefits from its proximity to other large retailers within the Gateway Plaza shopping center, such as Target, Home Depot, Best Buy, and Kohls, and its direct access from Interstate 80 via Columbus Parkway.

The Draft EIR concludes impacts from urban decay are considered less than significant and no mitigation is required. No changes to the Draft EIR were made as a result of this comment.

Demographic Comparisons Between Existing Costco and Vacant Walmart Locations

Location (1-Mile Radius)	Retail Vacancy Rate	Number of Households	Average Household Income	Median Household Income	% Households Earning Greater than \$100K/Yr	% Households Earning Less Than \$100K/Yr
198 Plaza Drive (Current Costco Location)	4.8%	3,489	\$120,630	\$96,071.32	47.99%	52.01%
5180 Sonoma Boulevard (Vacant Walmart)	11.8%	5,532	\$86,423	\$66,213.56	31.53%	68.47%

Source; DTA, 2020; demographic information from Costar and Nielsen reports.

- F-13 The City does not concur with this comment. The Taussig Study is a review of the economic strength of the retail market surrounding the project trade area and in particular Costco. The

technical analysis shows that the retail market has sufficient demand to absorb the reuse of the vacated Costco building. This is not a situation where there will be two warehouse stores as was the situation in the cited Bakersfield Citizen's case.

The Taussig Study does not assume the immediate reuse of the existing site but concludes there will be opportunity for a variety of retailers (even with the proposed deed restriction that will not allow other warehouse type stores in place) to utilize the current site, such as those in the General Merchandise or Other Retail categories, which currently have unmet demand of \$56.4 million and \$195.6 million, respectively. The allowable uses permitted at the existing site are provided in the Permitted Uses table in the Northgate Specific Plan on page 25. The \$300 per square foot is based off the median sales per square foot of retail centers provided by the Urban Land Institute. The use of \$300 per square foot is a conservative assumption for purposes of this Study (as this element is actually inverted, i.e., a higher figure is more conservative as it results in more retail supply that needs to be absorbed). For example, if you refer to Exhibit 8 within Appendix A of the Taussig Study (Draft EIR Appendix B) and adjust the taxable sales per square foot from \$300 to \$150, the supply in the Primary Trade Area created by the re-tenanting of the existing Costco decreases from \$30,104,880 to \$15,052,440 while the demand remains the same, therefore contributing even less to the existing surplus. A comparison of the taxable sales per square foot at \$150 and \$300 (as shown in the Taussig Study) is provided at the end of this response letter as Exhibit F-1 and Exhibit F-2.

The Draft EIR concludes impacts from urban decay are considered less than significant and no mitigation is required. No changes to the Draft EIR were made as a result of this comment.

- F-14 The City does not concur that the traffic analysis in the Draft EIR is inaccurate and distorted. First, the City does not use hypothetical conditions as the environmental baseline. As explained on page 4.15-4 of the Draft EIR, the Existing Conditions scenario is based on "the current traffic operations at the study locations and are considered the baseline conditions against which changes are measured." As quoted by the commenter, this is the scenario that is "ordinarily" done and is consistent with *Smart Rail*, 57 Cal.4th 439, 457. Moreover, *Smart Rail* holds that while an agency should provide reasoning for using only a future baseline, no such justification is required where the agency analyzes both existing conditions and future conditions. *Smart Rail*, 57 Cal.4th at 454; Guidelines § 15125 (in addition, a lead agency may use both existing conditions and projected future conditions). Here, the Draft EIR includes both existing and future conditions. The existing conditions scenario is based on actual traffic counts and is not misleading.

The environmental review for this project started in 2018 and the Notice of Preparation for the Draft EIR was published in October 2018. Traffic counts that form the basis of the existing conditions analysis were taken in November 2017, December 2018, July 2019, and August 2019, a span of 22 months. The count dates are shown below.

- Thursday 11/9/17 from 12-2 PM and 4-6 PM
- Saturday 11/11/17 from 12-2 PM
- Thursday 12/6/18 from 7-9 AM, 11 AM-1 PM and 4-6 PM
- Saturday 12/8/18 from 11 AM-2 PM
- Saturday 7/20/19 from 12-2 PM
- Tuesday 7/23/19 from 7-9 AM, 12-2 PM, and 4-6 PM

- Tuesday 8/27/19 from 7-9 AM

The November 2017 counts were used to support the analysis of the weekday mid-day, weekday PM, and Saturday mid-day peak hours for the original study intersection list. The December 2018 counts were taken to add the Foothill Drive/Turner Parkway intersection to the study. The July 2019 counts were taken to add three intersections on Redwood Parkway to the study, and the August 2019 counts were taken to add the weekday AM peak hour analysis to the study for all intersections. All but the July 2019 counts were taken when local schools were in session.

“Check” counts were taken as part of the July 2019 counts at the intersection of Admiral Callaghan Lane/Redwood Parkway, allowing a comparison of the 2019 and 2017 counts. This is standard practice. The Admiral Callaghan Lane/Redwood Parkway intersection was chosen for the check count because it is in the heart of the study area and serves some of the highest traffic volumes of all the study intersections. The comparison showed that the 2019 counts were somewhat lower than the 2017 counts; this indicates that traffic conditions had not changed substantially between the 2017 and 2019 count periods including taking into account that schools were not in session during the 2019 counts. In addition, local development in the study area had not changed substantially between 2017 and 2019, other than the construction of the In-n-Out restaurant on Admiral Callaghan Lane between Redwood Parkway and Rotary Way. Fehr & Peers accounted for the In-n-Out traffic by adding the projected traffic from the In-n-Out traffic study to the existing conditions intersection volumes, for the Near-Term case. This was also done for the three additional intersections counted in July 2019, although the In-n-Out was open when those counts were taken. Thus, the Near-Term volumes at those intersections (#16, #17 and #18 in the EIR) are considered conservative because they double count the In-n-Out traffic.

Traffic volumes that are less than two years old are often used for the baseline conditions analysis for traffic studies, when evidence that traffic characteristics have not changed substantially is available. This is also consistent with the City’s Traffic Impact Analysis/Study Guidelines. Therefore, based on the above evaluation, the use of the 2017, 2018 and 2019 counts to form the basis for the existing conditions analysis is considered appropriate.

As described above, the November 2017 counts taken for the original study intersection list were validated by taking a “check” count in July 2019 at one of the intersections in the middle of the study area – Admiral Callaghan Lane/Redwood Parkway. A comparison of the July 2019 counts (when Six Flags Discovery Kingdom was open and serving summer visitors) to the November 2017 counts demonstrated that the latter counts were slightly lower than the earlier counts.

Regarding the construction of a new traffic signal at Admiral Callaghan Lane/Rotary Way between the time when the 2017 counts were taken at the bulk of the study intersections (14 of the eventual 18 existing intersections) and the Draft EIR was published, it is often the case that conditions change while an environmental analysis is being conducted. The new traffic signal was incorporated into the Near-Term and Cumulative scenarios but was not assumed in the existing condition because it was not in place when the original study intersection counts were taken. The presence of the new signal on Admiral Callaghan Lane is not be expected to substantially affect traffic flows at the four intersections which were added in 2018 and 2019, which are located on Turner Parkway and on Redwood Parkway based on the project trip distribution (Figure 4.15-1 of

the Draft EIR, page 4.15-3) and peak hour performance of the intersections as analyzed in the Draft EIR.

The traffic analysis included in the Draft EIR is entirely consistent with CEQA. As explained by the court in Pfeiffer v. City of Sunnyvale City Council (2011) 200 Cal.App.4th 1552, 1572:

‘[T]he date for establishing baseline cannot be a rigid one. Environmental conditions may vary from year to year and in some cases it is necessary to consider conditions over a range of time periods.’ [Citation.]” (*Communities for a Better Environment, supra*, 48 Cal.4th at pp. 327–328, 106 Cal.Rptr.3d 502, 226 P.3d 985.) Here, there was substantial evidence, undisputed by appellants, that traffic conditions in the vicinity of the PAMF project could vary from existing conditions due to a forecast for traffic growth and the construction of already-approved developments. Moreover, appellants overlook the fact that the EIR included existing conditions, based on actual traffic counts, in its analysis of traffic impacts.

Here, the Draft EIR includes existing conditions based on actual traffic counts in its analysis of traffic impacts. It also includes a near term scenario to represent the conditions when the project is expected to be built out that conservatively double counts the In-n-Out traffic as described above. The analysis is straightforward and consistent with *Smart Rail*.

This comment does not change any of the conclusions in the Draft EIR. No changes to the EIR were made as result of this comment.

- F-15 The intersection traffic counts were conducted by documenting the specific turning movements at each intersection, using video cameras and post-video review. They were not counted with “strips” (it is assumed this comment refers to the pneumatic count hoses that are used to capture roadway segment volumes). Thus, the location of count strips is not relevant to the accuracy of the data.

No changes to the EIR were made as result of this comment.

- F-16 The City does not concur with this comment. Please see Response F-14.

No changes to the EIR were made as result of this comment.

- F-17 The comment provides a summary of legal case law and does not comment directly on the adequacy of the Draft EIR. The traffic analysis in the Draft EIR is consistent with CEQA case law. The Notice of Preparation was filed in October 2018 and is not stale. As explained above in F-14, the Draft EIR used actual traffic counts to determine the existing conditions and used that as the baseline against which to compare impact from development of the project. This is nothing like the case in *Woodward Park Homeowners Assn., Inc. v. City of Fresno* (2007) 150 Cal.App.4th 683, 707 where “the EIR acknowledged that the project site was presently a vacant lot. It then went on in many instances, however, to evaluate environmental impacts by comparing the project’s impacts with those of the maximum buildable development under existing zoning and plan

designations.” Here, the project site is vacant site and was considered as such in the Draft EIR. The environmental impacts were compared against this vacant site, not to those of the maximum buildable development.

F-18 The City does not concur with this comment. The Draft EIR does not rely on future baseline conditions or depart from the normal process on conducting a traffic impact analysis. Please see Response F-14 regarding how the existing conditions baseline was formulated. No changes to the EIR were made as result of this comment.

F-19 The City does not concur with this comment. As explained in F-14 and F-17 above, the Draft EIR does not rely on future baseline conditions. The existing conditions scenario is based on actual traffic counts that are representative of the current traffic conditions. . As discussed in Response F-14, five of the seven traffic counts were conducted for the project’s traffic analysis were conducted after the Notice of Preparation was released in October 2018. Please see Response F-14 regarding how the existing conditions baseline was formulated for the traffic impact analysis.

No changes to the EIR were made as result of this comment.

F-20 The City does not concur that the traffic study area should be expanded to align with the expected primary and secondary market area for the proposed Costco, up to seven miles from the project site. The traffic impact study area is designed to capture potentially significant impacts, based on anticipated driving behaviors and the number of project trips which would use the intersections. As shown on Figure 4.15-1 in the Draft EIR, the project trips are distributed and assigned to the various study area “gateway” roadways; beyond these gateways, the percent of project trips would drop as trips are further distributed to various feeder roadways and neighborhoods. In particular, the trip assignments to I-80 east (10%), I-80 west (35%), and State Route 37 west (15%) would further distribute to the many interchanges and neighborhoods within the cited seven mile radius of the project, resulting in far fewer trips affecting any one freeway interchange or off-freeway intersection, compared to the trip assignments at the selected study intersections which are relatively close to the project site.

The geographic area is not truncated, and the Draft EIR does not underreport vehicle miles travel in the context of the traffic study, air quality analysis or energy study. The project includes Mitigation Measure GHG-3 (Draft EIR page 4.6-28) which requires the applicant to prepare a Commute Trip Reduction/Transportation Demand Management Plan to reduce vehicle miles traveled by at least 17.8 percent. Please see Response C-8.

This comment does not change any of the conclusions in the Draft EIR. No changes to the EIR were made as result of this comment.

F-21 The City does not concur that the traffic study uses a flawed analysis. The comment states the commenter’s opinion that the DEIR fails as an informational document. While the commenter asserts that the DEIR is inadequate, the comment letter provides no facts, expert opinion, or technical analysis to substantiate this claim. The DEIR has been prepared in compliance with CEQA and the 2019 CEQA Guidelines. Its impact analysis and conclusions are supported by technical traffic analysis including physical traffic counts, traffic modeling, computer simulations prepare by qualified traffic engineers.

No changes to the EIR were made as result of this comment.

- F-22 The City does not concur with this comment. The comment letter has not presented any substantial evidence that the Draft EIR omits environmental impacts. Comments in the letter are related to potential urban decay impacts and traffic impacts. The Draft EIR is based on project specific technical studies prepared by qualified professionals with the professional training and experience their specific fields. Comments raised in this letter related to urban decay are addressed in Responses F-1 through F-13. Comments related to traffic impacts are addressed in Responses F-14 through F-21.

No changes to the EIR were made as result of this comment.



EXHIBIT F-1: \$150 TAXABLE SALES/SQ. FT.

CITY OF VALLEJO - FAIRVIEW AT NORTHGATE
PROJECTED RETAIL SUPPLY WITH PROJECT
(INCLUDING ALL FUTURE DEVELOPMENT)

MARKET AREA	EXISTING 2019 SUPPLY	RE-TENANTING OF EXISTING SITE	FAIRVIEW AT NORTHGATE (TOTAL)	TOTAL SUPPLY IN 2024
PRIMARY TRADE AREA				
PROJECTED BUILDING SQ. FT. ¹		125,437	54,251	
BLENDED TAXABLE SALES PER SQ. FT. ²		\$150	\$693	
DISPLACED SALES WITHIN TRADE AREA ³		20.00%	20.00%	
PRIMARY TRADE AREA SUPPLY ⁴	\$1,509,196,507	\$15,052,440	\$30,066,158	\$1,554,315,105
COMBINED PRIMARY & SECONDARY TRADE AREA				
PROJECTED BUILDING SQ. FT. ¹		125,437	54,251	
BLENDED TAXABLE SALES PER SQ. FT. ²		\$150	\$693	
DISPLACED SALES WITHIN TRADE AREA ³		20.00%	20.00%	
COMBINED PRIMARY & SECONDARY TRADE AREA SUPPLY ⁵	\$2,609,116,317	\$15,052,440	\$30,066,158	\$2,654,234,915

Notes:

[1] Source: Publications from the City of Vallejo Planning Department.

[2] Based on the median sales per sq. ft. figure for retail centers as outlined in "Dollars and Cents of Shopping Centers" (2008) published by the Urban Land Institute.

[3] Estimate, subject to change.

[4] Refer to Exhibit 2 for 2019 figures.

[5] Refer to Exhibit 3.



EXHIBIT F-2: TAXABLE SALES \$300/SQ.FT.

CITY OF VALLEJO - FAIRVIEW AT NORTHGATE
PROJECTED RETAIL SUPPLY WITH PROJECT
(INCLUDING ALL FUTURE DEVELOPMENT)

MARKET AREA	EXISTING 2019 SUPPLY	RE-TENANTING OF EXISTING SITE	FAIRVIEW AT NORTHGATE (TOTAL)	TOTAL SUPPLY IN 2024
PRIMARY TRADE AREA				
PROJECTED BUILDING SQ. FT. ¹		125,437	54,251	
BLENDED TAXABLE SALES PER SQ. FT. ²		\$300	\$693	
DISPLACED SALES WITHIN TRADE AREA ³		20.00%	20.00%	
PRIMARY TRADE AREA SUPPLY ⁴	\$1,509,196,507	\$30,104,880	\$30,066,158	\$1,569,367,545
COMBINED PRIMARY & SECONDARY TRADE AREA				
PROJECTED BUILDING SQ. FT. ¹		125,437	54,251	
BLENDED TAXABLE SALES PER SQ. FT. ²		\$300	\$693	
DISPLACED SALES WITHIN TRADE AREA ³		20.00%	20.00%	
COMBINED PRIMARY & SECONDARY TRADE AREA SUPPLY ⁵	\$2,609,116,317	\$30,104,880	\$30,066,158	\$2,669,287,355

Notes:

[1] Source: Publications from the City of Vallejo Planning Department.

[2] Based on the median sales per sq. ft. figure for retail centers as outlined in "Dollars and Cents of Shopping Centers" (2008) published by the Urban Land Institute.

[3] Estimate, subject to change.

[4] Refer to Exhibit 2 for 2019 figures.

[5] Refer to Exhibit 3.

Letter G - Natalie Mattei



Natalie Mattei
natalie.mattei@safeway.com

January 21, 2020

Via Electronic Mail

Members of the City of Vallejo Planning Commission
City of Vallejo
555 Santa Clara Street
Vallejo, CA 94590

**RE: Fairview at Northgate: Vacant site at southeast corner of Admiral Callaghan Lane and Turner Parkway (APN: 0081-490-010)
Planned Development (PD) 17-0007, Tentative Map (TM) 17-0002
Major Use Permit (UP) 18-0007, Zoning Map Amendment (ZMA) 17-0001**

Dear Members of the Planning Commission:

I write on behalf of Safeway Inc., which leases and operates a grocery store at 774 Admiral Callaghan Lane ("Store # 989") in the Redwood Plaza shopping center, and owns and operates a freestanding grocery store and gas station at 709 Lincoln Road W ("Store # 968"), in the City of Vallejo ("City"). This letter is in connection with the Planning Commission's study session on the proposed Fairview at Northgate project ("Project"), which is scheduled for January 22, 2020.

As background, Safeway is a proud member of UFCW Local 5 and Local 8 (Clerks and Meat, respectively), BCTGM Local 24 (Bakery), and Teamsters Local 439 (Distribution Center). Safeway opened Store # 989 in Redwood Plaza in 1981. The 46,980 square foot store is a full-service supermarket with pharmacy and located 408 feet south of the Project. Safeway opened its full-service, 32,744 square foot Store #968 on Lincoln Road W, 1.9 mile south of the Project, in 1979. Its accompanying Safeway gas station opened in 2002.

G-1 { I am not aware of Safeway receiving public notice for the upcoming Planning Commission study session or previous public hearings on the Project. We learned of the study session on January 18, 2020 and, after a cursory review of the documents, are concerned that the data is not properly reflecting the Project baseline and the impacts will be greater than outlined. Safeway has communicated with the City over the years, especially in conjunction with the Redwood Plaza signage package in 2017, that Store # 989 has struggled to remain viable. The opening of In N Out Burger in Redwood Plaza in January 2019 has also changed the operating conditions of the shopping center and traffic in the vicinity. Our concern is that the Project's anticipated impacts, which are understated due to gaps in the baseline data, have the capacity to cause severe harm to Store # 989 and other shops in Redwood Plaza, and negatively impact Store # 968 and its gas station as well.

G-2 { As a preliminary matter, Safeway would like to be added to the list of Interested Persons for all future noticing on the Project (please use my name and address as contact information). I have spoken with Principal Planner Aaron Sage today and shared Safeway's preliminary observations and concerns. Safeway has a professional relationship with the applicant, Lewis, and has advised Mr. Sage that we are happy to discuss the matter in more detail with Lewis. To follow is a summary of our initial observations and concerns. We will be reviewing the Draft EIR in more detail and anticipate submitting a formal comment letter prior to the closure of the public review period on March 2, 2020.

ALBERTSONS' COMPANIES / 11555 Dublin Canyon Rd. / Pleasanton, CA 94588

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Economic Impact Analysis; and Fiscal Impact Analysis

G-3

The Economic Impact Analysis dated December 19, 2019 ("EIA") includes several incorrect assumptions and conclusions. These include, but are not limited to, the following items.

Exhibit 10 includes only one Safeway store and erroneously lists the square footage for Safeway as 31,790 sq. ft. As noted previously, Store # 989 is 46,980 sq. ft. and located 408 feet south of the Project. Store # 968 is 32,744 sq. ft. and located 1.9 mile south of the Project.

Page V of the EIA states:

"DTA acknowledges the oversupply of \$52.9 million in the Primary Trade Area when solely examining the Food category, however given the fact that the Project is merely the relocation and expansion of an existing Costco, and only half of the additional 26,701 square feet will be used for grocery items, as confirmed by the Proponent, there is no evidence to indicate that the Project would exacerbate the already existing surplus. The Project is also not expected to compete with other typical grocery store chains, such as the nearby Safeway, because although both stores offer food and beverage items, each location has a different use to the average consumer depending on their needs."

The EIA does not contain substantial evidence to justify the foregoing conclusion.

G-4

Page 11 of the EIA further states:

"With the 26,701 additional square feet in retail space created by the Project, the new Costco has capacity to support 330 employees upon completion, as confirmed by the Project Proponent and Costco management. This increase in employees could have further indirect and induced impacts, such as additional employees and sales tax receipts within the Primary Trade Area."

"Other existing stores that provide similar retail sales to that of Costco and serve as retail anchors within the Primary Trade Area include Ross, Safeway, CVS, Lowe's, and Big 5 Sporting Goods, among others. These properties and those in the surrounding areas have exhibited strong sales and high occupancy rates."

The EIA does not contain substantial evidence to justify its conclusion that Costco's proposed increase in employees could increase sales tax receipts. There is no guarantee that the proposed employees would live in the Primary Trade Area and there is no analysis regarding the potential loss of jobs at impacted retailers in the area.

Contrary to the EIA, Safeway is not exhibiting "strong sales" in the trade area. The EIA does not discuss the possible closure of existing grocery stores, drug stores, and gas stations in the City as a result of the Project. Table A only discusses the economic implications of Costco closing for business in its existing location and relocating outside the City limits.

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Transportation Impact Analysis

G-5

The Transportation Impact Analysis dated December 2019 ("TIA") includes several incorrect assumptions and conclusions. These include, but are not limited to, the following items.

It appears the traffic counts taken in November 2017 do not take into account the opening of In N Out Burger in Redwood Plaza in January 2019 and installation of a traffic signal at Rotary and Admiral Callahan. Additionally, it is unclear whether the November 2017 counts were taken while nearby Six Flags Discovery Kingdom was open to the public as they are a seasonal use.

The exact location of the strips used to count vehicles along Admiral Callahan at the Hwy 80 ramps, the intersection of Admiral Callahan and Redwood Pkwy, and intersection of Redwood Pkwy and southbound exit of Hwy 80 is not clear. The location of the counts is critical to understanding the impacts of the Project. These locations have unique access points and if not reviewed properly, the conclusions about the impacts in these areas will be erroneous.

We respectfully ask the Planning Commission to direct City Staff and the applicant to work with Safeway to address our concerns. While I am unable to attend the study session due to a prior commitment, please do not hesitate to contact me at (925) 226-5754 with any questions. Thank you for your consideration of Safeway's feedback.

Sincerely,



Natalie Mattei
Senior Real Estate Manager

CC: Aaron Sage, Principal Planner – (aaron.sage@cityofvallejo.net)
Dawn Abrahamson, City Clerk – (dawn.abrahamson@cityofvallejo.net)
Joshua Stark, AKT Properties – (Joshua@aktproperties.com)
Mark Enes, AKT Properties – (mark@aktinvestments.com)
Jeb Elmore, Lewis Management Corp – (jeb.elmore@lewismc.com)

ALBERTSONS' COMPANIES / 11555 Dublin Canyon Rd. / Pleasanton, CA 94588

Response to Letter G – Natalie Mattei, January 21, 2020

- G-1 The City exceeded the legal notification requirements for the Planning Commission study session on January 22, 2020 and the CEQA Notice of Availability (NOA) for the Draft EIR. Because the study session was not a formal public hearing, no notification was required other than the posting of the meeting agenda at least 72 hours in advance, which the City did. However, the City provided the same notice required for public hearings by mailing notices to landowners (not occupants) within a 500-foot radius of the project site (which includes the Redwood Plaza shopping center), posting on the project site, posting notices on the project site, and publishing the notice in the Vallejo Times Herald. By including the NOA in the study session notice, the City exceeded the requirements of the State CEQA Guidelines Section 15087, which requires notices to be either mailed, posted on site, or published in a newspaper, but not all three. In a phone call prior to the study session, the commenter informed City staff that she became aware of the study session due to the newspaper notice.

Additionally, the project applicant expanded the noticing radius by more than twice the required distance (to 1,200 feet) as part of its community outreach efforts. This notice included occupants as well as property owners. Notably, the applicant sent notice for its community outreach meeting that was held on November 15, 2018 to 720 Admiral Callahan Lane (shopping center that includes Safeway) and 774 Admiral Callahan Lane (Safeway building). Please see Response F-14 regarding how the traffic baseline was established for the traffic analysis included in the Draft EIR. The comment does not state how the project would cause severe harm to other Safeway stores mentioned in the comment.

No changes to the EIR were made as a result of this comment.

- G-2 The City has added the commenter to the City's distribution list for the project. City staff and the applicant met with the commenter at the City of Vallejo Planning Department to discuss concerns related to the project on February 19, 2020.

No changes to the EIR were made as a result of this comment.

- G-3 The City does not concur with this comment. Please see Response F-3 which addresses this same topic. The comment does not provide any evidence of what the urban decay analysis is lacking or what potential impacts have not been identified in Draft EIR. The City acknowledges that the correct square footage of Safeway Store #989 is 46,980 square feet and Safeway Store #968 is 32,744 square feet. This small change in the square footage does not impact the conclusions of the urban decay analysis.

No changes to the EIR were made as a result of this comment.

- G-4 The City does not concur that the Economic Impact Analysis lacks substantial evidence. The statement that additional employees could induce an increase in sales tax receipts within the primary Trade Area is supported by the discussion on page 12 of the report. Costco's employee wages are higher than other stores within the primary trade area, which could provide additional spending power for employees who choose to shop in Vallejo. As stated on page 4.12-17 of the Draft EIR, Costco anticipates adding an additional 60 employees at the relocated Costco store. The report refers to the sales tax receipts of the Costco employees, not property tax. Specifically,

it is reasonable to assume that additional Costco employees would spend some money in Vallejo either at the relocated Costco store or at other businesses in Vallejo. Where those employees live is not related to the analysis. Please see Response F-3 regarding the relationship of added competition to the urban decay analysis.

No changes to the EIR were made as a result of this comment.

- G-5 The City does not concur with this comment. Please see Response F-14 regarding the traffic counts and F-15 regarding where the traffic counters were located.

No changes to the EIR were made as a result of this comment.

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Letter H - Natalie Mattei



Natalie Mattei
natalie.mattei@safeway.com

March 2, 2020

Via Electronic Mail

Chairman Schussel and Honorable Members of the City
of Vallejo Planning Commission
City of Vallejo
555 Santa Clara Street
Vallejo, CA 94590

**RE: Fairview at Northgate: Vacant site at southeast corner of Admiral Callaghan Lane and Turner Parkway (APN: 0081-490-010)
Planned Development (PD) 17-0007, Tentative Map (TM) 17-0002
Major Use Permit (UP) 18-0007, Zoning Map Amendment (ZMA) 17-0001**

Dear Chairman Schussel and Honorable Members of the City of Vallejo Planning Commission:

I write on behalf of Safeway Inc., which leases and operates a grocery store at 774 Admiral Callaghan Lane ("Store # 989") in the Redwood Plaza shopping center, owns and operates a freestanding grocery store and gas station at 709 Lincoln Road W ("Store # 968"), and leases and operates a grocery store at 122 Robles Way ("Store 1631") in the Glen Cove shopping center, all in the City of Vallejo ("City"). This letter is in connection with the Planning Commission's public hearing concerning the Draft Environmental Impact Report (DEIR) on the proposed Fairview at Northgate project ("Project"), scheduled for this evening, March 2, 2020. The following comments are in addition to and supplement the earlier comments to the DEIR provided by our attorney, Steve Herum, by a letter dated February 21, 2020.

Economic Impact Analysis; and Fiscal Impact Analysis

The Economic Impact Analysis dated December 19, 2019 ("EIA") includes several materially incorrect flawed assumptions and conclusions. The critical errors in the analysis include, but are not limited to, the following items.

H-1 { **1. Consideration of Significant Sources of Non-Traditional Retail Sales and Non-Traditional Grocery Sales**
The EIA does not discuss ecommerce (online sales such as Amazon, etc.). This is having a profound effect on the retail industry, especially as it relates to brick and mortar stores (see [Exhibit A](#)). Additionally, the City of Vallejo's actual knowledge of the impact of ecommerce is illustrated by its proposal to host a second headquarters for Amazon (see [Exhibit B](#)).

H-2 { **2. Effect of Proposed Costco on Safeway Stores in Vallejo, American Canyon, and Benicia**
Page V of the EIA states:

"DTA acknowledges the oversupply of \$52.9 million in the Primary Trade Area when solely examining the Food category, however given the fact that the Project is merely the relocation

ALBERTSONS' COMPANIES / 11555 Dublin Canyon Rd. / Pleasanton, CA 94588

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H-2
cont'd { *and expansion of an existing Costco, and only half of the additional 26,701 square feet will be used for grocery items, as confirmed by the Proponent, there is no evidence to indicate that the Project would exacerbate the already existing surplus. The Project is also not expected to compete with other typical grocery store chains, such as the nearby Safeway, because although both stores offer food and beverage items, each location has a different use to the average consumer depending on their needs."*

The EIA does not discuss or explain why it believes Costco and Safeway have "a different use to the average consumer depending on their needs." When one looks at Costco and Safeway, as demonstrated in Exhibit C, they indeed each offer the same or similar food and beverage items.

H-3 { Additionally, the EIA does not discuss or explain the possible closure of existing retail establishments, including but not limited to grocery stores, drug stores, and gas stations, in the cities of Vallejo, American Canyon, and Benicia as a result of the Project. At a meeting on February 19, 2020 with City Staff and the Applicant, planner Aaron Sage indicated the closure of one to two existing gas stations due to the proposed Costco would not be considered significant but did not offer any facts or data to support this conclusion (nor are such facts or data contained in the DEIR). The EIA does not discuss this alleged threshold nor which gas station(s) is/are assumed to close, however if an existing Safeway Gas Station is one of these potential closures, we would certainly deem it "significant."

3. Urban Decay in the City of Vallejo

H-4 { Please see Exhibit D for examples of existing urban decay in the City of Vallejo. Please see Exhibit E for news articles regarding the closures of grocery stores Food 4 Less and Raley's in Vallejo.

Transportation Impact Analysis

The Transportation Impact Analysis dated December 2019 ("TIA") includes several incorrect assumptions and conclusions. These include, but are not limited to, the following items.

1. Gas Station Vehicle Queuing

H-5 { The TIA states on page 50 the existing Costco Gas Station "was found to contain vehicle queues on-site, without spill-back to the primary entry driveway to the store. Queues varied from one to three vehicles per lane over the course of the peak hours." This conflicts with my personal experience wherein I have seen the queue exit the existing Costco Gas Station parcel and back up all the way down Plaza Drive as shown in the attached photos (which I took) on Exhibit F. These photos support my personal observations and experience concerning this traffic problem.

H-6 { Also on page 50, the TIA states that "it is expected that the gas station queues at the Project site will be contained within the feeder lanes and gas station site." When Safeway designs a gas station, it develops a "queueing plan" which demonstrates how many cars can queue. I did not see a proposed site plan for the proposed Costco Gas Station that layered the queues onto the plan in order to demonstrate how many vehicles

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- H-6
cont'd { can queue. Hence there is no data or information about the proposed Costco Gas Station queueing capacity. If the street is used for queueing then the congestion is exacerbated.
- H-7 { Both the Fehr & Peers and Kittelson & Associates reports discuss the trip generation of the proposed Costco Gas Station in terms of square footage and number of gas pumps. They create a multiplier based on Costco comp stores that have expanded and then apply that multiplier to the existing Vallejo Costco Gas Station counts to determine the proposed Vallejo Costco Gas Station counts. This analysis is lacking because it focuses on size and does not take into account the throughput (number of gallons of gasoline sold) at any of the locations. For example, a 12,000 square foot Trader Joe's can do the same sales volume or more than any of the larger full-service grocery stores in Vallejo. The point being that sales volume, which in the case of gas stations is connected to throughput, is more of an indicator of trip generation than size alone.
- H-8 { **2. Cumulative Traffic Conditions**

The TIA does not appear to take into consideration the future major developments listed on [Exhibit G](#). At a meeting with City Staff and the Applicant on February 19, 2020, I advised that the list utilized for Cumulative conditions appeared to be missing developments. I specifically asked about the proposed Blue Rock Springs golf course and was told that it is too premature, however given there is an Exclusive Negotiations Agreement (see [Exhibit H](#)) it should be studied.
- H-9 { The DEIR also does not study, let alone elaborate on, the proposed Caltrans improvements to Hwy 80 and Redwood Street. There are no drawings or detailed descriptions, nor any outline of Caltrans funding and timelines to determine if the project is reasonably foreseeable. This work has been contemplated for over a decade and the TIA assumes it occurs in the Cumulative conditions, however exactly what is proposed and the actual likelihood of it happening are not discussed. Depending on its design and timing, the proposed Caltrans improvements could be mitigation measures for the Project. As shown in the photos I took in [Exhibit I](#), the existing traffic conditions on Admiral Callahan in front of Redwood Plaza are congested, and layering the Project on top of that without mitigation measures will negatively impact Safeway because traditional grocery customers favor locations that are easily accessible.
- H-10 { It is unclear what direction City Staff provided Fehr & Peers. According to an email exchange in January 2018 (see [Exhibit J](#)), the scope of work for the TIA was still uncertain. Further, in an email exchange regarding an onsite meeting I was attempting to schedule in February 2020 (see [Exhibit K](#)), City Staff directed Fehr & Peers to consider "any low-cost solutions or improvements that don't require recirculation of EIR." This represents an unlawful method to reject otherwise feasible mitigation measures.
- H-11 { Lastly, it is unclear why the Applicant should have to pay the City's share of the traffic signal installed at Admiral Callahan and Rotary for the In N Out Burger (see comment #2 on page 1 of [Exhibit L](#)). Those proposed fees should be allotted to mitigation measures for the Project and not past projects.

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Thank you for your consideration of Safeway's feedback. Please do not hesitate to contact me at (925) 226-5754 with any questions.

Sincerely,



Natalie Mattei
Senior Real Estate Manager

CC: Dawn Abrahamson, City Clerk – (dawn.abrahamson@cityofvallejo.net)
Gillian Hayes, Planning & Development Services Director – (Gillian.Hayes@cityofvallejo.net)
Aaron Sage, Principal Planner – (aaron.sage@cityofvallejo.net)
Steve Herum, Herum Crabtree Suntag (sherum@herumcrabtree.com)

Attachments:

- Exhibit A – Ecommerce
- Exhibit B – City of Vallejo Effort Re: Amazon Headquarters
- Exhibit C – Items Commonly Sold at Costco and Safeway
- Exhibit D – Examples of Existing Urban Decay in Vallejo
- Exhibit E – News Articles Re: Closures of Food 4 Less and Raley's
- Exhibit F – Existing Vallejo Costco Gas Station Queues
- Exhibit G – Future Major Developments in Vallejo
- Exhibit H – Exclusive Negotiations Agreement Re: Blue Rock Springs
- Exhibit I – Existing Traffic Conditions on Admiral Callahan
- Exhibit J – Email Re: Fehr & Peers Scope of Work
- Exhibit K – Email Re: Staff Direction to Fehr & Peers
- Exhibit L – City Staff Letter Re: Project Application

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Letter H Exhibits

Exhibits A through L are provided under separate cover. These attachments can be found on CD on the back cover of the hard copy Final EIR or on the City's website:

https://www.cityofvallejo.net/city_hall/departments_divisions/planning_and_development_services/community_development_projects.

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Response to Letter H – Natalie Mattei, March 2, 2020

H-1 The City does not concur with this comment. Please see Response F-6.

No changes to the EIR were made as a result of this comment.

H-2 The City does not concur with this comment. Please see Responses F-3 and F-4.

No changes to the EIR were made as a result of this comment.

H-3 The City does not concur with this comment. Please see Response F-4. The discussion with City staff was in response to a question regarding the approach of the urban decay analysis and the impacts of additional competition on the area following recent CEQA case law. Specifically, CEQA Case law established in the Chico Advocates for a Responsible Economy (CARE)¹⁰ case confirmed that an Urban Decay Analysis under CEQA was related to physical impacts to the environment. Impacts such as introducing competition to existing businesses or even the closure of a business do not amount to urban decay. Specifically, the ruling noted:

The Court distinguished *Bakersfield Citizens for Local Control v. City of Bakersfield*, [124 Cal.App.4th 1184] (2004) as a “case involv[ing] a complete failure to consider urban decay impacts” and “not [one] hold[ing] that the absence of close and convenient shopping, by itself, constitutes an environmental impact [as opposed to a possible social problem].” In a footnote, it further challenged the factual premise of CARE’s argument that possible elimination of a Food Maxx less than a mile to the west would “deprive[] the neighborhood of “close and convenient shopping” as opposed to simply “substitut[ing] one “close and convenient” shopping option for another.”¹¹

Furthermore, the proposed gas station is the relocation of an existing Costco gas station from approximately 0.75-mile away and a Costco membership is required to purchase gas at the gas station. As such, most of the gas station customers will be existing customers. The analysis in the Draft EIR concluded potential impacts as a result of urban decay are less than significant and no mitigation is required. No changes to the Draft EIR were made as a result of this comment.

No changes to the EIR were made as a result of this comment.

H-4 Please see Response F-12.

No changes to the EIR were made as a result of this comment.

H-5 As stated in the comment, queuing at the existing Costco gas station was observed as part of the traffic analysis. The proposed gas station is the relocation of an existing Costco gas station from approximately 0.75-mile away and a Costco membership is required to purchase gas at the gas

¹⁰ Chico Advocates for a Responsible Economy v. City of Chico, [40 Cal.App.5th 839] (2019).

¹¹ Miller Star Regalia, https://www.ceqadevelopments.com/2019/10/09/third-district-rejects-ceqa-challenges-to-chico-walmart-expansion-project-eirs-urban-decay-analysis-and-citys-statement-of-overriding-considerations/?utm_source=Miller+Starr+Regalia+-+CEQA+Developments&utm_campaign=576a24b313-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_2b3a24553f-576a24b313-72899433 accessed March 6, 2020

station. As such, not all of the gas station customers will be new customers. Page 50 of the TIA includes the following discussion regarding the added capacity of the proposed gas station:

The Project's gas station will be able to serve more customers per hour because of an increase from 16 to 30 gas dispensers, resulting in potentially shorter queues than observed at the existing gas station. Further, as noted in the memorandum provided by Kittelson & Associates describing the change in transactions related to store size increases and gas station additions, included in Appendix F, the increase in transactions is generally commensurate with the store size increase, with a relatively small difference related to the addition of gas dispensers. For these reasons, it is expected that gas station queues at the Project site will be contained within the feeder lanes and gas station site.

It should be noted that Costco has designed the proposed gas station to operate efficiently for the convenience of its members. Based on the operations of other Costco gas stations with a similar gas station configuration, Costco has experienced that that increasing the number of fueling positions helps reduce vehicle queues. With 30 fueling positions at this proposed gas station lengthy queues are not anticipated. The proposed gas station will have approximately an 80-vehicle queue capacity (15 at the pumps, plus 65 in the queueing lanes). Costco has not experienced vehicles queuing outside the fuel facility queue area with this configuration. Nonetheless, a queuing plan to keep the vehicles onsite in the unlikely event that queues exceed the available storage will be required as a condition of approval for the project. Potential impacts from gas station queuing are considered less than significant and no mitigation is required.

No changes to the EIR were made as a result of this comment.

- H-6 Please see Response H-5. Based on the project design the City has determined that the project will not result in queues that extend into the public right-of-way and adversely impact traffic operations on Admiral Callaghan Boulevard. The City is not involved regarding internal movements within the project site. However, the City does review the site plan to ensure the project's internal circulation does not adversely impact movements on the public streets and Right-of-Way. The City did review the project site plan, and the applicant made changes to the design to improve onsite circulation.

No changes to the EIR were made as a result of this comment.

- H-7 The City does not concur with this comment. As discussed in Table 5A of the Traffic Impact Analysis (TIA) (page 26), Appendix J of the Draft EIR, the trip generation estimates for the gas station were cross-referenced against Costco's sales data (which correlates to trips) and found to be accurate. Costco has extensive records related to its operation of stores throughout California and the west coast of the United States. Because Costco is a members only retail center, the organization is able to track sales receipts and sales patterns among its members to provide accurate correlations between sales on at the warehouse retail floor and its appurtenant sales areas (e.g., gas station, tire center). Appendix F of Appendix J of the Draft EIR provides data as it relates to similar sized Costco Warehouse stores to substantiate the data used in the TIA and Draft EIR.

No changes to the EIR were made as a result of this comment.

- H-8 The City does not concur that the cumulative traffic analysis is incomplete. For cumulative (2040) traffic projections, the baseline and 2040 Solano-Napa Travel Demand Model runs were reviewed, and a traffic growth percentage was derived by comparing roadway volumes between the two runs. An overall growth rate of approximately one percent per year (23 percent for the period 2017 – 2040) was derived. This is considered conservative because the model already includes land use growth between the baseline and 2040 models, and the Fairview at Northgate Project would represent some of that growth. The existing traffic counts were increased by 23 percent to represent Cumulative No Project traffic volumes; then the Project traffic was added to those volumes to represent Cumulative With Project traffic volumes. Section 15130 of the State CEQA Guidelines allows for a lead agency to utilize two approaches to forecast cumulative conditions, list of projects and summary of projections. For the purpose of cumulative traffic impacts, the City utilized a summary of projections based on the 2040 Solano-Napa Travel Demand Model.

With regard to the projects included in the exhibit attached to the comment letter (Exhibit H), not all projects within the City are included in the cumulative traffic analysis. The cumulative analysis includes those projects anticipated to use the same intersections and roadways as the proposed projects. The traffic impact study area is designed to capture potentially significant impacts, based on the number of project trips which would use the intersections within the study area. As shown on Figure 4.15-1 in the Draft EIR, the project trips are distributed and assigned to the various study area “gateway” roadways; beyond these gateways, the percent of project trips would drop as trips are further distributed to various feeder roadways and neighborhoods. In particular, the trip assignments to I-80 east (10%), I-80 west (35%), and State Route 37 west (15%) would further distribute to the many interchanges and neighborhoods within the cited seven-mile radius of the project. This will result in far fewer trips affecting any one freeway interchange or off-freeway intersection, compared to the trip assignments at the selected study intersections which are relatively close to the project site.

No application for the Blue Rock Springs project has been submitted to the City. Negotiations regarding the project have been ongoing as the project involves financial agreements between the City and the project developers that must be resolved prior to the project moving forward. Based on all of the above uncertainty, this project is not included in the list of cumulative projects. However, based on this comment, the City reviewed the cumulative traffic projections discussed above and the most recent land uses proposed for Blue Rock Springs. Based on the conservative approach used in projecting traffic volumes, the City’s traffic engineer and traffic consultant have concluded that traffic volumes from a future Blue Rock Springs project would be captured within the cumulative traffic analysis.

- H-9 Please see Responses C-2 and C-4. The cumulative analysis does not assume that these improvements are in place until the year 2040, over 20 years from buildout. If the improvements are completed sooner, traffic conditions will improve. The Draft EIR does not rely on required payments towards these improvements as mitigation that would reduce impacts to a less than significant level.

Additionally, it should be noted that Admiral Callaghan Lane is currently a two-lane road with one travel lane in each direction with no bike lanes or sidewalks. The project would improve Admiral Callaghan Lane to an approximately 76-foot cross-section with improvements along the project frontage. The new lane configuration for Admiral Callaghan Lane would consist of two travel lanes in each direction, an eleven-foot landscaped center median, a 5-foot wide bike lane in each

direction, and a 4.5-foot wide pedestrian sidewalk on the eastern side (northbound direction) of Admiral Callaghan Lane along the project frontage.

No changes to the EIR were made as a result of this comment.

- H-10 This comment does not address the adequacy of the Draft EIR and is related to a meeting with the commenter after the Draft EIR was released for public review. The comment by City staff regarding “low-cost solutions or improvements” was intended as a good-faith effort to identify potential improvements not otherwise required by CEQA that would improve the existing traffic conditions at the Safeway parking lot. At no time did City staff believe or intend to imply that it could reject any mitigation measure without making all required findings under CEQA. In the meeting with the commenter, City staff asked for the commenter’s suggestions for additional mitigation measures, and she did not identify any other than a fair share payment toward the Redwood/I-80 interchange improvement project, which is not necessary since this project is anticipated to be funded through other sources (including payment of regional transportation impact fees by the proposed project).

No changes to the EIR were made as a result of this comment.

- H-11 The applicant is required to pay a fair-share contribution to the new traffic signal installed at Admiral Callaghan Lane and Rotary Way. The applicant is paying the project’s share of this traffic signal, not the City’s share. This comment is not related to the adequacy of the Draft EIR.

No changes to the EIR were made as a result of this comment.

Letter I – Response to Planning Commissioner questions during EIR public review period

STAFF RESPONSES TO QUESTIONS FROM PLANNING COMMISSION FAIRVIEW AT NORTHGATE PROJECT FEBRUARY 10, 2020

The commissioner's questions are listed first in bold, and staff responses follow in italics.

- 1. How many cars can be stacked (i.e. maximum) for each of the left hand turns for southbound traffic on Admiral Callahan? For each lane exiting and entering the site how many cars can be stacked? More detailed drawings that include the number of cars need to supplement drawing C.3.2.**

Staff Response: Please see table below with queuing (stacking) capacities indicated for key locations corresponding to letters on the attached site plan. The City's traffic consultant, with oversight by the City's traffic engineer, has reviewed the site plan and determined that on-site queueing capacity (including the gas station feeder lanes) is adequate to prevent any spill-over into the public right-of-way. The traffic consultant and traffic engineer have also reviewed the southbound left turn lanes on Admiral Callahan and determined these should be revised as indicated below. These revisions will be made prior to the Planning Commission hearing on April 20.

Site Plan ID	Location	Current Length (ft.)	Current Capacity (vehicles)*	Revised Length (ft.)	Revised Capacity (vehicles)*
A	Admiral Callaghan north left turn lane	135	5	200	8
B	Admiral Callaghan middle left turn lane	135	5	275	11
C	Admiral Callaghan south left turn lane	160	6	200	8
D	North driveway inbound lane	130**	5**	No change	No change
E	Middle driveway inbound lane	220**	9**	No change	No change
F	South driveway inbound lane	430**	17**	No change	No change
G	Gas station queue lanes (before pumps)	80	3 vehicles per lane (total 30)	No change	No change
H	Gas station queue area	160 along left side	Approx. 15	No change	No change

* - Vehicle capacity is based on 25 linear feet per vehicle.

** - Inbound lanes are measured to first intersecting parking aisle; actual capacity is higher than shown here because queue may extend past aisle, and incoming vehicles may turn into intersecting aisles to look for parking.

2. For the gas station what is the maximum amount of stacking that can occur for every lane, roadway etc.

Staff Response: See response to question #1.

3. For actual use of driveways varying day to day were worst case scenarios utilized?

Staff Response: Yes, the weekday AM, weekday PM and Saturday PM periods analyzed in the TIA represent the worst-case scenarios for this project.

4. Why were Sundays not accounted for in the traffic counts?

Staff Response: Saturday traffic is heavier than Sunday and therefore represents a worst-case scenario for weekend traffic. This is supported by our traffic engineers' professional experience as well as Costco sales data.

5. Were [the traffic counts] assumptions used from prior projects or actual counts?

Staff Response: The trip generation assumptions for Costco are based on actual counts of the existing Vallejo store, adjusted upward to reflect the proposed store size. These numbers were compared to other Costcos of similar size, and the Vallejo counts were higher, therefore they were used in order to conservatively estimate project impacts.

6. What days and times were the counts done?

Staff Response: This information is presented in Appendix A of the Traffic Impact Analysis. To summarize, counts were conducted as follows:

- Thursday 11/9/17 from 12-2 PM and 4-6 PM
- Saturday 11/11/17 from 12-2 PM
- Thursday 12/6/18 from 7-9 AM, 11 AM-1 PM and 4-6 PM
- Saturday 12/8/18 from 11 AM-2 PM
- Saturday 7/20/19 from 12-2 PM
- Tuesday 7/23/19 from 7-9 AM, 12-2 PM, and 4-6 PM
- Tuesday 8/27/19 from 7-9 AM

7. Were current In and Out numbers considered or just the assumptions?

Staff Response: In N Out opened in January 2019 and therefore In N Out's actual traffic was collected as part of the 2019 traffic counts.

8. [Is Six Flags] Discovery Kingdom traffic included in traffic counts?

Staff Response: Yes, any Six Flags traffic passing through the study intersections was counted along with other existing traffic.

9. Why were only 4 hours on Saturday (Saturday and Sunday are extremely busy times at the current gas station) used for the gas station and how were the 4 hours selected?

Staff Response: Mid-day on Saturday was considered by the applicant, the City and the City's traffic consultant to be at or near the peak time on the weekend. As noted in response #4 above, Costco sales data indicates that this period is the highest level of activity at the existing Costco.

10. Why was all day Tuesday used when it is comparably a slower day?

Staff Response: Saturday traffic is heavier than midweek, so the Saturday scenario represents the worst case for this project. In terms of Costco traffic, the weekday counts are more for informational purposes than to show a critical scenario. Traffic counts are typically taken on a Tuesday, Wednesday or Thursday to reflect mid-week conditions. The Tuesday and Thursday counts showed no significant difference in the level of traffic.

11. Why weren't Costco gas stations similar to Vallejo's volume used for comparisons--were they samples of convenience?

Staff Response: The estimates of the project's gas station trip generation and queueing was based on the best available data, given that the existing Vallejo Costco gas station has only 16 fueling stations, with two fueling stations per lane, and the project's gas station would have 30 fueling stations with three fueling stations per lane. The data used includes the existing Vallejo Costco gas station, a survey provided by Costco of two 30-fueling-station/three fueling stations per lane gas stations, and additional surveys performed by Fehr and Peers at two Costco gas stations that have both two-fueling-station lanes and three-fueling-station lanes. The latter survey was conducted to better understand the service flow rate of the different lane types. The analysis process is described on pages 50 – 51 in Fehr & Peers' TIA, and supporting data is included in TIA Appendix F.

12. What are the ballpark traffic impact fees paid to Solano County?

Staff Response: Approx. \$336K. The project will also pay a City traffic fee of approximately \$1.8M.

13. How and who selected the traffic consultant? Who is the Peer Review Consultant? What comments did they make and is a copy of the peer review available for inspection?

Staff Response: The consultant (Fehr & Peers) was selected by the City. Fehr & Peers is one of three traffic/transportation consulting firms with an on-call contract with the City. David Yatabe, the City's traffic engineer, along with Kimley-Horn, the EIR consultant, peer reviewed Fehr & Peers' work and found it to be adequate. The final TIA reflects all comments made during the peer review.

14. Will public utility easements be required between existing and new developments?

Staff Response: Yes.

15. For public utility easements, can ownership and responsibility for maintenance be clarified?

Staff Response: Yes, this will be done prior to the April 20 hearing.

16. What is the verification process for maintenance?

Staff Response: Easements will be delineated as public or private and recorded on the final map.

17. At what date is the HOA's GHG reduction website required to be active?

Staff Response: Prior to occupancy of any new homes.

18. How long must the website be maintained?

Staff Response: For the life of the project.

19. What agency will be responsible for verifying the validity of the information on an annual basis?

Staff Response: The HOA will be required to submit an annual report to the Planning Division documenting that the website is still active, and the Planning Division will review.

20. Will there be a penalty or fine associated with non-compliance?

Staff Response: Yes, violations of EIR mitigations are handled in the same manner as zoning code violations.

21. What agency will be responsible for ensuring that the closed-circuit television monitor system on the gas station is functional 24/7? Will there be a penalty or fine associated with non-compliance.

Staff Response: The Planning Division will verify that the system is functional prior to issuance of an occupancy permit, but will not conduct ongoing monitoring past occupancy. If the system is not maintained, a complaint can be filed and the City would investigate and issue fines through its normal code enforcement procedure.

22. The EIR and Master Plan have conflicting language about whether the 5.7 acre open space is accessible to the public.

Staff Response: The open space has a publicly accessible trail running along the east side. The EIR and/or Master Plan will be revised to clarify this.

23. The plan set provided to the PC does not include modifications to the lane geometry at Admiral Callaghan Lane and Turner Parkway that are included in Mitigation Measure TR-1. Will these modifications be required?

Staff Response: Yes, the plans will be revised to include these modifications prior to the April 20 hearing.

**STAFF RESPONSES TO QUESTIONS FROM PLANNING COMMISSION
FAIRVIEW AT NORTHGATE PROJECT
FEBRUARY 19, 2020**

The commissioner's questions are listed first in bold, and staff responses follow in italics.

- 1. What information was used to determine the new revised capacity for the left-hand turns? Is there any downside to making the left turn lanes (on Admiral Callahan) even larger than the proposed revised ones?**

Staff Response: Fehr & Peers used the anticipated "worst case" left turn vehicle volumes, plus a safety factor of two additional vehicles, to recommend the longer turn lanes. Their recommended turn lanes are therefore already conservative.

- 2. Questions #1 and #6 How can the statement be made that the "on-site queueing capacity for the gas station feeder lanes is adequate to prevent any spill-over into the public right-of-way" when half of the measurements were for "slower days" and the Saturday measurements (most only 2-hour observations) may have missed even larger spillovers that occurred at other times during the weekend?**

Local users of the current gas station report significant spillovers outside of the two-hour observation time used for Saturdays. How can you be sure that the Public's observed spillovers aren't larger than what was reported in the traffic study?

Staff Response: The Saturday mid-day (12-2 PM) traffic counts include the highest weekday traffic volumes as supported by Costco sales data. In addition, Fehr & Peers observed several different Costco gas stations, both with two pumps and three pumps per lane. The proposed gas station queueing capacity is much greater than the existing Costco due to the longer queue lanes and the higher number of pumps per lane, and Fehr & Peers along with the City's traffic engineer are confident there is adequate space for queueing.

- 3. #3 "The TIA represent the worst-case scenarios for this project?" Does the abbreviation TIA stand for Transportation Impact Analysis?**

Staff Response: Yes.

- 4. #5 How much greater (percentage) is the trip generation for the current Vallejo store than other Costco's of similar size? Depending on the measure 20% to 60% is stated. Which measure is correct? Were additional adjustments added to take into account that the new store may generate even more trips (due to more merchandise/food) than other Costco's the size of the new store?**

Appendix F Costco Trip Generation Rate Development does not seem to show that this type of adjustment occurred.

Staff Response: The trip generation estimates for the proposed Costco were based on the existing Vallejo store, not other stores. Fehr & Peers compared the estimates for this store to traffic counts from other similarly sized Costcos on the West Coast, and after finding their estimates to be higher, opted to keep their estimates without any further adjustments.

5. **#10 “The weekday counts are more for informational purposes than to show a critical scenario”**
 a) what do you mean by informational purposes?—do you mean the data was collected but not used to determine size needed for queues etc..?

Why collect more than one day of weekday data (slower days) when everyone acknowledges Friday and weekend traffic is the biggest problem?

Staff Response: Regardless of the number of weekday traffic counts that were performed, the highest traffic volumes for the Costco store and the overall project will occur on Saturdays between 12 and 2 PM, and additional weekend counts would not have yielded any useful information. The residential component of the project will generate its highest traffic during weekdays, therefore it was also important to look at weekdays.

6. **#11 A statement was made that the “project’s gas station trip generation and queueing was based on the best available data” yet no evidence is provided that the trip generation etc. at these other sites are similar/representative of Vallejo.**

What evidence is available that shows the data used was an appropriate comparison? It may be the best data you have but should it (for example Bellingham WA) be used for estimating queueing etc. for the new Vallejo Costco?

Staff Response: Similar to the methodology for the new store, Fehr & Peers collected traffic counts at the existing Costco gas station and adjusted these upward to reflect the increase in the number of pumps. Other Costco gas locations were looked at only for comparison purposes, to confirm if the Vallejo-based estimate was accurate. The Vallejo-based estimate showed higher numbers and was therefore selected for the study.

7. **#13 the following statement was made—“ David Yatabe, the City’s traffic engineer, along with Kimley-Horn, the EIR consultant, peer reviewed Fehr & Peers’ work and found it to be adequate”. What is the title of the person from Kimley-Horn who peer reviewed the traffic study and was the peer reviewer a licensed traffic engineer?**

Did the review look at alternatives or just the proposed project? If alternatives were looked at which ones?

Staff Response: David Yatabe is a licensed traffic engineer, therefore the peer review is adequate. The following alternatives were analyzed, as discussed in Chapter 6 of the EIR: No Project, Existing Zoning, All Housing, and Wetland Preservation. Please see Chapter 6 for further details.

- 8. Was an entrance on Turner Parkway (with right hand turns in and out) into the northern end of the parking lot (4 new commercial buildings) considered as a way to draw traffic off of Admiral Callahan and lessen congestion? If it was rejected why?**

Staff Response: There is not adequate room for another commercial entrance on Turner Parkway due to the narrow commercial frontage between Admiral Callaghan Lane and the wetlands, the presence of a bus stop on Turner Parkway, and the minimum distance needed from Admiral Callaghan for traffic queueing.

- 9. It was said Alternatives were looked at. Which ones were considered?**

Staff Response: See response #7 above.

- 10. What will the HOA be responsible for maintaining? For example, front yards, Open Space, roads, pocket parks?**

Staff Response: The HOA will maintain the residential alleys and all parks and open space areas. Front yards will be maintained by property owners.

- 11. What is the estimated yearly HOA fee that will be charged?**

Staff Response: This is not relevant to the Planning Commission's purview.

- 12. Will permit parking on the street be required?**

Staff Response: Parking restrictions (red curb and no parking on trash pickup days) have been proposed for the project, but not permit parking.

**STAFF RESPONSES TO QUESTIONS FROM PLANNING COMMISSION
FAIRVIEW AT NORTHGATE PROJECT
MARCH 2, 2020**

The commissioner's questions are listed first in bold, and staff responses follow in italics.

- 1. Why is a Secondary Trade Area (STA) being used to justify many of the conclusions in the DTA Economic Impact Analysis when a significant amount of the shopping by Vallejo residents is being done in the Primary Trade Area (PTA)?**

Staff Response: Costco has a regional draw, not just a local draw. The Primary Trade Area is a 3-mile radius and only encompasses approximately 39,852 people. Consumers are willing to travel much farther for the merchandise and services offered by Costco than other local-serving retailers. The Secondary Trade Area reflects this quantitatively. Also, modelling both is standard industry practice.

- 2. Are the shortfalls in the PTA overstated –many businesses are struggling in Vallejo and commercial rentals are weak. Page V 2nd paragraph.**

Staff Response: No, the figures are based off Nielsen Data, which is widely utilized in the industry. This study is not an Economic Development Plan. The struggling businesses, as stated, already compete with one (1) Costco in Vallejo. If the project is approved, they will continue to compete with one (1) Costco in Vallejo.

- 3. Page V paragraph 3--According to DTA there is an oversupply of \$52.9M in the PTA for Food/Grocery. So why isn't the conclusion that any more Food/Grocery sales will increase the oversupply? Combining Food/Eating/Drinking and using the STA hides this. A statement is made that Costco does not compete with other grocery chains—this statement is NOT true and should be corrected. Costco's tire store competes with other local tire stores. DTA comparison to automotive vehicle dealers is misleading and should be removed—they are not competitors, but tire stores are competitors.**

Staff Response: DTA clearly acknowledged the oversupply in the study (the data was not hidden) and stated that the additional 13,367 square feet dedicated to grocery space would not be significant enough to exacerbate the already-existing surplus of \$52.9 million (note, this figure only accounts for 3.5% of total supply in the PTA). Furthermore, DTA notes that Costco provides different uses than that of a traditional grocery store, e.g. bulk merchandise, tire centers, optometrist, etc. As such, the urban decay analysis demonstrates the Project does not create new competition with neighboring grocery stores, as the existing one (1) Costco is already competing with neighboring grocery stores.

Regarding the tire store comment, car dealerships make up 87% of the existing Automotive supply in the trade area. If DTA were to remove car dealerships from the automotive supply in the trade area, there would be no surplus, and in fact, a significant demand. The continued existence of Costco's tire services will not exacerbate any existing competition with neighboring tire shops.

- 4. Why is no mention made of the expanded gas sales and its effect on other gas stations nearby? Costco is expanding this part of their operation.**

Staff Response: The expansion of the Costco fueling operation may impact other gas stations in Vallejo, however: (1) the City's Municipal Code requested that we focus specifically on food and beverage; (2) gas sales only account for 7.7% of the total supply in the Primary Trade Area and 8.8% in the combined Primary and Secondary Trade Areas; and (3) the additional 14 pumps are generally on the order of one (1) new gas station, the development of which would not carry the same CEQA/Urban Decay implications as a "big box" store. The proposed gas station is the relocation of an existing Costco gas station from approximately 0.75-mile away and a Costco membership is required to purchase gas at the gas station. As such, most of the gas station customers will be existing customers.

- 5. Page VI Reference is made to General Merchandise Retailers—what are they? 1. The last sentence states that even with the restrictive deed demand for additional retail and re-tenanting opportunities will occur. Where is the evidence to support this statement? In Vallejo similar sites (K Mart and Wal-Mart) with restrictive deeds have been vacant for many years and blight the nearby areas.**

- 6. Staff Response: The fact that there is unmet demand of \$56.4 million and \$195.6 million in the General Merchandise and Other Retail categories shows that there will still be ample demand for a variety of retailers to utilize the existing Costco site. The Northgate Specific Plan which applies to the existing site allows a wide variety of uses typical of most commercial districts, including administrative and professional services, building supplies, eating and drinking establishments, general retail, and gyms/health clubs. The allowable uses permitted at the existing site are provided in the Permitted Uses table in the Northgate Specific Plan on page 25. Page 2 DTA states between 2019 and 2024 the population in the Trade Area will grow. What evidence exists that the PTA population will increase a significant amount?**

Staff Response: U.S. Census Bureau data and projections.

- 7. Page 11 DTA states the new store will support 330 employees. How many are employed at old store?**

Staff Response: 270.

**STAFF RESPONSES TO PUBLIC COMMENTS AT THE PLANNING COMMISSION HEARING
FAIRVIEW AT NORTHGATE PROJECT
MARCH 2, 2020**

Natalie Mattei

- 1. The Draft EIR need to provide mitigation to allow Safeway to remain viable. The public and Planning Commission needs an accurate and thorough review of the Draft EIR. Safeway's comments should be given proper review and consideration.**

The speaker did not identify any specific mitigation measures needed to allow Safeway to remain viable. The Draft EIR was released for public review and comment for 45 days from January 19 to March 2, 2020. All of the public comments and planning commission comments received on the Draft EIR during the public review period have been included in the FEIR. The speaker's letters dated January 21, 2020 and March 2, 2020 are included in the Final EIR as Letters G and H respectively.

No changes to the Draft EIR were made as a result of this comment.

Robert McConnell (as private citizen)

- 1. The Draft EIR should evaluate impact of closing proposed Costco Warehouse by 0.5 hour and 1 hour and an earlier starting time regarding traffic impacts.**

As a members only store, Costco typically establishes uniform operating times across its stores to maintain consistency across its warehouse operations. Costco has not proposed to change its operating hours.

As noted in the Draft EIR, the proposed closing time of the Costco Warehouse is 8:30 PM on weekdays and 6:00 PM on weekends. The proposed tire center would close at 9:30 PM on weekdays and 7:00 PM on weekends. The proposed gas station would be open until 10:00 PM seven days a week. All of these closing times are outside of the PM peak hours of 4:00 PM to 6:00 PM on weekdays and 12:30 to 1:30 PM on weekends. Additionally, the proposed Costco Warehouse is the re-location of an existing Costco location less than 1 mile away. For these reasons extending the hours of operation by a half hour or an hour would not result in a substantial change in the performance of intersection operations as shown in the Draft EIR.

The Draft EIR evaluated AM Peak Hour traffic based on the Costco Warehouse opening at 9:00 AM and the gas station opening at 5:00 AM. The Draft EIR did not identify any intersection operational impacts in the AM Peak Hour as a result of the proposed project. Opening the Costco Warehouse up to an hour earlier in the morning would shift the store hours into the AM Peak hour and would increase traffic volumes at the study area intersections during those times by adding approximately 650 peak hour trips. Additional

traffic volumes could add delay to those intersections compared to what is currently proposed.

No changes to the Draft EIR were made as a result of this project.

2. The Draft EIR should evaluate impacts of 3 waiting spaces at each pump versus the 4 or 5 now at present location.

Queuing at the existing Costco gas station was observed as part of the traffic analysis. The proposed gas station is the relocation of an existing Costco gas station from approximately 0.75-mile away, and a Costco membership is required to purchase gas at the gas station. As such, most of the gas station customers will be existing customers. Page 50 of the TIA includes the following discussion regarding the added capacity of the proposed gas station:

The Project's gas station will be able to serve more customers per hour because of an increase from 16 to 30 gas dispensers, resulting in potentially shorter queues than observed at the existing gas station. Further, as noted in the memorandum provided by Kittelson & Associates describing the change in transactions related to store size increases and gas station additions, included in Appendix F, the increase in transactions is generally commensurate with the store size increase, with a relatively small difference related to the addition of gas dispensers. For these reasons, it is expected that gas station queues at the Project site will be contained within the feeder lanes and gas station site.

Additionally, Costco has designed the proposed gas station to operate efficiently for the convenience of its members. Based on the operations of other Costco gas stations with a similar gas station configuration, Costco has experienced that that increasing the number of fueling positions helps reduce vehicle queues. With 30 fueling positions at this proposed gas station lengthy queues are not anticipated. The proposed gas station will have approximately an 80-vehicle queue capacity (15 at the pumps, plus 65 in the queueing lanes). Costco has not experienced vehicles queuing outside the fuel facility queue area with this configuration. Nonetheless, a queuing plan to keep the vehicles onsite in the unlikely event that queues exceed the available storage will be required as a condition of approval for the project.

No changes to the Draft EIR were made as a result of this comment.

3. The Draft EIR should evaluate the impact of having an external credit card reader compared to internal scanner currently used at pump sites.

It is assumed this comment is referencing a mechanism to expedite payment at the fuel pumps. There is no evidence that credit card processing would result in traffic impacts related to the gas station. Please see Response 2 above regarding queuing at the gas station.

No changes to the Draft EIR were made as a result of this comment.

4. The Draft EIR should address additional impact of additional access lane to feed all pumps instead of permitting cars to pursue what appears to be the shortest lane in the gas station area.

The City does not have standards for internal circulation within the project site. Please see Response 2 above.

No changes to the Draft EIR were made as a result of this comment.

5. **The Draft EIR should evaluate adding dedicated pedestrian walkways between parked cars to reduced pedestrian/car conflicts.**

As shown in Figure 3-8 of the Draft EIR (page 3.0-16), the project does include pedestrian walkways through the central portion of the site. The pedestrian walkways connect to the sidewalk along Admiral Callaghan to the Costco Warehouse entrance and to the commercial retail area in the northern portion of the site. The pathway also connects the Costco Warehouse entrance to the commercial retail area. The parking area has been designed to meet the required number of parking spaces as well as facilitate a safe and efficient internal circulation for the cars entering and leaving the project site.

No changes to the Draft EIR were made as a result of this comment.

6. **The Draft EIR should evaluate the impacts of the deed restriction on the existing Costco building with respect to attracting new tenants.**

The Draft EIR (Footnote 1 on page 3.0-17) and the Economic Impact Analysis (Draft EIR Appendix B, page 26) do consider the deed restriction on the existing Costco building. The analysis concludes there will be opportunity for a variety of retailers (even with the proposed deed restriction that will not allow other warehouse merchandise concepts or Walmart affiliations in its place) to utilize the current site pursuant to Northgate Specific Plan permitted uses. As noted in the Draft EIR, General Merchandise or Other Retail categories, currently have unmet demand of \$56.4 million and \$195.6 million, respectively.

No changes to the Draft EIR were made as a result of this comment.

7. **What is the definition of “will not result in long term urban decay.” What does long-term mean?**

The requirement to evaluate potential short- and long-term urban decay effects with regard to the development of a “Superstore” is a requirement of Section 16.76.040(C) of the Vallejo Municipal Code. This code section does not define what durations short- and long-term should represent. With regard to an urban decay analysis, a long-term effect could be defined as a downward spiral of retail closures and long-term vacancies. However, the Draft EIR concludes that there is no finding of Urban Decay based on the

evidence provided in the Economic Impact Analysis (Appendix B of the Draft EIR) prepared in accordance with Section 16.76.040(C) of the Vallejo Municipal Code. Therefore, the conclusion is that there are no long-term adverse economic impacts or urban decay.

No changes to the Draft EIR were made as a result of this comment.

8. The Draft EIR should evaluate impacts to housing located downwind from the proposed 30 fuel pumps and waiting area with regard to air quality impacts. Would screening reduce impacts?

The Draft EIR does evaluate potential impacts to surrounding residents from the proposed gas station. Pages 4.2-34 through page 4.2-40 of the Draft EIR contain the results of a Health Risk Assessment. The modeling used to calculate concentrations of toxic air contaminants takes into account atmospheric conditions such as prevailing wind direction. As shown in Table 4.2-9 (page 4.2-38), operational TAC emission concentrations and associated cancer risks would be below the significance thresholds established by the Bay Area Air Quality Management District (BAAQMD). Air emissions are released into the atmosphere and dispersed at elevations that are higher than ground level. As such, no ground level air quality screening measures have been identified that would contain air pollutant emissions.

No changes to the Draft EIR were made as a result of this comment.

9. The Draft EIR should consider having bus stops for seniors at the front door of Costco.

The applicant and City staff coordinated with Soltrans regarding the location of a new bus pull-out. Soltrans indicated that a new bus pull-out is required on Turner Parkway and that no new bus stops were required on Admiral Callaghan Lane. Soltrans bus stops are not located on private property. The project does not restrict private third-party shuttles, such as ParaTransit, from entering the property to deliver and picking-up riders at the Costco entrance.

No changes to the Draft EIR were made as a result of this comment.

10. The Draft EIR should consider impacts of visitor parking in the residential area.

Parking is not considered an environmental impact under the California Environmental Quality Act and therefore the Draft EIR does not address parking. However, the Master Plan addresses parking requirements for the residential portion of the project. The Master Plan (page 32) requires, "Two parking spaces in a garage are required for every dwelling unit. Additional parking spaces shall be located on the public streets. On street parking space minimum of 7 feet by 20 feet."

No changes to the Draft EIR were made as a result of this comment.

Robert McConnell (as Vice President of Soltrans)

- 1. As vice-president of Soltrans Board of Directors, the speaker will look into the prospect of adding a new Soltrans bus stop on Admiral Callaghan Lane.**

Comment noted. City staff and the applicant will continue to coordinate with Soltrans regarding the implementation of Soltrans facilities.

No changes to the Draft EIR were made as a result of this comment.

3.0 REVISIONS TO THE DRAFT EIR TEXT

3.1 INTRODUCTION

The Revisions to the Draft EIR Text chapter presents minor corrections, clarifications, and revisions made to the Draft EIR initiated by the Lead Agency (City of Vallejo) based on comments received during the public review period by reviewing agencies and the public.

The changes represent minor clarifications or amplifications of the analysis contained in the Draft EIR and do not constitute significant new information or change any of the conclusions in the Draft EIR that, in accordance with the State CEQA Guidelines, Section 15088.5, would trigger the need to recirculate portions or all of the Draft EIR.

3.2 DESCRIPTION OF CHANGES

New text is double underlined and deleted text is ~~struck through~~. Text changes are presented in the page order in which they appear in the Draft EIR.

Chapter 2.0: Executive Summary

For clarification purposes, Table ES-1, page 2.0-17 is revised as follows:

AQ-1: BAAQMD Basic Construction Measures. Prior to any grading activities, the applicant shall prepare and implement a Construction Management Plan that includes the BAAQMD Basic Construction Mitigation Measures to minimize construction-related emissions. This shall plan shall first be reviewed and approved by the Director of Public Works/City Engineer. The BAAQMD Basic Construction Mitigation Measures are:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers on an as-needed basis ~~at least once per day~~. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

For clarification purposes, Table ES-1, pages 2.0-18 – 2.0-19 are revised as follows:

MM AQ-2: BAAQMD Additional Construction Mitigation Measures. Prior to the issuance of any grading permits, the applicant shall prepare and implement a Construction Management Plan that includes the BAAQMD Additional Construction Mitigation Measures to minimize construction-related emissions. This shall plan shall first be reviewed and approved by the Planning & Development Services Director. The applicable BAAQMD Additional Construction Mitigation Measures are:

- The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.
- Idling time of diesel-powered construction equipment shall be limited to two minutes.
- The project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction (i.e., owned, leased, and subcontractor vehicles) will meet United States Environmental Protection Agency Tier 4 final off-road emissions standards or would achieve a project-wide fleet-average 20 percent NOX reduction and 45 percent PM reduction compared to the most recent CARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment

products, add-on devices such as particulate filters, and/or other options as such become available.

- Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., BAAQMD Regulation 8, Rule 3: Architectural Coatings).
- Requiring that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOX and PM.
- Require the lifting and placing of HVAC units on the roof of the proposed Costco building via helicopter to only occur when no other excavation, grading, and ground-disturbing construction activities are being conducted on the project site, ~~and only once the commercial component of the project has been fully paved.~~

For clarification purposes, Table ES-1, page 2.0-24 is revised as follows:

MM CUL-1: Cultural Awareness Training Program. Prior to the issuance of grading permits, a Cultural Awareness Training Program shall be provided to all construction managers and construction personnel prior to commencing ground disturbance work at the project site. The training shall be prepared and conducted by a qualified archaeologist to the satisfaction of the City of Vallejo Planning & Development Services Department. The training shall be a length of time adequate to explain applicable statutes, regulations, enforcement provisions; the prehistoric and historic environmental setting and context, local tribal groups; show sample artifacts; and what prehistoric and historic archaeological deposits look like at the surface and when exposed during construction. The training may be discontinued to new workers to the site when ground disturbance is completed. Construction personnel shall not be permitted to operate equipment within the construction area unless they have attended the training. The entity responsible for the training shall extend an invitation to the Yocha Dehe Wintun Nation to be present during the training program. A list of the names of all personnel who attended the training and copies of the signed acknowledgment forms shall be submitted to the City Planning & Development Services Department for their review and approval.

For clarification purposes, Table ES-1, page 2.0-25 is revised as follows:

MM CUL-2: Cultural Resources Construction Monitoring. During mass grading activities, a qualified archaeologist and Native American Monitor shall be continuously present onsite, and on-call during trenching activities, to observe disturbance areas. The applicant shall provide to the satisfaction of the Director of Planning & Development Services that a Native American

Monitor from the Yocha Dehe Wintun Nation has been retained or that every reasonable effort to has been made to retain a Native American monitor. The qualified archaeologist or contractor shall halt work in the immediate vicinity if artifacts, exotic rock, shell or bone are uncovered during the construction. In the event such cultural resources are unearthed during ground-disturbing activities, and the qualified archaeologist is not in that location, the project operator shall cease all ground-disturbing activities within 50 feet of the find and immediately contact the qualified archaeologist and the Native American monitor. Work shall not resume until the potential resource can be evaluated by the qualified archaeologist and Native American monitor. The qualified archaeologist shall be empowered to halt or redirect ground-disturbing activities away from the vicinity of the find until the qualified archaeologist has evaluated the find, determined whether the find is culturally sensitive, and designed an appropriate short-term and long-term treatment plan in consultation with the Native American monitor. The significance of the find shall be determined by the archaeologist and monitor. If determined to be significant the archaeologist shall prepare a treatment plan in consultation with local experts, Native American Representatives, and the City Planning & Development Services Department.

For clarification purposes, Table ES-1, page 2.0-31 is revised as follows:

GHG-4: Traffic Calming. The project developers shall integrate the traffic calming measures as shown in the Project Application materials into the community-wide circulation network to promote reduced speeds and encourage pedestrian and bicycle trips. Prior to the issuance of building permits, the building official shall confirm with the Public Works Director that the applicable project improvement plans and specifications include the traffic calming measures shown in the Project Application materials such as marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others where applicable.

For clarification purposes, Table ES-1, pages 2.0-33 – 2.0-36 are revised as follows:

GHG-11: Additional GHG Emissions Reduction Measures. The proposed project shall include, but not be limited to, the following list of Project Design Features, which shall be incorporated into the project to ensure compliance with BAAQMD GHG thresholds. The project applicant may submit a report to the City, prepared by a qualified independent consultant, that substantiates why specific measures are considered infeasible at that point in time and identify alternate measures that would achieve equivalent reductions. The recommended measures for reducing operational GHG emissions are listed below. The recommended measures may be updated as new technologies or methods become available, to the satisfaction of the Planning &

Development Services Director. The project applicant shall be required to implement the following:

Energy Efficiency Measures

- Include conduits and space for the future addition of energy storage to optimize renewable energy generation systems and avoid peak energy use. Electrical panels should appropriately be sized to allow for future expanded use. This measure shall be verified prior to building permit issuance.
- The City shall verify before issuance of all residential building permits that where appliances are offered by residential project developers, Energy Star-rated appliances (or other equivalent technology) for clothes washers, dishwashers, refrigerators, and fans shall be installed in the residences.
- The City shall verify before issuance of all residential and non-residential building permits that high-efficiency light bulbs and lighting fixtures are installed in residential and non-residential buildings. High-efficiency light bulbs include compact fluorescent lamps (CFLs), light-emitting diodes (LED), and other light bulbs that provide an energy efficiency of at least 75% compared to traditional incandescent bulbs.
- The City shall verify before issuance of building permits that buildings comply with Title 24 Building Energy Efficiency Standards, which includes energy-efficient design practices such as high-performance glazing. Energy Star compliant systems, radiant heat roof barriers (including but not limited to high-albedo white thermoplastic polyolefin roof membrane), high-efficient HVAC with hot-gas reheat, insulation on all pipes, programmable thermostats, solar access, shading of HVAC systems from direct sunlight, use of formaldehyde-free insulation, use of recycled-content gypsum board, sealed ducts, orientation of building and incorporation of landscaping to maximize passive solar (heating during cool seasons, and minimize heat gain during hot season), and designs that take advantage of prevailing winds .
- The project developers shall site and design buildings to take advantage of daylight where feasible and consistent with building purpose.
- The project developers shall use lighter-colored paving or open-grid paving materials for surface parking areas or break up large expanses of paved area with shade trees or shade structures or use light-colored roofing materials.

Water Efficiency Measures

- To the extent feasible, project developers shall landscape to preserve natural vegetation and maintain watershed integrity. This measure shall be verified prior to building permit issuance.
- The project shall use native species and drought-tolerant species for a minimum of 50 percent of the ornamental plant palette in non-turf areas for all retail, common, and public areas, and residential front-yard landscaping to minimize water demand.
- ~~Use recycle water for landscape irrigation where available. This measure shall be verified prior to building permit issuance.~~

Solid Waste Measures

- Reuse, recycle, and divert construction waste, and use locally-sourced building materials with a high recycled material content to the greatest extent feasible (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard). This measure shall be verified prior to grading permit issuance.
- Provide interior and exterior storage areas for recyclables and adequate recycling containers located in public areas. Recycling bins in the storage areas shall be included to promote recycling of paper, metal, glass, and other recyclable material. These bins shall be emptied and recycled accordingly as part of the proposed project's regular solid waste disposal program. The project applicant or its successor in interest shall only contract for waste disposal services within a company that recycles waste in compliance with AB 341. This measure shall be implemented prior to issuance of an occupancy permit.

GHG Reduction Education and Information

- The project applicant or its successors or the HOA shall maintain a Fairview website that includes, but is not limited to, information about greenhouse gas (GHG) reduction opportunities to help educate project residents, as well as schools, other agencies, and businesses with facilities on the project site.
- The project applicant or its successors or the HOA shall include on the Fairview website information about rebates and low-interest loans to residents that make energy-saving improvements to their homes.

- The project applicant or its successors or the HOA shall include on the Fairview website information about the air quality and greenhouse gas benefits of electric landscape maintenance equipment.
- The project applicant or its successors or the HOA shall include on the Fairview website educational information on energy and water conservation and efficiency for project residents, customers, tenants, and large energy users.
- The project applicant or its successors or the HOA shall include in the Fairview website information about energy conservation and financial incentive programs.

For clarification purposes, Table ES-1, page 2.0-36 is revised as follows:

MM GHG-12: GHG Emissions Offsets. The project applicant shall purchase and retire GHG offsets to reduce the project's GHG emissions for the first 30 years below the BAAQMD's thresholds of significance (i.e., below 1,100 MTCO₂e per year, or 4.6 MTCO₂e per service population per year [as adjusted for post-2020 GHG reduction targets], or the latest applicable threshold at the time). GHG offsets shall be purchased either with a lump sum payment prior to occupancy for the entire 30-year period, or on an annual basis for a period of thirty years from project occupancy. If annual payments are made, evidence of the purchase of GHG offsets for the first year of occupancy shall be submitted to the satisfaction of the Planning & Development Services Director prior to the issuance of occupancy permits. Evidence of the GHG offsets years 2-30 shall be submitted annually on or before the anniversary of the occupancy permit (or as adjusted by the Planning & Development Services Director). ~~GHG offsets shall be purchased on an annual basis for a period of thirty years.~~ GHG offsets shall be consistent with the performance standards and requirements set forth below.

- The GHG offsets shall be secured from an accredited registry that is recognized by the California Air Resources Board (CARB) or a California air district, or from an emissions reduction credits program that is administered by CARB or a California air district.
- The GHG offsets shall represent the past reduction or sequestration that is "not otherwise required," in accordance with California Environmental Quality Act (CEQA) Guidelines Section 15126.4(c)(3).
- The GHG offsets shall be real, permanent, quantifiable, verifiable, and enforceable.
- Recognizing that future regulatory mandates, technological advances, new renewable energy programs, or final project design features would likely result in GHG emissions

that are lower than the levels presented in this EIR, the project applicant may prepare a final project GHG emissions inventory prior to issuance of the certificate of occupancy. The inventory shall be subject to verification by a City-approved third party (at applicant expense), with the final emissions estimates dictating the increment to be mitigated through purchase of GHG offsets. The offsets must also be secured by the applicant and verified by the City prior to issuance of the certificate of occupancy, thus providing full mitigation prior to completion of the project.

For clarification purposes, Table ES-1, page 2.0-37 is revised as follows:

Impact	Significance Before Mitigation	Mitigation Measure	Significance After Mitigation
Impact GHG-2: Criteria Pollutants, Conflict with an Applicable Plan Adopted for the Purpose of Reducing Greenhouse Gas Emissions. The project would comply with existing and future regulations requiring less carbon intensive energy sources. As such, the project would not conflict with any state-level regulations pertaining to GHGs.	Less Than Significant <u>Potentially Significant</u>	None Required. <u>Implement MM GHG-1 through MM GHG-12.</u> <u>No Additional Mitigation Measures are required.</u>	Less Than Significant <u>with Mitigation Incorporated.</u>

For clarification purposes, Table ES-1, page 2.0-25 is revised as follows:

MM GHG-3: Vehicle Trip Reduction. The project applicant shall submit a qualifying Commute Trip Reduction (CTR)/Transportation Demand Management (TDM) plan prepared by a qualified

transportation consultant acceptable to the City to reduce vehicle trips by ~~17.8~~ percent. The TDM plan shall be approved by the City of Vallejo Public Works Director prior to the issuance of occupancy permits and incorporated into the project's Covenants, Conditions, and Restrictions (CC&Rs). The TDM plan shall discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. The TDM plan shall include a requirement for annual reporting to the City Planning Division showing good faith compliance with plan requirements. The TDM plan may be modified with the City's agreement, provided that no additional trips are generated.

Chapter 3.0: Project Description

For clarification purposes, Footnote 1, page 3.0-17 is revised as follows:

~~While not a part of the project, the~~ The analysis in this EIR assumes that the 125,437 square foot existing Costco building will be re-occupied with a general commercial retail use as allowed under ~~the current zoning~~ the Northgate Specific Plan permitted uses, with the exception that this analysis includes a deed restriction limiting those permitted uses by restricting production of merchandise concepts and Walmart affiliations. This analysis assumes ~~that a~~ this deed restriction would be placed on the existing building that would preclude discount warehouse or bulk retail sales as future uses at the site.

For clarification purposes, page 3.0-21 under Open Space - Wetlands is revised as follows:

The central portion of the proposed project site would be preserved as open space would consist of 5.7 acres. Development would be precluded in this area, with the exception of a pedestrian trail and bridge located outside of the delineated wetlands; see next section for further details. This area drains the existing off-site residential developments to the south and southeast of the project site. Portions of this area are designated as seasonal wetlands. This open space would separate the proposed project's commercial and residential components and provide a buffer between the two uses. This area would be subject to protective restrictions that would not allow for public or private use (except for the trail noted above) and the open space would be secured by attractively designed perimeter fencing consistent with the appearance of open space. The open space would be owned, managed, and maintained by a homeowners association (HOA) created in connection with the residential component of the proposed project. The open space would only be accessible via private gates in order to facilitate maintenance activities.

For clarification purposes, page 3.0-21 under Parks and Pedestrian Access is revised as follows:

The proposed project would provide parks and privately maintained greenspace to fulfill the

City's Quimby Act parkland dedication requirements. The proposed project would include approximately 2.66 acres of parks and trails. In addition, the applicant will receive parkland credit for a portion of the central open space area due to the trails providing access around and through this area, as discussed below. The park area includes two pocket parks (0.15-acre each) and two linear paseos (0.13-acre each) which would be for the use of project residents. A 1.92-acre linear park with trail would be located between the residential area and the 5.7-acre open space area described above. The linear park and trail would connect to a 0.18-acre open space area with a meandering pathway along Turner Parkway. From this pathway a trail would be provided along the east side of the commercial center, and a decomposed granite trail approximately 500 feet in length would cross the central open space area between the linear park and the commercial parking lot, in order to provide a more direct pedestrian connection between the Costco and the residential area. As shown in Figure #, the bridge will cross the delineated wetland area at its narrowest point and no disturbance to the jurisdictional wetlands will occur from construction of the bridge or path. A fence will be erected along each side of this trail with "keep out" signs posted to prevent encroachment into the wetlands. The proposed project was designed to include these walkways in order to encourage pedestrian activity within the residential community as well as from the residential community to the ~~service-oriented uses at the north end of the commercial area. The proposed project would be required to pay an in-lieu fee as mitigation for any amount of parkland acreage not provided.~~

Figure 3-8 was updated to reflect this change. The updated figure is included at the end of this chapter.

Chapter 4.1: Aesthetics

For clarification purposes, page 4.1-15, second paragraph under Impact AES-4 is revised as follows:

The potential short- and long-term economic impacts of the proposed project were analyzed under the framework provided by Section 16.76.040 of the Vallejo Municipal Code (VMC). Therefore, this urban decay analysis section focuses on "superstores" which are defined in the VMC as stores that are over 75,000 square feet or more gross floor area and devote ten thousand square feet or more of the gross floor area to the sale of nontaxable merchandise, including but not limited to food and beverage retail sales. In other words, most of this analysis is related to the proposed Costco store as it is the project component that triggers the need for the analysis. The urban decay analysis analyzed the North Gate Specific Plan permitted uses.

Chapter 4.2: Air Quality

For clarification purposes, page 4.2-33 is revised as follows:

AQ-1: BAAQMD Basic Construction Measures. Prior to any grading activities, the applicant shall prepare and implement a Construction Management Plan that includes the BAAQMD Basic Construction Mitigation Measures to minimize construction-related emissions. This shall plan shall first be reviewed and approved by the Director of Public Works/City Engineer. The BAAQMD Basic Construction Mitigation Measures are:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers on an as-needed basis ~~at least once per day~~. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

For clarification purposes, page 4.2-34 is revised as follows:

MM AQ-2: BAAQMD Additional Construction Mitigation Measures. Prior to the issuance of any grading permits, the applicant shall prepare and implement a Construction Management Plan that includes the BAAQMD Additional Construction Mitigation Measures to minimize construction-related emissions. This plan shall first be reviewed and approved by the Planning & Development Services Director. The applicable BAAQMD Additional Construction Mitigation Measures are:

- The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.
- Idling time of diesel-powered construction equipment shall be limited to two minutes.
- The project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction (i.e., owned, leased, and subcontractor vehicles) will meet United States Environmental Protection Agency Tier 4 final off-road emissions standards or would achieve a project-wide fleet-average 20 percent NOX reduction and 45 percent PM reduction compared to the most recent CARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available.
- Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., BAAQMD Regulation 8, Rule 3: Architectural Coatings).
- Requiring that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOX and PM.
- Require the lifting and placing of HVAC units on the roof of the proposed Costco building via helicopter to only occur when no other excavation, grading, and ground-disturbing construction activities are being conducted on the project site, ~~and only once the commercial component of the project has been fully paved.~~

Chapter 4.3: Biological Resources

For clarification purposes, page 4.3-6 is revised as follows:

Perennial Stream (0.02 acre [0.05-acre below top-of-bank])

The perennial stream on the project site is comprised of a small (approximately 85 linear feet) portion of Blue Rock Springs Creek, which is located in the southwestern corner of the project site. Perennial streams are considered sensitive under the State CEQA Guidelines and are regulated by the U.S. Army Corps of Engineers (Corps), Regional Water Quality Control Board (RWQCB), and CDFW. The primary source of water for the perennial stream is storm water and other runoff from the surrounding developed lands. The stream enters the project site from the south through a culvert that runs under the automobile dealership. It exits the project site to the west through a culvert under Admiral Callaghan Lane. Sparse vegetation is present along the fringes of Blue Rock Springs Creek below the Ordinary High-Water Mark (OHWM), but the feature is generally unvegetated. Indicators of OHWM are present, including a clear bed and bank. The perennial stream on the project site is assumed to drain into receiving waters that are Jurisdictional Waters of the U.S. and therefore, is expected to be considered jurisdictional under Section 404 of the Clean Water Act (CWA). ~~Areas below the top of bank are expected to be considered jurisdictional by CDFW.~~

This change was made in response to Comment B-3.

For clarification purposes, page 4.3-18 is revised as follows:

The CDFW potentially extends the definition of stream to include “intermittent and ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams (USGS), and watercourses with subsurface flows. Canals, aqueducts, irrigation ditches, and other means of water conveyance can also be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife”. The CDFW regulates Waters of the State through the agencies Lake and Streambed Alteration Program which is maintained on their website at: <https://wildlife.ca.gov/Conservation/LSA>. ~~Such areas of the proposed project were determined using methodology described in A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607.~~

This change was made in response to Comment B-3.

For clarification purposes, page 4.3-25 is revised as follows:

The project site contains three sensitive biological communities: perennial stream, anthropogenic depressions, and seasonal wetland swales. The project has been designed to avoid approximately 2.50 acres of seasonal wetlands in the central region of the project site; however, project activities would impact 2.52 acres of seasonal wetland swale and 0.08 acre of anthropogenic depression. Construction activities within the seasonal wetlands in the

central part of the project site, the proposed open space area, would consist of a single span (temporary bridge) over the seasonal wetland. This span would allow graded soil to be transferred from the western portion of the project site to the eastern portion of the project site without trucks having to use local roadways. Additionally, this process would minimize dust pollutants and greenhouse gas emissions because trucks would be traveling the shortest possible distance. With the construction of a temporary span, grading activities would avoid any physical impacts to the wetlands in this area, but the coverage from the temporary span over the wetland would result in temporary impacts from shading. Construction of the Admiral Callaghan Lane roadway improvements would result in shading to 0.01-acre of perennial stream, in the southwestern corner of the project site, below the OHWM (0.03 acre below the top of bank). A multi-use pathway is proposed over the seasonal wetlands within the open space area. The pathway has been designed to keep the pathway (including abutments) outside of the seasonal wetland jurisdictional area. The pathway includes a 35-foot span over the wetland area. While not physical improvements will be located within the wetlands the span structure will result in shading to approximately 0.01-acre of the seasonal wetlands.

Wetland swales and anthropogenic depressions are within the jurisdiction of the Corps under Section 404 of the CWA and the RWQCB under the Porter Cologne Act and Section 401 of the CWA. The perennial stream is jurisdictional by those agencies as well as the CDFW under Section 1602 of the California Fish and Game Code. The project will seek a Lake and Streambed Alteration Agreement per Fish and Game Code Section 1602. Permits from these agencies will be required for work on or affecting wetlands and open water habitats.

This change was made in response to Comment B-3.

Chapter 4.4: Cultural Resources

For clarification purposes, page 4.4-14 is revised as follows:

MM CUL-1: Cultural Awareness Training Program. Prior to the issuance of grading permits, a Cultural Awareness Training Program shall be provided to all construction managers and construction personnel prior to commencing ground disturbance work at the project site. The training shall be prepared and conducted by a qualified archaeologist to the satisfaction of the City of Vallejo Planning & Development Services Department. The training shall be a length of time adequate to explain applicable statutes, regulations, enforcement provisions; the prehistoric and historic environmental setting and context, local tribal groups; show sample artifacts; and what prehistoric and historic archaeological deposits look like at the surface and when exposed during construction. The training may be discontinued to new

workers to the site when ground disturbance is completed. Construction personnel shall not be permitted to operate equipment within the construction area unless they have attended the training. The entity responsible for the training shall extend an invitation to the Yocha Dehe Wintun Nation to be present during the training program. A list of the names of all personnel who attended the training and copies of the signed acknowledgment forms shall be submitted to the City Planning & Development Services Department for their review and approval.

For clarification purposes, page 4.4-14 is revised as follows:

MM CUL-2: Cultural Resources Construction Monitoring. During mass grading activities, a qualified archaeologist and Native American Monitor shall be continuously present onsite, and on-call during trenching activities, to observe disturbance areas. The applicant shall provide to the satisfaction of the Director of Planning & Development Services that a Native American Monitor from the Yocha Dehe Wintun Nation has been retained or that every reasonable effort to has been made to retain a Native American monitor. The qualified archaeologist or contractor shall halt work in the immediate vicinity if artifacts, exotic rock, shell or bone are uncovered during the construction. In the event such cultural resources are unearthed during ground-disturbing activities, and the qualified archaeologist is not in that location, the project operator shall cease all ground-disturbing activities within 50 feet of the find and immediately contact the qualified archaeologist and the Native American monitor. Work shall not resume until the potential resource can be evaluated by the qualified archaeologist and Native American monitor. The qualified archaeologist shall be empowered to halt or redirect ground-disturbing activities away from the vicinity of the find until the qualified archaeologist has evaluated the find, determined whether the find is culturally sensitive, and designed an appropriate short-term and long-term treatment plan in consultation with the Native American monitor. The significance of the find shall be determined by the archaeologist and monitor. If determined to be significant the archaeologist shall prepare a treatment plan in consultation with local experts, Native American Representatives, and the City Planning & Development Services Department.

Chapter 4.6: Greenhouse Gas

For clarification purposes, page 4.6-29 is revised as follows:

GHG-4: Traffic Calming. The project developers shall integrate the traffic calming measures as shown in the Project Application materials into the community-wide circulation network to promote reduced speeds and encourage pedestrian and bicycle trips. Prior to the issuance of building permits, the building official shall confirm with the Public Works Director that the applicable project improvement plans and specifications include the traffic calming measures

shown in the Project Application materials such as marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others where applicable.

For clarification purposes, pages 4.6-30 – 4.6-32 are revised as follows:

GHG-11: Additional GHG Emissions Reduction Measures. The proposed project shall include, but not be limited to, the following list of Project Design Features, which shall be incorporated into the project to ensure compliance with BAAQMD GHG thresholds. The project applicant may submit a report to the City, prepared by a qualified independent consultant, that substantiates why specific measures are considered infeasible at that point in time and identify alternate measures that would achieve equivalent reductions. The recommended measures for reducing operational GHG emissions are listed below. The recommended measures may be updated as new technologies or methods become available, to the satisfaction of the Planning & Development Services Director. The project applicant shall be required to implement the following:

Energy Efficiency Measures

- Include conduits and space for the future addition of energy storage to optimize renewable energy generation systems and avoid peak energy use. Electrical panels should appropriately be sized to allow for future expanded use. This measure shall be verified prior to building permit issuance.
- The City shall verify before issuance of all residential building permits that where appliances are offered by residential project developers, Energy Star-rated appliances (or other equivalent technology) for clothes washers, dishwashers, refrigerators, and fans shall be installed in the residences.
- The City shall verify before issuance of all residential and non-residential building permits that high-efficiency light bulbs and lighting fixtures are installed in residential and non-residential buildings. High-efficiency light bulbs include compact fluorescent lamps (CFLs), light-emitting diodes (LED), and other light bulbs that provide an energy efficiency of at least 75% compared to traditional incandescent bulbs.
- The City shall verify before issuance of building permits that buildings comply with Title 24 Building Energy Efficiency Standards, which includes energy-efficient design practices such as high-performance glazing. Energy Star compliant systems, radiant heat roof

barriers (including but not limited to high-albedo white thermoplastic polyolefin roof membrane), high-efficient HVAC with hot-gas reheat, insulation on all pipes, programmable thermostats, solar access, shading of HVAC systems from direct sunlight, use of formaldehyde-free insulation, use of recycled-content gypsum board, sealed ducts, orientation of building and incorporation of landscaping to maximize passive solar (heating during cool seasons, and minimize heat gain during hot season), and designs that take advantage of prevailing winds .

- The project developers shall site and design buildings to take advantage of daylight where feasible and consistent with building purpose.
- The project developers shall use lighter-colored paving or open-grid paving materials for surface parking areas or break up large expanses of paved area with shade trees or shade structures or use light-colored roofing materials.

Water Efficiency Measures

- To the extent feasible, project developers shall landscape to preserve natural vegetation and maintain watershed integrity. This measure shall be verified prior to building permit issuance.
- The project shall use native species and drought-tolerant species for a minimum of 50 percent of the ornamental plant palette in non-turf areas for all retail, common, and public areas, and residential front-yard landscaping to minimize water demand.
- ~~Use recycle water for landscape irrigation where available. This measure shall be verified prior to building permit issuance.~~

Solid Waste Measures

- Reuse, recycle, and divert construction waste, and use locally-sourced building materials with a high recycled material content to the greatest extent feasible (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard). This measure shall be verified prior to grading permit issuance.
- Provide interior and exterior storage areas for recyclables and adequate recycling containers located in public areas. Recycling bins in the storage areas shall be included to promote recycling of paper, metal, glass, and other recyclable material. These bins shall be emptied and recycled accordingly as part of the proposed project's regular solid waste disposal program. The project applicant or its successor in interest shall only contract for

waste disposal services within a company that recycles waste in compliance with AB 341. This measure shall be implemented prior to issuance of an occupancy permit.

