



2023-2031

***Housing Element & Safety
Element Updates***

Environmental Impact Report

SCH# 2022060021

November 2022





City of Benicia

2023-2031

***HOUSING ELEMENT &
SAFETY ELEMENT UPDATES
ENVIRONMENTAL IMPACT
REPORT***

SCH# 2022060021
Public Review Draft | November 2022



Prepared By:

PlaceWorks

101 Parkshore Drive, Suite 200
Folsom, California 95630
916.245.7500

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
 For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: _____

Lead Agency: _____ Contact Person: _____

Mailing Address: _____ Phone: _____

City: _____ Zip: _____ County: _____

Project Location: County: _____ City/Nearest Community: _____

Cross Streets: _____ Zip Code: _____

Longitude/Latitude (degrees, minutes and seconds): _____° _____' _____" N / _____° _____' _____" W Total Acres: _____

Assessor's Parcel No.: _____ Section: _____ Twp.: _____ Range: _____ Base: _____

Within 2 Miles: State Hwy #: _____ Waterways: _____

Airports: _____ Railways: _____ Schools: _____

Document Type:

- | | | | |
|--------------------------------------|--|------------------------------------|--|
| CEQA: <input type="checkbox"/> NOP | <input type="checkbox"/> Draft EIR | NEPA: <input type="checkbox"/> NOI | Other: <input type="checkbox"/> Joint Document |
| <input type="checkbox"/> Early Cons | <input type="checkbox"/> Supplement/Subsequent EIR | <input type="checkbox"/> EA | <input type="checkbox"/> Final Document |
| <input type="checkbox"/> Neg Dec | (Prior SCH No.) _____ | <input type="checkbox"/> Draft EIS | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Mit Neg Dec | Other: _____ | <input type="checkbox"/> FONSI | _____ |

Local Action Type:

- | | | | |
|---|---|--|---|
| <input type="checkbox"/> General Plan Update | <input type="checkbox"/> Specific Plan | <input type="checkbox"/> Rezone | <input type="checkbox"/> Annexation |
| <input type="checkbox"/> General Plan Amendment | <input type="checkbox"/> Master Plan | <input type="checkbox"/> Prezone | <input type="checkbox"/> Redevelopment |
| <input type="checkbox"/> General Plan Element | <input type="checkbox"/> Planned Unit Development | <input type="checkbox"/> Use Permit | <input type="checkbox"/> Coastal Permit |
| <input type="checkbox"/> Community Plan | <input type="checkbox"/> Site Plan | <input type="checkbox"/> Land Division (Subdivision, etc.) | <input type="checkbox"/> Other: _____ |

Development Type:

- | | |
|---|--|
| <input type="checkbox"/> Residential: Units _____ Acres _____ | <input type="checkbox"/> Transportation: Type _____ |
| <input type="checkbox"/> Office: Sq.ft. _____ Acres _____ Employees _____ | <input type="checkbox"/> Mining: Mineral _____ |
| <input type="checkbox"/> Commercial: Sq.ft. _____ Acres _____ Employees _____ | <input type="checkbox"/> Power: Type _____ MW _____ |
| <input type="checkbox"/> Industrial: Sq.ft. _____ Acres _____ Employees _____ | <input type="checkbox"/> Waste Treatment: Type _____ MGD _____ |
| <input type="checkbox"/> Educational: _____ | <input type="checkbox"/> Hazardous Waste: Type _____ |
| <input type="checkbox"/> Recreational: _____ | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Water Facilities: Type _____ MGD _____ | |

Project Issues Discussed in Document:

- | | | | |
|---|---|--|---|
| <input type="checkbox"/> Aesthetic/Visual | <input type="checkbox"/> Fiscal | <input type="checkbox"/> Recreation/Parks | <input type="checkbox"/> Vegetation |
| <input type="checkbox"/> Agricultural Land | <input type="checkbox"/> Flood Plain/Flooding | <input type="checkbox"/> Schools/Universities | <input type="checkbox"/> Water Quality |
| <input type="checkbox"/> Air Quality | <input type="checkbox"/> Forest Land/Fire Hazard | <input type="checkbox"/> Septic Systems | <input type="checkbox"/> Water Supply/Groundwater |
| <input type="checkbox"/> Archeological/Historical | <input type="checkbox"/> Geologic/Seismic | <input type="checkbox"/> Sewer Capacity | <input type="checkbox"/> Wetland/Riparian |
| <input type="checkbox"/> Biological Resources | <input type="checkbox"/> Minerals | <input type="checkbox"/> Soil Erosion/Compaction/Grading | <input type="checkbox"/> Growth Inducement |
| <input type="checkbox"/> Coastal Zone | <input type="checkbox"/> Noise | <input type="checkbox"/> Solid Waste | <input type="checkbox"/> Land Use |
| <input type="checkbox"/> Drainage/Absorption | <input type="checkbox"/> Population/Housing Balance | <input type="checkbox"/> Toxic/Hazardous | <input type="checkbox"/> Cumulative Effects |
| <input type="checkbox"/> Economic/Jobs | <input type="checkbox"/> Public Services/Facilities | <input type="checkbox"/> Traffic/Circulation | <input type="checkbox"/> Other: _____ |

Present Land Use/Zoning/General Plan Designation:

Project Description: (please use a separate page if necessary)

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with an "X".
If you have already sent your document to the agency please denote that with an "S".

_____ Air Resources Board	_____ Office of Historic Preservation
_____ Boating & Waterways, Department of	_____ Office of Public School Construction
_____ California Emergency Management Agency	_____ Parks & Recreation, Department of
_____ California Highway Patrol	_____ Pesticide Regulation, Department of
_____ Caltrans District # _____	_____ Public Utilities Commission
_____ Caltrans Division of Aeronautics	_____ Regional WQCB # _____
_____ Caltrans Planning	_____ Resources Agency
_____ Central Valley Flood Protection Board	_____ Resources Recycling and Recovery, Department of
_____ Coachella Valley Mtns. Conservancy	_____ S.F. Bay Conservation & Development Comm.
_____ Coastal Commission	_____ San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
_____ Colorado River Board	_____ San Joaquin River Conservancy
_____ Conservation, Department of	_____ Santa Monica Mtns. Conservancy
_____ Corrections, Department of	_____ State Lands Commission
_____ Delta Protection Commission	_____ SWRCB: Clean Water Grants
_____ Education, Department of	_____ SWRCB: Water Quality
_____ Energy Commission	_____ SWRCB: Water Rights
_____ Fish & Game Region # _____	_____ Tahoe Regional Planning Agency
_____ Food & Agriculture, Department of	_____ Toxic Substances Control, Department of
_____ Forestry and Fire Protection, Department of	_____ Water Resources, Department of
_____ General Services, Department of	
_____ Health Services, Department of	_____ Other: _____
_____ Housing & Community Development	_____ Other: _____
_____ Native American Heritage Commission	

Local Public Review Period (to be filled in by lead agency)

Starting Date _____ Ending Date _____

Lead Agency (Complete if applicable):

Consulting Firm: _____	Applicant: _____
Address: _____	Address: _____
City/State/Zip: _____	City/State/Zip: _____
Contact: _____	Phone: _____
Phone: _____	