GHG Reduction Education and Information

- The project applicant or its successors or the HOA shall maintain a Fairview website that includes, but is not limited to, information about greenhouse gas (GHG) reduction opportunities to help educate project residents, as well as schools, other agencies, and businesses with facilities on the project site.
- The project applicant or its successors or the HOA shall include on the Fairview website information about rebates and low-interest loans to residents that make energy-saving improvements to their homes.
- The project applicant or its successors or the HOA shall include on the Fairview website information about the air quality and greenhouse gas benefits of electric landscape maintenance equipment.
- The project applicant or its successors or the HOA shall include on the Fairview website educational information on energy and water conservation and efficiency for project residents, customers, tenants, and large energy users.

The project applicant or its successors or the HOA shall include in the Fairview website information about energy conservation and financial incentive programs.

For clarification purposes, page 4.6-33 is revised as follows:

MM GHG-12: GHG Emissions Offsets. The project applicant shall purchase and retire GHG offsets to reduce the project's GHG emissions for the first 30 years below the BAAQMD's thresholds of significance (i.e., below 1,100 MTCO₂e per year, or 4.6 MTCO₂e per service population per year [as adjusted for post-2020 GHG reduction targets], or the latest applicable threshold at the time). GHG offsets shall be purchased either with a lump sum payment prior to occupancy for the entire 30-year period, or on an annual basis for a period of thirty years from project occupancy. If annual payments are made, evidence of the purchase of GHG offsets for the first year of occupancy shall be submitted to the satisfaction of the Planning & Development Services Director prior to the issuance of occupancy permits. Evidence of the GHG offsets years 2-30 shall be submitted annually on or before the anniversary of the occupancy permit (or as adjusted by the Planning & Development Services Director). ~~GHG offsets shall be purchased on an annual basis for a period of thirty years.~~ GHG offsets shall be consistent with the performance standards and requirements set forth below.

- The GHG offsets shall be secured from an accredited registry that is recognized by the California Air Resources Board (CARB) or a California air district, or from an emissions reduction credits program that is administered by CARB or a California air district.
- The GHG offsets shall represent the past reduction or sequestration that is “not otherwise required,” in accordance with California Environmental Quality Act (CEQA) Guidelines Section 15126.4(c)(3).
- The GHG offsets shall be real, permanent, quantifiable, verifiable, and enforceable.
- Recognizing that future regulatory mandates, technological advances, new renewable energy programs, or final project design features would likely result in GHG emissions that are lower than the levels presented in this EIR, the project applicant may prepare a final project GHG emissions inventory prior to issuance of the certificate of occupancy. The inventory shall be subject to verification by a City-approved third party (at applicant expense), with the final emissions estimates dictating the increment to be mitigated through purchase of GHG offsets. The offsets must also be secured by the applicant and verified by the City prior to issuance of the certificate of occupancy, thus providing full mitigation prior to completion of the project.

For clarification purposes, page 4.6-33 is revised as follows:

IMPACT
GHG-2

WOULD THE PROJECT CONFLICT WITH AN APPLICABLE PLAN, POLICY, OR REGULATION ADOPTED FOR THE PURPOSE OF REDUCING THE EMISSIONS OF GREENHOUSE GASES? RESULT IN A CUMULATIVELY CONSIDERABLE NET INCREASE OF ANY CRITERIA POLLUTANT FOR WHICH THE PROJECT REGION IS NON-ATTAINMENT UNDER AN APPLICABLE FEDERAL OR STATE AMBIENT AIR QUALITY STANDARD?

(LESS THAN SIGNIFICANT IMPACT WITH MITIGATION)

Chapter 4.7: Hazardous Materials

For clarification purposes, page 4.7-17 is revised as follows:

IMPACT HAZ-2	WOULD THE PROJECT CREATE A SIGNIFICANT HAZARD TO THE PUBLIC OR THE ENVIRONMENT THROUGH REASONABLY FORESEEABLE UPSET AND ACCIDENT CONDITIONS INVOLVING THE RELEASE OF HAZARDOUS MATERIALS INTO THE ENVIRONMENT? (LESS THAN SIGNIFICANT IMPACT <u>WITH MITIGATION INCORPORATED</u>)
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For clarification purposes, page 4.7-20 is revised as follows:

The proposed project also would be subject to state and local regulations related to OES requirements under Chapter 6.95 of the California Health and Safety Code Article 1 – Hazardous Materials Release Response and Inventory Program (Sections 25500 to 25520) and Article 2 – Hazardous Materials Management (Sections 25531 to 25543.3). CCR Title 19, Public Safety, Division 2, Office of Emergency Services, Chapter 4 – Hazardous Material Release Reporting, Inventory, and Response Plans, Article 4 (Minimum Standards for Business Plans) which establishes minimum statewide standards for Hazardous Materials Business Plans (HMBP). In accordance with requirements, these plans are required to include the following: (1) a hazardous material inventory in accordance with Sections 2729.2 to 2729.7; (2) emergency response plans and procedures in accordance with Section 2731; and (3) training program information in accordance with Section 2732. The Solano County Department of Resource Management, Environmental Health Services Division is the Certified Unified Program Agency (CUPA) for all cities and unincorporated areas within Solano County. The County's HMBP program addresses the preparedness for emergency response to incidents involving hazardous materials. The HMBP includes a chemical inventory of hazardous materials, site diagram, emergency response plan, and employee training plan must be reviewed and annually submitted to the California Environmental Reporting System (CERS). In addition, the proposed project would be required to comply with OSHA standards are listed in Title 29 CFR Part 1910. Conformance to these regulations and implementation of Costco's Operational Safeguards as conditions of project approval and Design Features listed Mitigation Measure HAZ-1 above, would be required for the life of the project and would reduce impacts from accident or upset conditions to less than significant.

This change was made in response to Comment A-1.

Chapter 4.14: Recreation

For clarification purposes, pages 4.14-7 – 4.14-8 are revised as follows:

Based on VMC Chapter 3.18 and the proposed number of residential units, the project's park dedication requirement pursuant to the Quimby Act is calculated to be 2.31 acres. The proposed project includes 2.66 acres of parks and trails¹. In addition, the applicant will receive parkland credit for a portion of the central open space area due to the trails providing access around and through this area, as discussed below. The project includes the following open space facilities for the use of project residents and the general public: two 0.15-acre "pocket" parks, two 0.13-acre paseos connecting to the pocket parks, 0.18-acre of open space along Turner Parkway, ~~and a~~ 1.92-acre linear park/trail to be located between the residential area and ~~a~~ the central 5.7-acre open space area, a trail approximately 500 feet in length connecting the linear park with the commercial parking lot, and a trail along the east side of the commercial center connecting to Turner Parkway. It is anticipated that the proposed park and open space improvements within the project will satisfy all requirements under VMC Chapter 3.18 and that no fees will be required; however, this is subject to approval by the Planning Commission and City Council.

~~In addition,~~ If the proposed park and open space improvements are determined not to satisfy VMC Chapter 3.18, the City of Vallejo will requires the payment of a Development Impact Fee to the GVRD for each single-family unit. The collection of fees and determined fair share fee amounts are adopted by the City as Conditions of Approval (COAs) for all new development projects prior to project approval. Fees paid aid in the development of new park-space and maintenance as required, to ensure continued high-quality park facilities for all city residents. Given that the proposed park and open space improvements are anticipated to satisfy all requirements under VMC Chapter 3.18, and the City maintains an ample and diverse range of park sites and park facilities and collects fees from new development to fund the construction of new parks and the maintenance of existing parks, the additional demand for parks generated by the project would not result in the physical deterioration of existing parks and facilities within Vallejo. As such, this is a less than significant impact and no mitigation is required.

¹Acreage calculation does not include north/south residential paseos.

Chapter 4.15: Transportation

For clarification purposes, Table 4.15-5, page 4.7-23 is revised as follows:

Table 4.15-5: Existing With Project Trip Generation

Land Use	Quantity	ITE Code	AM Peak Hour			Weekday Mid-Day Peak Hour			Weekday PM Peak Hour			Saturday Peak Hour			Daily
			In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Project Site															
New Costco	152 ksf	Custom	ye95	95	190	754	754	1,508	870	870	1,740	896	932	1,828	15,590
Retail	30 ksf	820	55	48	102	48	48	96	53	58	111	75	69	145	1,280
Residential	178 du	210	33	100	133	94	55	150	109	64	173	87	74	161	1,690
Project Site Total Trips			183	243	425	897	858	1,755	1,032	992	2,024	1,058	1,076	2,134	18,560
Existing Costco Site															
Existing Costco ¹	125 ksf	Custom	(76)	(76)	(152)	(618)	(618)	(1,237)	(713)	(713)	(1,427)	(735)	(764)	(1,499)	(12,860)
Existing Costco Site Total Trips			(76)	(76)	(152)	(618)	(618)	(1,237)	(713)	(713)	(1,427)	(735)	(764)	(1,499)	(12,860)
Net New Trips			107	167	273	279	240	518	319	279	598	323	311	635	5,700
ksf = thousand square feet; du = dwelling unit															
(1) The analysis in this EIR assumes that the 125,437 square foot existing Costco building would be re-occupied with a general commercial retail use as allowed under the Northgate Specific Plan permitted uses, with the exception that this analysis includes a deed restriction limiting those permitted uses by restricting production of merchandise concepts and Walmart affiliations.															
Source: Trip Generation Manual (9th Edition), ITE, 2012; Fehr & Peers, December 2019.															

For clarification purposes, page 4.15-44 is revised as follows:

Trip Generation

This scenario assumes that the existing Costco site would be vacated by Costco but occupied by a new retail tenant. The net new trips under this scenario represents the removal of the existing Costco trips, the addition of retail trips at the existing Costco site, and proposed project trips: commercial center, relocated Costco store, and residential development. Trip generation estimates for the *Cumulative With Project Conditions* are presented in *Table 4.15-6: Near Term and Cumulative Project Trip Generation*.) This cumulative analysis assumes that the 125,437 square foot existing Costco building would be re-occupied with a general commercial retail use as allowed under the Northgate Specific Plan permitted uses. With the exception that this analysis includes a deed restriction limiting those permitted uses by restricting production of merchandise concepts and Walmart affiliations.

For clarification purposes, page 4.15-53 is revised as follows:

Cumulative Conclusion

The proposed mitigation does not improve the LOS or delay at impacted intersections #6, #7, #9, #11 and ~~#17~~^{#21} to an acceptable level. Intersection delays improve at some of these intersections, but the vehicle spillback from intersections #9 and #10 causes intersections #6, #7, ~~#17, #19 and #21, #23, and #25~~ to fail despite the improvements provided by the mitigations. Intersection ~~#21~~^{#25} has no feasible mitigation. However, improvements at upstream intersections due to the proposed mitigations alleviate queue spillback and improve operations to an acceptable level in the weekday mid-day peak hour, and intersection delays are improved but not to an acceptable level in the Saturday mid-day peak hour. The improvements at intersections #6, #7, and ~~#22~~^{#18} improve operations at intersection #18 to an acceptable level.

With the implementation of the proposed mitigation measures, the impact at intersections, #8 and #18 are reduced to a less than significant level under cumulative conditions. Intersection impacts at intersections #6, #7, #9, and #11, ~~#17, #19 and #21, #23, and #25~~ are significant and unavoidable after mitigation measure have been applied.

Chapter 4.16: Utilities and Service Systems

For clarification purposes, page 4.16-24, under Wastewater is revised as follows:

Based on information in the Propel Vallejo 2040 General Plan EIR, the estimated net increased wastewater generation rate from the buildout of development planned for in the General Plan would be approximately 2.89 mgd. Regional Water Quality Control Board Order No. R2-2012-

0017 (NPDES Permit No CA0037699), adopted February 8, 2012, prescribes treatment requirements and discharge flow capacity limits. This NPDES Order currently specifies dry weather facility permitted capacity (and design flow) of up to 15.5 mgd, and wet weather design flow of up to 60 mgd. The current average dry weather flow is less than 10 mgd and the maximum daily wet weather flow between October 2006 and December 2010 was 43.3 mgd average wet weather flow. The General Plan EIR determined that the increase in wastewater generation would be well within the currently available excess dry weather design flow capacity of greater than 5.0 mgd and construction of expanded or new wastewater treatment facilities would not be required. The proposed project is anticipated to contribute approximately an average daily volume of 53,712 gpd of wastewater to the 2.89 mgd total. The proposed project is consistent with the land uses evaluated in the Propel Vallejo 2040 General Plan EIR which concluded that buildout of the General Plan would not exceed the capacity of the City's wastewater treatment system. Therefore, impacts would be less than significant.

The change was made in response to Comment E-21.

PROJECT SUMMARY:

LAND USE:
 RESIDENTIAL - 23.8± AC
 COMMERCIAL - 21.8± AC
 OPEN SPACE - 5.7± AC
 TOTAL - 51.3± AC

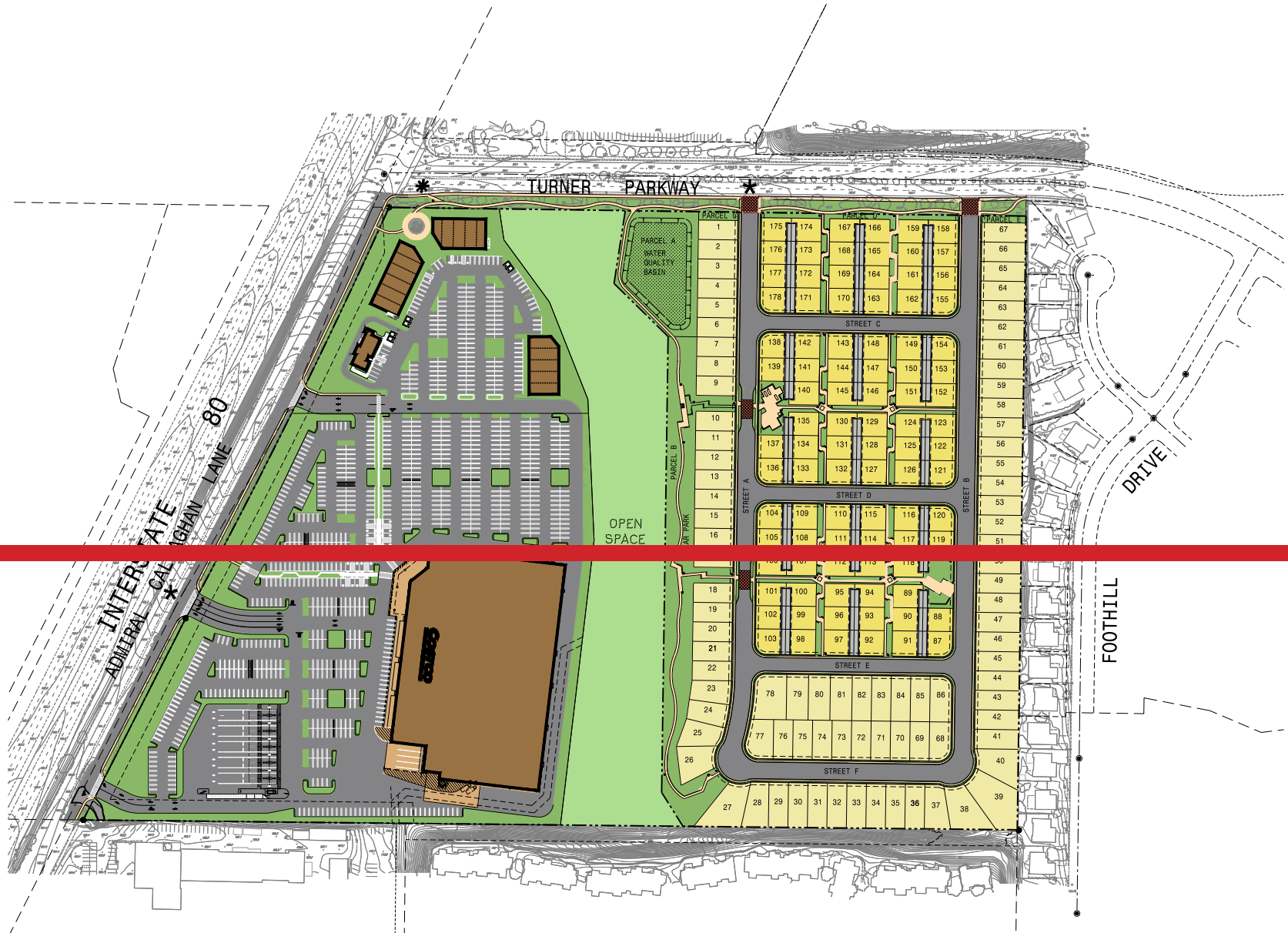
RESIDENTIAL SUMMARY:

LOT COUNT:
 86 - 42'x85' SINGLE FAMILY LOTS
 92 - 50'x60' ALLEY-LOADED LOTS
 178 - TOTAL LOTS

COMMERCIAL SUMMARY:

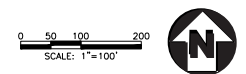
MAJOR RETAILER: 152,138± SF
 SHOPS & RETAIL: 27,490± SF

- ★ SIGNALIZED INTERSECTION (TWO LOCATIONS)
- ✱ PROPOSED BUS STOP



Source: MacKay and Soms, 2019

FIGURE 3-8: Site Plan
 Fairview at Northgate Project



PROJECT SUMMARY:

LAND USE:
 RESIDENTIAL - 23.8± AC
 COMMERCIAL - 21.8± AC
 OPEN SPACE - 5.7± AC
 TOTAL - 51.3± AC

RESIDENTIAL SUMMARY:

LOT COUNT:
 86 - 42'x85' SINGLE FAMILY LOTS
 92 - 50'x60' ALLEY-LOADED LOTS
 178 - TOTAL LOTS

COMMERCIAL SUMMARY:

MAJOR RETAILER: 152,138± SF
 SHOPS & RETAIL: 27,490± SF

✱ SIGNALIZED INTERSECTION (TWO LOCATIONS)

✱ PROPOSED BUS PULLOUT



Source: MacKay and Soms, 2020

FIGURE 3-8: Site Plans
 Fairview at Northgate Project

4.0 MITIGATION MONITORING AND REPORTING PROGRAM

4.1 INTRODUCTION

Section 15097 of the California Environmental Quality Act (CEQA) requires all State and local agencies to establish monitoring or reporting programs for projects approved by a public agency whenever approval involves the adoption of either a “mitigated negative declaration” or specified environmental findings related to environmental impact reports.

The following is the Mitigation Monitoring and Reporting Program (MMRP) for the Fairview at Northgate Project. The intent of the MMRP is to ensure implementation of the mitigation measures identified within the Environmental Impact Report (EIR) for this project. Unless otherwise noted, the cost of implementing the mitigation measures as prescribed by this MMRP shall be funded by the applicant.

4.2 COMPLIANCE CHECKLIST

The MMRP contained herein is intended to satisfy the requirements of CEQA as they relate to the Final EIR prepared for the proposed project. This MMRP is intended to be used by City of Vallejo staff and mitigation monitoring personnel to ensure compliance with mitigation measures during project implementation. Mitigation measures identified in this MMRP were developed in the Final EIR.

The Final EIR presents a detailed set of mitigation measures that will be implemented throughout the lifetime of the project. Mitigation is defined by CEQA Guidelines, Section 15370, as a measure that:

- Avoids the impact altogether by not taking a certain action or parts of an action;
- Minimizes impacts by limiting the degree or magnitude of the action and its implementation;
- Rectifies the impact by repairing, rehabilitating, or restoring the impacted environment;
- Reduces or eliminates the impact over time by preservation and maintenance operations during the life of the project; or
- Compensates for the impact by replacing or providing substitute resources or environments.

The intent of the MMRP is to ensure the implementation of adopted mitigation measures. The MMRP will provide for monitoring of construction activities as necessary and in-the-field identification and resolution of environmental concerns.

Monitoring and documenting the implementation of mitigation measures will be coordinated by City of Vallejo. The table attached to this report identifies the mitigation measure, the monitoring action for the mitigation measure, the responsible party for the monitoring action, and timing of the monitoring action. The applicant will be responsible for fully understanding and effectively implementing the mitigation measures contained within the MMRP. The County will be responsible for monitoring compliance.

4.3 MITIGATION MONITORING AND REPORTING PROGRAM

The following table indicates the mitigation measure number, the impact the measure is designed to address, the measure text, the monitoring agency, implementation schedule, and an area for sign-off indicating compliance.

**Mitigation Monitoring and Reporting Program
Fairview at Northgate Project**

Mitigation Measure	Implementation Phase	Enforcing Agency	Verification of Compliance		
			Initials	Date	Remarks
AESTHETICS					
AES-5: Lighting Plan. Prior to issuance of a building permit, the project applicant shall submit, to the satisfaction of the Planning & Development Services Director, a lighting plan for the project site demonstrating that outdoor lighting fixtures will not cause substantial glare and light spillover to surrounding properties including the open space area. At the Director’s discretion, the lighting plan can be broken up into commercial and residential components. The plan shall include photometric contours, manufacturer’s specifications on the fixtures, and mounting heights.	Prior to issuance of a building permit	City of Vallejo Planning & Development Services Department			
AIR QUALITY					
AQ-1: BAAQMD Basic Construction Measures. Prior to any grading activities, the applicant shall prepare and implement a Construction Management Plan that includes the BAAQMD Basic Construction Mitigation Measures to minimize construction-related emissions. This shall plan shall first be reviewed and approved by the Director of Public Works/City Engineer. The BAAQMD Basic Construction Mitigation Measures are: 1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. 2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered. 3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street	Prior to grading activities	City of Vallejo Public Works Department and/or City Engineer			

**Mitigation Monitoring and Reporting Program
Fairview at Northgate Project**

Mitigation Measure	Implementation Phase	Enforcing Agency	Verification of Compliance		
			Initials	Date	Remarks
sweepers on an as-needed basis. The use of dry power sweeping is prohibited. 4. All vehicle speeds on unpaved roads shall be limited to 15 mph. 5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. 6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. 7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. 8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.					

AQ-2: BAAQMD Additional Construction Mitigation Measures. Prior to the issuance of any grading permits, the applicant shall prepare and implement a Construction Management Plan that includes the BAAQMD Additional Construction Mitigation Measures to minimize construction-related emissions. This plan shall first be reviewed and approved by the Planning & Development Services Director. The applicable BAAQMD Additional Construction Mitigation Measures are: • The simultaneous occurrence of excavation, grading, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time. • Idling time of diesel-powered construction equipment shall be limited to two minutes. • The project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction (i.e., owned, leased, and subcontractor vehicles) will meet United States Environmental Protection Agency Tier 4 final off-road emissions standards or would achieve a project-wide fleet-average 20 percent NOX reduction and 45 percent PM reduction compared to the most recent CARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available. • Use low VOC (i.e., ROG) coatings beyond the local requirements (i.e., BAAQMD Regulation 8, Rule 3: Architectural Coatings).	Prior to issuance of grading permits	City of Vallejo Planning & Development Services Department			
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**Mitigation Monitoring and Reporting Program
Fairview at Northgate Project**

Mitigation Measure	Implementation Phase	Enforcing Agency	Verification of Compliance		
			Initials	Date	Remarks
- Requiring that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOX and PM. - Require the lifting and placing of HVAC units on the roof of the proposed Costco building via helicopter to only occur when no other excavation, grading, and ground-disturbing construction activities are being conducted on the project site.					
BIOLOGICAL RESOURCES					
BIO-1: Nesting Birds. Project activities should be initiated outside of the nesting season to the extent feasible (September 1 - January 31). However, if vegetation removal, grading, or initial ground-disturbing activities must be conducted during the nesting season, a pre-construction nesting bird survey shall be conducted by a qualified biologist prior to vegetation removal or initial ground disturbance. Nesting habitat may include grasslands, shrubs, trees, snags and open ground. The survey should be conducted in a sufficient area around the worksite to identify the location and status of any nests that could potentially be affected by Project activities. If active nests are found within the project limits of impact or close enough to these areas to affect breeding success, a work exclusion zone shall be established around each nest by a qualified biologist and confirmed by the City. Established exclusion zones shall remain in place until all young in the nest have fledged or the nest otherwise becomes inactive (e.g., due to predation). Appropriate	Prior to ground-disturbing activities	City of Vallejo Planning & Development Services Department			

**Mitigation Monitoring and Reporting Program
Fairview at Northgate Project**

Mitigation Measure	Implementation Phase	Enforcing Agency	Verification of Compliance		
			Initials	Date	Remarks
exclusion zone sizes vary dependent upon bird species, nest location, existing visual buffers and ambient sound levels, and other factors; an exclusion zone radius shall be a minimum of 25 feet (for common, disturbance-adapted species) or as large as 250 feet or more for raptors. Exclusion zone size may also be reduced from established levels if supported with nest monitoring by a qualified biologist indicating that work activities outside the reduced radius are not adversely impacting the nest.					
BIO-2: Wetland Permits. Prior to the approval of grading permits or improvement plans, the applicant shall provide, to the satisfaction of the Planning and Development Services Director, evidence that the U. S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and the San Francisco Regional Water Quality Control Board (RWQCB) have been notified in writing regarding the existence of wetlands on the property. Any permits required shall be obtained and copies submitted to the Director prior to any equipment staging, clearing, grading, or excavation work. The permit shall include authorization for temporary construction work within the wetland area.	Prior to approval of grading permits or improvements plans	City of Vallejo Planning & Development Services Department			
BIO-3: Wetland Compensation. Prior to the approval of grading permits or improvement plans, the applicant shall submit to the satisfaction of the Planning and Development Services Director evidence that the following measures have been completed: Provide written evidence that compensatory mitigation has been established through the purchase of mitigation	Prior to approval of grading permits or improvements plans	City of Vallejo Planning & Development Services Department			

**Mitigation Monitoring and Reporting Program
Fairview at Northgate Project**

Mitigation Measure	Implementation Phase	Enforcing Agency	Verification of Compliance		
			Initials	Date	Remarks
credits at a qualified wetland mitigation bank established by and in agreement with the U. S. Army Corps of Engineers (USACE) and the San Francisco Regional Water Quality Control Board (RWQCB). The purchase of credits shall be a minimum of a 1:1 ratio or equal to the amount necessary as determined by USACE and RWQCB to replace impacted jurisdictional wetlands including compensation for temporal loss in accordance with approved regulatory permits (e.g., Regional Water Quality Control Board Section 401 Water Quality Certification, US Army Corps of Engineers 404 Permit, and California Department of Fish and Game Section 1602 Lake and Streambed Alteration Agreement) (minimum 1:1 ratio; more if required by other agencies). The total amount of impacted jurisdictional wetlands, as determined by the regulatory agencies, shall be replaced in accordance with the total amount of impacted acreage.					
BIO-4: Construction Fencing. Prior to approval of grading or improvement plans, the applicant shall submit to the satisfaction of the Planning & Development Services Director evidence that the following measures have been completed: The grading or improvement plans shall identify the location of protective construction fencing. High visibility and silt fencing shall be erected at the edge of the construction/maintenance footprint if work is anticipated to occur within 50 feet of the preserved jurisdictional features and riparian areas. A qualified biological shall be present during the fence installation and during any initial	Prior to approval of grading or improvements plans	City of Vallejo Planning & Development Services Department			

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grading or vegetation clearing activities within 50 feet of jurisdictional features and riparian areas which are proposed for avoidance. Temporary construction activities related to the transfer of graded soil material and equipment to and from the commercial and residential areas shall be described and included in the permit issued for grading and encroachment in the wetland area. The crossing shall be limited to a single span in a single location and shall not be moved during any grading activities. The span shall be fenced and marked and shall be removed at the earliest feasible time upon the completion of grading. The span shall be installed, operated, and removed to minimize disturbance to the wetland area to the maximum extent feasible.					
BIO-5: Construction Staging. Prior to the approval of grading permits or improvement plans, the applicant shall submit to the satisfaction of the Planning & Development Services Director evidence that the following measures have been completed: All equipment shall be stored, fueled and maintained in a vehicle staging area 300 feet (or the maximum distance possible) from any wetland feature. The staging area shall be no closer than 200 feet unless a bermed area is constructed between it and the wetland. Within the staging area the refueling areas shall be lined to prevent fuel contamination and hazardous-material absorbent pads shall be available in the event of a spill. The grading or improvement plans shall include a note clearly stating	Prior to approval of grading permits or improvements plans	City of Vallejo Planning & Development Services Department			

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the requirements for the staging area distances, berming requirements, and use of liner in the refueling areas.					
CULTURAL RESOURCES					
CUL-1: Cultural Awareness Training Program. Prior to the issuance of grading permits, a Cultural Awareness Training Program shall be provided to all construction managers and construction personnel prior to commencing ground disturbance work at the project site. The training shall be prepared and conducted by a qualified archaeologist to the satisfaction of the City of Vallejo Planning & Development Services Department. The training shall be a length of time adequate to explain applicable statutes, regulations, enforcement provisions; the prehistoric and historic environmental setting and context, local tribal groups; show sample artifacts; and what prehistoric and historic archaeological deposits look like at the surface and when exposed during construction. The training may be discontinued to new workers to the site when ground disturbance is completed. Construction personnel shall not be permitted to operate equipment within the construction area unless they have attended the training. The entity responsible for the training shall extend an invitation to the Yocha Dehe Wintun Nation to be present during the training program. A list of the names of all personnel who attended the training and copies of the signed acknowledgment forms shall be submitted to the City Planning & Development Services Department for their review and approval.	Prior to the issuance of grading permits	City of Vallejo Planning & Development Services Department; Yocha Dehe Tribe			

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CUL-2: Cultural Resources Construction Monitoring. During mass grading activities, a qualified archaeologist and Native American Monitor shall be continuously present onsite, and on-call during trenching activities, to observe disturbance areas. The applicant shall provide to the satisfaction of the Director of Planning & Development Services that a Native American Monitor from the Yocha Dehe Wintun Nation has been retained or that every reasonable effort to has been made to retain a Native American monitor. The qualified archaeologist or contractor shall halt work in the immediate vicinity if artifacts, exotic rock, shell or bone are uncovered during the construction. In the event such cultural resources are unearthed during ground-disturbing activities, and the qualified archaeologist is not in that location, the project operator shall cease all ground-disturbing activities within 50 feet of the find and immediately contact the qualified archaeologist and the Native American monitor. Work shall not resume until the potential resource can be evaluated by the qualified archaeologist and Native American monitor. The qualified archaeologist shall be empowered to halt or redirect ground-disturbing activities away from the vicinity of the find until the qualified archaeologist has evaluated the find, determined whether the find is culturally sensitive, and designed an appropriate short-term and long-term treatment plan in consultation with the Native American monitor. The significance of the find shall be determined by the archaeologist and monitor. If determined to be significant the archaeologist shall prepare a treatment plan in consultation with local experts,	During grading activities	City of Vallejo Planning & Development Services Department; Yocha Dehe Tribe			

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Native American Representatives, and the City Planning & Development Services Department.					
CUL-3: Discovery of Unknown Resources. The project applicant shall continuously comply with the following requirement: In the event that unanticipated cultural or tribal cultural resources are encountered during the course of grading or construction, the project operator/contractor shall cease any ground-disturbing activities within 50 feet of the find. Cultural and/or tribal cultural resources may include prehistoric archaeological materials such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock, as well as historic materials such as glass, metal, wood, brick, or structural remnants. A qualified archaeologist shall evaluate the resource and recommend appropriate treatment measures, as appropriate.	During grading and construction activities	City of Vallejo Planning & Development Services Department			
CUL-4: Discovery of Human Remains. The project applicant shall continuously comply with the following: If human remains are uncovered during ground-disturbing activities, the project proponent shall immediately halt work and contact the Solano County Coroner to evaluate the remains, and follow the procedures and protocols set forth in Section 15064.5 (e)(1) of the CEQA Guidelines. The City of Vallejo Police Department and City of Vallejo Planning & Development Services Department shall be contacted immediately after contact or attempted contact with the County Coroner. All excavation activities on the project site shall cease. If the County Coroner determines that the remains are Native American, the Native American	During ground-disturbing activities	City of Vallejo Planning & Development Services Department			

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Heritage Commission shall be notified, in accordance with Health and Safety Code Section 7050.5, subdivision (c), and Public Resources Code 5097.98 (as amended by AB 2641). No further excavation activity shall occur on the site or any nearby area reasonably suspected to overlie adjacent human remains until consultation is complete with the most likely descendant, the Coroner and the City Planning & Department Services Department staff. Authorization to resume construction shall only be given by the City after consultation with the most likely descendent and shall include implementation of all appropriate measures to protect any possible burial sites or human remains.					
GEOLOGY AND SOILS					
GEO-1: Geotechnical Investigation. Prior to construction, the project applicant shall prepare a design-level geotechnical investigation and a final geotechnical report with site-specific recommendations, which must be reviewed and approved by the City of Vallejo prior to issuance of any grading permit. All recommended remedial grading measures identified in the ENGEO reports dated April 17, 2017 shall be updated to reflect current building code requirements and be implemented unless alternative techniques developed by a certified geotechnical engineer or engineering geologist are identified as part of the final geotechnical report.	Prior to construction	City of Vallejo Planning & Development Services Department			
GEO-2: Paleontological Monitor. Prior to the issuance of a grading permit, the project applicant shall, to the satisfaction of the Planning & Development Services	Prior to issuance of grading permit	City of Vallejo Planning & Development			

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Director, provide evidence that a qualified paleontologist has been retained to monitor mass grading and construction activities. The paleontological monitor may periodically inspect construction activities to adjust the level of monitoring in response to subsurface conditions. In the event that any potentially significant paleontological resources are discovered, the paleontological monitor shall stop work inside a zone designated by him/her where additional paleontological resources could be found. A plan for the evaluation of the resource shall be submitted to the Planning & Development Services Director for approval. In the event that a paleontological resource (fossilized invertebrate, vertebrate, plan or micro-fossil) is found during construction, excavation within 50 feet of the find shall be temporarily halted or diverted until the discovery is evaluated. Upon discovery, the Planning & Development Services Director shall be notified immediately, and a qualified paleontologist shall be retained to document and assess the discovery in accordance with Society of Vertebrate Paleontology's 2010 Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources, and determine procedures to be followed before construction is allowed to resume at the location of the find. If determined to be significant, the paleontologist will prepare an excavation plan for mitigating the Project's impact on this resource, including preparation, identification, cataloging, and curation of any salvaged specimens.		Services Department			

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GREENHOUSE GAS					
GHG-1: Electric Powered Landscape Equipment. Prior to issuance of building permits, the project applicant shall prepare and submit building plans to the City of Vallejo Chief Building Official that demonstrate that all new structures have outdoor electrical outlets that are accessible to maintenance workers and landscapers front and back exteriors of all residential and non-residential structures to allow the use of electric-powered equipment.	Prior to issuance of building permits	City of Vallejo Building Division or Planning Division			
GHG-2: Hearth Emissions. Prior to the issuance of building permits, the building official shall confirm that the applicable project plans and specifications do not include wood-burning and natural gas hearths.	Prior to issuance of building permits	City of Vallejo Building Division or Planning Division			
GHG-3: Vehicle Trip Reduction. The project applicant shall submit a qualifying Commute Trip Reduction (CTR) /Transportation Demand Management (TDM) plan prepared by a qualified transportation consultant acceptable to the City to reduce vehicle trips by 17.8 percent. The TDM plan shall be approved by the City of Vallejo Public Works Director prior to the issuance of occupancy permits and incorporated into the project’s Covenants, Conditions, and Restrictions (CC&Rs). The TDM plan shall discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. The TDM plan shall include a requirement for annual reporting to the City Planning Division showing good faith compliance with plan requirements. The TDM plan may be modified with	Prior to construction	City of Vallejo Public Works			

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the City's agreement, provided that no additional trips are generated. Examples of trip reduction measures for non-residential uses may include, but are not limited to: • Include a pedestrian access system integrated into the design of the project to encourage pedestrian travel as an alternative to automobile travel. • Post transit information (maps, schedules, fares, etc.) in a public area of Costco that is accessible to employees and patrons; • Provide a work commute trip reduction program for on-site employment that may include employer carpooling promotion, employer ride-matching assistance, preferential carpool parking on-site, employer vanpool assistance, and on-site bicycle end-trip facilities including bicycle parking. • Provide employer-subsidized transit passes; • Sponsor an employee ride-sharing program; • Provide employee lockers for personal items; • Provide employees with an employee-only restroom with a shower (only applies to Costco warehouse); • Provide secure indoor bicycle parking (racks or lockers) for employees; • Provide customer bicycle parking (racks) in safe and convenient locations; • Allow flex scheduling or compressed scheduling practices;					

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• Provide preferential parking spaces for clean air vehicles; • Provide additional parking spaces designated for electric vehicles and electric vehicle charging stations beyond what is already required (applies only to Costco warehouse) as; and • Provide a minimum of two charging stations for electric vehicles (applies only to Costco warehouse); and • If home delivery service is provided in the future, it shall be performed using low emission or alternative-fueled (electric, natural gas, hydrogen, etc.) vehicles. Examples of trip reduction measures for residential uses may include, but are not limited to: • Provide a ride-matching assistance program that will include ride-matching through a website and/or social media site and/or advertisements in community common areas; • Provide a school trip matching program via the Homeowners Association (HOA) and the local schools to match local students together for potential carpools through the HOA, PTA, and school website and/or social media site and/or promotion at the local schools; • Establish a Transit Management Association, such as through a HOA, to promote, manage, and monitor transit and mobility services and infrastructure, such as through distributing information to homeowners on transit options or through posters to inform the public; and					

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The Transit Management Association shall work with local automotive dealers to help promote CNG electric and hybrid electric vehicles, such as requesting that dealers offer incentive programs to residents of the project.					
GHG-4: Traffic Calming. The project developers shall integrate the traffic calming measures as shown in the Project Application materials into the community-wide circulation network to promote reduced speeds and encourage pedestrian and bicycle trips. Prior to the issuance of building permits, the building official shall confirm with the Public Works Director that the applicable project improvement plans and specifications include the traffic calming measures shown in the Project Application materials such as marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others where applicable.	Prior to issuance of building permits	City of Vallejo Public Works			
GHG-5: Pedestrian Connectivity. The project developers shall provide as part of the project and consistent with City requirements and limitations, sidewalks, and crosswalks at all streets (along with general pedestrian connectivity throughout the project) to encourage pedestrian travel and offer an alternative to vehicle trips.	Prior to construction	City of Vallejo Planning & Development Services Department			

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GHG-6: Internal Trails. The project developers shall construct a multi-purpose internal trail system that includes an off-road multi-use trail and bike lanes within the street right-of-way.	Prior to construction	City of Vallejo Planning & Development Services Department			
GHG-7: Alternatively Fueled Equipment. To the extent that such equipment is readily available and can adequately perform all tasks, Costco shall use electric-, propane-, or natural gas-powered mobile equipment (forklifts, non-street legal street sweepers, etc.) for operational activities within the project site. Existing gasoline- or diesel-powered mobile equipment may continue to be used until its service life is exhausted.	Prior to issuance of building permits	City of Vallejo Planning & Development Services Department			
GHG-8: Idling Limitation. Prior to issuance of occupancy permits for the Costco store, the project applicant shall submit to the satisfaction of the Planning & Development Services Director, an idling restriction program for heavy-duty diesel vehicles. The program shall require that all trucks comply with state regulations limiting idling to no more than 5 minutes. The program shall be implemented through signage in all loading areas and training of store personnel about the idling restrictions.	Prior to issuance of occupancy permits	City of Vallejo Planning & Development Services Department			
GHG-9: Loading Dock Electrical Hookups. Prior to issuance of building permits for the proposed Costco store, the project applicant shall provide at least of one electrical hookup in each of the proposed loading docks that is capable of powering a truck-mounted transport refrigeration unit (TRU) with an electrical hookup option.	Prior to issuance of building permits	City of Vallejo Planning & Development Services Department			

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GHG-10: On-Site Renewable Energy. Prior to issuance of building permits for the proposed Costco store, the project applicant shall submit to the satisfaction of the Chief Building Official, a roof layout plan that illustrates how future installation of a photovoltaic system could be accommodated, including plans that identify installation of conduit from the roof to the electrical room—or to electrical panels if no electrical room is provided—to accommodate future photovoltaic system or other collector/power generation installation. Within four years of project occupancy, Costco shall install rooftop photovoltaic panels or another renewable energy source that generates at least 500,000 kilowatt-hours (kWh) per year.	Prior to issuance of building permits	City of Vallejo Building Division or Planning Division			
GHG-11: Additional GHG Emissions Reduction Measures. The proposed project shall include, but not be limited to, the following list of Project Design Features, which shall be incorporated into the project to ensure compliance with BAAQMD GHG thresholds. The project applicant may submit a report to the City, prepared by a qualified independent consultant, that substantiates why specific measures are considered infeasible at that point in time and identify alternate measures that would achieve equivalent reductions. The recommended measures for reducing operational GHG emissions are listed below. The recommended measures may be updated as new technologies or methods become available, to the satisfaction of the Planning & Development Services	Prior to issuance of building permits	City of Vallejo Planning & Development Services Department			

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Director. The project applicant shall be required to implement the following: Energy Efficiency Measures • Include conduits and space for the future addition of energy storage to optimize renewable energy generation systems and avoid peak energy use. Electrical panels should appropriately be sized to allow for future expanded use. This measure shall be verified prior to building permit issuance. • The City shall verify before issuance of all residential building permits that where appliances are offered by residential project developers, Energy Star-rated appliances (or other equivalent technology) for clothes washers, dishwashers, refrigerators, and fans shall be installed in the residences. • The City shall verify before issuance of all residential and non-residential building permits that high-efficiency light bulbs and lighting fixtures are installed in residential and non-residential buildings. High-efficiency light bulbs include compact fluorescent lamps (CFLs), light-emitting diodes (LED), and other light bulbs that provide energy efficiency of at least 75% compared to traditional incandescent bulbs. • The City shall verify before issuance of building permits that buildings comply with Title 24 Building Energy Efficiency Standards, which includes energy-efficient design practices such as high-performance glazing. Energy Star compliant systems, radiant heat roof barriers (including but not limited to high-albedo white					

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thermoplastic polyolefin roof membrane), high-efficient HVAC with hot-gas reheat, insulation on all pipes, programmable thermostats, solar access, shading of HVAC systems from direct sunlight, use of formaldehyde-free insulation, use of recycled-content gypsum board, sealed ducts, orientation of building and incorporation of landscaping to maximize passive solar (heating during cool seasons, and minimize heat gain during hot season), and designs that take advantage of prevailing winds. - The project developers shall site and design buildings to take advantage of daylight where feasible and consistent with building purpose. - The project developers shall use lighter-colored paving or open-grid paving materials for surface parking areas or break up large expanses of paved area with shade trees or shade structures or use light-colored roofing materials. Water Efficiency Measures - To the extent feasible, project developers shall landscape to preserve natural vegetation and maintain watershed integrity. This measure shall be verified prior to building permit issuance. - The project shall use native species and drought-tolerant species for a minimum of 50 percent of the ornamental plant palette in non-turf areas for all retail, common, and public areas, and residential front-yard landscaping to minimize water demand.					

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Solid Waste Measures • Reuse, recycle, and divert construction waste, and use locally-sourced building materials with a high recycled material content to the greatest extent feasible (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard). This measure shall be verified prior to grading permit issuance. • Provide interior and exterior storage areas for recyclables and adequate recycling containers located in public areas. Recycling bins in the storage areas shall be included to promote recycling of paper, metal, glass, and other recyclable material. These bins shall be emptied and recycled accordingly as part of the proposed project's regular solid waste disposal program. The project applicant or its successor in interest shall only contract for waste disposal services within a company that recycles waste in compliance with AB 341. This measure shall be implemented prior to issuance of an occupancy permit. GHG Reduction Education and Information • The project applicant or its successors or the HOA shall maintain a Fairview website that includes, but is not limited to, information about greenhouse gas (GHG) reduction opportunities to help educate project residents, as well as schools, other agencies, and businesses with facilities on the project site. • The project applicant or its successors or the HOA shall include on the Fairview website information about					

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rebates and low-interest loans to residents that make energy-saving improvements to their homes. - The project applicant or its successors or the HOA shall include on the Fairview website information about the air quality and greenhouse gas benefits of electric landscape maintenance equipment. - The project applicant or its successors or the HOA shall include on the Fairview website educational information on energy and water conservation and efficiency for project residents, customers, tenants, and large energy users. - The project applicant or its successors or the HOA shall include in the Fairview website information about energy conservation and financial incentive programs.					
GHG-12: GHG Emissions Offsets. The project applicant shall purchase and retire GHG offsets to reduce the project's GHG emissions for the first 30 years below the BAAQMD's thresholds of significance (i.e., below 1,100 MTCO₂e per year, or 4.6 MTCO₂e per service population per year [as adjusted for post-2020 GHG reduction targets], or the latest applicable threshold at the time). GHG offsets shall be purchased either with a lump sum payment prior to occupancy for the entire 30-year period, or on an annual basis for a period of thirty years from project occupancy. If annual payments are made, evidence of the purchase of GHG offsets for the first year of occupancy shall be submitted to the satisfaction of the Planning & Development Services Director prior to the issuance of occupancy permits. Evidence of the GHG offsets years 2-30	Prior to issuance of occupancy permits	City of Vallejo Planning & Development Services Department			

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shall be submitted annually on or before the anniversary of the occupancy permit (or as adjusted by the Planning & Development Services Director). GHG offsets shall be consistent with the performance standards and requirements set forth below. • The GHG offsets shall be secured from an accredited registry that is recognized by the California Air Resources Board (CARB) or a California air district, or from an emissions reduction credits program that is administered by CARB or a California air district. • The GHG offsets shall represent the past reduction or sequestration that is “not otherwise required,” in accordance with California Environmental Quality Act (CEQA) Guidelines Section 15126.4(c)(3). • The GHG offsets shall be real, permanent, quantifiable, verifiable, and enforceable. • Recognizing that future regulatory mandates, technological advances, new renewable energy programs, or final project design features would likely result in GHG emissions that are lower than the levels presented in this EIR, the project applicant may prepare a final project GHG emissions inventory prior to issuance of the certificate of occupancy. The inventory shall be subject to verification by a City-approved third party (at applicant expense), with the final emissions estimates dictating the increment to be mitigated through purchase of GHG offsets. The offsets must also be secured by the applicant and verified by the City prior to issuance of the certificate of occupancy, thus					

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providing full mitigation prior to completion of the project.					
HAZARDS AND HAZARDOUS MATERIALS					
HAZ-1 Gas Station Design Requirements. Prior to the issuance of building permits for the Costco gas station, the project applicant shall to the satisfaction of the Planning & Development Services Director or designee, demonstrate that the following measures have been incorporated into the applicable plans and project designs to the satisfaction of the Planning & Development Services Director or their designee. All design features requiring verification of installation shall be verified and approved by the appropriate City representative prior to initiation of fueling station operations. 1. The tank and piping monitoring system shall be designed to meet the federal underground storage tank leak detection standards of 95 percent probability of detection and 5 percent probability of false alarm. California State Water Resources Control Board also certifies the system under LG-113. 2. The project shall be designed to utilize durable petroleum-resistant sealant joint sealers to seal the concrete control joints to prevent petroleum products from entering the underlying soil at the concrete joints. 3. The storm drainage system for the fueling facility area shall be designed in accordance with State of California Best Management Practices for water quality treatment standards. Stormwater from the fueling area	Prior to the issuance of building permits	City of Vallejo Planning & Development Services Department			

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will be isolated and will be directed away from the perennial stream (located in the southeastern corner of the project site) to a catch basin and processed through an oil/water separator prior to discharge to the storm drain system or bioretention basin. 4. The underground tank and piping control units shall be housed inside the controller enclosure. The enclosure shall contain the power console, the dispenser interface unit, the submersible pump variable speed controllers, and the monitoring system console. An air conditioner mounted on the side of the enclosure shall have a preset thermostat to maintain a safe operating temperature. 5. The underground storage tanks and all containment sumps, including the dispenser sumps shall be double-walled fiberglass for its corrosion resistance and plasticity. The double-walled storage tank system shall include a hydrostatic interstitial space sensor that monitors the primary and secondary tank walls. An interstitial sensor shall be installed to immediately shut down the product delivery system and activate a visual/audible alarm if a tank wall is compromised. 6. The underground storage tanks shall be secured in place with anchoring straps (tie-downs) connected to concrete hold down deadmen. The entire tank excavation hole shall be backfilled with pea gravel and capped with an 8-inch-thick reinforced concrete slab (overburden). The tie-downs, together with the overburden, shall be designed to overcome any					

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possible buoyancy factors and resist buckling under hydrostatic pressures. 7. All products, vapor and vent piping shall be non-corrosive and provide three levels of protection. All product piping shall be monitored with pressure line leak detection. All piping shall be double-walled to provide secondary containment. All fiberglass piping shall be additionally monitored under vacuum per California 2481 regulations such that if a breach is detected in the vacuum, the product delivery system will shut down and system will sound audible alarm. 8. All piping connections to the tanks and dispensers shall be flexible to prevent rupture from any form of ground movement. 9. The project shall be designed such that all piping slopes to the sumps at the underground storage tanks. If a piping leak occurs, the gasoline shall flow through the secondary pipe to the sump, where a sensor is triggered to immediately shutdown the system and activate an audible/visual alarm. 10. All tanks and dispensers shall be equipped with latest Phase I and Phase II Enhanced Vapor Recovery (EVR) vapor recovery air pollution control equipment technology per the California Air Resources Board regulations and associated Executive Orders. 11. Emergency shutoff switches shall be installed next to the controller enclosure and in locations near the dispensers, as dictated by the fire code.					

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12. The UST monitoring system incorporates automatic shutoffs. If gasoline is detected in the sump at the fuel dispenser, the dispenser shuts down automatically and an alarm is sounded. If a problem is detected with a tank, the tank is automatically shut down and an alarm is sounded.					
13. Each fuel dispenser includes several safety devices. Specifically, each dispenser sump is equipped with an automatic shutoff valve to protect against vehicle impact.					
14. Closed-circuit television monitor cameras shall be aimed to show all fueling positions, the tank slab, and equipment enclosures. Equipment enclosures shall be mounted on canopy columns adjacent to the fuel islands. A split-screen monitor shall be located in the Costco warehouse to allow for full-time monitoring of the fueling operation. All images shall be recorded by the camera system.					
15. A monitoring system to detect leaks from the tank and piping system that is programmed to activate visual/audible alarms in the event of an alarm condition shall be installed. One visual/audible alarm shall be located on the outside of the controller enclosure and a second visual/audible alarm shall be located in the Costco warehouse entry/exit area. The monitoring system shall be designed so that if power is lost to the monitoring console the facility is shut down and will not operate.					

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16. An independent security company shall monitor the Costco Wholesale warehouse alarm system. The alarm system shall acknowledge an alarm condition at the fueling facility and notify Costco management staff of an alarm condition should it occur after operating hours.					
HYDROLOGY AND WATER QUALITY					
HYD-1: Construction Water Quality Plan. Prior to issuance of any grading permit, the applicant shall submit to the satisfaction of the Public Works Director, a Storm Water Pollution Prevention Plan (SWPPP) that satisfies the requirements of the National Pollutant Discharge Elimination System (NPDES) and State General Permit for construction. The SWPPP shall incorporate Best Management Practices (BMPs) to control runoff and sedimentation. The SWPPP shall identify specific types and sources of storm water pollutants, determine the location and nature of potential impacts, and specify appropriate control measures to eliminate any potentially significant impacts on receiving water quality from storm water runoff. The SWPPP shall comply with the most current standards established by the San Francisco RWQCB. The BMPs shall be selected from a menu according to site requirements and shall be subject to approval by the Public Works Director and San Francisco RWQCB. Additionally, the project applicant shall provide to the satisfaction of the Public Works Director, evidence of a	Prior to issuance of grading permit	City of Vallejo Public Works and/or San Francisco RWQCB			

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			Initials	Date	Remarks
Waste Discharged Identification (WDID) number generated from the State Regional Water Quality Control Board's Stormwater Multiple Application & Reports Tracking System (SMARTS). This serves as the Regional Water Quality Control Board approval or permit under the National Pollutant Discharge Elimination System (NPDES) construction stormwater quality permit.					
HYD-2: Stormwater Quality Control Plan. Prior to issuance of a grading permit or approval of improvement plans, the project applicant shall submit to the satisfaction of the Public Works Director, a final Storm Water Quality Plan (SWQP), either within the Final Drainage Plan or as a separate document that identifies how this project will meet the City's MS4 permit obligations. Site design measures, source control measures, and Low Impact Development (LID) standards, as necessary, shall be incorporated into the design and shown on the grading or improvement plans. In addition, per the MS4 permit, projects creating and/or replacing one acre or more of impervious surface (excepting projects that do not increase impervious surface area over the pre-project condition) are also required to demonstrate hydromodification management of stormwater such that post-project runoff is maintained to equal or below pre-project flow rates for the 2 year, 24-hour storm event, generally by way of infiltration, rooftop and impervious area disconnection, bioretention, and other LID measures that result in post-project flows that mimic pre-project conditions. For the commercial area, specific source control measures for	Prior to issuance of a grading permit or approval of improvement plans	City of Vallejo Public Works			

Mitigation Monitoring and Reporting Program Fairview at Northgate Project

Mitigation Measure	Implementation Phase	Enforcing Agency	Verification of Compliance		
			Initials	Date	Remarks
trash storage areas and the gas station shall be identified in the SWCP.					
HYD-3: Final Drainage Plan. Prior to the approval of grading permits or improvement plans, the applicant shall submit to the satisfaction of the Public Works Director a Final Drainage Plan to demonstrate the ability of the planned on-site storm water drainage facilities to adequately collect on-site storm water flows in accordance with all applicable standards and requirements The final drainage plan shall demonstrate that the new storm water drainage facilities can satisfy the Regional Water Quality Control Board's Municipal Regional Permit (MRP) requirements by: Minimizing impervious surfaces, as feasible, and directing flows to Integrated Management Practices (IMPs); Integrating appropriately sized IMPs to ensure post-development flows do not exceed pre-development flows; and Incorporating bio-retention in combination with site planning, minimizing impervious areas, and dispersion of runoff to meet Low Impact Development (LID) requirements.	Prior to approval of grading permits or improvement plans	City of Vallejo Public Works			
NOISE					
NOI-1: Construction Noise. Prior to the start of grading, the Construction Manager shall provide evidence acceptable to the City of Vallejo Public Planning & Development Services Director ("Director"), that: Construction activities shall be restricted to day time hours of between 7:00 a.m. and 6:00 p.m. Mondays through Saturdays. No construction activity shall occur	Prior to the start of grading	City of Vallejo Planning & Development Services Department			

Mitigation Monitoring and Reporting Program
Fairview at Northgate Project

Mitigation Measure	Implementation Phase	Enforcing Agency	Verification of Compliance		
			Initials	Date	Remarks
on Sundays or federal holidays. The Director shall have authority to grant exceptions from this restriction for the concrete pour of the Costco store and for activities occurring within a fully sealed building envelope. • Helicopter usage shall be limited to no more than two weekdays between 9 a.m. and 5 p.m. At times when the helicopter is not actively in the process of connecting straps to and lifting and placing HVAC units on the roof of the Costco building, the helicopter shall ascend, as appropriate, to lessen the level of noise. At least 14 days prior to helicopter usage, the construction contractor shall provide written notice of such usage to residents, businesses and owners of property within 500 feet of the project site. The Director shall review and approve such notice prior to distribution. • Prior to the start of construction activities, the construction contractor shall: - o Maintain and tune all proposed equipment in accordance with the manufacturer's recommendations to minimize noise emission. - o Inspect all proposed equipment and should fit all equipment with properly operating mufflers, air intake silencers, and engine shrouds that are no less effective than as originally equipped by the manufacturer. - o Post a sign, clearly visible at the site, with a contact name and telephone number of the City of Vallejo's authorized representative to respond in the event of a noise complaint.					

Mitigation Monitoring and Reporting Program Fairview at Northgate Project

Mitigation Measure	Implementation Phase	Enforcing Agency	Verification of Compliance		
			Initials	Date	Remarks
- o Place stationary construction equipment and material delivery in loading and unloading areas as far as practicable from the residences. - o Limit unnecessary engine idling to the extent feasible. - o Use smart back-up alarms, which automatically adjust the alarm level based on the background noise level or switch off back-up alarms and replace with human spotters. - o Use low-noise emission equipment. - o Limit use of public address systems. - o Minimize grade surface irregularities on construction sites.					
TRAFFIC AND TRANSPORTATION					
TR-1: Roadway Improvements. Prior to the issuance of occupancy permits, the applicant shall construct, to the satisfaction of the Public Works Director, the following roadway improvement: Admiral Callaghan Lane at Turner Parkway – Add a northbound right-turn pocket lane and modify the geometry of the westbound approach to provide a right-turn lane, one left-turn lane and one left-turn pocket.	Prior to the issuance of occupancy permits	City of Vallejo Public Works			
TR-2: Initial Signal Timing Study. Prior to the issuance of Occupancy Permits, the City shall initiate a signal timing study for the proposed traffic signal and the existing traffic signals. The timing study shall include the same traffic signals included in the Transportation Impact Analysis	Prior to the issuance of occupancy permits	City of Vallejo Planning & Development Services Department			

**Mitigation Monitoring and Reporting Program
Fairview at Northgate Project**

Mitigation Measure	Implementation Phase	Enforcing Agency	Verification of Compliance		
			Initials	Date	Remarks
prepared for the project. This study is to assist the City in optimizing traffic flow in the project vicinity and provide a baseline for a post-occupancy signal coordination study.					
TR-3: Post Costco Occupancy Signal Coordination Study. Within 3 months of occupancy of the Costco store (or as adjusted by the Public Works Director), the applicant shall fund and prepare, to the satisfaction of the Public Works Director, a signal timing and coordination study to confirm the EIR's traffic analysis and further optimize traffic flow in the project vicinity. The study shall include the same intersections noted in the Transportation Impact Analysis, so that refined signal timings and coordination based on actual traffic volumes and observed conditions can be implemented if necessary. Upon the Public Works Director's approval of the study, the City shall update signal timing based on the results of this study, if necessary.	Within 3 months of occupancy of the Costco store (or as adjusted by the Public Works Director)	City of Vallejo Public Works			
TR-4: New Bus Pull-Out. Prior to issuance of occupancy permits, the applicant shall, to the satisfaction of the Planning & Development Services Director, coordinate with SolTrans and construct a new bus pull-out on eastbound Turner Parkway East of Admiral Callaghan Lane. The Project applicant will construct a bus pull-out and concrete pad per Soltrans' and the City's specifications. Soltrans will provide, and the applicant will install, signage, a shelter, lighting, and trash receptacle.	Prior to the issuance of occupancy permits	City of Vallejo Planning & Development Services Department			

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Fairview at Northgate Final EIR
Response to Letter E
Appendix A
South Coast Air Quality Management District Amicus Brief

S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,

Plaintiffs and Appellants,

v.

COUNTY OF FRESNO,

Defendant and Respondent,

and,

FRIANT RANCH, L.P.,

Real Party in Interest and Respondent.

SUPREME COURT
FILED

APR 13 2015

Frank A. McGuire Clerk
Deputy

After a Published Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726
Honorable Rosendo A. Pena, Jr.

**APPLICATION OF THE SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT FOR LEAVE TO FILE
BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY
AND [PROPOSED] BRIEF OF *AMICUS CURIAE***

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CLERK SUPREME COURT

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**TO THE HONORABLE CHIEF JUSTICE AND JUSTICES OF THE
SUPREME COURT:**

APPLICATION FOR LEAVE TO FILE *AMICUS CURIAE* BRIEF

Pursuant to Rule 8.520(f) of the California Rules of Court, the South Coast Air Quality Management District (SCAQMD) respectfully requests leave to file the attached *amicus curiae* brief. Because SCAQMD's position differs from that of either party, we request leave to submit this amicus brief in support of neither party.

HOW THIS BRIEF WILL ASSIST THE COURT

SCAQMD's proposed amicus brief takes a position on two of the issues in this case. In both instances, its position differs from that of either party. The issues are:

- 1) Does the California Environmental Quality Act (CEQA) require an environmental impact report (EIR) to correlate a project's air pollution emissions with specific levels of health impacts?
- 2) What is the proper standard of review for determining whether an EIR provides sufficient information on the health impacts caused by a project's emission of air pollutants?

This brief will assist the Court by discussing the practical realities of correlating identified air quality impacts with specific health outcomes. In short, CEQA requires agencies to provide detailed information about a project's air quality impacts that is sufficient for the public and decisionmakers to adequately evaluate the project and meaningfully understand its impacts. However, the level of analysis is governed by a rule of reason; CEQA only requires agencies to conduct analysis if it is reasonably feasible to do so.

With regard to health-related air quality impacts, an analysis that correlates a project's air pollution emissions with specific levels of health impacts will be feasible in some cases but not others. Whether it is feasible depends on a variety of factors, including the nature of the project and the nature of the analysis under consideration. The feasibility of analysis may also change over time as air districts and others develop new tools for measuring projects' air quality related health impacts. Because SCAQMD has among the most sophisticated air quality modeling and health impact evaluation capability of any of the air districts in the State, it is uniquely situated to express an opinion on the extent to which the Court should hold that CEQA requires lead agencies to correlate air quality impacts with specific health outcomes.

SCAQMD can also offer a unique perspective on the question of the appropriate standard of review. SCAQMD submits that the proper standard of review for determining whether an EIR is sufficient as an informational document is more nuanced than argued by either party. In our view, this is a mixed question of fact and law. It includes determining whether additional analysis is feasible, which is primarily a factual question that should be reviewed under the substantial evidence standard. However, it also involves determining whether the omission of a particular analysis renders an EIR insufficient to serve CEQA's purpose as a meaningful, informational document. If a lead agency has not determined that a requested analysis is infeasible, it is the court's role to determine whether the EIR nevertheless meets CEQA's purposes, and courts should not defer to the lead agency's conclusions regarding the legal sufficiency of an EIR's analysis. The ultimate question of whether an EIR's analysis is "sufficient" to serve CEQA's informational purposes is predominately a question of law that courts should review de novo.

This brief will explain the rationale for these arguments and may assist the Court in reaching a conclusion that accords proper respect to a lead agency's factual conclusions while maintaining judicial authority over the ultimate question of what level of analysis CEQA requires.

STATEMENT OF INTEREST OF *AMICUS CURIAE*

The SCAQMD is the regional agency primarily responsible for air pollution control in the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of the Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410; Cal. Code Regs., tit. 17, § 60104.) The SCAQMD participates in the CEQA process in several ways. Sometimes it acts as a lead agency that prepares CEQA documents for projects. Other times it acts as a responsible agency when it has permit authority over some part of a project that is undergoing CEQA review by a different lead agency. Finally, SCAQMD also acts as a commenting agency for CEQA documents that it receives because it is a public agency with jurisdiction by law over natural resources affected by the project.

In all of these capacities, SCAQMD will be affected by the decision in this case. SCAQMD sometimes submits comments requesting that a lead agency perform an additional type of air quality or health impacts analysis. On the other hand, SCAQMD sometimes determines that a particular type of health impact analysis is not feasible or would not produce reliable and informative results. Thus, SCAQMD will be affected by the Court's resolution of the extent to which CEQA requires EIRs to correlate emissions and health impacts, and its resolution of the proper standard of review.

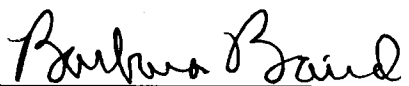
CERTIFICATION REGARDING AUTHORSHIP AND FUNDING

No party or counsel in the pending case authored the proposed amicus curiae brief in whole or in part, or made any monetary contribution intended to fund the preparation or submission of the brief. No person or entity other than the proposed *Amicus Curiae* made any monetary contribution intended to fund the preparation or submission of the brief.

Respectfully submitted,

DATED: April 3, 2015

SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT
KURT R. WIESE, GENERAL COUNSEL
BARBARA BAIRD, CHIEF DEPUTY COUNSEL

By: 
Barbara Baird

Attorneys for [proposed] Amicus Curiae
SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT

BRIEF OF AMICUS CURIAE

SUMMARY OF ARGUMENT

The South Coast Air Quality Management District (SCAQMD) submits that this Court should not try to establish a hard-and-fast rule concerning whether lead agencies are required to correlate emissions of air pollutants with specific health consequences in their environmental impact reports (EIR). The level of detail required in EIRs is governed by a few, core CEQA (California Environmental Quality Act) principles. As this Court has stated, “[a]n EIR must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project.” (*Laurel Heights Improvement Assn. v. Regents of the Univ of Cal.* (1988) 47 Cal.3d 376, 405 [*“Laurel Heights I”*]) Accordingly, “an agency must use its best efforts to find out and disclose all that it reasonably can.” (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 428 (quoting CEQA Guidelines § 15144)¹). However, “[a]nalysis of environmental effects need not be exhaustive, but will be judged in light of what is reasonably feasible.” (*Association of Irrigated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1390; CEQA Guidelines §§ 15151, 15204(a).)

With regard to analysis of air quality related health impacts, EIRs must generally quantify a project’s pollutant emissions, but in some cases it is not feasible to correlate these emissions to specific, quantifiable health impacts (e.g., premature mortality; hospital admissions). In such cases, a general description of the adverse health impacts resulting from the pollutants at issue may be sufficient. In other cases, due to the magnitude

¹ The CEQA Guidelines are found at Cal. Code Regs., tit. 14 §§ 15000, *et seq.*

or nature of the pollution emissions, as well as the specificity of the project involved, it may be feasible to quantify health impacts. Or there may be a less exacting, but still meaningful analysis of health impacts that can feasibly be performed. In these instances, agencies should disclose those impacts.

SCAQMD also submits that whether or not an EIR complies with CEQA's informational mandates by providing sufficient, feasible analysis is a mixed question of fact and law. Pertinent here, the question of whether an EIR's discussion of health impacts from air pollution is sufficient to allow the public to understand and consider meaningfully the issues involves two inquiries: (1) Is it feasible to provide the information or analysis that a commenter is requesting or a petitioner is arguing should be required?; and (2) Even if it is feasible, is the agency relying on other policy or legal considerations to justify not preparing the requested analysis? The first question of whether an analysis is feasible is primarily a question of fact that should be judged by the substantial evidence standard. The second inquiry involves evaluating CEQA's information disclosure purposes against the asserted reasons to not perform the requested analysis. For example, an agency might believe that its EIR meets CEQA's informational disclosure standards even without a particular analysis, and therefore choose not to conduct that analysis. SCAQMD submits that this is more of a legal question, which should be reviewed de novo as a question of law.

ARGUMENT

I. RELEVANT FACTUAL AND LEGAL FRAMEWORK.

A. Air Quality Regulatory Background

The South Coast Air Quality Management District (SCAQMD) is one of the local and regional air pollution control districts and air quality

management districts in California. The SCAQMD is the regional air pollution agency for the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410, 17 Cal. Code Reg. § 60104.) The SCAQMD also includes the Coachella Valley in Riverside County (Palm Springs area to the Salton Sea). (SCAQMD, *Final 2012 AQMP* (Feb. 2013), <http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan>; then follow “chapter 7” hyperlink; pp 7-1, 7-3 (last visited Apr. 1, 2015).) The SCAQMD's jurisdiction includes over 16 million residents and has the worst or nearly the worst air pollution levels in the country for ozone and fine particulate matter. (SCAQMD, *Final 2012 AQMP* (Feb. 2013), <http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan>; then follow “Executive Summary” hyperlink p. ES-1 (last visited Apr. 1, 2015).)

Under California law, the local and regional districts are primarily responsible for controlling air pollution from all sources except motor vehicles. (Health & Saf. Code § 40000.) The California Air Resources Board (CARB), part of the California Environmental Protection Agency, is primarily responsible for controlling pollution from motor vehicles. (*Id.*) The air districts must adopt rules to achieve and maintain the state and federal ambient air quality standards within their jurisdictions. (Health & Saf. Code § 40001.)

The federal Clean Air Act (CAA) requires the United States Environmental Protection Agency (EPA) to identify pollutants that are widely distributed and pose a threat to human health, developing a so-called “criteria” document. (42 U.S.C. § 7408; CAA § 108.) These pollutants are frequently called “criteria pollutants.” EPA must then establish “national ambient air quality standards” at levels “requisite to protect public health”,

allowing “an adequate margin of safety.” (42 U.S.C. § 7409; CAA § 109.) EPA has set standards for six identified pollutants: ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide, particulate matter (PM), and lead. (U.S. EPA, National Ambient Air Quality Standards (NAAQS), <http://www.epa.gov/air/criteria.html> (last updated Oct. 21, 2014).)²

Under the Clean Air Act, EPA sets emission standards for motor vehicles and “nonroad engines” (mobile farm and construction equipment, marine vessels, locomotives, aircraft, etc.). (42 U.S.C. §§ 7521, 7547; CAA §§ 202, 213.) California is the only state allowed to establish emission standards for motor vehicles and most nonroad sources; however, it may only do so with EPA's approval. (42 U.S.C. §§ 7543(b), 7543(e); CAA §§ 209(b), 209(c).) Sources such as manufacturing facilities, power plants and refineries that are not mobile are often referred to as “stationary sources.” The Clean Air Act charges state and local agencies with the primary responsibility to attain the national ambient air quality standards. (42 U.S.C. § 7401(a)(3); CAA § 101(a)(3).) Each state must adopt and implement a plan including enforceable measures to achieve and maintain the national ambient air quality standards. (42 U.S.C. § 7410; CAA § 110.) The SCAQMD and CARB jointly prepare portion of the plan for the South Coast Air Basin and submit it for approval by EPA. (Health & Saf. Code §§ 40460, et seq.)

The Clean Air Act also requires state and local agencies to adopt a permit program requiring, among other things, that new or modified “major” stationary sources use technology to achieve the “lowest achievable emission rate,” and to control minor stationary sources as

² Particulate matter (PM) is further divided into two categories: fine particulate or PM_{2.5} (particles with a diameter of less than or equal to 2.5 microns) and coarse particulate (PM₁₀) (particles with a diameter of 10 microns or less). (U.S. EPA, Particulate Matter (PM), <http://www.epa.gov/airquality/particulatepollution/> (last visited Apr. 1, 2015).)

needed to help attain the standards. (42 U.S.C. §§ 7502(c)(5), 7503(a)(2), 7410(a)(2)(C); CAA §§ 172(c)(5), 173(a)(2), 110(a)(2)(C).) The air districts implement these permit programs in California. (Health & Saf. Code §§ 42300, et seq.)

The Clean Air Act also sets out a regulatory structure for over 100 so-called “hazardous air pollutants” calling for EPA to establish “maximum achievable control technology” (MACT) for sources of these pollutants. (42 U.S.C. § 7412(d)(2); CAA § 112(d)(2).) California refers to these pollutants as “toxic air contaminants” (TACs) which are subject to two state-required programs. The first program requires “air toxics control measures” for specific categories of sources. (Health & Saf. Code § 39666.) The other program requires larger stationary sources and sources identified by air districts to prepare “health risk assessments” for impacts of toxic air contaminants. (Health & Saf. Code §§ 44320(b), 44322, 44360.) If the health risk exceeds levels identified by the district as “significant,” the facility must implement a “risk reduction plan” to bring its risk levels below “significant” levels. Air districts may adopt additional more stringent requirements than those required by state law, including requirements for toxic air contaminants. (Health & Saf. Code § 41508; *Western Oil & Gas Assn. v. Monterey Bay Unified APCD* (1989) 49 Cal.3d 408, 414.) For example, SCAQMD has adopted a rule requiring new or modified sources to keep their risks below specified levels and use best available control technology (BACT) for toxics. (SCAQMD, *Rule 1401-New Source Review of Toxic Air Contaminants*, <http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiv>; then follow “Rule 1401” hyperlink (last visited Apr. 1, 2015).)

B. The SCAQMD's Role Under CEQA

The California Environmental Quality Act (CEQA) requires public agencies to perform an environmental review and appropriate analysis for projects that they implement or approve. (Pub. Resources Code § 21080(a).) The agency with primary approval authority for a particular project is generally the “lead agency” that prepares the appropriate CEQA document. (CEQA Guidelines §§ 15050, 15051.) Other agencies having a subsequent approval authority over all or part of a project are called “responsible” agencies that must determine whether the CEQA document is adequate for their use. (CEQA Guidelines §§ 15096(c), 15381.) Lead agencies must also consult with and circulate their environmental impact reports to “trustee agencies” and agencies “with jurisdiction by law” including “authority over resources which may be affected by the project.” (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines §§ 15086(a)(3), 15073(c).) The SCAQMD has a role in all these aspects of CEQA.

Fulfilling its responsibilities to implement its air quality plan and adopt rules to attain the national ambient air quality standards, SCAQMD adopts a dozen or more rules each year to require pollution reductions from a wide variety of sources. The SCAQMD staff evaluates each rule for any adverse environmental impact and prepares the appropriate CEQA document. Although most rules reduce air emissions, they may have secondary environmental impacts such as use of water or energy or disposal of waste—e.g., spent catalyst from control equipment.³

³ The SCAQMD's CEQA program for its rules is a “Certified Regulatory Program” under which it prepares a “functionally equivalent” document in lieu of a negative declaration or EIR. (Pub. Resources Code § 21080.5, CEQA Guidelines § 15251(l).)

The SCAQMD also approves a large number of permits every year to construct new, modified, or replacement facilities that emit regulated air pollutants. The majority of these air pollutant sources have already been included in an earlier CEQA evaluation for a larger project, are currently being evaluated by a local government as lead agency, or qualify for an exemption. However, the SCAQMD sometimes acts as lead agency for major projects where the local government does not have a discretionary approval. In such cases, SCAQMD prepares and certifies a negative declaration or environmental impact report (EIR) as appropriate.⁴ SCAQMD evaluates perhaps a dozen such permit projects under CEQA each year. SCAQMD is often also a “responsible agency” for many projects since it must issue a permit for part of the projects (e.g., a boiler used to provide heat in a commercial building). For permit projects evaluated by another lead agency under CEQA, SCAQMD has the right to determine that the CEQA document is inadequate for its purposes as a responsible agency, but it may not do so because its permit program already requires all permitted sources to use the best available air pollution control technology. (SCAQMD, *Rule 1303(a)(1) – Requirements*, <http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiii>; then follow “Rule 1303” hyperlink (last visited Apr. 1, 2015).)

Finally, SCAQMD receives as many as 60 or more CEQA documents each month (around 500 per year) in its role as commenting agency or an agency with “jurisdiction by law” over air quality—a natural resource affected by the project. (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines § 15366(a)(3).) The SCAQMD staff provides comments on as many as 25 or 30 such documents each month.

⁴ The SCAQMD's permit projects are not included in its Certified Regulatory Program, and are evaluated under the traditional local government CEQA analysis. (Pub. Resources Code §§ 21150-21154.)

(SCAQMD Governing Board Agenda, Apr. 3, 2015, Agenda Item 16, Attachment A, <http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-april-3-2015>; then follow “16. Lead Agency Projects and Environmental Documents Received by SCAQMD” hyperlink (last visited Apr. 1, 2015).) Of course, SCAQMD focuses its commenting efforts on the more significant projects.

Typically, SCAQMD comments on the adequacy of air quality analysis, appropriateness of assumptions and methodology, and completeness of the recommended air quality mitigation measures. Staff may comment on the need to prepare a health risk assessment detailing the projected cancer and noncancer risks from toxic air contaminants resulting from the project, particularly the impacts of diesel particulate matter, which CARB has identified as a toxic air contaminant based on its carcinogenic effects. (California Air Resources Board, Resolution 98-35, Aug. 27, 1998, <http://www.arb.ca.gov/regact/diesltac/diesltac.htm>; then follow Resolution 98-35 hyperlink (last visited Apr. 1, 2015).) Because SCAQMD already requires new or modified stationary sources of toxic air contaminants to use the best available control technology for toxics and to keep their risks below specified levels, (SCAQMD Rule 1401, *supra*, note 15), the greatest opportunity to further mitigate toxic impacts through the CEQA process is by reducing emissions—particularly diesel emissions—from vehicles.

II. THIS COURT SHOULD NOT SET A HARD-AND-FAST RULE CONCERNING THE EXTENT TO WHICH AN EIR MUST CORRELATE A PROJECT’S EMISSION OF POLLUTANTS WITH RESULTING HEALTH IMPACTS.

Numerous cases hold that courts do not review the correctness of an EIR’s conclusions but rather its sufficiency as an informative document. (*Laurel Heights 1*, *supra*, 47 Cal.3d at p. 392; *Citizens of Goleta Valley v.*

Bd. of Supervisors (1990) 52 Cal.3d 553, 569; *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1197.)

As stated by the Court of Appeal in this case, where an EIR has addressed a topic, but the petitioner claims that the information provided about that topic is insufficient, courts must “draw[] a line that divides *sufficient* discussions from those that are *insufficient*.” (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) The Court of Appeal readily admitted that “[t]he terms themselves – sufficient and insufficient – provide little, if any, guidance as to where the line should be drawn. They are simply labels applied once the court has completed its analysis.” (*Id.*)

The CEQA Guidelines, however, provide guidance regarding what constitutes a sufficient discussion of impacts. Section 15151 states that “the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible.” Case law reflects this: “Analysis of environmental effects need not be exhaustive, but will be judged in light of what was reasonably feasible.” (*Association of Irrigated Residents v. County of Madera, supra*, 107 Cal.App.4th at p. 1390; see also CEQA Guidelines § 15204(a).)

Applying this test, this Court cannot realistically establish a hard-and-fast rule that an analysis correlating air pollution impacts of a project to quantified resulting health impacts is always required, or indeed that it is never required. Simply put, in some cases such an analysis will be “feasible”; in some cases it will not.

For example, air pollution control districts often require a proposed new source of toxic air contaminants to prepare a “health risk assessment” before issuing a permit to construct. District rules often limit the allowable cancer risk the new source may cause to the “maximally exposed individual” (worker and residence exposures). (*See, e.g.*, SCAQMD Rule 1401(c)(8); 1401(d)(1), *supra* note 15.) In order to perform this analysis, it

is necessary to have data regarding the sources and types of air toxic contaminants, location of emission points, velocity of emissions, the meteorology and topography of the area, and the location of receptors (worker and residence). (SCAQMD, *Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act (AB2588)*, pp. 11-16; (last visited Apr. 1, 2015) [http://www.aqmd.gov/home/library/documents-support-material](http://www.aqmd.gov/home/library/documents-support-material;); "Guidelines" hyperlink; AB2588; then follow AB2588 Risk Assessment Guidelines hyperlink.)

Thus, it is feasible to determine the health risk posed by a new gas station locating at an intersection in a mixed use area, where receptor locations are known. On the other hand, it may not be feasible to perform a health risk assessment for airborne toxics that will be emitted by a generic industrial building that was built on "speculation" (i.e., without knowing the future tenant(s)). Even where a health risk assessment can be prepared, however, the resulting maximum health risk value is only a calculation of risk—it does not necessarily mean anyone will contract cancer as a result of the project.

In order to find the "cancer burden" or expected additional cases of cancer resulting from the project, it is also necessary to know the numbers and location of individuals living within the "zone of impact" of the project: i.e., those living in areas where the projected cancer risk from the project exceeds one in a million. (SCAQMD, Health Risk Assessment Summary form, <http://www.aqmd.gov/home/forms>; filter by "AB2588" category; then "Health Risk Assessment" hyperlink (last visited Apr. 1, 2015).) The affected population is divided into bands of those exposed to at least 1 in a million risk, those exposed to at least 10 in a million risk, etc. up to those exposed at the highest levels. (*Id.*) This data allows agencies to calculate an approximate number of additional cancer cases expected from

the project. However, it is not possible to predict which particular individuals will be affected.

For the so-called criteria pollutants⁵, such as ozone, it may be more difficult to quantify health impacts. Ozone is formed in the atmosphere from the chemical reaction of the nitrogen oxides (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. (U.S. EPA, Ground Level Ozone, <http://www.epa.gov/airquality/ozonepollution/> (last updated Mar. 25, 2015).) It takes time and the influence of meteorological conditions for these reactions to occur, so ozone may be formed at a distance downwind from the sources. (U.S. EPA, *Guideline on Ozone Monitoring Site Selection* (Aug. 1998) EPA-454/R-98-002 § 5.1.2, <http://www.epa.gov/ttnamti1/archive/cpreldoc.html> (last visited Apr. 1, 2015).) NO_x and VOC are known as “precursors” of ozone.

Scientifically, health effects from ozone are correlated with increases in the ambient level of ozone in the air a person breathes. (U.S. EPA, *Health Effects of Ozone in the General Population*, Figure 9, <http://www.epa.gov/apti/ozonehealth/population.html#levels> (last visited Apr. 1, 2015).) However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels over an entire region. For example, the SCAQMD's 2012 AQMP showed that reducing NO_x by 432 tons per day (157,680 tons/year) and reducing VOC by 187 tons per day (68,255 tons/year) would reduce ozone levels at the SCAQMD's monitor site with the highest levels by only 9 parts per billion. (South Coast Air Quality Management District, *Final 2012 AQMP* (February 2013), <http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan>; then follow “Appendix V: Modeling & Attainment Demonstrations” hyperlink,

⁵ See discussion of types of pollutants, *supra*, Part I.A.

pp. v-4-2, v-7-4, v-7-24.) SCAQMD staff does not currently know of a way to accurately quantify ozone-related health impacts caused by NO_x or VOC emissions from relatively small projects.

On the other hand, this type of analysis may be feasible for projects on a regional scale with very high emissions of NO_x and VOCs, where impacts are regional. For example, in 2011 the SCAQMD performed a health impact analysis in its CEQA document for proposed Rule 1315, which authorized various newly-permitted sources to use offsets from the districts “internal bank” of emission reductions. This CEQA analysis accounted for essentially *all* the increases in emissions due to new or modified sources in the District between 2010 and 2030.⁶ The SCAQMD was able to correlate this very large emissions increase (e.g., 6,620 pounds per day NO_x (1,208 tons per year), 89,180 pounds per day VOC (16,275 tons per year)) to expected health outcomes from ozone and particulate matter (e.g., 20 premature deaths per year and 89,947 school absences in the year 2030 due to ozone).⁷ (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System* (see hyperlink in fn 6) at p. 4.1-35, Table 4.1-29.)

⁶ (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, Attachment G, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System, Vol. 1, p.4.0-6*, <http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-february-4-2011>; the follow “26. Adopt Proposed Rule 1315 – Federal New Source Review Tracking System” (last visited April 1, 2015).)

⁷ The SCAQMD was able to establish the location of future NO_x and VOC emissions by assuming that new projects would be built in the same locations and proportions as existing stationary sources. This CEQA document was upheld by the Los Angeles County Superior Court in *Natural Res. Def. Council v SCAQMD*, Los Angeles Superior Court No. BS110792).

However, a project emitting only 10 tons per year of NO_x or VOC is small enough that its regional impact on ambient ozone levels may not be detected in the regional air quality models that are currently used to determine ozone levels. Thus, in this case it would not be feasible to directly correlate project emissions of VOC or NO_x with specific health impacts from ozone. This is in part because ozone formation is not linearly related to emissions. Ozone impacts vary depending on the location of the emissions, the location of other precursor emissions, meteorology and seasonal impacts, and because ozone is formed some time later and downwind from the actual emission. (EPA Guideline on Ozone Monitoring Site Selection (Aug. 1998) EPA-454/R-98-002, § 5.1.2; <https://www.epa.gov/ttnamti1/archive/cpreldoc.html>; then search “Guideline on Ozone Monitoring Site Selection” click on pdf) (last viewed Apr. 1, 2015).)

SCAQMD has set its CEQA “significance” threshold for NO_x and VOC at 10 tons per year (expressed as 55 lb/day). (SCAQMD, *Air Quality Analysis Handbook*, <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook>; then follow “SCAQMD Air Quality Significance Thresholds” hyperlink (last visited Apr. 1, 2015).) This is because the federal Clean Air Act defines a “major” stationary source for “extreme” ozone nonattainment areas such as SCAQMD as one emitting 10 tons/year. (42 U.S.C. §§ 7511a(e), 7511a(f); CAA §§ 182(e), 182(f).) Under the Clean Air Act, such sources are subject to enhanced control requirements (42 U.S.C. §§ 7502(c)(5), 7503; CAA §§ 172(c)(5), 173), so SCAQMD decided this was an appropriate threshold for making a CEQA “significance” finding and requiring feasible mitigation. Essentially, SCAQMD takes the position that a source that emits 10 tons/year of NO_x or VOC would contribute cumulatively to ozone formation. Therefore, lead agencies that use SCAQMD’s thresholds of significance may determine

that many projects have “significant” air quality impacts and must apply all feasible mitigation measures, yet will not be able to precisely correlate the project to quantifiable health impacts, unless the emissions are sufficiently high to use a regional modeling program.

In the case of particulate matter (PM_{2.5})⁸, another “criteria” pollutant, SCAQMD staff is aware of two possible methods of analysis. SCAQMD used regional modeling to predict expected health impacts from its proposed Rule 1315, as mentioned above. Also, the California Air Resources Board (CARB) has developed a methodology that can predict expected mortality (premature deaths) from large amounts of PM_{2.5}. (California Air Resources Board, *Health Impacts Analysis: PM Premature Death Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort_arch.htm (last reviewed Jan. 19, 2012).) SCAQMD used the CARB methodology to predict impacts from three very large power plants (e.g., 731-1837 lbs/day). (Final Environmental Assessment for Rule 1315, *supra*, pp 4.0-12, 4.1-13, 4.1-37 (e.g., 125 premature deaths in the entire SCAQMD in 2030), 4.1-39 (0.05 to 1.77 annual premature deaths from power plants.) Again, this project involved large amounts of additional PM_{2.5} in the District, up to 2.82 tons/day (5,650 lbs/day of PM_{2.5}, or, or 1029 tons/year. (*Id.* at table 4.1-4, p. 4.1-10.)

However, the primary author of the CARB methodology has reported that this PM_{2.5} health impact methodology is not suited for small projects and may yield unreliable results due to various uncertainties.⁹ (SCAQMD, *Final Subsequent Mitigated Negative Declaration for: Warren*

⁸ SCAQMD has not attained the latest annual or 24-hour national ambient air quality standards for “PM_{2.5}” or particulate matter less than 2.5 microns in diameter.

⁹ Among these uncertainties are the representativeness of the population used in the methodology, and the specific source of PM and the corresponding health impacts. (*Id.* at p. 2-24.)

E&P, Inc. WTU Central Facility, New Equipment Project (certified July 19, 2011), <http://www.aqmd.gov/home/library/documents-support-material/lead-agency-permit-projects/permit-project-documents---year-2011>; then follow “Final Subsequent Mitigated Negative Declaration for Warren E&P Inc. WTU Central Facility, New Equipment Project” hyperlink, pp. 2-22, 2-23 (last visited Apr. 1, 2015).) Therefore, when SCAQMD prepared a CEQA document for the expansion of an existing oil production facility, with very small PM_{2.5} increases (3.8 lb/day) and a very small affected population, staff elected not to use the CARB methodology for using estimated PM_{2.5} emissions to derive a projected premature mortality number and explained why it would be inappropriate to do so. (*Id.* at pp 2-22 to 2-24.) SCAQMD staff concluded that use of this methodology for such a small source could result in unreliable findings and would not provide meaningful information. (*Id.* at pp. 2-23, 2-25.) This CEQA document was not challenged in court.

In the above case, while it may have been technically possible to plug the data into the methodology, the results would not have been reliable or meaningful. SCAQMD believes that an agency should not be required to perform analyses that do not produce reliable or meaningful results. This Court has already held that an agency may decline to use even the “normal” “existing conditions” CEQA baseline where to do so would be misleading or without informational value. (*Neighbors for Smart Rail v. Exposition Metro Line* (2013) 57 Cal.4th 439, 448, 457.) The same should be true for a decision that a particular study or analysis would not provide reliable or meaningful results.¹⁰

¹⁰ Whether a particular study would result in “informational value” is a part of deciding whether it is “feasible.” CEQA defines “feasible” as “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and

Therefore, it is not possible to set a hard-and-fast rule on whether a correlation of air quality impacts with specific quantifiable health impacts is required in all cases. Instead, the result turns on whether such an analysis is reasonably feasible in the particular case.¹¹ Moreover, what is reasonably feasible may change over time as scientists and regulatory agencies continually seek to improve their ability to predict health impacts. For example, CARB staff has been directed by its Governing Board to reassess and improve the methodology for estimating premature deaths. (California Air Resources Board, *Health Impacts Analysis: PM Mortality Relationship*, <http://www.arb.ca.gov/research/health/pm-mort/pm-mort.htm> (last reviewed Dec. 29, 2010).) This factor also counsels against setting any hard-and-fast rule in this case.

III. THE QUESTION OF WHETHER AN EIR CONTAINS SUFFICIENT ANALYSIS TO MEET CEQA'S REQUIREMENTS IS A MIXED QUESTION OF FACT AND LAW GOVERNED BY TWO DIFFERENT STANDARDS OF REVIEW.

A. Standard of Review for Feasibility Determination and Sufficiency as an Informative Document

A second issue in this case is whether courts should review an EIR's informational sufficiency under the "substantial evidence" test as argued by Friant Ranch or the "independent judgment" test as argued by Sierra Club.

technological factors." (Pub. Resources Code § 21061.1.) A study cannot be "accomplished in a *successful* manner" if it produces unreliable or misleading results.

¹¹ In this case, the lead agency did not have an opportunity to determine whether the requested analysis was feasible because the comment was non-specific. Therefore, SCAQMD suggests that this Court, after resolving the legal issues in the case, direct the Court of Appeal to remand the case to the lead agency for a determination of whether the requested analysis is feasible. Because Fresno County, the lead agency, did not seek review in this Court, it seems likely that the County has concluded that at least some level of correlation of air pollution with health impacts is feasible.

As this Court has explained, “a reviewing court must adjust its scrutiny to the nature of the alleged defect, depending on whether the claim is predominantly one of improper procedure or a dispute over the facts.” (*Vineyard Area Citizens v. City of Rancho Cordova*, *supra*, 40 Cal.4th at 435.) For questions regarding compliance with proper procedure or other legal questions, courts review an agency’s action de novo under the “independent judgment” test. (*Id.*) On the other hand, courts review factual disputes only for substantial evidence, thereby “accord[ing] greater deference to the agency’s substantive factual conclusions.” (*Id.*)

Here, Friant Ranch and Sierra Club agree that the case involves the question of whether an EIR includes sufficient information regarding a project’s impacts. However, they disagree on the proper standard of review for answering this question: Sierra Club contends that courts use the independent judgment standard to determine whether an EIR’s analysis is sufficient to meet CEQA’s informational purposes,¹² while Friant Ranch contends that the substantial evidence standard applies to this question.

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¹² Sierra Club acknowledges that courts use the substantial evidence standard when reviewing predicate factual issues, but argues that courts ultimately decide as a matter of law what CEQA requires. (Answering Brief, pp. 14, 23.)

SCAQMD submits that the issue is more nuanced than either party contends. We submit that, whether a CEQA document includes sufficient analysis to satisfy CEQA's informational mandates is a mixed question of fact and law,¹³ containing two levels of inquiry that should be judged by different standards.¹⁴

The state CEQA Guidelines set forth standards for the adequacy of environmental analysis. Guidelines Section 15151 states:

An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection, but for adequacy, completeness, and a good-faith effort at full disclosure.

In this case, the basic question is whether the underlying analysis of air quality impacts made the EIR "sufficient" as an informative document. However, whether the EIR's analysis was sufficient is judged in light of what was reasonably feasible. This represents a mixed question of fact and law that is governed by two different standards of review.

¹³ Friant Ranch actually states that the claim that an EIR lacks sufficient relevant information is, "most properly thought of as raising mixed questions of fact and law." (Opening Brief, p. 27.) However, the remainder of its argument claims that the court should apply the substantial evidence standard of review to all aspects of the issue.

¹⁴ Mixed questions of fact and law issues may implicate predominantly factual subordinate questions that are reviewed under the substantial evidence test even though the ultimate question may be reviewed by the independent judgment test. *Crocker National Bank v. City and County of San Francisco* (1989) 49 Cal.3d 881, 888-889.

SCAQMD submits that an EIR's sufficiency as an informational document is ultimately a legal question that courts should determine using their independent judgment. This Court's language in *Laurel Heights I* supports this position. As this Court explained: "The court does not pass upon the correctness of the EIR's environmental conclusions, but only upon its *sufficiency as an informative document*." (*Laurel Heights I, supra*, 47 Cal.3d at 392-393) (emphasis added.) As described above, the Court in *Vineyard Area Citizens v. City of Rancho Cordova, supra*, 40 Cal.4th at 431, also used its independent judgment to determine what level of analysis CEQA requires for water supply impacts. The Court did not defer to the lead agency's opinion regarding the law's requirements; rather, it determined for itself what level of analysis was necessary to meet "[t]he law's informational demands." (*Id.* at p. 432.) Further, existing case law also holds that where an agency fails to comply with CEQA's information disclosure requirements, the agency has "failed to proceed in the manner required by law." (*Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 118.)

However, whether an EIR satisfies CEQA's requirements depends in part on whether it was reasonably feasible for an agency to conduct additional or more thorough analysis. EIRs must contain "a detailed statement" of a project's impacts (Pub. Res. Code § 21061), and an agency must "use its best efforts to find out and disclose all that it reasonably can." (CEQA Guidelines § 15144.) Nevertheless, "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." (CEQA Guidelines § 15151.)

SCAQMD submits that the question of whether additional analysis or a particular study suggested by a commenter is "feasible" is generally a question of fact. Courts have already held that whether a particular alternative is "feasible" is reviewed by the substantial evidence test.

(*Uphold Our Heritage v. Town of Woodside* (2007) 147 Cal.App.4th 587, 598-99; *Center for Biological Diversity v. County of San Bernardino* (2010) 185 Cal.App.4th 866, 883.) Thus, if a lead agency determines that a particular study or analysis is infeasible, that decision should generally be judged by the substantial evidence standard. However, SCAQMD urges this Court to hold that lead agencies must explain the basis of any determination that a particular analysis is infeasible in the EIR itself. An EIR must discuss information, including issues related to the feasibility of particular analyses “in sufficient detail to enable meaningful participation and criticism by the public. ‘[W]hatever is required to be considered in an EIR must be in that formal report; what any official might have known from other writings or oral presentations cannot supply what is lacking in the report.’” (*Laurel Heights I, supra*, 47 Cal.3d at p. 405 (quoting *Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 831) (discussing analysis of alternatives).) The evidence on which the determination is based should also be summarized in the EIR itself, with appropriate citations to reference materials if necessary. Otherwise commenting agencies such as SCAQMD would be forced to guess where the lead agency's evidence might be located, thus thwarting effective public participation.

Moreover, if a lead agency determines that a particular study or analysis would not result in reliable or useful information and for that reason is not feasible, that determination should be judged by the substantial evidence test. (See *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority, supra*, 57 Cal.4th 439, 448, 457:

whether “existing conditions” baseline would be misleading or uninformative judged by substantial evidence standard.¹⁵)

If the lead agency’s determination that a particular analysis or study is not feasible is supported by substantial evidence, then the agency has not violated CEQA’s information disclosure provisions, since it would be infeasible to provide additional information. This Court’s decisions provide precedent for such a result. For example, this Court determined that the issue of whether the EIR should have included a more detailed discussion of future herbicide use was resolved because substantial evidence supported the agency’s finding that “the precise parameters of future herbicide use could not be predicted.” *Ebbetts Pass Forest Watch v. California Dept. of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 955.

Of course, SCAQMD expects that courts will continue to hold lead agencies to their obligations to consult with, and not to ignore or misrepresent, the views of sister agencies having special expertise in the area of air quality. (*Berkeley Keep Jets Over the Bay v. Board of Port Commissioners* (2007) 91 Cal.App.4th 1344, 1364 n.11.) In some cases, information provided by such expert agencies may establish that the purported evidence relied on by the lead agency is not in fact “substantial”. (*Id.* at pp. 1369-1371.)

In sum, courts retain ultimate responsibility to determine what CEQA requires. However, the law does not require exhaustive analysis, but only what is reasonably feasible. Agencies deserve deference for their factual determinations regarding what type of analysis is reasonably feasible. On the other hand, if a commenter requests more information, and the lead agency declines to provide it but does *not* determine that the

¹⁵ The substantial evidence standard recognizes that the courts “have neither the resources nor the scientific expertise” to weigh conflicting evidence on technical issues. (*Laurel Heights I, supra*, 47 Cal.3d 376, 393.)

requested study or analysis would be infeasible, misleading or uninformative, the question becomes whether the omission of that analysis renders the EIR inadequate to satisfy CEQA's informational purposes. (*Id.* at pp. 1370-71.) Again, this is predominantly a question of law and should be judged by the de novo or independent judgment standard of review. Of course, this Court has recognized that a "project opponent or reviewing court can always imagine some additional study or analysis that might provide helpful information. It is not for them to design the EIR. That further study...might be helpful does not make it necessary." (*Laurel Heights I, supra*, 47 Cal.3d 376, 415 – see also CEQA Guidelines § 15204(a) [CEQA "does not require a lead agency to conduct every test. . . recommended or demanded by commenters."].) Courts, then, must adjudicate whether an omission of particular information renders an EIR inadequate to serve CEQA's informational purposes.¹⁶

¹⁶ We recognize that there is case law stating that the substantial evidence standard applies to "challenges to the scope of an EIR's analysis of a topic" as well as the methodology used and the accuracy of the data relied on in the document "because these types of challenges involve factual questions." (*Bakersfield Citizens for Local Control v. City of Bakersfield, supra*, 124 Cal.App.4th 1184, 1198, and cases relied on therein.) However, we interpret this language to refer to situations where the question of the scope of the analysis really is factual—that is, where it involves whether further analysis is feasible, as discussed above. This interpretation is supported by the fact that the *Bakersfield* court expressly rejected an argument that a claimed "omission of information from the EIR should be treated as inquiries whether there is substantial evidence supporting the decision approving the project." *Bakersfield, supra*, 124 Cal.App.4th at p. 1208. And the *Bakersfield* court ultimately decided that the lead agency must analyze the connection between the identified air pollution impacts and resulting health impacts, even though the EIR already included some discussion of air-pollution-related respiratory illnesses. *Bakersfield, supra*, 124 Cal.App.4th at p. 1220. Therefore, the court must not have interpreted this question as one of the "scope of the analysis" to be judged by the substantial evidence standard.

B. Friant Ranch's Rationale for Rejecting the Independent Judgment Standard of Review is Unsupported by Case Law.

In its brief, Friant Ranch makes a distinction between cases where a required CEQA topic is not discussed at all (to be reviewed by independent judgment as a failure to proceed in the manner required by law) and cases where a topic is discussed, but the commenter claims the information provided is insufficient (to be judged by the substantial evidence test). (Opening Brief, pp. 13-17.) The Court of Appeal recognized these two types of cases, but concluded that both raised questions of law. (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) We believe the distinction drawn by Friant Ranch is unduly narrow, and inconsistent with cases which have concluded that CEQA documents are insufficient. In many instances, CEQA's requirements are stated broadly, and the courts must interpret the law to determine what level of analysis satisfies CEQA's mandate for providing meaningful information, even though the EIR discusses the issue to some extent.

For example, the CEQA Guidelines require discussion of the existing environmental baseline. In *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 954-955, the lead agency had discussed the environmental baseline by describing historic month-end water levels in the affected lakes. However, the court held that this was not an adequate baseline discussion because it failed to discuss the timing and amounts of past actual water releases, to allow comparison with the proposed project. The court evidently applied the independent judgment test to its decision, even though the agency discussed the issue to some extent.

Likewise, in *Vineyard Area Citizens* (2007) 40 Cal.4th 412, this Court addressed the question of whether an EIR's analysis of water supply impacts complied with CEQA. The parties agreed that the EIR was required to analyze the effects of providing water to the development project, "and that in order to do so the EIR had, in some manner, to identify the planned sources of that water." (*Vineyard Area Citizens, supra*, at p. 428.) However, the parties disagreed as to the level of detail required for this analysis and "what level of uncertainty regarding the availability of water supplies can be tolerated in an EIR" (*Id.*) In other words, the EIR had analyzed water supply impacts for the project, but the petitioner claimed that the analysis was insufficient.

This Court noted that neither CEQA's statutory language or the CEQA Guidelines specifically addressed the question of how precisely an EIR must discuss water supply impacts. (*Id.*) However, it explained that CEQA "states that '[w]hile foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can.'" (*Id.*, [Guidelines § 15144].) The Court used this general principle, along with prior precedent, to elucidate four "principles for analytical adequacy" that are necessary in order to satisfy "CEQA's informational purposes." (*Vineyard Area Citizens, supra*, at p. 430.) The Court did not defer to the agency's determination that the EIR's analysis of water supply impacts was sufficient. Rather, this Court used its independent judgment to determine for itself the level of analysis required to satisfy CEQA's fundamental purposes. (*Vineyard Area Citizens, supra*, at p. 441: an EIR does not serve its purposes where it neglects to explain likely sources of water and "... leaves long term water supply considerations to later stages of the project.")

Similarly, the CEQA Guidelines require an analysis of noise impacts of the project. (Appendix G, “Environmental Checklist Form.”¹⁷) In *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1123, the court held that the lead agency’s noise impact analysis was inadequate even though it had addressed the issue and concluded that the increase would not be noticeable. If the court had been using the substantial evidence standard, it likely would have upheld this discussion.

Therefore, we do not agree that the issue can be resolved on the basis suggested by Friant Ranch, which would apply the substantial evidence standard to *every* challenge to an analysis that addresses a required CEQA topic. This interpretation would subvert the courts’ proper role in interpreting CEQA and determining what the law requires.

Nor do we agree that the Court of Appeal in this case violated CEQA’s prohibition on courts interpreting its provisions “in a manner which imposes procedural or substantive requirements beyond those explicitly stated in this division or in the state guidelines.” (Pub. Resources Code § 21083.1.) CEQA requires an EIR to describe *all* significant impacts of the project on the environment. (Pub. Resources Code § 21100(b)(2); *Vineyard Area Citizens, supra*, at p. 428.) Human beings are part of the environment, so CEQA requires EIRs to discuss a project’s significant impacts on human health. However, except in certain particular circumstances,¹⁸ neither the CEQA statute nor Guidelines specify the precise level of analysis that agencies must undertake to satisfy the law’s requirements. (see, e.g., CEQA Guidelines § 15126.2(a) [EIRs must describe “health and safety problems caused by {a project’s} physical changes”].) Accordingly, courts must interpret CEQA as a whole to

¹⁷ Association of Environmental Professionals, 2015 CEQA Statute and Guidelines (2015) p.287.

¹⁸ E.g., Pub. Resources Code § 21151.8(C)(3)(B)(iii) (requiring specific type of health risk analysis for siting schools).

determine whether a particular EIR is sufficient as an informational document. A court determining whether an EIR's discussion of human health impacts is legally sufficient does not constitute imposing a new substantive requirement.¹⁹ Under Friant Ranch's theory, the above-referenced cases holding a CEQA analysis inadequate would have violated the law. This is not a reasonable interpretation.

IV. COURTS MUST SCRUPULOUSLY ENFORCE THE REQUIREMENTS THAT LEAD AGENCIES CONSULT WITH AND OBTAIN COMMENTS FROM AIR DISTRICTS

Courts must "scrupulously enforce" CEQA's legislatively mandated requirements. (*Vineyard Area Citizens, supra*, 40 Cal.4th 412, 435.) Case law has firmly established that lead agencies must consult with the relevant air pollution control district before conducting an initial study, and must provide the districts with notice of the intention to adopt a negative declaration (or EIR). (*Schenck v. County of Sonoma* (2011) 198 Cal.App.4th 949, 958.) As *Schenck* held, neither publishing the notice nor providing it to the State Clearinghouse was a sufficient substitute for sending notice directly to the air district. (*Id.*) Rather, courts "must be satisfied that [administrative] agencies have fully complied with the procedural requirements of CEQA, since only in this way can the important public purposes of CEQA be protected from subversion." *Schenck*, 198 Cal.App.4th at p. 959 (citations omitted).²⁰

¹⁹ We submit that Public Resources Code Section 21083.1 was intended to prevent courts from, for example, holding that an agency must analyze economic impacts of a project where there are no resulting environmental impacts (see CEQA Guidelines § 15131), or imposing new procedural requirements, such as imposing additional public notice requirements not set forth in CEQA or the Guidelines.

²⁰ Lead agencies must consult air districts, as public agencies with jurisdiction by law over resources affected by the project, *before* releasing an EIR. (Pub. Resources Code §§ 21104(a); 21153.) Moreover, air

Lead agencies should be aware, therefore, that failure to properly seek and consider input from the relevant air district constitutes legal error which may jeopardize their project approvals. For example, the court in *Fall River Wild Trout Foundation v. County of Shasta*, (1999) 70 Cal.App.4th 482, 492 held that the failure to give notice to a trustee agency (Department of Fish and Game) was prejudicial error requiring reversal. The court explained that the lack of notice prevented the Department from providing any response to the CEQA document. (*Id.* at p. 492.) It therefore prevented relevant information from being presented to the lead agency, which was prejudicial error because it precluded informed decision-making. (*Id.*)²¹

districts should be considered “state agencies” for purposes of the requirement to consult with “trustee agencies” as set forth in Public Resources Code § 20180.3(a). This Court has long ago held that the districts are not mere “local agencies” whose regulations are superseded by those of a state agency regarding matters of statewide concern, but rather have concurrent jurisdiction over such issues. (*Orange County Air Pollution Control District v. Public Util. Com.* (1971) 4 Cal.3d 945, 951, 954.) Since air pollution is a matter of statewide concern, *Id.* at 952, air districts should be entitled to trustee agency status in order to ensure that this vital concern is adequately protected during the CEQA process.

²¹ In *Schenck*, the court concluded that failure to give notice to the air district was not prejudicial, but this was partly because the trial court had already corrected the error before the case arrived at the Court of Appeal. The trial court issued a writ of mandate requiring the lead agency to give notice to the air district. The air district responded by concurring with the lead agency that air impacts were not significant. (*Schenck*, 198 Cal.App.4th 949, 960.) We disagree with the *Schenck* court that the failure to give notice to the air district would not have been prejudicial (even in the absence of the trial court writ) merely because the lead agency purported to follow the air district’s published CEQA guidelines for significance. (*Id.*, 198 Cal.App.4th at p. 960.) In the first place, absent notice to the air district, it is uncertain whether the lead agency properly followed those guidelines. Moreover, it is not realistic to expect that an air district’s published guidelines would necessarily fully address all possible air-quality related issues that can arise with a CEQA project, or that those

Similarly, lead agencies must obtain additional information requested by expert agencies, including those with jurisdiction by law, if that information is necessary to determine a project's impacts. (*Sierra Club v. State Bd. Of Forestry* (1994) 7 Cal.4th 1215, 1236-37.) Approving a project without obtaining that information constitutes a failure to proceed in the manner prescribed by CEQA. (*Id.* at p. 1236.)

Moreover, a lead agency can save significant time and money by consulting with the air district early in the process. For example, the lead agency can learn what the air district recommends as an appropriate analysis on the facts of its case, including what kinds of health impacts analysis may be available, and what models are appropriate for use. This saves the lead agency from the need to do its analysis all over again and possibly needing to recirculate the document after errors are corrected, if new significant impacts are identified. (CEQA Guidelines § 15088.5(a).) At the same time, the air district's expert input can help the lead agency properly determine whether another commenter's request for additional analysis or studies is reasonable or feasible. Finally, the air district can provide input on what mitigation measures would be feasible and effective.

Therefore, we suggest that this Court provide guidance to lead agencies reminding them of the importance of consulting with the relevant air districts regarding these issues. Otherwise, their feasibility decisions may be vulnerable to air district evidence that establishes that there is no substantial evidence to support the lead agency decision not to provide specific analysis. (*See Berkeley Keep Jets Over the Bay, supra*, 91 Cal.App.4th 1344, 1369-1371.)

guidelines would necessarily be continually modified to reflect new developments. Therefore we believe that, had the trial court not already ordered the lead agency to obtain the air district's views, the failure to give notice would have been prejudicial, as in *Fall River, supra*, 70 Cal.App.4th 482, 492.

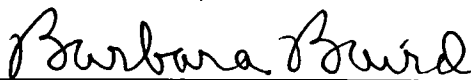
CONCLUSION

The SCAQMD respectfully requests this Court *not* to establish a hard-and-fast rule concerning whether CEQA requires a lead agency to correlate identified air quality impacts of a project with resulting health outcomes. Moreover, the question of whether an EIR is “sufficient as an informational document” is a mixed question of fact and law containing two levels of inquiry. Whether a particular proposed analysis is feasible is predominantly a question of fact to be judged by the substantial evidence standard of review. Where the requested analysis is feasible, but the lead agency relies on legal or policy reasons not to provide it, the question of whether the EIR is nevertheless sufficient as an informational document is predominantly a question of law to be judged by the independent judgment standard of review.

DATED: April 3, 2015

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.520(c)(1) of the California Rules of Court, I hereby certify that this brief contains 8,476 words, including footnotes, but excluding the Application, Table of Contents, Table of Authorities, Certificate of Service, this Certificate of Word Count, and signature blocks. I have relied on the word count of the Microsoft Word Vista program used to prepare this Certificate.

DATED: April 3, 2015

Respectfully submitted,


Barbara Baird

PROOF OF SERVICE

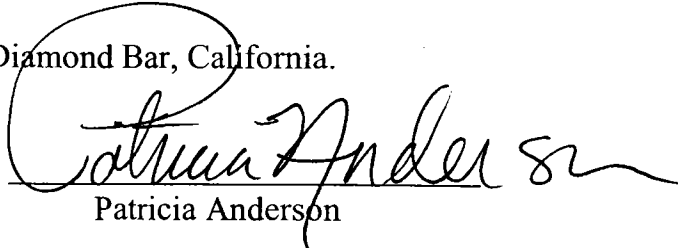
I am employed in the County of Los Angeles, California. I am over the age of 18 years and not a party to the within action. My business address is 21865 Copley Drive, Diamond Bar, California 91765.

On April 3, 2015 I served true copies of the following document(s) described as **APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*** by placing a true copy of the foregoing document(s) in a sealed envelope addressed as set forth on the attached service list as follows:

BY MAIL: I enclosed the document(s) in a sealed envelope or package addressed to the persons at the addresses listed in the Service List and placed the envelope for collection and mailing following our ordinary business practices. I am readily familiar with this District's practice for collection and processing of correspondence for mailing. Under that practice, the correspondence would be deposited with the United States Postal Service, with postage thereon fully prepaid at Diamond Bar, California, in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on April 3, 2015 at Diamond Bar, California.


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Fairview at Northgate Final EIR
Response to Letter E
Appendix B
San Joaquin Air Pollution Control District Amicus Brief

SUPREME COURT COPY

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

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LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

SUPREME COURT
FILED

APR 13 2015

Frank A. McGuire Clerk
Deputy

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

**APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF
SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN
SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND
REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.**

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APPLICATION

Pursuant to California Rules of Court 8.520(f)(1), proposed Amicus Curiae San Joaquin Valley Unified Air Pollution Control District hereby requests permission from the Chief Justice to file an amicus brief in support of Defendant and Respondent, County of Fresno, and Defendant and Real Parties in Interest Friant Ranch, L.P. Pursuant to Rule 8.520(f)(5) of the California Rules of Court, the proposed amicus curiae brief is combined with this Application. The brief addresses the following issue certified by this Court for review:

Is an EIR adequate when it identifies the health impacts of air pollution and quantifies a project's expected emissions, or does CEQA further require the EIR to *correlate* a project's air quality emissions to specific health impacts?

As of the date of this filing, the deadline for the final reply brief on the merits was March 5, 2015. Accordingly, under Rule 8.520(f)(2), this application and brief are timely.

1. Background and Interest of San Joaquin Valley Unified Air Pollution Control District

The San Joaquin Valley Unified Air Pollution Control District ("Air District") regulates air quality in the eight counties comprising the San Joaquin Valley ("Central Valley"): Kern, Tulare, Madera, Fresno, Merced, San Joaquin, Stanislaus, and Kings, and is primarily responsible for attaining air quality standards within its jurisdiction. After billions of dollars of investment by Central Valley businesses, pioneering air quality regulations, and consistent efforts by residents, the Central Valley air basin has made historic improvements in air quality.

The Central Valley's geographical, topographical and meteorological features create exceptionally challenging air quality

conditions. For example, it receives air pollution transported from the San Francisco Bay Area and northern Central Valley communities, and the southern portion of the Central Valley includes three mountain ranges (Sierra, Tehachapi, and Coastal) that, under some meteorological conditions, effectively trap air pollution. Central Valley air pollution is only a fraction of what the Bay Area and Los Angeles produce, but these natural conditions result in air quality conditions that are only marginally better than Los Angeles, even though about ten times more pollution is emitted in the Los Angeles region. Bay Area air quality is much better than the Central Valley's, even though the Bay Area produces about six times more pollution. The Central Valley also receives air pollution transported from the Bay Area and northern counties in the Central Valley, including Sacramento, and transboundary anthropogenic ozone from as far away as China.

Notwithstanding these challenges, the Central Valley has reduced emissions at the same or better rate than other areas in California and has achieved unparalleled milestones in protecting public health and the environment:

- In the last decade, the Central Valley became the first air basin classified by the federal government under the Clean Air Act as a “serious nonattainment” area to come into attainment of health-based National Ambient Air Quality Standard (“NAAQS”) for coarse particulate matter (PM₁₀), an achievement made even more notable given the Valley's extensive agricultural sector. Unhealthy levels of particulate matter can cause and exacerbate a range of chronic and acute illnesses.
- In 2013, the Central Valley became the first air basin in the country to improve from a federal designation of “extreme” nonattainment to

actually attain (and quality for an attainment designation) of the 1-hour ozone NAAQS; ozone creates “smog” and, like PM10, causes adverse health impacts.

- The Central Valley also is in full attainment of federal standards for lead, nitrogen dioxide, sulfur dioxide, and carbon monoxide.
- The Central Valley continues to make progress toward compliance with its last two attainment standards, with the number of exceedences for the 8-hour ozone NAAQS reduced by 74% (for the 1997 standard) and 38% (for the 2008 standard) since 1991, and for the small particulate matter (PM2.5) NAAQS reduced by 85% (for the 1997 standard) and 61% (for the 2006 standard).

Sustained improvement in Central Valley air quality requires a rigorous and comprehensive regulatory framework that includes prohibitions (e.g., on wood-burning fireplaces in new residences), mandates (e.g., requiring the installation of best available pollution reduction technologies on new and modified equipment and industrial operations), innovations (e.g., fees assessed against residential development to fund pollution reduction actions to “offset” vehicular emissions associated with new residences), incentive programs (e.g., funding replacements of older, more polluting heavy duty trucks and school buses)¹, ongoing planning for continued air quality improvements, and enforcement of Air District permits and regulations.

The Air District is also an expert air quality agency for the eight counties and cities in the San Joaquin Valley. In that capacity, the Air District has developed air quality emission guidelines for use by the Central

¹ San Joaquin’s incentive program has been so successful that through 2012, it has awarded over \$ 432 million in incentive funds and has achieved 93,349 tons of lifetime emissions reductions. See SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 2012 PM2.5 PLAN, 6-6 (2012) available at <http://www.valleyair.org/Workshops/postings/2012/12-20-12PM25/FinalVersion/06%20Chapter%206%20Incentives.pdf>.

Valley counties and cities that implement the California Environment Quality Act (CEQA).² In its guidance, the Air District has distinguished between toxic air contaminants and criteria air pollutants.³ Recognizing this distinction, the Air District's CEQA Guidance has adopted distinct thresholds of significance for *criteria* pollutants (i.e., ozone, PM2.5 and their respective precursor pollutants) based upon scientific and factual data which demonstrates the level that can be accommodated on a cumulative basis in the San Joaquin Valley without affecting the attainment of the applicable NAAQS.⁴ For *toxic air* pollutants, the District has adopted different thresholds of significance which scientific and factual data demonstrates has the potential to expose sensitive receptors (i.e., children, the elderly) to levels which may result in localized health impacts.⁵

The Air District's CEQA Guidance was followed by the County of Fresno in its environment review of the Friant Ranch project, for which the Air District also served as a commenting agency. The Court of Appeal's holding, however, requiring correlation between the project's criteria

² See, e.g., SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, PLANNING DIVISION, GUIDE FOR ASSESSING AND MITIGATING AIR QUALITY IMPACTS (2015), available at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf ("CEQA Guidance").

³ Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health, they are distinguishable from toxic air contaminants and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of toxic air contaminants occurs solely under section 112 of the Act. Compare 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 with 42 U.S.C. § 7411.

⁴ See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 64-66, 80.

⁵ See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 66, 99-101.

pollutants and local health impacts, departs from the Air District's Guidance and approved methodology for assessing criteria pollutants. A close reading of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants (for which a local health risk assessment is feasible and routinely performed) and criteria air pollutants (for which a local health risk assessment is not feasible and would result in speculative results).⁶ The Air District has a direct interest in ensuring the lawfulness and consistent application of its CEQA Guidance, and will explain how the Court of Appeal departed from the Air District's long-standing CEQA Guidance in addressing criteria pollutants and toxic air contaminants in this amicus brief.

2. How the Proposed Amicus Curiae Brief Will Assist the Court

As counsel for the proposed amicus curiae, we have reviewed the briefs filed in this action. In addition to serving as a "commentary agency" for CEQA purposes over the Friant Ranch project, the Air District has a strong interest in assuring that CEQA is used for its intended purpose, and believes that this Court would benefit from additional briefing explaining the distinction between criteria pollutants and toxic air contaminants and the different methodologies employed by local air pollution control agencies such as the Air District to analyze these two categories of air pollutants under CEQA. The Air District will also explain how the Court of Appeal's opinion is based upon a fundamental misunderstanding of these two different approaches by requiring the County of Fresno to correlate the project's *criteria* pollution emissions with *local* health impacts. In doing

⁶ CEQA does not require speculation. *See, e.g., Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 6 Cal. 4th 1112, 1137 (1993) (upholding EIR that failed to evaluate cumulative toxic air emission increases given absence of any acceptable means for doing so).

so, the Air District will provide helpful analysis to support its position that at least insofar as criteria pollutants are concerned, CEQA does not require an EIR to correlate a project's air quality emissions to specific health impacts, because such an analysis is not reasonably feasible.

Rule 8.520 Disclosure

Pursuant to Cal. R. 8.520(f)(4), neither the Plaintiffs nor the Defendant or Real Party In Interest or their respective counsel authored this brief in whole or in part. Neither the Plaintiffs nor the Defendant or Real Party in Interest or their respective counsel made any monetary contribution towards or in support of the preparation of this brief.

CONCLUSION

On behalf of the San Joaquin Valley Unified Air Pollution Control District, we respectfully request that this Court accept the filing of the attached brief.

Dated: April 2, 2015



Annette A. Ballatore-Williamson
District Counsel
Attorney for Proposed Amicus Curiae

SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL
DISTRICT

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I. INTRODUCTION.

The San Joaquin Valley Unified Air Pollution Control District (“Air District”) respectfully submits that the Court of Appeal erred when it held that the air quality analysis contained in the Environmental Impact Report (“EIR”) for the Friant Ranch development project was inadequate under the California Environmental Quality Act (“CEQA”) because it did not include an analysis of the correlation between the project’s criteria air pollutants and the potential adverse human health impacts. A close reading of the portion of the administrative record that gave rise to this issue demonstrates that the Court’s holding is based on a misunderstanding of the distinction between toxic air contaminants and criteria air pollutants.

Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants (hereinafter referred to as “TACs”) regulated by the United States Environmental Protection Agency (“EPA”) and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health,

they are distinguishable from TACs and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of TACs occurs solely under section 112 of the Act. *Compare* 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 *with* 42 U.S.C. § 7411.

The most relevant difference between criteria pollutants and TACs for purposes of this case is the manner in which human health impacts are accounted for. While it is common practice to analyze the correlation between an individual facility's TAC emissions and the expected localized human health impacts, such is not the case for criteria pollutants. Instead, the human health impacts associated with criteria air pollutants are analyzed and taken into consideration when EPA sets the national ambient air quality standard ("NAAQS") for each criteria pollutant. 42 U.S.C. § 7409(b)(1). The health impact of a particular criteria pollutant is analyzed on a regional and not a facility level based on how close the area is to complying with (attaining) the NAAQS. Accordingly, while the type of individual facility / health impact analysis that the Court of Appeal has required is a customary practice for TACs, it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task.

It is clear from a reading of both the administrative record and the Court of Appeal's decision that the Court did not have the expertise to fully

appreciate the difference between TACs and criteria air pollutants. As a result, the Court has ordered the County of Fresno to conduct an analysis that is not practicable and not likely yield valid information. The Air District respectfully requests that this portion of the Court of Appeal's decision be reversed.

II. THE COURT OF APPEAL ERRED IN FINDING THE FRIANT RANCH EIR INADEQUATE FOR FAILING TO ANALYZE THE SPECIFIC HUMAN HEALTH IMPACTS ASSOCIATED CRITERIA AIR POLLUTANTS.

Although the Air District does not take lightly the amount of air emissions at issue in this case, it submits that the Court of Appeal got it wrong when it required Fresno County to revise the Friant Ranch EIR to include an analysis correlating the criteria air pollutant emissions associated with the project with specific, localized health-impacts. The type of analysis the Court of Appeal has required will not yield reliable information because currently available modeling tools are not well suited for this task. Further, in reviewing this issue de novo, the Court of Appeal failed to appreciate that it lacked the scientific expertise to appreciate the significant differences between a health risk assessment commonly performed for toxic air contaminants and a similar type of analysis it felt should have been conducted for criteria air pollutants.

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A. Currently Available Modeling Tools are not Equipped to Provide a Meaningful Analysis of the Correlation between an Individual Development Project's Air Emissions and Specific Human Health Impacts.

In order to appreciate the problematic nature of the Court of Appeals' decision requiring a health risk type analysis for criteria air pollutants, it is important to understand how the relevant criteria pollutants (ozone and particulate matter) are formed, dispersed and regulated.

Ground level ozone (smog) is not directly emitted into the air, but is formed when precursor pollutants such as oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) are emitted into the atmosphere and undergo complex chemical reactions in the process of sunlight.¹ Once formed, ozone can be transported long distances by wind.² Because of the complexity of ozone formation, a specific tonnage amount of NO_x or VOCs emitted in a particular area does not equate to a particular concentration of ozone in that area. In fact, even rural areas that have relatively low tonnages of emissions of NO_x or VOCs can have high levels of ozone concentration simply due to wind transport.³ Conversely, the San Francisco Bay Area has six times more NO_x and VOC emissions per square mile than the San Joaquin Valley, but experiences lower

¹ See United States Environmental Protection Agency, *Ground-level Ozone: Basic Information*, available at: <http://www.epa.gov/airquality/ozonepollution/basic.html> (visited March 10, 2015).

² *Id.*

³ *Id.*

concentrations of ozone (and better air quality) simply because sea breezes disperse the emissions.⁴

Particulate matter (“PM”) can be divided into two categories: directly emitted PM and secondary PM.⁵ While directly emitted PM can have a localized impact, the tonnage emitted does not always equate to the local PM concentration because it can be transported long distances by wind.⁶ Secondary PM, like ozone, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur dioxides (SO_x) and NO_x.⁷ Because of the complexity of secondary PM formation, the tonnage of PM-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary PM in that area.

The disconnect between the *tonnage* of precursor pollutants (NO_x, SO_x and VOCs) and the *concentration* of ozone or PM formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects, but the concentration of resulting ozone or PM. Indeed, the national ambient air quality standards (“NAAQS”), which are statutorily required to be set by the United States Environmental Protection

⁴ *San Joaquin Valley Air Pollution Control District 2007 Ozone Plan*, Executive Summary p. ES-6, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/03%20Executive%20Summary.pdf (visited March 10, 2015).

⁵ United States Environmental Protection Agency, *Particulate Matter: Basic Information*, available at: <http://www.epa.gov/airquality/particulatepollution/basic.html> (visited March 10, 2015).

⁶ *Id.*

⁷ *Id.*

Agency (“EPA”) at levels that are “requisite to protect the public health,” 42 U.S.C. § 7409(b)(1), are established as concentrations of ozone or particulate matter and not as tonnages of their precursor pollutants.⁸

Attainment of a particular NAAQS occurs when the concentration of the relevant pollutant remains below a set threshold on a consistent basis throughout a particular region. For example, the San Joaquin Valley attained the 1-hour ozone NAAQS when ozone concentrations remained at or below 0.124 parts per million Valley-wide on 3 or fewer days over a 3-year period.⁹ Because the NAAQS are focused on achieving a particular concentration of pollution region-wide, the Air District’s tools and plans for attaining the NAAQS are regional in nature.

For instance, the computer models used to simulate and predict an attainment date for the ozone or particulate matter NAAQS in the San Joaquin Valley are based on regional inputs, such as regional inventories of precursor pollutants (NO_x, SO_x and VOCs) and the atmospheric chemistry and meteorology of the Valley.¹⁰ At a very basic level, the models simulate future ozone or PM levels based on predicted changes in precursor

⁸ See, e.g., United States Environmental Protection Agency, *Table of National Ambient Air Quality Standards*, available at: <http://www.epa.gov/air/criteria.html#3> (visited March 10, 2015).

⁹ *San Joaquin Valley Unified Air Pollution Control District 2013 Plan for the Revoked 1-Hour Ozone Standard*, Ch. 2 p. 2-16, available at: http://www.valleyair.org/Air_Quality_Plans/OzoneOneHourPlan2013/02Chapter2ScienceTrendsModeling.pdf (visited March 10, 2015).

¹⁰ *Id.* at Ch. 2 p. 2-19 (visited March 12, 2015); *San Joaquin Valley Unified Air Pollution Control District 2008 PM_{2.5} Plan*, Appendix F, pp. F-2 – F-5, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Final_Adopted_PM2.5/20%20Appendix%20F.pdf (visited March 19, 2015).

emissions Valley wide.¹¹ Because the NAAQS are set levels necessary to protect human health, the closer a region is to attaining a particular NAAQS, the lower the human health impact is from that pollutant.

The goal of these modeling exercises is not to determine whether the emissions generated by a particular factory or development project will affect the date that the Valley attains the NAAQS. Rather, the Air District's modeling and planning strategy is regional in nature and based on the extent to which *all* of the emission-generating sources in the Valley (current and future) must be controlled in order to reach attainment.¹²

Accordingly, the Air District has based its thresholds of significance for CEQA purposes on the levels that scientific and factual data demonstrate that the Valley can accommodate without affecting the attainment date for the NAAQS.¹³ The Air District has tied its CEQA significance thresholds to the level at which stationary pollution sources permitted by the Air District must "offset" their emissions.¹⁴ This "offset"

¹¹ *Id.*

¹² Although the Air District does have a dispersion modeling tool used during its air permitting process that is used to predict whether a particular project's directly emitted PM will either cause an exceedance of the PM NAAQS or contribute to an existing exceedance, this model bases the prediction on a worst case scenario of emissions and meteorology and has no provision for predicting any associated human health impacts. Further, this analysis is only performed for stationary sources (factories, oil refineries, etc.) that are required to obtain a New Source Review permit from the Air District and not for development projects such as Friant Ranch over which the Air District has no preconstruction permitting authority. See San Joaquin Valley Unified Air Pollution Control District Rule 2201 §§ 2.0; 3.3.9; 4.14.1, available at: <http://www.valleyair.org/rules/curnrules/Rule22010411.pdf> (visited March 19, 2015).

¹³ *San Joaquin Valley Unified Air Pollution Control District Guide to Assessing and Mitigating Air Quality Impacts*, (March 19, 2015) p. 22, available at: <http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan%202002%20Rev.pdf> (visited March 30, 2015).

¹⁴ *Id.* at pp. 22, 25.

level allows for growth while keeping the cumulative effects of all new sources at a level that will not impede attainment of the NAAQS.¹⁵ In the Valley, these thresholds are 15 tons per year of PM, and 10 tons of NOx or VOC per year. *Sierra Club, supra*, 172 Cal.Rptr.3d at 303; AR 4554. Thus, the CEQA air quality analysis for criteria pollutants is not really a localized, project-level impact analysis but one of regional, “cumulative impacts.”

Accordingly, the significance thresholds applied in the Friant Ranch EIR (15 tons per year of PM and 10 tons of NOx or VOCs) are not intended to be indicative of any localized human health impact that the project may have. While the health effects of air pollution are of primary concern to the Air District (indeed, the NAAQS are established to protect human health), the Air District is simply not equipped to analyze whether and to what extent the criteria pollutant emissions of an individual CEQA project directly impact human health in a particular area. This is true even for projects with relatively high levels of emissions of criteria pollutant precursor emissions.

For instance, according to the EIR, the Friant Ranch project is estimated to emit 109.52 tons per year of ROG (VOC), 102.19 tons per year of NOx, and 117.38 tons per year of PM. Although these levels well

¹⁵ ¹⁵ *San Joaquin Valley Unified Air Pollution Control District Environmental Review Guidelines* (Aug. 2000) p. 4-11, available at: http://www.valleyair.org/transportation/CEQA%20Rules/ERG%20Adopted%20_August%202000_.pdf (visited March 12, 2015).

exceed the Air District's CEQA significance thresholds, this does not mean that one can easily determine the concentration of ozone or PM that will be created at or near the Friant Ranch site on a particular day or month of the year, or what specific health impacts will occur. Meteorology, the presence of sunlight, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone or PM. This is especially true for a project like Friant Ranch where most of the criteria pollutant emissions derive not from a single "point source," but from area wide sources (consumer products, paint, etc.) or mobile sources (cars and trucks) driving to, from and around the site.

In addition, it would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have. As discussed above, the currently available modeling tools are equipped to model the impact of *all* emission sources in the Valley on attainment. According to the most recent EPA-approved emission inventory, the NO_x inventory for the Valley is for the year 2014 is 458.2 tons per day, or 167,243 tons per year and the VOC (or ROG) inventory is 361.7 tons per day, or 132,020.5 tons per year.¹⁶ Running the photochemical grid model used for predicting ozone attainment with the

¹⁶ *San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan*, Appendix B pp. B-6, B-9, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/19%20Appendix%20B%20April%202007.pdf (visited March 12, 2015).

emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NOx and VOC in the Valley) is not likely to yield valid information given the relative scale involved.

Finally, even once a model is developed to accurately ascertain local increases in concentrations of photochemical pollutants like ozone and some particulates, it remains impossible, using today's models, to correlate that increase in concentration to a specific health impact. The reason is the same: such models are designed to determine regional, population-wide health impacts, and simply are not accurate when applied at the local level.

For these reasons, it is not the norm for CEQA practitioners, including the Air District, to conduct an analysis of the localized health impacts associated with a project's criteria air pollutant emissions as part of the EIR process. When the accepted scientific method precludes a certain type of analysis, "the court cannot impose a legal standard to the contrary." *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 717 n. 8. However, that is exactly what the Court of Appeal has done in this case. Its decision upends the way CEQA air quality analysis of criteria pollutants occurs and should be reversed.

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B. The Court of Appeal Improperly Extrapolated a Request for a Health Risk Assessment for Toxic Air Contaminants into a Requirement that the EIR contain an Analysis of Localized Health Impacts Associated with Criteria Air Pollutants.

The Court of Appeal's error in requiring the new health impact analysis for criteria air pollutants clearly stems from a misunderstanding of terms of art commonly used in the air pollution field. More specifically, the Court of Appeal (and Appellants Sierra Club et al.) appear to have confused the health risk analysis ("HRA") performed to determine the health impacts associated with a project's toxic air contaminants ("TACs"), with an analysis correlating a project's criteria air pollutants (ozone, PM and the like) with specific localized health impacts.

The first type of analysis, the HRA, is commonly performed during the Air District's stationary source permitting process for projects that emit TACs and is, thus, incorporated into the CEQA review process. An HRA is a comprehensive analysis to evaluate and predict the dispersion of TACs emitted by a project and the potential for exposure of human populations. It also assesses and quantifies both the individual and population-wide health risks associated with those levels of exposure. There is no similar analysis conducted for criteria air pollutants. Thus, the second type of analysis (required by the Court of Appeal), is not currently part of the Air District's process because, as outlined above, the health risks associated

with exposure to criteria pollutants are evaluated on a regional level based on the region's attainment of the NAAQS.

The root of this confusion between the types of analyses conducted for TACs versus criteria air pollutants appears to stem from a comment that was presented to Fresno County by the City of Fresno during the administrative process.

In its comments on the draft EIR, the City of Fresno (the only party to raise this issue) stated:

[t]he EIR must disclose the human health related effects of the Project's air pollution impacts. (CEQA Guidelines section 15126.2(a).) The EIR fails completely in this area. The EIR should be revised to disclose and determine the significance of TAC impacts, and of human health risks due to exposure to Project-related air emissions.

(AR 4602.)

In determining that the issue regarding the correlation between the Friant Ranch project's criteria air pollutants and adverse health impacts was adequately exhausted at the administrative level, the Court of Appeal improperly read the first two sentences of the City of Fresno's comment in isolation rather than in the context of the entire comment. *See Sierra Club v. County of Fresno* (2014) 172 Cal.Rptr.3d 271, 306. Although the comment first speaks generally in terms of "human health related effects" and "air pollution," it requests only that the EIR be revised to disclose "the significance of TACs" and the "human health risks due to exposure."

The language of this request in the third sentence of the comment is significant because, to an air pollution practitioner, the language would only have indicated only that a HRA for TACs was requested, and not a separate analysis of the health impacts associated with the project's criteria air pollutants. Fresno County clearly read the comment as a request to perform an HRA for TACs and limited its response accordingly. (AR 4602.)¹⁷ The Air District submits that it would have read the City's comment in the same manner as the County because the City's use of the terms "human health risks" and "TACs" signal that an HRA for TACs is being requested. Indeed, the Air District was also concerned that an HRA be conducted, but understood that it was not possible to conduct such an analysis until the project entered the phase where detailed site specific information, such as the types of emission sources and the proximity of the sources to sensitive receptors became available. (AR 4553.)¹⁸ The City of Fresno was apparently satisfied with the County's discussion of human health risks, as it did not raise the issue again when it commented on the final EIR. (AR 8944 – 8960.)

¹⁷ Appellants do not challenge the manner in which the County addressed TACs in the EIR. (Appellants' Answer Brief p. 28 fn. 7.)

¹⁸ Appellants rely on the testimony of Air District employee, Dan Barber, as support for their position that the County should have conducted an analysis correlating the project's criteria air pollutant emissions with localized health impacts. (Appellants Answer Brief pp. 10-11; 28.) However, Mr. Barber's testimony simply reinforces the Air District's concern that a risk assessment (HRA) be conducted once the actual details of the project become available. (AR 8863.) As to criteria air pollutants, Mr. Barber's comments are aimed at the Air District's concern about the amount of emissions and the fact that the emissions will make it "more difficult for Fresno County and the Valley to reach attainment which means that the health of Valley residents maybe [sic] adversely impacted." Mr. Barber says nothing about conducting a separate analysis of the localized health impacts the project's emissions may have.

The Court of Appeal's holding, which incorrectly extrapolates a request for an HRA for TACs into a new analysis of the localized health impacts of the project's criteria air pollutants, highlights two additional errors in the Court's decision.

First, the Court of Appeal's holding illustrates why the Court should have applied the deferential substantial evidence standard of review to the issue of whether the EIR's air quality analysis was sufficient. The regulation of air pollution is a technical and complex field and the Court of Appeal lacked the expertise to fully appreciate the difference between TACs and criteria air pollutants and tools available for analyzing each type of pollutant.

Second, it illustrates that the Court likely got it wrong when it held that the issue regarding the criteria pollutant / localized health impact analysis was properly exhausted during the administrative process. In order to preserve an issue for the court, '[t]he "exact issue" must have been presented to the administrative agency....' [Citation.] *Citizens for Responsible Equitable Environmental Development v. City of San Diego*, (2011) 196 Cal.App.4th 515, 527 129 Cal.Rptr.3d 512, 521; *Sierra Club v. City of Orange* (2008) 163 Cal.App.4th 523, 535, 78 Cal.Rptr.3d 1, 13. "[T]he objections must be sufficiently specific so that the agency has the

opportunity to evaluate and respond to them.’ [Citation.]” *Sierra Club v. City of Orange*, 163 Cal.App.4th at 536.¹⁹

As discussed above, the City’s comment, while specific enough to request a commonly performed HRA for TACs, provided the County with no notice that it should perform a new type of analysis correlating criteria pollutant tonnages to specific human health effects. Although the parties have not directly addressed the issue of failure to exhaust administrative remedies in their briefs, the Air District submits that the Court should consider how it affects the issues briefed by the parties since “[e]xhaustion of administrative remedies is a jurisdictional prerequisite to maintenance of a CEQA action.” *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1199, 22 Cal.Rptr.3d 203.

III. CONCLUSION

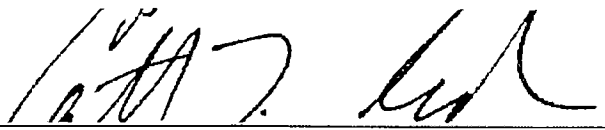
For all of the foregoing reasons, the Air District respectfully requests that the portion of the Court of Appeal’s decision requiring an analysis correlating the localized human health impacts associated with an individual project’s criteria air pollutant emissions be reversed.

¹⁹ *Sierra Club v. City of Orange*, is illustrative here. In that case, the plaintiffs challenged an EIR approved for a large planned community on the basis that the EIR improperly broke up the various environmental impacts by separate project components or “piecemealed” the analysis in violation of CEQA. In evaluating the defense that the plaintiffs had failed to adequately raise the issue at the administrative level, the Court held that comments such as “the use of a single document for both a project-level and a program-level EIR [is] ‘confusing’,” and “[t]he lead agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project,” were too vague to fairly raise the argument of piecemealing before the agency. *Sierra Club v. City of Orange*, 163 Cal.App.4th at 537.

correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

Respectfully submitted,

Dated: April 2, 2015

A handwritten signature in black ink, appearing to read 'C. Redmond', is written over a horizontal line.

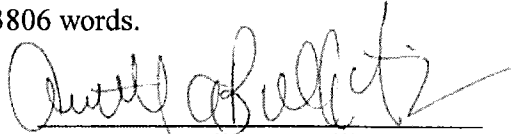
Catherine T. Redmond
Attorney for Proposed Amicus
Curiae

SAN JOAQUIN VALLEY
UNIFIED
AIR POLLUTION CONTROL
DISTRICT

CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.204 of the California Rules of Court, I hereby certify that this document, based on the Word County feature of the Microsoft Word software program used to compose and print this document, contains, exclusive of caption, tables, certificate of word count, signature block and certificate of service, 3806 words.

Dated: April 2, 2015

A handwritten signature in cursive script, appearing to read "Annette A. Ballatore-Williamson", written over a horizontal line.

Annette A. Ballatore-Williamson
District Counsel (SBN 192176)

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

PROOF OF SERVICE

I am over the age of 18 years and not a party to the above-captioned action; that my business address is San Joaquin Valley Unified Air Pollution Control District located at 1990 E. Gettysburg Avenue, Fresno, California 93726.

On April 2, 2015, I served the document described below:

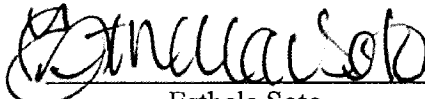
**APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF
SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN
SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO**

On all parties to this action at the following addresses and in the following manner:

PLEASE SEE ATTACHED SERVICE LIST

- (XX) **(BY MAIL)** I caused a true copy of each document(s) to be laced in a sealed envelope with first-class postage affixed and placed the envelope for collection. Mail is collected daily at my office and placed in a United State Postal Service collection box for pick-up and delivery that same day.
- () **(BY ELECTRONIC MAIL)** I caused a true and correct scanned image (.PDF file) copy to be transmitted via electronic mail transfer system in place at the San Joaquin Valley Unified Air Pollution Control District ("District"), originating from the undersigned at 1990 E. Gettysburg Avenue, Fresno, CA, to the address(es) indicated below.
- () **(BY OVERNIGHT MAIL)** I caused a true and correct copy to be delivered via Federal Express to the following person(s) or their representative at the address(es) listed below.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that I executed this document on April 2, 2015, at Fresno, California.



Esthela Soto

SERVICE LIST

Sierra Club et al, v. County of Fresno, et al

Supreme Court of California Case No.: S219783

Fifth District Court of Appeal Case No.: F066798

Fresno County Superior Court Case No.: 11CECG00726

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Clerk of the Court Superior Court of California County of Fresno 1130 'O' Street Fresno, California 93721 Telephone: (559) 457-1900	
Clerk of the Court Fifth District Court of Appeal 2424 Ventura Street Fresno, California 93721 Telephone: (559) 445-5491	

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Marcia L. Scully, Esq. General Counsel METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA Post Office Box 54153 Los Angeles, California 90054 Telephone: (213) 217-6115	Attorney for Amicus Curiae, The Metropolitan Water District of Southern CA
Amy Minter, Esq. CHATEN-BROWN & CARSTENS LLP 2200 Pacific Coast Highway, Suite 318 Hermosa Beach, California 90254 Telephone: (310) 798-2400 Facsimile: (310) 798-2402 Email: ACM@CBCEarthlaw.com	Attorney for Amici Curiae, Association of Irrigated Residents, Medical Advocates for Healthy Air, and Coalition for Clean Air
Shanda M. Beltran, Esq. General Counsel BUILDING INDUSTRY LEGAL DEFENSE FOUNDATION 17744 Sky Park Cr., Suite 170 Irvine, California 92614 Telephone: (949) 553-9500 Facsimile: (949) 769-8943 Email: sbeltran@biasec.org	Attorney for Amicus Curiae, Building Industry Legal Defense Foundation
Gene Talmadge, President CALIFORNIA ASSOCIATION OF ENVIRONMENTAL PROFESSIONALS 40747 Baranda Court Palm Desert, California 92260 Telephone: (760) 340-4499 Facsimile: (760) 674-2479	Attorney for Amicus Curiae, California Association of Environmental Professionals
Jennifer L. Hernandez, Esq. HOLLAND & KNIGHT LLP 50 California Street, Suite 2800 San Francisco, California 94111	On behalf of Amicus Curiae, CEQA Research Council

Telephone: (415) 743-6927 Facsimile: (415) 743-6910 Email: Jennifer.hernandez@hklaw.com	
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Fairview at Northgate Final EIR
Response to Letter E
Appendix C
Updated Will Serve Letter and City Water Supply Confirmation



Water Department · 202 Fleming Hill Road · Vallejo · CA · 94589 · 707.648.4307

March 03, 2020

Lewis Management Corp.
9216 Kiefer Blvd.
Sacramento, CA 95826

SUBJECT: WILL SERVE LETTER FOR THE COMMERCIAL DEVELOPMENT AT,
ADMIRAL CALLAGHAN LANE, VALLEJO, CA, APN 0081-490-010

FILE: (DF) COOKE PROPERTY

Dear Jeb Elmore:

In reply to your request, the City of Vallejo will provide potable water from Vallejo's Water System to your proposed commercial and residential development at Admiral Callaghan Lane, Vallejo, APN 0081-490-010, upon completion of the following conditions:

1. Submit for City's review and approval, the building site plan (as approved by City of Vallejo) showing any of the existing/proposed water service, meter and backflow location as it relates to the driveway, curb and gutter, sidewalk, existing water main and nearest existing fire hydrant.
2. Provide water meter and service sizing calculations per most recent California Plumbing Code, include a water fixture count table with proposed water fixtures and water demand.
3. Payment of applicable capacity charges as it relates to commercial development, dependent on the City of Vallejo's classification.

If you have any questions, I can be reached at (707) 648-5204.

Sincerely,

Addison LeBlanc
Assistant Engineer

cc: Mark Quady, Engineering Manager

Jewell, Alex

From: Jewell, Alex
Sent: Friday, March 13, 2020 3:32 PM
To: Jewell, Alex
Subject: RE: Fairview at Northgate - confirmation of water supply

From: Mark Quady
Sent: Friday, March 06, 2020 10:57 AM
To: Aaron Sage <Aaron.Sage@cityofvallejo.net>; Addison LeBlanc <Addison.LeBlanc@cityofvallejo.net>
Cc: Melissa Cansdale <Melissa.Cansdale@cityofvallejo.net>
Subject: RE: Fairview at Northgate - confirmation of water supply

Hi Aaron,

We have adequate supply.

Best,

Mark Quady, P.E.
Engineering Manager
City of Vallejo | Water Department
Offc: (707) 648-4309 | mark.quady@cityofvallejo.net

From: Aaron Sage
Sent: Friday, March 6, 2020 9:41 AM
To: Mark Quady <Mark.Quady@cityofvallejo.net>; Addison LeBlanc <Addison.LeBlanc@cityofvallejo.net>
Subject: Fairview at Northgate - confirmation of water supply

Hi Mark and Addison,

We are responding to public comments on the project EIR and need written confirmation from you that Vallejo Water has adequate supply to serve this project both now and over the long term. Can you please reply to this e-mail with that confirmation. Please let me know if any further questions or if you'd like to see the EIR discussion on this topic.

Regards,
Aaron

Aaron Sage, AICP
Principal Planner
City of Vallejo | Planning & Development Services Dept., Planning Division
(707) 648-5391 | aaron.sage@cityofvallejo.net



Fairview at Northgate Final EIR
Response to Letter E
Appendix D
Resumes of Biological Resources Assessment Preparers



LESLIE LAZAROTTI Principal

Years of Experience: 15

Education

M.S., Ecology, San Francisco State University, San Francisco, 2004

B.S., Biology, University of California, Davis, 2001

B.A., English, University of California, Davis, 2001

Professional Affiliations/Certifications

California Native Plant Society

Association of Environmental Professionals

Society of Wetland Scientists

CREW, East Bay

Bay Planning Coalition, Member Sustainable Waterfronts Committee

California Coastal Resilience Network

Specialized Training

- Surface Mining and Reclamation Act (SMARA) Workshop, Office of Mine Reclamation, 2009
- Coastal Development in California, Lorman Education Services, 2008
- Legally Defensible Environmental Review Under CEQA, Lorman Educational Services, 2007
- Environmental Impact and CEQA: Getting it Right, Northwest Environmental Training Center, 2006
- Poaceae Identification Training, Jepson Herbarium, University of California, Berkeley, 2006
- Flora of San Luis Obispo, Jepson Herbarium, University of California, Berkeley, 2006

Leslie Lazarotti is a Principal at WRA, Inc. Her main focus is helping clients understand the interface of California's environmental regulations and natural communities. She has worked on projects throughout the varied ecosystems of California, including sensitive coastal communities and wetland habitats. Prior to joining WRA, Leslie worked for San Francisco State University, San Francisco Estuary Institute, and the State Water Quality Resources Control Board as part of the 401 Water Quality Certification Program. She specializes in preparing multi-agency permitting approaches for redevelopment projects along San Francisco Bay, infrastructure improvement projects, and open space and park projects with public access elements. Leslie is also one of WRA's foremost experts in California Coastal Zone requirements.

Representative Projects

Development

East Bay Municipal Utility District, Recoat Mokelumne Aqueduct Project, Bay-Delta, California

The East Bay Municipal Utility District (EBMUD) Mokelumne Aqueduct Recoating Project Phase 8 was conducted at four project sites located in San Joaquin and Contra Costa counties. Leslie worked with the extensive project team to perform biological assessments and compile and submit permit applications to the Corps, RWQCB, and CDFG. Leslie wrote the Wetland Mitigation and Monitoring Plan, reviewed design specifications, and acted as liaison to interested agencies. The permit applications were submitted to and approved by the regulatory agencies. Due to an immediate success of the revegetation of the project sites, Leslie worked with the agencies towards an agreement that the mitigation requirements were met two years ahead of schedule.

Runnymede Storm Drain Phase II Project and Repair of the O'Connor Pump Station Outfall Structure, East Palo Alto, California

To improve local water conveyance and reduce the potential for flood events, the Runnymede Storm Drain project will alleviate flooding along the urban/bay interface in East Palo Alto. WRA worked with the City and its engineers in the development of alternatives to reduce project impacts to wetlands. As a result, the project's excavated materials will be placed on-site as part of a berm that further reduces the potential for flooding while reducing costs associated with soil hauling. Leslie managed overall efforts to complete supportive biological resources evaluation and report for the project, which provided material for the City's CEQA Initial Study and Mitigated Negative Declaration (IS/MND). In addition, Leslie developed and implemented the overall permitting strategy for the project. The project has completed CEQA, has acquired all required regulatory permits, including a Biological Opinion from USFWS, and completed Phase 1 of construction during 2014. Phase 2 of the Project will commence during September of 2016; Leslie will continue to ensure the City is meeting all agency permit requirements, including having a biological monitor and Native American monitor on-site during construction activities.



**MICHAEL JOSSELYN, PhD,
PWS**
Principal, Senior Wetland
Ecologist

Years of Experience: 40

Education

PhD, Marine Botany, University of
New Hampshire, 1978

MS, Marine Science, University of
Miami, 1975

BS, Biology, Cornell University, 1972

**Professional Affiliations/
Certifications**

Society of Wetland Scientists

Professional Wetland Scientist
Certification Program (Past
President)

Association of State Wetland
Managers

American Association for
Advancement of Science

Specialized Training

Certified Professional Wetland
Scientist

Honors and Awards

Conservator of the Year, 2000, Bolsa
Chica Conservancy

Life Time Fellow, California Academy
of Sciences

As a co-founder and former President of WRA Inc., Mike Josselyn formed the company to incorporate the best scientific information on the environment to assist clients with environmental compliance and to assure successful implementation of habitat protection and restoration plans. Mike's work has focused on environmental permitting and habitat restoration, large scale restoration and conservation planning, and expert testimony. The company currently employs over 85 professionals at offices in San Rafael, Emeryville, Petaluma, and San Diego.

Mike has consulted internationally on wetland ecology and restoration. He has authored or edited several books and more than 50 articles on wetland ecology and mitigation published in national and international scientific journals. He was a Professor of Biology at San Francisco State University for 22 years and was the Director of the University's Romberg Tiburon Center for Environmental Studies. He was trained as a US Aquanaut in the NOAA "Man-in-the Sea" program and participated in five underwater missions.

He has successfully completed major wetland mitigation and restoration projects for transportation agencies, port authorities, utilities, private developers, and non-profit organizations. He has been the lead biologist for major conservation plans at Tejon Ranch in Kern County, for the Sunrise Powerlink in San Diego, and for several large scale wetland restoration projects throughout the nation. He has received awards for his work at the 1000-acre Bolsa Chica tidal restoration project, the Gateway Center tidal wetland on San Francisco Bay, and for the design of freshwater wetlands at the Santa Lucia Preserve in Monterey.

As a recognized expert in his field, he has served on national advisory committees to the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration, and the National Wetlands Technical Council in the development of federal wetland policy and research. He has served as a peer reviewer for State TMDL programs, served on the Wetland Recovery Program's Science Advisory Panel, and is an expert on the Santa Susanna Field Laboratory Surface Water Panel. He was appointed as to the Science Advisory Panel to the EPA to prepare a report on the proposed federal definition of "waters of the United States". He has participated in scientific advisory missions to the Philippines, Japan, and China. Mike has also provided expert witness services to the Department of Justice, the State of California, and many private parties.

Mike is a Professor Emeritus at San Francisco State University. Mike has taught courses in wetland restoration and mitigation for the U.S. Army Corps of Engineers, the Wetland Training Institute, and CLE International.

He is currently a Fellow of the California Academy of Sciences and a Certified Professional Wetland Scientist.



ELLIE KNECHT
Regulatory Permitting
Specialist

Years of Experience: 6

Education

Masters of Environmental Science &
Management, University of California
Santa Barbara, 2012

BA, University of California Berkeley,
2004

At WRA, Ellie's work includes biological resource assessment, wetland delineation, rare plant surveys, and environmental compliance and permitting including U.S. Army Corps of Engineers (ACOE) section 404 permits, Regional Water Quality Control Board (RWQCB) section 401 permits, San Francisco Bay Conservation and Development Commission (BCDC) permits and California Department of Fish and Wildlife (CDFW) Lake and Streambed Alteration Agreements. Prior to joining WRA in 2014, Ellie worked as a coastal program analyst in the regulatory division of BCDC. She has extensive experience in permitting for a wide-range of projects in the San Francisco Bay and is familiar with regulatory requirements related to the sensitive plant and wildlife species of the San Francisco Bay. Ellie received a Masters degree in Environmental Science and Management (MESM) from the Bren School at the University of California, Santa Barbara, where she specialized in conservation planning and water resource management.

Representative Projects

India Basin Shoreline, San Francisco, California

Ellie is assisting with a public-private partnership to redevelop the India Basin shoreline in the Hunter's Point area of San Francisco. She conducted a wetland delineation and biological resource assessment for the property and provides on-going guidance with regard to regulatory permitting for the redevelopment.

Treasure Island/Yerba Buena Island Redevelopment, San Francisco, California

The Treasure Island and Yerba Buena Island Redevelopment Project involves the conversion of 460 acres of the former Naval Base Treasure Island to mixed-use development, parks, and open space sponsored by the City of San Francisco and a consortium of private developers. It is one of the largest and most visible projects in the San Francisco Bay Area in the last 30 years. The project requires shoreline improvements and construction of a new ferry terminal located within an existing Anchorage Zone designated by the U.S. Coast Guard. Ellie assisted with obtaining regulatory permits for the project, including an Individual Permit from the Corps, RWQCB Water Quality Certification, NMFS consultation, and a BCDC Major Permit. This work included negotiation with BCDC of the total area of public access that would be designated and required by the permit, developing content for the project's Sea Level Rise Adaptive Management Plan, coordinating mitigation with the California Coastal Conservancy, and working with the U.S. Coast Guard to address issues related to the designated Anchorage Area



ROB SCHELL
Senior Wildlife Biologist

Rob Schell has more than 15 years of experience both managing and performing key technical roles in dozens of projects throughout California. In his role at WRA, Rob works alongside his clients to come up with efficient and cost effective solutions to complex and diverse environmental challenges. In addition to serving as the Wildlife Team Leader at WRA, Rob manages and acts as the technical wildlife lead on multiple complex permitting projects. Rob's work has led to the preservation of thousands of acres of habitat for threatened and endangered species.

Rob is a herpetologist and ecologist by training. He is considered an expert on the California red-legged frog, which he is currently undertaking a first of its kind translocation. Rob also has extensive experience with California tiger salamander and vernal pool branchiopods, for which he also holds federal recovery permits. Rob also is permitted to handle bats and CESA-listed reptiles and amphibians throughout California. Additionally, he performs surveys and assessments for many other special status species including bats.

Representative Projects

Austin Quarry, Madera County, California 2016 – Present

Vulcan Materials Company (VMC) is in the final permitting stages for development of a 348-acre hard-rock mine and processing plant within an existing vernal pool complex north of the Fresno, in Madera County. Once developed, the quarry will operate for approximately 100-years. The Project also includes preservation and entitlement of a 765-acre Conservation Easement on an adjacent property. WRA is coordinating and negotiating the issuance of the Project CDFW 2081, ACOE 404, and USFWS Section 7 Permits, including development of the Long Term Management Plan for the mitigation preserve.

Rob is the WRA Project Manager, and currently working on the final stages of Project permitting. Rob was the lead on preparation and negotiating the USFWS Biological Opinion and CDFW 2081 ITP for California Tiger Salamander, vernal pool branchiopods, and listed vernal pool plants. Rob is also the technical biological lead, preparing the CTS fencing plans, mortality reduction and relocation plans, and contributed to the interim- and long-term management plans for the adjacent 765-acre Fenston Preserve, which will serve as project mitigation.

Environmental Protection Agency Vernal Pool Study, California Central Valley, 2018 – Present

The U.S. EPA is undertaking a study to investigate pesticide effects on the vernal pool habitats of California's Central Valley. The EPA has contracted WRA to provide local technical input, permitting and logistical support, and to coordinate and lead the field sampling effort. In the Winter of 2019, Rob led the effort to sample 18 distinct vernal pool sites for vernal pool branchiopods between Colusa and Merced counties. Concurrently, soil, water and environmental DNA samples were collected for laboratory analysis. This project is ongoing and results of the analysis are pending.

Years of Experience: 15

Education

BS Evolution and Ecology, University of California: Davis

Professional Affiliations/

Certifications

USFWS 10(a)1(A) Recovery Permit
#TE-212445 3

- California red-legged frog
- California tiger salamander
- Vernal pool branchiopods

California Department of Fish and
Game Scientific Collecting Permit
#SC-7966

- Bats
- CESA Herps
- California tiger salamander
- Foothill yellow-legged frog
- Cascade Frog

Presentations

Amphibian Population Task Force
Western Bat Working Group
The Wildlife Society

Board of Directors

Dolce Vita Cycling 2017-2018
The Biodiversity Group 2018-2020



Nicholas Brinton
Associate Fisheries Biologist

Years of Experience: 7

Education

BS Wildlife, Fish and Conservation Biology, UC Davis, 2012

Technical Training:

Cal-Nevada AFS Fish Passage and Screening Criteria Workshop Sacramento, California, 2015.

BCM Bat Survey Techniques. Portal Arizona. 2016

Smith-Root Electrofishing Principals and Safety Certification 2019

Mine Safety and Health Administration Part 46 Certified Surface Miner

Professional Affiliations/ Certifications

Member: American Fisheries Society

Nick earned his undergraduate degree in Wildlife, Fish and Conservation Biology from the University of California, Davis. Prior to working with WRA, Nick worked in a variety of locations throughout California, from the Sierra Nevada Mountains to the Central Valley, gaining an array of experience with various California fish and amphibian species.

As a fisheries biologist at WRA, Nick leads specialized permitting tasks, including Section 7 and Section 10 consultations with federal agencies, as well as Section 2081 and 1602 permitting with the state. In the field, he performs protocol level surveys and fish passage assessments, leads fish rescue and relocation projects, and conducts habitat and water quality assessments. He is specialized in fisheries-related issues and has performed fish rescues on numerous state and federal listed species, including Lahontan cutthroat trout, steelhead and Coho salmon. He holds a certification to operate electrofishing equipment, and leads electrofishing efforts for WRA's fisheries projects. In addition, Nick has gained extensive experience with California tiger salamander and California red-legged frog. For these species, he has led excavation and relocation efforts as well as trained staff to perform species-specific procedures for surveys, monitoring and relocation. When not leading permitting efforts, he acts as a project manager for efforts requiring meticulous compliance with permits pertaining to special-status fish and amphibians.

Representative Projects

Mare Island Ship Yard Dry Dock Fish Salvage, Vallejo, California, 2014-Present

Both government and private ships needing repair are brought to the dry docks at the former Mare Island Naval Shipyard. In accordance with permit requirements by the USFWS, NMFS, and CDFW, biologists are required to be present during final stages of dewatering to salvage (rescue) stranded fish from the dry dock. Captured fish are placed in aerated holding coolers, identified to species, enumerated and measured before being returned to the Mare Island Channel of the Napa River. Nick is the lead fisheries biologist for this operation. His primary responsibility for this project is in leading and overseeing field crews that conduct the salvage operations. He also coordinates with resource agency personnel ensuring permit compliance, and writes technical reports following each salvage event. He is authorized to handle and relocate longfin smelt, Delta smelt, steelhead, winter and spring-run Chinook salmon as well as green sturgeon at this site. To date he has performed more than 125 salvages at this site. This project is ongoing.

National Park Service Electrofishing Surveys, Muir Woods, Mill Valley California, 2019

As part of the monitoring efforts within the National Park system, NPS fisheries crews annually sample Redwood Creek within Muir Woods in order to monitor the population of Central California Coast steelhead and Central California Coast Coho salmon which occur in the creek. Nick assisted with the electrofishing survey in 2019 which resulted in the capture and handling of both Coho and steelhead.

Fairview at Northgate Final EIR

Comment Letter E (Patrick Soluri, March 2, 2020) Exhibits

EXHIBIT 1



TECHNICAL MEMORANDUM

To: Patrick Soluri
Soluri & Meserve Law Firm

Date: March 1, 2020

From: Ray Kapahi *RK*
Tel: 916-687-8352
Tel: 916-687-8352
E-Mail: ray.kapahi@gmail.com

Subject: Review of Health Risks Analysis Presented in the Draft EIR for the Fairview at Northgate Project, Vallejo, California

I have reviewed the health risk analyses for the Fairview at Northgate project located in Vallejo, CA. I reviewed the Draft Environmental Impact Report dated January 2020 including Appendix C. The later contains the Air Quality and Greenhouse Gas Study Modeling Data.

The risk analyses provide separate risk estimates associated with the construction and operational phases. The DEIR concluded that project level and cumulative public health risks would be less than significant for both phases.

The risk calculations rely on the use of HARP 2 risk model developed by the California Air Resources Board (CARB)¹. The model includes and air dispersion model and a risk model that incorporates all the toxicity data and risk calculations.

My comments are as follows:

- E-22 {
1. The HARP modeling results presented in Table 4.2-9 could not be verified as no electronic files or any HARP model reports were provided in Appendix C. HARP model provides a variety of model results and reports, including the export of risk data into

¹ HARP Model available at: <https://ww2.arb.ca.gov/our-work/programs/hot-spots-analysis-reporting-program>

E-22
cont'd

Google Earth or similar mapping programs. Without this information, it is not possible to view the spatial distribution of risk around the project site. The DEIR did include spatial distribution of annual PM-10 concentrations but not cancer risk values.

2. Mitigated and emissions were provided for both the construction and operational phases. However, I could not verify if these emissions actually were input into HARP 2. Appendix C did not contains any HARP modeling results. See sample below of the HARP Model screenshot from another project showing the emissions inventory input into HARP

Emission Inventory

Add	Import	Export	Delete All	Options	Filter:	
SrcID	StkID	ProID	PolID	PolAbbrev	Multiplier	Annual Ems (lbs/yr)
TRCK_I...	0	0	9901	DieselExhPM	1	1.7
LINE_H...	0	0	9901	DieselExhPM	1	3.3
OVG_B...	0	0	9901	DieselExhPM	1	315.2
SWTC_...	0	0	9901	DieselExhPM	1	161.3
OVG_T...	0	0	9901	DieselExhPM	1	37.7
TUG_T...	0	0	9901	DieselExhPM	1	75.6
TUG_B...	0	0	9901	DieselExhPM	1	13.4
TRK_T...	0	0	9901	DieselExhPM	1	8.2

E-23

Without such basic information, it is impossible to verify the risk calculations presented in the DEIR.

E-24

3. The annual concentration of PM-10 presented in Table 4.2-9 is incorrect. The annual concentration presented in this table was averaged over 5 years. The BAAQMD threshold referenced in this table (0.3 ug/m3) applies to the maximum annual concentration. The modeling analysis should have calculated the annual PM-10 concentration for each of the 5 years and presented the highest annual concentration in Table 4.2-9. As a result, the annual concentration was underestimated.

E-25

4. The PM-10 isopleth maps all show 5 year averaged annual concentration. Not the maximum annual concentration. As a result, the results presented in the isopleth maps cannot be compared with the BAAQMD CEQA threshold.

EXHIBIT 2

February 26, 2020

Mr. Patrick M. Soluri
Soluri Meserve
510 8th Street
Sacramento, CA 95814

**Subject: Comments on the Draft Environmental Impact Report for the Fairview at
Northgate Project**

Dear Mr. Soluri:

This letter contains my comments on the Draft Environmental Impact Report (“DEIR”) prepared by the City of Vallejo (“City”) for the Fairview at Northgate Project (“Project”). The Project proponent (“Applicant”) proposes a mixture of commercial, residential, recreation, and designated open space on 51.3 acres of undeveloped, vacant land in the City of Vallejo.

I am an environmental biologist with 26 years of professional experience in wildlife ecology and natural resources management. I have served as a biological resources expert for over 125 projects in California. My experience and scope of work in this regard has included assisting various clients with evaluations of biological resource issues, reviewing environmental compliance documents prepared pursuant to the California Environmental Quality Act (“CEQA”) and the National Environmental Policy Act (“NEPA”), and submitting written comments in response to CEQA and NEPA documents. My work has included the preparation of written and oral testimony for the California Energy Commission, California Public Utilities Commission, and Federal courts. My educational background includes a B.S. in Resource Management from the University of California at Berkeley, and a M.S. in Wildlife and Fisheries Science from the Pennsylvania State University. A copy of my current curriculum vitae is attached hereto.

The comments herein are based on my review of the environmental documents prepared for the Project, a review of scientific literature pertaining to biological resources known to occur in the Project area, consultations with other biological resource experts, and the knowledge and experience I have acquired during my 26-year career in the field of natural resources management.

EXISTING CONDITIONS

Special-Status Plants

E-26

WRA biologists visited the Project site on March 18 and May 3, 2017.¹ During the May visit, the biologists conducted: (1) a biological resources assessment, (2) a special-status plant survey, and (3) a wetland delineation (which involved evaluation of vegetation, soils, and hydrology at 16 sampling points).² According to WRA's Biological Resources Assessment ("BRA"), the special-status plant survey was conducted simultaneously with the biological resources assessment, and it involved walking meandering transects throughout all grassland and coyote brush scrub habitat in the Study Area (i.e., at the Project site).³ The BRA provides no information on: (a) the professional expertise of the investigating biologists, or (b) the level of effort (person-hours) those individuals devoted to the special-status plant survey. As a result, the BRA fails to provide evidence that the biologists had the expertise, and devoted the level of effort necessary, to make valid inferences on the potential for various special-status plant species to be present at the Project site.

E-27

Sixty-seven special-status plant species have been documented within the vicinity of the Project site.⁴ WRA determined that 37 of those species have no potential to occur at the site, 29 are unlikely to occur, and one has moderate potential to occur (although it was not detected during the survey).⁵ According to the BRA:

For the 29 species determined to be unlikely to occur at the site, some elements of suitable habitat may be present (e.g., grassland, seasonal wetland, coastal scrub); however, because of the high disturbance levels surrounding the site and the generally degraded condition of habitat, these species are unlikely to occur within the Study Area.⁶

This is not sufficient rationale to conclude the species are unlikely to occur at the site. Special-status plants can occur in degraded habitats and areas that have been subject to disturbance.^{7,8} Furthermore, even if it is "unlikely" that the 29 species occur at the Project site, their presence cannot be ruled out entirely. This is important because some of the special-status plants that may occur at the site would not have been evident and identifiable during WRA's survey (i.e., in May). For example, the following species are annual herbs that have the potential to occur at the Project site,⁹ and that generally are not evident and identifiable in early May:¹⁰

- Big tarplant (known to occur along roadside and in degraded habitats).¹¹

¹ BRA, p. 6.

² DEIR, Appendix D (Biological Resources Assessment and Delineation of Waters of the U.S. Report).

³ BRA, pp. 9 and 17.

⁴ BRA, p. 14.

⁵ BRA, p. 14.

⁶ BRA, p. 17.

⁷ California Natural Diversity Database. 2020 Feb 4. RareFind 5. California Department of Fish and Wildlife.

⁸ Based on Google Earth imagery, the site is now fenced and has been recovering from prior disturbance activities.

⁹ BRA, Appendix B.

¹⁰ Data provided by the participants of the Consortium of California Herbaria. Available at: ucjeps.berkeley.edu/consortium/. (Accessed 24 Feb 2020).

¹¹ California Natural Diversity Database. 2020 Feb 4. RareFind 5. California Department of Fish and Wildlife.

- E-27 cont'd
- Pappose tarplant (known to occur in degraded habitats and disturbed areas).¹²
 - Napa bluecurls

E-28

In addition, WRA's rationale for eliminating some species is inconsistent with scientific evidence. For example, WRA concluded dwarf downingia and legenera have no potential to occur at the Project site because: "[t]he Study Area does not contain vernal pool habitat."¹³ This is inconsistent with the Solano HCP, which identifies the Study Area as an area that supports vernal pool habitats.¹⁴ Nevertheless, dwarf downingia and legenera are not limited to vernal pools; they can occur in seasonal wetlands, mesic grasslands, and other seasonally wet areas (including roadside ditches and ruts).¹⁵

E-29

WRA eliminated Baker's navarretia because: "[t]he Study Area does not contain vernal pools or vernal swale habitats."¹⁶ WRA's rationale is unsupported because the Project site does indeed contain vernal swales and other habitat features (e.g., wet depressions)¹⁷ associated with occurrences of Baker's navarretia.¹⁸

Special-Status Animals

Pallid bat

E-30

The BRA suggests there is no potential for the pallid bat to roost in the Study Area because there are no suitable roost structures such as buildings, rock outcrops, or caves.¹⁹ Pallid bats exhibit plasticity in roost site selection and are known to roost in trees, including bole cavities in oaks.²⁰ The Project entails removal of trees,²¹ and according to the BRA: "the Study Area contains oaks and other trees that may contain cavities."²² Because WRA did not inspect the trees to determine whether they provide potential roost sites for the pallid bat, and because the DEIR does not incorporate mitigation, Project impacts on the pallid bat remain potentially significant.

Ferruginous hawk

E-31

The BRA states that the Project site provides winter foraging habitat for the ferruginous hawk.²³ However, it concludes the species is "unlikely" to occur at the site. The basis for this determination is: "this species does not nest in northern California."²⁴ The fact that ferruginous hawks do not nest in California is irrelevant because the special-status designation applies to

¹² *Ibid.*

¹³ BRA, Appendix B.

¹⁴ LSA. 2012 Oct. Solano Habitat Conservation Plan. Final Administrative Draft. p. 6-49 and Figure 4-8.

¹⁵ California Natural Diversity Database. 2020 Feb 4. RareFind 5. California Department of Fish and Wildlife.

¹⁶ BRA, Appendix B.

¹⁷ See Delineation of Waters of the U.S. Report, p. 9: "there is also a large swale complex and several small depressions that were characterized by hydrophytic vegetation."

¹⁸ California Natural Diversity Database. 2020 Feb 4. RareFind 5. California Department of Fish and Wildlife.

¹⁹ BRA, Appendix B.

²⁰ Western Bat Working Group. 2015. Species accounts. Available at: <<http://wbwg.org/western-bat-species/>>.

²¹ See DEIR, p. 4.3-28.

²² BRA, p. 20.

²³ BRA, Appendix B.

²⁴ *Ibid.*

E-31
cont'd

birds on their *wintering* grounds.²⁵ Therefore, the lack of nesting habitat on the Project site has no influence on the potential for ferruginous hawks to occur at the site, and thus, the potential for the Project to have a significant impact on this special-status species.

Western bumble bee

E-32

The western bumble bee is a State candidate for listing as Endangered.²⁶ The BRA states this subspecies is “unlikely” to occur at the Project site; however, it fails to provide the rationale for that determination.²⁷

According to the BRA: “[t]his insect may be occasionally found within the Study Area, however, the Study Area does not contain communities of flowering plants whose removal would constitute a significant loss of habitat for the species.”²⁸ This conclusion is not supported by scientific evidence or analysis. Furthermore, habitat for the western bumble bee is not limited to flowering plants; it also includes habitat that supports nests. Western bumble bees primarily nest underground, although they will nest on the surface (e.g., in clumps of grass).²⁹ Nesting colonies have become scarce and now appear to be largely restricted to high elevation sites in the Sierra Nevada and a few scattered areas along the California coast.³⁰ Therefore, impacts to a nesting colony at the Project site would constitute a significant impact that was not analyzed in the DEIR or BRA.

Vernal pool branchiopods

E-33

WRA concluded there is no potential for the vernal pool fairy shrimp, vernal pool tadpole shrimp, and California linderiella to occur at the Project site because: “[w]etlands within the Study Area are not vernal pools with underlying hardpan soils necessary to support this species.”³¹ WRA’s conclusion is inconsistent with soils data, which indicate portions of the Project site do indeed contain the clay pan soils necessary to support vernal pool branchiopods.^{32,33} Furthermore, vernal pool fairy shrimp, vernal pool tadpole shrimp, and California linderiella are not limited to “vernal pools;” they also occur in seasonal pools (wetlands) comparable to those found on the Project site.³⁴ As a result, the WRA’s conclusion

²⁵ See California Department of Fish and Wildlife, California Natural Diversity Database. 2018 Nov. Special Animals List.

²⁶ California Fish and Game Commission. 2019 Jun 18. Notice of Findings. Available at: <<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=170351&inline>>.

²⁷ BRA, Appendix B.

²⁸ *Ibid.*

²⁹ California Department of Fish and Wildlife. 2019 Apr 4. Evaluation of the Petition from the Xerces Society, Defenders of Wildlife, and the Center for Food Safety to List Four Species of Bumble Bees as Endangered Under the California Endangered Species Act. p. 30. Available at:

<<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=166804&inline>>.

³⁰ *Ibid.*, pp. 28 through 35.

³¹ BRA, Appendix B.

³² Wetland Delineation Report, p. 10.

³³ Clear Lake clay (0 to 2 percent slopes) has the highest “Ponding Frequency Class.” See Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available at: <<https://websoilsurvey.sc.egov.usda.gov/>>. Accessed 24 Feb 2020.

³⁴ California Natural Diversity Database. 2020 Feb 4. RareFind 5. California Department of Fish and Wildlife.

E-33 cont'd { that the Project site lacks suitable habitat for vernal pool branchiopods is not supported by any evidence. Because the DEIR does not incorporate mitigation, Project impacts on vernal pool branchiopods remain potentially significant.

PROJECT IMPACTS

Impact BIO-1 (Special-status birds)

E-34 { The DEIR identifies eight special-status bird species that have the potential to occur at the Project site. The DEIR's analysis of impacts to these species is limited to the potential for the Project to disturb or remove active nests (which would violate the Migratory Bird Treaty Act and California Fish and Game Code). The DEIR fails to analyze (or mitigate) the permanent habitat loss that would be caused by the Project. This is important because habitat loss is the primary threat to most of the special-status birds that occur (or may occur) at the Project site.³⁵

Impact BIO-2 (Wetlands and other jurisdictional waters)

E-35 { The Project has been designed to avoid approximately 2.5 acres of seasonal wetlands in the central portion of the Project site. However, there would be no (or minimal) buffer between these wetlands and the developed portions of the Project. As a result, the Project will have indirect impacts on the physical, chemical, and biological elements of the "avoided" wetlands. For example, it is inevitable that the Project will affect the hydrogeomorphology of the site's wetlands and their habitat functions (i.e., due to urbanization of the surrounding landscape). In addition, although the Project includes bioretention facilities, it is inevitable that at least some pollutants associated with the Project (e.g., pesticides and heavy metals, among others) will reach the wetlands.³⁶ Because the DEIR does not analyze indirect impacts, it fails to provide a complete assessment of potentially significant impacts on the site's wetlands (in accordance with state and federal guidelines).³⁷

Cumulative Impacts

E-36 { The DEIR states: "[t]he cumulative discussions in Chapters 4.1 through 4.16 of this Draft EIR explain the geographic scope of the area affected by each cumulative effect (e.g., immediate project vicinity, county, watershed, or air basin)."³⁸ The Biological Resources chapter of the DEIR does not define, or provide the rationale for, the geographic scope that was used to assess cumulative impacts to biological resources. However, the geographic scope appears to have

³⁵ For example, see: Shuford WD, T Gardali, editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

³⁶ Trombulak SC, CA Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. Conservation Biology 14:18–30.

³⁷ State Water Resources Control Board. 2020 Feb. Draft Guidance for the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. 68 pp. See also US Army Corps of Engineers, South Pacific Division. 2017. Regulatory Program Standard Operating Procedure for Determination of Mitigation Ratios, Attachment 12501.2-SPD.

³⁸ DEIR, p. 4.0-2.

E-36
cont'd

been limited to other projects within one mile of the Project site.³⁹ The DEIR's rationale for this geographic scope is:

A one-mile radius was chosen because given the built-out nature of the surrounding area, it provided a reasonable opportunity to capture reasonable foreseeable development that would be likely to use similar resources such as freeway and roadway capacity, similar biological resources, similar surface water drainage patterns, and similar public services and utilities.⁴⁰

This rationale is inconsistent with the DEIR's statement that: "[o]ther cumulative projects within the cumulative impact area for biological resources have been identified to have a less than significant impact because they are located within an urban area and there is no native habitat on or adjacent to the cumulative project sites."⁴¹ In other words, the one-mile radius used for the City's analysis does not capture reasonably foreseeable development that would impact "similar biological resources."

E-37

In accordance with guidance issued by the U.S. Army Corps of Engineers and State Water Resources Control Board, the geographic scope of the City's assessment of cumulative impacts to wetlands (and other jurisdictional waters) should be the watershed.⁴² For special-status species, the geographic scope should be the Solano HCP Plan Area. As noted in the DEIR: "[a]lthough the Solano HCP has not been adopted, project impacts were considered in connection with the Solano HCP, which is a regional effort to offset significant cumulative biological impacts, and development in the County."⁴³

MITIGATION ISSUES

E-38

The City is a participating member agency in the preparation and approval process for the Solano HCP (which is now in the final stages). Although the Solano HCP has not yet been adopted, it establishes the standard for mitigation needed to conserve species and habitats within the approximately 585,000-acre Plan Area. As described further below, the mitigation measures incorporated into the DEIR are not consistent with those in the Solano HCP.⁴⁴

MM BIO-3 (Wetland Compensation)

E-39

MM BIO-3 requires the Applicant to mitigate impacts to wetlands through purchase of credits at a qualified wetland mitigation bank. According to the DEIR, the compensatory mitigation ratio can be as low as 1:1. This violates the terms of the Solano HCP. Under the HCP, Member

³⁹ *Ibid.*

⁴⁰ *Ibid.*

⁴¹ DEIR, p. 4.3-29.

⁴² State Water Resources Control Board. 2020 Feb. Draft Guidance for the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State. 68 pp. *See also* U.S. Army Corps of Engineers. 2015. Final 2015 Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division USACE.

⁴³ DEIR, p. 4.3-29.

⁴⁴ DEIR, pp. 4.3-28 and -29.

E-39
cont'd

Agencies agree to: “preserve vernal pool [or seasonal wetlands] and swale habitats at a ratio of 1:1, and restore vernal pool [or seasonal wetlands] and swale habitats at a ratio of 1:1.”⁴⁵

The Project will cause indirect impacts that will diminish the functions and values of the wetlands that are “avoided.” However, it appears MM BIO-3 only requires compensation for direct impacts to wetlands. This violates the terms of the HCP, which require compensation for indirect impacts to all vernal pools or seasonal wetlands within 100 feet of proposed development.⁴⁶ In addition, it violates the Vallejo General Plan, which requires: “adequate replacement mitigation be provided to ensure there is no net loss in habitat acreage *or values*.”⁴⁷

Swainson’s Hawk

E-40

The Project lies within the “Inner Coast Range Conservation Area.”⁴⁸ According to the Solano HCP: “[l]ong-term impacts to grassland and oak savanna habitat in the Inner Coast Range Conservation Area (Figure 4-21) shall be mitigated through the preservation and management of foraging habitat at a ratio of 1:1 (mitigation-to-impact) and subject to species management requirements specified in Section 10.5.3.”⁴⁹ The DEIR violates the terms of the Solano HCP because it does not require mitigation for the loss of Swainson’s hawk foraging habitat from the Project site.

This concludes my comments on the DEIR.

Sincerely,



Scott Cashen, M.S.
Senior Biologist

⁴⁵ LSA. 2012 Oct. Solano Habitat Conservation Plan. Final Administrative Draft. p. 6-51.

⁴⁶ *Ibid.*

⁴⁷ DEIR, p. 4.3-19. [emphasis added].

⁴⁸ LSA. 2012 Oct. Solano Habitat Conservation Plan. Final Administrative Draft. Figure 4-21.

⁴⁹ *Ibid.*, p. 6-68.

Scott Cashen, M.S.

Senior Wildlife Ecologist

Scott Cashen has 25 years of professional experience in natural resources management. During that time he has worked as a field biologist, forester, environmental consultant, and instructor of Wildlife Management. Mr. Cashen focuses on CEQA/NEPA compliance issues, endangered species, scientific field studies, and other topics that require a high level of scientific expertise.

Mr. Cashen has knowledge and experience with numerous taxa, ecoregions, biological resource issues, and environmental regulations. As a biological resources expert, Mr. Cashen is knowledgeable of the various agency-promulgated guidelines for field surveys, impact assessments, and mitigation. Mr. Cashen has led field investigations on several special-status species, including ones focusing on the yellow-legged frog, red-legged frog, desert tortoise, steelhead, burrowing owl, California spotted owl, northern goshawk, willow flycatcher, Peninsular bighorn sheep, red panda, and various forest carnivores.

Mr. Cashen is a recognized expert on the environmental impacts of renewable energy development. He has been involved in the environmental review process of over 80 solar, wind, biomass, and geothermal energy projects. Mr. Cashen's role in this capacity has encompassed all stages of the environmental review process, from initial document review through litigation support. Mr. Cashen has provided expert witness testimony on several of the Department of the Interior's "fast-tracked" renewable energy projects. His testimony on those projects helped lead agencies develop project alternatives and mitigation measures to reduce environmental impacts associated with the projects.

Mr. Cashen was a member of the independent scientific review panel for the Quincy Library Group project, the largest community forestry project in the United States. As a member of the panel, Mr. Cashen was responsible for advising the U.S. Forest Service on its scientific monitoring program, and for preparing a final report to Congress describing the effectiveness of the Herger-Feinstein Forest Recovery Act of 1998.

AREAS OF EXPERTISE

- CEQA, NEPA, and Endangered Species Act compliance issues
- Comprehensive biological resource assessments
- Endangered species management
- Renewable energy development
- Scientific field studies, grant writing and technical editing

EDUCATION

M.S. Wildlife and Fisheries Science - The Pennsylvania State University (1998)

Thesis: *Avian Use of Restored Wetlands in Pennsylvania*

B.S. Resource Management - The University of California, Berkeley (1992)

PROFESSIONAL EXPERIENCE

Litigation Support / Expert Witness

Mr. Cashen has served as a biological resources expert for over 100 projects subject to environmental review under the California Environmental Quality Act (CEQA) and/or the National Environmental Policy Act (NEPA). As a biological resources expert, Mr. Cashen reviews CEQA/NEPA documents and provides his clients with an assessment of biological resource issues. He then submits formal comments on the scientific and legal adequacy of the project's environmental documents (e.g., Environmental Impact Statement). If needed, Mr. Cashen conducts field studies to generate evidence for legal testimony, or he can obtain supplemental testimony from his deep network of species-specific experts. Mr. Cashen has provided written and oral testimony to the California Energy Commission, California Public Utilities Commission, and U.S. district courts. His clients have included law firms, non-profit organizations, and citizen groups.

REPRESENTATIVE EXPERIENCE

Solar Energy

- Abengoa Mojave Solar Project
- Avenal Energy Power Plant
- Beacon Solar Energy Project
- Blythe Solar Power Project
- Calico Solar Project
- California Flats Solar Project
- Calipatria Solar Farm II
- Carrizo Energy Solar Farm
- Catalina Renewable Energy Project
- Fink Road Solar Farm
- Genesis Solar Energy Project
- Heber Solar Energy Facility
- Imperial Valley Solar Project
- Ivanpah Solar Electric Generating
- Maricopa Sun Solar Complex
- McCoy Solar Project
- Mt. Signal and Calxico Solar
- Panoche Valley Solar
- San Joaquin Solar I & II
- San Luis Solar Project
- Stateline Solar Project
- Solar Gen II Projects
- SR Solis Oro Loma
- Vestal Solar Facilities
- Victorville 2 Power Project
- Willow Springs Solar

Geothermal Energy

- Casa Diablo IV Geothermal Project
- East Brawley Geothermal
- Mammoth Pacific 1 Replacement
- Orni 21 Geothermal Project
- Western GeoPower Plant

Wind Energy

- Catalina Renewable Energy Project
- Ocotillo Wind Energy Project
- SD County Wind Energy Ordinance
- Searchlight Wind Project
- Shu'luuk Wind Project
- Tres Vaqueros Repowering Project
- Tule Wind Project
- Vasco Winds Relicensing Project

Biomass Facilities

- CA Ethanol Project
- Colusa Biomass Project
- Tracy Green Energy Project

Other

- DRECP
- Carnegie SVRA Expansion Project
- Lakeview Substation Project
- Monterey Bay Shores Ecoresort
- Phillips 66 Rail Spur
- Valero Benecia Crude By Rail
- World Logistics Center

Project Management

Mr. Cashen has managed several large-scale wildlife, forestry, and natural resource management projects. Many of the projects have required hiring and training field crews, coordinating with other professionals, and communicating with project stakeholders. Mr. Cashen's experience in study design, data collection, and scientific writing make him an effective project manager, and his background in several different natural resource disciplines enable him to address the many facets of contemporary land management in a cost-effective manner.

REPRESENTATIVE EXPERIENCE

Wildlife Studies

- Peninsular Bighorn Sheep Resource Use and Behavior Study: (CA State Parks)
- "KV" Spotted Owl and Northern Goshawk Inventory: (USFS, Plumas NF)
- Amphibian Inventory Project: (USFS, Plumas NF)
- San Mateo Creek Steelhead Restoration Project: (Trout Unlimited and CA Coastal Conservancy, Orange County)
- Delta Meadows State Park Special-Status Species Inventory: (CA State Parks, Locke)

Natural Resources Management

- Mather Lake Resource Management Study and Plan – (Sacramento County)
- Placer County Vernal Pool Study – (Placer County)
- Weidemann Ranch Mitigation Project – (Toll Brothers, Inc., San Ramon)
- Ion Communities Biological Resource Assessments – (Ion Communities, Riverside and San Bernardino Counties)
- Del Rio Hills Biological Resource Assessment – (The Wyro Company, Rio Vista)

Forestry

- Forest Health Improvement Projects – (CalFire, SD and Riverside Counties)
- San Diego Bark Beetle Tree Removal Project – (SDG&E, San Diego Co.)
- San Diego Bark Beetle Tree Removal Project – (San Diego County/NRCS)
- Hillslope Monitoring Project – (CalFire, throughout California)

Biological Resources

Mr. Cashen has a diverse background with biological resources. He has conducted comprehensive biological resource assessments, habitat evaluations, species inventories, and scientific peer review. Mr. Cashen has led investigations on several special-status species, including ones focusing on the foothill yellow-legged frog, mountain yellow-legged frog, desert tortoise, steelhead, burrowing owl, California spotted owl, northern goshawk, willow flycatcher, Peninsular bighorn sheep, red panda, and forest carnivores.

REPRESENTATIVE EXPERIENCE

Biological Assessments/Biological Evaluations (“BA/BE”)

- Aquatic Species BA/BE – Reliable Power Project (*SF Public Utilities Commission*)
- Terrestrial Species BA/BE – Reliable Power Project (*SF Public Utilities Commission*)
- Management Indicator Species Report – Reliable Power Project (*SF Public Utilities Commission*)
- Migratory Bird Report – Reliable Power Project (*SF Public Utilities Commission*)
- Terrestrial and Aquatic Species BA – Lower Cherry Aqueduct (*SF Public Utilities Commission*)
- Terrestrial and Aquatic Species BE – Lower Cherry Aqueduct (*SF Public Utilities Commission*)
- Terrestrial and Aquatic Species BA/BE – Public Lands Lease Application (*Society for the Conservation of Bighorn Sheep*)
- Terrestrial and Aquatic Species BA/BE – Simon Newman Ranch (*The Nature Conservancy*)

Avian

- Study design and Lead Investigator - Delta Meadows State Park Special-Status Species Inventory (*CA State Parks: Locke*)
- Study design and lead bird surveyor - Placer County Vernal Pool Study (*Placer County: throughout Placer County*)
- Surveyor - Willow flycatcher habitat mapping (*USFS: Plumas NF*)
- Independent surveyor - Tolay Creek, Cullinan Ranch, and Guadacanal Village restoration projects (*Ducks Unlimited/USGS: San Pablo Bay*)
- Study design and Lead Investigator - Bird use of restored wetlands research (*Pennsylvania Game Commission: throughout Pennsylvania*)
- Study design and surveyor - Baseline inventory of bird species at a 400-acre site in Napa County (*HCV Associates: Napa*)

- Surveyor - Baseline inventory of bird abundance following diesel spill (*LFR Levine-Fricke: Suisun Bay*)
- Study design and lead bird surveyor - Green Valley Creek Riparian Restoration Site (*City of Fairfield: Fairfield, CA*)
- Surveyor - Burrowing owl relocation and monitoring (*US Navy: Dixon, CA*)
- Surveyor - Pre-construction burrowing owl surveys (*various clients: Livermore, San Ramon, Rio Vista, Napa, Victorville, Imperial County, San Diego County*)
- Surveyor - Backcountry bird inventory (*National Park Service: Eagle, Alaska*)
- Lead surveyor - Tidal salt marsh bird surveys (*Point Reyes Bird Observatory: throughout Bay Area*)
- Surveyor - Pre-construction surveys for nesting birds (*various clients and locations*)

Amphibian

- Crew Leader - Red-legged frog, foothill yellow-legged frog, and mountain yellow-legged frog surveys (*USFS: Plumas NF*)
- Surveyor - Foothill yellow-legged frog surveys (*PG&E: North Fork Feather River*)
- Surveyor - Mountain yellow-legged frog surveys (*El Dorado Irrigation District: Desolation Wilderness*)
- Crew Leader - Bullfrog eradication (*Trout Unlimited: Cleveland NF*)

Fish and Aquatic Resources

- Surveyor - Hardhead minnow and other fish surveys (*USFS: Plumas NF*)
- Surveyor - Weber Creek aquatic habitat mapping (*El Dorado Irrigation District: Placerville, CA*)
- Surveyor - Green Valley Creek aquatic habitat mapping (*City of Fairfield: Fairfield, CA*)
- GPS Specialist - Salmonid spawning habitat mapping (*CDFG: Sacramento River*)
- Surveyor - Fish composition and abundance study (*PG&E: Upper North Fork Feather River and Lake Almanor*)
- Crew Leader - Surveys of steelhead abundance and habitat use (*CA Coastal Conservancy: Gualala River estuary*)
- Crew Leader - Exotic species identification and eradication (*Trout Unlimited: Cleveland NF*)

Mammals

- Principal Investigator – Peninsular bighorn sheep resource use and behavior study (*California State Parks: Freeman Properties*)
- Scientific Advisor – Study on red panda occupancy and abundance in eastern Nepal (*The Red Panda Network: CA and Nepal*)
- Surveyor - Forest carnivore surveys (*University of CA: Tahoe NF*)
- Surveyor - Relocation and monitoring of salt marsh harvest mice and other small mammals (*US Navy: Skagg's Island, CA*)
- Surveyor – Surveys for Monterey dusky-footed woodrat. Relocation of woodrat houses (*Touré Associates: Prunedale*)

Natural Resource Investigations / Multiple Species Studies

- Scientific Review Team Member – Member of the scientific review team assessing the effectiveness of the US Forest Service's implementation of the Herger-Feinstein Quincy Library Group Act.
- Lead Consultant - Baseline biological resource assessments and habitat mapping for CDF management units (*CDF: San Diego, San Bernardino, and Riverside Counties*)
- Biological Resources Expert – Peer review of CEQA/NEPA documents (*various law firms, non-profit organizations, and citizen groups*)
- Lead Consultant - Pre- and post-harvest biological resource assessments of tree removal sites (*SDG&E: San Diego County*)
- Crew Leader - T&E species habitat evaluations for Biological Assessment in support of a steelhead restoration plan (*Trout Unlimited: Cleveland NF*)
- Lead Investigator - Resource Management Study and Plan for Mather Lake Regional Park (*County of Sacramento: Sacramento, CA*)
- Lead Investigator - Biological Resources Assessment for 1,070-acre Alfaro Ranch property (*Yuba County, CA*)
- Lead Investigator - Wildlife Strike Hazard Management Plan (*HCV Associates: Napa*)
- Lead Investigator - Del Rio Hills Biological Resource Assessment (*The Wyro Company: Rio Vista, CA*)
- Lead Investigator – Ion Communities project sites (*Ion Communities: Riverside and San Bernardino Counties*)
- Surveyor – Tahoe Pilot Project: Validation of California's Wildlife Habitat Relationships (CWHR) Model (*University of California: Tahoe NF*)

Forestry

Mr. Cashen has five years of experience working as a consulting forester on projects throughout California. Mr. Cashen has consulted with landowners and timber operators on forest management practices; and he has worked on a variety of forestry tasks including selective tree marking, forest inventory, harvest layout, erosion control, and supervision of logging operations. Mr. Cashen's experience with many different natural resources enable him to provide a holistic approach to forest management, rather than just management of timber resources.

REPRESENTATIVE EXPERIENCE

- Lead Consultant - CalFire fuels treatment projects (*SD and Riverside Counties*)
- Lead Consultant and supervisor of harvest activities – San Diego Gas and Electric Bark Beetle Tree Removal Project (*San Diego*)
- Crew Leader - Hillslope Monitoring Program (*CalFire: throughout California*)
- Consulting Forester – Forest inventories and timber harvest projects (*various clients throughout California*)

Grant Writing and Technical Editing

Mr. Cashen has prepared and submitted over 50 proposals and grant applications. Many of the projects listed herein were acquired through proposals he wrote. Mr. Cashen's clients and colleagues have recognized his strong scientific writing skills and ability to generate technically superior proposal packages. Consequently, he routinely prepares funding applications and conducts technical editing for various clients.

PERMITS

U.S. Fish and Wildlife Service Section 10(a)(1)(A) Recovery Permit for the Peninsular bighorn sheep

PROFESSIONAL ORGANIZATIONS / ASSOCIATIONS

The Wildlife Society

Cal Alumni Foresters

Mt. Diablo Audubon Society

OTHER AFFILIATIONS

Scientific Advisor and Grant Writer – *The Red Panda Network*

Scientific Advisor – *Mt. Diablo Audubon Society*

Grant Writer – *American Conservation Experience*

TEACHING EXPERIENCE

Instructor: Wildlife Management - The Pennsylvania State University, 1998

Teaching Assistant: Ornithology - The Pennsylvania State University, 1996-1997

PUBLICATIONS

Gutiérrez RJ, AS Cheng, DR Becker, S Cashen, et al. 2015. Legislated collaboration in a conservation conflict: a case study of the Quincy Library group in California, USA. Chapter 19 *in*: Redpath SR, et al. (eds). *Conflicts in Conservation: Navigating Towards Solutions*. Cambridge Univ. Press, Cambridge, UK.

Cheng AS, RJ Gutiérrez RJ, S Cashen, et al. 2016. Is There a Place for Legislating Place-Based Collaborative Forestry Proposals?: Examining the Herger-Feinstein Quincy Library Group Forest Recovery Act Pilot Project. *Journal of Forestry*.

EXHIBIT 3

AIR QUALITY AND LAND USE HANDBOOK: A COMMUNITY HEALTH PERSPECTIVE



April 2005

California Environmental Protection Agency
California Air Resources Board



Table 1-1

**Recommendations on Siting New Sensitive Land Uses
Such As Residences, Schools, Daycare Centers, Playgrounds, or Medical
Facilities***

Source Category	Advisory Recommendations
Freeways and High-Traffic Roads	• Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
Distribution Centers	• Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week). • Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.
Rail Yards	• Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard. • Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.
Ports	• Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the ARB on the status of pending analyses of health risks.
Refineries	• Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	• Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloro-ethylene	• Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district. • Do not site new sensitive land uses in the same building with perc dry cleaning operations.
Gasoline Dispensing Facilities	• Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.

***Notes:**

- These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

Recommendation

- Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines provide 500 feet. For operations with 3 or more machines, consult with the local air district.
- Do not site new sensitive land uses in the same building with percdry cleaning operations.