Signature of Lead Agency Representative: _____ **Date:** _____

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

Table of Contents

1.	EXECUTIVE SUMMARY	1-1
1.1	Environmental Procedures.....	1-1
1.2	Project Location.....	1-4
1.3	Project Summary.....	1-7
1.4	Issues to Be Resolved.....	1-8
1.5	Summary of Impacts and Mitigation Measures	1-8
1.6	Summary of Sensitive Sites	1-28
2.	INTRODUCTION	2-1
2.1	Purpose of the Environmental Impact Report.....	2-1
2.2	EIR Scope	2-4
2.3	Incorporation by Reference.....	2-6
2.4	Public Review and Final EIR Certification	2-6
2.5	Mitigation Monitoring	2-6
3.	PROJECT DESCRIPTION	3-1
3.1	Project Location.....	3-1
3.2	Statement of Objectives.....	3-1
3.3	Project Background.....	3-1
3.4	Intended Use of The EIR	3-20
3.5	References.....	3-21
4.	ENVIRONMENTAL ANALYSIS	4-1
4.1	Aesthetics	4.1-1
4.2	Air Quality	4.2-1
4.3	Biological Resources.....	4.3-1
4.4	Cultural Resources.....	4.4-1
4.5	Energy	4.5-1
4.6	Geology and Soils.....	4.6-1
4.7	Greenhouse Gas Emissions.....	4.7-1
4.8	Hazards and Hazardous Materials.....	4.8-1
4.9	Hydrology and Water Quality	4.9-1
4.10	Land Use and Planning	4.10-1
4.11	Noise.....	4.11-1
4.12	Population and Housing	4.12-1
4.13	Public Services.....	4.13-1
4.14	Transportation	4.14-1

TABLE OF CONTENTS

4.15	Tribal Cultural Resources	4.15-1
4.16	Utilities and Service Systems	4.16-1
5.	SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS	5-1
6.	ALTERNATIVES TO THE PROPOSED PROJECT	6-1
6.1	Introduction	6-1
6.2	No Project/Existing Housing and Safety Elements Alternative	6-6
6.3	Avoidance of Historical Resources Alternative	6-10
6.4	Removal of All Opportunity Sites in Historic DistrictS	6-16
6.5	Environmentally Superior Alternative	6-23
7.	CEQA-MANDATED SECTIONS.....	7-1
7.1	Impacts Found Not to Be Significant	7-1
7.2	Significant Irreversible Changes Due to the Proposed Project	7-4
7.3	Growth-Inducing Impacts of the Proposed Project	7-5
7.4	References.....	7-8
8.	ORGANIZATIONS AND PERSONS CONSULTED	8-1
	City of Benicia	8-1
	Report Preparers	8-1

APPENDICES

Appendix 2-1: NOP and NOP Comments
Appendix 3-1: City of Benicia Housing Element Update
Appendix 3-2: City of Benicia Health and Safety Element: Background Report, Climate Change Vulnerability Report, and Draft Policies
Appendix 3-3: Housing Element Opportunity Sites Overlay Zone Draft Text
Appendix 4.2-1: Air Quality and Greenhouse Gas Appendix
Appendix 4.14-1: City of Benicia Housing Element Update – VMT Analysis
Appendix 4.15-1: Tribal Response Letters

LIST OF FIGURES

Figure 1-1 Regional Location 1-5

Figure 1-2 Citywide Aerial 1-6

Figure 3-1a City of Benicia Sites Inventory #1 3-13

Figure 3-1b City of Benicia Sites Inventory #2 3-14

Figure 3-1c City of Benicia Sites Inventory #3 3-15

Figure 3-1d City of Benicia Sites Inventory #4 3-16

Figure 3-1e City of Benicia Sites Inventory #5 3-17

Figure 4.1-1 Designated State Scenic Highway within City of Benicia 4.1-3

Figure 4.4-1 Downtown Historic District and Housing Element Sites 4.4-9

Figure 4.4-2 Arsenal Historic District and Housing Element Sites 4.4-10

Figure 4.6-1 Geology Map 4.6-5

Figure 4.6-2A Fault Map 4.6-9

Figure 4.6-2B Fault Map 4.6-10

Figure 4.6-2C Fault Map 4.6-11

Figure 4.6-2D Fault Map 4.6-12

Figure 4.6-2E Fault Map 4.6-13

Figure 4.6-3A Liquefaction Susceptibility Map 4.6-14

Figure 4.6-3B Liquefaction Susceptibility Map 4.6-15

Figure 4.6-3C Liquefaction Susceptibility Map 4.6-16

Figure 4.6-3D Liquefaction Susceptibility Map 4.6-17

Figure 4.6-3E Liquefaction Susceptibility Map 4.6-18

Figure 4.6-4A Landslide Susceptibility Map 4.6-21

Figure 4.6-4B Landslide Susceptibility Map 4.6-22

Figure 4.6-4C Landslide Susceptibility Map 4.6-23

Figure 4.6-4D Landslide Susceptibility Map 4.6-24

Figure 4.6-4E Landslide Susceptibility Map 4.6-25

Figure 4.8-1 Travis Air Force Base Compatibility Zones within the City of Benicia 4.8-11