References

- *Proposed Amended Rule 1421 – Control of Perchloroethylene Emissions from Dry Cleaning Systems*, Final Staff Report. South Coast AQMD. (October 2002)
- *Air Toxic Control Measure for Emissions of Perchloroethylene from Dry Cleaning Operations*. ARB (1994)
(<http://www.arb.ca.gov/toxics/atcm/percatcm.htm>)
- “An Assessment of Tetrachloroethylene in Human Breast Milk”, Judith Schreiber, New York State Department of Health – Bureau of Toxic Substance Assessment, *Journal of Exposure Analysis and Environmental Epidemiology*, Vol.2, Suppl.2, pp. 15-26, 1992.
- *Draft Air Toxics “Hot Spots” Program Perchloroethylene Dry Cleaner Industry-wide Risk Assessment Guidelines*. (CAPCOA (November 2002)
- *Final Environmental Assessment for Proposed Amended Rule 1421 – Control of Perchloroethylene Emissions from Dry Cleaning Systems*. South Coast AQMD. (October 18, 2002)

Gasoline Dispensing Facilities

Refueling at gasoline dispensing facilities releases benzene into the air. Benzene is a potent carcinogen and is one of the highest risk air pollutants regulated by ARB. Motor vehicles and motor vehicle-related activity account for over 90 percent of benzene emissions in California. While gasoline-dispensing facilities account for a small part of total benzene emissions, near source exposures for large facilities can be significant.

Since 1990, benzene in the air has been reduced by over 75 percent statewide, primarily due to the implementation of emissions controls on motor vehicle vapor recovery equipment at gas stations, and a reduction in benzene levels in gasoline. However, benzene levels are still significant. In urban areas, average benzene exposure is equivalent to about 50 in one million.

Gasoline dispensing facilities tend to be located in areas close to residential and shopping areas. Benzene emissions from the largest gas stations may result in near source health risk beyond the regional background and district health risk thresholds. The emergence of very high gasoline throughput at large retail or

wholesale outlets makes this a concern as these types of outlets are projected to account for an increasing market share in the next few years.

Key Health Findings

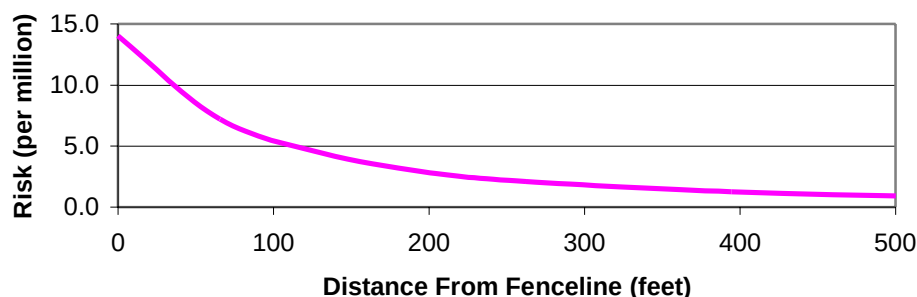
Benzene is a human carcinogen identified by ARB as a toxic air contaminant. Benzene also can cause non-cancer health effects above a certain level of exposure. Brief inhalation exposure to high concentrations can cause central nervous system depression. Acute effects include central nervous system symptoms of nausea, tremors, drowsiness, dizziness, headache, intoxication, and unconsciousness. It is unlikely that the public would be exposed to levels of benzene from gasoline dispensing facilities high enough to cause these non-cancer health effects.

Distance Related Findings

A well-maintained vapor recovery system can decrease emissions of benzene by more than 90% compared with an uncontrolled facility. Almost all facilities have emission control systems. Air quality modeling of the health risks from gasoline dispensing facilities indicate that the impact from the facilities decreases rapidly as the distance from the facility increases.

Statistics reported in the ARB's staff reports on Enhanced Vapor Recovery released in 2000 and 2002, indicated that almost 96 percent of the gasoline dispensing facilities had a throughput less than 2.4 million gallons per year. The remaining four percent, or approximately 450 facilities, had throughputs exceeding 2.4 million gallons per year. For these stations, the average gasoline throughput was 3.6 million gallons per year.

Figure 1-6
Gasoline Dispensing Facility Health Risk
for 3,600,000 gal/yr throughput



As shown in Figure 1-6, the risk levels for a gasoline dispensing facility with a throughput of 3.6 million gallons per year is about 10 in one million at a distance of 50 feet from the fenceline. However, as the throughput increases, the potential risk increases.

As mentioned above, air pollution levels in the immediate vicinity of large gasoline dispensing facilities may be higher than the surrounding area (although tailpipe emissions from motor vehicles dominates the health impacts). Very large gasoline dispensing facilities located at large wholesale and discount centers may dispense nine million gallons of gasoline per year or more. At nine million gallons, the potential risk could be around 25 in one million at 50 feet, dropping to about five in one million at 300 feet. Some facilities have throughputs as high as 19 million gallons.

Recommendation

- Avoid siting new sensitive land uses within 300 feet of a large gasoline dispensing facility (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.

References

- *Gasoline Service Station Industry-wide Risk Assessment Guidelines*. California Air Pollution Control Officers Association (December 1997 and revised November 1, 2001)
- *Staff Report on Enhanced Vapor Recovery*. ARB (February 4, 2000)
- *The California Almanac of Emissions and Air Quality*. ARB (2004)
- *Staff Report on Enhanced Vapor Recovery Technology Review*. ARB (October 2002)

Other Facility Types that Emit Air Pollutants of Concern

In addition to source specific recommendations, Table 1-3 includes a list of other industrial sources that could pose a significant health risk to nearby sensitive individuals depending on a number of factors. These factors include the amount of pollutant emitted and its toxicity, the distance to nearby individuals, and the type of emission controls in place. Since these types of facilities are subject to air permits from local air districts, facility specific information should be obtained where there are questions about siting a sensitive land use close to an industrial facility.

Potential Sources of Odor and Dust Complaints

Odors and dust from commercial activities are the most common sources of air pollution complaints and concerns from the public. Land use planning and permitting processes should consider the potential impacts of odor and dust on surrounding land uses, and provide for adequate separation between odor and dust sources. As with other types of air pollution, a number of factors need to be considered when determining an adequate distance or mitigation to avoid odor or

EXHIBIT 4



8.2. GREENHOUSE GASES

The District does not have an adopted *Threshold of Significance* for construction-related GHG emissions. However, the Lead Agency should quantify and disclose GHG emissions that would occur during construction, and make a determination on the significance of these construction-generated GHG emission impacts in relation to meeting AB 32 GHG reduction goals. BAAQMD recommends using URBEMIS for proposed land use development projects and RoadMod for proposed projects that are linear in nature. Sources of construction-related GHGs only include exhaust, for which the same detailed guidance as described for criteria air pollutants and precursors should be followed.

The Lead Agency is encouraged to incorporate best management practices to reduce GHG emissions during construction, as applicable. Best management practices may include, but are not limited to: using alternative fueled (e.g., biodiesel, electric) construction vehicles/equipment of at least 15 percent of the fleet; using local building materials of at least 10 percent; and recycling or reusing at least 50 percent of construction waste or demolition materials.

8.3. TOXIC AIR CONTAMINANTS

BAAQMD recommends that the same community risk and hazard *Threshold of Significance* for project operations be applied to construction. However, BAAQMD suggests associated impacts should be addressed on a case-by-case basis, taking into consideration the specific construction-related characteristics of each project and proximity to off-site receptors, as applicable. The Air District recommends that for construction projects that are less than one year duration, Lead Agencies should annualize impacts over the scope of actual days that peak impacts are to occur, rather than the full year.

BAAQMD has developed guidance for estimating risk and hazards impacts entitled *Recommended Methods for Screening and Modeling Local Risks and Hazards* (May 2010) which also includes recommendations for mitigation of significant risk and hazards impacts. The Air District has also developed a Construction Risk Calculator model that provides distances from a construction site, based on user-provided project date, where the risk impacts are estimated to be less than significant; sensitive receptors located within these distances would be considered to have potentially significant risk and hazards impacts from construction. The Construction Risk Calculator can be downloaded from the Air District web site at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES.aspx>.

8.3.1. Diesel Particulate Matter

Construction-related activities could result in the generation of TACs, specifically diesel PM, from on-road haul trucks and off-road equipment exhaust emissions. Due to the variable nature of construction activity, the generation of TAC emissions in most cases would be temporary, especially considering the short amount of time such equipment is typically within an influential distance that would result in the exposure of sensitive receptors to substantial concentrations. Concentrations of mobile-source diesel PM emissions are typically reduced by 70 percent at a distance of approximately 500 feet (ARB 2005). In addition, current models and methodologies for conducting health risk assessments are associated with longer-term exposure periods of 9, 40, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities. This results in difficulties with producing accurate estimates of health risk. Additionally, the implementation of the *Basic Construction Mitigation Measures* (table 8-2), which is recommended for all proposed projects, would also reduce diesel PM exhaust emissions.



However, these variability issues associated with construction do not necessarily minimize the significance of possible impacts.

The analysis shall disclose the following about construction-related activities:

1. Types of off-site receptors and their proximity to construction activity within approximately 1,000 feet;
2. Duration of construction period;
3. Quantity and types of diesel-powered equipment;
4. Number of hours equipment would be operated each day;
5. Location(s) of equipment use, distance to nearest off-site sensitive receptors, and orientation with respect to the predominant wind direction;
6. Location of equipment staging area; and
7. Amount of on-site diesel-generated PM_{2.5} exhaust (assuming that all on-site diesel PM_{2.5} exhaust is diesel PM) if mass emission levels from construction activity are estimated.

In cases where construction-generated emissions of diesel PM are anticipated to occur in close proximity to sensitive receptors for extended periods of time, lead agencies are encouraged to consult with BAAQMD.

8.3.2. Demolition and Renovation of Asbestos-Containing Materials

Demolition of existing buildings and structures would be subject to BAAQMD Regulation 11, Rule 2 (Asbestos Demolition, Renovation, and Manufacturing). BAAQMD Regulation 11, Rule 2 is intended to limit asbestos emissions from demolition or renovation of structures and the associated disturbance of asbestos-containing waste material generated or handled during these activities. The rule addresses the national emissions standards for asbestos along with some additional requirements. The rule requires the Lead Agency and its contractors to notify BAAQMD of any regulated renovation or demolition activity. This notification includes a description of structures and methods utilized to determine whether asbestos-containing materials are potentially present. All asbestos-containing material found on the site must be removed prior to demolition or renovation activity in accordance with BAAQMD Regulation 11, Rule 2, including specific requirements for surveying, notification, removal, and disposal of material containing asbestos. Therefore, projects that comply with Regulation 11, Rule 2 would ensure that asbestos-containing materials would be disposed of appropriately and safely. By complying with BAAQMD Regulation 11, Rule 2, thereby minimizing the release of airborne asbestos emissions, demolition activity would not result in a significant impact to air quality.

Because BAAQMD Regulation 11, Rule 2 is in place, no further analysis about the demolition of asbestos-containing materials is needed in a CEQA document. BAAQMD does recommend that CEQA documents acknowledge and discuss BAAQMD Regulation 11, Rule 2 to support the public's understanding of this issue.

8.3.3. Naturally Occurring Asbestos

Naturally occurring asbestos (NOA) was identified as a TAC in 1986 by ARB. NOA is located in many parts of California and is commonly associated with ultramafic rocks, according to the California Department of Geology's special publication titled [Guidelines for Geologic Investigations of Naturally Occurring Asbestos in California](#). Asbestos is the common name for a group of naturally occurring fibrous silicate minerals that can separate into thin but strong and durable fibers. Ultramafic rocks form in high-temperature environments well below the surface of the earth. By the time they are exposed at the surface by geologic uplift and erosion, ultramafic rocks may be partially to completely altered into a type of metamorphic rock called serpentinite.

EXHIBIT 5

Residential Proximity to Environmental Hazards and Adverse Health Outcomes

Jean D. Brender, RN, PhD, Juliana A. Maantay, PhD, MUP, and Jayajit Chakraborty, PhD, MS

How living near environmental hazards contributes to poorer health and disproportionate health outcomes is an ongoing concern. We conducted a substantive review and critique of the literature regarding residential proximity to environmental hazards and adverse pregnancy outcomes, childhood cancer, cardiovascular and respiratory illnesses, end-stage renal disease, and diabetes.

Several studies have found that living near hazardous wastes sites, industrial sites, cropland with pesticide applications, highly trafficked roads, nuclear power plants, and gas stations or repair shops is related to an increased risk of adverse health outcomes.

Government agencies should consider these findings in establishing rules and permitting and enforcement procedures to reduce pollution from environmentally burdensome facilities and land uses. (*Am J Public Health*. 2011; 101: S37–S52. doi:10.2105/AJPH.2011.300183)

CONCERNS ABOUT HEALTH and environmental hazards transcend the academic, scientific, and regulatory worlds; they are also of compelling interest to the public, who often recognizes a relationship between environmental hazards and health. In a 1999 national telephone survey among US voters,¹ 74% of respondents thought that environmental factors had an important impact on childhood cancer, and 73% thought these factors had an impact on birth defects. More than 50% of respondents felt that air pollution, contaminated drinking water, and toxic waste had a great deal of impact on a person's health. These concerns often resulted in public perceptions of disease clusters near hazardous waste sites, industrial facilities, and other potential sources of chemical releases. With the advent of geographic information systems, environmental scientists and public health researchers have been able to address these concerns more comprehensively and objectively with the use of various proximity analyses.

We undertook a systematic review of 94 studies that examined residential proximity to environmental hazards in relation to adverse reproductive outcomes, childhood cancer, respiratory and cardiovascular conditions, or other adverse health outcomes. In our review, unlike in previously published reviews, we focused on a wide range of health outcomes in relation to residential proximity to multiple environmental hazards and identified each study's

limitations. If the evidence indicates that residential proximity is associated with poorer health outcomes, regulatory agencies may need to factor in nearby populations when siting industrial facilities, municipal waste sites, incinerators, and other potential sources of emissions.

APPROACH

We identified studies of environmental proximity analyses in relation to health through the National Library of Medicine's PubMed, using search terms that combined *proximity to* and adverse pregnancy outcomes (birth defects, fetal death, low birth weight, preterm birth, and spontaneous abortion), childhood cancer, cardiovascular and respiratory illnesses, end-stage renal disease, and diabetes. We also identified additional relevant studies in these studies' bibliographies. With respect to cancer, we focused our review primarily on childhood cancers. Given the relatively long induction and latent period of solid tumors in adults, studies would need to include residential histories for as many as 15 to 30 years before a cancer diagnosis to capture pertinent environmental exposures. Although several recently published studies have included extensive residential histories,^{2–4} such studies are scarce. Even though various respiratory and cardiovascular conditions may originate many years before manifestation of overt disease, environmental exposures to pollutants could have acute

effects, for example, precipitating asthma attacks or myocardial infarction in susceptible individuals.

We summarized information from each study regarding target populations, type of study design used, health outcomes included, methods of proximity analyses and exposure assessment, major findings, and limitations. We also examined study results for evidence of racial or economic disparities in health outcomes in relation to residential proximity. In addition to discussing overall findings, we summarized the conclusions of studies that had minimal limitations with respect to exposure assessment and outcome.

A wide variety of methods were used in the reviewed studies to examine the relation between proximity to potential environmental hazards and adverse health outcomes, including spatial coincidence analyses (e.g., residence in a zip code with ≥ 1 hazardous waste sites), distance-based analyses (e.g., residence ≤ 1 mile of industrial facilities as defined by a 1-mile buffer), and pollution plume modeling (i.e., the dispersion footprint of the pollutant as a proxy for exposure). The most frequently used method was distance-based analysis.

ADVERSE PREGNANCY OUTCOMES

We reviewed 49 studies that examined the relation between residential proximity to 1 or more potential environmental hazards and adverse pregnancy outcomes.

Few studies specifically examined health impacts in relation to race or socioeconomic status (Table 1). Those studies that did had mixed conclusions regarding health impacts on specific racial or income groups. In a study of maternal residential proximity to hazardous waste sites and chromosomal anomalies, increased risk of Klinefelter variants was confined to births to Hispanic women.⁶ In the same study population, however, neural tube defects were associated with residential proximity within 1 mile of an industrial facility only among non-Hispanic White women.¹⁰ Among the various ethnic and racial groups studied, Orr et al.⁸ noted the strongest associations between maternal residence in a census tract with 1 or more National Priorities List hazardous waste sites and birth defects among American Indians and Alaska Natives. In Israel, Bedouin populations showed increased risk of major congenital malformations and perinatal mortality with residential proximity to an industrial park, but Jewish populations showed no increased risk.^{5,9} In a Canadian population, risks for preterm and low birth weight births in relation to maternal residential proximity to highways were strongest among highly educated women and women who lived in wealthy neighborhoods.⁷

We summarize the findings of studies, including limitations, that examined the relation between residential proximity to various environmental hazards and adverse pregnancy outcomes in a supplemental table (available as a supplement to the online version of this article at <http://www.ajph.org>). In several studies, investigators noted positive associations between maternal residence near waste sites and central nervous system defects,^{8,11–14} heart

defects,^{12,13,15–19} surgical correction of gastroschisis and exomphalos,²⁰ hypospadias and epispadias,¹⁹ and chromosomal anomalies in offspring.^{6,8,11,21}

Fewer studies explored the relation between maternal residential proximity to waste sites and adverse pregnancy outcomes other than congenital malformations. Most of these studies reported minimal or no association except between maternal residential proximity to pesticide-contaminated waste sites and fetal deaths,²² polychlorinated biphenyl (PCB)-contaminated sites and low birth weight among male births,²³ municipal solid waste landfills and low birth weight or small-for-gestational-age births,²⁴ and any hazardous waste site and low and very low birth weight.²⁰

In Europe and Japan, pregnancy outcomes were examined in relation to maternal residential proximity to incinerators or crematoriums. Studies noted associations between these residential characteristics and risk of neural tube defects,²⁵ heart defects,²⁵ oral clefts,²⁶ renal dysplasia,²⁶ stillbirths,²⁵ and infant deaths.²⁷ However, Tango et al.²⁷ found no higher rate of deaths resulting from congenital malformations among births to mothers who lived near municipal solid waste incinerators in Japan.

In several populations, maternal residential proximity to industrial complexes was associated with increased risk of adverse pregnancy outcomes, including central nervous system defects,^{5,10,28} oral clefts,²⁹ chromosomal anomalies,⁶ undescended testis,³⁰ perinatal mortality,⁹ and low birth weight.³¹ Vinceti et al.³² noted that women living in an industrial area contaminated with lead were more likely to give birth to babies with cardiovascular, musculoskeletal,

and oral cleft defects than were women living away from this area.

Increased risks for low birth weight and preterm births were noted among offspring of mothers who resided near highways⁷ and in areas with high traffic density,³³ although no statistically increased risk was noted for fetal and early neonatal deaths with this maternal residential characteristic.³⁴

Mothers living near cornfields at delivery were more likely to give birth to babies with limb malformations,³⁵ an association that might be attributed to exposure to pesticides used on this crop. Rull et al.³⁶ noted elevated risks for neural tube defects among offspring of women who lived within 1000 meters of applications of pesticides classified as amides, benzimidazole, methyl carbamate, organophosphates, benomyl, or methomyl. Bell et al.³⁷ found elevated risk of fetal deaths from congenital malformations if mothers lived near areas of pesticide application.

We expected that studies that measured actual distances between the environmental hazard of interest and individual maternal residential addresses would have less exposure misclassification. With respect to congenital malformations, we considered studies that included fetal deaths or terminations as well as live births and that examined specific defects instead of all malformations combined as having stronger designs. Eleven of the studies on congenital malformations^{6,10,12,13,18,21,29,30,35,38} and 6 of the studies on other adverse reproductive outcomes^{7,22,33,34,37,39} met these criteria. In several of these studies, adverse reproductive outcomes were associated with maternal proximity to waste sites,^{6,12,13,18,21} industrial sites,^{6,10,29,30,37} areas with pesticide

applications,^{35,36,37} roadways,⁷ and dense traffic.³³

CHILDHOOD CANCER

Most published studies of childhood cancer and residential proximity to potential environmental hazards focused on leukemia, brain cancer, or all childhood cancers combined. We list the characteristics, findings, and study limitations of the 25 studies reviewed in Table 2.

Residential proximity to roadways and other indices of increased exposure to traffic-related pollution were associated with increased risk of childhood leukemia in a number of European studies^{43,44} but were not noted in several US study populations^{50,54,55,62} or in a Danish population.⁵² Crosignani et al.⁴³ estimated traffic-related benzene emissions by means of a Gaussian diffusion model and observed an odds ratio (OR) of 3.91 (95% confidence interval [CI] = 1.36, 11.27) for childhood leukemia with benzene concentrations higher than 10 micrograms per cubic meter. Residential proximity to roadways or traffic emissions was also associated with Hodgkin's lymphoma in Danish children.⁵²

Risk of childhood cancer was examined in relation to residential proximity to cropland and pesticide applications in US populations in California^{53,56,57} and Texas.⁴¹ A birth address within 1000 meters of cropland showed some association with germ-cell tumors, non-Hodgkin's lymphoma, and Burkitt lymphoma, although the elevated ORs were based on a small number of cases.⁴¹ Using an exposure metric that consisted of residential proximity within 0.5 mile of pesticide applications (pounds per square mile), Reynolds et al.⁵⁶ noted

TABLE 1—Studies of Residential Proximity to Environmental Hazards and Adverse Pregnancy Outcomes With Reported Disparities by Race and Ethnicity or Socioeconomic Status

First Author, Year, and Country	Population	Pregnancy Outcomes	Disparities Examined	Environmental Hazard and Disparities
Bentov, 2006, ⁵ Israel	Beer-Sheva subdistrict, 1995–2000	Major congenital malformations combined and subcategorized into major congenital anomalies of central nervous system, chromosomal anomalies, and other major congenital malformations	Jewish populations (urban, urban satellite, and agricultural localities); Bedouin population (permanent localities and traditional tribal settlements)	Residential proximity to a regional industrial park was associated with increased rates of major congenital anomalies among the Bedouin population but not among the Jewish population.
Brender, 2008, ⁶ Texas	Live births and fetal deaths, 1996–2000	Chromosomal anomalies combined and categorized into 9 categories	Race or ethnicity (non-Hispanic White, Hispanic, African American, other)	Hispanic women who lived near hazardous waste sites were 7.9 times as likely (95% CI= 1.1, 42.4) to have offspring with Klinefelter variants.
Genereux, 2007, ⁷ Canada	All live singleton births, Montreal, 1997–2001	Preterm birth, low birth weight, and SGA birth	Maternal education (<11 y, 11 y, 12–13 y, > 13 y); census tracts ranked into quintiles according to neighborhood poverty level	Proximity to highways associated with OR=1.58 for preterm birth, OR=1.81 for low birth weight, and OR=1.32 for SGA births among women living in the most wealthy neighborhoods but not associated with these outcomes in less wealthy or poor areas; this residential characteristic was associated with preterm birth and low birth weight births in the most highly educated women but not in the less educated women.
Orr, 2002, ⁸ California	Live births and fetal deaths, 1983–1988	All congenital malformations combined and subcategorized into 9 defects or defect groups	Race and ethnicity (Hispanic or Latino, Black or African American, American Indian or Alaska Native, Asian and Pacific Islander)	Although the numbers of exposed cases and controls were small, the strongest association noted among American Indians and Alaska Natives was between a maternal residence in a census tract with 1 or more National Priority List hazardous waste sites and birth defects.
Sarov, 2008, ⁹ Israel	Beersheba subdistrict, 1995–2000	Perinatal mortality (fetal deaths, intrapartum death, and postpartum death within 28 d after delivery)	Stratified by ethnicity (Jews and Bedouins) and by type of locality	Residential proximity to an industrial park was associated with increased rates of perinatal mortality among Bedouins but not among Jews.
Suarez, 2007, ¹⁰ Texas	Live births and fetal deaths, 1996–2000	Neural tube defects	Ethnicity (non-Hispanic White, Hispanic)	Maternal residential proximity (<1 mi) to 1 or more TRI industrial facilities associated with neural tube defects in births to White, non-Hispanic mothers (OR=1.8; 95% CI=1.1, 2.8) but not with births to Hispanic mothers (OR=1.1; 95% CI=0.8, 1.4)

Note. CI = confidence interval; OR = odds ratio; SGA = small for gestational age; TRI = Toxic Release Inventory.

slightly elevated ORs for leukemia with birth addresses near application of pesticides that were probable or possible carcinogens and nearby applications of organochlorine or organophosphate pesticides. Risk of acute lymphoblastic leukemia was elevated in children who lived within 0.5 mile (lifetime residences) of applications of organophosphates, chlorinated phenols, and triazines and pesticides classified as insecticides or fumigants⁵⁷; acute lymphoblastic leukemia risk was associated with moderate but not high exposures.

Risk of childhood cancer was examined in relation to residential proximity to other sources of contaminants, including industries reporting under the US Toxic Release Inventory, petrochemical plants, gas stations, repair garages, nuclear power plants, and landfill sites and hazardous waste sites. Increased risk of childhood leukemia was found with residential addresses near gas stations,^{44,60,63} repair garages,⁶⁰ and nuclear power plants.^{46,59} Children whose mothers lived near industries covered under the Toxic Release Inventory during pregnancy were more likely to have brain cancer, especially if the mother lived within 1 mile of a facility with carcinogen emissions.⁴²

We considered studies that examined incident cases of childhood cancer in relation to actual measured distances between 1 or more residences documented before diagnosis and the environmental hazard of interest to be less subject to exposure misclassification and selection bias. Of the reviewed studies, 10 met these criteria.^{41,42,50,52,55–57,61,62,64} Residential addresses near cropland,⁴¹ pesticide application,^{56,57} and industries^{42,61} and their associated emissions⁶⁴ were associated with

childhood cancer in several of these studies.

CARDIOVASCULAR, RESPIRATORY, AND OTHER DISEASES

We conducted a comprehensive review of the literature to examine the relation between residential proximity to a wide range of environmental hazards and cardiovascular and respiratory disease, PCB toxicity, end-stage renal disease, diabetes, and adult cancers such as leukemia and non-Hodgkin's lymphoma. Online Supplemental Table 2 (available as a supplement to the online version of this article at <http://www.ajph.org>) summarizes the 20 research studies reviewed in this section, including limitations.

The results of 12 studies on respiratory illness suggested that residential proximity to both stationary sources of air pollution (industries covered under the Toxic Release Inventory, National Emission Inventory, hazardous air pollutants, petroleum refineries, etc.), and, with a few exceptions, heavily trafficked roads, was significantly associated with asthma hospitalizations.^{65–69} An example is the case-crossover study by Smargiassi et al.,⁶⁹ which examined the effects of residential proximity to point-source air pollution on asthma among children. They collected asthma hospitalization data for children aged 2 to 4 years and calculated the risk of asthma episodes for residential postal codes for the east end of Montreal Island. Exposure was estimated using the American Meteorological Society–Environmental Protection Agency Regulatory Model, an air dispersion model, and sulfur dioxide emissions data from 2 petroleum

refineries and other point sources measured via 2 fixed air-monitoring sites. The model computed estimations of daily sulfur dioxide exposure at the centroid of each postal code as well as average hourly predictions and daily peaks. Smargiassi et al.⁶⁹ used logistic regression to evaluate sulfur dioxide exposure in relation to asthma hospitalization days versus control days using a time-stratified approach. Results revealed that short-term increases in sulfur dioxide were significantly associated with a higher number of asthma-related emergency department visits and hospital admissions in children residing near refineries.

In addition, several studies found that exposure to mobile sources of air pollution through residential proximity to major roadways increased the occurrence of chronic respiratory symptoms by exacerbating asthma or increasing self-reported chronic respiratory symptoms such as wheezing, pulmonary function, attacks, and the use of respiratory medicine.^{70–73} Three other studies did not find a significant relationship between proximity to roads and asthma hospitalizations among children,^{74–76} although English et al.⁷⁴ reported that the odds of residing in high traffic-flow areas were significantly higher for children experiencing more than 1 asthma hospitalization per year than for children having only 1 incident. Three studies on cardiovascular disease^{65,77,78} also suggested a significant association between residential exposure to combined sources of air pollution and stroke mortality. For instance, Hu et al.⁷⁷ determined the observed and expected stroke mortality at the census tract-level for counties in northwest Florida. Air pollution was characterized by the presence of Toxic Release

Inventory sites and other stationary sources of air pollution (i.e., dry cleaners, sewage treatment plants, solid waste disposal, and Superfund sites), and roads with high average vehicle traffic counts. Using location, Hu et al. calculated air pollution density surfaces for point sources and traffic and used hierarchical logistic regression. The mean age-adjusted stroke rate in the study areas was more than 8 times the expected rate, and census tracts with high levels of air pollution had significantly elevated risks of stroke mortality. Maheswaran and Elliott⁷⁸ also looked at relationship between stroke mortality and residential proximity to main roads at the census enumeration district level in England and Wales. They evaluated mobile sources of air pollution by using road network data that characterized exposure as distance categories from the centroid of each census enumeration district to the nearest main road. Logistic regression controlling for age, gender, socioeconomic deprivation, and urbanization determined the associations between stroke mortality and distance categories. Census enumeration districts with distances of less than 200 meters to main roads had significantly higher stroke mortality rates than those with distances of more than 1000 meters. This association held when stratified by gender, and Maheswaran and Elliott determined a significant dose-response relationship for distance categories. Three studies using geographic information science examined the impact of residing near hazardous waste sites, although the health outcomes of interest were different: cord blood PCB level, end-stage renal disease, and diabetes. Kouznetsova et al.⁷⁹ conducted an ecological study to determine

TABLE 2—Studies of Residential Proximity to Potential Environmental Hazards and Childhood Cancer

First Author, Year, and Country	Study Design, Regional Description	Health Outcomes Included	Environmental Indicator and Exposure Description	Findings and Limitations
Carozza, 2008 United States ⁴⁰	Ecological study; US cancer cases in children aged 0–14 y diagnosed between 1995 and 2001 and reported to member registries of the NAACCR	All cancers combined and specific cancers diagnosed among children aged 0–14 y	Cropland: Percentage of cropland for each county, based on 1997 US Census of Agriculture; divided into <20% cropland (referent); 20%–< 60% (medium), and 60% or more (high); also examined 6 leading US crops	Findings ^a : All cancers combined showed no association with percentage of cropland in counties; incidence rates of several specific cancers showed an association with medium or high levels of agricultural activity; risk estimates for childhood cancer varied by type of crop grown, with elevated risks noted in counties with corn, oats, and soybeans. Limitations: Potential for ecological fallacy, use of county of residence at time of diagnosis, potential for residual confounding
Carozza, 2009, United States ⁴¹	Population-based case-control study; Texas childhood cancer cases and controls born 1990–1998	Childhood cancers reported among children aged <15 y to the Texas Cancer Registry	Cropland: Fields identified from digital orthophoto quadrangle data and Field Mass Index created to incorporate land area (cropland) and distance to each field from birth residence listed on birth certificate	Findings ^a : No association between a birth residence <1000 m of agricultural land use and all cancers combined. A birth residence near cropland showed some association with germ-cell tumors, non-Hodgkin lymphoma, and Burkitt lymphoma, but ORs based on few cases. Limitations: Small number of exposed cases and potential for residual confounding
Choi, 2006, United States ⁴²	Population-based case-control study; cases aged < 10 y at time of diagnosis during 1993–1997 and residents of FL, NJ, NY (excluding New York City), or PA at diagnosis	Incident cases of primary brain cancer	TRI facilities & emissions: residential proximity to TRI during pregnancy (<1 or <2 mi), whether carcinogens were emitted, and a comparative ranking system for TRI releases that combined toxicity information and total mass of release	Findings ^a : Increased risk of brain cancer among children aged <5 y at diagnosis observed for mothers living <1 mi of a TRI facility (OR = 1.66; 95% CI = 1.11, 2.48) and living <1 mi of a facility releasing carcinogens (OR = 1.72; 95% CI = 1.05, 2.82). Limitations: Quality of exposure data, potential for residual confounding from parental occupational exposures.
Crosignani, 2004, Italy ⁴³	Population-based case-control study; Varese Province	Childhood leukemia cases diagnosed 1978–1997	Roads and traffic density: Exposure distances of childhood addresses at time of diagnosis from highly trafficked roads; traffic densities in surrounding area; estimation of benzene concentrations with Gaussian diffusion model	Findings ^a : Relative to children whose homes were not exposed to road traffic emissions (<0.1 ug/m ³ benzene as estimated by the model), risk of leukemia with benzene concentration > 10 ug/m ³ (OR = 3.91; 95% CI = 1.36, 11.27)

Continued

TABLE 2—Continued

Harrison, 1999, United Kingdom ⁴⁴	Population-based case-control and retrospective cohort study designs, West Midlands	Childhood leukemia cases diagnosed between 1990 and 1994	Gas stations and roads: Exposure defined as an address at the time of diagnosis £ 100 m from gas station or a zone 100 m from a main road	Limitations: Potential for residual confounding from unmeasured confounders (parental occupation) and imperfect measurement (socioeconomic status assigned on the basis of municipality of residence), used addresses at time of diagnosis to assign exposure Findings^a: From case-control study, ORs = 1.61 (95% CI = 0.90, 2.87) and 1.99 (95% CI = 0.73, 5.43) for living £ 100 m of a main road or gas station, respectively; incidence ratios from cohort analysis = 1.16 (95% CI = 0.74, 1.72) for proximity to roads and 1.48 (95% CI = 0.65, 2.93) for proximity to gas stations. Limitations: Risk estimates not adjusted for age or gender and addresses at time of diagnosis used to assign exposure.
Jarup, 2002, Great Britain ⁴⁵	Ecological study that included cancer cases diagnosed 1983–1997	Childhood and adult leukemia; adult bladder cancer, brain cancer, and hepatobiliary cancer	Landfill sites: Constructed 2-km buffer zones around 9565 landfill sites using GIS techniques. Postal codes lying outside 2-km buffer were the referent areas.	Findings: With rate ratios adjusted for age, gender, and year of diagnosis, no excess of any cancer was found in relation to living £ 2-mi buffer of landfills. Limitations: Potential for exposure misclassification to chemicals in landfills and potential for ecological fallacy
Kaatsch, 2008, Germany ⁴⁶	Population-based case-control study of 41 counties in the vicinity of 16 power plant sites in western Germany	Leukemia and other cancers that were diagnosed in children aged < 5 y	Nuclear plants: Distance of residence at the time of diagnosis from the chimney of the nearest nuclear plant; residential proximity £ 5 km and £ 10 km	Findings^a: For all leukemia cases combined, a dose–response effect was noted in which cases lived closer to sites than controls; residential proximity £ 5 km was associated with an OR = 2.19 (lower 95% confidence level = 1.51). Limitations: Potential selection bias resulting from differential response rates between cases and controls and between those who lived within 5 km of and outside the buffer zone; potential residual confounding; used address at time of diagnosis to assign exposure

Continued

TABLE 2—Continued

Knox, 2000, Great Britain ⁴⁷	Migration study of 4385 children who died from cancer before age 16, 1953–1980	Tumors were classified into 11 groups.	Incinerators and landfill sites: Migration asymmetries of birth and death addresses and proximity of these addresses to municipal and hospital waste incinerators and landfill sites	Findings ^a : No systematic migration asymmetries noted for landfill sites; highly significant number of migrations away from birthplaces close to municipal and hospital incinerators Limitations: No external control group or control for demographic characteristics or proximity to other environmental hazards; deaths instead of incident cases were used.
Knox, 2006, Great Britain ⁴⁸	Migration study of 5663 children who died from cancer before age 16, 1953–1980	Tumors were classified into 10 diagnostic subtypes.	Roads and other transportation-related entities: Examined birth and death addresses linked to location of railway stations, bus stations, ferry terminals, railways, roads, canals, and rivers and migration asymmetries of birth and death addresses.	Findings ^a : Significant migration asymmetries (close residential proximity at birth but not at death) noted for residential proximity to bus stations, railway stations, ferries, railways, and roads. Limitations: No external control group or control for demographic characteristics or proximity to other environmental hazards; used cancer deaths instead of incident cases.
Knox, 1997, Great Britain ⁴⁹	Retrospective cohort study with 22 448 addresses at death (and available birth addresses) of children aged 0–15 y who died of leukemia and other cancers	Deaths from leukemia and other childhood cancers	Industries and transportation-related entities: Radial distances of home address postal codes (birth and death) from potential hazards, including industries, railway lines, motorways, airfields, and harbors	Findings ^a : Relative excesses of leukemia and solid tumors were found with residences close to a variety of industries and airfields, railways, motorways, and harbors; hazard proximities for birth addresses were stronger than for death addresses; among children who moved between birth and death, the proximity effect was limited to birth addresses. Limitations: Population at risk not enumerated at various distances, no adjustment for age or gender, analyzed cancer deaths instead of incident cases
Langholz, 2002, United States ⁵⁰	Population-based case-control study in Los Angeles County, CA	Incident cases of childhood leukemia diagnosed during 1978–1984 among children aged 0–10 y	Traffic density: Integrated distance-weighted traffic density was computed for the residence of longest duration.	Findings: Although unadjusted ORs of the relation between quintile of traffic density and risk of leukemia suggested a linear trend, this trend was confounded by wire code.

Continued

TABLE 2—Continued

Liu, 2008, Taiwan ⁵¹	Population-based case-control study of 226 Taiwan municipalities	Brain cancer deaths from Bureau of Vital Statistics occurring in people aged 0–29 y; controls included deaths from all causes other than cancer and diseases with respiratory complications.	Petrochemical industry: Proportion of municipality's total population employed in petrochemical industry was used as indicator of petrochemical air emissions at residence at death.	Limitations: Potential exposure misclassification because traffic counts were obtained for 1990–1994, whereas cases were diagnosed during 1978–1984. Findings^a: With the petrochemical indicator variable divided into tertiles, people in the highest tertile (with the lowest tertile as referent) had a significantly higher OR for death from brain cancer (OR=1.65; 95% CI=1.0, 2.73) with adjustment for age, gender, urbanization level of residence, and nonpetrochemical air pollution (P trend < .01). Limitations: Used brain cancer deaths instead of incident cases; not clear whether data were available to distinguish primary from metastatic brain cancers; exposure metric based on municipality instead of individual distance from industry, thereby introducing exposure misclassification; death address may not be relevant for cases who changed residences between birth and death.
Raaschou-Nielsen, 2001 Denmark ⁵²	Population-based case-control study of Danish children aged < 15 y diagnosed with selected cancers 1968–1991 and control children	Leukemia, tumors of the CNS, malignant lymphoma diagnosed in children aged < 15 y	Air concentrations of benzene and nitrogen dioxide: Using Operational Street Pollution Use Model, linked addresses from 9 mo before birth to diagnosis of cancer or similar date for the matched controls to average concentrations of benzene and nitrogen dioxide at the dwelling's front door.	Findings^a: Risks of leukemia, CNS tumors, and all selected cancers combined not linked to exposure to benzene or nitrogen dioxide estimates; risk of Hodgkin's lymphoma associated with highest categories of exposure to benzene (OR=4.3; 95% CI=1.5, 12.4) and nitrogen dioxide (OR=6.7; 95% CI=1.7, 26.0). Limitations: Minimal; parental occupation not taken into account in the analyses
Reynolds, 2002, United States ⁵³	Ecological study using 1988–1994 childhood cancer incidence rates in CA	Cases of invasive cancer diagnosed in children aged < 15 y during 1988–1994	Pesticide use in adjacent land area: Assigned census block groups to case residences at diagnosis; for each block group, estimated pesticide use density in lb/mi ² for 4 toxicologic groups, 4 chemical classes, and 7 individual pesticides.	Findings^a: For all cancers combined, the RR for block groups with high propargite usage was 1.25 (95% CI included 1.0); with leukemia, the RR associated with propargite usage was 1.48 (95% CI=1.03, 2.13); no association noted between usage density of pesticides classified as probable carcinogens $\geq$ 90th percentile and all types of childhood cancer combined (RR=0.95, 95% CI=0.80, 1.13)

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TABLE 2—Continued

Reynolds, 2002, United States ⁵⁴	Ecological study using 1988–1994 childhood cancer incidence rates in CA	All childhood cancers combined; leukemia; gliomas (brain cancer) diagnosed in children aged < 15 y	Roads and traffic density: Assigned census block groups to case residences at diagnosis and used GIS to match addresses with a road network; estimates developed for vehicle, road, and traffic density; these 3 metrics were correlated with ambient measurements of carbon monoxide, nitrogen dioxide, PM10, benzene, and 1,3-butadiene.	Limitations: Potential for ecological fallacy, potential for residual confounding, and exclusive use of residence at diagnosis to assign exposure Findings^a: Rate ratios at the 90th percentile of traffic density were 1.08 (95% CI=0.98, 1.20) for all childhood cancers combined, 1.15 (95% CI=0.97, 1.37) for leukemia, and 1.14 (95% CI=0.90, 1.45) for gliomas; minimal or no evidence of rate differences in these cancers in census block groups with high vehicle or road density; results were suggestive of an association between traffic density and Hodgkin's lymphoma, but a dose-response pattern was not observed. Limitations: Potential ecological fallacy, lacked data on potential confounding factors, used residence at diagnosis to assign exposure, which might not be relevant for children who changed residences.
Reynolds, 2004, United States ⁵⁵	Population-based case-control study; CA statewide	Childhood cancer combined, leukemias, and CNS tumors diagnosed in children aged < 5 y	Roads and traffic density: Case and control maternal residential address at delivery linked to road and traffic density in 500-ft radius of residence.	Findings: For all cancers combined, for highest road density exposure category compared with lowest, OR = 0.87 (95% CI = 0.75, 1.0); for leukemia, OR = 0.80 (95% CI = 0.64, 1.01); and for CNS tumors, OR = 1.03 (95% CI = 0.75, 1.43). Similar ORs were found with traffic density, although for CNS tumors OR = 1.22 (95% CI = 0.87, 1.70) Limitations: Assignment of exposure limited to residence at birth

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TABLE 2—Continued

Reynolds, 2005, United States ⁵⁶	Population-based case-control study; CA statewide	Childhood cancer combined, leukemias, and CNS tumors diagnosed in children aged < 5 y	Pesticide use in adjacent land area: Case and control maternal residential addresses at birth linked to pesticides used on land area (lb/mi ²) $\leq$ 0.5 mi of residence.	Findings ^a : No clear risk patterns noted although mildly elevated ORs for leukemia associated with pesticides that were probable and possible carcinogens and with use of organochlorines or organophosphates. Limitations: Small numbers of children exposed to high-use areas, exposure assessment restricted to birth address, potential exposure misclassification
Rull, 2009, United States ⁵⁷	Population-based case-control study; selected counties in northern CA	Incident cases of childhood acute lymphoblastic leukemia diagnosed in children aged < 15 y 1995–2002	Pesticide use in adjacent land area: Case and control lifetime and 1st-year-of-life residences linked to pesticides used on land area $\leq$ 0.5 mi; pesticides categorized by toxicological effects, physicochemical properties, and target pests or uses.	Findings ^a : Increased risk of acute lymphoblastic leukemia with lifetime moderate exposure to pesticide applications of organophosphates, chlorinated phenols, and triazines and with pesticides classified as insecticides and fumigants; elevated risk not consistent with high exposures. Limitations: Small numbers of exposed cases and controls, climatic conditions not considered.
Sharp, 1996, Scotland ⁵⁸	Ecological study of populations near 7 nuclear sites, 1968–1993	Incident cases of leukemia and non-Hodgkin's lymphoma in children aged < 15 y	Nuclear sites: For each nuclear site, study zone constructed with a population centroid $\leq$ 25 km; each nuclear site examined separately; small-area statistical methods used.	Findings: No evidence of general increased incidence of childhood leukemia and non-Hodgkin's lymphoma noted around nuclear sites; only 1 site had appreciably more cases observed than expected (observed to expected ratio = 1.99). Limitations: Minimal information on potential confounding factors, residence at diagnosis used
Spix, 2008, Germany ⁵⁹	Population-based case-control study around all 16 major nuclear power plants	Leukemia including specific forms, CNS tumors diagnosed in children aged < 5 y during 1980–2003	Nuclear power plants: Metric of 1/(distance in km) used as measure of proximity; categorical analyses of 5- and 10-km zones versus outer zones.	Findings ^a : Effects modest except for the association between living in the inner 5-km zone and leukemia (OR = 2.19, lower one-sided 95% CI = 1.51).

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TABLE 2—Continued

Steffen, 2004 France ⁶⁰	Multicenter, hospital-based, case-control study (4 centers) of newly diagnosed cases during 1995–1999	Acute leukemia in children aged 0–14 y	Roadways, repair garages, and gas stations: History of exposure to hydrocarbons (residential proximity to roadways, car repair garage, gas station) from date of conception to date of diagnosis (cases) or interview (controls); proximity information obtained by in-person interview; also obtained information about parental occupation.	Limitations: Other sources of potential radiation exposure not accounted for, potential unmeasured confounders; used residence at diagnosis to assign exposure. Findings^a: Association between residential proximity to a gas station or repair garage during childhood and risk of childhood leukemia (OR = 4.0, 95% CI = 1.5, 10.3) was stronger for acute nonlymphocytic leukemia (OR = 7.7, 95% CI = 1.7, 34.3).
Tsai, 2006, United States ⁶¹	Population-based case-control study of residents of CA, FL, NJ, MI, NC, and PA	Wilms's tumor diagnosed in children through age 9 y during 1992–1995	Hazardous waste sites: Maternal and paternal addresses in close proximity to a National Priorities List site during the 2-y period before the child's birth; residential history determined by parental interview.	Limitations: Proximity to hazards ascertained by self-report, which could have introduced recall bias and inflated risk estimates. Findings: OR = 0.35 (95% CI = 0.12, 0.99) for Wilms's tumor with a maternal residence ≤ 1 mi of National Priorities List site during pregnancy, OR = 0.39 (95% CI = 0.16, 0.98) with a residence ≤ 1 mi of National Priorities List site during 2 y before birth; no association noted for paternal residence.
Von Behren, 2008, United States ⁶²	Population-based case-control study in northern CA counties	Leukemia diagnosed in children aged < 15 y during 1995–2002	Traffic density: Traffic density ≤ 500 -ft-radius buffer determined for each address at diagnosis, birth, and lifetime average.	Limitations: Small numbers of exposed cases and controls and potential selection bias, with African Americans more likely to not participate than Whites Findings: OR = 1.17 (95% CI = 0.76, 1.81) for acute lymphocytic leukemia with residential traffic density > 75th percentile (0 traffic density as referent) for residence at diagnosis, OR = 1.11 (95% CI = 0.70, 1.78) for residence at birth, and OR = 1.24 (95% CI = 0.75, 2.08) for average lifetime traffic density. Limitations: Potential selection bias, with control families having higher household incomes than case families

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TABLE 2—Continued

Weng, 2009, Taiwan ⁶³	Population-based case-control study of all deaths	Leukemia deaths in children aged <15y, 1996–2006	Gas stations: Gas station density in municipalities in which the residents lived at the time of death	Findings ^a : AOR = 1.91 (95% CI = 1.29, 2.82) for leukemia (death) associated with living in municipalities with the highest gas station density; a significant trend was noted between increasing gas station density and risk of death from childhood leukemia. Limitations: Used deaths instead of incident cases of leukemia; exposure classification restricted to municipality of residence at death; gas station density metric based on 2008 data, which might have introduced exposure misclassification; potential for residual confounding.
Yu, 2006, Taiwan ⁶⁴	Population-based case-control study in Kaohsiung, 1997–2003	Incident leukemia diagnosed in people aged < 30 y, 1997–2003	Petrochemical plants: Exposure opportunity score assigned, based on residences ≤ 2 years before birth, that took into account residential mobility, length of stay in each residence, distance to petrochemical plants, monthly prevailing wind direction, and multiple petrochemical pollution sources.	Findings ^a : No overall association noted with acute lymphocytic leukemia in the group aged 0–19 y who had a higher exposure opportunity score (OR = 1.21; 95% CI = 0.89, 1.65); positive association seen between residential petrochemical exposure and leukemia among people aged 20–29 y (1 unit increase in log-transformed exposure score: OR = 1.54; 95% CI = 1.14, 2.09). Limitations: Potential for selection bias because of differential participation between case and control participants.

Note. AOR = adjusted odds ratio; CI = confidence interval; CNS = central nervous system; GIS = geographic information system; NAACCR = North American Association of Central Cancer Registries; OR = odds ratio; PM10 = particulate matter ≤ 10 μm; RR = relative risk; TRI = Toxic Release Inventory.

^aPositive associations found between environmental entity and health outcomes under study.

whether exposure to persistent organic pollutants (POPs) found near hazardous waste sites was associated with diabetes risk in New York. They used state hospitalization data to calculate diabetes hospitalization rates in patients aged 25 to 74 years by zip code, controlling for age, gender, race, income, and urban or rural population density. Hazardous waste sites were grouped into exposure categories by zip code: POP sites (dioxins and furans, PCBs, persistent pesticides), non-POP sites (volatile organics and metals, etc.), and clean sites. They found significantly higher diabetes hospitalization rates in POP zip codes versus both clean and non-POP sites. With stratification, the rates were highest for Blacks and older age groups.

Some evidence has linked residential proximity to hazardous waste sites and adverse health impacts,^{79–81} but the dearth of literature makes cross-study comparisons difficult. Although exposure to hazardous waste sites may be associated with outcomes such as PCB toxicity, end-stage renal disease, and diabetes, more research is needed.

We reviewed three studies using geographic information science to explore the relationship between environmental burdens and adult cancer. The environmental exposures of interest in these studies included air pollution from industrial plants and a nuclear facility's radioactive emissions; the findings were mixed. Leukemia was significantly associated with proximity to the Pilgrim nuclear power plant among women,⁸² and the odds of leukemia increased with proximity to the plant. Wilkinson et al.⁸³ calculated the observed and expected cancer incidence and death rates

pesticide- and fertilizer-producing Pan Britannica Industries Plant. Although they found significant differences between observed and expected rates of cancer incidence and mortality for distances from 0 to 1 kilometers and 0 to 7.5 kilometers around the plant, evidence of a dose-response relationship was mixed, and the rate ratios were within the range for the region, although the observed incidence of melanoma and cancers of the lung, pancreas, and stomach was significantly higher than expected values. Another study⁸⁴ found significant associations between other industrial plants and some cancers; for instance, non-Hodgkin's lymphoma was significantly associated with proximity to a copper smelter and sulfite pulp mill.

Similar to the hazardous waste site studies, studies assessing cancer risk from exposure to various environmental hazards suffered from comparability problems. Residential proximity to certain industrial plants appears to be linked to cancer risk, although the significance of the results depends on the specific type of plant, population subgroup, and cancer types.

We would expect studies that measured the distance between the environmental hazard of interest and individual residential addresses to have fewer exposure misclassifications and therefore stronger designs. Of the 20 studies we considered, 11 met that criterion.^{65-68,70,71,74,80-82,84} In 9 of these 11 studies, residential proximity to roads^{66,70,74}; to cokeworks, copper smelters, refineries, nuclear power plants, or other stationary point sources of air pollution^{65,67,68,82,84}; or to hazardous waste sites⁸¹ were associated with asthma, respiratory illnesses, heart disease, non-Hodgkin's lymphoma,

end-stage renal disease, or adult leukemia.

LIMITATIONS OF EVIDENCE

Without exception, the studies included in this review had 1 or more limitations that should be considered in the interpretation of results and implications for environmental and public health. Several studies used an ecological approach in which the investigators compared rates of adverse health outcomes with census-defined or administrative boundaries (e.g., zip code) as a proxy for residential location when individual addresses were unknown. This approach, in which exposure is assigned on the basis of whether a specific environmental hazard is present within a particular unit of aggregation⁸⁵ (called a container approach or spatial coincidence analysis), implies that all residents within a particular boundary are equally affected by the hazard of interest without accurate assessment of individual exposure.⁸⁵ For example, a case participant may live next to a particular hazard of interest, but if the hazard is located outside the researcher's unit of analysis (e.g., zip code), then that case participant would not be defined as exposed. Such a design can lead to an ecological bias in which associations at an aggregate level do not represent exposures at the individual level among people with and without adverse health outcomes.⁸⁶ In general, the larger the unit of spatial aggregation is, the more likely it is that bias will be introduced as a result of heterogeneity across and within these units,⁸⁵ and ecological fallacy may result.

Distance-based methods greatly improve on this approach by measuring the actual distance

between residential addresses and environmental hazards. However, residential exposure to site contaminants, industrial emissions, traffic emissions, and pesticide applications will also vary by the climatic and topographic characteristics of the geographic area. The distance-based studies we reviewed rarely considered these conditions; the exceptions were those by Crosignani et al.,⁴³ Goldberg et al.,²⁴ Maantay et al.,⁶⁸ Raaschou-Nielsen et al.,⁵² Vinceti et al.,^{38,87} Wilhem and Ritz,³³ and Yu et al.⁶⁴ Residential proximity to environmental hazards can only serve as a crude proxy for exposure and does not accurately represent individual exposure to ambient conditions or body or target organ dose. However, pollution plume modeling, a method that combines data on chemical emissions and local meteorological conditions to model the environmental fate and dispersion of pollutants, can more accurately predict exposures in the ambient environment.

With respect to residential proximity and adverse pregnancy outcomes, many studies used maternal address at delivery to assign exposure rather than address around conception and during the first trimester. Although address at delivery might be relevant for some adverse pregnancy outcomes, it can be problematic for assigning exposure in studies of chromosomal and nonchromosomal congenital malformations, for which the time around conception and earlier or in the first trimester of pregnancy are, respectively, the most relevant. The estimated percentage of women who change addresses between the time of conception and delivery has ranged between 12% and 33% depending on the maternal population examined.⁸⁸⁻⁹¹

Childhood cancer studies frequently based exposure assignment on 1 address such as address at birth, diagnosis, or death, which potentially introduced exposure misclassification by not accounting for residential mobility. In a California study of childhood leukemia,⁹² 65.8% of the study children moved between birth and date of diagnosis, with more than one third of those who moved living in at least 1 residence outside of the county of birth.

Residual confounding can also be an issue; information regarding factors that are related to both exposure and outcome are measured imprecisely or are not available. Residential addresses of mothers, children, and adults are not randomly distributed; rather, they depend on several factors such as socioeconomic status, parental occupation, and race or ethnicity. These same factors may also increase or decrease the likelihood of living near potential environmental hazards. For instance, race and ethnicity,⁹³⁻⁹⁵ maternal education,⁹⁵ and maternal occupation⁹⁶ have been associated with maternal residential proximity to sources of pollution. These factors are also risk factors for several adverse pregnancy outcomes.

CONCLUSIONS AND RECOMMENDATIONS

Research using geographic information science and other geospatial techniques to explore the public health burdens of residential proximity to environmental hazards is in its infancy. We investigated the associations between only a few environmental exposures and health outcomes, and our review is not by any means meant to be considered exhaustive. In addition, differences in study design and methodology

may result in a lack of consistency across studies. Although their results are mixed, many studies found significant relationships between residential proximity to environmental hazards and adverse health outcomes, such as adverse pregnancy outcomes (including increased risks for central nervous system defects, congenital heart defects, oral clefts, renal dysplasia, limb malformations, chromosomal anomalies, preterm births, low birth weight, small-for-gestational-age births, fetal deaths, and infant deaths), childhood cancers (including leukemia, brain cancer, germ-cell tumors, non-Hodgkin's lymphoma, and Burkitt lymphoma), asthma hospitalizations and chronic respiratory symptoms, stroke mortality, PCB toxicity, end-stage renal disease, and diabetes. Although populations living close to environmental hazards appear more likely to have adverse health outcomes, proximity does not necessarily equate to individual-level exposure. Few studies have examined whether such exposures are more or less likely to increase risk of adverse health outcomes among minority and lower-income populations. This dearth of studies is possibly the result of a limitation of the available health data, which often do not accurately or completely report race and ethnicity for the health outcome cases.

Given these conclusions, which are based on previous evidence of disparities by race and income in relation to proximity to environmental hazards,^{97–100} the adverse health outcomes for populations in close proximity to environmental hazards, and acknowledgment of the health disparities experienced in general by communities of color and lower-income communities, we suggest that government agencies consider these findings in

siting of environmentally burdensome facilities and land uses, in regulatory and enforcement efforts concerning pollution, and in the active promotion of environmental health justice and environmental health protection.

The evidence at this time is sufficient to justify the application of the precautionary principle to protect people from the deleterious effects of living near environmental hazards. Even in the absence of complete scientific proof, enough evidence of potential harm being done exists to justify taking steps to rectify the problem and to protect the public from potentially harmful exposures when all available evidence points to plausible risk. Although economic and political forces will likely require stringent proof that specific recommendations (e.g., establishment of protective buffer zones around noxious land uses) will be effective, some practical applications should be obvious. For example, prohibiting the siting of schools near highways and being cognizant of pesticide drift when planning residential allocations or other sensitive land uses, fall into the category of commonsense guidelines and constitute approaches that would be difficult to argue against.

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Contributors

J. D. Brender, J. A. Maantay, and J. Chakraborty conceptualized the analytic review. J. D. Brender and J. A. Maantay completed the systematic reviews of the literature and shared supervision of the article's overall content. J. Chakraborty reviewed the article and contributed to the conclusions, implications, and recommendations.

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EXHIBIT 6



Risk of leukemia as a result of community exposure to gasoline vapors: A follow-up study

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Objectives: To assess the temporal and spatial relationship of risk for total leukemia and AML (acute myelogenous leukemia) among community residents of an area in northeastern (NE) Pennsylvania (PA) affected by the Tranguch Gasoline Spill which occurred in the early 1990s.

Methods: Standardized incidence ratios (SIR) were calculated for total leukemia and AML among 625 residents affected by the gasoline spill in relation to both PA and local county cancer incidence rates. The risk of total leukemia and AML among the gasoline exposed population was evaluated for the period prior to the spill, 1985–1989; during the time surrounding the spill, 1990–1994; and for a period subsequent to the spill, 1995–2001.

Results: The incidence of total leukemia and AML was significantly elevated subsequent to the spill for the entire period 1990–2001 and was highest for the period 1995–2001, whether comparison was made to PA or local county leukemia rates. Based on comparison to PA rates, the SIRs for total leukemia and AML were 7.69 (95% CI ¼ 1.58–22.46) and 11.54 (95% CI ¼ 2.38–33.69) for the 1995–2001 period, respectively. Prior to the spill, 1985–1989, and during the period of the spill, 1990–1994, no cases of leukemia were identified among the affected residents.

Conclusions: These results suggest a possible association between chronic low level benzene exposure and increased risk of leukemia among residents of the Tranguch Spill Site in NE PA. Our study provides additional support to the growing body of evidence implicating low level benzene exposure and cancer risk. We recommend that other communities contaminated with gasoline vapor through leaking underground storage vessels be monitored for elevated risk of leukemia.

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1. Introduction

In 2001, the local governments of Hazle Township and the City of Hazleton, in Luzerne County in northeastern (NE) Pennsylvania (PA), sought the assistance of the University of Pittsburgh Graduate School of Public Health (GSPH) due to health concerns related to a leaking underground storage tank. The Pennsylvania Department of Environmental Protection (PADEP) documented that as early as 1993 a large quantity of gasoline began leaking from rusting underground storage tanks at a site previously identified as the Tranguch Tire Resurfacing and Gasoline Station (Patel et al., 2004). The exposures occurred as a result of gasoline contaminating the groundwater and filtering into the sanitary

sewer system. As the gasoline vapor migrated through the sewer system, some residents complained about smelling vapors in their homes. The chronic exposure to low levels of benzene and other petroleum distillates raised the concern of the residents about potential health effects. A retrospective cohort study was conducted to determine if there was an increased cancer risk in this population (Patel et al., 2004).

During the study period, the average benzene content of gasoline in the United States (US) was estimated to have ranged between 1% and 2% by volume (Krewski et al., 2000). Because of the benzene content, an *a priori* concern from exposure to gasoline among the community residents was whether or not an elevated incidence of leukemia might be observed. This concern was based on studies demonstrating elevated risks of leukemia and other manifestations of bone marrow toxicity from exposure to either benzene or gasoline. In some of the earlier occupational cohort studies, leukemia risk had been associated with high level benzene exposure (100–200 ppm or greater) (Aksoy et al., 1974;

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Aksoy and Erdem, 1978; Vigliani and Saita, 1964; Vigliani, 1976; Infante, 1993; Rinsky et al., 1987). Other community-exposure studies have also demonstrated elevated leukemia risks, including acute myelogenous leukemia (AML), as a result of low level and low cumulative benzene exposures (Bond et al., 1986; Hayes et al., 1997; Hayes et al., 2001; Guenel et al., 2002; Glass et al., 2003; Collins et al., 2003; Kirkeleit et al., 2008).

Workers exposed to benzene have demonstrated significantly reduced blood cell counts and depression of myeloid progenitor cell colony formation as a result of exposure levels of less than 1 ppm (Qu et al., 2002; Lan et al., 2004; Lan et al., 2006), indicating immunosuppression. Some epidemiological studies of those dispensing gasoline have demonstrated significantly elevated risks of leukemia and other blood diseases (Schwartz, 1987; Jakobsson et al., 1993; Terry et al., 2005; Lumley et al., 1990; Naizi and Fleming, 1989), as well as chromosomal damage to blood lymphocytes (Oesch et al., 1995; Hogstedt et al., 1991). In one study (Terry et al., 2005), the data demonstrate a significant increase in the risk of AML for those employed as a gas station attendant for more than a year; OR $\frac{1}{4}$ 1.8 (95% CI $\frac{1}{4}$ 1.1–2.9). However, a large study of gasoline attendants from the Nordic countries did not observe an overall statistically significant elevated risk of AML (Lyng et al., 1997); the SIR was 1.4 (95% CI 0.8–2.4).

The evaluation of relative risk for Patel et al.'s. (2004) study was conducted for 10 separate cancer sites for the 11-year period of follow-up (1990–2000) and results indicated that total leukemia (ICD-9, 204–208) was significantly elevated compared to Pennsylvania and Luzerne County, PA, cancer incidence rates by age and gender. Standardized Incidence Ratio (SIR) $\frac{1}{4}$ 4.4 (95% CI $\frac{1}{4}$ 1.09–10.24) (Patel et al., 2004; SEER, 2011). There were 43 reported and verified total cancers in this population with 49.1 expected compared to the state of PA, yielding an SIR of .88 (95% CI: 0.64–1.18). No other SIRs for cancer sites were significantly elevated.

In this phase of our study, we: (1) present data for an additional year of follow-up; (2) consider temporal and spatial relationships between exposure to the gasoline spill and risk of leukemia; and (3) report on AML risk known to be more closely related with benzene exposure.

2. Materials and methods

2.1. Benzene exposure estimates

Prior to the Environmental Protection Agency's (EPA) remediation efforts which began in 1996, the PADEP tested the indoor air of a subset of homes for the concentration of total volatile organic compounds (VOCs). A Hnu photo ionization detector (PID) (ATSDR, 2004) was used to obtain samples from 43 homes over the course of 72 days (49 sampling days). Total VOCs concentration ranged from 0–202 ppm with an estimated benzene concentration range of 0–42 ppm (0–136 mg/m³). Benzene levels in the groundwater of the Tranguch Spill area were estimated by the EPA and The U.S. Army Corps of Engineers through exposure modeling conducted between 1994 and 1996. Groundwater estimates of benzene ranged from 200 to 2500 mg/m³ (23). The "affected" area consisting of 366 households within the Hazle Township and the City of Hazleton municipalities potentially exposed to gasoline fumes as a result of the Tranguch fuel spill was determined by the EPA. Using these surveys and taking into consideration possible vapor migration through the sanitary sewer system, the EPA defined a remediation area (Fig. 1) (PADOH, 2001).

Although the EPA sampled the affected residential properties for concentrations of indoor benzene using Summa canisters in late 2000 and January 2001, cumulative benzene exposure could not be adequately estimated due to the lack of comprehensive historical data on air and groundwater concentrations and duration of exposure. Approximately 20% of home owners provided their results to investigators. The reported levels of household benzene exposure ranged from non-detectable ($\leq$ 8.3 mg/m³) to 140 mg/m³. As a result, exposure to benzene from the leaking tanks was defined by residence within the EPA defined remediation area (ATSDR, 2004).

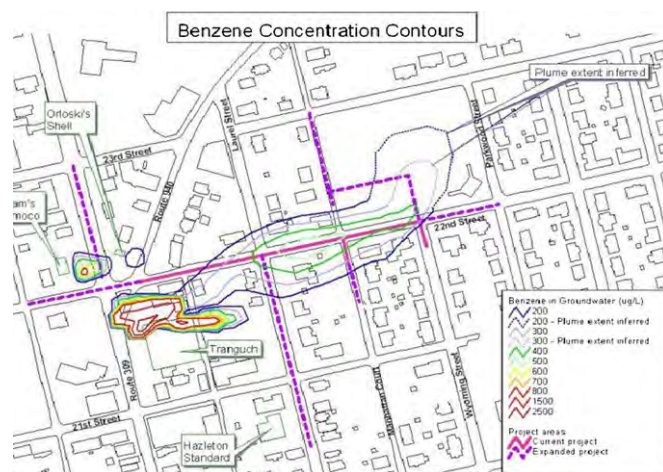


Fig. 1. Benzene Concentration Contours in the Gasoline Plume. (EPA and US Army Corps of Engineers (1998)).

2.2. Details of the study design and target population

Details of the study design, target population, and data collection for the study were provided in the previous publication (Patel et al., 2004). The EPA designated 366 properties in Hazle Township and the City of Hazleton as potentially affected by the spill and 347 of these were determined to be residential. This then comprised our study area.

The original cohort was constructed from tax records, municipal lists, and residential histories of persons living for at least 6 months within the EPA remediation ("affected") area between January 1, 1990 and December 31, 2000. A study-specific questionnaire was developed to assess demographics and primary and secondary health outcomes. The questionnaire obtained self-reported information on residential, medical, and occupational history, health habits, and lifestyle factors. Six consent-to-participate forms, 3 study questionnaires, and 3 medical record release forms were mailed to each current and former head of household and were included for all family members of the affected properties to inform them of the study. A combination of telephone interviews and in-person interviews were also carried out to improve the response rate. Data was collected in the summer of 2001 for the smaller population of Hazle Township, PA and during the summer of 2002 for the City of Hazleton, PA.

Incident cases of cancer among residents of the Hazle Township/City of Hazleton affected area from 1990 through 2001 were identified via the questionnaires. For all self-reported cancers, a request was made by a study staff member for the release of the medical records to the investigators and verification by the attending physician of cancer diagnosis, cancer site, and disease status. A request was also made to the PA Department of Health (PADOH) for the confirmation of all self-reported cancers using data from the PA Cancer Registry as well as validation of any additional non-reported cancers for all study participants. For purposes of this follow-up study, we have added the 2001 cancer data not used in the previous analyses due to lagged PA Cancer Registry information.

As part of this University of Pittsburgh study, no formal medical visits to detect aplastic anemia or leukemia among exposed residents were conducted. The PADOH, however, provided free complete blood tests (CBCs) beginning in 2001 for all residents in the study area in collaboration with St. Joseph's Hospital in the City of Hazleton as a result of the heightened awareness concerning the gasoline spill. A total of 400 individuals underwent this test. Results of the test were sent directly to family physicians. We know of no cases of leukemia identified in this fashion (PADOH, 2001).

2.3. Statistical analyses

The present analysis focused on total leukemia, specifically AML as these cancers have been linked to benzene exposure. An indirect method was used to calculate standardized incidence ratios (SIRs) and 95% confidence intervals (CIs) for total leukemia, including acute lymphoblastic leukemia (ALL, ICD-9 code: 204.0), chronic lymphocytic leukemia (CLL, ICD-9 code: 204.1), acute myelogenous leukemia (AML, ICD-9 code: 205.0), and chronic myelogenous leukemia (CML, ICD-9 code: 205.1) (SEER, 2011; Gordis, 2008). Since cancer is a rare event, Poisson distribution tables (Breslow and Day, 1987) were used to determine the 95% confidence intervals. Due to the small number of observed cases for site-specific outcomes, exact methods were used.

The observed number of cancers in the exposed areas of Hazle Township and the City of Hazleton were compared to expected numbers derived from age and

gender specific cancer rates for the state of PA and for Luzerne County from the Pennsylvania Cancer Registry during the same time period. The numerators consisted of the number of cases of total leukemia and of AML specifically for Pennsylvania and Luzerne County from 1990–2001 and were obtained from the PADOH Bureau of Health Statistics. The denominators used were population figures for the state of PA and Luzerne County obtained from the PADOH EpiQMS (Epidemiologic Query and Mapping System). The 1990 and 2000 PA and Luzerne County populations by age are based on the U.S. Bureau of the Census population figures. For the years 1991–1999 and for 2001, the Census Bureau and the State Data Center of the Pennsylvania State University at Harrisburg jointly produced population estimates for PA and Luzerne County. These estimates are generated by a combination of a component procedure that depends on administrative records and regression methodology (PADOH, 2004).

Each person residing in the affected areas of Hazle Township or the City of Hazleton during the entire period from January 1990 to December 2001 contributed 12 person-years to the denominator. For those persons not residing in the area for the full twelve-year study period, algorithms were created to assess total and age group-stratified person-year contribution based on beginning and end date of residence in the area. Additionally, individual person-years were stratified by contribution to specific age categories for comparison with standard rates. The categories were as follows: less than 15 years, 5-year increments through 79 years (i.e., 15–19 through 75–79), and 80+ years.

For residents in the affected area of the City of Hazleton, however, residential histories were available from January 1, 1990 through December 31, 2001. Individual interview data for residents in Hazle Township was available from January 1, 1990 through June 2001, the end of data collection. For the purpose of this study, it was assumed that any resident residing in the affected area of Hazle Township at the time of his or her study interview in 2001 remained in the Township through the end of the calendar year (until December 31, 2001) and contributed one age-specific person-year in 2001 for this analysis.

For the temporal analysis we calculated SIRs for leukemia and types of leukemia for the time periods 1990–1994, 1995–2001, and for 1990–2001.

For the spatial analysis, residences were classified into three potential exposure categories (high, medium, or low) based on the proximity of the residence to the underground gasoline plume as defined by the EPA/US Army Corps of Engineers modeling of the projected plume extension (1998). Residences were coded in the high exposure category if they were located directly over the plume or adjacent to the estimated boundary (within one household). The medium exposure category included homes two or more houses away from the plume boundary, up to three blocks. Homes three or more blocks away from the plume boundary were classified into the low exposure category. SIRs were calculated for each exposure category.

All statistical analyses were completed using SAS version 8 for Windows (Cary, NC) and Microsoft Excel.

3. Results

A total of 347 households were identified as eligible to participate in the study. Of the 347, a total of 275 households agreed to participate (Fig. 2). Although the 275 households consisted of 663 individuals who had lived in the affected area at one point as determined by tax records, only 625 residents were alive at the time of the interview and therefore included in the analysis (39 residents died between 1990–2001). The overall household response rate for Hazle Township and City of Hazleton was 79.3% (275/347). A total of 663 participants from Hazle Township and from the City of Hazleton completed the questionnaire. For the interval 1990–1994, a total of 601 individuals reported residing in the affected area. Sixty-two individuals entered the area after December 31, 1994 and 38 individuals left before January 1, 1995.

The cohort was 99% Caucasian and was composed of 343 (51.7%) women and 320 (48.3%) men, with a mean age of 49.2722.1 years. The average age of the women was 52.1721.3 with mean years of residence of 38.8722.5. The average age of the men was 46.0722.4 with mean years of residence of 34.3721.0. Both men and women lived in the study area for the majority of their lives reflecting a stable population with an average period of residence of 36.8721.9 years (Table 1). The majority of participants had at least a high school education and were married. Approximately 50% of the cohort was currently employed and 34% were retired. The employment history of the leukemia cases was unremarkable for potential benzene

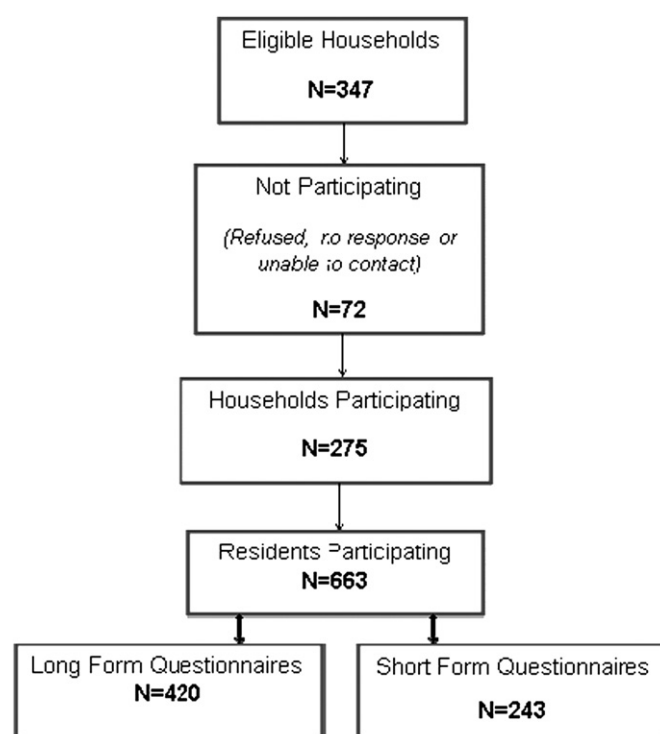


Fig. 2. Hazle Township and the City of Hazleton Household and Resident Response Rate.

exposure. Two cases were employed in sales occupations, one worked in food production, another was a seamstress, and one case was a homemaker.

3.1. Temporal analyses

Table 2 presents the observed numbers of cases and SIRs for total leukemia and AML in the areas of Hazle Township and City of Hazleton for the two time periods (1990–1994, 1995–2001, and for 1990–2001) affected by the gasoline spill as compared to PA and Luzerne County, respectively. For 1990–2001 inclusive, a total of 5 cases of leukemia, of which 3 cases were AML, were identified as the primary, or first diagnosed, cancer among the 663 residents in the combined affected area that participated in the University of Pittsburgh studies. Of the two remaining cancers, one was CML and the other CLL. During the time interval, 1990–1994, no cases of leukemia or AML were identified among 601 subjects in our study within the affected areas of Hazle Township and the City of Hazleton. This was confirmed by a report of the PADOH that considered the 1985–2000 and 1990–2000 time intervals, and reported no cases of leukemia in the combined affected area of Hazle Township and the City of Hazleton during the 5-year time interval, a period that purportedly predates the Tranguch Spill (2001) (<http://www.health.state.pa.us/pdf/tranguch/tranguchspill.pdf>). All 5 cases of leukemia (Table 3) reported during the 1990–2001 interval were identified among the 625 affected residents during the time period from 1995–2001. One patient diagnosed with AML had moved to the area after December 31, 1994.

For the intervals 1995–2001 and 1990–2001, the age-specific SIRs for total leukemia and AML were statistically significant for the combined affected area of Hazle Township and City of Hazleton compared to both the PA and Luzerne County populations. Compared to the PA rates, the SIRs and 95% confidence intervals for total leukemia and AML for 1995–2001 were 6.49 [95% CI: 2.10–15.13] and 11.54 [95% CI: 2.38–33.69], respectively.

Table 1

Age Distribution of population alive at time of data collection with mean age and mean years of residence within Hazleton/Hazle township by age group.

Age group	Males			Females			Total		
	N	Mean Age $\pm$ SD	Mean years of residence $\pm$ SD	N	Mean age $\pm$ SD	Mean years of residence $\pm$ SD	N	Mean age $\pm$ SD	Mean years of residence $\pm$ SD
0–18	40	11.074.7	10.174.9	30	11.574.0	10.074.3	70	11.374.4	10.074.6
18–34	63	26.375.1	22.377.3	47	27.374.8	23.976.8	110	26.775.0	23.077.1
35–44	37	40.772.9	33.9712.6	42	40.572.6	30.8713.6	79	40.672.8	32.2713.1
45–54	38	49.872.7	32.9717.2	47	50.573.3	33.3716.3	85	50.273.0	33.1716.6
55–64	37	59.573.1	40.4717.5	54	60.373.0	43.6716.5	91	60.073.1	42.3716.9
65–74	49	69.973.2	50.9717.8	57	70.173.1	50.0720.4	106	70.073.1	50.4719.2
75+	30	79.673.4	56.4725.6	54	79.473.3	61.8723.6	84	79.473.3	59.9724.3
Total	294	46.0722.4	34.3721.0	331	52.1721.3	38.8722.5	625	49.2722.1	36.8721.9

Table 2

Age-adjusted standardized incidence ratios (SIRs) for total leukemia and AML in the combined gasoline spill areas of Hazle Township and Hazleton compared to Pennsylvania (PA) and Luzerne County rates for three time intervals.

Reference Population	Intervals	Total leukemia				AML			
		Obs.	Exp.	SIR	95%CI	Obs.	Exp.	SIR	95%CI
PA	1990–1994	0	0.44	–	0–6.81	0	0.13	–	0–23.04
	1995–2001	5	0.77	6.49 ^a	2.10–15.13	3	0.26	11.54 ^a	2.38–33.69
	1990–2001	5	1.20	4.17 ^a	1.35–9.71	3	0.39	7.69 ^a	1.58–22.46
Luzerne	1990–1994	0	0.56	–	0–5.35	0	0.14	–	0–21.40
	1995–2001	5	0.91	5.49 ^a	1.78–12.80	3	0.28	10.71 ^a	2.21–31.29
	1990–2001	5	1.46	3.42 ^a	1.11–7.98	3	0.42	7.14 ^a	1.47–20.86

^a SIR is statistically significant at $p < 0.05$.

Table 3

Selected characteristics of leukemia cases in Hazle township and city of hazleton affected area, 1990–2001.

Gender	Age group	Year of Dx	Type of leukemia	Duration of residence	Occupation
F	75–79	1998	CLL	50 $\pm$ years	Sales
M	70–74	1998	AML	35 $\pm$ years	Food production
F	70–74	2000	AML	10 $\pm$ years	Textile/apparel
F	65–69	2000	CML	15 $\pm$ years	Homemaker
M	40–44	2001	AML	5 $\pm$ years	Sales
^a F	85 $\pm$	2001	CML	35 $\pm$ years	Homemaker

Dx = diagnosis.

^a Second cancer.

For 1990–2001, the SIRs for total leukemia and AML were 4.17 [95% CI: 1.35–9.71] and 7.69 [95% CI: 1.58–22.46], respectively. As compared to Luzerne County rates, the SIRs for total leukemia and AML during the 1995–2001 period were 5.49 [95% CI: 1.78–12.80] and 10.71 [95% CI: 2.21–31.29], respectively. The SIRs for total leukemia and AML for 1990–2001 are 3.42 [95% CI: 1.11–7.89] and 7.14 [95% CI: 1.47–20.86], respectively. These results are also statistically significant at the $p < 0.05$ level.

The leukemia cases ranged in age from 44 to 78 although most (4 of the 5) were 65 years of age or older and the median age was 70 years. The average length of residence in the affected area among cases was 24.6 $\pm$ 719.59 years.

In addition, one case of chronic myelogenous leukemia was reported in 2001 as a second cancer in an individual diagnosed previously with breast cancer in 2000 (Table 3). By *a priori* decision, no second (i.e. subsequent to the first) cancers were included in the calculated SIRs in our analysis. However, this leukemia case represents the 6th identified leukemia (CML) among study participants. If this case is included in the analysis

of total leukemia for 1990–2001 for PA as a whole, the SIR for total leukemia is 5.0 (95% CI: 1.83–10.88).

3.2. Spatial analyses

To further assess the potential health effects of the gasoline spill, emphasis was placed on the projected location of the underground plume. Residences were classified into three potential exposure categories (high, medium, or low) based on the proximity of the residence to the underground gasoline plume as defined by the EPA/US Army Corps of Engineers modeling of the projected plume extension (1998). Residences were coded as being in either the high exposure category (within one household), the medium exposure category (up to three blocks from the plume), or into the low exposure category (three or more blocks away from the plume).

A total of 42 households were determined to be in the potentially high exposure area, 109 in the moderate exposure area and 115 in the low exposure area (Table 4). Nine homes were unable to be coded with the available data. A total of 84 residents were categorized as living in potentially high exposure residences; these participants accrued a total of 691 person-years. The medium exposure category included 269 participants who accumulated 2,523 person years. Finally, the lowest exposure category included 290 participants with a total of 2,724 person-years.

Overall and site-specific cancer SIRs and 95% CIs were calculated for each exposure category, using the PA population as a comparison group. For the lowest and medium exposure categories, no statistically significant increases in SIRs were observed for the overall leukemia or any leukemia type. One case of CLL was diagnosed among low exposure participants (SIR = 2.51; 95% CI = 0.08–13.99). Two leukemias (a CML and an AML) were diagnosed among the medium exposure group resulting in an elevated SIR of 4.88 (95% CI = 0.59–17.61).

In the high exposure group, two leukemia cases, both representing AMLs were identified among participants living directly

Table 4
Standardized incidence ratios (SIRs) and 95% CI for total leukemia by household exposure level, Hazle Township and city of Hazleton affected area, 1990–2001.

Exposure level	Number of households	Number of residents	Person years	Number of observed cases of leukemia	SIR for total leukemia ^a	95% CI	Type of leukemia
High	42	84	691	2	16.81	2.02–60.67	AML
Moderate	109	269	2523	2	4.88	(0.59–17.61)	CML, AML
Low	115	290	2724	1	2.51	0.08–13.99	CLL
Total	266	643	5.938	5			

^a 9 homes were unable to be coded with available data.

^a Note: SIRs were calculated on the basis of data for the state of Pennsylvania from the PA cancer registry.

over or adjacent to the underground projected gasoline plume as previously defined. The leukemia SIR for this group, based on these two cases, was 16.81 (95% CI ¼ 2.02–60.67). This result is statistically significant.

4. Discussion

The results of our current analysis indicates that there was a statistically significant excess of total leukemia and more specifically of AML for the time-period 1990–2001 for the populations of Hazle Township and the City of Hazleton who were affected by the Tranguch gasoline leakage as compared to the Pennsylvania State rates or to Luzerne County population rates. This excess appears to be confined to the time interval 1995–2001. No cases of leukemia were identified between 1985–1989 nor between 1990–1994, as observed in studies conducted by PADOH (2000) and by the current University of Pittsburgh analysis, respectively.

Three of the five leukemia cases identified in the Hazle Township/City of Hazleton combined affected area were AML. The three cases of AML, all identified in this population from 1995–2001, represent a significant increase compared to the number of cases expected based on AML rates observed in either Pennsylvania or Luzerne County (0.39 and 0.42 cases expected, respectively).

The latency for AML in occupational studies described previously ranges from two to over 20 years. This is most likely dependent on exposure level, duration of exposure, as well as characteristics of the population studied. Given that gasoline contains a percentage of benzene, leukemia was the *a priori* adverse health impact of concern at the commencement of the study. Moreover, the leukemia most highly elevated was AML, the type that has demonstrated the highest relative risk in relation to benzene exposure in an industrial setting, and leukemia was the only cancer site that demonstrated a significant increase in our study population.

Spatial analysis of the three potential exposure categories (high, medium, or low) based on the proximity of the residence to the underground gasoline plume as defined by the EPA/US Army Corps of Engineers modeling of the projected plume extension (1998), found a significant association between high exposure level and AML. The medium and low exposure categories were also elevated but not significant.

Although the potential historical benzene exposure of Hazle Township/City of Hazleton residents in the affected area may have been less than exposures typically observed in occupational settings, the long-term duration of benzene exposure among these individuals in a residential environment (i.e. cumulative hours spent in the home vs. the workplace) may have significantly impacted health outcomes in the gasoline spill area, particularly among more susceptible populations. Rappaport et al. (2009) modeled urinary metabolites of benzene in relation to atmospheric benzene exposures. They concluded that current benzene

risk assessments would likely underestimate leukemia risks at ambient concentrations by a factor of three and even higher for subgroups with specific genetic susceptibilities. In a recent review of the literature, Smith (2010) has concluded that it seems unlikely that a practical threshold exists for benzene exposure and leukemia given the high background exposure to benzene as a combustion by-product in the environment. In their case-control study of leukemia among refinery workers, Glass et al. (2003), Ward et al. (1996), and Lan et al. (2006) found no evidence for a threshold for benzene exposure. Barregard et al. (2009) identified a greater than 2-fold risk of leukemia among residents of two communities exposed downwind from an oil refinery in Sweden. The relative risk of leukemia related to estimated benzene refinery emissions was much greater than would have been expected based on the results from quantitative risk assessments from occupational studies.

5. Strengths and limitations

Our study had several important strengths. Interviews were conducted in person and residential histories as well as an accurate number of person years of exposure were obtained. In addition, all cancer cases were double-verified through physician diagnoses as well as through PADOH Cancer Registry records. Finally, the response rate for a community health study was high at nearly 80% leaving only about 20% of residents unaccounted for. Moreover, as this was a community health study, confounding by occupational exposure was not a primary issue.

Selection bias may still be a concern of our study. However, as noted, a parallel PADOH study was conducted in 2003 that used U.S. Census block group data and door-to-door enumeration to identify all residences within the affected area of the City of Hazleton and Hazle Township, as well as any reported cancers diagnosed between 1985 and 2002 through the PA Cancer Registry (PADOH, 2008). A total of 899 residences were determined to be in the affected area. One additional case of CLL was identified by this study, resulting in an SIR ¼ 3.63 (*p*0.05) (PADOH, 2008).

One limitation is the possibility of heightened awareness of cancer risk in our exposed area, which may lead to people seeking medical care earlier, especially in the later period of our study. Although the PaDoH offered free blood tests to all in the area and two additional cases were diagnosed in 2001, we have no knowledge that any of the five leukemia cases were a direct result of this screening. A final limitation is the small number of cases which leads to the wide CIs.

The lack of specific individual level exposures, however, is a limitation of the study. Households were categorized as potentially high, medium, or low exposure areas and person-years calculated. Residents were classified according to the exposure for their household. A significantly elevated risk for leukemia was

found among those in the high exposure area. Moreover, within the high to medium to low exposure area, the risk estimates increase in a dose dependent fashion.

Our previous publication, Patel et al. (2004) concluded that the study provided support for the growing body of evidence suggesting a causal link between benzene exposure below 1 ppm and risk of leukemia. Our new analyses demonstrating temporal and spatial relationships between the gasoline spill and elevated risk of leukemia and particularly AML among the community residents, adds to this evidence.

Concern about community exposure to benzene from gasoline is consistent with recent action taken by the EPA (2007). Noting an increased risk of leukemia, other blood diseases and immunotoxicity as a result of community exposure to benzene from gasoline, the EPA recently issued a rule requiring refiners to reduce the benzene content of gasoline to an average level of 0.6% by 2011, and to require limitations on hydrocarbon emissions from portable fuel containers such as those on lawn and garden equipment, recreational and passenger vehicles, etc. in order to reduce benzene vapor emissions from these containers.

6. Conclusion

Our analyses demonstrated a significantly elevated risk of total leukemia and AML among the exposed community residents during the period approximately 4–10 years subsequent to the spill. These results suggest a possible association between chronic low level benzene exposure and increased risk of leukemia among residents of the Tranguch spill site in NE PA. Recommendations based on the study's findings were made to public health agencies and the community. They included screening for disease precursors and continued surveillance for hematopoietic malignancies. We also recommend that other communities contaminated with exposure to gasoline vapor through leaking underground storage vessels be monitored for elevated cancer risk.

Acknowledgment

We wish to acknowledge the late Dr. Jeanne Zborowski who gave tirelessly of her time during the follow-up period of the study.

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EXHIBIT 7

Acute childhood leukaemia and residence next to petrol stations and automotive repair garages: the ESCALE study (SFCE)

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ABSTRACT

Background: The association between acute childhood leukaemia and residing next to petrol stations and automotive repair garages was analysed in a national registry-based case-control study carried out in France in 2003–2004.

Methods: Population controls were frequency matched with cases on age and gender. Data were collected by standardised telephone interview with the mothers. The latter were asked to report the proximity of their homes to petrol stations, automotive repair garages and other businesses from the conception of the index child to the diagnosis (for cases) or interview (for controls). Odds ratios were estimated using unconditional regression models adjusted for age, gender, number of children under 15 years of age in the household, degree of urbanisation and type of housing.

Results: 765 cases of acute leukaemia and 1681 controls were included. Acute leukaemia was significantly associated with residence next to petrol stations or automotive repair garages (OR 1.6, 95% CI 1.2 to 2.2) and next to a petrol station (OR 1.9, 95% CI 1.2 to 3.0). The OR showed no tendency to increase with duration of exposure. The results were not modified by adjustment for potential confounding factors including urban/rural status and type of housing.

Conclusions: The results support the findings of our previous study and suggest that living next to a petrol station may be associated with acute childhood leukaemia. The results also suggest that the role of low-level exposure to benzene in acute childhood leukaemia deserves further evaluation.

Benzene exposure has mainly been studied in the occupational health field (the rubber industry, the Pliofilm cohort) and has been identified as an established cause of acute leukaemia, especially acute non-lymphoid leukaemia, in adults. The International Agency for Research on Cancer (IARC) included benzene in group 1 (carcinogenic to humans) in 1982. Benzene can be bioactivated to toxic metabolites such as 1,4 benzoquinone, which can alter signalling pathways and affect chromosomal integrity. Benzoquinone has been shown to increase the activity of c-Myb, which is an important transcription factor involved in haematopoiesis, cell proliferation and cell differentiation.¹ A recent study has also shown that exposure to low-dose benzene (urban traffic police) could alter DNA methylation and induce epigenetic changes in gene expression.²

What this paper adds

- © High exposure to benzene is a known risk factor for adult leukaemia.
- © This population-based case-control study investigated the vicinity of petrol stations as a potential source of environmental benzene exposure.
- © Our results, consistent with that of our previous study on the same subject and with some studies on traffic and leukaemia, support the hypothesis that living next to a petrol station may be associated with acute childhood leukaemia.
- © On the basis of these findings, the role of exposure to low level benzene in childhood acute leukaemia deserves further evaluation.

Environmental non-occupational exposures to benzene have been less investigated. Unleaded fuel contains small amounts of benzene and studies have shown that the benzene concentration close to the pump during refuelling ranges between 1 and 10 mg/m³, while the environmental background concentration is about 4 mg/m³.³ For children, one of the main sources of outdoor exposure to benzene is petrol. Living next to a petrol station or repair garage may increase the opportunity for benzene exposure. Thus, the

influence of a petrol station or garage in the immediate neighbourhood on childhood leukaemia was investigated.

Various geographical studies have been carried out to determine the relationship between children residing in the neighbourhood of potential hydrocarbon pollution sources (eg, oil refineries, petrol tanks and stations) and acute childhood leukaemia.^{4–9} Six case-control studies and a geographical study focused on the role of exposure to automotive emissions and acute childhood leukaemia.^{4–10–16} Five of the six studies showed a positive association between different indicators of air pollution or heavy traffic in the vicinity of children's homes and acute leukaemia. Three of the associations were statistically significant.^{11–12–16}

In 2004, a previous case-control study carried out in France by the present authors¹⁷ found a significant positive association between acute childhood leukaemia and living next to an automotive repair

garage or petrol station during childhood (OR 4.0, 95% CI 1.5 to 10.3). A statistically significant positive trend between the duration of childhood exposure to a neighbouring repair garage or petrol station and acute leukaemia was also found (OR 1.03, 95% CI 1.01 to 1.05, per month of exposure).

The present study again investigated the relationship between acute childhood leukaemia and residing next to repair garages and petrol stations in utero and during childhood, using an improved methodology compared to the previous study. The present study is population based and national, whereas the previous study, conducted in 1995–99 in four cities, was hospital based.

METHODS

The ESCALE study was conducted in 2003 and 2004 to investigate the role of infectious, environmental and genetic factors in four childhood neoplastic diseases (leukaemia, lymphoma, neuroblastoma and brain tumour).^{18–24} Only leukaemias are considered in the present study.

Selection of cases and controls

Cases were identified directly by the investigators assigned to each French paediatric oncology hospital department, with the support of the French National Registry of Childhood Blood Malignancies.²⁵ In order for the cases to be eligible, children had to have been diagnosed with acute leukaemia between 1 January 2003 and 31 December 2004. The cases were also required to be aged less than 15 years old and to be resident in France at the time of diagnosis. Cases who had been adopted, whose biological mother had died, whose mother did not speak French, or whose mother was suffering from a serious psychiatric disorder were not eligible. For ethical reasons, children who had died or who were receiving hospital palliative care were not eligible. Of the 938 cases of acute leukaemia identified during the study period, 843 cases were eligible. The reasons for non-eligibility were the child's death (34), hospital palliative care (7), the biological mother's death (10), a non-French speaking mother (29) or a mother with a serious psychiatric disorder (15). A total of 765 incident cases of acute leukaemia were included after 78 (9%) of the 843 eligible cases had refused to participate.

The controls were randomly selected from the French population. A first sample of 60 000 addresses, representative of the French population in terms of the 22 administrative regions and nine degrees of urbanisation, was randomly extracted from the French national telephone directory (plus randomly generated unlisted numbers).

Quotas were then applied so that controls were similar to the whole set of cases, including cases of leukaemia, lymphoma, neuroblastoma and brain tumour, in terms of age and gender, based on the expected distributions provided by the French national registries.²⁶ The following age strata were used for quota sampling: 0–1 years, 2 years, 3 years, 4 years, 5–6 years, 7–8 years, 9–11 years and 12–14 years. Additional quotas were used to ensure that the control group was also representative of the French general population in terms of the number of children aged less than 15 years living in the household, conditionally on age, based on the 1999 population census. Like the cases, the controls were not to have been adopted and were to have a French-speaking biological mother who could be interviewed and was not suffering from a serious psychiatric disease.

Of the 50 217 phone numbers dialled, 22 584 did not connect to a home number because they were non-residential numbers. They were mainly wrong numbers (16 953), business telephone numbers (2143) and numbers remaining unanswered (3488). Another set of 24 410 phone numbers consisted of ineligible home numbers, mostly households with no children (17 479) or with children suitable for already completed quotas (5277) and households with no mother or no biological mother or with a non-French speaking mother (1654). For the 2361 remaining numbers, there were 679 refusals to participate. Thus, 1682 mothers were interviewed (71.2%). One child with a history of neuroblastoma was excluded; 1681 children were included as controls.

Data collection

The same trained interviewers carried out the telephone interview with the biological mothers of the cases and controls using structured questionnaires. The mothers of the cases were interviewed 6 months, on average, after the diagnosis. Apart from a few questions relating to quota sampling and targeting the control mothers, the questionnaire and interview conditions were exactly the same for the cases and controls. Case-control status was therefore not likely to have influenced the interview. Many interviews were monitored by the epidemiological team in order to check the reliability of interviews and their independence with respect to case-control status. The cases and controls were interviewed during the same time period, and the case and control interviews were similarly distributed by age within that period.

The telephone questionnaire elicited information on demographic and socioeconomic characteristics, childhood environment, lifestyle, and personal and familial medical history. The questions relating to businesses in the vicinity of the home covered all residences (up to a maximum of seven) from pregnancy to date of diagnosis or interview. For each residence, the mothers were asked the name of the municipality and its zip/area code, the type of housing (apartment, house or farm) and whether a business adjoined it. A checklist of closed questions was used to explicitly elicit information on repair garages, petrol stations, car bodywork repair shops and printing plants; open questions were used for factories and other businesses.

The degree of urbanisation of the municipalities of residence was derived from the 1999 census data. The parents' professional category was taken to be the higher of the maternal and paternal occupations at interview and was coded using the two-digit ILO classification (ISCO 1988).

Variables

The group of children "exposed" to a given business included those who had lived next to that business in at least one residence from the date of conception to the date of diagnosis (cases) or interview (controls). "Next" to a business is taken to mean that there was no building or road between the residence and the business of interest. The interviewers had been clearly instructed with respect to that definition. The reference group was the group of children whose mothers did not mention the business in connection with any residence. Because the authors' previous study did not distinguish between garages and petrol stations, and because those businesses are frequently combined, the following variables were considered: combined exposures to garages and petrol stations (garage or petrol station/neither of them; exposure to garage only/petrol station only/both garage

Table 1 Distribution of cases and controls by the stratification variable age×gender (16 categories) used for quota sampling

Age (years)	Controls (n = 1681)		Cases				AML (n = 100)		No of controls per case
			All (n = 765)		ALL (n=646)				
	No	%	No	%	No	%	No	%	
Boys									
0-1	201	12	53	7	34	5	17	17	3.8
2	79	5	54	7	49	7	5	5	1.5
3	87	5	60	8	57	8	2	2	1.4
4	89	5	48	6	42	6	4	4	1.8
5-6	126	8	60	8	50	7	6	6	2.1
7-8	96	6	36	5	30	4	5	5	2.7
9-11	137	8	59	8	49	7	9	9	2.3
12-14	117	7	45	6	35	5	6	6	2.6
Total	932		415		346		54		
Girls									
0-1	168	10	62	8	44	7	18	18	2.7
2	74	4	47	6	44	7	3	3	1.6
3	79	5	50	7	47	7	2	2	1.6
4	56	3	38	5	35	5	3	3	1.5
5-6	102	6	60	8	55	8	5	5	1.7
7-8	67	4	39	5	33	5	5	5	1.7
9-11	88	5	35	4	27	4	7	7	2.5
12-14	115	7	19	2	16	2	3	3	6.0
Total	749		350		301		46		
Cases vs controls (χ^2)			$p > 0.001$		$p > 0.001$				

ALL, acute lymphocytic leukaemia; AML, acute myeloblastic leukaemia.

and petrol station/neither of them), and separate exposures (exposure to garage (yes/no) and exposure to petrol station (yes/no)). The questionnaire also elicited exposures to car bodywork repair shops, printing plants, and factories (unspecified).

For garage and petrol station exposures, various exposure periods, relative to child development (intrauterine only, childhood only, both periods and sub-periods within childhood) were considered. Separate analyses were performed for the exposures before and after the publication of the previous study on petrol stations and childhood leukaemia.¹⁷ The periods before and after 2001, when implementation of the regulation on petrol vapour recovery began in French petrol stations (Directive 94/63/EC)²⁷ were also distinguished. The duration of exposure during childhood (duration, the median of the distribution/duration – the median of the distribution) and the duration since the end of exposure were also analysed.

An attempt was made to evaluate potential differential reporting of the immediate proximity of a petrol station between case and control mothers. Various independent and objective data sources (Catalist,²⁸ Navteq,²⁹ Mappy,³⁰ Google Earth,³¹ and telephone directories) were used to confirm the reported presence of a petrol station adjacent to a residence. Checking was conducted blind to case/control status and focused on the residences at the time of the interview because only those addresses were sufficiently detailed to be located on a map.

Statistical analysis

The odds ratios (OR) and their 95% confidence intervals (CI) were estimated by the use of unconditional logistic regression, with adjustment for the stratification variables, age and gender, and for the number of children under 15 years of age living in the household.

Adjustment for potential confounders, including factors that were associated with the type of business in the vicinity of the home or with acute childhood leukaemia, was carried out.

Thus, analyses were adjusted for type of housing, degree of urbanisation (rural: > 5000 people; mixed: 5000–100 000 people; urban: < 100 000 people) and parental socioeconomic category. Adjustments were also made for early infections in childhood, paternal smoking and maternal domestic pesticide use during pregnancy, all of which had previously been shown to be related to childhood leukaemia in the literature and in the ESCALE study^{23,24} (J Clavel, personal communication). The analyses have also been adjusted for maternal smoking during the index pregnancy.

The SAS software package (version 9; SAS Institute, Cary, North Carolina, USA) was used for all analyses.

The study complied with all applicable international regulatory requirements including submission to an ethical committee (DGS No. 2003/0259). The participants gave their oral informed consent to the interview prior to the study.

RESULTS

A total of 765 cases of acute leukaemia were included. They consisted of 647 cases of acute lymphocytic leukaemia (ALL; 544 common B-cell ALL, 27 mature B-cell ALL, 67 T-cell ALL and 8 unspecified ALL), 118 cases of acute non-lymphocytic leukaemia (ANLL; 100 acute myeloblastic leukaemia (AML) and 18 cases of unclassified leukaemia).

Comparability of cases and controls

The distribution of the cases and controls by the quota variable combining age and gender is shown in table 1.

The ALL distribution showed the expected male predominance and incidence peak at 2–5 years of age.

The cases and controls were similar with respect to the stratification variable age×gender for the study as a whole, but not for each malignancy. In particular, the controls were significantly younger than the cases of acute leukaemia. Therefore, all the strata contained more than one control per

Table 2 Distribution of cases and controls by educational level, professional category, type of home and area of residence

	Controls (n=1681)		Cases (n=765)		OR* (95 CI)
	No	%	No	%	
Maternal educational level					
High school	979	58.2	465	60.8	1.0 (ref)
< High school	701	41.7	299	39.1	0.9 (0.8 to 1.1)
Paternal educational level					
High school	1063	63.2	526	68.8	1.0 (ref)
< High school	601	35.7	230	30.1	0.8 (0.6 to 0.9)
Parental professional category					
Managers, intellectual/intermediate professions	715	42.5	279	36.5	1.0 (ref)
Administrative and sales workers	477	28.3	224	29.3	1.2 (0.9 to 1.5)
Service workers	215	12.8	96	12.5	1.2 (0.9 to 1.5)
Factory/agricultural workers, unemployed	274	16.3	165	21.6	1.5 (1.2 to 1.9)
No of residences between conception and interview					
1	766	45.6	267	34.9	1.0 (ref)
2	613	36.5	292	38.2	1.3 (1.1 to 1.6)
>3	296	17.6	204	26.7	2.2 (1.7 to 2.8)
Type of home					
At conception					
Apartment	756	44.9	394	51.5	1.0 (ref)
House	899	53.5	358	46.8	1.3 (1.1 to 1.5)
Farm	23	1.4	7	1.0	0.7 (0.3 to 1.7)
At interview					
Apartment	484	28.8	249	32.5	1.0 (ref)
House	1173	69.8	506	66.1	1.2 (0.9 to 1.4)
Farm	23	1.4	10	1.3	0.9 (0.4 to 1.9)
Rural/urban status at the time of interview					
Rural	601	35.7	251	32.8	1.0 (ref)
Mixed	391	23.2	184	24.0	1.1 (0.9 to 1.4)
Urban	689	41.0	330	43.2	1.1 (0.9 to 1.4)

*OR estimated by unconditional logistic regression models including the stratification variables, age and gender, and the number of children ≥ 15 years of age living in the household.

case for adjustment, with the most controls per case in the youngest strata.

The distribution of the cases and controls by parental professional category, type of home and area of residence is shown in table 2.

The parents of controls had a slightly higher educational level and higher professional status than the parents of cases. The cases had moved house more often than controls, with odds ratios of 1.3 and 2.2 for two dwellings and three or more dwellings, respectively. The parents of controls lived in a house during the index pregnancy slightly more often than the parents of cases. There was no difference between cases and controls with regard to the degree of urbanisation of the place of residence at the time of interview. The frequency of maternal smoking during pregnancy and childhood was also similar in cases and controls.²²

Exposure to a neighbouring automotive repair garage or petrol station and acute childhood leukaemia

The ORs associated with residing in the vicinity of a garage or petrol station are shown in table 3.

At least one home next to a garage or petrol station was reported by 10% of the mothers of cases and by 6.4% of the mothers of controls. There were only six missing data, for six controls (0.3%) who had all had more than seven homes between the date of conception and date of diagnosis or interview and whose questionnaire was incomplete for the childhood period.

A positive significant association between living in a residence adjoining an automotive repair garage or petrol station and acute leukaemia (OR 1.6, 95% CI 1.2 to 2.2) was observed. The association was stronger for petrol station only (OR 2.1, 95% CI 1.1 to 4.0).

There were no significant associations between acute leukaemia and living next to a car bodywork repair shop, factory or printing plant. Actually, the OR of 1.6 (95% CI 0.9 to 3.0) observed for car bodywork repair shop decreased to 1.2 (95% CI 0.6 to 2.3) when the analysis was adjusted for exposure to garage or petrol station. This is due to the fact that car bodywork repair shops are often associated with repair garages. On the basis of the open questions, seven cases and 10 controls had lived next to other factories or businesses (joinery: three cases and two controls; food processing company: five controls; metal industry: two cases and one control; building industry: two cases and two controls).

The associations between acute leukaemia and living next to an automotive repair garage or petrol station were similar for the ALL and AML subtypes (table 4). The associations were also similar when the analyses were restricted to common B-cell ALL.

The association between acute leukaemia and living next to a garage or petrol station was strongest when the exposure was intrauterine only and much weaker when both intrauterine and childhood exposure occurred.

The associations between acute leukaemia and living next to a garage or petrol station were similar for all the child-age-at-diagnosis strata used for quota sampling and for the youngest children as well (see supplemental table A).

Table 3 Acute childhood leukaemia and residence next to businesses

Residence in the vicinity of businesses	Cases (n = 765)		Controls (n = 1681)		OR* (95 CI)
	No	%	No	%	
Automotive repair garage					
Never	708	92.6	1590	94.6	1.0 (ref)
Ever	57	7.4	85	5.1	1.4 (1.0 to 2.0)
Petrol station					
Never	730	95.4	1633	97.2	1.0 (ref)
Ever	35	4.6	42	2.5	1.9 (1.2 to 3.0)
Garage or petrol station					
Never	689	90.0	1568	93.3	1.0 (ref)
Ever	76	10.0	107	6.4	1.6 (1.2 to 2.2)
Never	689	90.0	1568	93.3	1.0 (ref)
Garage only	41	5.4	65	3.8	1.4 (0.9 to 2.1)
Petrol station only	19	2.5	21	1.2	2.1 (1.1 to 4.0)
Both	16	2.1	21	1.2	1.7 (0.9 to 3.4)
Other businesses					
Car bodywork repair shop (yes vs no)	19	2.5	27	1.6	1.6 (0.9 to 3.0)
Factory (yes vs no)	39	5.1	92	5.5	0.9 (0.6 to 1.4)
Printing plant (yes vs no)	10	1.3	20	1.2	1.0 (0.5 to 2.2)
Missing		0		6	0.3

*OR estimated by unconditional logistic regression models including the stratification variables, age and gender, and the number of children ≥ 15 years of age living in the household.

The odds ratios showed no trend toward an increase with duration of exposure to a neighbouring garage or petrol station (table 5). The association seemed to be stronger when exposure occurred during pregnancy only than when it occurred during childhood only, but the number of children who experienced intrauterine exposure only was very small. For most of the exposed children, exposure began before the age of 1 year. The odds ratio was higher when exposure began after the age of 1 year. The association seemed to increase when the time since the end of exposure was greater than 2 years. With regard to the strengthening of petrol station regulation in 2001 (Directive 94/63/EC),²⁷ when implementation of the petrol vapour recovery regulation began in France, there was no tendency toward a reduction in the association for exposures occurring after the cut-off date.

Among the controls, residence adjoining a garage or petrol station varied with the degree of urbanisation and the type of housing. At the time of interview, 39.6% of the control mothers who reported having lived next to a garage or petrol station

lived in apartments and 55.1% of them lived in urban areas. Control mothers who did not report having lived next to those businesses resided in apartments (28%) or in urban areas (40.1%) less often. For the controls, residence adjoining a garage or petrol station did not vary with parental socioeconomic category. Stratified analyses showed that the associations between acute leukaemia and residence next to a garage or petrol station were stable across the three urbanisation categories and two types of housing. Odds ratios of 1.5 (95% CI 0.7 to 2.8), 1.4 (95% CI 0.7 to 2.9) and 1.7 (95% CI 1.1 to 2.6) were observed for children living in rural, mixed and urban areas. Odds ratios of 1.5 (95% CI 0.9 to 2.5) and 1.6 (95% CI 1.1 to 2.4) were observed for children living in apartments and houses. None of the children had lived on a farm adjoining a garage or petrol station.

As the cases had moved house between conception and diagnosis or interview slightly more than controls (average number of homes: 2.0 vs 1.8), the analyses were stratified on the number of residences occupied by the children. The associations

Table 4 Acute childhood leukaemia and residence adjoining a garage or petrol station by leukaemia subtype: acute lymphoid leukaemia (ALL) and acute myeloblastic leukaemia (AML)

	ALL					AML				
	Case: (n = 647)		Controls (n = 1681)		OR* (95 CI)	Cases (n = 100)		Controls (n = 1681)		OR* (95 CI)
	No	%	No	%		No	%	No	%	
Any period of exposure										
Garage or petrol station	67	10.3	107	6.4	1.6 (1.9 to 2.3)	7	7.0	107	6.4	1.1 (0.5 to 2.5)
Garage only	37	5.7	65	3.8	1.5 (0.9 to 2.3)	3	3.0	65	3.8	0.8 (0.2 to 2.5)
Petrol station only	16	2.4	21	1.2	2.0 (1.0 to 4.0)	3	3.0	21	1.2	2.5 (0.7 to 8.8)
Garage and petrol station	14	2.1	21	1.2	1.8 (0.9 to 3.5)	1	1.0	21	1.2	0.8 (0.1 to 6.2)
Missing	0	0.0	6	0.3		0	0.0	6	0.3	
Garage or petrol station by period										
Intrauterine only	9	1.4	4	0.2	6.0 (1.8 to 19.5)	2	2.0	4	0.2	8.3 (1.4 to 49.4)
Childhood only	16	2.5	19	1.1	2.3 (1.2 to 4.5)	2	2.0	19	1.1	2.2 (0.5 to 9.8)
Both	38	5.9	77	4.6	1.3 (0.9 to 1.9)	2	2.0	77	4.6	0.4 (0.1 to 1.7)
Missing	5	0.8	13	0.8		1	1.0	13	0.8	

*OR estimated by unconditional logistic regression models including the stratification variables, age and gender, and number of children ≥ 15 years of age living in the household.

Table 5 Acute childhood leukaemia and residence adjoining an automotive repair garage or petrol station by duration of exposure, period of exposure, age at start of exposure, time between end of exposure and diagnosis or interview, and first year of exposure to a petrol station

	Cases (n = 765)		Controls (n = 1681)		
	No	%	No	%	OR* (95 CI)
Duration of exposure in childhood only					
Never	688	90.0	1573	93.6	1.0 (ref)
< 31.8 months	13	1.7	5	0.3	4.7 (1.6 to 13.6)
≥ 31.8 months	7	1.0	15	0.8	1.2 (0.5 to 3.0)
Missing	57	7.5	88	5.2	
Period of exposure					
Never	688	90.0	1573	93.6	1.0 (ref)
Childhood (yes vs no)	61	8.0	99	5.9	1.3 (0.9 to 1.9)
Intrauterine (yes vs no)	54	7.1	83	4.9	1.4 (1.0 to 2.1)
Childhood or in utero					
Childhood only	19	2.5	19	1.1	2.2 (1.1 to 4.2)
Intrauterine only	11	1.4	4	0.2	6.1 (1.9 to 19.7)
Both	41	5.4	77	4.6	1.2 (0.8 to 1.7)
Missing	6	0.7	8	0.5	
Age at start of exposure					
Never	688	90.0	1573	93.6	1.0 (ref)
≤ 1 year old	61	8.0	90	5.3	1.5 (1.1 to 2.1)
> 1 year old	12	1.6	12	0.7	2.3 (1.0 to 5.2)
Missing	4	0.4	6	0.3	
Time since end of exposure					
Never	688	90.0	1573	93.6	1.0 (ref)
< 6 months	39	5.1	65	3.9	1.3 (0.9 to 2.0)
≥ 6 months and < 24 months	11	1.4	16	0.9	1.5 (0.7 to 3.3)
≥ 24 months	22	2.8	22	1.3	2.3 (1.2 to 4.2)
Missing	5	0.6	5	0.3	
First year of petrol station exposure					
Never	729	95.4	1638	97.5	1.0 (ref)
< 2001	25	3.2	28	1.7	1.9 (1.1 to 3.3)
≥ 2001	9	1.2	13	0.8	1.9 (0.8 to 4.6)
Missing	2	0.3	2	0.1	

*OR estimated by unconditional logistic regression models including the stratification variables, age and gender, and number of children ≤ 15 years of age living in the household.

{The median of duration of exposure during childhood was 31.8 months.

between acute leukaemia and residence next to a garage or petrol station were similar for the three categories of number of residences (one, two, three or more).

The results were unchanged after adjustment for parental socioeconomic category, birth order, early infections in childhood (at least one infection per quarter before the age of 1 year), domestic pesticide exposure during pregnancy, maternal smoking during pregnancy and paternal smoking before conception, during pregnancy and during childhood.

Exclusion of the cases with Down's syndrome from the analyses did not modify the results.

The results were unchanged when the analyses were restricted to the cases and controls interviewed before August 2004, when the authors' previous study was published and publicised.

Similarly, the results were unchanged when the six controls with missing last residence data were considered exposed to a garage or petrol station.

Out of the 30 residences at the time of interview reported to be located in the immediate vicinity of a petrol station, the presence of a station was confirmed by the independent databases for 16 residences. The confirmation frequency was similar for the cases (54%) and controls (52%).

DISCUSSION

The present study mainly showed a significant association between a history of childhood or intrauterine residence adjoining an automotive repair garage or petrol station and acute childhood leukaemia.

The size of the study generated sufficient statistical power for many of the associations under study, but not for investigation of period or duration of exposure or for subtype analyses.

The cases were identified through the data collection system of the French National Registry of Childhood Blood Malignancies, which is extremely comprehensive (> 99% of acute leukaemia cases diagnosed in mainland France), making case selection at the identification stage unlikely. The case mother participation rate was very high, at about 90%. The main reason for non-inclusion was the child's poor state of health.

However, living next to a garage or petrol station is unlikely to have been related to the severity of the disease or short term survival, particularly since the associations were similar for rural, semi-urban and urban places of residence, in which health care may differ.

The controls were randomly selected from the overall population using the national telephone directory. Unlisted

numbers were randomly generated in order to prevent selection of controls on socioeconomic category or related factors, which might influence inclusion in the telephone directory. People with cell phones only could not be contacted and included as controls. This could have induced a bias if that category of people differed from those with a landline with regard to the variables under study. A French study on how psychoactive drugs are perceived³² compared cell phone only owners with landline owners, and showed that the former were mainly young men (average age: 29 vs 42 years) and were less frequently parents (45% vs 72%). Cell phone only owners are thus likely to constitute only a small fraction of the source parent population.

The quota sampling process successfully ensured that the responding controls had the same distribution as the case group with regard to gender and age, and the same distribution as the overall population with regard to birth order and region, as shown by comparison with the French national perinatal surveys.^{33–35} The degree of urbanisation was not reported in those surveys. The refusals to take part in the study could have been related to parental socioeconomic status, which appeared higher for controls than cases. However, the results were unchanged after adjustment for parental socioeconomic status.

The residences adjoining a garage or petrol station were more often apartments and located in urban areas. The controls lived in a house slightly more frequently than the cases, which may have resulted in overestimation of the association. However, the estimates were similar when stratified by type of dwelling and urban/rural place of residence.

There was therefore no indication that the results may be due to selection of controls on factors related to residence adjoining a garage or petrol station. Adjustment for type of housing and place of residence did not change the results.

As the cases had lived in slightly more residences than the controls, the analyses were also adjusted for, and stratified by, the number of residences occupied by the cases and controls between conception and diagnosis or interview. The estimates were not modified by those adjustments or stratifications.

The case and control interviews were conducted in exactly the same manner, by the same interviewers, using closed questions in order to reduce differential misclassifications. However, misclassifications are likely to have occurred: the businesses adjoining the residences were described retrospectively and reported in maternal interviews; the questionnaire aggregated the exposures by residence as though the neighbourhood had not changed over the time spent in the same residence. The misclassifications may have been differential, since the parents of cases may have more readily reported having resided in a residence next to a garage or petrol station, even if the business was not located immediately next to their home, than the parents of controls. The French public started to become aware of the potential association between vehicle exhaust fumes and acute childhood leukaemia in August 2004, when the authors' previous study was published.¹⁷ However, the results were unchanged when the post-August 2004 interview data were excluded.

In a study by Schüz *et al.*,³⁶ the recall bias was greater when parents reported the exposures of young children, since case parents were considered to be more sensitive to minor exposures than control parents, when the exposures occurred shortly before the interview. In the present study, exposure was reported by case mothers more often than by control mothers for all age subgroups (9.3% for children aged 4 years; 9.1% for

children aged over 11 years) (see online supplemental table A). Interestingly, there was no association with residence adjoining businesses other than garages and petrol stations, although car bodywork repair shops or printing plants, for instance, could have been subject to the same degree of recall bias, at least before August 2004.

The associations between acute leukaemia and living next to a garage or petrol station were stronger when the exposure was intrauterine only or during childhood only, than when the exposure was both intrauterine and during childhood. However, the exposure may be more imprecise when the duration of exposure increases, as the questionnaire did not take into account the possible closing of businesses during the time children were living in a residence. Moreover, many petrol stations closed during the 1990s.

There were no missing or "not known" answers to the questions on the businesses next to the home. The only missing data were for the six controls who had lived in more than seven residences. When all those controls were included in the group exposed to a garage or petrol station, the results were unchanged.

Two main databases (Catalist²⁸ and Navteq²⁹), which only covered the year 2005, were used to validate the addresses of petrol stations. The proximity of a petrol station to a residence at the time of interview, was confirmed for 52% of the controls and 54% of the cases who had reported living near a petrol station, which suggests non-differential misclassification. Unfortunately, the extent of the misclassification could not be estimated from the set of sources available, since none of them was sufficiently comprehensive to be considered a gold standard. Their comprehensiveness was around 58% for each and 80% taken together and they did not cover petrol stations that closed before 2005. Therefore, no conclusion can be drawn for the 14 residences for which the presence of a petrol station was not confirmed, since the station may either have closed before 2005 or have been omitted from the databases.

There are only a few known factors that may have confounded the results. Urban/rural status and type of housing were associated with residence adjoining a garage or petrol station: more apartments and more urban residences were located next to those businesses. However, the results were similar after stratification by, or adjustment for, those factors. Analyses were also adjusted for parental smoking and pesticide use and the results were unchanged. Down's syndrome is a strong risk factor for childhood leukaemia and 11 children had this syndrome. Their exclusion from the analyses did not modify the results.

Other environmental factors not measured in the present study may have confounded the relationship, such as power lines or heavy traffic in the vicinity of homes, although neither is currently a recognised risk factor. However, a recent case-control study on acute childhood leukaemia and traffic¹⁶ found a significant association between childhood exposure to traffic fumes and risk of acute leukaemia, with an OR of 3.91 (95% CI 1.36 to 11.27) for the high exposure group (estimated annual average benzene exposure $> 10 \text{ mg/m}^3$) and an OR of 1.51 (95% CI 0.91 to 2.51) for the intermediate exposure group (estimated annual average benzene exposure between 0.1 and 10 mg/m^3), compared to the unexposed group.

The results are in favour of a role of childhood exposure to vehicle exhaust fumes and low levels of benzene in acute childhood leukaemia. In the study, the traffic density at the place of residence at diagnosis or interview is to be derived from an ongoing geocoding process.

Other benzene sources, such as cigarette smoke, building materials or commuting may contribute to children exposure. In recent studies,^{37, 38} benzene concentrations were determined in some childhood microenvironments, such as outside the home, inside the home and at school. The concentrations varied from 0.6 mg/m³ in school and 1.2 mg/m³ outside the home, to 2.1 mg/m³ in homes in one study.³⁷ In another study,³⁸ the mean concentration in homes was 4.6 mg/m³, with variations depending on the urban/rural location of the home. The latter finding supports the influence of outdoor benzene levels on indoor benzene concentration.

The concentrations are much lower than those in petrol stations, close to the pump (1–10 mg/m³),³ but they are average concentrations that do not reflect the peak exposures to which children may be exposed several times a day.

In France, a recent campaign by the oil industry association³⁹ showed benzene concentrations in the air ranging from 4.3 to 31.3 mg/m³ close to petrol pumps, and from 1.2 to 8.2 mg/m³ at the edges of petrol stations. The levels were markedly higher in urban than in rural areas. The highest levels were found in petrol stations located under buildings. The levels were approximately three times lower in 2005 than in the period 1990–2000. In 1994, CONCAWE determined the air benzene concentrations around petrol stations in nine European countries and found that concentrations at petrol station boundaries were higher than the background concentrations. In France, the mean concentrations were 28.0 mg/m³ at petrol station boundaries and 15.4 mg/m³ in the background, in winter.⁴⁰ The CONCAWE authors estimated that a petrol station increased the benzene level of a residence next to the station by 6 mg/m³.

To the authors' best knowledge, the associations between exposure to neighbouring automotive repair garages and petrol stations and acute childhood leukaemia have only been analysed in their previous case-control study, which was hospital based and carried out in four urban areas.¹⁷ The results reported herein support the previous finding of an association between childhood residence in the vicinity of a garage or petrol station and acute childhood leukaemia.

In the present study, the OR for childhood residence adjoining a garage or petrol station is lower (2.2, 95% CI 1.1 to 4.2) than that in the previous study (4.0, 95% CI 1.5 to 10.3), but the confidence interval is narrower. In the present study, the separate analyses of exposure to a neighbouring garage and exposure to a neighbouring petrol station showed a stronger association for petrol station only.

In the present study, there was a significant association between exposure to a garage or petrol station during the intrauterine period only and acute childhood leukaemia (OR 6.1, 95% CI 1.9 to 19.7), but in the previous study¹⁷ the association was not significant (OR 2.2, 95% CI 0.9 to 5.7).

No trend with respect to the duration of exposure to a neighbouring garage or petrol station and acute childhood leukaemia, was observed in the present study, but a statistically significant positive trend was found in the previous study (OR 1.03, 95% CI 1.01 to 1.05 per month of exposure). It is to be noted that the duration used in the present study is the time spent by the child in the residence. This may be different from the time the business remained next to the residence.

CONCLUSION

The results support the findings of the authors' previous study, that living in the vicinity of a petrol station might be associated with an increased risk of acute childhood leukaemia. The

information was only obtained by interview and no dose–risk relationship was evidenced, preventing an overly strong causal interpretation. However, many potential confounders were taken into account.

On the basis of these findings, the role of low level benzene exposure in acute childhood leukaemia deserves further evaluation with, as far as possible, a more accurate assessment of childhood exposures.

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Ethics approval: Ethics approval was obtained for this study (DGS No. 2003/0259).

SFCE: Société Française de lutte contre les Cancers et Leucémies de l'Enfant et de l'Adolescent (see appendix 1 for a list of the SFCE investigators of the ESCALE study).

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APPENDIX 1

Table A1 SFCE Investigators of the ESCALE study

Principal investigator	Degree	Hospital	City (France)
André Baruchel	MD	Saint-Louis/Robert Debré	Paris
Claire Berger	MD	Centre Hospitalier Universitaire	Saint-Etienne
Christophe Bergeron	MD	Centre Léon Bérard	Lyon
Jean-Louis Bernard	MD	La Timone	Marseille
Yves Bertrand	MD	Debrousse	Lyon
Pierre Bordigoni	MD	Centre Hospitalier Universitaire	Nancy
Patrick Boutard	MD	Centre Hospitalier Régional Universitaire	Caen
Gérard Couillault	MD	Hôpital d'Enfants	Dijon
Lionel De Lumley	MD	Centre Hospitalier Régional Universitaire	Limoges
Anne-Sophie Defachelles	MD	Centre Oscar Lambret	Lille
François Demeocq	MD	Hôtel-Dieu	Clermont-Ferrand
Alain Fischer	MD	Hôpital des Enfants Malades	Paris
Virginie Gandemer	MD	Centre Hospitalier Universitaire – Hôpital Sud	Rennes
Olivier Hartmann	MD	Institut Gustave Roussy	Villejuif
Jean-Pierre Lamagnere	MD	Centre Gatien de Clocheville	Tours
Françoise Lapierre	MD	Centre Hospitalier Universitaire Jean Bernard	Poitiers
Guy Leverger	MD	Trousseau	Paris
Patrick Lutz	MD	Hôpital de Haute pierre	Strasbourg
Geneviève Margueritte	MD	Arnaud de Villeneuve	Montpellier
Françoise Mechinaud	MD	Hôpital Mère et Enfants	Nantes
Gérard Michel	MD	La Timone	Marseille
Frédéric Millot	MD	Centre Hospitalier Universitaire Jean Bernard	Poitiers
Martine Münzer	MD	American Memorial Hospital	Reims
Brigitte Nelken	MD	Jeanne de Flandre	Lille
Hélène Pacquement	MD	Institut Curie	Paris
Brigitte Pautard	MD	Centre Hospitalier Universitaire	Amiens
Yves Perel	MD	Pellegrin Tripode	Bordeaux
Alain Pierre-Kahn	MD	Enfants Malades	Paris
Emmanuel Plouvier	MD	Centre Hospitalier Régional	Besançon
Xavier Rialland	MD	Centre Hospitalier Universitaire	Angers
Alain Robert	MD	Hôpital des Enfants	Toulouse
Hervé Rubie	MD	Hôpital des Enfants	Toulouse
Nicolas Sirvent	MD	L'Archet	Nice
Christine Soler	MD	Fondation Lenval	Nice
Danièle Sommelet	MD	Centre Hospitalier Universitaire	Nancy
Jean-Pierre Vannier	MD	Charles Nicolle	Rouen

EXHIBIT 8

Commentary

Residential Proximity to Gasoline Stations and Risk of Childhood Leukemia

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Significant elevations in the risk of childhood leukemia have been associated with environmental exposure to gasoline; aromatic hydrocarbons from refinery pollution, petroleum waste sites, and mobile sources (automobile exhaust); paints, paint products, and thinners; and secondary cigarette smoke in the home. These higher risks have also been associated with parental exposure to benzene, gasoline, motor vehicle–related jobs, painting, and rubber solvents. These exposures and jobs have 1 common chemical exposure—benzene, a recognized cause of acute leukemia in adults—and raise the question of whether children represent a subpopulation in which a higher risk of leukemia is associated with very low level exposure to environmental benzene.

benzene; childhood leukemia; gasoline stations; gasoline; residential exposure

Abbreviations: ALL, acute lymphatic leukemia; AML, acute myelogenous leukemia; CI, confidence interval; CL, childhood leukemia.

Editor's Note: A response to this commentary appears on page 5.

Over the past decades, the average benzene content of gasoline has been approximately 1%–3% (and up to 5%) in the United States (1, 2) and 3%–5% in European countries (3, 4). Because benzene is known to be associated with adult leukemia and lymphomas (5–14), a number of investigators have evaluated the risk of childhood leukemia (CL) in relation to several potential sources of benzene exposure, including parental occupational sources (15–26), maternal environmental sources (27–29), household products (e.g., painting products) (16, 21, 30–36), traffic density (37–43), and air pollution from the release of toxic chemicals into the environment (44, 45).

Most recently, in their meta-analysis, Carlos-Wallace et al. (46) brought together this important literature. Parental occupational exposures, household product exposures, traffic density, and related air pollution measures were significantly associated with CLs. The authors concluded that several metrics of benzene exposure were associated with CL; yet, they did not find an association between residential proximity to gasoline service stations and CL. Carlos-Wallace et al.

selected 3 case-control studies for use in a meta-evaluation of this association (47–49) and concluded that the relative risks for CL using data from these 3 studies of residential proximity to gasoline stations were all above 1.0 but were not statistically significant overall (46). The lack of an observed association between residential proximity to gasoline stations and CL, however, may have been a reflection of the methodology used for the selection of results from these 3 studies. I suggest that the authors consider modifying their analysis based on these studies by including the data related to residential proximity to gasoline stations only and all types of CL.

Two of the 3 studies cited provided data separately for residential proximity to gasoline stations and risk of CL (47, 48), and the third provided data for proximity to gasoline stations and automotive repair garages combined (49). With regard to residential proximity to gasoline stations only, Brosselin et al. (47) showed that for total CL (acute lymphatic leukemia (ALL) and acute myelogenous leukemia (AML) combined), the odds ratio was 2.1 (95% confidence interval (CI): 1.1, 4.0; based on 19 cases). This overall odds ratio for CL was a reflection of the ALL odds ratio being 2.0 (95% CI: 1.0, 4.0; based on 16 cases) and the AML odds ratio being 2.5 (95% CI: 0.7, 8.8; based on

3 cases). Thus, the study demonstrated a significant 2-fold risk for total CL, as well as for ALL separately. Although the results for AML were not statistically significant, the odds ratio was slightly greater than the odds ratio for ALL; however, it was based on only 3 cases and included a 95% confidence interval that ranged from 0.7 to 8.8. In their meta-analysis, Carlos-Wallace et al. (46) selected the results for AML from only the study by Brosselin et al. (47). They then combined data for residential proximity to gasoline stations with the data for residential proximity to automotive repair garages. As a result, in Table 2 of their meta-analysis, they listed an odds ratio of 1.1 for AML in relation to CL under the subheading "Studies of Residential Proximity to Gas Stations." Contrary to this, they did not include the much larger data set for ALL and did not present data analysis for residential proximity to gasoline stations only. To be consistent with the types of exposures and risk indicated in their Table 2, I suggest that they include the results for total CL (and perhaps for ALL and AML separately if they choose) as related to gasoline stations only.

Combining data for residential proximity to gasoline stations with data for proximity to automotive repair garages in an analysis of CL risk seems reasonable because emissions from gasoline vapor potentially occur in both situations. Exposures to gasoline vapors would seem to be lower in the vicinity of automotive repair garages as compared with gasoline stations, although I have not been able to locate literature on this subject. Such an environmental exposure differential, however, is consistent with the findings of Brosselin et al. (47), who found that the odds ratio for the association of CL and residential proximity to gasoline stations only was 2.1 (95% CI: 1.1, 4.0) as compared with an odds ratio of 1.4 (95% CI: 0.9, 2.1) for the association with residential proximity to repair garages only. Hence, combining data for these exposures dilutes the findings related to CL risk associated with residential proximity to gasoline stations.

The second data set used in the meta-analysis (46) was from a study by Harrison et al. (48). They compared the

incidence of childhood solid tumors with that of CL. The results of this analysis indicated that for persons who resided within 100 meters of a gasoline station, the odds ratio for CL was 1.99 (95% CI: 0.73, 5.43; based on 8 cases); no separation of cell types was presented in the report. Concerned that solid tumors may be related to gasoline exposures, the authors (48) conducted a second analysis using incidence data for the population area from which the cases of CL were selected in order to estimate the number of expected CL cases. The results from the incidence rate analysis indicated there were 8 cases observed versus the 5.4 that were expected (incidence rate = 1.48, 95% CI: 0.65, 2.93). Of these 2 analyses, the authors (48) preferred the results based on the solid tumor comparison, because the age distribution estimated for the general population incidence analysis was inferred and standardization for age and sex could not be accomplished. The authors (48) also preferred the solid tumor comparison analysis because the fugitive emissions being evaluated had been associated only with lung cancer, which is rare in the age group of children being studied (0–15 years). Hence, the solid tumor control group seemed to be adequate for comparison. Harrison et al. (48) further justified their preference for results from the solid tumor analysis portion of their study by noting that their incidence analysis indicated there was no increase in the risk of childhood solid tumors in the area. Carlos-Wallace et al. (46) included only the results of the study by Harrison et al. (48) that were based on the general population incidence rate for CL. I suggest that the analysis based on solid tumors be given preference in their meta-analysis because it seems there is more justification for doing so.

In the third study used in the meta-analysis, Steffen et al. (49) evaluated the risk of CL using combined data for residential proximity to gasoline stations and automotive repair shops. They did not separate their data for these 2 exposures situations in their study. The authors found an odds ratio of 3.6 (95% CI: 1.3, 9.9) for ALL based on 13 cases and an odds ratio of 7.7 (95% CI: 1.7, 34.3) for AML

Table 1. Residential Proximity to Gasoline Stations and Risk of Childhood Leukemia

First Author, Year (Reference No.)	RR	95% CI	Type of Leukemia	No.	Recommendation
Brosselin, 2009 (47)					
Data from Carlos Wallace (46 ^a)	1.1	0.5, 2.5	AML	7	Excluding data for proximity to auto repair shops and to include residential proximity to gasoline stations for all CL
Replacement data	2.1	1.1, 4.0	CL	19	
Harrison, 1999 (48)					
Data from Carlos Wallace (46 ^a)	1.48	0.65, 2.93	CL	8	Case-control study results based on solid tumors as controls to replace general population incidence analysis
Replacement data	1.99	0.73, 5.43	CL	8	
Steffen, 2004 (49)					
Data from Carlos Wallace (46 ^a)	7.7	1.7, 34.3	AML	4	Adding results for acute lymphatic leukemia
Replacement data	4.0	1.5, 10.3	CL	17	

Abbreviations: AML, acute myelogenous leukemia; CI, confidence interval; CL, childhood leukemia.

^a Data obtained from Table 2 of this study.

based on 4 cases. With their data for ALL and AML combined, the odds ratio for CL was 4.0 (95% CI: 1.5, 10.3). Furthermore, based on the 17 total cases of CL evaluated in the study (49), the authors demonstrated a significant dose-response relationship between residential proximity to a gasoline station or automotive repair garage and the risk of CL. For those with 1–35 months of residential proximity, the corresponding odds ratio for CL was 3.4; for those with 36 months or more, it was 4.7 (P for trend < 0.05). The identification of a significant dose-response relationship in an epidemiologic study is usually a strong indication of causality (11). Carlos-Wallace et al. (46) used only the AML portion of these study results in their meta-analysis. I suggest that they include the data for ALL and AML combined from the study by Steffen et al. (49). The selection of only childhood AML results for inclusion in the analysis presented in Table 2 of their article (46) is again confusing because the table title indicated that the results were for “childhood leukemia.”

As shown in Table 1, based on the recommended revisions to the data entry for residential proximity to gasoline stations (indicated as “replacement data”), the risk of CL ranges from essentially 2-fold in the studies by Brosselin et al. (47) and Harrison et al. (48) to 4-fold in the study by Steffen et al. (49). From the 3 studies included in their meta-analysis, it seems fairly clear that there is a significant association between CL and residential proximity to gasoline stations.

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EXHIBIT 9

Acute childhood leukaemia and environmental exposure to potential sources of benzene and other hydrocarbons; a case-control study

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Aim: To analyse the association between potential environmental exposure to hydrocarbons and the risk of acute childhood leukaemia.

Methods: A hospital based multicentre case control study, stratified on centre, age, and sex, with 280 leukaemia cases and 285 controls was carried out. Data were collected by a standardised interview of the mothers.

Results: No clear association was seen between maternal occupational exposure to hydrocarbons during pregnancy and leukaemia, or between residential traffic density and leukaemia. There was an association between dwellings neighbouring a petrol station or a repair garage during childhood and the risk of childhood leukaemia (OR 4.0, 95% CI 1.5 to 10.3), with a duration trend. The association, which appeared particularly strong for acute non-lymphocytic leukaemia (OR 7.7, 95% CI 1.7 to 34.3), was not altered by adjustment for potential confounding factors.

Conclusions: Results showed an association between acute childhood leukaemia and dwellings neighbouring auto repair garages and petrol stations, which are benzene emitting sources. These findings could be due to chance, although the strength of the association and the duration trend are arguments for a causal association.

Acute leukaemia (AL) is the most frequent malignant disease in children, though it fortunately still remains relatively rare, with an incidence rate of 4 in 100 000 per year in developed countries.¹ Only a small number of risk factors related to childhood AL have been identified, namely exposure to high doses of ionising radiation, trisomy 21, certain rare diseases (Fanconi's anaemia, ataxia-telangiectasia, type 1 neurofibromatosis), and certain chemotherapies.

Epidemiological studies have shown a clear association between occupational exposure to benzene and AL in adults, especially acute non-lymphocytic leukaemia. This association was shown for workers of the rubber industry, where exposure level to benzene used to be very high in the past.^{2–3}

However, direct implication of exposure to benzene in childhood leukaemia has never been reported. In fact, environmental exposure levels, which children might be exposed to, are very low compared to those of the historic cohort of rubber workers.²

The goal of the present study was to determine the role played by exposure to certain hydrocarbons in the risk of childhood leukaemia. Hence, the review of literature focused on two different kinds of children's potential exposure to hydrocarbons: in utero exposure through maternal occupational exposure to hydrocarbons, and in utero or childhood exposure to environmental hydrocarbons.

We identified seven case-control studies dealing with maternal occupational exposure to hydrocarbons during pregnancy and childhood leukaemia.^{4–10} Five reported a positive association between occupational exposure to different hydrocarbons and AL,^{6–10} although the association was statistically significant in only three of the studies.^{7–8–10} The association was particularly strong for benzene and non-lymphocytic acute leukaemia.

Different kinds of geographical studies have been carried out to determine the relation between children's dwellings in the neighbourhood of certain potential hydrocarbon pollution sources (for example, oil refineries, petrol tanks and stations) and AL.^{11–16} Knox found that clusters of cases were significantly closer to oil refineries or depots than controls.¹² Reynolds *et al* showed a statistically significant association between a hazardous air pollutants exposure score and childhood leukaemia.¹⁷

Five case-control studies as well as one geographical study focused on the role of exposure to automobile emissions and childhood AL.^{11–18–23} Four of the six studies showed a positive association between different indicators of air pollution or heavy traffic in the vicinity of children's dwellings and AL. Two of them were statistically significant.^{19–20–22}

In the present study we analysed the relation between acute childhood leukaemia and repair garages, petrol stations, high traffic roads in the proximity of children's dwellings, as well as maternal occupational exposure to hydrocarbons during pregnancy. This paper is based on a case-control study investigating potential environmental and genetic leukaemia risk factors.

SUBJECTS AND METHODS

Subjects

The study was a multicentre hospital based case-control study, which has been described elsewhere.^{24–26} The hospital based design was chosen since case and control blood samples were required, with the approval from an ethics committee. Cases were identified from hospitals of four

Abbreviations: AL, acute leukaemia; ALL, acute lymphocytic leukaemia; ANLL, acute non-lymphocytic leukaemia

centres: Nancy, Lille, Lyon, and Paris. To be eligible for the study, children aged 0–14 years at the time of diagnosis had to be newly diagnosed with acute leukaemia (AL) between 1 January 1995 and 31 December 1999. Acute leukaemia cases occurring after chemotherapy were excluded. Diagnosis was based on cytology and immunophenotype. The cases and controls were frequency matched on sex, age, centre, and ethnic origin. In each centre, the same interviewer was responsible for the inclusion of both cases and controls and for the local frequency matching on age and sex. All the mothers of eligible cases or controls who were present during the interviewers' working hours were asked for participating in the study. Controls were recruited in the same hospitals as cases among children aged less than 15 years, living in the same area as cases, and hospitalised for acute pathologies, mainly traumatic (51%) and non-traumatic (34%) orthopaedic diseases. Many different diagnostic categories were included in order to avoid selection biases in the event that a particular disease was related to the exposures of interest. However, children hospitalised for cancer or a major congenital malformation were not eligible for the study, since those diseases may share risk factors with leukaemia. The oncology departments recruit patients from more distant places than do control departments, and this could have introduced bias. In order to keep cases and controls comparable in terms of socioeconomic category and rural/urban status, only children living in the same administrative region as the hospital location were included in the study.

Among the mothers of the 282 eligible cases, two mothers refused to participate. Thus, 280 acute leukaemia cases were included in the study. Among them, 40 were diagnosed with acute non-lymphocytic leukaemia (ANLL), comprising 4 M0, 10 M1–M2, and 18 M4–M5 morphological types, and 240 with acute lymphocytic leukaemia (ALL).

Among the 291 eligible controls, four were excluded—one because the child was adopted and the three others because their mothers decided to stop the interview before the questionnaire on residential history was completed. Two control mothers refused to participate.

Data collection

Data were collected by specifically trained medical doctors through a face-to-face interview of the mothers of the children (cases and controls), after having given written informed consent. The interview of the case mothers was conducted during the first remission period of the disease (on average, two months after diagnosis and beginning of treatment). Case and control mothers were interviewed under strictly similar conditions, at the same period, using a standardised questionnaire.

For all children, a history of exposure to hydrocarbons at each of their different dwelling places was taken. The period investigated spanned from date of conception to date of diagnosis or interview (controls). In utero exposure and childhood exposure were considered separately. Among the different types of exposure investigated was the existence of a neighbouring business, and especially an automobile repair garage or a petrol station.

By "neighbouring business" was meant a property adjoining the child's dwelling. Questions were also asked to determine the possible exposure to heavy traffic roads in the vicinity (>50 metres) of the children's homes. The questionnaire also included questions on parental occupations, which were coded using international codes for job titles and industrial activities. For the categorisation of jobs with respect to potential exposure to benzene and other solvents, we used a basic job-exposure matrix we had developed with industrial hygienists for previous studies.²⁸ A checklist of closed questions on mothers' tasks during their

pregnancy was also included in the questionnaire, with explicit items on solvent exposure.

Methods

Odds ratios (ORs) were calculated by unconditional logistic regression (SAS software package), including matching variables age, sex, centre, and ethnic origin. We calculated 95% confidence intervals (CI) for all odds ratios. Minimal detectable odds ratios for a study of 280 cases and 280 controls, with a statistical power of 80% ($\alpha=0.05$) were 1.6 and 2.2 respectively for a 30% and a 5% frequency for a given exposure in the control group.

RESULTS

No difference was observed between cases and controls on the matching variables sex, origin, and centre (table 1). Sixty per cent of the cases were 2–6 years old, whereas only 45% of the controls were in that age group. This was due to the difficulty of recruiting enough controls 2–3 years old, which corresponds to the age of the peak incidence of AL.

We found no significant difference between cases and controls regarding socioeconomic status and level of education of the parents, family situation, or urban and rural dwelling status.

Exposure to a neighbouring repair garage or petrol station

Positive associations were observed between AL and exposure to a close neighbouring repair garage or petrol station for both periods: in utero and childhood (table 2). The association was statistically significant for the latter period (OR 4.0 95% CI 1.5 to 10.3).

The odds ratios for the subgroups of ANLL and ALL were respectively 7.7 (95% CI 1.7 to 34.3) and 3.6 (95% CI 1.3 to 9.9) for exposure during childhood (table 3).

Exposures to petrol stations during intrauterine life and during childhood were strongly associated. Although confidence intervals were large, the association between exposure to a petrol station and AL appeared to be stronger when it spanned over the childhood period only (five cases and one control, OR 9.3, 95% CI 1.0 to 88.4) rather than over the in utero period only (one case and two controls). An OR of 3.1 (95% CI 1.0 to 8.9) was associated with exposure in utero and during childhood (12 cases and six controls).

A positive, statistically significant trend (OR 1.03, 95% CI 1.01 to 1.05, per month of exposure) was found between duration of childhood exposure to a neighbouring repair garage or petrol station and AL (table 4).

The association remained statistically significant (OR 3.4, 95% CI 1.3 to 9.1) when only those children were classified as exposed, whose exposure started at least one year prior to AL diagnosis or interview (controls), though, in that case, the duration trend was no longer consistent.

A sensitivity analysis on the potential impact of the missing values concerning exposure to petrol stations or repair garages was carried out. In the case that all missing values stemmed either from exposed children only or from unexposed children only, the odds ratios would remain statistically significant: respectively OR 2.3 (95% CI 1.1 to 4.6) and OR 3.8 (95% CI 1.5 to 9.9). In the case that all missing values in cases stemmed from unexposed children and all missing values in controls stemmed from exposed children, the odds ratio would be 1.5 (95% CI 0.7 to 3.1).

Unlike for neighbouring garages, no association was found between AL and other close neighbouring businesses, which included: aluminium, plastic, wood and metalwork, horticulture, processing laboratory (photography), printing plant, bakery, textile and ceramics making, slaughterhouse, retail (paints, mirrors, electric supply), transportation, and service

Table 1 Characteristics of cases and controls

	Cases (n = 280)		Controls (n = 285)		p
	No.	%	No.	%	
Sex					
Male	166	59.3	166	58.3	NS
Age* (y)					
> 2	33	11.8	51	17.8	
2-3	85	30.4	52	18.3	
4-6	83	29.6	78	27.4	
7-10	41	14.6	63	22.1	
>11	38	13.6	41	14.4	> 0.01
Centre*					
Lille	39	13.9	26	9.1	
Lyon	36	12.9	35	12.3	
Nancy	23	8.2	22	7.7	
Paris	182	65.0	202	70.9	NS
Origin*					
European	244	87.1	236	82.8	
North African	15	5.4	23	8.1	
Other	21	7.5	26	9.1	NS
Socioeconomic status					
High	147	52.5	160	55.1	
Intermediate	55	19.6	49	17.2	
Low	78	27.9	75	26.3	NS
Missing value	0	0.0	1	0.4	
Education of mother					
- High school	90	32.1	108	37.9	
High school	190	67.9	175	61.4	NS
Missing value	0	0.0	2	0.7	
Education of father					
- High school	87	31.1	99	34.7	
High school	181	64.6	170	59.7	NS
Missing value	12	4.3	16	5.6	
Family situation					
Couple	247	88.2	242	84.9	
Widow/separate	26	9.3	35	12.3	
Single	7	2.5	5	1.8	NS
Missing values	0	0.0	3	1.1	
Type of dwelling					
Urban	221	78.9	234	82.1	
Rural	58	20.7	49	17.2	NS
Missing value	1	0.4	2	0.7	

*Matching variables.

NS: p > 0.05.

corporations. The number of different businesses was 1 or 2 for each business type.

Exposure to high traffic roads

No association was found between the existence of high traffic roads within a 50 metre distance of the children's homes and AL, neither during the in utero period nor during the childhood period (table 5). Adjusting for rural or urban location did not have any influence on the risk estimates.

Adjustment for potential confounders previously identified,²⁴⁻²⁶ such as family history of solid tumour or haematological neoplasm, early common infection, day care attendance, and breast feeding, and for high traffic roads did not modify the association between exposure to garages and AL.

Maternal occupational exposure to hydrocarbons during pregnancy

No case or control mother worked in a laboratory or industry with exposure to benzene. Two control mothers and no case

Table 2 Childhood acute leukaemia and close neighbouring businesses according to period of exposure

	Cases (n = 280)		Controls (n = 285)		OR	[95% CI]
	No.	%	No.	%		
In utero period						
No neighbouring business	257	91.8	256	89.8	1.0	(ref.)
Repair garage or petrol station*	13	4.7	8	2.8	2.2	(0.9 to 5.7)
Other neighbouring business	6	2.1	9	3.2	0.8	(0.3 to 2.4)
Missing values	4	1.4	12	4.9		
Childhood period						
No neighbouring business	249	88.9	258	90.5	1.0	(ref.)
Repair garage or petrol station*	17	6.1	7	2.5	4.0	(1.5 to 10.3)
Other neighbouring business	8	2.9	8	2.8	1.4	(0.5 to 4.1)
Missing values	6	2.1	12	4.2		

*With or without another business.

Table 3 Childhood acute leukaemia (AL) and exposure to close neighbouring businesses during childhood according to type of AL

	Cases (n = 280)		Controls (n = 285)		OR	(95% CI)
	No.	%	No.	%		
Acute non-lymphocytic leukaemia (n = 40)						
No neighbouring business	35	87.5	258	90.5	1.0	(ref.)
Repair garage or petrol station*	4	10.0	7	2.5	7.7	(1.7 to 34.3)
Other neighbouring business	1	2.9	8	2.8	1.0	(0.1 to 8.9)
Missing values	0	0	12	4.2		
Acute lymphocytic leukaemia (n = 240)						
No neighbouring business	214	89.2	258	90.5	1.0	(ref.)
Repair garage or petrol station*	13	5.4	7	2.5	3.6	(1.3 to 9.9)
Other neighbouring business	7	2.9	8	2.8	1.5	(0.5 to 4.6)
Missing values	6	2.5	12	4.2		

*With or without another business.

mothers were employed as petrol station cashiers. Only very few mothers declared having been exposed to glues, paints, or varnishes containing organic solvents (seven cases and four controls, OR 1.7, 95% CI 0.5 to 60).

DISCUSSION

An association between a history of childhood dwelling next to a repair garage or petrol station and childhood leukaemia was observed.

Selection of cases and controls did not depend directly on the type of neighbourhood of the dwellings. Therefore, a selection bias on the *neighbouring garage* variable would only have been introduced, if it were related to another factor that might itself have influenced inclusion and exclusion of cases and controls, such as parental socioeconomic status or academic level. In the present study, no statistically significant difference concerning these variables was found between cases and controls. Furthermore, the *neighbouring garage* variable was not associated with these sociodemographic factors. The hospital based design of the study was chosen since case and control blood samples were required. Special care was therefore paid to selecting an appropriate control group. Controls were included from many diagnostic categories, none of those categories being related to the variables of interest. In a recent paper, Infante-Rivard analysed the possibility of differential reporting of exposures in a case-control study on childhood leukaemia using either hospital or population controls.²⁹ Both control groups appeared comparable according to socioeconomic characteristics, and evidencing no systematic reporting bias, although the odds ratio tended to be more often closer to 1 with hospital controls. This observation suggests that the present findings are unlikely to be attributable to the hospital based design of our study.

Over-declaration by the cases' mothers of risk factors, which they might deem possibly related to the disease of their children, cannot be excluded. This could introduce a differential error of classification and thus create a false statistical association between these risk factors and AL.

The question about the presence of a *neighbouring garage or petrol station* next to the index child's house was quite unambiguous, which should have limited over- or under-declaration. Moreover, for other variables, which might also be considered as risk factors and therefore susceptible to the same type of misclassification, no association with AL was found (for example, neighbouring businesses other than garages and petrol stations, high traffic roads). Finally, there is no particular public concern about a potential relation between repair garages or petrol stations and leukaemia.

Classification of missing values is also susceptible to introduce errors. A sensitivity analysis of the impact of these missing values on the estimated odds ratios was carried out. It showed that odds ratios always remained greater than 1 (between 1.5 and 4) and that loss of the statistically significant association would only occur for a very unlikely distribution of garage exposure between cases and controls among these missing values.

Confounders might have influenced our findings. We therefore introduced a variety of possible confounding factors in our model in order to test the consistency of the association between neighbouring garages and AL. Among them were variables previously identified as related to AL (family history of solid tumour or haematological neoplasm, early common infections, and day-care attendance²⁵⁻²⁹). We also introduced simultaneously the variables related to neighbouring garages and petrol stations, and proximity of high traffic roads. Adjusting for these factors did not alter the results.

Table 4 Childhood acute leukaemia and duration of exposure to a close neighbouring petrol station or repair garage during childhood

	Cases (n = 280)		Controls (n = 285)		OR	(95% CI)
	No.	%	No.	%		
Exposure duration to neighbouring petrol station or repair garage						
0	257	91.8	268	94.0	1.0	(ref.)
1-35 months	8	2.9	4	1.4	3.4	(0.9 to 12.4)
>36 months	9	3.2	3	1.1	4.7	(1.2 to 18.5)
Missing values	6	2.1	10	3.5		
OR per month of exposure					1.03	(1.01 to 1.05)
					(p trend > 0.05)	

Table 5 Childhood acute leukaemia and exposure to high traffic roads (≥ 50 m) according to exposure period

	In utero exposure						Childhood exposure					
	Cases (n = 280)			Controls (n = 285)			Cases (n = 280)			Controls (n = 285)		
	No.	%	No.	%	OR	(95% CI)	No.	%	No.	%	OR	(95% CI)
Heavy traffic road												
All road types	134	47.9	149	52.3	0.9	(0.7 to 1.3)	155	55.4	164	57.5	1.1	(0.8 to 1.6)
Secondary road or main street	98	35.0	104	36.5	1.0	(0.7 to 1.4)	114	40.7	124	43.5	1.1	(0.7 to 1.6)
Primary road	19	6.8	21	7.4	0.8	(0.4 to 1.6)	28	10.0	21	7.3	1.1	(0.6 to 2.2)
Motorway or similar road	11	3.9	13	4.6	1.3	(0.5 to 3.2)	14	5.0	17	6.0	1.3	(0.6 to 2.9)

Although exposure to neighbouring garages and petrol stations concerned only a small number of children, we observed a positive, statistically significant duration trend (OR 1.4 per year of exposure, p for trend ≥ 0.05).

Benzene exposure has been studied in occupational medicine (rubber industry, *Pliofilm* cohort) and is now an established cause of AL in adults, especially ANLL. It has therefore been classified in group 1 (carcinogenic substances) by IARC.^{27–30} Unleaded fuel, which is very largely distributed, contains small amounts of benzene. Moreover, the benzene concentration in air around petrol stations during refuelling may be relatively high compared to the environmental background concentration.²

As far as we know, exposure to neighbouring auto-repair garages and petrol stations, in relation to acute childhood leukaemia, has never been analysed in a case-control study. The few studies in the literature concerning AL and residential exposure to hydrocarbons are geographical studies that deal with a variety of hydrocarbon emitting sources (oil refineries, tanks and petrol stations).^{11–16} In these studies, the distance between pollution sources and dwellings has been determined by geographical means and ranges from 100 to 7500 metres. Adjoining sources have not been studied specifically. Harrison *et al* found a non-statistically significant association between children living in a 100 metre range of a petrol station and AL (OR 1.99, 95% CI 0.73 to 5.43).¹¹ Because of a very different methodology, the results of these studies cannot be easily compared with the findings of our case-control study.

Rinsky *et al* used data from the *Pliofilm* cohort study to construct a dose-response relation for adult workers between cumulative exposure to benzene and risk of AL.³¹

According to that equation, to obtain an odds ratio of 4, a five year exposure to an air concentration of 77 mg/m³ of benzene would be necessary (24 hours-a-day, 7 days-a-week exposure). This is an extremely high concentration, which might only have been observed in the rubber industry, prior to enforcement of more stringent regulations. Environmental background concentration is around 4 mg/m³,² and during refuelling, air peak concentration, very close to the pump, may reach 1–10 mg/m³. Therefore, if the observed association reflected a causal relation, children's sensitivity to benzene regarding the risk of developing AL would be much higher than adults'. This hypothesis needs to be confirmed by further investigations. In particular, the possible involvement of other substances emitted by petrol stations cannot be excluded.

In the present study several independent aetiological hypotheses were tested, including questions about family cancer history, early childhood infections, day care attendance, breast feeding, and potential environmental exposure to hydrocarbons. Thus, many statistical tests were carried out and some of them may have been statistically significant by mere chance. Concerning the *neighbouring garages*, the strength and the specificity of the association, the duration

trend, and the plausibility are arguments against a random association.

Unlike for the exposure to neighbouring petrol stations, our results did not confirm the findings of certain studies, which showed an association between maternal occupational exposure during pregnancy to hydrocarbons and AL,^{7–9} or between high traffic roads in the vicinity of children's dwellings and AL.^{20–22} A limit of our results concerning roads was that the exposure was self declared and that distance to the roads is probably collected approximately. Since no objective criterion of the actual local air pollution or the traffic density was available, it is possible that the highest exposure group was diluted in the lower exposure groups. Concerning occupational exposure during pregnancy to hydrocarbons, the number of exposed mothers was very small. Undeclared occupational exposures are possible, but would probably not have concerned benzene.

Conclusion

The present study showed an association between childhood AL and dwellings neighbouring auto-repair garages and petrol stations, which possibly expose children to benzene. These findings have, as far as we know, never been described before, and could be due to chance. However, the strength of the association and the duration trend are arguments for a causal association. These results need to be confirmed by further investigations. Hence, future epidemiological studies on acute childhood leukaemia, assessing specifically exposure to the most common hazardous substances emitted by petrol stations and garages, and especially benzene, would be useful.

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EXHIBIT 10

Response to Commentary

Steinmaus and Smith Respond to “Proximity to Gasoline Stations and Childhood Leukemia”

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Benzene is an established cause of adult leukemia, but its role in childhood leukemia is less clear. In a recent meta-analysis, we identified associations of childhood leukemia with occupational and household product benzene exposure and traffic-related pollution. Residential proximity to gasoline stations or automobile repair facilities may be another source of benzene, and in 3 studies assessing these sources, we identified a summary relative risk of 1.59 (95% confidence interval: 0.70, 3.62). Although not statistically significant, this summary relative risk was of a magnitude similar to that of our other positive findings. In this issue of the *Journal* (*Am J Epidemiol.* 2017;185(1):5–7), Dr. Infante suggested that meta-analyses of studies on childhood leukemia and proximity to gasoline stations should involve some criteria that differ from those we used. These suggested criteria involved combining leukemia subtypes, excluding automobile repair facilities, and using nonleukemia cancers as control subjects. We redid our meta-analysis using these new criteria and obtained a summary relative risk of 2.42 (95% confidence interval: 1.51, 3.89). Overall, although this result should be interpreted in light of the relatively small sample size (3 studies) and its post-hoc nature, it provides additional new evidence for associations of childhood leukemia with both residential proximity to gasoline stations and exposure to benzene.

Millions of people are exposed to benzene worldwide in either occupational or environmental settings. Although benzene is an established cause of leukemia in adults (1), its relationship with childhood leukemia is less clear. In a recent meta-analysis of epidemiologic data on benzene and childhood leukemia published in this *Journal* (2), we identified statistically significant associations between benzene and childhood leukemia based on studies in which investigators assessed occupational sources and household products (summary relative risk (sRR) = 1.96, 95% confidence interval (CI): 1.53, 2.52; $n = 20$ studies) and studies in which they assessed traffic-related pollution (sRR = 1.48, 95% CI: 1.10, 1.99; $n = 12$ studies). Gasoline stations or automobile repair facilities may also be a source of benzene exposure, and we identified 3 studies in which the authors examined associations between residential proximity to these sources and childhood leukemia (3–5). All 3 studies had relative risk estimates greater than 1.0 (although one was only 1.1), and the summary relative risk for the meta-analysis of these 3 studies was 1.59 (95% CI: 0.70, 3.62). Notably, this summary relative risk is not only above 1.0, it is also of a magnitude similar to that of most

of our positive findings from the examination of other benzene sources.

Almost all of the studies used in our meta-analysis provided a number of results based on examinations of different leukemia subtypes (acute myeloid leukemia (AML) vs. acute lymphocytic leukemia (ALL) vs. all subtypes combined), different exposure metrics (e.g., residential proximity to gasoline stations alone vs. residential proximity to gasoline stations or automobile repair facilities), or differences in several other exposure or study design factors. In order to meet the assumption of independence for the statistical approaches we used, we established a set of criteria a priori for selecting a single result from each study for inclusion in our final meta-analysis calculations. For example, when a study presented separate results for AML and ALL, we selected the result for AML because this subtype is the one most strongly linked to benzene in adults (1, 6, 7). When a study presented one result for residential proximity to gasoline stations, another result for residential proximity to automobile repair facilities, and a separate result for residential proximity to one or the other, we chose the latter because products containing benzene are used at both types of facilities (8).

In his recent commentary in this *Journal* (9), Dr. Infante suggested 3 criteria for selecting study results that differed from those we used. First, he suggested that priority should be given to results that combine AML and ALL. The advantage of this approach is that if benzene is related to both subtypes of leukemia, this approach could increase the statistical power of both the study result and the meta-analysis that uses it. In fact, in both of our meta-analyses of occupational and household product benzene use and our meta-analysis of traffic-related pollution, elevated summary relative risks were seen for both AML and ALL, although they were higher in the former for both occupational household product exposures (for AML, sRR = 2.34, 95% CI: 1.72, 3.18; for ALL, sRR = 1.57, 95% CI: 1.21, 2.05) and traffic-related pollution (for AML, sRR = 2.07, 95% CI: 1.34, 3.20; for ALL, sRR = 1.49, 95% CI: 1.07, 2.08). Second, Dr. Infante suggested that meta-analyses of benzene and childhood leukemia should focus on gasoline stations and not combine data for gasoline stations with those for automobile repair facilities (9). As noted in his commentary, data concerning the relative levels of benzene at automobile repair facilities and gasoline stations are scarce. However, given the much larger volume of gasoline used at gasoline stations compared with automobile repair facilities, Dr. Infante's argument that exposures near gasoline stations are likely to be higher than those near automobile repair facilities is reasonable. Dr. Infante's final suggestion involved the 2 different control groups used in the study by Harrison et al. (4). In 1 group, a case-control analysis was done using children with solid tumors as the controls. In the other, incidence ratios were calculated using estimated population distributions from the source population. Based on the concern that benzene or a correlated exposure might impact the risks of other cancers, we a priori selected the incidence ratio result. However, given that Harrison et al. examined the relationship between residential proximity to gasoline stations and solid tumors and found no evidence of an association, selecting the case-control odds ratio, as suggested by Dr. Infante, seems a valid alternative that is unlikely to introduce substantial bias.

Using the statistical methods presented in our original paper (2), we investigated how our results would change if we incorporated Dr. Infante's suggestions (9), that is, if we preferentially selected data on all leukemia types combined (rather than just AML), used results from just gasoline stations (when available), and used the case-control data from Harrison et al. rather than the incidence study data. Using our original criteria, we reported a summary relative risk of 1.59 (95% CI: 0.70, 3.62; χ^2 heterogeneity statistic = 5.08; P for heterogeneity = 0.08). However, using the new criteria suggested by Dr. Infante, the summary relative risk increased to 2.42 (95% CI: 1.51, 3.89; χ^2 heterogeneity statistic = 1.38; P for heterogeneity = 0.50). The 2 sets of data used in each analysis are shown in Table 1, and the meta-analysis results are shown in Table 2. Overall, as with our original result, this new finding is consistent with an association between residential proximity to gasoline stations and a higher risk of childhood leukemia. Importantly though, this new result should be interpreted in light of the post-hoc manner in which it was generated and the relatively

Table 1. Study Data Used in the Original and New Meta-Analyses of Residential Proximity to Gasoline Stations and the Risks of Childhood Leukemia

First Author, Year (Reference No.)	Location	Years	Leukemia Type	Exposure	Study Design	No. of Cases	Weight, %	RR	95% CI
<i>Carlos-Wallace et al., 2016 (2)</i>									
Brosselin et al., 2009 (3)	France	2003–2004	AML	Repair garage or gasoline station	Case-control	7	41.2	1.1	0.5, 2.5
Harrison et al., 1999 (4)	United Kingdom	1990–1994	All leukemias	Gasoline station only	Incidence study	8	47.0	1.48	0.65, 2.93
Steffen et al., 2004 (5)	France	1995–1999	AML	Repair garage or gasoline station	Case-control	4	11.8	7.7	1.7, 34.3
<i>Using Infante's Suggestions (9)</i>									
Brosselin et al., 2009 (3)	France	2003–2004	ALL and AML ^a	Gasoline station only ^a	Case-control	19	53.7	2.1	1.1, 4.0
Harrison et al., 1999 (4)	United Kingdom	1990–1994	All leukemias	Gasoline station only	Case-control ^a	8	22.2	1.99	0.73, 5.43
Steffen et al., 2004 (5)	France	1995–1999	ALL and AML ^a	Repair garage or gasoline station	Case-control	17	24.1	4.0	1.5, 10.3

Abbreviations: ALL, acute lymphocytic leukemia; AML, acute myelogenous leukemia; CI, confidence interval; RR, relative risk estimate.

^a Infante suggestions that differ from those in the meta-analysis by Carlos-Wallace et al.

Table 2. Meta-Analysis Results in the Original and New Analyses of Residential Proximity to Gasoline Stations and the Risks of Childhood Leukemia

First Author, Year (Reference No.)	No.	Summary RR ^a	95% CI	Heterogeneity χ^2	P for Heterogeneity
Carlos-Wallace, 2016 (2)	19	1.59	0.70, 3.62	5.08	0.08
Infante, 2016 (9)	44	2.42	1.51, 3.89	1.38	0.50

Abbreviations: CI, confidence interval; RR, relative risk.

^a Summary relative risks were calculated using the fixed effects method with adjustments of the 95% confidence interval in the presence of heterogeneity (10).

small number of studies on which it is based. Further research on childhood leukemia and residential proximity to gasoline stations that involves larger sample sizes and more detailed residential and exposure histories could add new insights into this important issue.

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Conflict of interest: M.T.S. has received consulting and expert testimony fees from law firms representing both plaintiffs and defendants in cases involving exposure to benzene. Other author reports no conflicts.

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EXHIBIT 11



Childhood Leukemia and Traffic Air Pollution in Taiwan: Petrol Station Density as an Indicator

Hsu-Huei Weng , Shang-Shyue Tsai , Hui-Fen Chiu , Trong-Neng Wu & Chun-Yuh Yang

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Childhood Leukemia and Traffic Air Pollution in Taiwan: Petrol Station Density as an Indicator

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Although the incidence of cancer in childhood is low compared with adults, cancer accounts for a substantial proportion of deaths amongst children (Little, 1999). Accidents and malignancies are the leading causes of death for children under 15 yr of age in Taiwan. Among childhood cancers, leukemia is the most frequent type (DOH/Taiwan, 2005).

Research to date has failed to firmly establish risk factors for childhood leukemia except for ionizing radiation, chemotherapy agents, and certain inherited genetic disorders (Ross et al., 1994; Reynolds et al., 2003; Pyatt et al., 2007). Air pollution from motor vehicle exhaust has been one of the most studied environmental factors (Raaschou-Nielsen & Reynolds, 2006; Reynolds et al., 2003; Craig et al., 2008). Exhaust from traffic is a complex mixture of many chemical compounds, including benzene and polycyclic aromatic (PAH) compounds. The International Agency for Research on Cancer (IARC) classified the emission of diesel exhaust engine compounds as probably carcinogenic (Group 2A) and gas engine exhaust substances as possibly (Group 2B) carcinogenic to humans (IARC, 1989).

The evidence for an association between childhood leukemia and exposure to traffic-related air pollution is inconclusive. Several studies reported an increased risk for childhood leukemia in association with surrogate measures of exposure to vehicle exhaust, including traffic density, car density, and estimated nitrogen dioxide (NO₂) or benzene concentrations in outdoor air (Savitz & Feingold, 1989; Feychting et al., 1998; Pearson et al., 2000; Crosignani et al., 2004; Weng et al., 2008). However, this has not been confirmed by other studies (Alexander et al., 1996; Nordlinder & Jarvholm, 1997; Harrison et al., 1999; Raaschou-Nielsen et al., 2001; Reynolds et al., 2002, 2004; Langholz et al., 2002; Steffen et al., 2004). The role of vehicle exhaust in childhood leukemia continues to remain a subject of discussion (Raaschou-Nielsen & Reynolds, 2006).

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Benzene, total suspended particles, and NO₂ are commonly used markers for traffic-related air pollution (Raaschou-Nielsen et al., 2001; Van Wijnen & Van der Zee, 1998; Bedeschi et al., 2007; Muzykl et al., 1998). Measurements of the spatial distribution of benzene in the atmosphere showed that the highest outdoor concentrations within urban areas tend to occur adjacent to main roads (Leung & Harrison, 1999). However, benzene levels were not recorded in fixed, outdoor monitoring stations in Taiwan. Weng et al. (2008) used NO₂ as a marker for traffic-related air pollution in 64 municipalities in a previous study. Traffic counts and proximity to roads have commonly served as surrogates for exposure to traffic-related potential carcinogens (Reynolds et al., 2004). Concentrations of these compounds are higher within 500 to 1000 ft of busy roads and freeways based on measured traffic-related air pollutant levels (Dubowsky et al., 1999; Raaschou-Nielsen et al., 2000, 2001). To our knowledge, it is not known which exposure assessment approach best reflects the long-term personal exposure of children to traffic-related air pollution (Raaschou-Nielsen & Reynolds, 2006; Bedeschi et al., 2007).

Epidemiological studies already referred to have not given a consistent answer to the postulation that road traffic exposure influences the risk of development of childhood leukemia. The study reported here was designed as a case-control study to explore further whether the risk of childhood leukemia is associated with exposure to vehicle exhaust emissions using petrol station density (PSD) as a marker of traffic-related air pollution in Taiwan.

MATERIALS AND METHODS

Study Areas

Taiwan is divided into 359 administrative districts, which are designated in this report as municipalities and are the units subjected to statistical analysis.

Subject Selection

Data on all deaths of Taiwan residents from 1996 through 2006 were obtained from the Bureau of Vital Statistics of the Taiwan Provincial Department of Health, which is in charge of the death registration system in Taiwan. For each death, detailed demographic information including gender, occupation, marital status, year of birth, year of death, cause of death, place of death (municipality), and residential district (municipality) were recorded. The cancer case group consisted of all eligible leukemia deaths occurring in individuals between 0 and 14 yr of age (International Classification of Disease, ninth revision [ICD-9], codes 204–208). Controls were drawn from all other deaths excluding deaths due to neoplasms and diseases which were associated with respiratory problems (ICD-9 codes 010–018 and 460–519). Control subjects were pair matched to the cancer cases by gender, year of birth, and year of death. Each matched control was selected randomly

from the set of possible controls for each case. The main objective of the present study was to assess the effect, if any, of traffic air pollution on the risk of death from leukemia.

Petrol Station Density (PSD)

Data on the number of petrol stations in study municipalities were collected from the two major petroleum supply corporations, Chinese Petroleum Corporation (CPC, 2008) and Formosa Petrochemical Corporation (FPCC, 2008). Total number of petrol stations in each of the two corporations were then summed and divided by the municipality's land area (km²). This proportion (petrol station density, PSD) was used as an indicator of a subject's exposure to benzene and other PAH present in evaporative losses of petrol or to air emissions from motor vehicles. The municipality of residence for all cancer cases and controls was identified from their death certificates. Their municipality of residence formed the only basis for defining their exposure to traffic air pollution.

Socioeconomic Factor

Socioeconomic status (SES) was suggested as a risk factor for childhood leukemia (Little, 1999). It was also found that leukemia was associated with urbanization gradients (Greenberg, 1983; Miller et al., 1987; Li et al., 1998). In this study, SES is unknown for cancer cases and controls individually. However, Tzeng and Wu (1986) attributed the urbanization index of the municipality of residence as indicator of SES. The urbanization index used in this study serves as a proxy for a large number of explanatory variables, such as population density, age composition, mobility, economic activity and family income, educational level, environmental factors, and health service-related facilities, that are related to the etiology of mortality. Each municipality in Taiwan was given a degree of urbanization category, 1–8. A municipality with the highest urbanization score, such as the Taipei metropolitan area, was classified in category 1, while mountainous areas with the lowest score were assigned to category 8. This index was used in our previous studies (Yang et al., 1997; Yang & Hsieh, 1998). This index was used to adjust for possible confounding resulting from the different urbanizational levels among the municipalities. For the analyses, the urban–rural classification was further subdivided into two levels: I, urban areas (categories 1–4); and II, rural areas (categories 5–8).

Statistics

In the analysis, the subjects were divided into tertiles according to the levels of PSD. Conditional logistic regression was used to estimate the relative risk in relation to the levels of PSD (Breslow & Day, 1980). Odds ratios (OR) and their 95% confidence intervals (95% CI) were calculated using the group with the lowest exposure as the reference group. Tests for trend were conducted using the method described by Mantel (1963). Values of $p < .05$ were considered statistically significant.

RESULTS

The distribution of cancer cases and controls by selected demographic and residential characteristics is shown in Table 1. In total, 729 leukemia cases with completed records were selected using the study criteria for the period 1996–2006. Of the 729 cases, 407 were male and 322 were female. Cancer cases had a significantly higher rate (61%) of living in urban municipalities than controls (53.4%). The crude OR were significantly higher than 1 for the groups with high levels of PSD in their residential municipality.

After adjustments for possible confounders, the OR were not markedly altered. The adjusted OR (95% CI) were 1.45 (1.06–1.98) for the group with PSD levels 0.15 and 0.395 and 1.91 (1.29–2.82) for the group with PSD levels of 0.399 or

more compared to the group with the lowest PSD levels (Table 2). There was a significant trend toward an increased risk of childhood leukemia with rising PSD levels.

DISCUSSION

This study used a death-based case-control study to examine the relationship between mortality attributed to childhood leukemia and traffic air pollution using PSD as an indicator of exposure in Taiwan. The results show that there is a significant exposure-response relationship between traffic emissions and the risk of leukemia occurrence in young children after controlling for possible confounders. This finding is consistent with previous studies (Savitz & Feingold, 1989;

A 1
Characteristics of Study Population Enrolled in the Study

Characteristics	Cancer cases (<i>n</i> = 729)	Controls (<i>n</i> = 729)	OR (95% CI) ^a
Enrollment municipality	359	359	
Age (yr)			
0–4	265 (36.4%)	265 (36.4%)	
5–9	229 (41.4%)	229 (31.4%)	
10–14	235 (32.2%)	235 (32.2%)	
Gender			
Male	407 (55.8%)	407 (55.8%)	
Female	322 (44.2%)	322 (44.2%)	
Petrol station density per km ² (median)			
≤ 0.149 (0.065)	179 (24.5%)	246 (33.8%)	1.00
0.150–0.395 (0.225)	238 (32.7%)	240 (32.9%)	1.47 (1.11–1.94)*
0.399–2.692 (0.585)	312 (42.8%)	243 (33.3%)	1.95 (1.47–2.59)*
Urbanization level of residence			
Rural	284 (39.0%)	340 (46.6%)	1.00
Urban	445 (61.0%)	389 (53.4%)	1.53 (1.20–1.95)*

Note. Asterisk indicates significant difference from control (*p* < .05).

^aOR (95% CI): odds ratio and 95% confidence interval.

A 2
Odds Ratios for Childhood Leukemia Associated with PSD Levels Based on Multiple Logistic Regression Model

	≤ 0.149 (0.065)	0.150–0.395 (0.225)	0.399–2.692 (0.585)
Petrol station density (PSD) (median)			
Number of cases	179 (24.5%)	238 (32.7%)	312 (42.8%)
Number of controls	246 (33.8%)	240 (32.9%)	243 (33.3%)
Crude odds ratio	1.0	1.47 (1.11–1.94)	1.95 (1.47–1.94)
Adjusted odds ratio ^a	1.0	1.45 (1.06–1.98)	1.91 (1.29–2.82)
χ^2 , trend = 19.02, <i>p</i> < .05			

^aOR adjusted for urbanization level.

Feychting et al., 1998; Pearson et al., 2000; Crosignani et al., 2004; Weng et al., 2008).

The completeness and accuracy of a death registration system should be evaluated before any conclusion based on mortality analysis is made. In Taiwan, it is mandatory to register death certificates at local household registration offices and since the household registration information is verified annually through a door-to-door survey, the death registration is thus accurate. Although causes of death may be misdiagnosed and/or misclassified, this problem has been minimized through the improvement in the verification and classification of causes of death in Taiwan since 1972. Furthermore, as in other countries (Mahoney et al., 1990), malignant neoplasms, including leukemia, were reported to be one of the most unequivocally classified causes of death in Taiwan (Chen & Wang, 1990). It is believed that all leukemia cases from rural or urban areas in Taiwan had similar access to medical care regardless of geographical location in recent years.

Inherent in this study design were the assumptions that cancer cases and controls were exposed to traffic air pollution associated with the "usual place of residence" recorded on the death certificate and that subjects spent most of their daily life in the residential municipality. The likelihood that these assumptions were true was maximized by the imposition of sample restriction. First, the ages for both cancer cases and controls were between 0 and 14 yr of age, and it is assumed that the majority of these study subjects (1) spent more time at home, (2) were studying near their usual residential municipality, and (3) are less likely to have lived in other locations. Second, for this cohort of decedents (death years 1996–2006), occupational exposure was excluded and thus a confounding effect of occupational exposure is unlikely. The study subjects were therefore likely to be exposed to traffic air pollution only in their residential municipality.

Since the measure of effect in this study is mortality rather than incidence, migration during the interval between leukemia diagnosis and death must also be considered. During this period, leukemia diagnosis may have influenced parental decision to migrate and may have possibly introduced bias. If there was a trend toward migration to a high-PSD area because of proximity to medical care, for example, a spurious association between traffic air pollution exposure and death due to leukemia would have resulted. Two aspects of this study presumably minimize this possibility. First, migration precipitated by a leukemia diagnosis would have been less likely for the parents of the subjects, because for this cohort of decedents, the parental occupational status would weigh against a move requiring a job change. Second, urbanization level was included as a control variable in the analysis.

Of greater concern is whether the relative levels of PSD in the period around 2008 correspond to the relative levels occurring in periods 10–20 yr earlier. This is important since it is likely that exposure to causal factors would precede cancer mortality. However, it is possible that the correlation between

the current levels (2008) and levels in the past of 10–20 yr ago would be high since a municipality's urban development is gradual. It was therefore assumed that levels of PSD in 2008 were a reasonable indicator of historical levels occurring over the past 10–20 yr. Our study employed an ecologic design using group-level exposure data. It was assumed that children living in the municipalities of higher levels of PSD experienced a greater exposure to benzene and other PAH present in evaporative losses of petrol or to air emissions from motor vehicles. Nonetheless, significant air pollution concentration may differ substantially within a municipality and therefore group exposure levels do not necessarily correspond to individual exposure levels (Reynolds et al., 2003). Further, potential exposure misclassification may also have resulted from differing individual time–activity and personal exposure from indoor sources (Elliott et al., 2000). While these sources of misclassification are important, such misclassification of exposure is most likely to be nondifferential (i.e., unlikely to be associated with leukemia), which would reduce the magnitude of association rather than introduce a positive bias in the association. Therefore, it is unlikely that the observed positive association between PSD exposure and leukemia development was a result of exposure misclassification. Likewise, a study of this nature cannot account for variations in susceptibility among individuals with comparable exposure (Reynolds et al., 2003).

Migration from a municipality of high to low PSD or vice versa may have introduced misclassification bias or bias in OR estimates. Our study population is stable in terms of mobility compared with populations in most industrialized countries, probably because of cultural factors and the age distribution of our study population (Yu et al., 2006). Further, any misclassification of exposure is most likely to be nondifferential, which would reduce the estimated magnitude of association rather than introduce a positive bias in the estimation.

There are other risk factors, not included in this study, that may play a role in the etiology of leukemia, such as ionizing radiation, electromagnetic fields, parental occupations, parental smoking, infection, chemotherapy agents, and certain inherited genetic disorders (Pyatt et al., 2007; Ross et al., 1994; Little, 1999). Unfortunately, no information was available on these variables for our individual study subjects, and the variables could not be adjusted for directly in the analysis. However, there is no reason to believe that there would be any correlation between these risk factors and PSD. Therefore, it is postulated that our inability to control for these factors had a negligible effect on our results. It is also unlikely that there would be a direct relationship between other risk factors and the level of PSD. In addition, fear of a raised incidence or mortality of leukemia may have influenced the parents to move because the possible role of residence within petrol station as a risk factor for leukemia development has not received public attention.

In summary, this study provides evidence of a relationship between PSD exposure and the risk of childhood leukemia development. Due to inherent methodological limitations,

future investigation of the relationship between traffic air pollution exposure and childhood leukemia development should include more accurate means of exposure assessment, including quantifying individual exposure to benzene because benzene is an established cause of leukemia in humans (IARC, 1987), and quantifying individual exposure to other carcinogens, such as PAH, emitted by motor vehicles that are inhaled as gases or absorbed on particulate matter that is also inhaled (Muzykl et al., 1998; Crosignani et al., 2004).

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EXHIBIT 12



Benzene and childhood acute leukemia in Oklahoma

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ABSTRACT

Background: Although childhood cancer is a leading cause of childhood mortality in the US, evidence regarding the etiology is lacking. The goal of this study was to evaluate the association between benzene, a known carcinogen, and childhood acute leukemia.

Methods: We conducted a case-control study including cases diagnosed with acute leukemia between 1997 and 2012 ($n = 307$) from the Oklahoma Central Cancer Registry and controls matched on week of birth from birth certificates ($n = 1013$). We used conditional logistic regression to evaluate the association between benzene, measured with the 2005 National-Scale Air Toxics Assessment (NATA) at census tract of the birth residence, and childhood acute leukemia.

Results: We observed no differences in benzene exposure overall between cases and controls. However, when stratified by year of birth, cases born from 2005 to 2010 had a three-fold increased unadjusted odds of elevated exposure compared to controls born in this same time period (4th Quartile OR: 3.53, 95% CI: 1.35, 9.27). Furthermore, the estimates for children with acute myeloid leukemia (AML) were stronger than those with acute lymphoid leukemia, though not statistically significant.

Conclusions: While we did not observe an association between benzene and childhood leukemia overall, our results suggest that acute leukemia is associated with increased benzene exposure among more recent births, and children with AML may have increased benzene exposure at birth. Using the NATA estimates allowed us to assess a specific pollutant at the census tract level, providing an advantage over monitor or point source data. Our study, however, cannot rule out the possibility that benzene may be a marker of other traffic-related exposures and temporal misclassification may explain the lack of an association among earlier births.

1. Introduction

As a leading cause of childhood mortality, childhood cancer is an important health concern in the US (Heron, 2013). However, evidence regarding the etiology is lacking despite numerous studies (Belson et al., 2007; Ries et al., 1999). One environmental risk factor of recent interest is ambient air pollution. According to the International Agency for Research on Cancer (IARC), ambient air pollution has been classified as carcinogenic to humans (International Agency for Research on Cancer, 2013). Furthermore, IARC has classified diesel engine exhaust

as carcinogenic and motor vehicle exhaust as possibly carcinogenic (Benbrahim-Tallaa et al., 2012). As the primary pollutant of concern in engine exhaust, benzene has been classified as a known carcinogen in adult acute myeloid leukemia (AML) (International Agency for Research on Cancer, 1982). The minimal risk level established by the Environmental Protection Agency (EPA) for benzene is 0.009 ppm (ppm) (28.71 $\mu\text{g}/\text{m}^3$) for acute exposure lasting less than 15 days and 0.003 ppm (9.57 $\mu\text{g}/\text{m}^3$) for chronic exposure of ≥ 365 days (Department of Health and Human Services, 2007).

Important sources of exposure to benzene are occupational

Abbreviations: ALL, Acute lymphoid leukemia; AML, Acute myeloid leukemia; PM_{10} , Coarse particulate matter; CI, Confidence Interval; EPA, Environmental Protection Agency; HC, Highway Contract Boxes; IARC, International Agency for Research on Cancer; LOESS, Locally weighted scatterplot smoothing; NATA, National-Scale Air Toxics Assessment; OR, Odds ratio; OCCR, Oklahoma Central Cancer Registry; PO, Post Office Boxes; SES, Socioeconomic status; TRI, Toxics Release Inventory

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exposure, gasoline stations, auto-repair shops, traffic, and cigarette smoking (Department of Health and Human Services, 2007). In occupational settings, benzene exposure was higher than that of the general population, with health effects generally observed above 79.8 $\mu\text{g}/\text{m}^3$ (Khalade et al., 2010; Rushton and Romaniuk, 1997). Benzene is also produced through drilling for oil and natural gas, by burning of oil and coal, and by oil and gas refineries (Department of Health and Human Services, 2007; Esswein et al., 2014; McKenzie et al., 2012; United States Environmental Protection Agency, 2015). While Oklahoma is a fairly rural state with an estimated 3.9 million people in 2016 and 34% of the population residing in rural areas, it is the third largest oil and gas producing state in the US (U.S. Energy Information Administration, 2016; United States Census Bureau, 2017a, 2017b).

The biologic mechanism of benzene as a cause of leukemia, the most common form of childhood cancer, is not well understood. However, it is believed to occur through similar mechanisms as chemotherapy-induced AML, which is a result of chromosomal abnormalities and/or translocations secondary to previous chemotherapy treatments (Pedersen-Bjergaard et al., 2008). Benzene is metabolized primarily by the lungs and liver, but secondary metabolism occurs in the bone marrow, where blood cells are formed. Furthermore, benzene-induced chromosomal alterations are similar to those observed in AML cells (Department of Health and Human Services, 2007; McHale et al., 2012).

There have been few studies focusing specifically on benzene and childhood leukemia. However, studies to date have reported conflicting results for childhood leukemia overall (Crosignani et al., 2004; Garcia-Perez et al., 2015; Raaschou-Nielsen et al., 2001; Vinceti et al., 2012; Whitworth et al., 2008). Garcia-Perez et al. (2015) observed an association between residence ≤ 2.5 km of an industrial facility releasing benzene and childhood leukemia in Spain (OR: 1.5, 95% CI: 1.1, 2.1). In a study using the EPA's National-Scale Air Toxics Assessment (NATA) estimates to measure benzene, Whitworth et al. (2008) reported an increased rate of leukemia among census tracts with benzene levels $> 2.36 \mu\text{g}/\text{m}^3$ compared to $< 1.28 \mu\text{g}/\text{m}^3$ in their ecologic study (Rate Ratio: 1.4, 95% Confidence Interval [CI]: 1.1, 1.8). Crosignani et al. (2004) reported a relative risk of 3.9 (95% CI: 1.4, 11.3) among those exposed to air concentrations of benzene $> 10 \mu\text{g}/\text{m}^3$ compared to $< 0.1 \mu\text{g}/\text{m}^3$. Among children less than 5 years of age, Vinceti et al. (2012) reported a 2.7 times higher income-adjusted odds of leukemia for each 10-fold increase in exposure to benzene when measured continuously in $\mu\text{g}/\text{m}^3$ (95% CI: 1.1, 6.9). However, Raaschou-Nielsen et al. (2001) observed no association between benzene and leukemia in their case-control study, with rate ratio estimates near unity. In addition, previous studies suggest a stronger relationship between benzene and AML, with limited evidence of a relationship with acute lymphoid leukemia (ALL) (Heck et al., 2014; Houot et al., 2015; Symanski et al., 2016; Vinceti et al., 2012; Whitworth et al., 2008).

While dispersion models were used in previous studies of benzene and childhood acute leukemia, they primarily estimated benzene and other air pollutants along roadways (Crosignani et al., 2004; Raaschou-Nielsen et al., 2001; Vinceti et al., 2012). Our study aims to improve upon previous exposure assessments by using the NATA estimates, which take multiple sources of benzene exposure into account in addition to traffic, applying estimates to all census tracts. The NATA estimates also incorporated activity and microenvironment data to estimate exposures in addition to ambient concentration of benzene. The goal of this study was to determine if children in Oklahoma with acute leukemia had a higher odds of exposure to benzene than children without acute leukemia.

2. Materials and methods

2.1. Study design and data sources

We conducted a case-control study to compare children with acute

leukemia from the Oklahoma Central Cancer Registry (OCCR) ($n = 360$) with controls identified through birth certificate records matched on week of birth to cases ($n = 1440$). We linked the OCCR to birth certificates using Registry Plus™ Link Plus software v. 2.0 (CDC, Atlanta, GA), with 72% of leukemia cases linking to a birth certificate record. Details of the study design were published previously in an analysis of traffic-related air pollution and childhood leukemia and will be presented in brief (Janitz et al., 2016). Cases were diagnosed with leukemia prior to age 20 and during the years 1997–2012. Because we were unable to geocode all birth residences, our dataset available for analysis included 307 cases and 1013 controls. We obtained data on cases related to their cancer diagnosis from OCCR and data on covariates related to birth, including residence, from birth certificates for all children included in the study. We used the 2014 TIGER/Line files (based on the 2010 U.S. Census) in ArcGIS (ESRI®, Redlands, CA), using the North American Datum of 1983 as the geographic coordinate system, to geocode cases and controls. For those with rural routes or addresses unable to be geocoded in ArcGIS, we used the Melissa Data® service. We were unable to geocode children with Highway Contract (HC) Boxes or Post Office (PO) Boxes as no physical address was available. Institutional Review Board approval was obtained from both the University of Oklahoma Health Sciences Center and the Oklahoma State Department of Health.

We obtained data on benzene from the EPA's 2005 NATA, which estimated the average concentration of air toxics for the US at the census tract level to provide State/Local/Tribal agencies' directions for prioritization and research in order to better understand the health effects of pollution (United States Environmental Protection Agency, 2013). NATA models were based on data from various sources including state and local air toxics inventories, existing databases related to the EPA air toxics regulatory programs, and the TRI. Estimates from mobile sources, including motor vehicles, non-road engines, and equipment, were also incorporated into the models. Activity, fuel, and vehicle data were obtained from local, state, and federal agencies. Emissions estimates were obtained using emission factors of pollutants and sources of emissions included point (i.e., factory, ship, smokestack), and non-point (i.e., area pollution from small or ubiquitous sources such as dry cleaners) stationary sources, on-road (i.e., cars, trucks, buses) and non-road (i.e., airplanes, trains, lawnmowers) mobile sources, derived background from natural sources, and secondary formation and decay of air toxics from the Community Multiscale Air Quality Model from 2005 (ICF International, 2011).

More specifically, the 2005 NATA used the Assessment System for Population Exposure Nationwide (ASPEN) model and the Human Exposure Model-3 (HEM) American Meteorological Society – U.S. EPA Regulatory Model (AERMOD) Version to determine benzene estimates (ICF International, 2011; United States Environmental Protection Agency, 2011). ASPEN was used to model non-point sources at the census tract level using data from 2005 and census data from 2000. HEM was used to model point, on-road mobile, and non-road mobile emissions sources at the census block level along with dispersion and human exposure, using population data from both the 2000 and 2010 US Census.

To determine population exposure to benzene at the census tract level, the EPA used the Hazardous Air Pollutant Exposure Model (HAPEM). The estimates were calculated using ambient concentrations of air toxics, population data from the 2000 U.S. Census, population activity data, and microenvironmental data. Activity data were obtained from the Consolidated Human Activity Database (CHAD), where a sample of the population was surveyed in order to track activity levels in indoor and outdoor microenvironments.

These model-based assessments were conducted approximately every three to six years beginning in 1990. We used the assessment from 2005 as it incorporated the most advanced models available at the time this study was conducted. The EPA does not recommend combining assessments due to differing methodologies (United States Environmental Protection Agency, 2011).

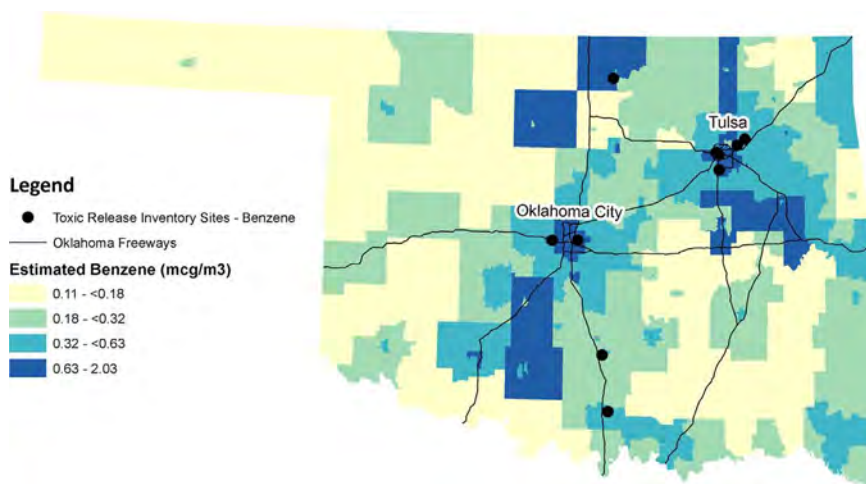


Fig. 1. Distribution of benzene in Oklahoma using 2005 NATA estimates and locations of Toxic Release Inventory (TRI) sites. Source: Benzene levels were obtained from the 2005 National-level Air Toxics Assessment from the US EPA. Toxic Release Inventory sites were obtained from the US EPA in 2015. Oklahoma Freeways were obtained from the National Transportation Atlas Databases for the United States published by the Federal Highway Administration.

2.2. Statistical analysis

To evaluate the association between benzene and acute leukemia, we used conditional logistic regression to account for the matching variable of week of birth. We classified benzene into quartiles based on the distribution among controls since the logit was not linear for benzene. In a secondary analysis, we fitted a locally weighted scatterplot smoothing (LOESS) curve of the predicted log odds of a case by benzene resulting in additional exposure cutpoints at the 40th percentile ($0.53 \mu\text{g}/\text{m}^3$), the 60th percentile ($0.78 \mu\text{g}/\text{m}^3$), and the 95th percentile ($1.33 \mu\text{g}/\text{m}^3$).

To evaluate confounding, we used a directed acyclic graph including the variables of race/ethnicity, age at diagnosis, gender, birth order, exposure to electromagnetic fields, urbanization, and maternal variables of education, age, and smoking during pregnancy, which was analyzed using DAGitty (Textor et al., 2011). The minimally sufficient set of confounding variables included urbanization, maternal education, and maternal tobacco use during pregnancy. We used backwards selection to quantitatively evaluate whether covariates changed the odds ratio (OR) $> 20\%$ after removal from the model. Because tobacco use was only collected from 1991 forward, we evaluated confounding among children born from 1991 to 2010 and observed $< 10\%$ change in the OR. Therefore, we analyzed the association between benzene and acute leukemia without tobacco as a confounder using all available data. Furthermore, because it was not clear whether urbanization may be a possible surrogate for socioeconomic status (SES) (Tselios, 2013) or benzene exposure, we evaluated models with and without urbanization as a potential confounder. Using a test for interaction, we evaluated effect modification of the association between benzene and leukemia by urbanization and other covariates.

To evaluate potential biases and limitations of the data, we conducted a series of sensitivity analyses. We explored whether the association between benzene exposure and leukemia differed by leukemia type. In addition, we stratified our analyses by age at diagnosis/index age and compared benzene exposure among cases who did and did not move between birth and cancer diagnosis to evaluate potential residential mobility. We also stratified by year of birth to assess temporal misclassification of benzene. To further evaluate the impact of potential misclassification related to using 2005 NATA data for children born in earlier years, we conducted a sensitivity analysis of children born from 1979 to 1996 and compared the results of our analysis using the 1996 NATA to the 2005 NATA. We also assessed for selection bias due to lack of geocoding for 316 children ($n = 53$ [14.7%] cases and $n = 263$ [18.3%] controls). We used the child's ZIP code (available for all but two children) to determine the census block with the highest population within the ZIP code and assigned benzene based on the appropriate census tract. To evaluate leukemia cases who were born in Oklahoma

but did not link to a birth certificate, we compared cancer-related covariates with those of cases who linked using a Chi-Square Test, including type of cancer, year of birth, year of diagnosis, and age at diagnosis.

To identify observations that did not fit the conditional logistic regression model well, we calculated Pearson and Deviance residual measures and observed no poorly fit observations (all residual values < 5). We used an alpha of 0.05 to define significance and SAS v. 9.4 (Cary, NC) for all statistical analyses.

3. Results

In Oklahoma, the average exposure concentration of benzene for all census tracts in the state ($0.58 \mu\text{g}/\text{m}^3$) (average population size of 1530 people per census tract) was lower than that of the US ($0.95 \mu\text{g}/\text{m}^3$). Oklahoma was ranked 39th lowest out of 53 states, territories, and Washington, DC, with Washington, DC ($1.88 \mu\text{g}/\text{m}^3$), New York ($1.85 \mu\text{g}/\text{m}^3$), and Colorado ($1.49 \mu\text{g}/\text{m}^3$) having the highest total exposure concentration levels. Descriptively, several areas in central and northeastern Oklahoma had higher levels of benzene exposure (Fig. 1). TRI sites, nine of which were oil refineries, were located in the Tulsa and Oklahoma City metropolitan areas and in both northern and southern Oklahoma (United States Environmental Protection Agency, 2015). While these sites were near the areas of highest benzene exposure, they did not correspond directly to the NATA estimates, especially in southern Oklahoma.

A higher percentage of cases were male and Hispanic compared to controls, but a lower percentage of cases were African American (Table 1). ALL was the most common type of acute leukemia among cases (74.3%), with precursor cell leukemias being the most common subtype of lymphoid leukemia (97.4%). Approximately half of all cases were diagnosed with leukemia prior to age five years (48.5%).

We observed no differences in benzene exposure between cases and controls in the bivariate analysis or after adjusting for the confounding factors of urbanization and maternal education (Table 2). In our evaluation of benzene exposure using cutpoints informed by the LOESS curve, benzene was again not associated with acute leukemia. While adjusting for urbanization and maternal education resulted in an OR further from the null, removal of these variables changed the OR $< 20\%$.

In the analysis evaluating associations by leukemia type, the estimates for children with AML were stronger than those with ALL, though all of the confidence intervals contained the null value (Table 3). The point estimates suggest a potential dose-response relationship with AML, with the odds of exposure to the 4th quartile of benzene, relative to the lowest quartile, (OR: 2.42, 95% CI: 0.98, 5.96) approaching statistical significance among cases compared to controls after

Table 1
Distribution of birth characteristics of the child, mother, and residence by case/control status.

	Cases (n=307)		Controls (n=1013)		p-value ^a
	N	%	N	%	
Female (v. Male)	130	42.4	518	51.1	0.02
Race/Ethnicity ^b					0.001
Non-Hispanic (NH) White	207	67.4	702	69.3	
NH African American	20	6.5	122	12.0	
NH American Indian	29	9.5	88	8.7	
NH Other	14	4.6	22	2.2	
Hispanic	37	12.1	79	7.8	
Maternal Age at Child's Delivery					0.34
< 20 years	40	13.0	162	16.0	
20–34 years	240	78.2	778	76.8	
≥35 years	27	8.8	73	7.2	
Parity					0.05
0 previous deliveries	112	36.5	430	42.5	
1 previous delivery	91	29.6	320	31.6	
2 previous deliveries	67	21.8	159	15.7	
3+ previous deliveries	37	12.1	104	10.3	
Tobacco Use During Pregnancy (1991–2010)					0.87
Yes	36	13.8	126	14.4	
No	198	75.9	689	78.7	
Unknown	27	10.3	60	6.9	
Maternal Education					0.33
> High School Education	118	38.4	406	40.1	
Completed High School	103	33.6	361	35.6	
< High School Education	81	26.4	229	22.6	
Unknown	5	1.6	17	1.7	
Urban Census Block at Birth	249	81.1	830	81.9	0.63
Residence (v. Rural)					
Complete Street Address (v. Rural Route)	300	97.7	989	97.6	0.94

^a p-value based on univariate conditional logistic regression.

^b Unknown Hispanic ethnicity classified as non-Hispanic, NH Other includes Asian, Pacific Islander, other unclassified ethnicity, and unknown ethnicity.

adjustment for urbanization and maternal education. In this model, removal of urbanization changed the OR > 20%. Although we observed no significant differences when evaluating benzene and acute leukemia by age at diagnosis/index age, cases diagnosed between birth and 4 years of age had elevated ORs among those exposed to the 4th quartile compared to controls (Table 4). Among cases, 58.3% of children diagnosed between ages 0 and 4 years changed residence between birth and the date of cancer diagnosis, whereas 86.1% diagnosed from ages 15–19 years changed residence. We also observed a lower percentage of high benzene exposure based on quartiles among cases who did not change residence (21.7%) compared to those who moved between birth and cancer diagnosis (26.1%).

Table 2
Odds ratios (OR) and 95% confidence intervals (CI) for the association between benzene and childhood acute leukemia.

	Cases	Controls	Unadjusted	Adjusted for Maternal Education	Adjusted for Urbanization and Maternal Education
	N	N	OR (95% CI)	OR (95% CI)	OR (95% CI)
Quartiles of exposure					
0.11– < 0.39 $\mu\text{g}/\text{m}^3$	73	251	Reference	Reference	Reference
0.39– < 0.67 $\mu\text{g}/\text{m}^3$	71	253	0.98 (0.68, 1.43)	0.97 (0.67, 1.41)	1.06 (0.71, 1.58)
0.67– < 0.91 $\mu\text{g}/\text{m}^3$	77	253	1.05 (0.72, 1.51)	1.07 (0.73, 1.55)	1.21 (0.79, 1.87)
0.91–2.03 $\mu\text{g}/\text{m}^3$	86	256	1.17 (0.81, 1.68)	1.13 (0.78, 1.63)	1.28 (0.83, 1.97)
Benzene divided at 40th, 60th, and 95th percentiles					
0.11– < 0.53 $\mu\text{g}/\text{m}^3$	117	405	Reference	Reference	Reference
0.53– < 0.78 $\mu\text{g}/\text{m}^3$	60	202	1.02 (0.71, 1.45)	1.00 (0.69, 1.44)	1.06 (0.72, 1.55)
0.78– < 1.33 $\mu\text{g}/\text{m}^3$	116	355	1.13 (0.84, 1.53)	1.13 (0.84, 1.53)	1.23 (0.87, 1.72)
1.33–2.03 $\mu\text{g}/\text{m}^3$	14	51	0.94 (0.50, 1.77)	0.81 (0.42, 1.56)	0.88 (0.45, 1.73)

When stratified by year of birth, cases born from 2005 to 2010 had a three-fold increased unadjusted odds of elevated exposure compared to controls born in this same time period (Table 5). After adjusting for both urbanization and maternal education, the odds of exposure increased for the third and fourth quartiles of benzene, but the confidence intervals were wider compared to the unadjusted estimates. In our sensitivity analysis comparing results of children born from 1979 to 1996 using both the 1996 and 2005 NATA estimates, we observed little change in the results (1996 NATA unadjusted 4th quartile OR: 0.81, 95% CI: 0.43, 1.51; 2005 NATA unadjusted 4th quartile OR: 0.78, 95% CI: 0.41, 1.49). Results were also similar after adjusting for urbanization and maternal education (data not shown).

We observed no meaningful differences in the results in our sensitivity analysis including all cases (n=360) and all but two controls (n = 1438) compared to our primary analyses excluding those who did not geocode (n = 1320) (data not shown). Furthermore, in our analyses comparing cases who did and did not link to birth records, we observed no differences between the two groups among cancer-related covariates of type of leukemia (p = 0.93), year of birth (p = 0.18), year of diagnosis (p = 0.24), and age at diagnosis (p = 0.58).

4. Discussion

Although we observed no significant differences between cases and controls regarding benzene exposure, the ORs among children with AML were increased compared to controls. While our results suggested a potential dose-response relationship between benzene and AML based on the analysis of quartiles, this was not confirmed in our analysis using the cutpoints identified through LOESS curves. Although there were few observations in the higher levels of benzene exposure, we observed elevated ORs for both methods of classification. Previous studies have used varying methods to classify exposure to benzene (Crosignani et al., 2004; Raaschou-Nielsen et al., 2001; Vinceti et al., 2012; Whitworth et al., 2008). Thus, we conducted our analysis using a common method of classifying by quartiles and additionally determined cutpoints based on the LOESS curve.

Consistent with our findings, Whitworth et al. (2008) observed a potential dose-response relationship between benzene and AML in their ecologic study, which was only significantly elevated in the fourth quartile of benzene exposure (> 2.36 $\mu\text{g}/\text{m}^3$) (AML RR: 2.0, 95% CI: 1.0, 4.0) after adjusting for age, sex, race/ethnicity, and SES. Additionally, Vinceti et al. (2012) observed a stronger association between benzene and AML (OR: 5.5, 95% CI: 1.1, 26.5) compared to ALL (OR: 2.0, 95% CI: 0.6, 6.5) for every 10-fold increase in benzene, but only among children under five years of age after adjustment for coarse particulate matter (PM₁₀). Houot et al. (2015) observed a positive association between benzene and AML among those exposed to benzene concentrations $\geq 1.3 \mu\text{g}/\text{m}^3$ and $\geq 309 \text{ m}$ of road within 150 m of the child's residence (OR: 2.2, 95% CI: 1.1, 4.7) after adjustment for age.

Table 3

Odds ratios (OR) and 95% confidence intervals (CI) for the association between benzene and childhood acute leukemia, stratified by leukemia type.

	Acute Lymphoid Leukemia n=228			Acute Myeloid Leukemia n=79		
	Unadjusted	Adjusted for Maternal Education	Adjusted for Urbanization and Maternal Education	Unadjusted	Adjusted for Maternal Education	Adjusted for Urbanization and Maternal Education
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Quartiles of benzene exposure						
0.11- < 0.39 µg/m ³	Reference	Reference	Reference	Reference	Reference	Reference
0.39- < 0.67 µg/m ³	0.93 (0.61, 1.42)	0.89 (0.58, 1.37)	0.91 (0.58, 1.44)	1.20 (0.54, 2.66)	1.24 (0.55, 2.79)	1.60 (0.67, 3.81)
0.67- < 0.91 µg/m ³	1.02 (0.67, 1.56)	1.04 (0.68, 1.60)	1.07 (0.66, 1.76)	1.13 (0.54, 2.38)	1.26 (0.58, 2.72)	1.92 (0.77, 4.74)
0.91–2.03 µg/m ³	1.10 (0.72, 1.67)	1.03 (0.67, 1.58)	1.06 (0.65, 1.74)	1.42 (0.69, 2.94)	1.60 (0.75, 3.42)	2.42 (0.98, 5.96)
Benzene divided at 40th, 60th, and 95th percentiles						
0.11- < 0.53 µg/m ³	Reference	Reference	Reference	Reference	Reference	Reference
0.53- < 0.78 µg/m ³	0.91 (0.61, 1.37)	0.92 (0.61, 1.39)	0.93 (0.60, 1.43)	1.49 (0.69, 3.21)	1.46 (0.66, 3.22)	1.76 (0.79, 3.92)
0.78- < 1.33 µg/m ³	1.08 (0.77, 1.53)	1.07 (0.75, 1.51)	1.08 (0.73, 1.59)	1.33 (0.73, 2.40)	1.50 (0.80, 2.78)	1.74 (0.88, 3.46)
1.33–2.03 µg/m ³	0.81 (0.36, 1.84)	0.66 (0.28, 1.57)	0.67 (0.28, 1.62)	1.24 (0.44, 3.48)	1.34 (0.47, 3.86)	1.58 (0.53, 4.69)

Table 4

Analysis of benzene classified into quartiles at the census tract of the birth residence and acute leukemia by age at leukemia diagnosis/index age for controls. Estimates are presented as odds ratios (OR) and 95% confidence intervals (CI).

Age at Leukemia Diagnosis/Index Age	All Ages	0–4 years	5–9 years	10–14 years	15–19 years
Number of Cases	307	149	76	37	45
Number of Controls	1013	514	250	110	139
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Unadjusted					
0.11- < 0.39 µg/m ³	Referent	Referent	Referent	Referent	Referent
0.39- < 0.67 µg/m ³	0.97 (0.67, 1.41)	0.92 (0.54, 1.58)	0.99 (0.46, 2.14)	1.45 (0.54, 3.89)	0.81 (0.28, 2.33)
0.67- < 0.91 µg/m ³	1.07 (0.73, 1.55)	1.22 (0.73, 2.05)	0.69 (0.32, 1.50)	1.22 (0.39, 3.88)	1.00 (0.38, 2.62)
0.91–2.03 µg/m ³	1.13 (0.78, 1.63)	1.28 (0.76, 2.17)	1.26 (0.62, 2.56)	0.79 (0.27, 2.29)	0.95 (0.36, 2.51)
Adjusted for Urbanization and Maternal Education					
0.11- < 0.39 µg/m ³	Referent	Referent	Referent	Referent	Referent
0.39- < 0.67 µg/m ³	1.06 (0.71, 1.58)	1.01 (0.56, 1.81)	1.07 (0.46, 2.44)	1.66 (0.53, 5.17)	0.71 (0.23, 2.19)
0.67- < 0.91 µg/m ³	1.21 (0.79, 1.87)	1.41 (0.77, 2.61)	0.76 (0.31, 1.88)	1.90 (0.44, 8.12)	0.96 (0.33, 2.82)
0.91–2.03 µg/m ³	1.28 (0.83, 1.97)	1.45 (0.77, 2.73)	1.36 (0.59, 3.16)	1.15 (0.31, 4.24)	0.83 (0.27, 2.60)
Adjusted for Maternal Education					
0.11- < 0.39 µg/m ³	Referent	Referent	Referent	Referent	Referent
0.39- < 0.67 µg/m ³	0.98 (0.68, 1.43)	0.92 (0.54, 1.58)	0.98 (0.45, 2.11)	1.35 (0.48, 3.75)	0.71 (0.23, 2.15)
0.67- < 0.91 µg/m ³	1.05 (0.72, 1.51)	1.25 (0.74, 2.10)	0.67 (0.31, 1.47)	1.37 (0.38, 4.95)	0.96 (0.36, 2.56)
0.91–2.03 µg/m ³	1.17 (0.81, 1.68)	1.28 (0.75, 2.17)	1.21 (0.59, 2.48)	0.86 (0.28, 2.66)	0.83 (0.30, 2.33)

Table 5

Analysis of benzene classified into quartiles at the census tract of the birth residence and acute leukemia by year of birth. Estimates are presented as odds ratios (OR) and 95% confidence intervals (CI). Statistically significant estimates are indicated in bold.

Year of Birth	All Years	1979–1989	1990–1994	1995–1999	2000–2004	2005–2010
Number of Cases	307	34	45	67	102	59
Number of Controls	1013	102	142	216	355	198
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Unadjusted						
0.11- < 0.39 µg/m ³	Reference	Reference	Reference	Reference	Reference	Reference
0.39- < 0.67 µg/m ³	0.97 (0.67, 1.41)	0.70 (0.22, 2.24)	1.03 (0.38, 2.81)	0.80 (0.36, 1.76)	1.16 (0.63, 2.15)	1.37 (0.48, 3.91)
0.67- < 0.91 µg/m ³	1.07 (0.73, 1.55)	0.87 (0.29, 2.55)	0.83 (0.28, 2.45)	0.74 (0.36, 1.52)	0.87 (0.45, 1.68)	3.15 (1.22, 8.13)
0.91–2.03 µg/m ³	1.13 (0.78, 1.63)	0.62 (0.20, 1.90)	1.30 (0.51, 3.29)	0.75 (0.35, 1.60)	1.11 (0.59, 2.07)	3.53 (1.35, 9.27)
Adjusted for Urbanization and Maternal Education						
0.11- < 0.39 µg/m ³	Reference	Reference	Reference	Reference	Reference	Reference
0.39- < 0.67 µg/m ³	1.06 (0.71, 1.58)	0.53 (0.16, 1.79)	1.70 (0.54, 5.28)	0.80 (0.34, 1.86)	1.15 (0.59, 2.25)	2.22 (0.67, 7.39)
0.67- < 0.91 µg/m ³	1.21 (0.79, 1.87)	0.63 (0.17, 2.32)	2.16 (0.58, 8.09)	0.77 (0.34, 1.75)	0.87 (0.40, 1.88)	5.70 (1.69, 19.26)
0.91–2.03 µg/m ³	1.28 (0.83, 1.97)	0.39 (0.10, 1.56)	3.17 (0.96, 10.49)	0.70 (0.30, 1.65)	1.03 (0.49, 2.17)	6.73 (1.86, 24.40)
Adjusted for Maternal Education						
0.11- < 0.39 µg/m ³	Reference	Reference	Reference	Reference	Reference	Reference
0.39- < 0.67 µg/m ³	0.98 (0.68, 1.43)	0.59 (0.18, 1.91)	1.12 (0.40, 3.17)	0.78 (0.35, 1.75)	1.18 (0.63, 2.19)	1.40 (0.49, 4.01)
0.67- < 0.91 µg/m ³	1.05 (0.72, 1.51)	0.80 (0.26, 2.50)	1.08 (0.34, 3.48)	0.75 (0.36, 1.57)	0.90 (0.46, 1.75)	3.22 (1.24, 8.39)
0.91–2.03 µg/m ³	1.17 (0.81, 1.68)	0.50 (0.15, 1.69)	1.44 (0.54, 3.89)	0.68 (0.31, 1.50)	1.07 (0.56, 2.02)	3.60 (1.35, 9.55)

Furthermore when restricted to children under one year of age, Heck et al. (2014) observed an elevated association between one inter-quartile range increase in benzene and AML after adjustment for confounding factors including SES (OR: 2.6, 95% CI: 1.0, 7.0). The authors also observed significantly elevated associations with both AML (Adjusted OR: 1.8, 95% CI: 1.0, 2.9) and ALL (Adjusted OR: 1.5, 95% CI: 1.1, 2.1) during the third trimester of pregnancy (Heck et al., 2014).

In addition, two recent meta-analyses focused on air pollution and childhood leukemia observed an elevated summary OR for children with AML. Filippini et al. (2015) observed a summary OR of 2.3 for benzene and AML (95% CI: 1.1, 4.8), but no association with ALL (OR: 1.1, 95% CI: 0.7, 1.8). However, Carlos-Wallace et al. (2015) observed an elevated summary OR for both AML (OR: 2.1, 95% CI: 1.3, 3.2) and ALL (OR: 1.5, 95% CI: 1.1, 2.1) among studies that evaluated traffic density, traffic-related air pollution, or residential proximity to gas stations, excluding occupational or household product exposures. Filippini et al. (2015) reported summary results for the association between benzene and childhood leukemia whereas Carlos-Wallace et al. (2015) included multiple measures of traffic-related air pollution, which may partially explain the difference in the results for ALL. Furthermore, the meta-analysis by Carlos-Wallace et al. (2015) included studies with self-reported residential proximity to gas stations (Brosselin et al., 2009; Steffen et al., 2004), which may have biased the summary OR (Heinrich et al., 2005; Kuehni et al., 2006; Piro et al., 2008).

After adjustment for urbanization, the estimates for benzene and acute leukemia were larger than the unadjusted estimates. While there was little change in the OR after adjustment for urbanization in our sensitivity analysis with the entire dataset, we continued to observe an increased OR when restricting to children with AML. This increase was in contrast to other studies adjusting for urbanization as a confounder, which either observed no difference from the unadjusted model or a reduced OR after adjustment (Raaschou-Nielsen et al., 2001; Weng et al., 2009). We expected adjustment for urbanization to reduce the OR since it was positively associated with benzene and the levels of benzene were higher in urban than rural census tracts. However, an alternative explanation may be that urbanization functioned as a surrogate for traffic, indicating a stronger association among benzene sources other than traffic.

Because all of the cases and controls were not geocoded, we were concerned with potential selection bias in our study, with controls being less likely to geocode than cases (Janitz et al., 2016). Results from our sensitivity analysis including nearly all children available for the study ($n = 1798$) were similar to the results for the geocoded dataset ($n = 1320$), demonstrating that selection bias is unlikely to explain our results. However, we may have overestimated exposure to benzene by assigning the child to the census block with the highest population when they may have actually resided in a more rural census block. Depending on whether misclassification was differential, this may result in either an over or underestimate of the true OR.

In our study, we measured exposure at birth as a surrogate for maternal exposure during pregnancy. This assumption is only appropriate if the mother did not change residence during pregnancy and may not represent exposure during childhood. However, it is unclear when the relevant window of exposure occurs for childhood cancer. Chromosomal changes associated with childhood leukemia have been observed in blood spots collected at birth, indicating that at least one of the two or more genetic 'hits,' as described by Knudson (2001) occurred in utero (Wiemels et al., 1999, 2002). According to Smith (2010), environmental exposures, including benzene, could have occurred before birth and may be a result of parental exposure. While an estimated 13–30% of mothers change residence during pregnancy and up to two-thirds of children change residence between birth and cancer diagnosis (Chen et al., 2010; Lupo et al., 2010; Reynolds et al., 2001; Urayama et al., 2009), several studies have indicated minimal changes in exposure status, with kappa values of 0.69–0.99, when comparing

exposure to ambient air pollution between the residence of the mother during the prenatal period and that listed on the birth certificate from case-control studies on congenital anomalies (Chen et al., 2010; Lupo et al., 2010). To estimate the potential impact of residential mobility in our study, we stratified by age at diagnosis/index age for controls. Younger children may have reduced residential mobility compared to older children, which we observed among cases and is supported by a stronger, though non-significant, association among children under 5 years of age. Although we were able to compare benzene exposure among cases who did and did not change residence between birth and cancer diagnosis, we had no information on controls with which to conduct a sensitivity analysis using the residence at diagnosis/index age. Studies with detailed data on residential mobility patterns are needed to explore the relevant windows of exposure and whether this occurs around the time of conception, in utero, or after birth.

Measurement of benzene biomarkers can be measured through breath, urine, and serum. While biomarkers are often measured in occupational studies, measurement is limited to recent exposures (Department of Health and Human Services, 2007). Although the NATA estimates were not a direct individual measure of benzene, they had several advantages over using monitor or TRI data, including adjustments for dispersion of the pollutants, meteorological variables, activity data and areas/sources of exposure. Collecting this type of information on individuals would not be feasible in a population-based study. In addition, NATA estimates incorporated many sources of benzene exposure, in addition to traffic. Because of the many factors that must be incorporated to accurately measure benzene exposure of the population, a comprehensive model, such as NATA, provided an improvement over models only estimating traffic-related benzene. However, NATA applied the same benzene levels to an entire census tract which may not reflect the actual exposure of all those residing in that census tract. Although the NATA estimates account for commuting between census tracts, the activity patterns of individual participants may vary. Using ecologic exposure data could result in misclassification, potentially biasing the results away or towards the null depending on the person's actual exposure.

By using a single year of benzene estimates, there was a risk for temporal misclassification. Births in this study ranged from 1979 to 2010 and benzene estimates from 2005 may not represent the exposure of those born in 1979. Ambient benzene levels have decreased approximately 56% from 1994 to 2002 in the US (Fortin et al., 2005). However, when comparing children born from 1979 to 1996 using both the 1996 and 2005 NATA estimates, we observed no meaningful difference in results. Among children born between 2005 and 2010, cases had a significantly higher odds of exposure to benzene than controls. While we expected a stronger association with benzene in children born in more distant years, children born during 2005–2010 may have less misclassification of exposure compared to children born prior to 2005. This suggests the potential association between benzene and leukemia may have been attenuated in our study by bias resulting from exposure misclassification, regardless of the NATA estimates used. However, it is unclear why there was no association among those born from 2000 to 2004.

Using birth certificate data as our source of covariates is a limitation of this study. While birth certificates may be a reliable source for some variables, the reliability for maternal tobacco use during pregnancy is reported to be poor and vary by education status (Vinikoor et al., 2010). However, Oklahoma updated the birth certificate in 2009 which improved measurement of smoking status. Prior to the update, smoking was classified as present or absent any time during pregnancy, whereas after the update smoking was assessed before pregnancy and by trimester. Although this improvement will be beneficial to future studies using birth certificate data, self-report of smoking status during pregnancy remains problematic due to the stigma of smoking during pregnancy.

5. Conclusions

Based on the reviewed literature, benzene has the strongest evidence of a relationship with acute leukemia compared to other components of motor vehicle exhaust. However, studies have not established whether one specific pollutant or a combination of pollutants is responsible for the association between air pollution and leukemia. Therefore, consideration of other markers of traffic, such as NO₂ and road density, are important in understanding this relationship. In addition, improved measurement of benzene exposure at the individual level through adjustment for exposure misclassification from validation studies is necessary in future studies (Raaschou-Nielsen et al., 2001). While we did not observe statistically significant associations between benzene and leukemia, it is important to continue evaluating the effects in areas with higher exposure concentrations along with other potential health effects of benzene exposure.

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Ethics

We obtained IRB approval for this research from the University of Oklahoma Health Sciences Center and the Oklahoma State Department of Health.

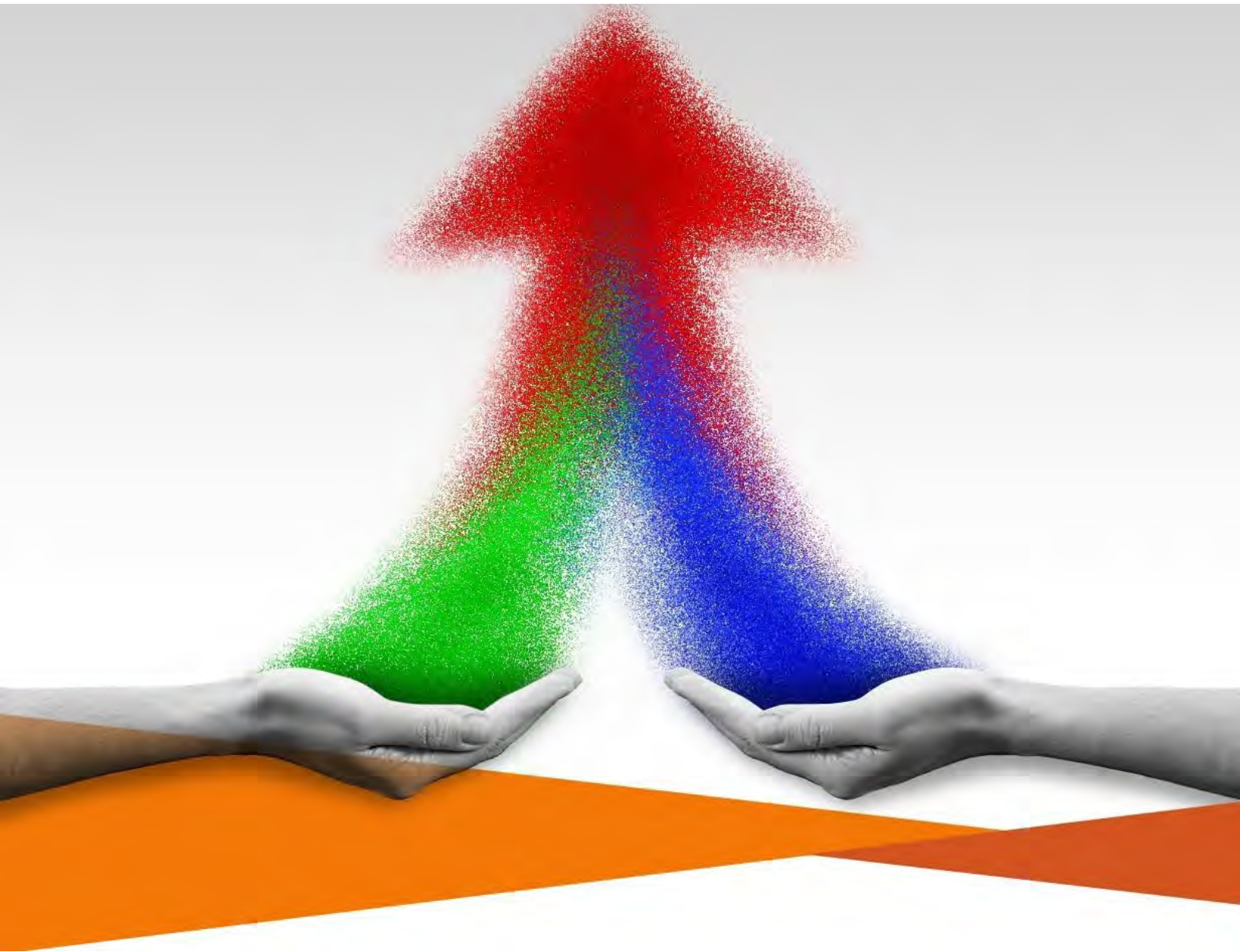
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EXHIBIT 13



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Short Report

Ambient benzene at the residence and risk for subtypes of childhood leukemia, lymphoma and CNS tumor

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Exposure to benzene increases the risk for acute myeloid leukemia and possibly other types of cancer in adults. For children, only limited evidence about benzene and cancer exists. A few studies have indicated that benzene may increase risk for some subtypes of childhood cancer but not for others. We aimed to investigate if outdoor levels of benzene at the residence increase the risk for subtypes of leukemia, lymphoma and CNS tumor in children. We identified 1,989 children diagnosed with leukemia, lymphoma or CNS tumor during 1968–1991 in the Danish Cancer Registry and randomly selected 5,506 control children from the Danish population, matched on sex, age and calendar time. We traced residential history of all children from 9 months before birth to time of diagnosis, calculated outdoor benzene concentration at all addresses and summarized cumulative exposure over fetal and childhood periods separately. We used conditional logistic regression for the statistical analyses. Benzene exposure during childhood above the 90th percentile was associated with relative risks for acute lymphocytic leukemia (ALL) and acute myeloid leukemia (AML) of 1.0 (95% confidence intervals (CI): 0.6–1.7) and 1.9 (95% CI: 0.3–11.1), respectively, when compared with exposure levels below the median. For CNS tumors, there was a tendency of lower risk for ependymoma and higher risk for medulloblastoma in association with higher exposure. In conclusion, benzene was associated with higher risk for childhood AML, but not ALL, which is consistent with the few previous studies.

Cancer in children (<15 years) is rare with incidence rates between 100 and 150 per million person-years in most parts of the world.¹ Nevertheless, 15% of deaths in ages 5–14 years are due to cancer, making it the leading disease causing death in children beyond infancy.² The few established risk factors include ionizing radiation (leukemias, CNS tumor), Epstein–Barr virus (lymphomas) and genetic syndromes (leukemia, CNS tumor).^{3,4} These risk factors can, however, only explain a small proportion of cases.^{3–5} Leukemia, CNS tumors and lymphomas are the three most frequent types of childhood cancer, constituting approximately two-thirds of all cases.

There is convincing evidence that benzene causes acute myeloid leukemia (AML) in adults exposed to relatively high

concentrations at work,⁶ leading to the hypothesis that benzene is also a cause of childhood leukemia. Benzene occurs in the ambient air pollution mixtures emitted from sources such as traffic and some industries. Previous studies have investigated associations between generic indicators for air pollution mixtures, thus indirectly addressing potential for benzene exposure in outdoor (e.g., proximity to traffic and petrol stations) or indoor air (e.g., household use of solvents). These studies mostly show associations with risk for childhood leukaemia^{7–9} but specific pollutants in the air pollution mixtures (such as benzene) cannot be pointed out as responsible for the associations. Tobacco smoke includes benzene but studies on maternal smoking during pregnancy indicated no association with risk for acute lymphocytic leukemia (ALL) in children.⁸

Eleven case–control studies have quantified benzene concentration at the residence of children and investigated associations mainly with risk for leukemia, but also CNS tumor, lymphomas and other types of childhood cancer.^{10–20} In recent years, research has focused on benzene in relation to subtypes of childhood cancers, and indicated that results might differ according to subtypes of leukaemia^{12,14,18,20} and CNS tumour.¹⁷ In 2001, we reported on benzene concentrations and risk for the three main types of childhood cancer: leukemia, CNS tumor and lymphomas.¹⁰ Due to the recent interest for associations between benzene and specific subtypes of childhood leukemia and CNS tumor, we aimed to use the data material from our 2001 study and report on fetal

Additional Supporting Information may be found in the online version of this article.

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What's new?

Benzene is classified as a human carcinogen causing acute myeloid leukemia (AML) in adults exposed to relatively high concentrations at work. It is, however, uncertain whether low concentrations of benzene in outdoor air causes leukemia in children. In this population-based case-control study, the authors found an association between risk for acute myeloid leukemia—but not acute lymphocytic leukemia (ALL)—in children and benzene concentration outside their residence. The results are in line with the few previous studies examining exposure to outdoor benzene and risk for AML in children.

and childhood exposure to benzene in relation to subtypes of leukemia and CNS tumor and non-Hodgkin lymphoma (NHL).

Material and Methods

The material and methods are similar to those of our previous study,¹⁰ and we give only a brief summary here.

We used an individually matched case-control design. We identified cases of first childhood cancer in the Danish Cancer Registry,²¹ who were born in Denmark in 1960 onwards and received their diagnosis at an age below 15 years between 1968 and 1991. We included leukemia, CNS tumor and lymphoma. Control children were randomly drawn from the entire Danish population.²² They had to have been born in Denmark and been alive and cancer-free at the time of diagnosis of the corresponding case. We matched two, three and five control children to each case of leukemia, CNS tumor and lymphoma, respectively, by sex, age and calendar time.

We traced residential addresses of children during childhood and their mothers during pregnancy in Danish Registries and identified 18,440 addresses at which 7,495 pregnant mothers and children had lived.¹⁰ The average concentration of benzene at the front door of each residence was calculated by the Operational Street Pollution Model for the exact period when the families resided at the address. The model has been described in detail elsewhere and the correlation coefficient between modeled and measured benzene at 76 locations in the Greater Copenhagen area was 0.62.²³ Exposure was summarized as “exposure level 3 time” over each address during pregnancy and childhood separately. The time-window for which exposure was calculated was exactly equal for a case and the matched controls. We used the International Classification of Diseases for Oncology (ICD-O) to define subgroups of leukemia: ALL, AML; NHL; CNS tumor: ependymoma, astrocytoma, medulloblastoma and for this study of these subtypes of childhood cancer, we included 1,506 cases and their 5,428 controls.

We used conditional logistic regression for the analysis and the 50th and 90th percentiles for the total study population as cutoff points to form three exposure groups. We chose the 50th and 90th percentiles as cutoff points (rather than tertiles or quartiles) because the distribution of exposure was right-skewed (Supporting Information, Figure O1). We estimated a linear trend based on log-2 of the exposure; this was chosen to avoid excessive influence of a few observations in the very high end of the right-skewed exposure distribution. The analyses were adjusted

for degree of urban development (seven categories based on number of inhabitants), geographical region (eight regions of Denmark), type of residence (three categories of proportion of time lived in a one-family house), electromagnetic fields (three categories; calculated fields,²⁴ mother's age (five categories) and birth order (four categories); the definitions and categories are given in Table 1 and our previous report.¹⁰ The potential confounders were selected *a priori* based on potential for association with benzene levels and risk for a childhood cancer diagnosis.

A priori, we specified exposure and statistical analyses to follow the approach used in our previous report.¹⁰ To investigate the sensitivity of our results, and to increase comparability with the results of other studies, we repeated analyses (1) using quartiles of exposure instead of three groups defined by the 50th and 90th percentile, (2) defining exposure as time-weighted averages (TWA) instead of the cumulative “exposure level 3 time” measure and (3) using the benzene concentration only at the address at time of birth and time of diagnosis instead of taking into account all addresses during pregnancy and childhood.

Results

Table 1 shows slight differences between cases and controls in the distribution of mother's age, birth order, residential birth region, urbanization, living in a one-family house and exposure to electromagnetic field.

The distribution of cumulative exposure was right-skewed (Supporting Information, Figure O1) ranging between 2.4 and 114,164 ppb days (mean: 5,431) with TWA concentrations between 0.8 and 26.0 ppb (mean: 2.2). Benzene exposure during childhood above the 90th percentile was associated with relative risks (RR) for ALL and AML of 1.0 (95% CI: 0.6–1.7) and 1.9 (95% CI: 0.3–11.1), respectively, when compared with exposure levels below the median. We also found higher relative risk for AML, but not ALL, in association with exposure during pregnancy (Table 2). However, the number of cases was small in some of the highest exposure groups, resulting in wide confidence intervals (CI). The results also suggested a higher RR for NHL with higher exposure during pregnancy (RR 5 1.6; 95% CI: 0.8–3.3), whereas exposure during childhood was virtually unrelated to risk for NHL. The highest exposure category during both pregnancy and childhood was associated with lower risk for ependymomas (RR 5 0.3; 95% CI: 0.0–1.7; childhood exposure) and a higher risk for medulloblastoma (RR 5 1.7; 95% CI:

Table 1. Characteristics in percentage of childhood cancer cases and controls

	Controls N 5 5,428	ALL N 5 727	AML N 5 125	NHL N 5 178	Ependymoma N 5 77	Astrocytoma N 5 259	Medulloblastoma N 5 140
Mothers age at birth							
<25 years	42.6	38.3	36.8	44.6	49.4	42.1	52.9
25–29 years	34.8	35.0	35.2	35.6	33.8	34.8	30.4
≥30 years	22.7	26.6	28.0	19.8	16.9	23.2	16.7
Birth order, child							
1	44.5	42.9	36.0	52.0	39.0	42.1	56.2
2	36.1	37.1	44.0	33.3	44.2	37.1	32.1
≥3	19.3	20.0	20.0	14.7	16.9	20.9	11.7
Residential area at birth							
Copenhagen and suburbs	24.7	20.6	20.8	24.2	18.2	22.4	21.4
Zealand ex. Copenhagen	18.5	20.8	16.0	15.7	13.0	18.9	15.7
Jutland	47.5	49.4	49.6	48.3	57.1	45.6	55.0
Other	9.3	9.2	13.6	11.8	11.7	13.1	7.9
Urbanization ¹							
<2,000 inhabitants	31.0	30.8	32.0	27.0	35.1	34.0	25.0
2,000–19,999 inhabitants	27.1	29.0	27.2	29.2	23.4	22.0	22.1
20,000–79,999 inhabitants	25.6	22.7	25.6	20.8	26.0	25.5	30.0
≥80,000 inhabitants	16.3	17.5	15.2	23.0	15.6	18.5	22.9
Lived in one-family house ²							
No	14.5	14.6	12.0	16.9	13.0	12.7	21.4
Part of the time	30.9	25.7	33.6	32.6	29.9	27.4	29.3
All the time	54.6	59.7	54.4	50.6	57.1	59.9	49.3
Electromagnetic fields ³							
<0.1 mT	99.4	99.5	100	99.4	100	99.2	100
≥0.1 mT	0.6	0.5	0	0.6	0	0.8	0

Abbreviations: ALL, acute lymphocytic leukemia; AML, acute myeloid leukemia; NHL, non-Hodgkin's lymphoma.

¹Time-weighted average of for all addresses (pregnancy and childhood).

²During the period from conception to the time of diagnosis/index date.

³Highest level at any address during the period from conception to the time of diagnosis/index date.

0.7–4.2; pregnancy exposure) (Table 2). The two higher exposure categories during childhood was associated with higher risk for astrocytomas (RR 5.15; 95% CI: 0.7–3.1; highest exposure category) whereas exposure during pregnancy was not. The results of Table 2 without adjustment for potential confounders are shown in Supporting Information, Table O1.

Sensitivity analyses using quartiles of exposure showed similar tendencies for ALL, AML and NHL whereas the tendencies observed for ependymomas were not clear in the quartile-based results. The quartile-based results, however, showed an association with risk for medulloblastoma in association with exposure during both pregnancy and childhood (Supporting Information, Table O2). Analyzing associations with TWA instead of cumulative exposure showed similar results for the pregnancy period and most results for exposure during childhood; however, only a weak tendency was

seen for AML and no tendency was seen for astrocytoma (Supporting Information, Table O3). Supporting Information, Table O4 shows results based on assessment of exposure at the address at birth and at diagnoses, respectively. The results indicate higher risks for AML and medulloblastoma, but a lower risk for ependymomas, in association with exposure at the birth address and higher risk for astrocytoma in association with exposure at the address at diagnosis. Supporting Information, Table O5 shows spearman's correlation coefficients between 0.60 and 0.92 between the different exposure matrices.

Discussion

We found a tendency of a higher risk for AML—but not ALL—in children in association with higher outdoor benzene levels at their residence. Point estimates showed a positive

Table 2. Association between residential benzene exposure during pregnancy and childhood and risk of subtypes of leukemia, lymphoma and CNS tumor

Benzene exposure (1,000 ppb days)	Acute lymphocytic leukemia			Acute myeloid leukaemia			Non-Hodgkin's lymphoma			Ependymoma			Astrocytoma			Medulloblastoma		
	N cases	RR (95% CI)		N cases	RR (95% CI)		N cases	RR (95% CI)		N cases	RR (95% CI)		N cases	RR (95% CI)		N cases	RR (95% CI)	
During pregnancy																		
<0.5	391	1.0		71	1.0		70	1.0		43	1.0		142	1.0		48	1.0	
0.5–1.3	278	1.1 (0.9–1.4)		44	1.1 (0.6–2.1)		85	1.3 (0.8–2.0)		30	0.7 (0.3–1.5)		91	0.9 (0.6–1.3)		78	2.7 (1.6–4.7)	
>1.3	58	0.9 (0.6–1.4)		10	1.6 (0.5–5.2)		23	1.6 (0.8–3.3)		4	0.2 (0.0–0.9)		26	0.9 (0.5–1.6)		14	1.7 (0.7–4.2)	
Trend ¹	727	0.9 (0.8–1.1)		125	1.1 (0.8–1.7)		178	1.0 (0.8–1.4)		77	0.6 (0.3–1.0)		259	1.0 (0.8–1.3)		140	1.3 (1.0–1.9)	
During childhood																		
<3.9	471	1.0		67	1.0		73	1.0		41	1.0		112	1.0		70	1.0	
3.9–10.9	205	0.8 (0.6–1.1)		49	2.2 (0.6–7.9)		85	1.2 (0.6–2.1)		33	1.1 (0.4–3.2)		121	1.4 (0.9–2.3)		58	1.0 (0.5–2.0)	
>10.9	51	1.0 (0.6–1.7)		9	1.9 (0.3–11.1)		20	0.7 (0.3–1.8)		3	0.3 (0.0–1.7)		26	1.5 (0.7–3.1)		12	1.0 (0.3–2.8)	
Trend ¹	727	0.9 (0.8–1.1)		125	1.1 (0.6–1.8)		178	0.9 (0.7–1.3)		77	0.5 (0.3–1.0)		259	1.0 (0.7–1.3)		140	1.3 (0.9–1.8)	

Abbreviations: RR, relative risk; CI, confidence interval.

All results adjusted for degree of urbanization, geographical region, type of residence, electromagnetic fields, mother's age and birth order.

¹Trend estimate per doubling of exposure.

association between benzene levels during pregnancy and risk for NHL, whereas no association was observed with childhood exposure. Furthermore, the highest benzene level was associated with a lower risk for ependymoma and a higher risk for medulloblastoma.

The strengths of this study include identification of cases in the reliable and almost complete Danish Cancer Registry, the selection of control children from the nationwide, complete population registry, the access to address history, application of a successfully validated model for exposure assessment²³ and a relatively large dataset.

Limitations include nondifferential misclassification of exposure, which will inevitably occur when using a model for exposure assessment. We would not expect such misclassification to create artificial associations but rather to influence the relative risk estimate towards 1.0. Another limitation is the limited number of cases in the highest exposure group. We adjusted for some suggested risk factors for childhood cancer but had no information about others, such as maternal occupational exposure to benzene.²⁵

We have identified five previous case-control studies investigating associations between outdoor residential benzene levels and risk for subtypes of acute leukemia in children (Table 3); the first two of these were included in a previous review.⁹ In the Emilia-Romagna region, Northern Italy, Vinceti *et al.* identified 83 incident cases of acute leukemia among children (0–14 y) in the population-based AIEOP cancer registry and selected 332 population controls individually matched to cases by sex, year of birth and province of residence.¹² Traffic-related benzene and PM₁₀ concentrations were estimated by a dispersion model. Linear analyses showed ORs of 0.97 (95% CI, 0.49–1.93) and 1.92 (95% CI, 0.64–5.78) for ALL and AML, respectively, per 1 mg/m³ increase in benzene. Heck *et al.* included 66 cases of ALL and 41 cases of AML identified in the California Cancer Registry and 19,209 control children selected from the California birth records.¹⁴ Benzene concentration measured at the nearest fixed site monitoring station within 2 km (ALL) and 6 km (AML) was allocated to addresses. They found ORs of 1.44 (95% CI: 0.84–2.48) for ALL and 1.94 (95% CI: 0.89–4.19) for AML per interquartile range increase in benzene during pregnancy. Houot *et al.* modeled benzene concentration at the addresses of 517 incident acute leukaemia cases (0–14 y) and 6,147 control children living in France.¹⁸ Cases were identified in the National Registry of Childhood Hematopoietic Malignancies and control children were selected from a population-based tax-database, matched on calendar year. When comparing benzene concentrations above with below the median concentration, the OR for ALL was 0.9 (95% CI: 0.7–1.0) and 1.6 for AML (95% CI: 1.0–2.4). Symanski *et al.* identified 1,248 cases (0–4 y) of ALL in the Texas Cancer Registry and selected 12,172 population control children from birth certificates.¹⁹ Concentrations of benzene, 1,3-butadiene and polycyclic organic matter at census tract level was taken from the U.S. EPA National-Scale Air Toxics

Table 3. Summary of characteristics and results from six case-control studies, which analyzed associations between outdoor benzene concentration at children's residence and risk of acute lymphocytic leukemia and/or acute myeloid leukemia

Reference, location, study period	Exposure Assessment method and time-window	Unit evaluated	ALL		AML		Adjustment	Comments
			<i>N</i> cases	RR (95% CI)	<i>N</i> cases	RR (95% CI)		
Vinceti <i>et al.</i> (2012), Northern Italy, 1998–2009	Modeling at address at diagnosis	Per 1 mg/m ³ (linear)	64 (<15 y) 27 (<5 y)	0.97 (0.49–1.93) 1.95 (0.58–6.50)	19 (<15 y) 11 (<5 y)	1.92 (0.64–5.78) 5.46 (1.12–26.51)	Sex, age, province of residence, PM ₁₀ concentration	Incidence, 0–14 y. Subanalysis for age group 0–4 y.
Heck <i>et al.</i> (2014), California, USA, 1990–2007	Monitoring during pregnancy and over first year of life at station closest to address at birth	Per 1.2 ppbV (linear)	66 (exposure during pregnancy)	1.44 (0.84–2.48)	41	1.94 (0.89–4.19)	Year of birth, mothers birth place, parity, neighborhood SES, mothers race/ethnicity	Incidence, 0–5 y.
			61 (exposure during first year of life)	1.23 (0.62–2.43)	25	2.61 (0.97–6.99)		
Houot <i>et al.</i> (2015), Ile-de-France, France, 2002–2007	Modeling at address at diagnosis	<1.3 mg/m ³	215	1.00	33	1.00	Age	Incidence 0–14 y.
		>1.3 mg/m ³	210	0.9 (0.7–1.0)	59	1.6 (1.0–2.4)		
Symanski <i>et al.</i> (2016), Texas, USA, 1995–2011	Modeling for census district where living at time of birth	Q1 Q2 Q3 Q4	NR NR NR NR	1.00 1.19 (1.00–1.41) 1.16 (0.98–1.38) 1.17 (0.98–1.39)		Not investigated	Month/year of birth, census tract, maternal age, mothers birth place, education, maternal race/ethnicity	Incidence 0–4 y. No benzene-related risk in two-pollutant models including 1,3-butadiene.
Janitz <i>et al.</i> (2017), Oklahoma, USA, 1997–2012	Modeling for census district where living at time of birth.	In mg/m ³ : 0.11–0.39	NR	1.00	NR	1.00	Week of birth, race/ethnicity, age at diagnosis, sex, birth order, electromagnetic fields, urbanization, maternal education, pregnancy smoking	Incidence 0–19 y. The results were sensitive to choice of cutoff points between exposure categories.
		0.39–0.67	NR	0.91 (0.58–1.44)	NR	1.60 (0.67–3.82)		
		0.67–0.91	NR	1.07 (0.66–1.76)	NR	1.92 (0.77–4.74)		
		0.91–2.03	NR	1.06 (0.65–1.74)	NR	2.42 (0.98–5.96)		
Raaschou-Nielsen (this study), Denmark	Modeling at all addresses during childhood. Cumulated exposure	<3.9 3 10 ³ ppb days	471	1.0	67	1.0	Urbanization, region, type of residence, electromagnetic fields, maternal age, birth order	Incidence 0–14 y.
		3.9–10.9 3 10 ³ ppb days	205	0.8 (0.6–1.1)	49	2.2 (0.6–7.9)		
		10.9–31.0 3 10 ³ ppb days	51	1.0 (0.6–1.7)	9	1.9 (0.3–11.1)		
		>31.0 3 10 ³ ppb days						

Abbreviation: NR, not reported.

Assessment (NATA). ORs of 1.19 (95% CI, 1.00–1.41), 1.16 (95% CI, 0.98–1.38) and 1.17 (95% CI, 0.98–1.39) for the second, third and fourth exposure quartile compared to the first was found. Models including both benzene and 1,3-butadiene showed associations with 1,3-butadiene but not with benzene indicating that the results for benzene in the one-pollutant model were likely confounded by 1,3-butadiene exposure. Janitz *et al.* studied benzene and acute leukaemia including 228 cases of ALL and 79 of AML (0–19 y) from the Oklahoma Central Cancer Registry, USA.²⁰ They selected 1,013 population controls from birth certificates, matched on week of birth. Addresses were allocated to the census tract and benzene concentrations for each census tract were extracted from the NATA database. The results indicated no association between benzene and ALL, with an OR for the highest quartile compared to the lowest of 1.06 (95% CI, 0.65–1.74). In contrast, the OR for AML was 2.42 (95% CI, 0.98–5.96) with indication of exposure-response over quartiles but not over an alternative exposure categorization. Thus, our results of an association between benzene and risk for AML, but not ALL, in children fits remarkably well with the risk pattern observed in the five previous studies. That risk pattern was also noted by the expert group convened recently by the IARC to evaluate the evidence for benzene as a human carcinogen.²⁶

Two previous studies quantified benzene concentration outside child residence and analyzed associations with subtypes of CNS tumor. Danysh *et al.* found higher incidence rates of primitive neuroectodermal tumors (PNET) in the census tracts of Texas, with the highest benzene concentrations but virtually no association for astrocytoma, ependymoma or medulloblastoma.⁵ Von Ehrenstein *et al.* also showed a higher risk for PNET but a lower risk for medulloblastomas and astrocytomas in association with benzene concentrations at the residence in California, USA.¹⁷ In contrast to these studies, we found a tendency of higher risk for medulloblastoma. We are aware of no previous study reporting on associations between quantified benzene levels at children's residence and risk for childhood NHL; our finding suggesting a positive association with maternal exposure during pregnancy should be considered as hypothesis-generating and warrants further research.

Several studies have addressed risk for childhood cancer subtypes in association with indicators for outdoor air

pollution. Studies mostly found higher risk for ALL but not AML in association with traffic density and NO₂,^{9,27} which is opposite to the picture from studies of benzene. Heck *et al.* found higher risk for ependymoma and medulloblastoma but lower risk for NHL and astrocytoma in association with fine particulate matter (PM_{2.5}), and slightly higher risk for NHL and ependymoma in association with traffic density.²⁸ Lavigne *et al.* found higher risk for astrocytoma in association with PM_{2.5}.²⁷ It is unknown to which extent these markers of outdoor air pollution correlate with actual benzene concentrations at children's homes and interpretation in terms of association between benzene concentration and risk for childhood cancer is, therefore, not straight forward.

Our results indicated different risk patterns for pregnancy and childhood exposure in association with risk for NHL, astrocytomas and medulloblastoma, which only persisted in the sensitivity analyses for NHL. Von Ehrenstein *et al.* reported similar risk estimates for astrocytomas and medulloblastoma in association with pregnancy and infant life exposure to benzene.¹⁷ Lavigne *et al.* reported stronger associations with astrocytoma for exposure to NO₂ during infancy compared to pregnancy but the opposite picture for exposure to PM_{2.5}.²⁷ We are aware of no other study reporting on risk for NHL in association with benzene exposure during pregnancy and childhood separately. Thus, given the wide and overlapping CI for risk estimates in association with the two exposure time windows in our study and given the lack of support from other studies, we consider these differences for astrocytoma, medulloblastoma and NHL as chance findings—unless confirmed in future studies.

In summary, our results—together with the results of the previous similar studies on leukaemia subtypes—show a pattern of higher risk for childhood AML—but not ALL—in association with outdoor benzene concentration at the residence. It is too early for firm conclusions: only few studies have been published using different exposure assessments, the confidence intervals are generally wide due to low number of cases and confounding from correlated air pollutants in the air pollution mixture cannot be excluded. AML is a rare disease among children and a future conclusion about a possible link between benzene and AML in children will probably have to rely on the collective evidence from many small studies.

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EXHIBIT 14



School Siting Guidelines

School Siting Guidelines

Feature/Land Use	Description	Potential Hazard(s)	Recommendations		Additional Information ⁵¹
			Screening Perimeter	Evaluation	
Gas stations and other fuel dispensing facilities	Large gas station dispense more than 3.6 million gallons per year.	- Air pollution - Soil contamination - Ground water contamination - Vapor intrusion into structures - Heavy vehicular traffic	- Identify and evaluate gas stations and other fuel dispensing facilities within ~1,000 feet of prospective school locations - Applies to both onsite as well as adjacent or nearby locations	- Evaluate on a case- and site-specific basis. See Exhibit 5 for potential variables and mitigation options. - Consult with state, tribal and local authorities for applicable requirements. - Evaluate for spills, leaking underground storage tanks, potential air emissions.	Air Pollution Risk Assessment Maps and Mapping Underground Storage Tanks Vapor Intrusion/ (VOCs)
Dry cleaners	Facilities using perchloroethylene or similarly toxic chemicals.	- Air pollution - Soil contamination - Ground water contamination - Vapor intrusion into structures	- Identify and evaluate dry cleaning operations within ~1,000 feet of prospective school locations - Applies to both onsite as well as adjacent or nearby locations	- Evaluate on a case- and site-specific basis. See Exhibit 5 for potential variables and mitigation options. - Consult with state, tribal and local authorities for applicable requirements. - Consult with local environmental agencies to determine locations with high concentrations.	Air Pollution Risk Assessment Maps and Mapping Vapor Intrusion/ (VOCs)

EXHIBIT 15



FEDERAL TRANSIT ADMINISTRATION

Transit Noise and Vibration Impact Assessment Manual

SEPTEMBER 2018

FTA Report No. 0123
Federal Transit Administration

PREPARED BY
John A. Volpe National Transportation Systems Center



U.S. Department of Transportation
Federal Transit Administration

SECTION 7

Noise and Vibration during Construction

Construction noise and vibration often generates complaints from the community, even when construction is for a limited timeframe. Public concerns about construction noise and vibration increase considerably with lengthy periods of heavy construction on major projects as well as prevalence of nighttime construction (often scheduled to avoid disrupting workday road and rail traffic). Noise and vibration complaints typically arise from interference with people's activities, especially when the adjacent community has no clear understanding of the extent or duration of the construction. Misunderstandings can arise when the community thinks a contractor is being insensitive, and the contractor believes it is performing the work in compliance with local ordinances. This situation underscores the need for early identification and assessment of potential problem areas.

This section outlines the procedures for assessing noise and vibration impacts during construction. The type of assessment (qualitative or quantitative) and the level of analysis are determined based on the scale of the project and surrounding land uses. In cases where a full quantitative assessment is not warranted, a qualitative assessment of the construction noise and vibration environment can lead to greater understanding and tolerance in the community. For major projects with extended periods of construction at specific locations, a quantitative assessment can aid contractors in making bids by allowing changes in construction approach and including mitigation costs before the construction plans are finalized.

Generally, local noise ordinances are not very useful for evaluating construction noise impact. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should take into account the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land uses. While it is not the purpose of this manual to specify standardized criteria for construction noise impact, the following guidelines can be considered reasonable criteria for assessment. If these criteria are exceeded, there may be adverse community reaction.

Procedures for assessing construction noise are presented in Section 7.1. Procedures for assessing construction vibration are presented in Section 7.2.

7.1 Construction Noise Assessment

Noise impacts from construction may vary greatly depending on the duration and complexity of the project. The key elements of the Construction Noise Assessment procedure and recommended workflow are as follows.

EXHIBIT 16

Noise Levels Associated with Urban Land Use

Gavin King, Marek Roland-Mieszkowski, Timothy Jason,
and Daniel G. Rainham

ABSTRACT *Recent trends towards the intensification of urban development to increase urban densities and avoid sprawl should be accompanied by research into the potential for related health impacts from environmental exposure. The objective of the current study was to examine the effect of the built environment and land use on levels of environmental noise. Two different study areas were selected using a combination of small area census geography, land use information, air photography, and ground-truthing. The first study area represented residential land use and consisted of two- to three-story single-family homes. The second study area was characteristic of mixed-use urban planning with apartment buildings as well as commercial and institutional development. Study areas were subdivided into six grids, and a location was randomly selected within each grid for noise monitoring. Each location was sampled four times over a 24-h day, resulting in a total of 24 samples for each of the two areas. Results showed significant variability in noise within study areas and significantly higher levels of environmental noise in the mixed-use area. Both study areas exceeded recommended noise limits when evaluated against World Health Organization guidelines and yielded average noise events values in the moderate to serious annoyance range with the potential to obscure normal conversation and cause sleep disturbance.*

KEYWORDS *Noise, Land use, Urban, Geographic information systems, Sound level meter*

INTRODUCTION

The human environment has become increasingly shaped by urbanization and the built environment, which comprises the physical infrastructure arising from urban development as well as managed green space such as urban forests, parks, and sport fields.¹ Indeed, more than half of the global population and over 80 % of North Americans now reside in urban areas.² The built environment is now attracting the attention of public and environmental health researchers, as its inherent quality, characteristics, and spatial orientation (i.e., urban sprawl) have been linked both positively (e.g., parks, trails) and negatively (obesity, injuries, stress) to a variety of health outcomes.^{3,4} Increasing urbanization has been linked to a rise in the prevalence of health disparities, as well as a growing culture of sedentary living,

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contributing to the development of several chronic disease outcomes.⁵ In efforts to improve urban conditions and enhance human well-being, municipal planning groups have developed and promoted several initiatives, including mixed-use development strategies. A potential consequence of these strategies is an increase in environmental noise levels.

Environmental noise is an increasingly common feature of urban areas that can be described as an unwanted or undesirable sound within non-occupational settings. Road, rail, and air traffic sources account for the majority of noise in urban and surrounding areas.⁶ Additional sources of noise include industrial/commercial enterprise, construction projects, and such familiar domestic sources as pets and radios/stereos. Municipal planning strategies emphasizing increases in urban development densities, mixed-uses, as well as a continuation of automobile-centered traffic planning policies may lead to an increase in population level exposure to traffic and related urban environmental noise. At present, little is known regarding how noise levels may vary with forms of urban development and affect the health of a population.

Environmental noise has been linked to several non-auditory, biologically relevant health outcomes, including: increased levels of hypertension and high blood pressure,⁷ lowered cognitive ability,⁸ and an increased prevalence of cardiovascular disease.⁹ Exposure to environmental noise from traffic-related sources is reportedly the most annoying of all urban pollution types,¹⁰ interfering with enjoyment of daily activities and largely affecting sleep and rest patterns.^{10–12} In a recent Canadian survey, 20–28 % of urban populations attributed noise from road traffic to disruptions during sleep, conversation, and communication tasks such as reading and writing.¹³ Few studies have conducted field measurements to assess levels of environmental noise in Canadian cities; furthermore, it is still unknown whether recent trends towards the intensification of urban development will impact environmental noise levels and in turn population health.

Acceptable noise level guidelines have been developed by several agencies based on levels of annoyance, interference with communications, disturbance to sleep, and the potential to cause hearing impairments.^{14,15} For example the US Environmental Protection Agency recommended a maximum indoor noise level of 45 dB(A)* and outdoor noise level of 55 dB to allow for intelligible communication.¹⁶ Typically, values are derived for specific settings and time periods. Some agencies also provide guidelines according to land use and population density (e.g., Italian legislation in 1997). Recommended urban residential noise levels generally range from 45 to 55 dB depending on the time of day and location of measurement. For example, Australian Environmental Protection Authority noise guidelines state that noise levels in urban residential neighborhoods should not exceed 55 dB(A) during the day and 47 dB(A) at night (i.e., from 22:00 to 06:00). The maximum recommended noise levels generally increase in relation to the amount of commercial activity, which presents challenges for cities developing policies related to integrated residential and commercial land uses.

As with many urban centers in Canada and abroad, the Halifax Regional Municipality intends to intensify urban development by combining residential and

*Sound is measured by comparing the logarithm of a given sound to a reference sound pressure, and is expressed on a logarithmic decibel (dB) scale. The A-weighting [dB (A)] system was devised to adjust results in studies examining the impact of environmental noise on human hearing specifically.

commercial land-use types. The objective is to promote mixed-use neighborhoods with focused development in core areas. A number of reasons have been cited for this development strategy including the high costs of municipal services and rising costs of health care (e.g., obesity, transportation injuries) related to sprawl and associated increased automobile use.^{17–19} Research into these issues is required not only to protect the health and well-being of urban inhabitants, but also to ensure that planning decisions are based on evidence that considers the potential health and environmental consequences of development. To date, few studies have examined how noise varies as a function of urban development.

The aim of this study was to assess and compare noise levels in two urban neighborhoods: one completely residential and comprised of mostly single and multi-family dwellings, and the other characteristic of mixed residential and commercial land uses. Ambient environmental noise was recorded, measured, and analyzed within defined spatial locales in order to determine the potential for cumulative exposure to the local population. This research is timely and potentially informative given current trends in urban development.

METHODS

For the purpose of this study, two neighborhoods were selected: one almost exclusively residential to represent traditional planning strategies and the other comprised of residential and commercial land uses to represent more modern planning strategies that emphasize mixed-use development in urban core areas. The boundaries of each neighborhood matched the smallest statistical boundaries developed for the dissemination of Canadian census data (see Figure 1). Area 1, the representative residential area, mostly contained single-family dwelling units up to 10 m in height with 653 residents and a population density of approximately 3,950 persons per square kilometer. Buildings in this area are generally free standing and constructed of wood, stone, and brick. Area 1 also included seven roads (total length=3,506 m) that either border or are situated within the area. Area 2, representing mixed commercial and residential land uses, was larger in area yet housed a smaller population of 566 residents (1,836.5 persons per square kilometer). This area is bounded by several major roads and is generally oriented east to west. Area 2 contains commercial, institutional, and residential zones, with mostly concrete multi-story buildings. Sixteen roads traversed the area totaling 6,271 m in length.

Sampling Strategy

Study areas 1 and 2 were each divided by a grid into six identical cells. A geographic information system was used to randomly select one sample site location within each cell in the following manner. First, road network polygons were imported and a 4-m buffer polygon was inserted from the edge of the road. Second, a spatial random point generator, constrained to one point per grid cell within the buffer polygon, identified six sampling locations per study area. As a result, one randomly selected sample point per grid square was included in the analysis (Figure 1). Forty-five-minute noise recordings were randomly sampled during each of four distinct time periods from each of the six sampling locations per study area.

Environmental noise sampling methods vary considerably. For example, studies have used a sampling frequency of 15-min measurements every 2 h,²⁰ while others have employed continuous assessments.²¹ Studies have measured noise levels during

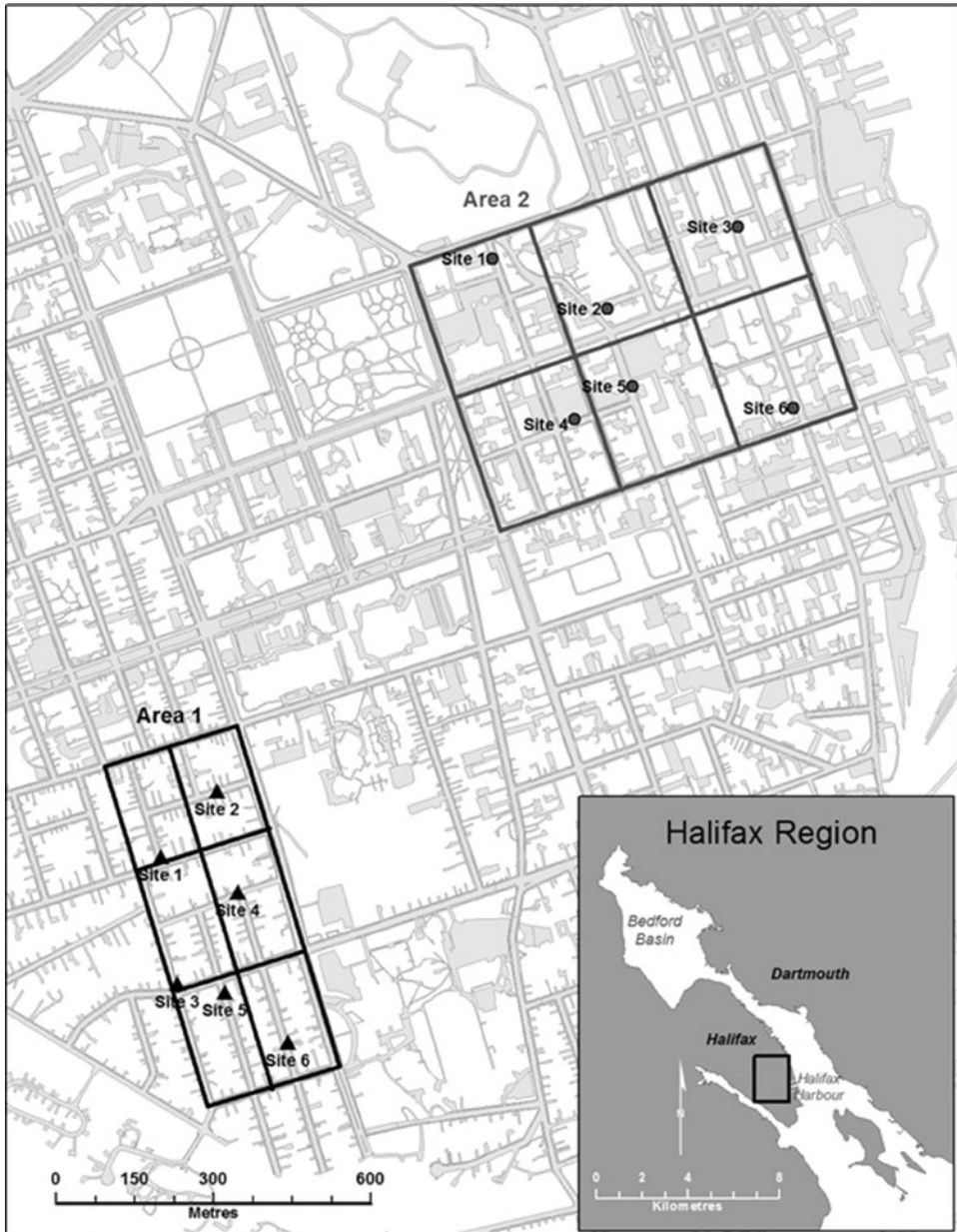


FIGURE 1. Study areas and sampling sites.

the day and at night,²² while others have only considered measurements during the day.²³ In 2007, Ng and Tang adopted a three-period assessment in which a 24-h clock was divided into three periods (day, evening, and night) that differed slightly in their period start times and sample lengths.²⁴ For the purpose of the current study, we incorporated a modified version of the three-period assessment method with certain refinements, as discussed by Ng and Tang,²⁴ for improving statistical accuracy. Each sample location yielded 3 h of data distributed across four time periods (i.e., 45 min per sampling period for each location). Daytime periods were subdivided into morning (06:00–12:00 h) and afternoon (12:00–18:00 h) segments

to enhance assessment quality. In addition, hours in the evening period (18:00–24:00 h) and the night period (24:00–06:00 h) were randomly sampled in order to capture the full daily spectrum of environmental noise production.

Data Collection

Noise data were collected using a Centre 322 Logging Sound Level Meter (SLM) and a Marantz PMD-660 Solid State Digital Recorder. The Centre SLM is an ANSI S1.4 Type 2 instrument with a 0.5" electrets condenser microphone, frequency range of 31.5 Hz to 8 KHz, measuring level range of 30–130 dB, and capacity to weight frequencies to either the A or C scale. The Marantz PMD-660 Solid State Digital Recorder was connected to an external microphone that can record 4 h of data at frequencies of 44.1/48 KHz.

The SLM and sound recorder were mounted on a camera tripod and microphone stand at a height of 1.5 m, a distance of 0.5 m from the curb, and were oriented perpendicularly to the nearest road. The SLM logged noise using an average of 1 s measurements, while the digital sound recorder facilitated continuous recordings to qualitatively identify peak noise events. Recordings commenced at the top of each hour (e.g., 1:00, 2:00...); in addition, the particular time at which recordings commenced was randomly assigned to sample locations thereby ensuring that the full 6-h time period (i.e., day, afternoon, evening, and night) was sampled. No data collection occurred on days ($n=2$) with rain, snow, or high winds, because these elements can both damage equipment and decrease the accuracy of measurements. Preliminary analysis of noise data from a related and, as of yet, unpublished study found that weather conditions, precipitation and wind in particular, had no influence on noise levels measured at a frequency of one measurement per hour. This conclusion was derived from comparing statistically noise levels measured during high wind or rain events (or both) with noise levels during times when weatherproofing of instrumentation would not be required.

Data Analysis

The SLM data included the minimum and maximum sound pressure level (SPL) averaged over 1 s, which resulted in 2,700 data points for each sampled time period and 10,800 data points for each grid sample area in a 24-h period. Basic noise descriptors were calculated. In addition, the equivalent continuous sound pressure level (L_{Aeq}) and day–evening–night composite whole-day rating level (L_{Rden}) were derived for the sample periods, grid sample areas, and study areas to identify variations in environmental noise over both space and time.

The two study areas were statistically evaluated and compared. First, each study area was examined individually to determine the spatial variation of environmental noise during each 6-h period and the full 24-h period. Noise levels associated with individual sample sites within each study area were compared statistically using a series of Kruskal–Wallis tests for non-parametric data. Then, the two primary study areas were compared statistically using the Mann–Whitney two-sample rank test.

L_{Aeq} values were compared with environmental noise exposure limits as dictated by Italian legislation (see Piccolo et al. 2005 for the exposure limits). In order to accomplish this, the study data were recalculated to correspond with the standardized time periods adopted by Italian legislation. This approach provided a means to determine levels of noise exposure with comparison to standards developed to prevent potential human health risk.

Calculation

Each study area yielded 18 h of data comprising 3 h per site (four time period samples of 45 min each). The A weighted equivalent continuous sound pressure level (L_{Aeq}) was calculated for each sample using the following formula:

$$L_{Aeq} = \frac{10 \log_{10} \left(\frac{1}{T} \sum_{i=1}^N P_A^2 \Delta t_i \right)}{20 \log_{10} \left(\frac{p_0}{p_{ref}} \right)} \quad (1)$$

P_A^2 – The A-weighted instantaneous sound pressure at the running time t_i ;

p_0 – The standard reference sound 20 μ Pa

The resultant L_{Aeq} values were then adjusted according to the particular sampled time period (+5 dB for evening hours and +10 dB for night-time hours) using the formula indicated below:

$$L_{Reqj,Tn} = L_{Aeqj,Tn} + K_j \quad (2)$$

K_j – Adjustment for the specified sample and time period;

$L_{Aeqj,Tn}$ – The actual L_{Aeq} value at the specified time period

Using the adjusted L_{Aeq} values, the day–evening–night rating levels were derived using the following formula:

$$L_{Rden} = 10 \log_{10} \left(\frac{d}{24} \times 10^{\frac{L_{Rd}}{10}} + \frac{e}{24} \times 10^{\frac{L_{Re}}{10}} + \frac{24-d-e}{24} \times 10^{\frac{L_{Rn}}{10}} \right) \quad (3)$$

d – The number of daytime hours;

n – The number of night-time hours;

e – The number of evening hours;

L_{Rd} – The rating level for daytime hours including adjustments;

L_{Re} – The rating level for evening hours including adjustments;

L_{Rn} – The rating level for night-time hours including adjustments

RESULTS

Area 1

The distribution of sound in area 1 was skewed to the right and somewhat peaked with an overall mean sound level of 48.1 dB(A) (SD=7.6) and substantial variation among individual sites (Table 1). Maximum values for the individual sites ranged from 60.6 dB(A) at site 6 to 93.3 dB(A) at site 3, while minimum values ranged from 20.0 dB(A) at site 3 to 47.0 dB(A) at site 4. Site 3 evidenced the greatest range of sound with night recordings of 20.0 dB(A) to 93.3 dB(A). L_{A90} values (90th percentile), representing background noise in the area, ranged from a low of 38.2 dB(A) at site 3 to a high of 50.3 dB(A) at site 4. Site 3 yielded higher than average L_{A1} values (1st percentile), indicating high levels of road traffic near the sample points. Adjusted (Adj) L_{Aeq} values ranged from a low of 44.7 dB(A) at site 6 to a high of 76.8 dB(A) at site 3. A comparison of the four sample time periods across sites evidenced maximum SPLs between 71.3 dB(A) and 77.4 dB(A) and mean SPLs from a low of 44.0 dB(A) to a high of 51.5 dB(A) (Table 2). L_{A90} values for the four time periods ranged from a low of 41.6 dB(A) to a high of 45.4 dB(A), while Adj L_{Aeq} values ranged from a low of 56.0 dB(A) to a high of 59.1 dB(A). Table 1 shows site 3 (68.9 dB(A)) and the night period (59.1 dB(A)) as having the highest overall Adj L_{Aeq} levels.

TABLE 1 Summary statistics for area 1

Site	Period	Start time	Max	Min	Mean	Percent iles			
						L_{A1}	L_{A90}	L_{Aeq}	Adj L_{Aeq}
1	1	07:00	73.0	40.1	44.2	60.0	41.8	48.5	48.5
	2	16:00	73.3	41.4	47.7	65.1	42.8	53.2	53.2
	3	18:00	66.6	25.8	43.9	61.8	39.5	49.2	54.2
	4	03:00	66.3	41.7	43.9	51.6	42.8	45.0	55.0
2	1	08:00	72.9	43.7	51.3	67.4	46.3	55.4	55.4
	2	12:00	75.4	40.9	48.0	63.7	43.3	53.0	53.0
	3	22:00	65.2	21	44.2	55.9	41.5	46.6	51.6
	4	01:00	66.3	38.8	40.3	49.2	39.4	42.0	52.0
3	1	09:00	90.0	42.3	61.4	80.3	48.0	69.1	69.1
	2	14:00	86.6	40.0	57.7	76.3	45.7	66.3	66.3
	3	23:00	81.4	37.0	43.1	72.1	38.2	58.6	63.6
	4	05:00	93.3	20.0	48.0	77.6	43.3	66.8	76.8
4	1	10:00	79.8	47.0	58.1	67.1	50.3	63.1	63.1
	2	15:00	77.5	23.0	49.0	56.7	43.0	54.8	54.8
	3	21:00	78.9	43.9	53.8	63.7	46.8	60.0	65.0
	4	24:00	77.4	39.9	45.8	55.0	41.3	52.9	62.9
5	1	11:00	72.7	41.6	50.8	66.6	43.9	55.4	55.4
	2	13:00	77.5	23.0	49.0	66.7	43.0	54.8	54.8
	3	19:00	73.9	37.8	48.4	65.0	40.5	54.2	59.2
	4	04:00	63.7	42.2	44.4	53.4	43.0	45.2	55.2
6	1	06:00	67.9	40.5	43.1	50.0	41.9	44.7	44.7
	2	17:00	73.8	42.6	49.8	66.5	45.6	54.6	54.6
	3	20:00	73.4	41.2	45.5	61.7	43.0	50.3	55.3
	4	02:00	60.6	38.3	41.7	51.5	40.2	42.7	52.7

As evident from Table 1, Adj L_{Aeq} values peaked at 05:00, 09:00, 14:00, and 23:00 (site 3), as well as at 21:00 and 00:00 (site 4). L_{Aeq} values mirrored this trend. The results suggest that the maximum values associated with these particular sites may have augmented the average noise level of the study area. The composite whole day rating for area 1 equaled 63.8 dB(A).

A significant difference in noise among individual sample sites in area 1 was observed, χ^2 (5, $N=24$)=16.2, $p=0.01$. Site 6 was associated with the lowest Adj L_{Aeq} levels in the area ($\bar{x}$ 51.8) yet produced a comparatively high number of outlier values throughout the day from elevated noise events. Site 3, which contributed the highest levels of environmental noise in area 1 ($\bar{x}$ 68.9), yielded a different data distribution pattern with fewer outlier points all of which occurred in the evening and night-time periods. A similar comparison across time periods failed to yield a significant difference, χ^2 (3, $N=24$)=0.55, $p=0.91$.

TABLE 2 Statistical values for area 1 by sample time period

	Max	Mean	L_{A1}	L_{A90}	L_{Aeq}	Adj L_{Aeq}
Morning	76.0	51.5	66.4	45.4	56.0	56.0
Afternoon	77.4	50.2	67.5	43.9	56.1	56.1
Evening	73.2	46.5	64.6	41.6	53.2	58.2
Night	71.3	44.0	57.8	41.7	49.1	59.1

Area 2

Data from area 2 yielded a similar distribution to area 1 with an overall mean of 56.6 dB(A). However, area 2 evidenced less variation in recorded sound values among individual sites and time periods (Table 3). Peak SPLs ranged from 69.7 dB (A) at site 2 to 90.3 dB(A) at site 6, while L_{A90} values ranged from a low of 44.0 dB (A) at site 6 to a high of 59.3 dB(A) at site 1. Adj L_{Aeq} values across sites ranged from a low of 55.4 dB(A) at site 4 to a high of 72.2 dB(A) at site 6. A comparison of the four sample time periods across sites yielded maximum SPLs between 77.2 dB(A) and 84.9 dB(A). L_{A90} values for the four time periods ranged from a low of 47.1 dB (A) to a high of 54.6 dB(A), while Adj L_{Aeq} values ranged from 61.8 dB(A) in the afternoon to 66.3 dB(A) at night (Table 4). The results indicate that area 2, the mixed use area, is associated with a more consistent level of environmental noise across sample sites. For example, L_{A90} values were highest recording in the afternoon at 54.6 dB(A), which varied little from the morning value of 53.1 dB (A), and then decreased through the evening to 47.1 dB(A) at night. Site 6 (≈ 69.9 dB(A)) and the night period (≈ 66.3 dB(A)) were associated with the highest overall Adj L_{Aeq} values (Table 3).

Table 3 displays L_{Aeq} and Adj L_{Aeq} values for selected sites over a 24-h period. As evident from this table, area 2 yielded Adj L_{Aeq} peaks at 01:00 (site 5), 03:00, 07:00,

TABLE 3 Summary statistics for area 2

Site	Period	Start time	Max	Min	Mean	Percentiles			
						L_{A1}	L_{A90}	L_{Aeq}	Adj L_{Aeq}
1	1	09:00	87.0	52.3	63.1	79.1	56.4	68.2	68.2
	2	12:00	88.3	55.4	65.1	75.9	59.3	68.1	68.1
	3	20:00	77.3	49.1	56.0	69.1	51.4	59.0	64.0
	4	02:00	79.4	42.3	50.0	65.3	45.9	55.8	65.8
2	1	08:00	89.0	46.7	58.3	75.1	52.2	65.0	65.0
	2	14:00	85.9	46.7	56.0	69.3	51.9	60.8	60.8
	3	23:00	77.8	48.9	53.4	67.3	50.2	56.7	61.7
	4	04:00	69.7	42.5	47.3	59.9	44.9	49.6	59.6
3	1	10:00	86.8	54.5	60.8	77.0	56.2	66.0	66.0
	2	15:00	85.2	54.3	60.3	71.6	56.6	62.7	62.7
	3	18:00	83.3	54.1	60.4	72.5	55.9	63.5	68.5
	4	05:00	75.1	49.7	54.0	67.5	51.5	56.4	66.4
4	1	11:00	72.7	45.4	52.6	65.9	49.0	55.4	55.4
	2	13:00	83.4	47.3	53.7	67.7	50.0	58.5	58.5
	3	22:00	75.1	28.6	50.4	66.0	47.2	54.1	59.1
	4	24:00	71.9	45.7	49.7	62.9	47.3	52.4	62.4
5	1	06:00	77.3	47.4	54.0	70.1	49.0	58.9	58.9
	2	16:00	86.0	23.7	60.9	72.1	55.0	64.0	64.0
	3	19:00	77.6	48.5	57.7	72.3	51.7	62.1	67.1
	4	01:00	85.7	46.2	53.8	73.5	49.1	61.3	71.3
6	1	07:00	90.3	49.8	65.6	81.3	56.0	71.1	71.1
	2	17:00	80.4	49.6	63.1	75.7	54.9	66.7	66.7
	3	21:00	83.7	46.7	60.1	74.3	51.8	64.8	69.8
	4	03:00	81.4	23.6	51.7	75.6	44.0	62.2	72.2

TABLE 4 Statistical values for area 2 by sample time period

	Max	Mean	L_{A1}	L_{A90}	L_{Aeq}	Adj L_{Aeq}
Morning	83.9	59.1	74.8	53.1	64.1	64.1
Afternoon	84.9	59.9	72.1	54.6	61.8	61.8
Evening	79.1	56.3	70.3	51.4	60.0	65.0
Night	77.2	51.1	67.5	47.1	56.3	66.3

and 21:00 (site 6). L_{Aeq} values, although deflated, mirrored this trend. The composite whole day rating was calculated and produced a result of 65.0 dB(A).

A significant difference in noise among individual sample sites in area 2 was yielded, χ^2 (5, $N=24$)=14.51, $p=0.01$. However, a similar comparison across time periods failed to yield a significant difference, χ^2 (3, $N=24$)=1.29, $p=0.73$. Areas 2 and 1 sample sites exhibited similar patterns of variation among sample sites and time periods; still, area 2 evidenced fewer outlier points due to higher overall levels of environmental noise. Traffic events characteristic of area 2 were absorbed by ambient background noise and therefore did not produce significant increases in sound. In contrast, sample sites associated with less road traffic and therefore lower ambient levels of noise produced more outlier points.

Comparison Between Areas 1 and 2

Differences were observed between the two sample areas both in terms of noise distribution and overall levels of environmental noise. First, Adj L_{Aeq} values among area 1 sites presented greater overall variability than area 2 sites (Figure 2). This difference can be attributed to variations in traffic volume related to land use, background institutional noise, and pedestrian activity. The noisier sites in area 1 were located near major roads, while sites associated with less noise were located further from the same roads. Although area 2 evidenced higher overall levels of environmental noise, sample sites produced fairly consistent and stable noise recordings. The consistency in noise levels across sites in area 2 likely relates to land use and background noise. More specifically, area 2 produces greater levels of background noise throughout the day from vehicle traffic in the area, industrial sounds (e.g., ventilation fans), delivery trucks, and high pedestrian traffic. This is confirmed by the higher L_{A90} values (representing background noise) in area 2 in addition to higher Adj L_{Aeq} values as a result of land use.

Results indicate that area 1 is more influenced by the disturbance effect of noise events. For example, a moving vehicle may generate an increase in sound levels of 10.0–30.0 dB(A), which would certainly lead to residential disturbances in area 1, yet remain unnoticed in the higher background sound levels inherent to area 2. It should be mentioned that the composite full day rating (L_{Rden}) values for the two areas evidenced very little difference in daily sound exposure (area 1=63.8 dB(A); area 2=65.0 dB(A)).

Findings from the Kruskal–Wallis tests provide evidence of statistically different levels of environmental noise among sample sites in areas 1 and 2. Using the Mann–Whitney test, a significant difference in Adj L_{Aeq} values associated with area 1 ($mdn = 55.1$) and area 2 ($mdn = 65.4$) was obtained ($U = 102$, $p = 0.0001$, $r = 0.56$), thus supporting the hypothesis that land use (e.g., built environments) affects levels of environmental noise.

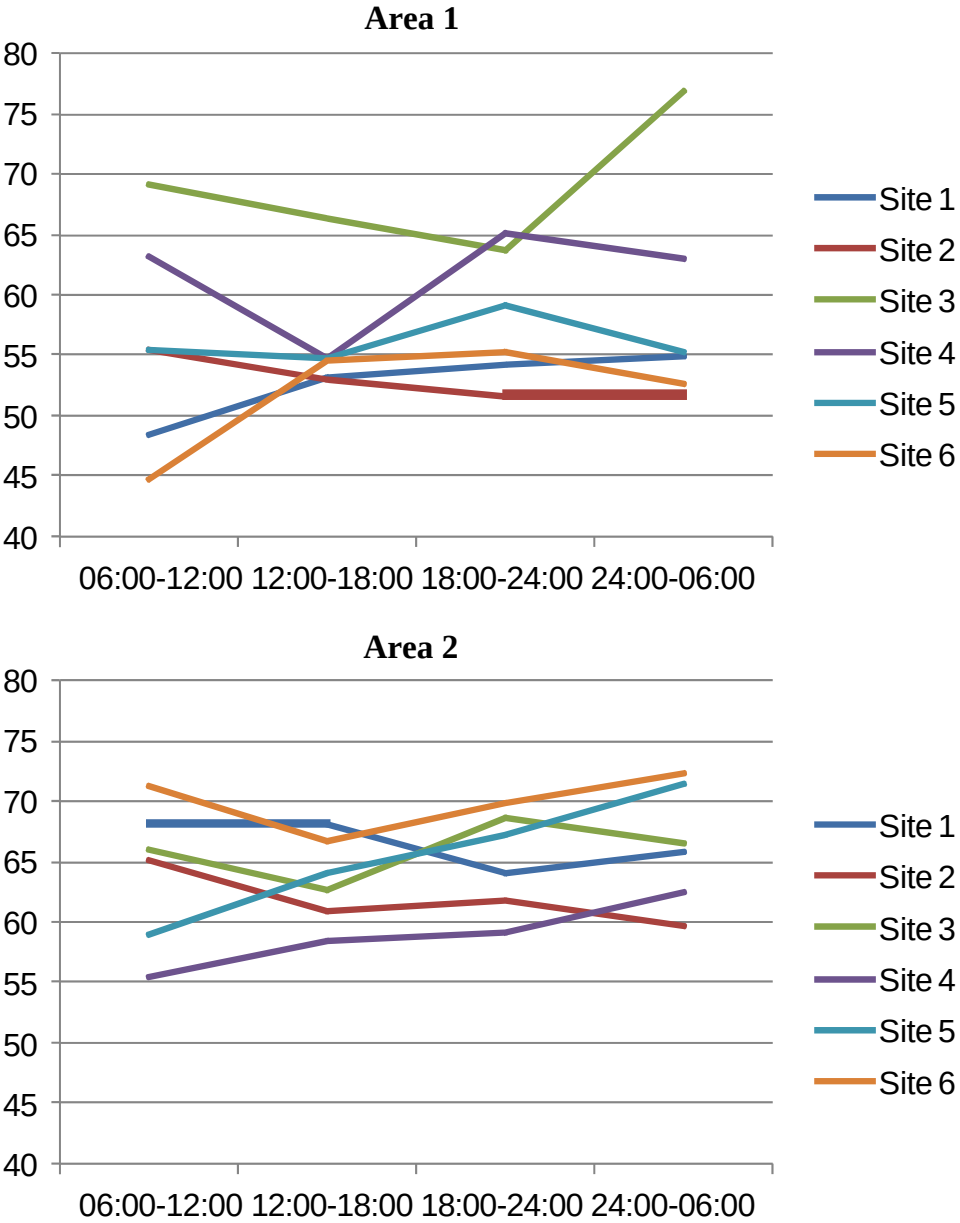


FIGURE 2. Adjusted L_{Aeq} values for areas 1 and 2.

DISCUSSION

The objective of the current research was to investigate and analyze spatial and temporal variations in environmental noise with respect to land use, specifically the built urban environment. In the analyses it was important to account for differences between neighborhood types in order to assess how increasing the frequency of mixed-used development land use would impact urban environmental noise levels. First, we found that noise levels varied significantly between residential and mixed-use neighborhoods. Noise levels in the mixed-use neighborhood were significantly greater than in the residential neighborhood. Second, noise values were analyzed to

determine the spatial and temporal variability within and between sample sites. Greater variation in noise levels was found in the residential neighborhood. This reflected the co-location of the sound-level recording with major roads bounding the sample area, as well as specific traffic-related noise sources such as buses, trucks, and street cleaning equipment. Noise variation within the sample areas was much greater in the residential neighborhood.

Analyses revealed statistically significantly higher levels of environmental noise in the mixed-use neighborhood (area 2) compared to the predominantly residential neighborhood (area 1). Area 1 generated absolute environmental noise levels within the range of an office environment or normal conversation both of which are considered comfortable for human hearing. Area 2, on the other hand, produced higher absolute environmental noise levels considered, according to annoyance scales, intrusive and slightly annoying. Noise values were on average (L_{eq}) 8 dB(A) greater during the day and 6 dB(A) greater during night-time hours in the mixed-use neighborhood. The higher overall levels of noise in area 2 likely reflect the continual presence of vehicular and pedestrian traffic in the area as well as background noise generated by institutional and industrial noise sources such as delivery trucks and ventilation systems. Evaluated against World Health Organization guidelines, both study areas yielded average noise events values in the moderate to serious annoyance range with the potential to obscure normal conversation and cause sleep disturbance.¹⁴

Our results also show significant variability in environmental noise *within* sample areas. With respect to area 1, environmental noise appeared to vary as a function of traffic patterns. For example, sites nearer to high traffic roads (e.g., heavy truck or bus traffic) presented higher levels of environmental noise. Because residential zones such as area 1 are associated with low(er) levels of background (i.e., continuous environmental noise) noise, traffic events can potentially contribute to high levels of disruption and disturbance. For example, people living close to site 3 in the residential area experienced on average a 10-dB(A) higher noise level during night-time hours compared to residents living elsewhere in the study area (Table 3). Site 3 is closest to two relatively major roads that are preferred routes for commuter, truck, and traffic from public transit (buses). In contrast, area 2 is associated with higher levels of background noise from steady traffic flow; consequently, results evidenced less intra-study area variability in noise despite the higher levels of noise associated with sites near high-traffic roads.

Oursampling approach also included measurement at random points within defined time periods to ensure sufficient noise measurements over a 24-h period. We did not find significant differences in average noise values across study sites within each sample area (Figure 2). Noise levels were somewhat higher during daytime hours, although the differences with evening and night-time measurements were minimized once values were adjusted. The consistency of noise values among day, evening, and night-time periods in urban environments has also been found in other studies.^{20,25}

Although noise values in both study areas did not vary significantly over time, there was relatively good correspondence in the intensity of average adjusted values between areas for the time periods selected. For example, noise levels increased incrementally from the afternoon, through the evening, and peaked in the overnight hours for both study areas, even though there was an overall difference in absolute noise levels. In both areas, adjusted noise levels were greater in the overnight hours, particularly for the residential study area (area 1). Adjusted noise levels in the residential study area will be affected greatly by unusual noise sources, such as loud motorcycles, automobiles, or even bus traffic, since typical noise values are much lower throughout the day. Normally

quiet neighborhoods in urban areas may thus be particularly prone to noise disturbances, especially during evening and night-time periods.

These findings support our initial hypothesis about the potential for variation in noise levels as a function of land use development in an urban environment. Urban planning initiatives developed to intensify urban development and promote mixed-use development may consider the potential for increased human exposure to noise and “design with noise in mind”, especially as there is good evidence in support of an association between environmental noise and stress-related health effects.^{7,9} When compared to guidelines designed to protect environmental quality and human health, adjusted noise levels in both areas exceed available recommended values for residential and mixed-use development and are indicative of relatively intensive land use development strategy (Table 5). Although Halifax is not a large city (population in 2006 of 372,675), noise levels in the mixed-use neighborhood are comparable to those measured in much larger urban centers such as Stockholm and Göteborg ($L_{Aeq, 24h}$ =62 dB),²⁶ San Francisco (L_{dn} =65 dB),¹² and Vancouver ($L_{Aeq, 5min}$ =61.7 dB).²⁷

From a public health perspective, noise levels measured in this study are of sufficient intensity to be injurious. For example, a 5-dB(A) increase in noise level between 45 and 65 dB(A) has been associated with a 38 % increased odds for hypertension even after control for several well-known risk factors.²⁸ The most deleterious health impacts arise from excessive noise exposures resulting in sleep disturbance. Sleep is a process of mental and physiological recovery essential to healthy functioning. It has been estimated that between 50 and 150 noise-induced awakenings per year may occur at outdoor noise levels equivalent to those measured in this study.²⁹ Subsequent impacts to health and well-being are numerous, including: impairment to cognitive performance, changes in hormone (epinephrine) levels, and changes in heart rate, sleep patterns, and mood. Ultimately, the constellation of noise-induced morbidities can lead to more severe health outcomes at noise levels not much greater than those measured in this study. Several studies have demonstrated an increased prevalence of cardiovascular diseases at noise levels as low as 70 dB(A).^{9,30} Given the high prevalence of heart disease in Halifax, when compared to similar size cities in Canada, there is a clear rationale to investigate in more detail the level and distribution of noise for the rest of the city.

Certain study limitations may affect the generalizability of the results. First, noise levels were measured in two neighborhoods and within a limited time period. Increasing the number of study areas to include additional land-use types would provide a deeper understanding of the relationship between environmental noise, the built environment, and human health risks. Second, an extended sampling campaign could investigate the potential for seasonal variation on noise levels. For example, the source and character of environmental noise may change with weather and road conditions. Third, the collection of full 24-h samples would help to eliminate

TABLE 5 Study L_{Aeq} values^a compared to noise exposure limits set by Italian legislation

	Area 1 (residential)		Area 2 (mixed use)	
	Noise exposure limits	L_{Aeq}	Noise exposure limits	L_{Aeq}
Day (06:00–22:00)	55.0	55.4	60.0	63.4
Night (22:00–06:00)	45.0	50.0	50.0	56.1

^aExpressed in dB(A)

measurement error in the L_{Aeq} calculation. Future research should consider the variation of noise with land use in a similar fashion to air quality research to enable prediction of noise levels in locations without direct noise measurement. This approach could be complemented by interviews with neighborhood residents in order to investigate annoyance and the potential for noise-related human health risks.

Despite these limitations, this study provides important evidence concerning the relationship between land use and environmental noise. A planning strategy focused on mixed-use development may result in an increase in noise levels and human exposures to noise at levels with potential health implications. In a 2007 paper on urban growth and population health, the authors recommended the inclusion of urbanicity as a potential determinant of health.³¹ Indeed, our findings suggest a sensitivity of residential areas to noise disruptions from such urban standards as traffic intensification. Municipal planning policies and initiatives should consider integrating traffic restrictions and controls in residential areas and school zones. At present there are no quantitative noise standards on which to compare measured noise levels or evaluate noise exceedances in Halifax, and all excess noise levels are controlled through a complaint driven process based on perceived noise levels. Municipal representatives should consider the institution of new environmental noise standards and policies in order to protect the health of residents and preserve urban environmental quality. Such policies could include improving the quality of mufflers on buses especially in light of findings that relate potentially harmful noise levels to mass transit systems.³² Ideally, policy development and regulation should originate from sound planning and an inclusive multi-sectoral approach,³³ to protect and improve population health in increasingly urbanized living environments.

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EXHIBIT 17



Loud Noise Dangers

Loud noise can cause permanent hearing loss. There are ways to protect your hearing. Audiologists can help.

On this page:

- ♦ About Noise-Induced Hearing Loss
- ♦ Dangerous and Safe Noise Levels
- ♦ Signs That Noise Is Too Loud
- ♦ Noise and Hearing Loss
- ♦ Noise and Your Health
- ♦ Protecting Your Hearing

About Noise-Induced Hearing Loss

Noise-Induced Hearing Loss, or NIHL, happens when you listen to loud sounds. These sounds can last a long time, like listening to a concert, or they can be short, like from gunfire. Three factors put you at risk for NIHL:

- ♦ How loud the noise is
- ♦ How close you are to the noise
- ♦ How long you hear the noise

Sound-level meters measure noise levels. We record noise levels in decibels, or dBA. The higher the noise level, the louder the noise. You can listen to sounds at 70 dBA or lower for as long as you want. Sounds at 85 dBA can lead to hearing loss if you listen to them for more than 8 hours at a time.

Sounds over 85 dBA can damage your hearing faster. The safe listening time is cut in half for every 3-dB rise in noise levels over 85 dBA. For example, you can listen to sounds at 85 dBA for up to 8 hours. If the sound goes up to 88 dBA, it is safe to listen to those same sounds for 4 hours. And if the sound goes up to 91 dBA, your safe listening time is down to 2 hours.

The World Health Organization and International Telecommunication Union 2019 document, WHO-ITU Global Standard on Safe Listening Devices and Systems [PDF], recommends that manufacturers equip devices like smartphones and personal audio players with information that explains safe listening (for adults, a total of 40 hours of weekly exposure to volume levels no higher than 80 dB is recommended; for children, the level is 75 dB); usage warnings and tracking information; cues for taking safe listening actions; options for limiting volume levels; and volume limiters expressly for parents to use. The recommendations would also have safe listening information appear on external product packaging and advertising, as well as on manufacturers' websites.

Citations

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Impulse Noise

A single loud blast or explosion that lasts for less than 1 second can cause permanent hearing loss right away. This noise, called impulse noise or impact noise, may come from gunfire or fireworks. We measure impulse noise in dB peak pressure, or dBP. Impulse noise greater than 140 dBP will hurt your hearing right away.

Dangerous and Safe Noise Levels

The noise chart below lists average decibel levels for everyday sounds around you.

Painful impulse noise—Not safe for any period of time

150 dBP = fireworks at 3 feet, firecracker, shotgun

140 dBP = firearms

Painful steady noise—Not safe for any period of time

130 dBA = jackhammer

120 dBA = jet plane takeoff, siren, pneumatic drill

Extremely loud—Dangerous to hearing; wear earplugs or earmuffs

112 dBA = maximum output of some MP3 players, rock concert, chainsaw

106 dBA = gas leaf blower, snow blower

100 dBA = tractor, listening with earphones

94 dBA = hair dryer, kitchen blender, food processor

Very loud—Dangerous to hearing; wear earplugs or earmuffs

91 dBA = subway, passing motorcycle, gas mower **Moderate—**

Safe listening for any time period

70 dBA = group conversation, vacuum cleaner, alarm clock

60 dBA = typical conversation, dishwasher, clothes dryer

50 dBA = moderate rainfall

40 dBA = quiet room

Faint—Safe listening for any time period

30 dBA = whisper, quiet library

The noise chart was developed using the following two websites:

- Noise Navigator
- Dangerous Decibels

Signs That Noise Is Too Loud

You probably don't always carry a sound level meter with you. So how can you know if noises are too loud? Here are some signs:

- You must raise your voice to be heard.
- You can't hear or understand someone 3 feet away from you.
- Speech around you sounds muffled or dull after you leave the noisy area.
- You have pain or ringing in your ears after you hear the noise, called tinnitus. It can last for a few minutes or a few days.

Noise and Hearing Loss

How do loud noises hurt your hearing? It may help to first understand how you hear:

- Sound goes into your ear as sound waves. The louder the sound, the bigger the sound wave.
- The outer ear, which is what you see on the side of your head, collects the sound wave. The sound wave travels down the ear canal toward your eardrum. This makes your eardrum vibrate.
- The sound vibration makes the three middle ear bones move. The movement makes the sound vibrations bigger.
- The last of the three middle ear bones moves the sound vibrations into the inner ear, or cochlea. The cochlea is filled with fluid and has tiny hair cells along the inside. The vibrations make the fluid in the inner ear move. The fluid makes the hair cells move, too. The hair cells change the vibrations into electrical signals that travel to your brain through your hearing nerve.
- Only healthy hair cells can send electrical signals to your brain. We recognize sounds in our brains and use that information to figure out how to respond.

You may lose some of your hearing if the hair cells get damaged. How does this happen?

- Hair cells are sensitive to big movements. If sounds are loud, they move the fluid in the inner ear more, and that can damage the hair cells.
- Hair cells that are damaged by loud sounds do not send signals to the brain as well as they should. The first hair cells that are hurt are those that send high-pitched sounds to the brain. This can make sounds like /t/ in "tin", /f/ in "sin", or /k/ in "kin" harder to hear.
- Short, loud noises—like a firecracker or an explosion—can damage hair cells. Listening to loud sounds for a long time, like when you are at a rock concert, also damages hair cells.

Ringings in your ears, or tinnitus, is an early sign of noise-induced hearing loss. There is no way to fix damaged hair cells. Hearing aids or other devices can help you hear better, but your hearing will not come back on its own.

Noise and Your Health

Loud noise does not just hurt your hearing. It can cause other problems that you may not think of as being noise related.

Noise can make you more tired and cranky. Loud noise can cause other health problems, like:

- high blood pressure
- faster heart rate
- upset stomach
- problems sleeping, even after the noise stops
- problems with how babies develop before birth

Noise can make it harder to pay attention. You may be less safe at work because you may not hear warning signals or equipment problems. Noise can also cause you to get less work done.

Noisy classrooms can make it harder for children to learn. To learn more about noise in schools, read the Classroom Acoustics page.

It is harder to understand what others say when it is noisy. You may need to concentrate more and use more energy to hear. And the person speaking needs to talk louder or yell. This can make conversations hard. You may give up trying to talk or listen.

So, you can see that noise does more than cause hearing loss. It can impact your health, work, learning, and social life. It is important to cut down on the noise in your life for all of these reasons.

Protecting Your Hearing

Knowing how noise impacts you is the key to protecting your hearing. You've taken that first step by reading this information.

The next step is to avoid loud noise whenever possible. Remember, if you have to shout to be heard, it is too loud. You should get away from the noise or find a way to protect your ears.

Here are some things you can do:

1. **Wear hearing protection.** Cotton in the ears will not work. You can buy things that protect your hearing, like earplugs or earmuffs, at the store or online.
 - **Earplugs** go **into** your ear so that they totally block the canal. They come in different shapes and sizes. An audiologist can make some just for your ears. Earplugs can cut noise down by 15 to 30 decibels.
 - **Earmuffs** fit completely **over** both ears. They must fit tightly to block sound from going into your ears. Like earplugs, earmuffs can reduce noise by 15 to 30 dB, depending on how they are made and how they fit.
 - **Earplugs and earmuffs** can be used together to cut noise down even more. You should use both when noise levels are above 105 dB for 8 hours or more. You should also use both if you might hear impulse sounds that are more than 140 dBP.
2. **Do not listen to loud sounds for too long.** Move away from the loud sound if you don't have hearing protection. Give your ears a break. Plug your ears with your fingers as emergency vehicles pass on the road.
3. **Lower the volume.** Keep personal listening devices set to no more than half volume. The World Health Organization recommends a total of 40 hours of weekly exposure to volume levels no higher than 80 dB for adults and 75 dB for children on personal listening devices. Don't be afraid to ask others to turn down the volume of their devices if you can hear them. Ask the movie theater manager to turn down the sound if the movie is too loud.

4. **Be a good consumer.** Look for noise ratings on appliances, sporting equipment, power tools, and hair dryers. Buy quieter products. This is especially important when buying toys for children.
5. **Be a local advocate.** Some movie theaters, health clubs, dance clubs, bars, and amusement centers are very noisy. Speak to managers about the loud noise and how it may hurt hearing. Ask that they turn the volume down.

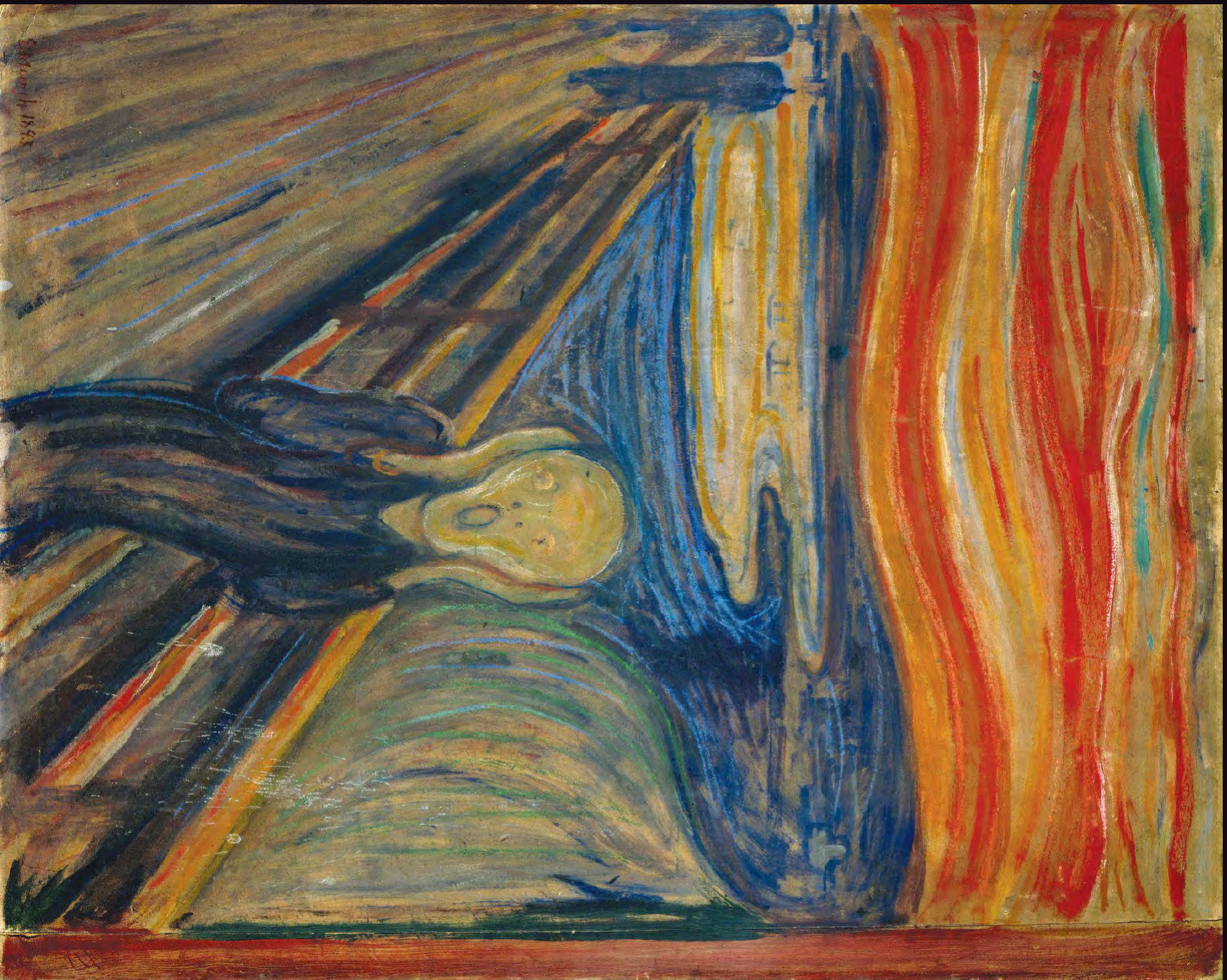
Don't be fooled by thinking your ears are "tough" or that you can "tune it out"! Noise-induced hearing loss is usually slow and painless. But, it is permanent. The hair cells and hearing nerve cannot be fixed. If loud sounds don't bother you, you may already have some hearing damage.

You can avoid noise-induced hearing. Protect your hearing for life.

More information on this topic can be found in our Audiology Information Series [PDF].

To find an audiologist near you, visit ProFind.

EXHIBIT 18



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Decibel Hell

It's not difficult for a person to encounter sound at levels that can cause adverse health effects. During a single day, people living in a typical urban environment can experience a wide range of sounds in many locations, including shopping malls, schools, the workplace, recreational centers, and the home. Even once-quiet locales have become polluted with noise. In fact, it's difficult today to escape sound completely. In its 1999 *Guidelines for Community Noise*, the World Health Organization (WHO) declared, "Worldwide, noise-induced hearing impairment is the most prevalent irreversible occupational hazard, and it is estimated that 120 million people worldwide have disabling hearing difficulties." Growing evidence also points to many other health effects of too much volume.

The growing noise pollution problem has many different causes. Booming population

growth and the loss of rural land to urban sprawl both play a role. Other causes include the lack of adequate anti-noise regulations in many parts of the world; the electronic nature of our age, which encourages many noisy gadgets; the rising number of vehicles on the roads; and busier airports. The U.S. Environmental Protection Agency

The Effects of Living in a Noisy World

(EPA) has long identified transportation—passenger vehicles, trains, buses, motorcycles, medium and heavy trucks, and aircraft—as one of the most pervasive outdoor noise sources, estimating in its 1981 *Noise Effects Handbook* that more

than 100 million people in the United States are exposed to noise sources from traffic near their homes.

Some experts define noise simply as "unwanted sound," but what can be unwanted for one person can be pleasant or even essential sound to another—consider boom boxes, car stereos,

drag races, and lawn mowers in this context. Sound intensity is measured in decibels (dB); the unit A-weighted dB (dBA) is used to indicate how humans hear a given sound. Zero dBA is considered the point at which a person begins to hear sound. A soft whisper at 3 feet equals 30 dBA, a busy freeway at 50 feet is around 80 dBA, and a chain saw can reach 110 dBA or more at operating distance. Brief exposure to sound levels exceeding 120 dBA without hearing protection may even cause physical pain.

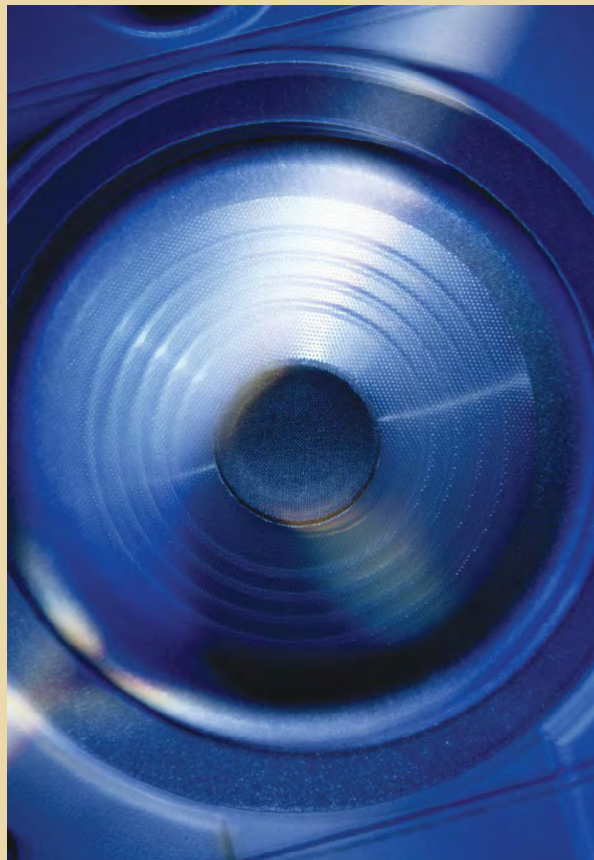
Mark Stephenson, a Cincinnati, Ohio-based senior research audiologist at the National Institute for Occupational Safety and Health (NIOSH), says his agency's definition of hazardous noise is sound that exceeds the time-weighted average of 85 dBA, meaning the average noise exposure measured over a typical eight-hour work day. Other measures and definitions are used for other purposes. For example, "sound exposure level" accounts for variations in sound from moment to moment, while "equivalent sound level" determines the value of a steady sound with the same dBA sound energy as that contained in a time-varying sound.

Growing Volume

In the United States, about 30 million workers are exposed to hazardous sound levels on the job, according to NIOSH. Industries having a high number of workers exposed to loud sounds include construction, agriculture, mining, manufacturing, utilities, transportation, and the military.

Noise in U.S. industry is an extremely difficult problem to monitor, acknowledges Craig Moulton, a senior industrial hygienist for the Occupational Safety and Health Administration (OSHA). "Still," he says, "OSHA does require that any employer with workers overexposed to noise provide protection for those employees against the harmful effects of noise. Additionally, employers must implement a continuing, effective hearing conservation program as outlined in OSHA's Noise Standard."

Meanwhile, there is no evidence to suggest things have gotten any quieter for residents since the EPA published its 1981 handbook. "For many people in the United States, noise has drastically affected the quality of their lives," says Arline L. Bronzaft, chair of the Noise Committee of the New York City Council of the Environment and a psychologist who has done pioneering research on the effects of noise on children's reading ability. "My daughter lives near La Guardia airport in New York City, and she can't open a window or enjoy her backyard in



On the street. Booming bass is quickly becoming the soundtrack of urban life.



On the increase. Our technological society encourages the propagation of noisy devices, and children are being exposed earlier than ever to an abundance of electronic noise.

the summer because of the airplane noise."

Indeed, the term *secondhand noise* is increasingly used to describe noise that is experienced by people who did not produce it. Anti-noise activists say its effect on people is similar to that of secondhand smoke. "Secondhand noise is really a civil rights issue," says Les Blomberg, executive director of the Noise Pollution Clearinghouse, an anti-noise advocacy group based in Montpelier, Vermont. "Like secondhand smoke, it's put into the environment without people's consent and then has effects on them that they don't have any control over."

Secondhand noise can also have a negative effect in the workplace. "Workers in the construction trades get exposure to noise not just from what they are doing but also from what is going on around them," says Rick Neitzel, director of communications for the National Hearing Conservation Association. "Electricians, for example, have a reputation as being a member of a quiet trade, but if they work all day next to a laborer who is using a jackhammer, it's going to have a harmful effect."

Even disregarding other people's noise, there are any number of household tools

and appliances that can produce harmful sound levels in the comfort of one's own home. According to the fact sheet "Noise in the Home" produced by the League for the Hard of Hearing, dishwashers, vacuum cleaners, and hair dryers can all reach or exceed 90 dBA.

Our modern industrialized society has spawned ubiquitous entertainment and sports industries with their boom boxes, "personal stereos" (Gap Kids now even offers a jacket with a built-in radio and speakers conveniently attached right in the hood), surround-sound movie theaters, loud TV commercials, and even louder commercials at sports stadiums crammed full of thousands of noisy fans. In drag racing, a growing international sport, a German team of audio engineers set an ear-splitting record of 177 dB—sound pressure level in 2002. Popular "boom cars" equipped with powerful stereo systems that are usually played with the volume and bass turned up abnormally high and the car windows rolled down can hit 140–150 dBA. Listening to music at a level of 150 dBA would be like standing next to a Boeing 747 airplane with its engines at full throttle, according to statistics provided by Noise Free America, an anti-noise advocacy group.

Even the countryside is not immune to the impact of noise pollution. According to the New York Center for Agricultural Medicine and Health in Cooperstown, a staggering 75% of farmworkers have some kind of hearing problem, largely the result of long-term exposure to loud equipment.

The United States is not the only country where noise pollution is affecting the quality of life. In Japan, for instance, noise pollution caused by public loudspeaker messages and other forms of city noise have forced many Tokyo citizens to wear earplugs as they go about their daily lives. In Europe, about 65% of the population is exposed to ambient sound at levels above 55 dBA, while about 17% is exposed to levels above 65 dBA, according to the European Environment Agency.

"The noisy problems associated with air travel are concentrated in communities around airports, whereas motorways or high-speed trains—traveling, for instance, from north to south Europe—have the potential to disturb thousands of people living along the route day after day," says Ken Hume, a principal lecturer in human physiology at the Manchester Metropolitan University in England.

Noise is indeed everywhere, and experts expect no decrease in noise levels, given the powerful impact of technology on modern

Counting Decibels

Device/Situation	dBA*
Grand Canyon at night, no birds, no wind	10
Quiet room	28–33
Computer	37–45
Floor fan	38–70
Refrigerator	40–43
Normal conversation	40
Forced-air heating system	42–52
Radio playing in background	45–50
Clothes washer	47–78
Dishwasher	54–85
Bathroom exhaust fan	54–55
Microwave oven	55–59
Normal conversation	55–65
Laser printer	58–65
Hair dryer	59–90
Window fan on "high" setting	60–66
Alarm clock	60–80
Vacuum cleaner	62–85
Push reel mower	63–72
Sewing machine	64–74
Telephone	66–75
Food disposal	67–93
Inside car with windows closed, traveling at 30 miles per hour	68–73
Handheld electronic game	68–76
Inside car with windows open, traveling at 30 miles per hour	72–76
Electric shaver	75
Air popcorn popper	78–85
Electric lawn edger	81
Electric can opener	81–83
Gasoline-powered push lawn mower	87–92
Average motorcycle	90
Air compressor	90–93
Weed trimmer	94–96
Leaf blower	95–105
Circular saw	100–104
Maximum output of stereo	100–120
Chain saw	110
Average snowmobile	120
Average fire crackers	140
Average rock concert	140

* Measurements are approximate and may vary by source.

Sources: National Institute on Deafness and Other Communication Disorders, Environmental Protection Agency, Noise Pollution Clearinghouse.

life. "In the past three decades, we have built noisier and noisier devices that are not subject to any regulations," Blomberg says. "Think about it. The car alarm is a seventies invention, as is the leaf blower. The

stereo sound systems we have in our cars are much louder than the sound system the Beatles used for their concerts in the sixties. All they had back then were three-hundred-amp speakers."



On the job. Occupational noise is pervasive throughout many industries and may cause serious damage despite regulations to protect workers' hearing.

Scary Sound Effects

Numerous scientific studies over the years have confirmed that exposure to certain levels of sound can damage hearing. Prolonged exposure can actually change the structure of the hair cells in the inner ear, resulting in hearing loss. It can also cause tinnitus, a ringing, roaring, buzzing, or clicking in the ears. The American Tinnitus Association estimates that 12 million Americans suffer from this condition, with at least 1 million experiencing it to the extent that it interferes with their daily activities.

NIOSH studies from the mid to late 1990s show that 90% of coal miners have hearing impairment by age 52—compared to 9% of the general population—and 70% of male metal/nonmetal miners will experience hearing impairment by age 60 (Stephenson notes that from adolescence onward, females tend to have better hearing than males). Neitzel says nearly half of all construction workers have some degree of hearing loss. “NIOSH research also reveals that by age twenty-five, the average carpenter’s hearing is equivalent to an otherwise healthy fifty-year-old male who hasn’t been exposed to noise,” he says.

“Noise has an insidious effect in that the more exposure a person has to noise, the more the hearing loss will continue to grow,” says Josara Wallber, disabilities services liaison

for the National Technical Institute for the Deaf in Rochester, New York. “Hearing loss is irreversible. Once hearing is lost, it’s lost forever.”

William Luxford, medical director of the House Ear Clinic of St. Vincent Medical Center in Los Angeles, points out one piece of good news: “It’s true that continuous noise exposure will lead to the continuation of hearing loss, but as soon as the exposure is stopped, the hearing loss stops. So a change in environment can improve a person’s hearing health.”

For many young people, changing their environment and their behavior would be a wise and healthy move. That’s because audiologists are fitting more and more of them with hearing aids, says Rachel Cruz, a research associate at the House Ear Clinic. She says audiologists are blaming this disturbing development on youth’s penchant for listening to loud music, especially with the use of headphones.

Research is catching up with this anecdotal evidence. In the July 2001 issue of *Pediatrics*, researchers from the Centers for Disease Control and Prevention reported that, based on audiometric testing of 5,249 children as part of the Third National Health and Nutrition Examination Survey, an estimated 12.5% of American children have noise-induced hearing threshold shifts—or dulled hearing—in one or both

ears. Most children with noise-induced hearing threshold shifts have only limited hearing damage, but continued exposure to excessive noise can lead to difficulties with high-frequency sound discrimination. The report listed stereos, music concerts, toys (such as toy telephones and certain rattles), lawn mowers, and fireworks as producing potentially harmful sounds.

For the baby boom generation, on the other hand, a change of environment may be too late. “Many baby boomers began losing their hearing when the amplification of popular music came into vogue in the nineteen sixties,” says Cruz. “We are starting to see that a lot of musicians and audio engineers who have been involved with popular music for a long time are having hearing problems.” Cruz is gathering data for a research study to examine how these professionals’ occupational sound exposures affect their hearing over a span of years.

Beyond the Ears

The effects of sound don’t stop with the ears. Nonauditory effects of noise exposure are those effects that don’t cause hearing loss but still can be measured, such as elevated blood pressure, loss of sleep, increased heart rate, cardiovascular constriction, labored breathing, and changes in brain chemistry. According to the WHO *Guidelines for Community Noise*, “these health effects, in turn, can lead to social handicap, reduced productivity, decreased performance in learning, absenteeism in the workplace and school, increased drug use, and accidents.”

The nonauditory effects of noise were noted as early as 1930 in a study published by E.L. Smith and D.L. Laird in volume 2 of the *Journal of the Acoustical Society of America*. The results showed that exposure to noise caused stomach contractions in healthy human beings. Reports on noise’s nonauditory effects published since that pioneering study have been both contradictory and controversial in some areas.

Data pertaining to whether noise can increase the risk of damage to the fetus is a case in point. A study published by L.D. Edmonds, P.M. Layde, and J.D. Erickson in the July–August 1979 issue of the *Archives of Environmental Health* found no significant data suggesting an effect of noise on fetal development in pregnant women who lived near airports. But in the October 1997 issue of *Pediatrics*, the Committee on Environmental Health of the American Academy of Pediatrics published a policy statement based on a review of research on the potential health effects of noise on the fetus and the newborn. The committee

concluded that excessive noise exposure *in utero* may result in high-frequency hearing loss in newborns and further that excessive sound levels in neonatal intensive care units may disrupt the natural growth and development of premature infants. It recommended that noise-induced health effects on fetuses and newborns are clinical and public health concerns that merit further study.

Studies have revealed that as children grow they are exposed to sounds that can threaten their health and cause learning problems. For instance, in the September 1997 issue of *Environment and Behavior*, Cornell University environmental psychologists Gary Evans and Lorraine Maxwell reported that the constant roar of jet aircraft could cause higher blood pressure, boosted stress levels, and other effects with potential life-long ramifications among children living in areas under the flight paths of airport.

Other human and animal studies also have linked noise exposure to chronic changes in blood pressure and heart rate. For example, in the July–August 2002 issue of the *Archives of Environmental Health*, a team of government and university researchers concluded that exposure to sound “acts as a stressor—activating physiological mechanisms that over time can produce adverse health effects. Although all the effects and mechanisms are not elucidated, noise may elevate systolic blood pressure, diastolic blood pressure, and heart rate, thus producing both acute and chronic health effects.”

Noise has also been shown to affect learning ability. In 1975 Bronzaft collaborated on a study of children in a school near an elevated train track that showed how exposure to noise can affect children’s reading ability. Half of the students in the study were in classrooms facing the train track and the other half were in classrooms in the school’s quieter back section. The findings, published in the December 1975 issue of *Environment and Behavior*, were that students on the quieter side performed better on reading tests, and by sixth grade they were a full grade point ahead of the students in the noisier classrooms.

Bronzaft and the school principal persuaded the school board to have acoustical tile installed in the classrooms adjacent to the tracks. The Transit Authority also treated the tracks near the school to make them less noisy. A follow-up study published in the September 1981 issue of the *Journal of Environmental Psychology* found that children’s reading scores improved after these interventions were put in place. “After we

did the study, more than twenty-five other studies were done examining the effect of noise on children’s learning ability,” Bronzaft says. “They have all found the same thing to be true: noise can affect children’s learning.”

The EPA reported in the *Noise Effects Handbook* that surveys taken in communities significantly affected by noise indicated that interruption of sleep was the underlying cause of many people’s complaints. Research has shown that unwanted sound is most annoying at the times when people expect to rest or sleep, that it can interrupt or delay sleep, and that it can have subtle effects on sleep, such as causing shifts from

deeper to lighter sleep stages. “The research is pretty solid that noise can prevent people from getting a good night’s sleep,” Hume says. “I believe that sleep deprivation can have negative health effects when it becomes a chronic problem.”

Fighting for Quiet

Worldwide, airports have become a flash point for community frustration over noise pollution. In September 2002, officials at the Frankfurt am Main Airport in Germany received 56,330 noise-related complaints, a 30% increase over the same month in 2001. The same year, residents living near a rural airport outside London, England, were



On the go. Transportation sound is perhaps the largest contributor to urban noise pollution.





On the way up. Problems from airplane and airport noise are increasing as more and more flights take off over residential areas.

submitting 100 petitions daily, objecting to proposals for three new runways at the site.

In March 2003, representatives from eight neighborhoods in Portland, Oregon, showed up for a city council hearing convened to discuss dozens of expansion projects for Portland International Airport. The airport was already a busy one: in 2002 it handled 12.2 million passengers and about 29,000 containers of air cargo. "The impacts are tremendous on the neighborhoods under the flight paths," testified one neighborhood representative, Jean Ridings. "People move in and move [right back] out. It's becoming a disaster." In response, the airport has initiated a multiyear, multimillion-dollar effort to study the sound impact of the airport, which locals hope will lead to a plan to reduce airport noise.

Noise Free America is seeking to file a class-action lawsuit against the makers of boom car equipment. Ted Rueter, Noise Free America's director and an assistant professor of political science at DePauw University in Greencastle, Indiana, says one group member has written a legal brief on the topic and has approached several

public-interest law firms seeking representation, with no takers so far. Rueter says Noise Free America will continue to pursue the suit.

A lot of money is being made from disturbing the peace, charges Mark Huber, communications director for Noise Free America. "By using paid lobbyists in Washington, D.C., and in state legislatures, the automobile and entertainment industries are quietly removing obstacles protecting the public against noise," Huber says.

"Try to get a noise control law passed through a state legislature and see what happens. We tried to get a boom car law enacted in the Virginia General Legislature, but right here in Richmond there are at least fifty car clubs, all of which are politically active. So our legislation disappeared."

Stephen McDonald, vice president of government affairs for the Washington, D.C.-based Specialty Equipment Market Association (SEMA), denies that any powerful lobby exists and is working against the best interests of society. SEMA represents manufacturers, distributors, retailers, and installers of specialty automotive equipment,

including boom car equipment. "Our prime focus is representing the interests of businesses that sell exhaust systems," McDonald says. "But that doesn't mean we want the products to increase noise to a level where it becomes objectionable. We do need to strike a balance, though, between what is acceptable for a neighborhood and what's fair to people who want to customize their cars."

Anti-noise activists say that Europe and several countries in Asia are more advanced than the United States in terms of combating noise. "Population pressure has prompted Europe to move more quickly on the noise issue than the United States has," Hume says. In the European Union, countries with cities of at least 250,000 people are creating noise maps of those cities to help leaders determine noise pollution policies. Paris has already prepared its first noise maps. The map data, which must be finished by 2007, will be fed into computer models that will help test the sound impact of street designs or new buildings before construction begins.

In the United States, the Noise Control Act of 1972 empowered the EPA to determine noise limits to protect the public health and welfare, and to establish a noise control office. Congress did establish the Office of Noise Abatement and Control (ONAC), as well as federal standards for business, industries, and communities, and it did begin researching the effects of sound exposures. In 1982, however, the Reagan administration defunded the office. "We are no longer doing research on noise," says Kenneth Feith, an EPA senior scientist and policy advisor. "We just don't have the money or staff to do it."

Activists believe that closing the ONAC has had a tremendous negative effect at the state and local level. "The U.S. has long since given up its lead in regulating noise, and because of that there has been no consistency in implementing local noise regulations," Huber says. The Noise Control Act, though still on the books, is essentially toothless.

In the mid-1990s, people in the borough of Queens, New York, who lived under the flight paths of La Guardia Airport, took their concerns about noise to Representative Nina Lowey (D-NY). "I could see that noise is a serious public health issue, and so I decided to do something about it," Lowey says. In 1997 the congresswoman introduced legislation that's become known as the Quiet Communities Act (HR 536), which provided for the refunding of the ONAC and for \$21 million to be spent annually on noise reduction. Among other measures, the money would be used to carry out a national noise assessment program to

identify trends in noise exposure and response, develop and disseminate information and public education materials on the health effects of noise, and establish regional technical assistance centers, which would use the resources of universities and private organizations to assist state and local noise control programs.

"More and more communities are being affected by airports, trains, and railways," Lowey says. "We need a national office to coordinate policy. That's commonsense to me. The federal government has to play a larger role on the noise issue. Otherwise, we will continue to lag behind other parts of the world in combating noise." While Lowey remains optimistic that the legislation will eventually pass, other sources doubt that it will happen, noting that the proposed legislation has been introduced and rejected several times.

Activists in other countries say they too want the United States to play a more

leading role on the noise issue. "Re-establishing the ONAC would be a huge move in the right direction," says Hans Schmid, the Vancouver, Canada-based president of the Right to Quiet Society. "That will show that the United States is serious about the noise issue. If the United States leads, other countries, especially Canada, will follow."

But as in other areas of environmental health, merely having a more powerful government agency in place that can set more regulations is not the ultimate answer, according to other experts. Regulations provide an important foundation, Stephenson says, but better education of workers, consumers, businesses, and citizens is critical. "We've found that in some factories as many as one-third of the workers who have significant hearing loss don't wear hearing protectors, even though the factory has a comprehensive hearing conservation program in place," he says.

Bronzaft stresses that governments worldwide need to increase funding for noise research and do a better job coordinating their noise pollution efforts so they can establish health and environmental policies based on solid scientific research. "Governments have a responsibility to protect their citizens by curbing noise pollution," she says.

Feith agrees. "The EPA had a successful educational program in the nineteen seventies in which we went to schools and educated students about noise," he says. "When students took the message home, they helped increase the sensitivity to the noise issue. We need more programs like that to educate the public about noise."

In the meantime, some facilities are doing what they can to help themselves to a quieter environment. Although peace and quiet are essential prerequisites for a healing environment, a Mayo Clinic study published in the February 2004 issue of the *American Journal of Nursing* showed that peak noise levels during the clinic's morning shift change rivaled the excruciating sound of a jackhammer. The study further showed that a few simple changes—for example, holding staff reports at shift change in an enclosed room (rather than at the nurses' station) and replacing roll-type paper towel dispensers with quieter models—reduced peak noise levels at shift change by 80%.

Similarly, the din of overhead pagers, which can reach 80 dBA, inspired the developers of the Woodwinds Health Campus in Woodbury, Minnesota, to build the facility with a staff location sensor and badge system, among other sound-friendly features. Staff can be located in just about any area of the Woodwinds campus without being paged. "We have developed an innovative approach to reducing noise in our hospital while fostering a healing environment," says Cindy Bultena, executive lead of healing and clinical coordination for Woodwinds. "Our change sounds simple enough, but it's a very radical one for hospitals."

By delivering their patients and staff from decibel hell, facilities like Woodwinds and the Mayo Clinic have scored one small victory in the ongoing battle against noise pollution. Their initiative, moreover, shows that given the pervasiveness and harmful effects of noise, governments, communities, and organizations worldwide will need to be creative and aggressive in addressing what will certainly continue to be one of the 21st century's most important environmental health issues.

Ron Chepesiuk



On the mend? Hospitals can be some of the noisiest public locations, but some health care facilities are actively fighting noise in the interest of better patient care.

Photodisc

EXHIBIT 19

TRAINING FOR HEALTH CARE PROVIDERS

[Date ...Place ...Event...Sponsor...Organizer]

CHILDREN AND NOISE

Children's Health and the Environment

WHO Training Package for the Health Sector

World Health Organization

www.who.int/ceh

1

<<NOTE TO USER: Please add details of the date, time, place and sponsorship of the meeting for which you are using this presentation in the space indicated.>>

This presentation on Children and Noise is part of a comprehensive set of training materials for health care providers on children, the environment and health.

<<NOTE TO USER: This is a large set of slides from which the presenter should select the most relevant ones to use in a specific presentation. These slides cover many facets of the problem. Present only those slides that apply most directly to the local situation in the region. It is also very useful if you present regional/local examples of noise prevention programs, if available, and choose local relevant pictures.>>

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- 1. Introduction**
- 2. Vulnerability of children**
- 3. Adverse health effects**
- 4. Effects by age-group**
- 5. Taking action**
- 6. Discussion**

LEARNING OBJECTIVES

To **understand, recognize** and **know**

1. Definition and characteristics of sound and noise
2. Sources and settings of noise exposure
3. Adverse effects of noise exposure
 - On physical health
 - On psychological health
 - On cognition
4. **Weight of the evidence of the harm to children**
 - **Special vulnerability of children**
 - **Various noise exposure scenarios in settings where children develop**
5. Interventions and preventive strategies

These are the learning objectives for this module. After the presentation, the audience should understand, recognize and know

<<READ SLIDE>>

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Children and noise

DEFINITION: SOUND AND NOISE

Sound is characterized by:

- ❖ **Vibration**
 - Frequency (Hz)
 - Intensity (Pa or dB)
 - Decibel scale logarithmic
 - Begins at threshold of hearing
- ❖ **Periodicity**
- ❖ **Duration**



“Noise is an unwanted or objectionable sound”

5

What is sound? Sound is a mechanic vibration propagated by elastic media (as air and water) which alters the pressure displacing the particles, and can be recognized by a person or an instrument.

Vibration and noise can never be separated but vibration can exist without audible noise.

Sound is characterized by its intrinsic characteristics:

- **Vibration:** Sound is a mechanic vibration, expressed as a combination of pressure (Pascals, Pa) and frequency (Hertz, Hz)
 - **Frequency** or pitch is the number of cycles per second (Hertz, Hz or kilo Hertz, KHz).
 - **Intensity** or loudness is the “level of sonorous pressure” and is measured in Pascals (Pa) or decibels (dB). The audible spectrum of the human ear is between 0.00002 Pa (corresponds to 0 dB) and 20 Pa (corresponds to 120 dB). The intensity of human speech is approximately 50 dB. Decibels are used for convenience to express sound on a compressed, logarithmic scale in the human audible spectrum.
- **Periodicity:** describes the pattern of repetition of a sound within a period of time: short sounds that are repeated.
- **Duration:** is the acoustic sense developed by the continuity of a sound in a period of time, for example music, voice or machinery.

What is noise? Noise is an unwanted or objectionable sound. Generally, the acoustic signals that produce a pleasant sense (music, bells) are recognized as “sound” and the unpleasant sounds as “noise” (for example: produced by a machine or airplane). It can be a pollutant and environmental stressor, and the meaning of sound is important in determining reaction of different individuals to the same sound. One person's music is another's noise.

The human ear is an instrument that detects vibration within a set range of frequencies. Air, liquid or solid propagates vibration; without them, sound does not exist. Sound does not exist in the vacuum. The higher the level of pressure of the sonorous wave, the shorter the period of time needed to be perceived by the ear.

Why are not all vibrations audible?

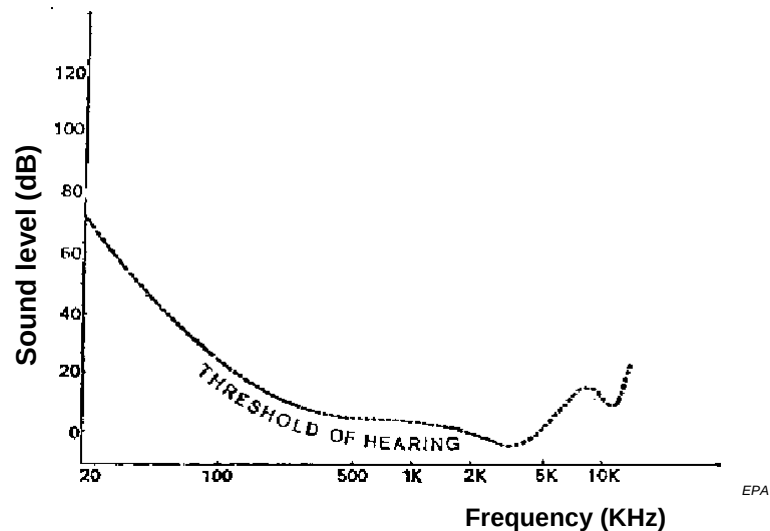
The ear is a frequency analyzer. The eardrum separates tone and conduction in two different ways: by the nervous system and by the bones. The nervous system connects the cochlea to the temporal region of both hemispheres of the brain. The cochlea perceives vibration transmitted directly from the bones of the head.

Picture:

•NASA

Children and noise

THRESHOLDS OF HUMAN HEARING



6

Why is noise sometimes inaudible?

Threshold of hearing is defined as the minimum efficient sonorous pressure (Pa or dB) that can be heard without background noise of a pure tone at a specific frequency (Hz or KHz, cycles per second).

The human audible frequency range is from 20 to 20,000 Hertz (Hz). Frequencies out of this range are not detected by the human ear. The ear is not equally sensitive to all the frequencies.* The most audible frequencies are between 2000 and 3000 Hz (range within which the least pressure is needed to provoke the conscious recognition of a sound). This range can be easily identified where the curve is at its minimum and corresponds to human speaking frequencies.

For this reason, sound meters are usually fitted with a filter whose response to frequency is a bit like that of the human ear. The most widely used sound level filter is the A scale, which roughly corresponds to the inverse of the 40 dB (at 1 kHz) equal-loudness curve. Using this filter, the sound level meter is thus less sensitive to very high and very low frequencies. Measurements made on this scale are expressed as **dBA**.

The "normal threshold" of hearing is defined in "young people with a healthy auditory system".

The "pain threshold" is the high level (high dB) audible sound where the level of pressure of the sound produces discomfort or pain. The pressures of the sounds are over the curve: "ultrasounds". Very powerful levels of sound can be perceived by the human ear but cause discomfort and pain.

*Pressures below the audible level are called "infra-sounds": the pressure is detected but our hearing mechanism is not adapted to making the sound evident to the human ear (under the curve in the graphic). These frequencies (less than 20 Hz, not audible for the human ear) can be produced by machines or "ultrasonic" motors of planes. Out of the limits of the human threshold of hearing exists sound that can be perceived by special equipment or animals such as dolphins and bats that are equipped to perceive sound that humans can not perceive. The human being hears a very short portion of the existing sounds, the very weak and the ones above and below of the thresholds are not perceived or they are accompanied by pain, **and can produce damage to a system that is not prepared to perceive them as the person may not be able to protect her/himself from this deleterious exposure**. There is individual variation within these general parameters.

Reference:

•Noise effects handbook, National Association of Noise Control Officials. Office of the Scientific Assistant, Office of Noise Abatement and Control, U.S. Environmental Protection Agency, 1979, revised 1981 (www.nonoise.org/library/handbook/handbook.htm).

Picture:

•EPA (U.S. Environmental Protection Agency)

Children and noise

MAGNITUDE AND EFFECTS OF SOUND

COMMON EXAMPLE	dBA	EFFECT
Breathing	0-10	Hearing threshold
Conversation at home	50	Quiet
Freeway traffic (15 m), vacuum cleaner, noisy party	70	Annoying , intrusive, interferes with phone use
Average factory, train (at 15 m)	80	Possible hearing damage
Jet take-off (at 305 m), motorcycle	100	Damage if over 1 minute
Thunderclap, textile loom, chain saw, siren, rock concert	120	Human pain threshold
Toy cap pistol, Jet takeoff (at 25 m), firecracker	150	Eardrum rupture

7

This abbreviated table correlates common sounds with effects on hearing.

Additional examples for discussion are listed below:

-Quiet suburb or quiet conversation	50 dB A	No significant effect
-Conversation in a busy place, background music or traffic	60 dB A	Intrusive
-Freeway traffic at 15 metres	70 dB A	Annoying
-Average factory, train at 15 metres	80 dB A	Possible hearing damage
-Busy urban street, diesel truck	90 dB A	Chronic hearing damage if exposure over 8 hours
-Subway noise	90 dB A	Chronic hearing damage, speech interfering
-Jet take-off 300 metres	100 dB A	More severe than above
-Stereo held close ear	110 dB A	More severe than above
-Live rock music, jet take off 160 mts	120 dB A	As above, human pain threshold
-Earphones at loud level	130 dB A	More severe than above
-Toy cap pistol, firecracker close ear	150 dB A	Acute damage (eardrum rupture)

dBA weighting curve: response of a filter that is applied to sound level meters to mimic (roughly) the response of human hearing. So a typical human equal loudness curve is somewhat similar to the dBA curve, but inverted.

Reference:

•Children's health and the environment: A review of evidence. Tamburlini G et al., eds. EEA-WHO, 2002 (www.eea.europa.eu/publications/environmental_issue_report_2002_29)

SOURCES OF NOISE

Outdoor sources

- ❖ Transport
 - Aircraft
 - Road
 - Rail
- ❖ Occupational
 - Machinery
- ❖ Neighbours
 - Machinery
 - Loud music

Indoor sources

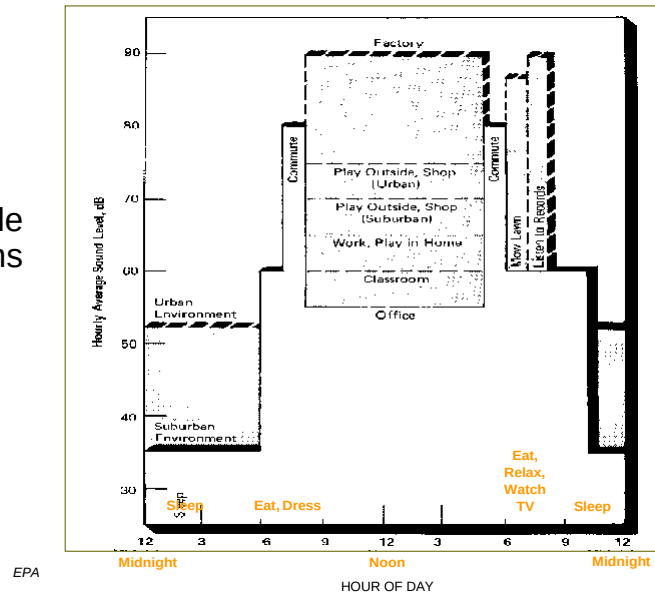
- ❖ Ambient noise outside
- ❖ Building design and location
- ❖ Room acoustics
- ❖ Activities of occupants
 - Children

Common sources of outdoor noise arise from transportation (aircraft, car and truck traffic, and trains), occupations (construction machinery, assembly lines), and even from neighbours (yard equipment, loud music). Indoor noise is affected by outdoor noise, and indoor sources such as TV, radio, music and children at play. The level is modified by building design and location as well as room acoustics.

Children and noise

SETTINGS OF NOISE EXPOSURE: “NOISE-SCAPE”

Hypothesized lifestyle
noise exposure patterns



The concept of a “noise-scape” can be useful in thinking about noise exposures. That is, obvious loud noises are imposed upon a background of noises that will vary according to general location (urban vs. rural), time of day (day vs. night) and activity (school vs. play). This image is a schematic representation which illustrates these different aspects of the “noise-scape”.

Reference:

- Noise effects handbook, National Association of Noise Control Officials. Office of the Scientific Assistant, Office of Noise Abatement and Control, U.S. Environmental Protection Agency, 1979, revised 1981 (www.nonoise.org/library/handbook/handbook.htm).

Picture:

- EPA (U.S. Environmental Protection Agency)

Children and noise

NOISE EXPOSURE IN EU

- ❖ 40% of population exposed to $L_{eq} > 55$ dBA during the day
- ❖ 20% of population exposed to $L_{eq} > 65$ dBA during the day
- ❖ 30% of population exposed to $L_{max} > 55$ dBA during the night
- ❖ Hazard is increasing

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L_{eq} : average sound level over the period of the measurement, usually measured A-weighted

L_{max} : maximum A-weighted noise level

dBA weighting curve: response of a filter that is applied to sound level meters to mimic (roughly) the response of human hearing. So a typical human equal loudness curve is somewhat similar to the dBA curve, but inverted.

Reference:

•Berglund B et al., eds. Guidelines for Community Noise. Geneva, WHO, 1999.

NOISE CONTAMINATION

- ❖ Noise exceeding safety threshold is widespread:
 - In neighbourhoods
 - Schools, hospitals and care centres
 - Urban and suburban areas
 - Activities inside the buildings (elevators, water tubs, music in discotheque)
 - From children themselves (toys, equipment, children playing or practicing sports in a close yard)
 - Traffic: heavy road, railways, highways, subways, airports
 - Industrial activities
 - Building and road construction, renovation
- ❖ Increased environmental noise levels - more noise sources
- ❖ Also linked to population growth

Noise contamination or noise pollution is a concept which implies harmful levels of excess noise. Noise intense enough to cause harm is widely spread.

<<READ SLIDE>>

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VULNERABLE GROUPS OF CHILDREN

- ❖ The fetus and babies
- ❖ Preterm, low birth weight and small for gestational age babies
- ❖ Children with dyslexia and hyperactivity
- ❖ Children on ototoxic medication

It is logical to consider certain subgroups of children (since conception) to be particularly at risk for harm from excess noise exposure. These include the fetus, babies and very young infants born preterm, with low birth weight or small for gestational age. Also, children who have learning disabilities or attention difficulties may be more likely to develop early problems with mild hearing loss compared to children without these challenges, and children on ototoxic medications may have higher likelihood of developing problems from exposure to excess noise.

Reference:

•Carvalho WB, et al. Noise level in a pediatric intensive care unit. J Pediatr , 2005, 81:495-8.

OBJECTIVES: The purpose of this study was to verify the noise level at a PICU. **METHODS:** This prospective observational study was performed in a 10 bed PICU at a teaching hospital located in a densely populated district within the city of São Paulo, Brazil. Sound pressure levels (dBA) were measured 24 hours during a 6-day period. Noise recording equipment was placed in the PICU access corridor, nursing station, two open wards with three and five beds, and in isolation rooms. The resulting curves were analyzed. **RESULTS:** A basal noise level variation between 60 and 70 dBA was identified, with a maximum level of 120 dBA. The most significant noise levels were recorded during the day and were produced by the staff. **CONCLUSION:** The basal noise level identified exceeds International Noise Council recommendations. Education regarding the effects of noise on human hearing and its relation to stress is the essential basis for the development of a noise reduction program.

VULNERABILITY OF CHILDREN

- ❖ Different perception of dangers of noise
 - Can not recognize the dangerous exposures
- ❖ Lack of ability to control the environment
 - Are not able to identify and avoid the source of noxious noise
 - Exposure *intra utero*
- ❖ Noise can interfere with communication of danger
- ❖ May be more exposed due to their behaviour
 - Exploratory or risk behaviour (in children and teenagers)

Special vulnerability of children to noise. The known increased risk is due to
<<READ SLIDE>>

Noise effects in children

"Children may be more prone to the adverse effects of noise because they may be more frequently exposed.....and they are more susceptible to the impact of noise". (Tamburlini, 2002)

Reference:

•Children's health and the environment: A review of evidence. Tamburlini G et al., eds. EEA-WHO, 2002 (www.eea.europa.eu/publications/environmental_issue_report_2002_29)

VULNERABILITY OF CHILDREN

Why might children be more susceptible to noise effects?

- ❖ Possible increased risk due to immaturity
Increased cochlear susceptibility?
 - *In utero*
 - Animal data studies
- ❖ Critical periods in relation to learning
- ❖ Lack of developed coping repertoires
- ❖ Vulnerable tasks \ Vulnerable settings (schools, home, streets)

What might be the implications of noise effects?

- ❖ Lifelong impairment of learning and education
- ❖ Short-term deficit followed by adaptation
- ❖ Non intentional lesions

<<READ SLIDE>>

Exposure to excessive noise and vibration during pregnancy may result in high frequency hearing loss in the newborn, may be associated with prematurity and growth retardation, although the scientific evidence remains inconclusive.

The role of the amniotic fluid is not yet defined, nor when and which noises or vibrations can damage the fetal development of the auditory system (e.g. cochlea). Concern about synergism between exposure to noise and ototoxic drugs remains incompletely defined. There are studies on fetal audition dating from 1932 that explore the reaction of the fetus to external noises but even today this remains incompletely characterized.

References:

- Children's health and the environment: A review of evidence, Ed. Tamburlini G. et al, EEA-WHO, 2002 (www.eea.europa.eu/publications/environmental_issue_report_2002_29).
- National Institute of Public Health Denmark. Health Effects of Noise on Children and Perception of the Risk of Noise. Bistrup ML, ed. Copenhagen, Denmark: National Institute of Public Health Denmark, 2001, 29.

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ADVERSE EFFECTS FROM EXCESS NOISE EXPOSURE

- ❖ Direct ear damage
 - Noise induced hearing loss
 - Noise induced threshold shift
- ❖ Indirect adverse effects
 - Physiological effects
 - Psychological effects
- ❖ Impaired cognition

Characteristics of the sound can modify effect

Adverse effects can be divided into direct damage, indirect adverse effects and impaired cognition. Many effects of noise exposure are more thoroughly studied in adults than in children.

The degree of adverse effect is modified by the sound characteristics.

•**Vibration:** can be acute or chronic, audible or inaudible. Vibration can be transmitted to all the body directly through the skin or bones.

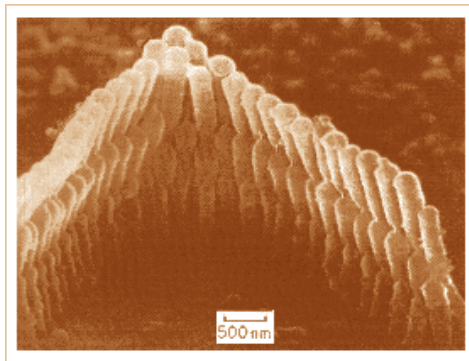
•**Frequencies:** lower and higher (ultra and infra sounds) can also damage the human hearing system, despite being imperceptible, and have important consequences for life (loss of hearing). These consequences can also be present after chronic exposure to low frequency non audible sounds (chronic back noise exposure). Incubators are an example of this exposure.

•**Intensity:** Direct blows to the ears, very loud noise (pneumatic hammer or drill, fire arms, rocket), and sudden but intense sounds can destroy the eardrum and damage the hair cells of the cochlea by bypassing the protective reflexes. Acute trauma can cause a lifelong lesion.

•**Periodicity and Duration:** Impulse noise is more harmful than continuous because it bypass the natural protective reaction, the damping-out of the ossicles mediated by the facial nerve. Loud noise may result in temporary decrease in the sensitivity of hearing and tinnitus, but repeated exposure may cause these temporary conditions to become permanent.

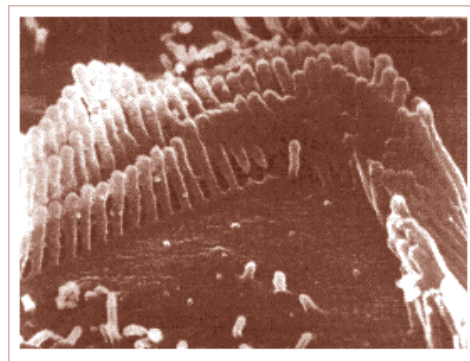
ORGAN DAMAGE NOISE INDUCED HEARING LOSS

Normal hair cell



VIMM

Noise damaged hair cell



VIMM

18

Normal healthy "hair cells" transform vibration into nerve impulses sending messages to the brain. Trauma to the hair cells of the cochlea results in hearing loss. Prolonged exposure to sounds louder than 85 dBA is potentially injurious (85 dBA is tolerable for an occupational exposure). Continuous exposure to hazardous levels of noise tend to affect high frequencies regions of the cochlea first. Noise induces hearing loss gradually, imperceptibly, and often painlessly. Often, the problem is not recognized early enough to provide protection. Further, it may not be recognized as a problem, but merely considered a normal consequence of ordinary exposure, and part of the environment and daily life.

References:

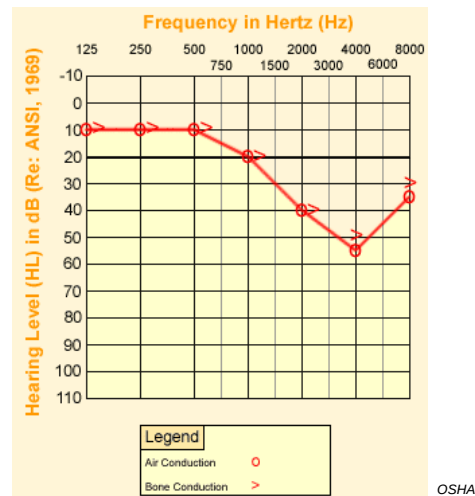
- Moeller, Environmental health, Harvard University Press, 1992
- VIMM (Veterinarian Institute of Molecular Medicine, Italy):
www.vimm.it/cochlea/cochleapages/theory/hcells/hcells.htm

Pictures:

- VIMM (Veterinarian Institute of Molecular Medicine, Italy):
www.vimm.it/cochlea/cochleapages/theory/hcells/hcells.htm - used with copyright permission.

AUDIOGRAM

Noise-induced
hearing loss



<< NOTE TO USER: If possible place an audiogram of a child living in your local environment here to illustrate either normal hearing, or hearing damaged by environmental noise. >>

Noise-induced hearing loss is insidious, but increases with time, usually beginning in adolescent years. As shown here, it affects the high frequencies first. The speech window is between 500 and 4000 Hz, so it is not surprising that high frequency loss of large magnitude could go undetected for long periods of time without formal testing.

Picture:

•OSHA (U.S. Department of Labor Occupational Safety & Health Administration)
www.osha.gov/dts/osta/otm/noise/images/sensorineural_loss_audiogram.gif

CHILDREN AND NOISE: SETTINGS

Noise at home	50 - 80 dB A
Home appliances	78 - 102 dB A
Noise in incubators	60 - 75 dB A, peak sounds 120 dB A
Noise in hospitals	> 70 dB A
Day-care institutions	75 – 81 dB A
Noise from toys peak sounds	79 - 140 dB A
Background noise in schools	46.5 – 77.3 dB A

These ranges represent excessive everyday exposures of children to sound.

References:

- Committee on Environmental Health. Noise: A Hazard for the Fetus and Newborn. Pediatrics, 1997, 100:724-27.
- Etzel RA, ed. Pediatric Environmental Health. 2nd ed. American Academy of Pediatrics Committee on Environmental Health.; Elk Grove Village, IL: American Academy of Pediatrics, 2003.

NOISE INDUCED THRESHOLD SHIFT (NITS)

- ❖ Initially - a temporary condition
 - Decrease in sensitivity to noise
 - Tinnitus
- ❖ Caused by exposure to loud noises
- ❖ May be reversible or irreversible
 - Severity and duration of exposure
 - Continuous and recurrent exposure

Exposure to loud noise may result in a temporary decrease in the sensitivity of hearing and tinnitus. This condition, called temporary noise-induced threshold shift (NITS), lasts for several hours depending on the degree of exposure, and may become permanent depending on the severity and duration of noise exposure. Noise induced threshold shifts may be reversible; however, continued excessive noise exposure could lead to progression of NITS to include other frequencies and lead to increase severity and permanent hearing loss. The consequences of these measured NITS may be enormous if they progress to a persistent minimal sensorineural hearing loss. In school-aged children, minimal sensorineural hearing loss has been associated with poor school performance and social and emotional dysfunction.

PREVALENCE NOISE INDUCED THRESHOLD SHIFTS

National survey US children (n=5249)

Characteristics	%	(95% CI)
Age: 6-11 years old	8.5	(6.9-10.0)
12-19 years old	15.5	(13.3-17.6)
Sex:		
Male	14.8	(12.3-17.3)
Female	10.1	(8.3-11.8)
Urban status:		
Metropolitan	11.9	(9.8-14.0)
Non-metropolitan	13.0	(11.3-14.6)

Niskar AS, Pediatrics, 2001, 108(1):40-3

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This is evidence that children are experiencing changes in hearing which are consistent with excess noise exposure. These data show the prevalence of Noise Induced Threshold Shift (NITS) in children which increases with age. The prevalence of NITS in one or both ears among children 6-19 year of age in the USA was recently found to be 12.5% (or 5.2 million) children affected. Most children with NITS have an early phase of NITS in only one ear and involving only a single frequency, however among children with NITS, 4.9% had moderate to profound NITS. This table demonstrates several points. First, older children have a higher prevalence of NITS compared to younger children suggesting that ongoing exposure to excess noise in the environment may be causing cumulative hearing damage. Boys in this survey were more likely to have evidence of excess noise exposure measured as NITS compared to girls, but there was little difference between urban and non-urban status.

Reference:

•Niskar AS. Estimated prevalence of noise-induced hearing threshold shifts among children 6 to 19 years of age: the Third National Health and Nutrition Examination Survey, 1988-1994, United States. Pediatrics, 2001, 108(1):40-3

This analysis estimates the first nationally representative prevalence of noise-induced hearing threshold shifts (NITS) among US children. Historically, NITS has not been considered a common cause of childhood hearing problems. Among children, NITS can be a progressive problem with continued exposure to excessive noise, which can lead to high-frequency sound discrimination difficulties (eg, speech consonants and whistles). The Third National Health and Nutrition Examination Survey (NHANES III) was conducted from 1988 to 1994. NHANES III is a national population-based cross-sectional survey with a household interview, audiometric testing at 0.5 to 8 kHz, and compliance testing. A total of 5249 children aged 6 to 19 years completed audiometry and compliance testing for both ears in NHANES III. The criteria used to assess NITS included audiometry indicating a noise notch in at least 1 ear. RESULTS: Of US children 6 to 19 years old, 12.5% (approximately 5.2 million) are estimated to have NITS in 1 or both ears. In the majority of the children meeting NITS criteria, only 1 ear and only 1 frequency are affected. In this analysis, all children identified with NITS passed compliance testing, which essentially rules out middle ear disorders such as conductive hearing loss. The prevalence estimate of NITS differed by sociodemographics, including age and sex.

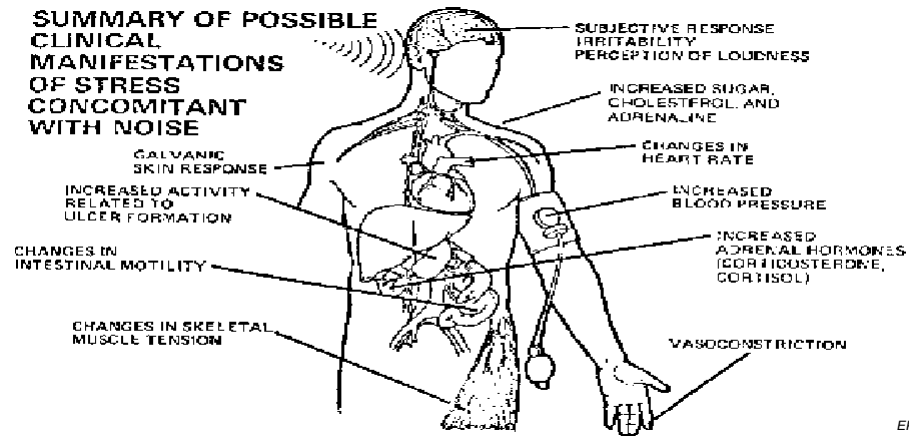
CONCLUSIONS: These findings suggest that children are being exposed to excessive amounts of hazardous levels of noise, and children's hearing is vulnerable to these exposures. These data support the need for research on appropriate hearing conservation methods and for NITS screening programs among school-aged children. Public health interventions such as education, training, audiometric testing, exposure assessment, hearing protection, and noise control when feasible are all components of occupational hearing conservation that could be adapted to children's needs with children-specific research.

INDIRECT ADVERSE EFFECTS

- ❖ Stress-related somatic effects
 - Stress hormone
 - Blood pressure
 - Muscle spasm
- ❖ Psychological effects
 - Annoyance / Isolation
 - Sleep disturbance
 - Mental health
- ❖ Cognitive effects
 - Reading, concentration, memory, attention

The next section will review the indirect adverse effects of noise listed here.

PHYSIOLOGICAL EFFECTS OF NOISE



There might be harmful consequences to health during the state of alertness as well as when the body is unaware or asleep.

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There are a variety of physiological effects that have been documented or postulated as a result of excess noise exposure.

<<READ SLIDE>>

References:

Stress response:

- Frankenhaeuser M. Immediate and delayed effects of noise on performance and arousal. Biol Psychol, 1974, 2:127-33

Increased excretion of adrenaline and noradrenaline demonstrated in humans exposed to noise at 90 dBA for 30 minutes.

- Henkin RI. Effect of sound on the hypothalamic-pituitary-adrenal axis. Am J. Physiol, 1963, 204:710-14
Hypothalamic- pituitary- adrenal axis is sensitive to noise as low as 65 dBA (53% increase in plasma 17 HO corticosteroid levels).

- Rosenberg J. Jets over Labrador and Quebec: noise effects on human health. Can. Med. Assoc. J., 1991, 144(7):869-75.

Biochemical evidence of the stress response was found in elevated urinary cortisol and hypertension accompanied a 30 minute exposure to 100dBA in 60 children aged 11 to 16 years.

Sleep derivation:

Noise levels at 40-50 dBA result in 10-20% increase in awakening or EEG changes

- Falk SA. Hospital noise levels and potential health hazards. Engl. J Med., 1973, 289(15):774-81
- Hilton BA. Quantity and quality of patient's sleep and sleep-disturbing factors in respiratory intensive care unit, J Adv Nurs, 1976, 1(6):453-68
- Thiessen GJ. Disturbance of sleep by noise. J. Acoustic Soc. Am., 1978, 64(1):216-22

Cardiovascular effects:

- Etzel RA, ed. Pediatric Environmental Health. 2nd ed. American Academy of Pediatrics Committee on Environmental Health. Elk Grove Village, IL: American Academy of Pediatrics; 2003.

Exposure to noise levels greater than 70 dBA causes increases in vasoconstriction, heart rate and blood pressure

Picture:

- EPA (U.S. Environmental Protection Agency)

STRESS HORMONES - CHILDREN

Noise type (Leq)	Noise exposure	N°	Adrenaline	Noradrenaline	Cortisol	Author
Aircraft	53, 62	217	+	+	+	Evans, 1998
Aircraft	56, 70	40	0	0	0	Ising, 1999
Road, Rail	<50, >60	115	0	0	+	Evans, 2001
Road	30-54, 55-78	56			+	Ising, 2001
Aircraft	<57, >66	238			0	Stansfeld, 2001
Aircraft	53, 62	204	0	0	0	Haines, 2001

+ increase with noise, - decrease with noise, 0 no effect

Adapted from Babisch W, Noise Health, 2003, 5(18):1-11

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In experimental studies with humans carried out in the laboratory, unequivocal findings of noise exposure on the endocrine system have been sometimes observed. However, exposure conditions vary considerably between experiments. Furthermore, secretory patterns of hormone excretion vary between individuals. It is not clear as to what extent findings from experimental studies on endocrine responses of noise reflect a potential health hazard. To more completely characterize these indirect adverse effects of excess noise, there is a need to 1) develop a consensus on measurement techniques, 2) replicate results of adult studies in children, and 3) link hormone levels to health impairment. When it is done, stress hormone responses may identify risk groups.

Leq: average sound level over the period of the measurement, usually measured A-weighted

N°: number of subjects

Reference:

•Babisch W. Stress hormones in the research on cardiovascular effects of noise. Noise Health, 2003, 5(18):1-11

In recent years, the measurement of stress hormones including adrenaline, noradrenaline and cortisol has been widely used to study the possible increase in cardiovascular risk of noise exposed subjects. Since endocrine changes manifesting in physiological disorders come first in the chain of cause-effect for perceived noise stress, noise effects in stress hormones may therefore be detected in populations after relatively short periods of noise exposure. This makes stress hormones a useful stress indicator, but regarding a risk assessment, the interpretation of endocrine noise effects is often a qualitative one rather than a quantitative one. Stress hormones can be used in noise studies to study mechanisms of physiological reactions to noise and to identify vulnerable groups. A review is given about findings in stress hormones from laboratory, occupational and environmental studies.

BLOOD PRESSURE - AIRCRAFT NOISE

Study	Psys (mm Hg)	Pdia (mm Hg)	Sound level (Leq)
Karagodina, 1969	abnormalities	abnormalities	distance from airport
Cohen, 1980	3-7	3-4	<70 dBA (indoors)
Cohen, 1981	no effect	no effect	70 dBA (indoors)
Evans, 1995	2	0	68 dBA (outdoors)
Evans, 1998	3	3	64 dBA (outdoors)
Morrell, 1998	negative	negative	ANE I 45 (outdoors)
Morrell, 2000	no effect	negative	ANE I 45 (outdoors)

- ❖ Inconsistent picture: 3 positive, 4 negative studies
- ❖ Prospective studies: 1 positive, 1 negative study
- ❖ Magnitude of effect found in positive studies may be relevant

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Studies on elevated blood pressure and noise exposure (from aircraft) are also inconsistent. Only the cross-sectional study of Cohen shows that aircraft noise exposure (specifically at school) is statistically significantly associated with increases in systolic and diastolic blood pressure.

Leq: average sound level over the period of the measurement, usually measured A-weighted

Psys: systolic pressure

Pdia: diastolic pressure

dBA weighting curve: response of a filter that is applied to sound level meters to mimic (roughly) the response of human hearing.

So a typical human equal loudness curve is somewhat similar to the dBA curve, but inverted.

ANEI: Australian Noise Exposure Index.

References:

Aircraft Noise:

- Cohen S. Physiological, motivational and cognitive effects of aircraft noise on children: moving from the laboratory to the field. *Am Psychol.*, 1980, 35:231-43.
- Cohen S. Aircraft noise and children: longitudinal and cross-sectional evidence on adaptation to noise and the effectiveness of noise abatement. *J. Pers Soc Psychol.*, 1981, 40:331-45
- Evans G. Chronic noise and psychological stress. *Psychological Science*, 1995, 6:333-38
- Evans G. Chronic noise exposure and physiological response: a prospective study of children living under environmental stress. *Psychological Science*, 1998, 9:75-77
- Karagodina IL. Effect of aircraft noise on the population near airports. *Hygiene and Sanitation*, 1969, 34:182-187
- Morrell S. Cross-sectional relationship between blood pressure of school children and aircraft noise. In N.L. Carter, & R.F.S Job (Eds.), *Noise Effects*. Proceedings of the 7th International on Noise as a Public Health Problem. Sydney, Australia: Noise Effects Inc, 1998, 275-79.
- Morrell S. Cross sectional and longitudinal results of a follow up examination of child blood pressure and aircraft noise. *The Inner Sydney Child Blood Pressure Study*. Proceedings Internoise, SFA, Nice, France, 2000, 4:2071.
- van Kempen E. et al. Noise exposure and children's blood pressure and heart rate: the RANCH project. *Occup Environ Med.*, 2006, 63:632-39

BACKGROUND: Conclusions that can be drawn from earlier studies on noise and children's blood pressure are limited due to inconsistent results, methodological problems, and the focus on school noise exposure. **OBJECTIVES:** To investigate the effects of aircraft and road traffic noise exposure on children's blood pressure and heart rate. **METHODS:** Participants were 1283 children (age 9-11 years) attending 62 primary schools around two European airports. Data were pooled and analysed using multilevel modelling. Adjustments were made for a range of socioeconomic and lifestyle factors. **RESULTS:** After pooling the data, aircraft noise exposure at school was related to a statistically non-significant increase in blood pressure and heart rate. Aircraft noise exposure at home was related to a statistically significant increase in blood pressure. Aircraft noise exposure during the night at home was positively and significantly associated with blood pressure. The findings differed between the Dutch and British samples. Negative associations were found between road traffic noise exposure and blood pressure, which cannot be explained. **CONCLUSION:** On the basis of this study and previous scientific literature, no unequivocal conclusions can be drawn about the relationship between community noise and children's blood pressure.

Traffic Noise:

- Babisch W. Blood pressure of 8-14 year old children in relation to traffic noise at home--results of the German Environmental Survey for Children (GerES IV). *The Science of the total environment*, 2009, 407(22):5839-43.
- Babisch W, Kamp I. Exposure-response relationship of the association between aircraft noise and the risk of hypertension. *Noise Health*. 2009 Jul-Sep, 11(44):161-8.
- Belojevic G et al. Urban road-traffic noise and blood pressure and heart rate in preschool children. *Environ Int*. 2008, 34(2):226-31. Epub 2007 Sep 14.

HYPERTENSION AND EXPOSURE TO NOISE NEAR AIRPORTS

The HyENA study

Results

- ❖ Significant exposure-response relationship
- ❖ Night time aircraft noise exposure: borderline significant relationship
- ❖ Risk of myocardial infarction in relation to noise exposure: analysis ongoing
- ❖ Effects of noise exposure on stress hormone level (cortisol): statistical analyses and epidemiological ongoing

Conclusion

- ❖ Prevalence of hypertension increased with increasing noise exposure
- ❖ Long-term road traffic noise exposure effects on BP
- ❖ Acute effect on hypertension of night-time aircraft noise
- ❖ Highly annoyed people are found at aircraft noise levels

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An increasing number of people live near airports with considerable noise and air pollution. The Hypertension and Exposure to Noise near Airports (HYENA) project aims to assess the impact of airport-related noise exposure on blood pressure (BP) and cardiovascular disease using a cross-sectional study design.

Although the study has been made in adults (men and women between 45-70 years old), it might be a good cardiovascular disease predictor in children.

Reference:

•Jarup L. Hypertension and Exposure to Noise near Airports (HYENA): Study Design and Noise Exposure Assessment. *Environ Health Perspect.*, 2005, 113(11):1473–1478.

PSYCHOLOGICAL DAMAGE

- ❖ Exposure to **moderate level of noise** can cause
 - Psychological stress
 - Annoyance, interference with activity, isolation
 - Headache, tiredness and irritability; may impair intellectual function and performance of complex tasks
- ❖ Exposure to **intense level of noise** can
 - Cause personality changes and aggressive/violent reactions
 - Reduce ability to cope
 - Alter work performance and intellectual function
 - May cause muscle spasm and also break a bone (when combined with strong vibration)
 - Sleep disturbance
 - Changes in mental health.
- ❖ Exposure to **sudden, unexpected noise** can cause
 - Startle reaction with stress responses
 - Cause non intentional injuries

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Psychological effects correlate with intensity (or loudness) of the noise.

Exposure to **moderate levels of noise** can cause psychological stress.

Other effects can be:

- Annoyance (fear, anger, feeling bothered, feelings of being involuntarily and unavoidably harmed, and feelings of having privacy invaded), interference with activity.
- Headache, tiredness and irritability are also common reactions to noise.
- Possible impairment of intellectual function and performance of complex tasks. Depends on the nature of sound and individual tolerance.

Exposure to **intense level of noise** can:

- Cause personality changes and provoke aggressive and violent reactions.
- Reduce ability to cope.
- Alter work performance and intellectual function.
- Cause muscle spasm and also break a bone (when combined with strong vibration).
- Cause sleep disturbance.
- Provoke changes in mental health.

Exposure to **sudden, unexpected noise** can cause:

- Startle reaction with stress responses.
- Cause non intentional injuries.

Stress response consisting in acute terror and panic was described in children upon exposure to sonic booms.

References:

- Kam PC. Noise pollution in the anaesthetic and intensive care environment. *Anaesthesia*, 1994, 49(11):982-6
- Kujala T, Brattico E. Detrimental noise effects on brain's speech functions. *Biol Psychol*. 2009, 81(3):135-43. Epub 2009 Apr 8.
- Rosenberg J. Jets over Labrador and Quebec: noise effects on human health. *Can. Med. Assoc. J.*, 1991, 144(7):869-75

IMPAIRED COGNITIVE FUNCTION

- ❖ Chronic noise exposure impairs cognitive function
 - Reading comprehension
 - Long term memory
- ❖ Dose-response relationships
 - Supported by both laboratory and field studies
- ❖ Study of possible mechanisms and noise reduction interventions
 - Tuning out of attention / concentration
 - Impairment of auditory discrimination

The most robust area of study on noise and effects in children comes from studies which evaluate the effect of noise on learning and cognitive function; there are possible mechanisms, including noise-related changes in attention or distraction and impaired auditory discrimination.

<<READ SLIDE>>

ENVIRONMENTAL NOISE AND COGNITIVE DEVELOPMENT IN PRESCHOOL CHILDREN

- ❖ Children 6 months - 5 years
- ❖ Inverse associations between noise level at home and cognitive development

Wachs TD. *Early Experience and Human Development*. New York Plenum, 1982
Evans GW. *Children's Environments*, 1993, 10(1):31-51

Effects of noise on cognitive development have been documented in preschool ages as well. Higher levels of noise at home are associated with decrements in cognitive development for age.

References:

- Evans GW. Non-auditory effects of noise on children: A critical review. *Children's Environments*, 1993, 10(1):31-51.
- Maxwell LE et al. The effects of noise on pre-school children's pre-reading skills. *Journal of Environmental Psychology*, 2000, 20(1):91-97.
- Wachs TD. *Early Experience and Human Development*. New York Plenum, 1982.
- Yang W, Bradley JS. Effects of room acoustics on the intelligibility of speech in classrooms for young children. *J Acoust Soc Am*. 2009, 125(2):922-33.

APARTMENT NOISE AND READING ABILITY

- ❖ 54 children living in apartments above interstate highway
 - 32nd floor: 55 dBA,
 - 20th floor: 60 dBA,
 - 8th floor: 66 dBA
- ❖ Measures of auditory discrimination and reading ability
- ❖ Correlations between floor level and auditory discrimination vary by duration of residence
- ❖ **Floor level correlates with reading-abolished by adjustment for auditory discrimination**
- ❖ Reading powerfully associated with mothers' education

Cohen S. *Journal of Experimental and Social Psychology*, 1973, 9:407-22.

This study shows that street traffic noise measured on different floors of a multilevel apartment correlates inversely with auditory discrimination and reading ability. The higher floors were quieter and children scored better on reading ability and auditory discrimination. Correlations varied with duration of residence, and when reading level scores were adjusted for auditory discrimination measures, the floor level effect disappeared. Reading is also powerfully associated with mother's education.

Reference:

•Cohen S. Apartment noise, auditory discrimination, and reading ability in children. *Journal of Experimental and Social Psychology*, 1973, 9:407-22.

RAILWAY NOISE AND READING SCORES

- ❖ Reading scores compared between classes in same school
- ❖ Exposed/not exposed to railway noise
- ❖ No selection of children into classes
- ❖ **Poorer performance on achievement test on noisyside**
- ❖ Measuring reading age 3-4 months behind on noisyside

Bronzaft AL. Environment and Behavior, 1975, 7:517-28

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This study compared reading scores between classrooms in the same school that were exposed and not exposed to railway noise. Poorer performance was noted on the noisy side with a 3-4 month delay compared to the quieter side. There was no selection of the children in each class. This is supportive evidence that noise impaired reading learning.

Reference:

•Bronzaft AL. The effect of elevated train noise on reading ability. Environment and Behavior. 1975, 7:517-28.

IMPAIRED COGNITIVE FUNCTION

❖ Los Angeles airport study

Cohen S. *Am Psychol.*, 1980, 35:231-43.

❖ New York airport city

Evans G. *Environment and Behavior*, 1997, 29(5):638-656.

❖ Munich airport study

Evans G. *Psychological Science*, 1998, 9:75-77; *Psychological Science*, 1995, 6:333-38

❖ Heathrow studies

Haines MM. *Psychological Medicine*, 2001a,b,c; *J Epidemiol Community Health*, 2002, 56(2):139

Over 20 studies have reported that noise **adversely affects** children's academic performance

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Many studies have reported that noise can adversely affect children's academic performance. Transport noise is well-studied. Some of the most important studies are the Los Angeles airport study, the New York airport study, the Munich and Heathrow studies.

References:

- Cohen S. Physiological, motivational and cognitive effects of aircraft noise on children: moving from the laboratory to the field. *Am Psychol.*, 1980, 35:231-43.
 - Cohen S. Aircraft noise and children: longitudinal and cross-sectional evidence on adaptation to noise and the effectiveness of noise abatement. *J. Pers Soc Psychol.*, 1981, 40:331-45
 - Evans G. Chronic noise and psychological stress. *Psychological Science*, 1995, 6:333-38
 - Evans G. Chronic noise exposure and physiological response: a prospective study of children living under environmental stress. *Psychological Science*, 1998, 9:75-77
 - Evans G. Chronic noise exposure and reading deficits: The mediating effects of language acquisition. *Environment and Behavior*, 1997, 29(5):638-656.
 - Haines MM. Chronic aircraft noise exposure, stress responses, mental health and cognitive performance in school children. *Psychological Medicine*, 2001a, 31:265-77.
 - Haines MM. The West London Schools Study: the effects of chronic aircraft noise exposure on child health. *Psychological Medicine*, 2001b, 31:1385-96.
 - Haines MM. A follow-up study of effects of chronic noise exposure on child stress responses and cognition. *International Journal of Epidemiology*, 2001c, 30:839-45.
 - Haines MM. Multilevel modelling of aircraft noise on performance tests in schools around Heathrow Airport London. *J Epidemiol Community Health*, 2002, 56(2):139-44
 - Ristovska G. et al. Psychosocial effects of community noise: cross sectional study of school children in urban center of Skopje, Macedonia. *Croat Med J.* 2004, 45(4):473-6.
- AIM: To assess noise exposure in school children in urban center in different residential areas and to examine psychosocial effects of chronic noise exposure in school children, taking into account their socioeconomic status. METHODS: We measured community noise on specific measurement points in residential-administrative-market area and suburban residential area. We determined the average energy-equivalent sound level for 8 hours (LAeq, 8 h) or 16 hours (LAeq, 16 h) and compared measured noise levels with World Health Organization (WHO) guidelines. Psychological effects were examined in two groups of children: children exposed to noise level LAeq, 8 h >55 dBA (n=266) and children exposed to noise level LAeq, 8 h <55 dBA (n=263). The examinees were schoolchildren of 10-11 years of age. We used a self-reported questionnaire for each child - Anxiety test (General Anxiety Scale) and Attention Deficit Disorder Questionnaire intended for teachers to rate children's behavior. We used Mann Whitney U test and multiple regression for identifying the significance of differences between the two study groups. RESULTS: School children who lived and studied in the residential-administrative-market area were exposed to noise levels above WHO guidelines (55 dBA), and school children who lived and studied in the suburban residential area were exposed to noise levels below WHO guidelines. Children exposed to LAeq, 8 h >55 dBA had significantly decreased attention (Z=-2.16; p=0.031), decreased social adaptability (Z=-2.16; p=0.029), and increased opposing behavior in their relations to other people (Z=-3; p=0.001). We did not find any correlation between socioeconomic characteristics and development of psychosocial effects. CONCLUSION: School children exposed to elevated noise level had significantly decreased attention, and social adaptability, and increased opposing behavior in comparison with school children who were not exposed to elevated noise levels. Chronic noise exposure is associated with psychosocial effects in school children and should be taken as an important factor in assessing the psychological welfare of the children.
- Stansfeld SA. Aircraft and road traffic noise and children's cognition and health: a cross-national study. *Lancet*, 2005, 365: 1942-49.
 - van Kempen EE et al. Children's annoyance reactions to aircraft and road traffic noise. *J Acoust Soc Am.* 2009, 125(2):895-904.

MUNICH AIRPORT SCHOOL PERFORMANCE

- ❖ Closure of old airport, opening of new airport
- ❖ **Deficits in long-term memory and reading around old airport**
- ❖ **Impairments diminish within 2 years after airport closed**
- ❖ **Same impairments develop in new group of children within 2 years of new airport opening**



US Transportation Security Administration

Hygge S, Psychol Sci. (2002)13(5):469

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When an old airport was closed down in Munich, deficits in long term memory and reading in children exposed to the old airport improved within 2 years of the airport's closure and the associated decreased noise exposure. Interestingly, the children exposed to noise from the new airport replacing the old began to have the same deficits in long term memory and reading that were seen in the children exposed to the old airport—also within 2 years.

Reference:

•Hygge S. et al. A prospective study of some effects of aircraft noise on cognitive performance in schoolchildren, Psychol Sci., 2002, 13(5):469.

Before the opening of the new Munich International Airport and the termination of the old airport, children near both sites were recruited into aircraft-noise groups (aircraft noise at present or pending) and control groups with no aircraft noise (closely matched for socioeconomic status). A total of 326 children (mean age = 10.4 years) took part in three data-collection waves, one before and two after the switch-over of the airports. After the switch, long-term memory and reading were impaired in the noise group at the new airport, and improved in the formerly noise-exposed group at the old airport. Short-term memory also improved in the latter group after the old airport was closed. At the new airport, speech perception was impaired in the newly noise-exposed group. Mediation analyses suggest that poorer reading was not mediated by speech perception, and that impaired recall was in part mediated by reading.

Picture:

•US Transportation Security Administration

STRENGTH OF EVIDENCE FOR EFFECTS OF AIRCRAFT NOISE ON CHILDREN

HEALTH OUTCOME	STRENGTH OF EVIDENCE
Annoyance	Sufficient
Hearing loss	Sufficient
Cognitive performance - reading	Sufficient
Cognitive performance - memory	Sufficient
Cognitive performance - auditory discrimination	Sufficient
Cognitive performance - speech perception	Sufficient
Cognitive performance - academic performance	Sufficient
Cognitive performance - attention	Inconclusive
Motivation	Sufficient / limited
Wellbeing/perceived stress	Sufficient / limited
Catecholamine secretion	Limited / inconclusive
Hypertension	Limited (weak associations)
Psychiatric disorder	Inconclusive / no effect
Sleep disturbance	Inadequate / no effect
Birth weight	Inadequate
Immune effects	Inadequate

Here is a brief summary slide examining the weight of the evidence for health outcomes in children from aircraft noise. We are indebted to Dr. Stephen Stansfeld (Queen Mary, University of London) for kindly lending us this and many of the previous slides for this project. This slide highlights the clear associations in children between annoyance, hearing loss and impaired cognitive performance and excess noise. The lower categories are still in need of investigation.

<<READ SLIDE>>

CONTENTS

1. Introduction
2. Vulnerability of children
3. Adverse health effects
4. **Effects by age-group**
5. Taking action
6. Discussion

EFFECTS OF NOISE BY AGE-GROUP

- ❖ Fetus
- ❖ Infant
- ❖ Pre-school, school-aged children
- ❖ Teenager
- ❖ Youth

Children and noise

EFFECTS OF NOISE ON THE FETUS

- ❖ Growth retardation
 - Occupational exposure of the mother to noise
 - Environmental noise unlikely to cause effects, but exposure to chronic low-dose noise requires more study
- ❖ Hearing impairment
 - Possible effects

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There are several paediatric populations which may be at increased risk of harm from noise. The fetus is one in which there is some evidence that occupational exposure to a pregnant woman may result in growth retardation and/or hearing impairment. Little is known about the effects of non-occupational noise on fetal development, and further studies are needed.

Reference:

•American Academy of Paediatrics, Committee on Environmental Health. Noise: a hazard to the fetus and newborn. Pediatrics. 1997, 100:724-727.

EFFECTS OF NOISE ON INFANTS

Pre-term and full-term baby

- ❖ Exposed to "Neonatal Intensive Care Unit" (NICU) noise
 - Pre-term babies have immature hearing organs / systems
- ❖ Adverse noise-induced effects on the pre-term baby
 - **Hearing impairment:** possible effect
 - **Sleep disturbances:** awakening, sleep disruption
 - **Others:** crying

Babies who are born pre-term or require intensive care in hospital are exposed to large amounts of noise from incubators and busy hospital settings. Furthermore, this noise may be continuous, 24 hours/day.

They are exposed to "Neonatal Intensive Care Unit" (NICU) noise (60 - 90 dBA max. 120 dBA) and noise inside the incubators (60 – 75 dBA max. 100 dBA). Pre-term babies must cope with their environment with immature organ systems (auditory, visual and central nervous system). These last stages of maturation occur, in part, during the time the pre-term child is in an incubator or neonatal intensive care unit (NICU).

References:

- Brandon DH. Effect of Environmental Changes on Noise in the NICU. *Advances in Neonatal Care*, 2008, 8(5):S5-S10
- Milette IH, Carnevale FA. I'm trying to heal...noise levels in a pediatric intensive care unit. *Dynamics*, 2003, 14:14-21.

The literature demonstrates clearly that most intensive care units exceed the standard recommendations for noise levels in hospitals, and that high noise levels have negative impacts on patients and staff. The purpose of this study was to evaluate the level of noise in a PICU and compare it to the recommendations of international bodies. We outline recommendations to promote the awareness of this problem and suggest strategies to decrease the level of noise in a PICU. The orientations of these strategies are threefold: 1) architectural-acoustic design, 2) equipment design and, most importantly, 3) staff education.

Children and noise

EFFECTS OF NOISE IN PRE-SCHOOL AND SCHOOL-AGED CHILDREN

- ❖ Hearing impairment
 - In isolated cases by toys or equipment
- ❖ Sleep disturbances
 - Earlier responses than adults (EEG awakenings)
- ❖ Somatic effects
 - Blood pressure and stress hormones
- ❖ Psycho-social effects
 - No studies on behaviour with high environmental noise levels
 - Cognitive tasks are impaired, like reading, long term memory, attention and motivation
- ❖ Vocal nodule

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EEG: electroencephalogram

<<READ SLIDE>>

Children raise their voices and risk developing hoarseness and vocal nodules because of noise and relative overcrowding. The number of children screaming so much and so loudly that their voices are damaged and require treatment increased in Denmark during the 1990s. Noise in schools and day care institutions results in boys' voices getting hoarse and girls' voices squeaky. Children with vocal nodules can be difficult to understand and risk losing their voices altogether. Other children become so tired of screaming or of trying to make themselves heard that they give up saying anything at all and, for example, do not raise their hands in class. If children give up speaking, their voices do not develop properly and language learning is not reinforced.

References:

- Boman, E. The effects of noise and gender on children's episodic and semantic memory. *Scandinavian Journal of Psychology*, 2004, 45:407 –416.
- Bowen C. Vocal nodules and voice strain in pre-adolescents. 1997 (members.tripod.com/Caroline_Bowen/teen-nodules.htm, accessed November 2009).
- Clark C et al. Exposure-effect relations between aircraft and road traffic noise exposure at school and reading comprehension: the RANCH project. *Am J Epidemiol*. 2006, 163:27-37.

Transport noise is an increasingly prominent feature of the urban environment, making noise pollution an important environmental public health issue. This paper reports on the 2001-2003 RANCH project, the first cross-national epidemiologic study known to examine exposure-effect relations between aircraft and road traffic noise exposure and reading comprehension. Participants were 2,010 children aged 9-10 years from 89 schools around Amsterdam Schiphol, Madrid Barajas, and London Heathrow airports. Data from The Netherlands, Spain, and the United Kingdom were pooled and analyzed using multilevel modeling. Aircraft noise exposure at school was linearly associated with impaired reading comprehension; the association was maintained after adjustment for socioeconomic variables (beta = -0.008, $p = 0.012$), aircraft noise annoyance, and other cognitive abilities (episodic memory, working memory, and sustained attention). Aircraft noise exposure at home was highly correlated with aircraft noise exposure at school and demonstrated a similar linear association with impaired reading comprehension. Road traffic noise exposure at school was not associated with reading comprehension in either the absence or the presence of aircraft noise (beta = 0.003, $p = 0.509$; beta = 0.002, $p = 0.540$, respectively). Findings were consistent across the three countries, which varied with respect to a range of socioeconomic and environmental variables, thus offering robust evidence of a direct exposure-effect relation between aircraft noise and reading comprehension.

- Jessen B, Ruge G. Skolebørn skriger sig syge [Schoolchildren scream until they get sick]. *Berlingske Tidende*, 2000:26.

Children and noise

EFFECTS OF NOISE.... A WORD APART FOR **TEENAGERS!!**

- ❖ Potential sources of hearing impairment
 - Noisy toys, firecrackers, boom-cars, musical instruments, others
- ❖ Discotheques and pop concerts
 - Exposure similar to occupational exposures
 - Use of music headphones
- ❖ Loss of hearing may go undetected for many years after chronic exposure to high levels of noise
- ❖ Increased rates of adolescent hearing impairment in last 3 decades
- ❖ Protection needed from the start
 - Be instructed to use personal hearing protection
 - Not only at work but also at technical and polytechnic schools

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<<READ SLIDE>>

Noise is associated with youth. Often, teenagers' exposure is constant. Prolonged exposure can lead to a transitory loss of 10-30 dB for several minutes after the noise ceases. Frequency of exposure, personal variability, and age of exposure determine the pattern of the damage.

Music occurs outside of the major frequencies of the human voice and over exposure to loud music causes loss of discrimination at low frequencies which may not be detected without formal testing for years. "Walkman" equipment is designed for emissions not higher than 80 dB, but the combination of an immature hearing system and a prolonged use may cause cumulative damage. Technology can be modified to bypass factory-imposed limitations and result in very loud music/noise exposure. Loss of concentration because of the focus on the music, in the presence of a potentially dangerous situation, makes a young person more vulnerable to accidents.

Teenagers should be instructed to use personal hearing protection as soon as they start being exposed to high noise levels, not only at work, but also at technical and polytechnic schools. If noise-abatement measures are not taken, good hearing will not be preserved and noise-induced tinnitus will not be prevented. The extent of hearing impairment in teenagers, caused by occupational noise exposure, and exposure at technical and polytechnic schools is unknown.

There are insufficient numbers of studies on somatic, psycho-social and behavioural effects of noise in teenagers.

References:

- Axelsson A. et al. Early noise-induced hearing loss in teenage boys. Scand Audiol, 1981;10: 91-96.
- Baig LA. et al. Health and safety measures available for young labourers in the cottage industries of Karachi. J Coll Physicians Surg Pak, 2005, 15:380.
- Fontana AM. et al. Brazilian young adults and noise: Attitudes, habits, and audiological characteristics. International Journal of Audiology, 2009, 48(10):692-699
- Plontke SK et al. The incidence of acoustic trauma due to New Year's firecrackers. Eur Arch Otorhinolaryngol, 2002, 259:247-52.
- Ryberg JB. A national project to evaluate and reduce high sound pressure levels from music. Noise Health, 2009, 11(43):124-8.
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- Vogel I et.al. Young People's Exposure to Loud Music. A Summary of the Literature. Am J Prev Med, 2007, 33(2):124-133.

CONTENTS

1. Introduction
2. Vulnerability of children
3. Adverse health effects
4. Effects by age-group
5. **Taking action**
6. Discussion

Children and noise

PREVENTION AND INTERVENTION

- ❖ More research needed, especially in vulnerable groups
- ❖ Preventive action
 - Noise has to be controlled at the source
 - Hearing protection devices are a last resort
- ❖ Child hearing conservation programs
- ❖ Education and dissemination

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Future research:

- Effects of noise on cognitive functions.
- Effects of noise on children's sleep.
- Magnitude/significance of noise annoyance.
- Children's perception and risk perception.
- Settings: home, schools, hospital, day care centres.
- Teenagers' attention when driving and listening to loud music.
- Effect of non-audible noise.
- Identification of more vulnerable groups!
- Intervention programs/best practices for preventing harmful effects.

Preventive actions

Noise has to be controlled at the source by:

- Reducing.
 - Enclosing the vibrating surfaces.
 - Placing sound absorbers and other protections.
- Hearing protection devices are a last resort!

Child hearing conservation program

- Noise monitoring where children live, study and play.
- Hearing protection programs diffusion for teachers and parents.
- Vibration detection and protection.
- Protection of the pregnant woman.

Education and dissemination

References:

- Folmer RL, et al. Hearing conservation education programs for children: a review. J Sch Health. 2002;72:51-7.
- Prevalence of noise-induced hearing loss (NIHL) among children is increasing. Experts have recommended implementation of hearing conservation education programs in schools. Despite these recommendations made over the past three decades, basic hearing conservation information that could prevent countless cases of NIHL remains absent from most school curricula. This paper reviews existing hearing conservation education programs and materials designed for children or that could be adapted for classroom use. This information will be useful as a resource for educators and school administrators and should encourage further development, implementation, and dissemination of hearing conservation curricula. The overall, and admittedly ambitious, goal of this review is to facilitate implementation of hearing conservation curricula into all US schools on a continuing basis. Ultimately, implementation of such programs should reduce the prevalence of noise-induced hearing loss among children and adults.
- Moeller. Environmental Health, Harvard University Press, 1992.

WHERE TO INTERVENE?

❖ Techniques for reducing or eliminating noise

- At the source
- By installing a barrier between the source and the recipient
- At the point of reception / At the human recipient

❖ Potential settings for intervention

- NICU
- Child care settings
- Primary schools
- Discotheques and rock festivals

❖ Address external and internal noise sources

<<READ SLIDE>>

Identified potential settings for intervention

1. NICU

2. Child care settings : more and more children stay in various child care settings. These play an important role in the initial stages of children beginning to establish their basic education.

3. Primary schools : primary school children often spend long periods of time in one classroom, and a noisy room can adversely affect the occupants of that room.

4. Discotheques and rock festivals : the noise level can be very high in discotheques, often resulting in tinnitus or a temporary threshold shift among patrons. Many major cities have festivals, and many of the noisier attractions inevitably appeal to younger people.

References:

•Bistrup M.L., Keiding L., ed. (2002). Children and noise - prevention of adverse effects. Copenhagen, National Institute of Public Health (also available at www.niph.dk).

•Byers JF, et al. Sound level exposure of high-risk infants in different environmental conditions. Neonatal Netw. 2006, 25(1):25-32.

PURPOSES: To provide descriptive information about the sound levels to which high-risk infants are exposed in various actual environmental conditions in the NICU, including the impact of physical renovation on sound levels, and to assess the contributions of various types of equipment, alarms, and activities to sound levels in simulated conditions in the NICU. **DESIGN:** Descriptive and comparative design. **SAMPLE:** Convenience sample of 134 infants at a southeastern quaternary children's hospital. **MAIN OUTCOME VARIABLE:** A-weighted decibel (dBA) sound levels under various actual and simulated environmental conditions. **RESULTS:** The renovated NICU was, on average, 4-6 dBA quieter across all environmental conditions than a comparable nonrenovated room, representing a significant sound level reduction. Sound levels remained above consensus recommendations despite physical redesign and staff training. Respiratory therapy equipment, alarms, staff talking, and infant fussiness contributed to higher sound levels. **CONCLUSION:** Evidence-based sound-reducing strategies are proposed. Findings were used to plan environment management as part of a developmental, family-centered care, performance improvement program and in new NICU planning.

HOW TO INTERVENE?

Technically

- ❖ Planning and designing outdoors and indoors “soundscapes”
- ❖ Improving road surfaces and developing green spaces and green barriers
- ❖ Developing noise barriers, building sound insulation
- ❖ Planning internal spaces according to activities (e.g. schools, sports-centres, others that involve noise), strategically using the space & location
- ❖ Reducing internal noise (eg. fans, ventilators)
- ❖ Using sound-absorbent materials
- ❖ Setting sound limits for concerts
- ❖ Increasing public and professional education to recognize noise pollution and reduction!

<<READ SLIDE>>

HOW TO INTERVENE?

Organizationally and Educationally

- ❖ Educating children, adults, professionals
- ❖ Teaching methods/interventions
- ❖ Disseminating information
- ❖ Informing the media and decision-makers and health professionals!
- ❖ Creating silent areas (“silence islands”) for resting
- ❖ Distributing earplugs at work and setting limits for the earphones
- ❖ Identifying and turning off noise at the source!

<<READ SLIDE>>

HOW TO INTERVENE?

Planning

- ❖ Identifying noise sources and recognizing noise as a problem
- ❖ Recognizing health effects in children caused by noise
- ❖ Recognizing and diagnosing adults' health problems originated in childhood exposure
- ❖ Raising awareness
- ❖ Setting-up noise control campaigns in hospitals and schools
- ❖ Applying the "Precautionary Principle"
- ❖ Thinking about noise exposure when planning the settings where children dwell
- ❖ Promoting sound landscape design
- ❖ Developing noise mapping, action plans, community involvement
- ❖ Standardizing noise measurements

Children and noise

POINTS FOR DISCUSSION

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<<NOTE TO USER: Add points for discussion according to the needs of your audience.>>

Children and noise

ACKNOWLEDGEMENTS

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Children and noise

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Fairview at Northgate Final EIR
Comment Letter H (Natalie Mattei, March 2, 2020) Exhibits

EXHIBIT A

Q4 Retail Index - Grocery

By Ethan Chernofsky on February 13, 2020



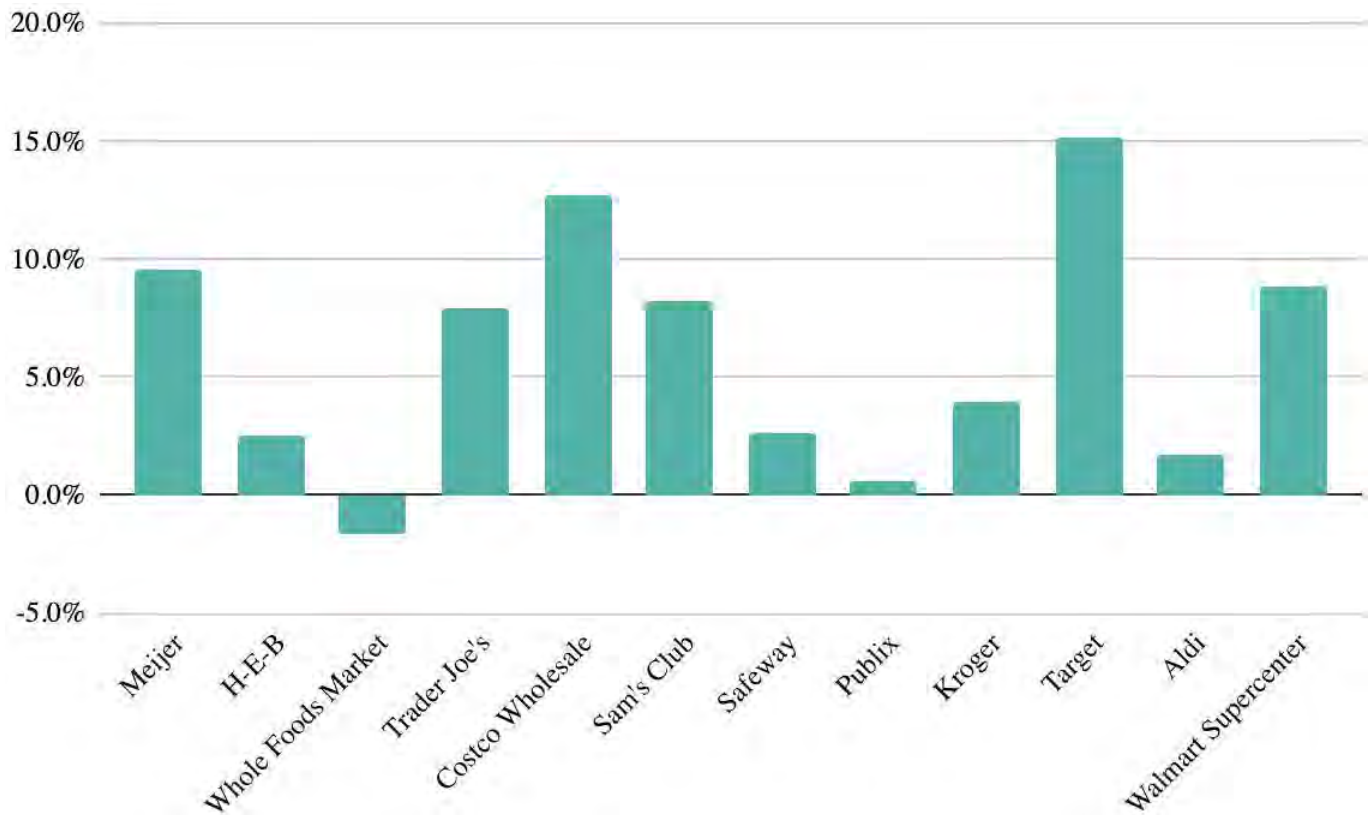
Between the build-up to Christmas and the annual supermarket holiday that is [Turkey Wednesday](#), grocers and general merchandise retailers have much to be excited about when Q4 rolls around.

So how did Q4 performance look for some of the top players in the space? We dug into the data to find out.

Big Grocery Returns

All but one of the twelve companies analyzed for the index saw significant growth in Q4 2019 compared to the previous quarter. Overall, the group saw an average foot traffic increase of 6% during this period, further indicating its strength. Target led the way with a 15.2% increase

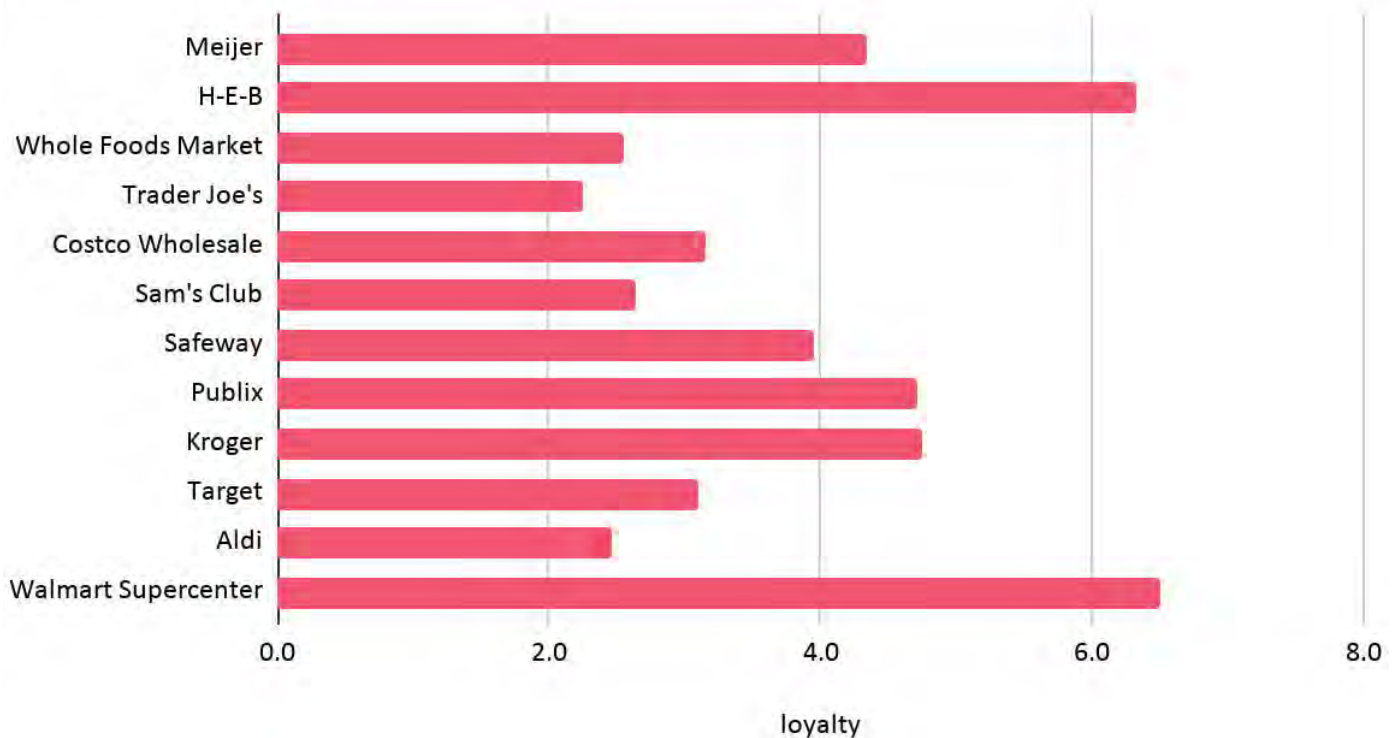
fueled by its a  **Placer.ai** ay bump, with Costco seeing a 12.7% increase followed by Meijer and W eases of 9.6% and 8.9% respectively.



Yet, the shortened holiday season also impacted the sector, with a growth number that was up only 1.0% year-over-year for the quarter for the group. Trader Joe's and Costco saw the biggest jumps of the group in this category with increases of 7% and 6% respectively year-over-year for the quarter.

Grocery's Successful Outliers - Costco and Trader Joe's

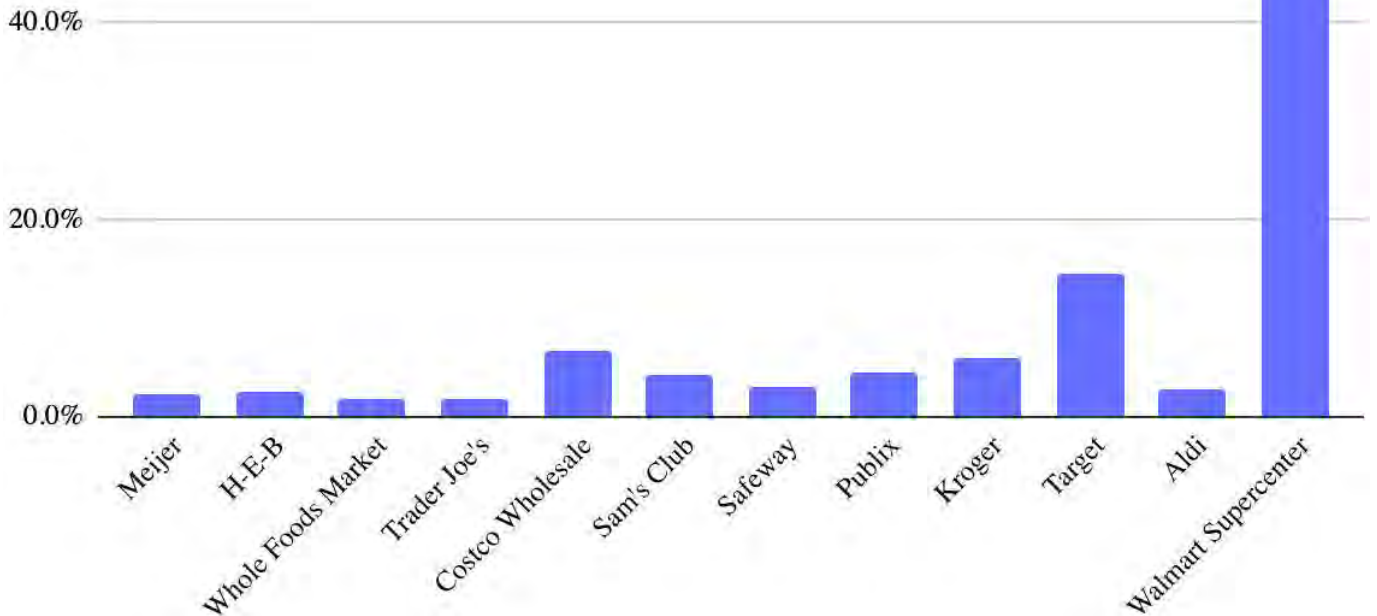
Yet, year-over-year improvement wasn't the only thing that united Costco and Trader Joe's. The two brands are all the more interesting considering they sit on the edges of the sector providing very specific products with equally unique benefits. Looking at Customer Loyalty - the average number of visits per visitor over the course of the quarter - shows a group average of 3.9 visits per visitor. Both Costco and Trader Joe's fall below this line with 3.2 and 2.3 visits per visitor respectively, **all** the more interesting considering their overall year-over-year growth.



At the same time, Costco finishes first among the group with a 45-minute average visit duration, while Trader Joe's had the second-lowest with just a 34 minutes average duration . The growth success alongside the tremendous variance in visit frequency and visit duration emphasize a critical point about retail success - it is not a one-size-fits-all market. Many brands with unique offerings that lead to more unique forms of customer engagement can help fill a growing Grocery and General Merchandise pie.

The Leaders Remain Ahead

While the quarterly factors may impact short term growth, the king of the Grocery & General Merchandise category remains Walmart. The supercenter brought in just over 50% of **all** visits to the category in Q4, with Target the next closest at 14.3%. Costco rounds out the top three with 6.5% while Kroger and Publix follow behind at 5.8% and 4.3% respectively. This gap delineates one of the key factors **still** underpinning the grocery sector, intense regionalization, which limits the rise of any single threat to Walmart's dominance.



Takeaways

Even in a shortened holiday season, the General Merchandise & Grocery sector brought in strong visits. Though more interesting than growth were two lessons that could help shape the wider space. Firstly, niche players like Costco and Trader Joe's are driving success proving the viability of grocery models that don't replicate the classic supermarket model. Secondly, the massive gap between the top two players and the rest of the field shows the powerful strength of each of these brands, especially within their specific core geographies.



Ethan Chernofsky

Ethan is the VP Marketing at Placer.ai and loves helping people reach their goals with location analytics.

EXHIBIT B



Costco's Plans for Its E-commerce Operations in 2019

By Jamie Grill-Goodman {/author-profile/jgoodman) - 03/11/2019

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Costco enjoyed a spike in online sales in its recent quarter, seeing growth in orders, profits and other metrics, in addition to digital sales. Now the retailer has a lot planned for the coming year to keep its e-commerce moving.

E-commerce sales increased by 20% year-over-year during the company's second quarter 2019. Top growth categories in the quarter included grocery, consumer electronics,







\$250- \$280 OFF

S150- S2QQ OFr

Costco expanded its buy online pickup in store selection in the quarter, offering a broader selection of Apple products.

hardware, health and beauty aids, tire and automotive, toys, seasonal and apparel.

"We continue to improve our online and in line cross-marketing initiatives and we think that's continuing to drive our business," noted EVP and CFO Richard Galanti on the company's earnings call.

Costco expanded its buy online pickup in store (BOPIS) selection in the quarter, offering a broader selection of Apple products and other electronics, jewelry, handbags, and more. The retailer also continues to test pick-up lockers for BOPIS items in 10 locations.

Costco also is expected to expand internationally this year. The retailer said it will likely begin e-commerce operations in Japan early this summer and in Australia by the end of summer or early fall. Costco already operates e-commerce sites in the U.S., Canada, the United Kingdom, Mexico, Korea, and Taiwan. E-commerce accounts for 5% to 6% of Costco's business, according to Galanti.

In the U.S., Costco's same day grocery delivery is now available to its members within a short drive of 99% of locations. Two-day grocery is available anywhere throughout the Continental United States.

"While still these are small pieces of our total business operation they are growing nicely," said Galanti. "We now have grocery shipments to all 50 states."

Costco fulfills two-day grocery delivery out of 10-11 of its business centers around the country. However, the retailer is in the process of moving these operations to six of its "depots" over the next several months.

"I think we've done the first one, and we have got several more planned right around the end of spring, beginning of summer," said Galanti.

He also noted one-day grocery is handled through Instacart and is in warehouse.

Costco also opened the first of three planned fulfillment automation centers in Mira Loma, CA, less than eight weeks, according to Galanti. The center is meant to handle small packages for e-commerce.

"It's over a \$100 million investment," he said. "The first one is the most expensive because you developed all the systems and everything as well. We have two other planned for depots in other parts of the country."

< [Newsroom \(/content/minisite/albertsonscorporation/en/newsroom.html\)](/content/minisite/albertsonscorporation/en/newsroom.html)

Albertsons Companies and Takeoff Technologies Develop Strategic Partnership Focused on the Future of Grocery E-Commerce

BOISE, Idaho, December 12, 2019 – Albertsons Companies and Takeoff Technologies are teaming up to collaborate on the future of grocery micro-fulfillment centers (MFC). The two companies have decided to form a strategic partnership with dedicated teams to collaborate on the evolution of the microfulfillment capabilities to drive the future of e-commerce order fulfillment.

Albertsons Cos., which operates stores in 8 out of 10 of the largest MSA's in the United States, has also agreed to purchase additional MFCs from Takeoff and is evaluating market expansion opportunities. Albertsons Cos. and Takeoff worked closely together on the successful implementation of the company's first MFC in South San Francisco in October 2019.

"The micro-fulfillment center model is a key element in the store of the future," said Vivek Sankaran, Albertsons Companies President and Chief Executive Officer. "It combines the efficiency of automation with the ease of meeting customers when and how they want to shop. In working with Takeoff, we can evolve how the MFC ties into our store and e-commerce ecosystems and accelerate our path to best serve our customers."

Albertsons Cos. and Takeoff Technologies began their partnership in 2018 with the announcement of two pilot micro-fulfillment centers that would be constructed in existing grocery stores. Albertsons Cos. began operating its first pilot unit on Oct. 23 at a Safeway in South San Francisco. Another pilot unit is scheduled to begin operations at a Safeway in San Jose, CA before the end of 2019.

"We are thrilled to broaden our partnership with Albertsons Cos., a clear leader in grocery retailing and a key player shaping the future of eGroceries," added Max Pedro, co-founder and president of Takeoff. "With our strategic partnership, we're confident we'll be able to add significant value to their business and consumers as we work in partnership to define the future of e-commerce."

Micro-fulfillment centers bring together the proximity of brick-and-mortar stores with the automation capabilities of a large warehouse. Located inside an existing store, micro-fulfillment centers typically hold about 15,000 to 18,000 of the local market's most popular products.

"In collaborating with Takeoff, we're able to leverage their thought leadership in e-commerce fulfillment with our expertise in running great grocery stores that meet customers' everyday needs, and that's exciting turf for us," said Chris Rupp, Executive Vice President and Chief Customer and Digital Officer at Albertsons. "By placing an MFC in an existing store close to customers, we can carry a diverse and locally relevant selection of products with the friendly touch of our local team to service the customer."

According to research by Takeoff Technologies, micro-fulfillment centers increase productivity by up to ten times through improved speed, productivity, accuracy, and efficiency. By providing real-time information about inventory, robotic fulfillment can greatly reduce or even eliminate product substitutions.

"We are living in historic times. The grocery industry is transforming its way into the future, and the winners will be the ones getting it right first. Albertsons Cos.' move to expand its micro-fulfillment capability is a clear testament of such transformation," said Jose V. Aguerrevere, co-founder and chief executive officer of Takeoff.

About Albertsons Companies

Locally great and nationally strong, Albertsons Companies is one of the largest food and drug retailers in the United States. Albertsons Cos. operates stores across 34 states and the District of Columbia under 20 well-known banners including Albertsons, Safeway, Vons, Jewel-Osco, Shaw's, Acme, Tom Thumb, Randalls, United Supermarkets, Pavilions, Star Market, Haggen, and Carrs. Albertsons Cos. is committed to helping people across the country live better lives by making a meaningful difference, neighborhood by neighborhood. In 2018 alone, along with the Albertsons Companies Foundation, the Company gave over \$262 million in food and financial support. These efforts helped millions of people in the areas of hunger relief, education, cancer research and treatment, programs for people with disabilities and veterans outreach.

About Takeoff Technologies

Takeoff is an eGrocery solution that empowers retailers to attain profitable online growth by leveraging automation at a hyperlocal scale. Orders are placed online through established retailers (whether using their existing eCommerce platform or Takeoff's customized UI solution) and Takeoff's automated technology fulfills the order using robots in Micro Fulfillment Centers. The company was co-founded by Jose V. Aguerrevere and Max Pedro in 2016, and recently closed its Series C financing led by Forrester Capital, taking the total capital raised to \$86M. The company's robotics technology is proven and ready to deploy at scale thanks to Takeoff's exclusivity partnership with Knapp, a leading global provider of automated warehouse solutions. By leveraging automated Micro Fulfillment Centers, Takeoff's innovative model operates at a much lower cost-to-serve than other eCommerce platforms, solving for both the cost of assembling the order and cost of the last mile. This results in savings for both shoppers and retail partners. For more information, visit [takeoff.com](https://www.takeoff.com/) (<https://www.takeoff.com/>).

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3,661 views | Feb 24, 2020, 02:19pm

Target, Eschewing Amazon's Open Marketplace, Is Making Strides In E-commerce



Kiri Masters Contributor 0

Retail

I cover online marketplaces from a retail brand's perspective.



(Photo by Eduardo Munoz Alvarez/VIEWpress/Corbis via Getty Images) 201a VIEWPRESS

Today, eMarketer reported that Target has surpassed three competitors to [become the eighth-largest retailer](#) in the U.S. in terms of e-commerce sales, up from [nth place](#) just one year ago.

Top 10 US companies, Ranked by Retail Ecommerce Sales Share, 2020

% of US retail ecommerce sales

1. Amazon

38.7%

2. Walmart

5.3%

3. eBay

4.73%

4. Apple

3.7%

5. The Home Depot

1.7%

6. Wayfair

1.5%

7. Best Buy

1.3%

8. Target

1.2%

9. Costco

1.2%

10. Macy's

1.1%

*Note: represents the gross value of products or services sold (browser or app), regardless of the method of payment or fulfillment excludes travel and event tickets
source: eMarketer, Feb 2020*

emarketer, share of US ecommerce companies EMARKETER

While Amazon and Walmart rely heavily on a marketplace model for e-commerce growth, Target appears to be focusing more on its first-party assortment, which can be fulfilled by

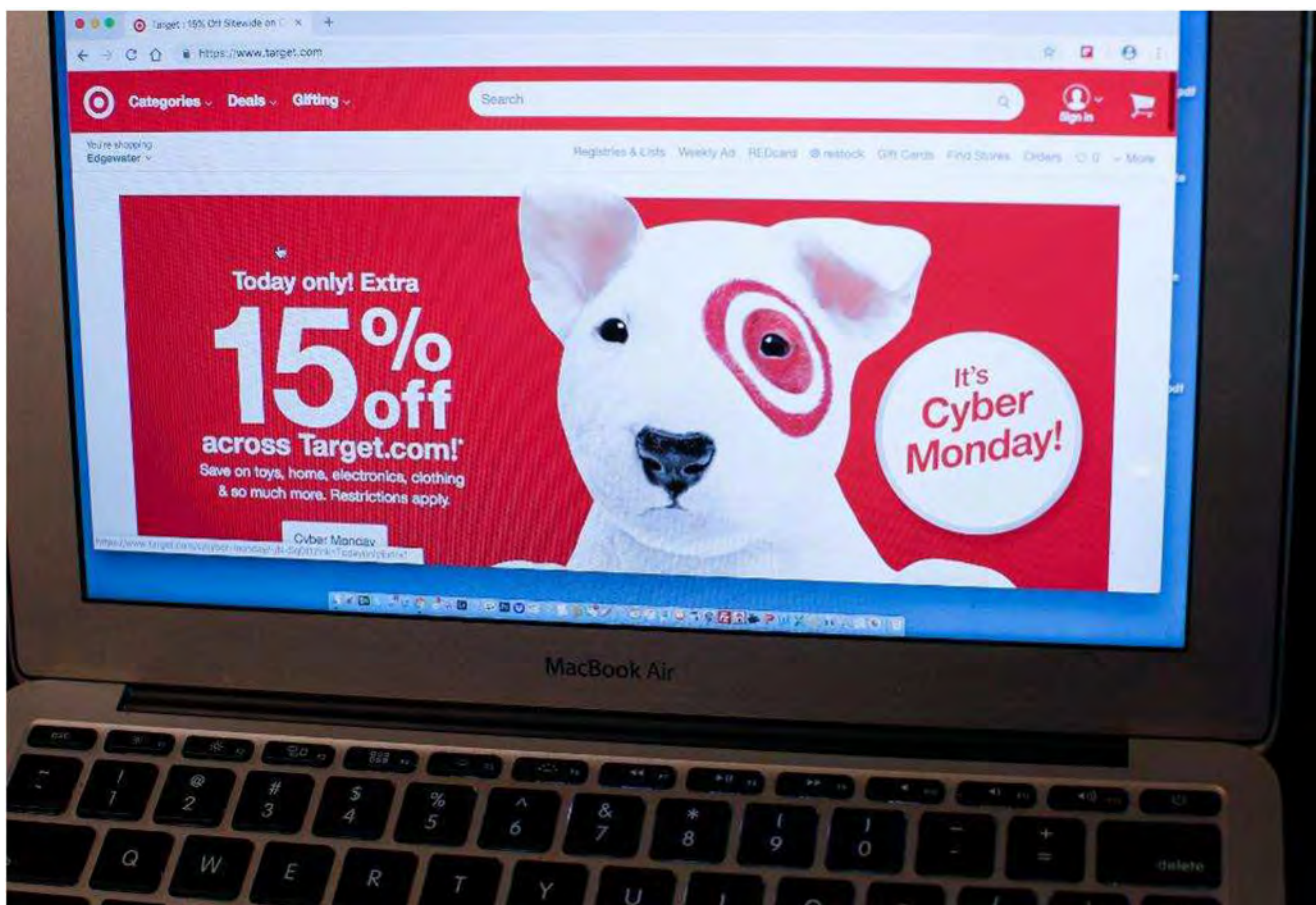
stores.

Target's e-commerce marketplace (known as Target+ or Target Plus) assortment is highly curated, as opposed to Walmart and certainly to Amazon. Amazon in particular has an open-door policy for new sellers. It's straightforward to set up a new Seller account and start listing products almost immediately. Walmart has some additional screening requirements to validate the capabilities of new sellers. But Target is on a whole new level: Brands can only start selling on the marketplace if they are invited to do so. And those invites are definitely exclusive. The invite-only marketplace started with 30 merchants, and six months later has grown to just 60 merchants and 115,000 products as of the end of 2019, [according to Marketplace Pulse data](#).

The number of sellers is a good, but not perfect, proxy for overall assortment size. When analyzed at this level, the difference between the three marketplaces is stark:

- 60 active sellers on Target+
- 36,754 sellers on Walmart.com
- 1,010,695 active sellers on Amazon.com

(These figures are from [Marketplace Pulse](#).)



GUTTENBERG, NJ - NOVEMBER 26: In this photo illustration, Target advertises Cyber Monday sales on ... [+] CORBIS VIA GETTY IMAGES

Target+ exclusivity could prevent Amazon's current challenges

The tiny assortment of Target+ could be key to the retailer's strategy, however.

Rick Gomez, chief digital officer at Target, said last year, "This is intended to be a very curated and select group of products and brands We are reaching out to the brands we want."

In this way, Target can avoid some of the negative consequences of Amazon's burgeoning marketplace, chiefly counterfeit products, gray-market inventory sold by third parties which creates headaches for brand owners, and fake product reviews. Amazon shoppers also face an avalanche of brandless products when searching across many product categories like bluetooth headphones, pajamas, and fish oil supplements. (For further reading, see [this great New York Times](#) piece.) While you'd imagine that the overabundance of options might cause many shoppers to abandon their searches, Amazon continues to power on-acquiring more market share every year.

Target+ could also attract the same brands who have shunned Amazon in recent years due to concerns with counterfeiting and unauthorized resellers.

EMarketer also forecasts that Target will inch past Costco this year, with only \$10 million in e-commerce sales separating the two companies.

Target's first-party assortment is critical

"At a time when brick-and-mortar stores are struggling to keep up with the fast-changing retail landscape, Target seems to have hit the bullseye," eMarketer forecasting analyst Cindy Liu said. "Store renovations and expanding same-day fulfillment options, such as in-store pickup, drive-up and delivery with Shipt, are paying off. Target has found a way to use its stores to fulfill online orders while keeping up with customer demands for convenience and speed."

Perhaps the Target+ marketplace will pick up steam in the future, as a low-capital way for Target to expand its assortment. But given its apparent success of integrating stores into the online experience, the marketplace may not be a key feature of Target's e-commerce strategy.

Time will tell which strategy-infinite options from third parties or curated first-party assortment-ultimately wins the hearts and wallets of shoppers.

Follow me on [Twitter](#) or [LinkedIn](#). Check out my [website](#) or some of my other work [here](#).

Kiri Masters

Follow

I am the founder of Bobsled Marketing, a digital agency that helps consumer product brands to grow their sales on Amazon. Specializing in operations, marketing and adve... **Read More**

EXHIBIT C

Vallejo pursues development after missing Amazon HQ2 shortlist



SLIDE 1 OF 3

The 157-acre north Mare Island area of Vallejo, part of the former Navy shipyard, is seen highlighted on this aerial view from the northeast. (City of Vallejo)

JEFF QUACKENBUSH

NORTH BAY BUSINESS JOURNAL | January 18, 2018

Sorry, Vallejo, but Los Angeles is the only West Coast city to make Amazon's list of 20 candidates for its second headquarters, but Solano County's largest city has had a tandem plan rolling to accommodate other large employers.

Amazon's short list, released Jan. 18, includes mostly cities toward the East Coast. In the western half of the country are Los Angeles, Denver, Dallas and Austin, Texas.

20 candidates for Amazon's HQ2

1. Atlanta
2. Austin, Texas
3. Boston
4. Chicago
5. Columbus, Ohio
6. Dallas
7. Denver

In October, Vallejo had thrown its hat into a ring of 238 contenders nationwide for Amazon's HQ2 project, which the Seattle-based company estimates will bring up to 50,000 jobs and \$5 billion in investments over almost two decades to the winner. Key selection criteria the company said it was looking for were a metropolitan area with 1 million people, business-friendliness, tech talent attraction and retention, innovative approach to development, sustainability, high-speed internet, cellphone connectivity and an Amazon-compatible culture.

Vallejo had offered the e-tail giant 157 acres at the north end of Mare Island, a former Navy shipyard converted into a commercial center and housing community. The area has an approved specific plan allowing up to 1.2 million square feet of commercial, office, retail or industrial space to be built there.

"One of the things that was really helpful with the Amazon solicitation was it really gave us a nice blueprint, confirming our business-attraction strategy for well-paying jobs," said Ron Gerber, the city's economic development manager. "It highlights some of the components we have here in Vallejo. When you're looking at diversity, recreation, affordable living and transit, those are all boxes we can check for business attraction and expansion. It helped us with what the 21st century employee and related employers look for."

Mare Island has connections to four highways and direct ferry service to San Francisco.

But Vallejo wasn't putting all its eggs in Amazon's shopping cart. In early November as the HQ2 bid was in progress, the city circulated a request for qualifications from commercial developers for the north Mare Island property. The deadline for submissions is March 30.

"Instead of specific site plans, we want to have concepts attached to jobs and experience and attached to capital," Gerber said.

After the shipyard closed in 1996, Lennar homebuilders and the city partnered to develop approximately 600 acres immediately adjacent to the north Mare Island site, bringing in commercial, light industrial, advanced manufacturing, medical and office users, as well as constructing a new residential neighborhood.

- 8. Indianapolis
- 9. Los Angeles
- 10. Miami
- 11. Montgomery County, Maryland
- 12. Nashville
- 13. Newark, New Jersey
- 14. New York City
- 15. Northern Virginia
- 16. Philadelphia
- 17. Pittsburgh
- 18. Raleigh, North Carolina
- 19. Toronto
- 20. Washington, D.C.

Source: Amazon

Contact for the north Mare Island request for proposals: Ron Gerber, ron.gerber@cityofvallejo.net, 707-553-7283, www.choosevallejo.com/nmi

EXHIBIT D

PRDUDLY SERVING NntJ,111fJ«b/tr11U1 SINCE 1e2s

Prices on this page are effective Wednesday
 Feb. 26 thru March 3, 2020.
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II26XL MOC Giltz a tril

Chester's
Wild Berry Protein Bars
1.85 to 7.64-oz. Selected varieties. Club Price: \$3.00 ea.
General Mills Large Cereal
12 to 18.5-oz. Selected varieties. Club Price: \$3.00 ea.

Aunt Jemima
Pancake Mix
12.5-oz. Club Price: \$3.00 ea.

BONUS
TICKET AT 50¢

Nature Valley
Protein Bars
1.85 to 7.64-oz. Selected varieties. Club Price: \$3.00 ea.

QuikKff
IikTant O. Imul
1.85 to 7.64-oz. Selected varieties. Club Price: \$3.00 ea.

O.Org.mkt.
Maple syrup
1.85 to 7.64-oz. Selected varieties. Club Price: \$3.00 ea.

Pinto Ica Mi
1.85 to 7.64-oz. Selected varieties. Club Price: \$3.00 ea.

OL.1.1n.52.1N.
1.85 to 7.64-oz. Selected varieties. Club Price: \$3.00 ea.

BONUS TICKET ITEM 1 BUY 1 GET 1 FREE 16-oz. Selected varieties. Club Price \$2.99 ea.	BONUS TICKET ITEM 5^{PP} 4-pack, 16-oz. Selected varieties. Club Price \$10.99 ea.	PdW r Primat IIIllk Shab 11oz. S. IIlladmiria. Club Price \$2.19 ea. 5^{PP} 11oz. S. IIlladmiria. Club Price \$2.19 ea.	Starbucks Coffee 12-oz. Selected varieties. Club Price \$2.99 ea. Starbucks Cold Brew 16-oz. Selected varieties. Club Price \$2.99 ea. \$5^{PP} Club Price \$2.99 ea.
BONUS TICKET ITEM 4 \$5^{PP} 500-ml. Club Price \$1.25 ea.	BONUS TICKET ITEM 2 \$5^{PP} 46-oz. Selected varieties. Club Price \$2.50 ea.	BONUS TICKET ITEM 88¢ Club Price \$1.09 ea.	BONUS TICKET ITEM 88¢ Club Price \$1.09 ea.
BONUS TICKET ITEM 10⁹⁹ Club Price \$3.50 ea.	BONUS TICKET ITEM 2 \$7^{PP} 9 to 13-oz. Selected varieties. Club Price \$3.50 ea.	BONUS TICKET ITEM 2 \$6^{PP} 16-oz. Selected varieties. Club Price \$3.09 ea.	BONUS TICKET ITEM 99¢ 5 to 8.5-oz. Selected varieties. Club Price \$3.09 ea.
BONUS TICKET ITEM 3⁹⁹ Club Price \$3.99 ea.	BONUS TICKET ITEM 1 BUY 1 GET 1 FREE 13 to 20-oz. Selected varieties. Club Price \$3.99 ea.	BONUS TICKET ITEM 1 BUY 1 GET 1 FREE 6 to 13.7-c. Selected varieties. Club Price \$3.99 ea.	BONUS TICKET ITEM 1 BUY 1 GET 1 FREE 6-c. Selected varieties. Club Price \$3.99 ea.

Hottest Bagged Donuts 9.5 to 18.75 ea. Selected varieties. Club Price: \$1.67 ea. \$3^{for}5 Club Price	Signature SELECT® Sandwich Bread 2.2 oz. Selected varieties. Club Price: \$2.00 ea. t\$4 CU. Pic.	Medallion Tabasco Sauce 5-oz. Selected varieties. 3⁴⁹	Skippy Peanut Butter 5 to 6-oz. Selected varieties. Club Price: \$2.29 ea. Skippy Peanut Butter 15 to 18.3-oz. Selected varieties. Club Price: \$2.29 ea. 2\$5 Club Price
Golden T.M. 100% Natural Rike -..699 Club Price	IFM!Joni of Itkm+ Ranl Cilblis : \$1.13 ju. \$J.O	...ft M+na ranl I: Othtl- 499	Tree Top Apple Sausage Pouches 4-pk, 1.1-oz. Selected varieties. Club Price: \$2.00 ea. Tree Top Apple Sausage 4-pk, 4-oz. Selected varieties. Club Price: \$2.00 ea. 2\$4 Club Price
Harm!HOIlr wllh ,... , 15-... YClle Jtm. 4\$6 When you Buy 4 Club Price	Signature SELECr 199 O	GoGurt OatPur:125.0u. rs	Mission Soft Taco Flour Tortillas 10 ct. 3⁴⁹ Club Price

Open Nature® Ice Cream Pint. Selected varieties. Signature SELECT® Ice Cream 1.5-qt. Selected varieties. 2⁹⁸ Club Price	0 Organics® Frozen Vegetables 10 to 16-oz. Club Price: \$1.50 ea. 2⁵ for Club Price	Jones Sausage Value Pack 20 to 28-oz. Selected varieties. 7⁹⁹ Club Price	Signature SELECT® Pancakes or Waffles 12.3 to 13.75-oz. Club Price: \$1.50 ea. 2⁵³ for Club Price	Deavour Pizza 23.6 to 27.5-oz. Selected varieties. Signature SELECT® Family Meal 12 to 38-oz. Selected varieties. 5⁹⁹ Club Price	Marie Callender's Pot Pies 10-oz. Selected varieties. 1^{FREE} BUY 1, GET 1 FREE LIMIT 1 ON SAME VALUE Club Price	Farm Rich Snacks 16 to 24-oz. Selected varieties. 4⁹⁹ Club Price
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Fresh PICKED



Large Hass Avocados
Each Price: \$2.50

Low Price Every Day
2\$5
for 5



Ready Pac Chopped Salad Kits
3.5 to 13.6-oz. Selected varieties.
Taylor Farms Chopped Salad Kits
9.25 to 13.5-oz. Selected varieties.
Fresh Express Salad Kits or Blends
5 to 11.9-oz. Selected varieties.



When you Buy 3
3\$10
for 10
Club Price



ORGANIC
Every Day
99¢
lb



Premium Red or Green Seedless Grapes
Every Day
3\$99
lb



Large Mangos
Club Price: \$1.25 ea.
4\$5
for 5
Club Price



Cucumbers or Green Bell Peppers
Club Price: \$1.00 ea.
10\$10
for 10
Club Price



ORGANIC
Every Day
3\$99
ea



Large Navel Oranges
California Grown.
Every Day
1\$49
lb



Sweet Corn
Every Day
69¢
ea



Large Lemons
Every Day
99¢
ea



ORGANIC
Every Day
3\$49
ea



FRESH CUT PRODUCE
AVAILABLE IN SELECT STORES ONLY.
BONUS TICKET ITEM
Every Day
5\$99
ea



BONUS TICKET ITEM
Every Day
5\$
ea



BONUS TICKET ITEM
Every Day
3\$10
for 10
Club Price

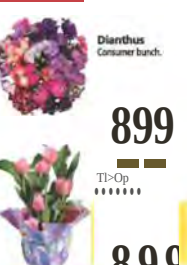


ORGANIC
Every Day
5\$
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Bauquilt Of Mamh
1-Hr Delivery
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BONUS TICKET ITEM
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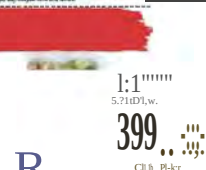
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6\$99



Tl:Op
8\$99



BONUS TICKET ITEM
Every Day
5\$
ea



Fresh Baked Cookies
36-ct. Selected varieties.
6\$99

Neighborhood DELI



Street Taco Kits
Chicken.
Every Day
7\$99
lb



BONUS TICKET ITEM
Every Day
6\$99
lb



Chicken Caesar Wrap Meal Deal
Includes regular size sandwich, chips and small fountain drink.
Club Price
6\$



Chicken Caesar Wrap Meal Deal
Includes regular size sandwich, chips and small fountain drink.
Club Price
6\$

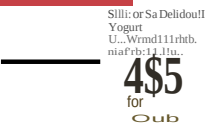
t/fa,tr DELIGHTS



Griek Yogurt
4.64lb, 32-oz.
Selected varieties.
Club Price: \$3.99 ea.
BONUS TICKET ITEM
Every Day
2\$7
for 7
Club Price



Dmclft Donut
Indu:ffee
Wmatv.1J6i.
Every Day
1\$
ea



Sillk or Sa Delidou! Yogurt
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Every Day
4\$5
for 5
Club Price



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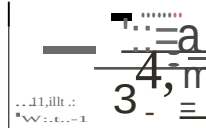
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Every Day
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Costco—198 Plaza Dr, Vallejo
February 15, 2020



Costco—198 Plaza Dr, Vallejo
February 15, 2020



EXHIBIT E

Urban Decay
Vacant Food 4 Less Grocery – 5184 Sonoma Blvd, Vallejo
February 15, 2020



Urban Decay
Vacant Food 4 Less Grocery – 5180 Sonoma Blvd, Vallejo
February 15, 2020



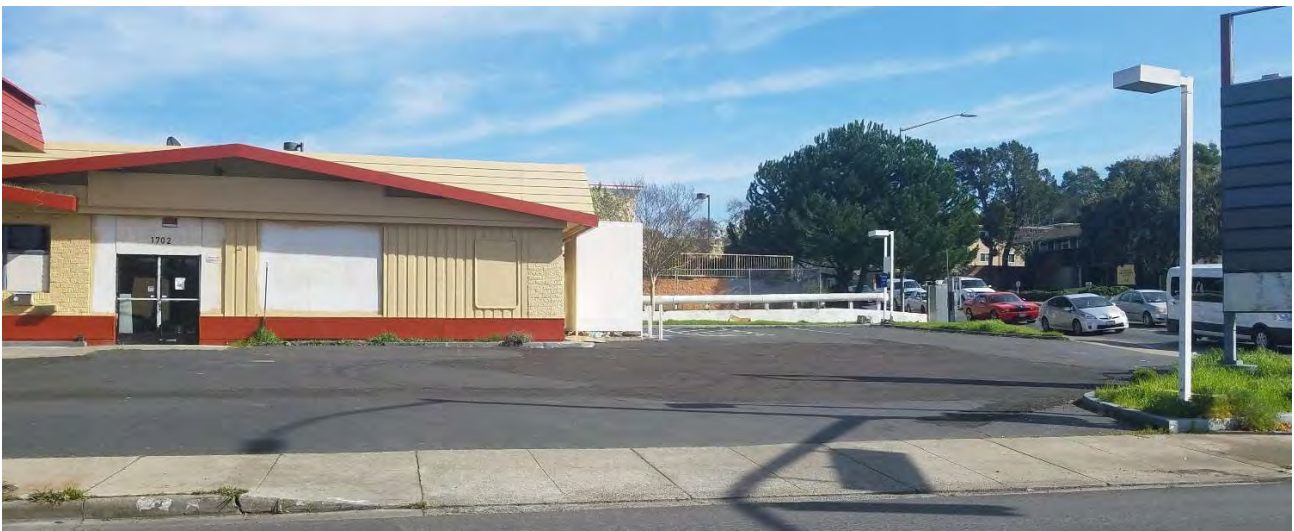
Urban Decay
Vacant Raley's Grocery & Shops – 4300 Sonoma Blvd, Vallejo
February 15, 2020



Urban Decay
Vacant Furniture Store – 709 Admiral Callahan, Vallejo
February 15, 2020



Urban Decay
Vacant Gas Station – 1702 Tuolumne, Vallejo
February 15, 2020



Urban Decay
Vacant Furniture Store – 3790 Sonoma Blvd, Vallejo
February 15, 2020



EXHIBIT F

NEWS > BUSINESS

Vallejo's Food 4 Less closing after lease expires



Vallejo Food 4 Less is expected to close for good at 5 p.m. on Sunday. - RACHEL RASKIN-ZRIHEN - TIMES-HERALD

By [RACHEL RASKIN-ZRIHEN](mailto:rzrihen@timesheraldonline.com) | rzrihen@timesheraldonline.com | Vallejo Times Herald

PUBLISHED: May 11, 2016 at 12:00 a.m. | UPDATED: August 30, 2018 at 12:00 a.m.

Many Vallejo Food 4 Less customers may still be in the dark, but its employees learned "a couple weeks ago," that the store is closing for good on Sunday, a long-time employee said Tuesday.

Eighteen-year store veteran Brian Roberts of Vallejo said the 75-or-so employees were told there are jobs for them in one of the company's new stores in Marin or Sacramento, if they want it.

"This is a great place to work, and I'm too young to retire, so I'm going to transfer," Roberts said. "I raised my girls here and they're graduating college this month and next month, so I can commute, now."

This year, for the 11th consecutive year, Nugget Markets - which owns Food 4 Less - ranks on FORTUNE Magazine's "100 Best Companies to Work For" list.

Food 4 Less spokeswoman Kate Stille, confirmed that the 25-year-old store - the discount brand of the Nugget Market franchise - will close its doors for the last time at 5 p.m. Sunday.

"Our lease is up, and that's the primary reason we're closing," she said. "We were in contract with a potential buyer, another grocer, but they backed out. Our 25-year lease is due, and that center has been (mostly) vacant for seven years and foot traffic and sales have declined as a result. So we made the decision to go ahead and close it."

Food 4 Less is the last surviving anchor tenant of the Meadows Plaza shopping center at Sonoma Boulevard and Meadows Drive, and has been since the Walmart closed more than a half dozen years ago. Local commercial Realtor Fred Sessler said the former Walmart site has been leased since its closure, by the Home Depot, which has yet to do anything with the property.

"We are very grateful for the support Vallejo has provided us over the years," Stille said. "About a month ago, our associates were notified. Some of them have been with us since the beginning. We are excited that a vast majority have accepted positions elsewhere in the company."

Roberts placed partial blame for the store's closure on how "Vallejo keeps allowing competition in," adding the employees were offered transfers or retirement.

"They tried their best to keep the store, and it was for the love of the people that work here," he said.

"Oh, wow," said Virginia Laguardia of American Canyon, who stopped into the Food 4 Less on Tuesday and learned it was closing. "I love coming here."

Laguardia said she had noticed some sparseness on the shelves recently that caused her to wonder. She said she's not sure where she'll do her shopping now.

"Maybe I'll go to Walmart," she said.

Another shopper taken by surprise by news of the store's impending closure, and who identified herself only as Monica from Vallejo, said she's unconcerned because she does most

"The north end of town, the Food 4 Less, which has always been a good neighbor, and the Raley's, which is very nice and is also struggling, I understand, are squeezed between the American Canyon Walmart Supercenter and the Vallejo Walmart Neighborhood Market."

The history of Food 4 Less' parent company, the Nugget Market, goes back to 1926 when the father-and-son team of William and Mack Stille, opened the original store in Woodland, according to the company website.

In the early 2000s, Nugget Markets was tapped to anchor developer Gary Mandarich's north Vallejo project on about 128 acres northeast of Interstate 80 and Columbus Parkway.

In, 2007, Nugget owner Eric Stille chose to walk away from that plan and his \$1.2 million investment in it, when city officials agreed to consider a possible Walmart Supercenter on Sonoma near Redwood Street. The development property has since been bought by the Solano Community College, Sessler said.

The city ultimately declined the Walmart, which built a Supercenter a few miles up the road in American Canyon. Sessler said that if history is any indication, another tenant will eventually be found for the space being vacated by the Food 4 Less.

"Who knows, maybe an ethnic market will go in there," he said.

Meanwhile, Kate Stille said she recalls the many years the company was involved with the city of Vallejo, helping pay for the annual fireworks display for decades, and company officials felt the affection was reciprocated.

"We're grateful for all the support the residence of Vallejo have given Food 4 Less," she said.

Another employee who preferred not to give her name, said she has mixed feelings about the news.

"We are happy because the people still have jobs, but we're also sad," she said. "We've been here 25 years and we'll miss our guests."

Contact Rachel Raskin-Zrihen at (707) 553-6824.



BUSINESS & REAL ESTATE

Raley's plans to close Vallejo supermarket, resulting in 65 layoffs

By Mark Glover

mglover@sacbee.com

MAY 10, 2017 12:19 PM



Raley's, which closed this store in Ceres in 2011, announced its plans to close a store in Vallejo, a move that will result in 65 layoffs. The store will close on June 24. *BART AH VOU MODESTO BEE*

West Sacramento-based grocer Raley's plans to close its Raley's Supermarket in Vallejo next month.

The planned closure of the store at 4300 Sonoma Blvd. will result in 65 layoffs, according to a standard "WARN Act" letter sent by Raley's and received by the California Employment Development Department on April 28.

The Worker Adjustment and Retraining Notification Act requires large businesses to give early warning of layoffs and closures.

In an email, Raley's spokeswoman Chelsea Minor confirmed that the store will close June 24. She said the store lease was up for renewal, and Raley's opted not to renew.

She added: "With all of our stores, we evaluate external factors, including neighborhood demographics, customer outlook and competitors. As the market for grocery and neighborhoods change, it requires us to review store locations based on customer traffic and sales. The Vallejo market has changed since we opened the store, with an increased number of competition in the area.

"This location was outdated and would have required large amounts of resources to renovate - something that is not supported by the customer traffic and sales."

Minor said the Vallejo store opened in 1987.

She said the company is working to transfer affected workers to available positions in nearby locations.

Founded in 1935, Raley's operates 121 stores in Northern California and Nevada under four banners: Raley's Supermarkets, Bel Air Markets, Nob Hill Foods and Food Source.

Mark Glover: [916-321-1184](tel:916-321-1184), [@markhglover](https://www.instagram.com/markhglover)

EXHIBIT G

Costco Gas—198 Plaza Dr, Vallejo
4:27 PM, Monday
February 3, 2020



Costco Gas—198 Plaza Dr, Vallejo
4:27 PM, Monday
February 3, 2020



EXHIBIT H

DATE: May 28, 2019
TO: Mayor and Members of the City Council
CC: Greg Nyhoff, City Manager
FROM: Economic Development, Planning, Building & Housing Divisions
SUBJECT: Major Projects Status Update

Aligned with City Council's Tier 1 Priorities of economic development and streamlining the permitting process, the City has enhanced its coordination between multiple departments on major projects. Bi-weekly meetings since August 2018 between Economic Development, Planning, Building, Housing, the City Manager, and the City Attorney's Office have allowed staff to focus on prioritizing those projects that necessitate City facilitation, identifying obstacles early, co-creating solutions, and ensuring that investors are successful in bringing sustainable growth, employment, and development to Vallejo.

Below is a brief update on 10 of the larger projects staff are currently working on:

Mare Island - Proposed Mixed Use Development

- The City executed an Exclusive Negotiating Agreement for 157 acres of City land on North Mare Island with the Nimitz Group in July 2018 to undertake the infrastructure and vertical development of up to 1.2 million square feet of manufacturing & office space. Subsequently, the Nimitz Group entered into a purchase agreement to acquire the Lennar holdings on south Mare Island, and is wrapping up their diligence period.
- The Nimitz Group contracted with internationally-recognized firm [HOK](#) in January 2019 and began developing an island-wide master plan to build a 21st Century community of employment, housing, and recreation to restore Mare Island as the economic engine of the region.
- Although the island requires tens of millions of dollars of infrastructure updates, the federally-designated Opportunity Zone status of Mare Island and the Nimitz Group's investment partners are well-positioned to undertake what the San Francisco Business Times declared the "[#1 Megaproject in the SF Bay Area](#)."
- The Nimitz Group is hosting community meetings in early June ahead of an anticipated transfer from Lennar to Nimitz in Summer 2019, with the Master Plan anticipated to be fully completed thereafter.

Contact: Will Morat, Assistant to the City Manager, 707-648-4109, will.morat@cityofvallejo.net

La Clinica - Downtown Community Health Care Facility Under Construction

- In 2017, City Council approved La Clinica de La Raza's request to renovate a vacant building downtown to accommodate their new health care and clinic expansion. The new facility at 415 Georgia Street will consolidate two of the existing clinics currently located at 243 Georgia Street and 2920 Sonoma Boulevard.

- Adaptive reuse of an existing vacant retail building in the downtown with a business that will generate employment and foot traffic along the primary commercial corridor supports the City's goal of creating a more vibrant downtown area.
- The renovation project is currently underway with most of the required demolition complete. The site, with buildings on both sides and situated in the downtown area, creates a challenging construction environment, and the City and contractor have been working to create a safe, secure site and laydown area in and around the building.
- The contractor anticipates completing the structural framing, siding, windows, doors and roof before winter.

Contact: Steve Arnold, Chief Building Official, 707-648-4387, steve.arnold@cityofvallejo.net

Cooke Property -New Costco & Housing Development In Process

- Vallejo Fairview Developers/Lewis Group have submitted a Master Plan to construct a new, expanded Costco and 178 new single-family homes on the 50-acre Cooke Property on Admiral Callahan Lane adjacent to 1-80 .
- The long-vacant site's size and visibility make it an ideal site for Costco to relocate within the City, retaining this major employer and sales tax generator.
- The project's challenging infrastructure costs were initially tackled through City Council's approval of a Memorandum of Understanding with Costco and the developer in May 2018 that set up a tax-financing strategy for the site, and staff and the developer continue to work on the federal agency permitting of the protected wetland corridor that separates the commercial and residential portions of the site.
- A Draft Environmental Review is being prepared and will be circulated in Fall 2019 with Planning Commission and City Council hearings anticipated for the first quarter of 2020.

More Information:

http://www.ci.vallejo.ca.us/city_hall/departments_divisions/planning_and_development_services/planning_division/major_development_specifc_plan_docs/fairfew_northgate_project_cooke_property

Contact: Alea Gage, ED Project Manager, 707-649-5454, alea.gage@cityofvallejo.net

Sacramento Street Permanent Supportive Housing - Proposed Multi-Family Housing for Homeless

- Eden Housing, one of the Bay Area's leaders in affordable housing, is the City-selected developer for a proposed 75-unit multi-family housing project for homeless residents on City-owned property at 2118 and 2134-36 Sacramento Street. The City has already allocated more than \$1 million, with several more million in funding scheduled to be committed, for the project in a combination of General Fund, HUD funding, and former redevelopment assets. The developer will also bring in California state tax credit financing to meet the total costs for a project anticipated to be valued at over \$30 million.
- Vallejo is poised to take the lead on progressive, evidenced-based solutions for homelessness with this Housing First project that will provide much-needed permanent housing for those most in need, including onsite services and support for residents.
- The City is working closely with Eden to facilitate the combination of funding sources, external grants, and financing to ensure the project's success.

- Eden is currently conducting community outreach and meetings, and a formal Development Agreement is anticipated to come before City Council in Summer 2019, leading into the application and review process, and ultimate construction in 2022.

Contact: Judy Shepard-Hall, Housing Manager, 707-648-4408. judy.shepard.tlall@cityofvallejo.net

Blue Rock Springs - Proposed Golf & Housing Development

- Currently under an Exclusive Negotiating Agreement with the Greg Norman Company and Lewis Group, the proposed Project Concept would transform two fiscally unsustainable City golf courses and an aging clubhouse on 225 acres of City-owned land into a new community of approximately 600 single-family homes designed within a single 18-hole Greg Norman Signature Course and state-of-the-art clubhouse.
- Revenues from the proposed project would cover construction of the new course and clubhouse to eliminate \$350,000-\$750,000 in annual City subsidies, but the golf component would remain public/City-owned.
- The project is challenged by the adjacent quarry that seeks to limit any development on City-owned land; the City, developer and the quarry owner are in dialogue on a negotiated compromise.
- A formal application for the project is anticipated in October 2019, to be followed by a full entitlement and environmental review process over the next 12-18 months, with construction potentially beginning in Summer 2021.

More Information: <http://www.cityofvallejo.net/cms/One.aspx?portalId=13506&pageId=152111580>

Contact: Will Morat, Assistant to the City Manager, 707-648-4109, will.morat@cityofvallejo.net

Northern Waterfront- Housing Development In Process

- There has been significant focus on pre-development activities for the Northern Waterfront, also known as Mariner's Cove, where Callahan Property Company has submitted an application for 175 single family homes, 20,000 square feet of commercial development, and two new parks.
- The City's import of 70,000 cubic yards of clean dirt in Summer 2018 begins the necessary soil stabilization process and improves the value of the property. The developer has undertaken community consultation to align with the Waterfront Planned Development Master Plan, including community workshops on December 13, 2018 and January 16, 2019, and the pre-submittal unit plan review with Vallejo Waterfront Coalition.
- Staff is working to remove a State Lands encumbrance along the property's edge, and evaluating financing mechanisms for both the City and Developer's fair share of the public infrastructure.
- Processing of final entitlements will include two Design Review Board hearings, two Planning Commission hearings and one City Council hearing, anticipated over the next 12 months.

More Information: <http://www.cityofvallejo.net/cms/One.aspx?portalId=13506&pageId=1036631>

Contact: Alea Gage, ED Project Manager, 707-649-5454, alea.gage@cityofvallejo.net

North Gateway {5190 Sonoma}-Multi-Family Housing Development In Process

- Chicago-based developer CA Ventures applied for planning permits in April 2019 for a 288-unit apartment project on 13 acres of vacant land on Sonoma Boulevard just south of Mini Drive.
- This project would be a major catalyst for development of the North Gateway District as envisioned in the General Plan, placing attractive and much-needed housing at the City's northern entrance along Highway 29. It would also be the City's first major multi-family development in over 10 years and would provide over 20 percent of the City's current Regional Housing Needs Allocation.
- Staff is working closely with the developer to coordinate with Caltrans on new access from State Route 29, aligning with the adjacent BayNine Trail on Broadway Street, and designing pedestrian and transit amenities to foster a walkable, mixed-use district.
- Staff is beginning the process of selecting an environmental review consultant for the project, and public hearings are anticipated in late 2018 or early 2019, depending on the level of environmental review needed.

Contact: Aaron Sage, Principal Planner, 707-648-5391, aaron.sage@cityofvallejo.net

Glen Cove Assisted Living - Senior Housing Facility Under Construction

- The Lodge at Glen Cove is a 140-unit assisted living facility for seniors at Glen Cove Marina Road approved by City Council in October 2018.
- The \$13.9 million project establishes a senior assisted living and memory care facility in Glen Cove near the marina, and provides an additional housing alternative for seniors in the greater Vallejo community.
- Contractors have already installed the underground utilities, constructed the retaining walls and poured most of the building's foundation. With building framing initiated this month, the project is focused on completing all of the framing, windows, doors, and roofing before winter.
- The Building Division's inspectors are working closely with the contractor to address any revisions quickly to ensure the project stays on schedule, with inspections done at each phase.

Contact: Steve Arnold, Chief Building Official, 707-648-4387, steve.arnold@cityofvallejo.net

Borges Ranch - Proposed Housing Development

- On June 22, 2018, the City began working with New Faze Development on 122-acre site located just west of Interstate 80 and south of American Canyon Road. The developer submitted an application on April 26, 2019 to create a Planned Development Master Plan that would ultimately entitle and construct 495 single-family units of varying styles, sizes, and price points, representing a much-needed addition to Vallejo's tight housing market.
- City staff is assisting the developer through extensive civil engineering work to design around the **site's** steep grade and proximity to Summit Reservoir.
- The applicant will be hosting community meetings in late 2019, and the entitlement and environmental review process will take place over the next 14 - 18 months.

Contact: Afshan Hamid, Planning Manager, 707-648-4382, afshan.hamid@cityofvallejo.net

Carlton Senior Living - Approved Assisted Living Facility

- In January 2019, the City Planning Commission approved an application from Carlton Senior Living to redevelop the former Elks Lodge property at 2850 Redwood Parkway as a 156-unit assisted living facility. The project also includes 24,000 square feet of medical office and commercial retail space on the property that will be constructed in the second phase.
- The project redevelops a long-vacant parcel along a major corridor near Interstate 80. The assisted living facility will provide critical housing for senior citizens, is designed to be compatible with the surrounding residential and commercial uses, and will activate the site on a 24-hour basis.
- The applicant is developing construction drawings and plans to begin demolishing the existing buildings, with first plan review by the Building Division anticipated in late August.

Contact: Steve Arnold, Chief Building Official, 707-648-4387, steve.arnold@cityofvallejo.net

EXHIBIT I

Northbound Admiral Callahan
Redwood Plaza/Safeway/In N Out on right
3:56 PM, Monday
February 3, 2020



Northbound Admiral Callahan
Redwood Plaza/Safeway/In N Out on right
4:21 PM, Monday
February 3, 2020



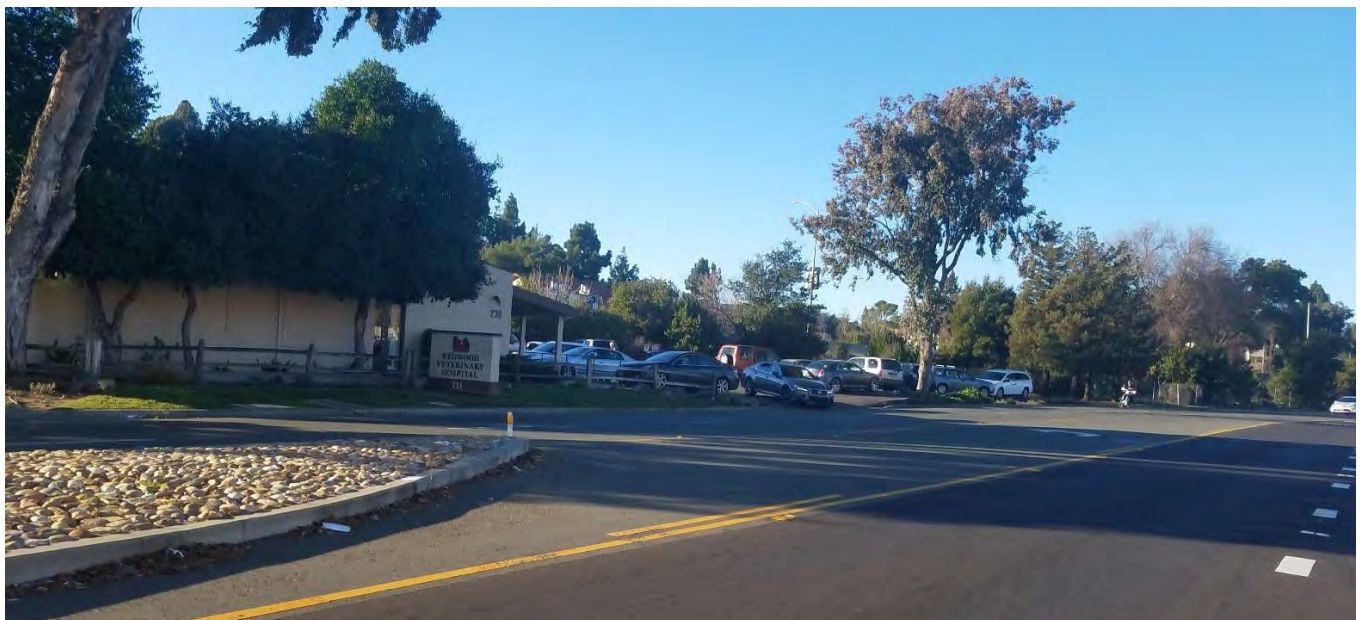
Southbound Admiral Callahan
Redwood Plaza/Safeway/In N Our on left
1:27 PM, Saturday
February 15, 2020



South Driveway Exiting Redwood Plaza onto Admiral Callahan
3:56 PM, Monday
February 3, 2020



Northbound Admiral Callahan
Redwood Veterinary Hospital on left
3:57 PM, Monday
February 3, 2020



Northbound Admiral Callahan & Rotary
4:21 PM, Monday
February 3, 2020

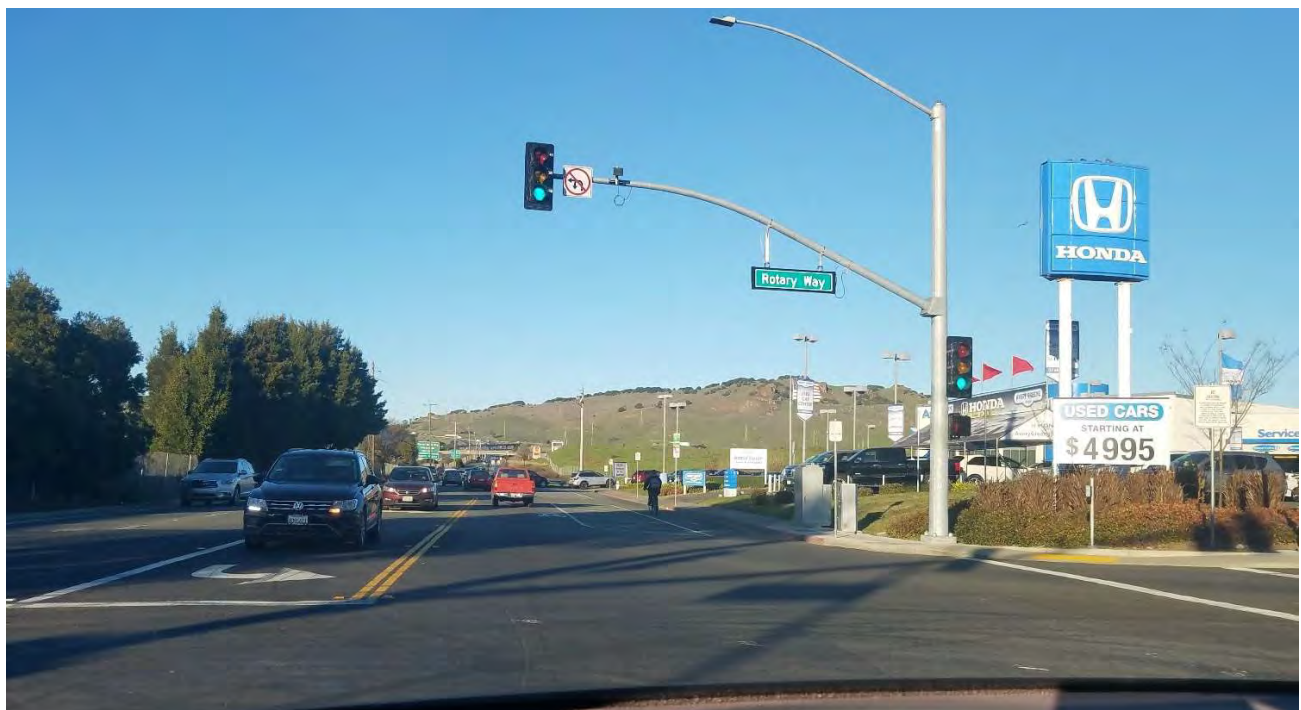


EXHIBIT J

From: [Dan Marks](#)
To: [Ron Gerber](#); [Afshan Hamid](#)
Subject: RE: Fehr Peers -VMT-- Fehr Peers -Cook site
Date: Wednesday, January 10, 2018 11:23:38 AM
Attachments: [image006.png](#)
[image007.png](#)
[image008.png](#)
[image009.png](#)
[image010.png](#)

Hi Ron: Let's discuss when you have a chance. I'm less concerned with the relation to VMT than I am about the duplication of effort (and additional cost) when one consultant is doing traffic analysis that would have to be peer reviewed by another for the EIR – especially when both consultants were selected by and reporting to staff (if, indeed, that's the case for Fehr/Peers).

From: Ron Gerber
Sent: Tuesday, January 09, 2018 6:17 PM
To: Afshan Hamid <Afshan.Hamid@cityofvallejo.net>; Dan Marks <Dan.Marks@cityofvallejo.net>;
Teri Killgore <Teri.Killgore@cityofvallejo.net>
Subject: Fehr Peers -VMT-- Fehr Peers -Cook site

All,

The last question in the responses below confirm that Fehr Peers is involved in the VMT project. We (Dan, Afshan and myself) learned on Friday that Fehr Peers was also selected by the City (not by the developer) as the traffic consultant for the Cook site. Apparently an \$18,000 task was completed by Fehr Peers regarding the Cook project. The overall traffic study scope of services and budget for Cook apparently has been not yet been finalized. It has been scaled back from the initial estimate of approx. \$190,000 but has yet to be finalized.

QUESTION: Any concerns about keeping Fehr Peers as the Cook traffic consultant? If so, Kimley Horn, the EIR firm selected for the Cook project has a very substantial traffic engineering division that handles many projects of this scope and much larger. Just wanted to make sure we're all on the same page as Cook ramps up.

Thanks!

Ron

Ron Gerber
Economic Development Manager
City of Vallejo | Economic Development Division
555 Santa Clara Street, Vallejo, CA 94590
(707) 553-7283 | ron.gerber@cityofvallejo.net


From: Heather Iopu
Sent: Tuesday, January 09, 2018 2:43 PM
Cc: Teri Killgore <Teri.Killgore@cityofvallejo.net>; Dan Singer <Dan.Singer@cityofvallejo.net>; Dawn

Abrahamson <Dawn.Abrahamson@cityofvallejo.net>; Claudia Quintana
<Claudia.Quintana@cityofvallejo.net>; Joanna Altman <Joanna.Altman@cityofvallejo.net>; Andrew
Bidou <Andrew.Bidou@cityofvallejo.net>; Beth Schoenberger
<Beth.Schoenberger@cityofvallejo.net>; Claudia Quintana <Claudia.Quintana@cityofvallejo.net>;
Dawn Abrahamson <Dawn.Abrahamson@cityofvallejo.net>; Donna Mooney
<Donna.Mooney@cityofvallejo.net>; Jack McArthur <Jack.McArthur@cityofvallejo.net>; Mike
Malone <Mike.Malone@cityofvallejo.net>; Ron Gerber <Ron.Gerber@cityofvallejo.net>; Ron Millard
<Ron.Millard@cityofvallejo.net>; Teri Killgore <Teri.Killgore@cityofvallejo.net>; Terrance Davis
<Terrance.Davis@cityofvallejo.net>; Angelina Abella <Angelina.Abella@cityofvallejo.net>; Brisa Long
<Brisa.Rojas@cityofvallejo.net>; Brooke OLeary <Brooke.OLeary@cityofvallejo.net>; Katie Buchanan
<Katie.Buchanan@cityofvallejo.net>; Leslie Trybull <Leslie.Trybull@cityofvallejo.net>; Shellyne Darst
<Shellyne.Darst@cityofvallejo.net>; Vanessa Garcia <Vanessa.Garcia@cityofvallejo.net>; Dan Singer
<Dan.Singer@cityofvallejo.net>; Carmen Valdez <Carmen.Valdez@cityofvallejo.net>; Melissa
Morton (mmorton@vsfcd.com) <mmorton@vsfcd.com>; Teresa Flores
<Teresa.Flores@cityofvallejo.net>; Dan Marks <dmarks@managementpartners.com>; Afshan Hamid
<Afshan.Hamid@cityofvallejo.net>; Jim Reese <Jim.Reese@cityofvallejo.net>; Lee Horton
<Lee.Horton@cityofvallejo.net>; Greg Nyhoff <Greg.Nyhoff@cityofvallejo.net>

Subject: Response to Council Questions for 1/9

Hello Mayor and Councilmembers,

Please find the attached response to questions on tonight's agenda.

Copies of this document will also be on the dais for you.

Thank you,

Heather Iopu

Deputy City Clerk | Acting Executive Assistant to the Interim City Manager, Teri Killgore

City of Vallejo | City Clerk's Office | City Manager's Office

(707) 648-4576

heather.iopu@cityofvallejo.net



EXHIBIT K

Natalie Mattei

From: Aaron Sage <Aaron.Sage@cityofvallejo.net>
Sent: Tuesday, February 18, 2020 9:27 PM
To: Natalie Mattei
Cc: Jewell, Alex; Doug Mull; Jeb Elmore; David Yatabe; Gillian Hayes; Ellen Poling; Delia Votsch; Gary G. Bauer
Subject: Re: EXTERNAL EMAIL: Re: Fairview traffic meeting with Safeway (confirmed)

Hello Natalie,

I apologize for the miscommunication and I appreciate your flexibility. Just to clarify, the meeting starts at 8 am not 8:30, so we will have a full hour for the meeting. Again, please use north entrance of City Hall.

Regards,
Aaron

Aaron Sage, AICP
Principal Planner
City of Vallejo
[707-648-5391](tel:707-648-5391)

On Feb 18, 2020, at 9:05 PM, Natalie Mattei <Natalie.Mattei@albertsons.com> wrote:

It's an extreme show of bad faith to change the location of a meeting at 8pm the night before, and to decrease the time available from an hour to a half hour.

I will be at City Hall tomorrow before 8:30am as requested. I do hope the City and its consultants visit the site before the next hearing. Last I talked with Aaron he had not been there recently, and I'm unsure if the consultants have ever been.

Natalie Mattei
Office 925-226-5754
Cell 925-413-4455

From: Doug Mull <doug.mull@lewismc.com>
Sent: Tuesday, February 18, 2020 8:42:45 PM
To: Natalie Mattei <Natalie.Mattei@albertsons.com>; Jewell, Alex <alex.jewell@kimley-horn.com>; Aaron Sage <Aaron.Sage@cityofvallejo.net>
Cc: Jeb Elmore <Jeb.Elmore@lewismc.com>; David Yatabe <David.Yatabe@cityofvallejo.net>; Gillian Hayes <Gillian.Hayes@cityofvallejo.net>; Ellen Poling <E.Poling@fehrendpeers.com>; Delia Votsch <D.Votsch@fehrendpeers.com>; Gary G. Bauer <gary.bauer@lewismc.com>
Subject: Re: EXTERNAL EMAIL: Re: Fairview traffic meeting with Safeway (confirmed)

I'm happy to but it's scheduled for city offices so I recommend that we stay with that plan. If it warrants a field trip, that opportunity is not foreclosed.

Douglas V. Mull
Senior Vice President/Regional Manager
Northern California Planned Communities
CA BRE # 00957775
Lewis Management Corp.

9216 Kiefer Blvd.
Sacramento, CA 95826
doug.mull@lewismc.com
(916) 363-2617 Office
(916) 403-1702 Direct
<https://clicktime.symantec.com/3AtzPt7W74DzSsTfnshSurQ7Vc?u=www.LewisGroupOfCompanies.com/>
<https://clicktime.symantec.com/3KptsAVQEwbb9N6WmPrPvh7Vc?u=www.LewisCareers.com>

From: Natalie Mattei <Natalie.Mattei@albertsons.com>
Sent: Tuesday, February 18, 2020 8:30:18 PM
To: Jewell, Alex <alex.jewell@kimley-horn.com>; Aaron Sage <Aaron.Sage@cityofvallejo.net>
Cc: Jeb Elmore <Jeb.Elmore@lewismc.com>; David Yatabe <David.Yatabe@cityofvallejo.net>; Gillian Hayes <Gillian.Hayes@cityofvallejo.net>; Ellen Poling <E.Poling@fehrrandpeers.com>; Delia Votsch <D.Votsch@fehrrandpeers.com>; Doug Mull <doug.mull@lewismc.com>; Gary G. Bauer <gary.bauer@lewismc.com>
Subject: Re: EXTERNAL EMAIL: Re: Fairview traffic meeting with Safeway (confirmed)

My understanding was the meeting would be onsite, which is most appropriate. 8am onsite.

Natalie Mattei
Office 925-226-5754
Cell 925-413-4455

From: Aaron Sage <Aaron.Sage@cityofvallejo.net>
Sent: Tuesday, February 18, 2020 8:13:25 PM
To: Jewell, Alex <alex.jewell@kimley-horn.com>
Cc: Natalie Mattei <Natalie.Mattei@albertsons.com>; Jeb Elmore <Jeb.Elmore@lewismc.com>; David Yatabe <David.Yatabe@cityofvallejo.net>; Gillian Hayes <Gillian.Hayes@cityofvallejo.net>; Ellen Poling <E.Poling@fehrrandpeers.com>; Delia Votsch <D.Votsch@fehrrandpeers.com>; Doug Mull <doug.mull@lewismc.com>; gary.bauer@lewismc.com <gary.bauer@lewismc.com>
Subject: EXTERNAL EMAIL: Re: Fairview traffic meeting with Safeway (confirmed)

The meeting is being held at City Hall, not at the project site. Our address is 555 Santa Clara Street, Vallejo CA 94590. Please use the entrance on the north side, facing the parking lot off of Santa Clara St.

Regards,
Aaron

Aaron Sage, AICP
Principal Planner
City of Vallejo
[707-648-5391](tel:707-648-5391)

On Feb 18, 2020, at 8:00 PM, Jewell, Alex <alex.jewell@kimley-horn.com> wrote:

I apologize for confusing the situation. There is no change to the meeting logistics and no one will be calling in. Please disregard my earlier email.

-Alex

From: Natalie Mattei <Natalie.Mattei@albertsons.com>
Sent: Tuesday, February 18, 2020 7:58 PM
To: Jewell, Alex <alex.jewell@kimley-horn.com>; Aaron Sage <Aaron.Sage@cityofvallejo.net>; Jeb Elmore <Jeb.Elmore@lewismc.com>; David Yatabe <David.Yatabe@cityofvallejo.net>; Gillian Hayes <Gillian.Hayes@cityofvallejo.net>; Ellen Poling <E.Poling@fehrandpeers.com>
Cc: Delia Votsch <D.Votsch@fehrandpeers.com>; Doug Mull <doug.mull@lewismc.com>; gary.bauer@lewismc.com
Subject: Fairview traffic meeting with Safeway (confirmed)

Who will not be attending?

I'm trying to understand the logistics. We will be walking the site and surrounding area, so will someone be holding a cell phone on speaker?

Natalie Mattei
Senior Real Estate Manager
Albertsons Companies
11555 Dublin Canyon Road
Pleasanton, CA 94588
(925) 226-5754 Office | (925) 413-4455 Mobile
natalie.mattei@safeway.com | [LinkedIn](#)

<image001.png>
www.albertsonscorporationsrealestate.com

From: Jewell, Alex <alex.jewell@kimley-horn.com>
Sent: Tuesday, February 18, 2020 7:52 PM
To: Natalie Mattei <Natalie.Mattei@albertsons.com>; Aaron Sage <Aaron.Sage@cityofvallejo.net>; Jeb Elmore <Jeb.Elmore@lewismc.com>; David Yatabe <David.Yatabe@cityofvallejo.net>; Gillian Hayes <Gillian.Hayes@cityofvallejo.net>; Ellen Poling <E.Poling@fehrandpeers.com>
Cc: Delia Votsch <D.Votsch@fehrandpeers.com>; Doug Mull <doug.mull@lewismc.com>; gary.bauer@lewismc.com
Subject: EXTERNAL EMAIL: RE: Fairview traffic meeting with Safeway (confirmed)

I don't believe that has changed. This number is for a couple of us who cannot be there in person.

-Alex

From: Natalie Mattei <Natalie.Mattei@albertsons.com>
Sent: Tuesday, February 18, 2020 7:49 PM
To: Jewell, Alex <alex.jewell@kimley-horn.com>; Aaron Sage <Aaron.Sage@cityofvallejo.net>; Jeb Elmore <Jeb.Elmore@lewismc.com>; David Yatabe <David.Yatabe@cityofvallejo.net>; Gillian Hayes <Gillian.Hayes@cityofvallejo.net>; Ellen Poling <E.Poling@fehrandpeers.com>
Cc: Delia Votsch <D.Votsch@fehrandpeers.com>; Doug Mull <doug.mull@lewismc.com>; gary.bauer@lewismc.com
Subject: Fairview traffic meeting with Safeway (confirmed)

I thought this was an in-person meeting onsite not a phone call?

Natalie Mattei

Senior Real Estate Manager
Albertsons Companies
11555 Dublin Canyon Road
Pleasanton, CA 94588
(925) 226-5754 Office | (925) 413-4455 Mobile
natalie.mattei@safeway.com | [LinkedIn](#)

<image001.png>

www.albertsonscorporationsrealstate.com

From: Jewell, Alex <alex.jewell@kimley-horn.com>
Sent: Tuesday, February 18, 2020 7:45 PM
To: Aaron Sage <Aaron.Sage@cityofvallejo.net>; Jeb Elmore <Jeb.Elmore@lewismc.com>;
David Yatabe <David.Yatabe@cityofvallejo.net>; Gillian Hayes
<Gillian.Hayes@cityofvallejo.net>; Ellen Poling <E.Poling@fehrandpeers.com>
Cc: Delia Votsch <D.Votsch@fehrandpeers.com>; Natalie Mattei
<Natalie.Mattei@albertsons.com>
Subject: EXTERNAL EMAIL: RE: Fairview traffic meeting with Safeway (confirmed)

Here is a call in number for tomorrow's meeting:

(833) 779-7795/Code: 398863173#

-Alex

[Join Skype Meeting](#)

Trouble Joining? [Try Skype Web App](#)

Join by phone

Toll-free number: +1 (833) 779-7795,,398863173# (Dial-in Number)
States)

English (United

Toll number: +1 (323) 886-7531,,398863173# (Dial-in Number)

English (United States)

[Find a local number](#)

Conference ID: 398863173

[Forgot your dial-in PIN?](#) | [Help](#) | [Legal](#)

-----Original Appointment-----

From: Aaron Sage <Aaron.Sage@cityofvallejo.net>

Sent: Wednesday, February 12, 2020 10:32 AM

To: Aaron Sage; Jeb Elmore; David Yatabe; Gillian Hayes; Jewell, Alex; Ellen Poling

Cc: Delia Votsch; Natalie Mattei

Subject: Fairview traffic meeting with Safeway (confirmed)

When: Wednesday, February 19, 2020 8:00 AM-9:00 AM (UTC-08:00) Pacific Time (US & Canada).

Where: Planning Conference Room

This is a placeholder pending confirmation with Safeway. The meeting goal is to explain the TIA methodology and conclusions, discuss Safeway's concerns (see attached letter), and identify any low-cost solutions or improvements that don't require recirculation of EIR.

Ellen and David, can you please make sure you've reviewed the attached letter from Safeway, and send brief thoughts on how you'd like to address their traffic comments by end of day Tuesday 2/18?

<image002.jpg>

Thanks all,
Aaron

Warning: All e-mail sent to this address will be received by the corporate e-mail system, and is subject to archival and review by someone other than the recipient. This e-mail may contain proprietary information and is intended only for the use of the intended recipient(s). If the reader of this message is not the intended recipient(s), you are notified that you have received this message in error and that any review, dissemination, distribution or copying of this message is strictly prohibited. If you have received this message in error, please notify the sender immediately.

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Warning: All e-mail sent to this address will be received by the corporate e-mail system, and is subject to archival and review by someone other than the recipient. This e-mail may contain proprietary information and is intended only for the use of the intended recipient(s). If the reader of this message is not the intended recipient(s), you are notified that you have received this message in error and that any review, dissemination, distribution or copying of this message is strictly prohibited. If you have received this message in error, please notify the sender immediately.

***** This is an EXTERNAL EMAIL. Stop and think before clicking links or opening attachments. *****

EXHIBIT L

Vallejo-Fairview Developers, LLC

5142 Franklin Drive, Suite B
Pleasanton, CA 94588

January 15, 2020

City of Vallejo
Attn: Aaron Sage
Planning Department, 2nd floor
555 Santa Clara Street
Vallejo, CA 94590

RE: Fairview at Northgate Project: Responses to City of Vallejo Application Comments from September 20, 2019

Dear Mr. Sage,

We appreciated confirmation that the City of Vallejo ("City") has provided an Application Completeness Letter on June 19, 2019, and that all submittal requirements have been met and the application has now moved into the "review" phase. We are in receipt of the City's Application Review Comment letter on September 20, 2019 and have attempted to address each comment below in writing, and where applicable, have updated the appropriate document(s) containing that information.

Public Works-Engineering Division:

1. A listing of code requirements and project conditions are provided as Attachment A. In most cases, the applicant will be required to demonstrate it has satisfied or complied with these items in order to receive approvals. Note that this same Attachment A was included with the October 31, 2018 letter on the second submittal of the TM and PD applications.

RESPONSE: **Code requirements and project conditions to be finalized in Conditions of Approval and/or during design/development stages**

2. **[New Comment]** *The project is required to make a "fair share" payment for the recently installed traffic signal at Admiral Callaghan Lane and Rotary Way. Staff will confirm the required amount prior to City Council action.*

RESPONSE: **Applicant understands the new requirement. Public Works and City Staff have confirmed that the maximum contribution amount for the Fairview Project is \$206,400, which represents 40% of the total Rotary Way signal costs per the City's Reimbursement Agreement with In&Out for \$516,000. The City will confirm the final total cost before final Project hearings. Increases scope of work/construction estimate for Admiral Callaghan Lane**

Fairview Pylon Sign Analysis

March 23, 2020

Comparison with Other Cities' Sign Codes – Pylon/Pole Signs

City	Max. Height	Max. Area	# of Signs
Vallejo – CP (Pedestrian Commercial) District*	25	75	2
Vallejo – CF (Freeway Commercial) District*	40	150	2
Fairfield	45	1 sq. ft. per LF of frontage (max. 300)	1
Davis	25 (40 for auto dealers)	200	1
Santa Rosa	7.5 (up to 9 through minor DR process)	1 sq. ft. per LF of frontage	1 per street entrance
Concord	6 (20 for auto dealerships)	30	1

* Minimum requirements for shopping center sign:

1. Min. 50K sq. ft. of floor area
2. Min. 300 ft. of street frontage
3. Shared off-street parking

Comparison of Nearby Pylon Signs (and one Concord Example)

Location (City)	Height	Area
Target Center (Vallejo)	65	348
Redwood Plaza/In-N-Out (Vallejo)	55	240 per face
Gateway Plaza (Vallejo)	25	62
Veranda center (Concord)	50 (~30 to top tenant sign)	783 (per sign face)

Target Center (immediately north of Fairview site)
65 Feet tall



Gateway Plaza (north of Fairview, not adjacent to freeway)
25 feet tall sign at shopping center entrance



Redwood Plaza (Safeway/In-N-Out) (south of Fairview site)
55 feet tall



Redwood Plaza sign from Admiral Callaghan Ln.



Concord Veranda Center
50 feet tall (~30' excluding center name/logo at top)



RECORDING REQUESTED BY:

First American Title Insurance Company

AND WHEN RECORDED MAIL THIS
DEED AND ALL TAX STATEMENTS TO:

Costco Wholesale Corporation
999 Lake Drive
Issaquah, Washington 98027
Attention: Property Management/Legal Dept.

APN: 0081-570-030

SPACE ABOVE THIS LINE RESERVED FOR RECORDER'S USE

DECLARATION OF RESTRICTIVE COVENANTS

THIS DECLARATION OF RESTRICTIVE COVENANTS (this “**Declaration**”) is made as of the ____ day of April, 2020, by Costco Wholesale Corporation, a Washington corporation (“**Declarant**”) with reference to the facts set forth below:

Declarant is the owner of that certain real property located at 198 Plaza Drive in the City of Vallejo, Solano County, California, more particularly described on **Exhibit A** attached hereto (the “**Property**”). Declarant desires to impose on the Property certain restrictions relating to the use of the Property. Declarant hereby fixes and establishes the following restrictions on the uses for which all the Property or any parts of the Property are allowed to be used or operated:

- (a) Subject to the exclusion described below for a Costco Facility or Business, no portion of the Property shall be used or operated:
 - (i) as a wholesale or retail general merchandise facility that has a merchandising concept based upon a relatively limited number of stock keeping units in a large number of product categories (the “**Merchandising Concept**”);
 - (ii) as a “Walmart” store or “Walmart Supercenter” or any other store operated under any Walmart brand (a “**Walmart**”); or
 - (iii) to support a facility operating under any prohibited use set forth in (i) and (iii) above, i.e., for parking or other necessary improvements for such a facility.
- (b) The Merchandising Concept restriction includes, but shall not be limited to: (i) any business that operates as a warehouse club; (ii) any business operated under the tradenames of Sam’s, BJ’s, Price Smart, Jetto or Smart and Final; and (iii) any business similar to those operated under the tradenames Costco, Sam’s, BJ’s, Price Smart, Jetto or Smart and Final. The Merchandising Concept restriction does not prohibit any of the following uses on the Property: (A) a specialty retail store that primarily sells goods in a few specific product categories, such as pet food, sporting goods, office supplies, home goods, home improvements, books, toys, party supplies,

craft supplies, apparel, shoes, furniture, appliances or electronics; or (B) a traditional department store, discount department store or junior department store, such as Kohl's, Target or K Mart (but specifically excluding a Walmart).

- (c) Notwithstanding anything to the contrary contained herein, in no event shall any of the prohibitions set forth in paragraphs (a) or (b) above prohibit the Property from being used for or as a Costco Facility or Business.
- (d) As used herein, a “**Costco Facility or Business**” shall mean any facility or business owned, leased, franchised, managed, operated or controlled by Costco Wholesale Corporation or by any affiliate of or successor to Costco Wholesale Corporation, including, without limitation, a Costco Wholesale warehouse club, Costco Wholesale business center, or any of the constituent or ancillary uses associated therewith. A Costco Facility or Business shall also include a facility or business that is owned or operated by a person or entity other than Costco Wholesale Corporation, or any affiliate of or successor to Costco Wholesale Corporation, but which facility or business is intended to be included as part of or otherwise integrated into a Costco Facility or Business, such as leased or licensed departments, or co-branded or ancillary uses.
- (e) These restrictive covenants shall run with the title to the Property and shall be binding upon successors and assigns with respect to the Property and shall inure to the benefit of Declarant for so long as Declarant or a successor or assign of Declarant operates a Costco Facility or Business within a ten (10) mile radius of the Property, irrespective of whether Declarant continues to own any interest in the Property or any part thereof, and to the benefit of persons or entities with ownership or possessory rights in the Property or any part thereof, and their respective successors and assigns (each, a “**Benefited Party**”). This Declaration is imposed upon the Property as a mutual equitable servitude, in favor of all the land of the Property and all portions thereof.
- (f) The breach of the foregoing restrictive covenants may cause immediate and irreparable harm for which damages are not an adequate remedy and that, to protect against such harm, Declarant or any Benefited Party may seek and obtain from a court of competent jurisdiction the issuance of a restraining order or injunction to prohibit any actual or threatened breach. Such an action for a restraining order or injunction is in addition to and does not limit any and all other remedies provided by law or equity.
- (g) The failure of Declarant or a Benefited Party to enforce at any time any provision of this Declaration will not constitute a waiver of that party's right thereafter to enforce the same or any other provision hereof, and no indulgence extended by Declarant or a Benefited Party will be construed as a waiver of any breach. Should Declarant or a Benefited Party waive any breach of any provision hereof, such waiver shall not be construed as a waiver of any rights or remedies with respect to any subsequent breach.

- (h) Should Declarant or a Benefited Party engage the services of an attorney to secure enforcement of rights hereunder, then, whether or not any action or proceeding is instituted in court, the party seeking such enforcement shall be entitled to receive from the party in breach, all costs and expenses incurred by the non-breaching party in connection with the enforcing of rights hereunder, including reasonable attorneys' fees.
- (i) So long as Declarant operates a Costco Facility or Business within a ten (10) mile radius of the Property, Declarant, acting alone, shall have the sole power and authority to modify, amend or otherwise change this Agreement in any manner, and any attempt to modify, amend or otherwise change this Agreement by any other means shall be null and void.

IN WITNESS WHEREOF, Declarant has executed this Declaration as of the date first above stated.

Costco Wholesale Corporation,
a Washington corporation

By: _____

Name: _____

Its: _____

ACKNOWLEDGMENT

STATE OF WASHINGTON

COUNTY OF _____

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that (he/she) signed this instrument, on oath stated that (he/she) was authorized to execute the instrument and acknowledged that as the _____ of _____ to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Name: _____
Notary Public

My appointment expires: _____

[SEAL]

NORTHGATE MIXED USE DEVELOPMENT

Permitted Uses

LAND USE (1)	COMMERCIAL (Section 5.1)	NEIGHBORHOOD SHOPPING & SERVICES (Section 4)	MIXED USE (Section 3)
Administrative and professional services	P	P	P
Animal sales and services (indoor)	P	—	MJUP
Automotive and equipment (4): including Sales/Rentals light equipment, Repair - light equipment, Service, Repair – heavy equipment excluding aircraft, boats and heavy trucks.	MJUP	—	—
Building maintenance service	P	—	P
Business equipment sales and services	P	—	P
Business support services	P	—	P
Community education (incl. Higher Education)	MJUP	—	MJUP
Construction sales and services	MJUP	—	—
Convenience sales and personal services	MJUP	MJUP	—
Cultural exhibits and library services	P	P	P
Eating and drinking establishments w/o alcohol	P (5)	P	P
Eating and drinking establishments, with on- and/or off-site sale of alcoholic beverages. Drive thru not permitted.	MNUP	MNUP	MNUP
Finance, insurance and real estate services	P	P	P
Food and beverage retail sales w/o alcohol. Drive thru not permitted.	P	P	P
Food and beverage retail sales, with on- and/or off-site sales of alcoholic beverages. Drive thru not permitted.	MNUP	MNUP	MNUP
Gasoline sales	—	MJUP	—
Group care (day care facility)	MNUP	MNUP	MNUP
Group Residential	—	—	P
Independent Living	—	—	P
Multi-Family Residential (1)	—	—	P
Independent / Assisted Living (2)	—	—	P
Medical offices	MNUP	MNUP	P
Medical services	P	MNUP	MNUP
Participant sports and recreation (indoor)	P	P	P
Participant sports and recreation (outdoor)	MJUP	—	—
Personal services of functional community training for developmentally disabled	P	MNUP	P
Personal services, general (3)	P	P	P
Postal services	P	P	P
Repair services, consumer	P	P	P
Research services	P	—	MJUP
Research, Development & Product Manufacturing (2)	MJUP	—	MJUP
Retail sales: general	P	P	P
Spectator sports and entertainment: limited	—	MJUP	—
Transient habitation (Lodging)	P	—	P

SEE NEXT PAGE FOR FOOTNOTES

LEGEND
P = Permitted
MJUP= Major Use Permit Required
MNUP= Minor Use Permit Required
— = Use Not Permitted

(From Page 25 of Northgate Specific Plan)

Footnotes for Northgate Mixed Use Development Permitted Uses Table:

- (1) Uses as defined within the Zoning Ordinance Chapter 16.06, unless otherwise noted.
- (2) Uses as defined within this Northgate Specific Plan. A Minor Use Permit shall be required for the specific use of "Assisted Living" and "Continuous Care" as defined within this section.
- (3) See General Regulation Section of the Zoning Ordinance Chapter 16.57.020 (N) for conditions of uses.
- (4) Automotive and equipment land uses subject to the Vallejo Automall Design and Development Guidelines presented in Appendix B of the Northgate Specific Plan.
A freestanding, freeway-oriented identification sign for an automall/auto center comprising of at least two or more new auto dealerships and for the business operating on the site where the sign is to be located is permitted within the geographic boundaries of the Northgate Specific Plan and Northeast Quadrant Gateway areas subject to a Major Use Permit. The size, location, design, content and height of the freestanding automall/auto center sign shall be determined through the Major Use Permit process and shall not be subject to the provisions of: a) the Vallejo Municipal Code Sign Ordinance; b) the Master Sign Program presented in the Northgate Specific Plan; or c) the Northeast Quadrant Gateway development standards and provisions of PUD Nos. 575 and 582.
- (5) Eating and drinking establishments w/o alcohol: Limited to one business on the southwest corner of Admiral Callaghan Lane and Columbus Parkway; drive thru is permitted subject to a Major Use Permit.

(From page 26 of Northgate Specific Plan)

5.2 COMMERCIAL CENTER

The Commercial Center site of 62.3 acres is located north of Turner Parkway and next to Vallejo Corners Shopping Center.

It is hoped that the uses within the commercial area include well-known retailers, a department store, and provide goods and services not currently not available in Vallejo. It is also hoped that neighborhood services be kept to an acceptable minimum in order to encourage the regional nature of the site. Neighborhood services should be limited.

The FAR will not exceed .25 for the gross acreage, with a total buildout not to exceed approximately 678,000 square feet of commercial/retail space.

Primary access for the site will be from the proposed extension of Plaza Drive. The Center will be designed to minimize the access along Turner Parkway in order to reduce the impacts on the adjacent residential neighborhoods. All perimeter streets will be adequately landscaped in order to maintain a quality streetscape as well as compliment the landscapes of adjacent properties.

The uses that will be allowed in the Commercial Center with an approved Planned Development Unit Plan:

- Administrative and professional services;
- Animal sales and services (indoor);
- Building maintenance service;
- Building supplies;
- Business equipment sales and services;
- Business support services;
- Communications services;
- Convenience sales and personal services;
- Cultural exhibits;
- Eating and drinking establishments, if not described below;
- Fast food restaurants in attached buildings;
- Finance, insurance and real estate services;
- Food and beverage retail sales, if not described below;
- Garden supplies;
- Laundry services;
- Lodging;
- Participant sports and recreation (indoor);
- Personal services, functional community training for the developmentally disabled;
- Personal services, general;
- Postal services;
- Repair services, consumer;
- Retail sales,
- Wholesale sales when associated with retail sales;
- Day care facilities;
- Essential services.

The uses that will be allowed in the Commercial Center with an approved Major Use Permit

- Eating and drinking establishments, with on- or off-site sale of alcoholic beverages;
- Food and beverage retail sales, with on- or off-site sale of alcoholic beverages;
- Participant sports and recreation (outdoor);
- Major impact utilities and services.

Fast food restaurants (maximum of two) on freestanding pads under the following conditions:

(From page 29 of the Northgate Specific Plan)

- a. One fast food restaurant upon written confirmation from the project sponsor to the City that the Commercial Center has obtained written commitments for location in the Center from the following firms and/or their equivalent:

A Fry's grocery store,
A Long's drug store;
A Home Club home improvement store; and
A Ross and/or Marshall's retail clothing store.

- b. A second fast food restaurant upon occurrence of any one of the following events:

Verification from the project sponsor to the City that the project sponsor has secured a retail tenant for 80,000 or more square feet;

Verification from the project sponsor to the City that the project sponsor has secured two retail tenants of 15,000 square feet or more and retail tenant of 10,000 square feet or more; or a combination of three retail stores totaling a minimum of 40,000 square feet, or

Verification from the project sponsor to the City that the project sponsor has secured a "dinner house" restaurant within the Northgate project of least 6,000 square feet and including a full bar/cocktail lounge.

The fast food restaurants shall be consistent with the rest of the center in terms of building design, materials, colors, details; landscaping; pedestrian paving surfaces, signage; street and pedestrian furniture. They shall not be allowed to maintain their corporate architecture.

- c. Light automotive services under the following conditions:

It is limited to tune-ups, lubes and oil changes, muffler installations, brake repairs, and wheel alignments.

It is allowed in only area of the Center in one building, and no freestanding pads.

It is conducted entirely indoors with no overnight storage of vehicles.

The building shall be identical to the remainder of the approved Center in term building design, materials, colors, details; landscaping; pedestrian paving surfaces; signage, and street and pedestrian furniture.

The use shall not visually impact adjoining uses and/or properties. Service bays shall be screened from adjoining uses and/or properties by the orientation of the building and landscaping.

- d. A gas station and car wash (maximum of one each) under the following conditions:

They are to be located on the east side of Plaza Drive only.

They are to be consistent with the Center in terms of building design, materials, colors, details; landscaping; pedestrian paving surfaces; signage, street and pedestrian furniture.

No residential, except lodging, or industrial uses will be allowed.

Commercial will typically be one or two stories with landscaped surface parking



February 25, 2020

Mr. Jeb Elmore
Lewis Management Corp.
9216 Kiefer Blvd.
Sacramento, CA 95826

RE: Fairview at Northgate project in Vallejo

Dear Mr. Elmore:

The Vallejo Chamber of Commerce's Economic Development Committee (EDC) recently heard your presentation on the Fairview at Northgate project. This project is to develop the "Cook property", a parcel adjacent to Highway 80 just north of Redwood Parkway. Following your presentation, the committee voted to recommend the project to the Board of Directors for Chamber support.

During a discussion and review of your presentation, the Board was reminded that in mid-2019 Vallejo Chamber members were surveyed about several local economic development projects. Of those surveyed, Fairview at Northgate received the highest level of support with over 90% in favor of the project. This fact, combined with the recommendation of the EDC and the Board's own sense of the project, led to the Board voting to give Fairview at Northgate its full support.

Economic development is the lifeblood of any community. The process of creating a new business, or building a new business site, breathes life and excitement into a location. Residents get excited, not only for the retail opportunities but for the work opportunities as well. Existing businesses benefit from new-found attention as well as this new attention translates into increased revenue and stability for their business.

This project has the additional benefit of adding much-needed homes in a location that will make both the retail development in front and the existing retail in the surrounding area accessible by foot. Adding jobs and homes is critical for continuing a city's growth and increasing prosperity. To do so while also minimizing the project's impact on the environment makes this project all the more compelling to support.

The City of Vallejo is ready for its economic development efforts to blossom. This project is perfectly suited for its location. The end result will be a bigger location for the anchor tenant, more jobs and homes, better traffic flow, and additional tax revenue for the city. The Vallejo Chamber of Commerce and our Board of Directors are happy to give the Fairview at Northgate project our full support.

Regards,

Shawna Gilroy
2020 Board Chair

James Cooper
President/CEO

President & CEO

JAMES COOPER

Chair 2020

SHAWNA GILROY
Times-Herald

Chair-Elect 2021

JOHNNY WALKER
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Medic Ambulance

MARK GAMBA
Old Republic Title Company

BILL BURRAGE
Recology Vallejo