Figure 4.8-2A Wildland-Urban Interface Fires in the City of Benicia 4.8-12

Figure 4.8-2B Wildland-Urban Interface Fires in the City of Benicia 4.8-13

Figure 4.8-2C Wildland-Urban Interface Fires in the City of Benicia 4.8-14

Figure 4.8-2D Wildland-Urban Interface Fires in the City of Benicia 4.8-15

Figure 4.8-2E Wildland-Urban Interface Fires in the City of Benicia 4.8-16

Figure 4.8-3A Wildfire Hazard Severity Zone 4.8-18

Figure 4.8-3B Wildfire Hazard Severity Zone 4.8-19

Figure 4.8-3C Wildfire Hazard Severity Zone 4.8-20

Figure 4.8-3D Wildfire Hazard Severity Zone 4.8-21

Figure 4.8-3E Wildfire Hazard Severity Zone 4.8-22

Figure 4.9-1A Flood Hazard Zones 4.9-15

Figure 4.9-1B Flood Hazard Zones 4.9-16

Figure 4.9-1C Flood Hazard Zones 4.9-17

Figure 4.9-1D Flood Hazard Zones 4.9-18

Figure 4.9-1E Flood Hazard Zones 4.9-19

Figure 4.9-2A Tsunami Inundation Areas 4.9-31

TABLE OF CONTENTS

Figure 4.9-2B	Tsunami Inundation Areas	4.9-32
Figure 4.9-2C	Tsunami Inundation Areas	4.9-33
Figure 4.9-2D	Tsunami Inundation Areas	4.9-34
Figure 4.9-2E	Tsunami Inundation Areas	4.9-35
Figure 4.13-1	Schools within the City of Benica.....	4.13-11

TABLE OF CONTENTS

LIST OF TABLES

Table 1-1	Summary of Impacts and Mitigation Measures	1-9
Table 1-2	Sensitive Sites	1-28
Table 2-1	NOP Comment Summary	2-2
Table 3-1	2023-2031 Regional Housing Needs Allocation (RHNA)	3-3
Table 3-2	Sites Removed from Inventory	3-4
Table 3-3	Opportunity Sites.....	3-7
Table 3-4	Suitably Designated/Zoned Sites	3-10
Table 4.1-1	Housing Element Sites along the I-780 corridor	4.1-7
Table 4.2-1	Criteria Air Pollutant Health Effects Summary.....	4.2-2
Table 4.2-2	CARB Recommendations for Siting New Sensitive Land Uses.....	4.2-6
Table 4.2-3	Ambient Air Quality Standards for Criteria Air Pollutants	4.2-8
Table 4.2-4	Attainment Status of Criteria Pollutants in the San Francisco Bay Area Air Basin	4.2-19
Table 4.2-5	Ambient Air Quality Monitoring Summary	4.2-20
Table 4.2-6	BAAQMD Regional (Mass Emissions) Criteria Air Pollutant Significance Thresholds.....	4.2-23
Table 4.2-7	Control Measures from the BAAQMD 2017 Clean Air Plan.....	4.2-32
Table 4.2-8	Citywide Project Generated Total VMT	4.2-38
Table 4.2-9	Comparison of the Change in Population and VMT in the City of Benicia	4.2-39
Table 4.4-1	Housing Element Sites in the Downtown Historic District	4.4-14
Table 4.4-2	Housing Element Sites in the Arsenal Historic District	4.4-16
Table 4.5-1	Year 2031 Forecast Electricity Consumption	4.5-13
Table 4.7-1	GHG Emissions and Their Relative Global Warming Potential Compared to CO ₂	4.7-3
Table 4.7-2	Summary of GHG Emissions Risk to California	4.7-5
Table 4.7-3	Priority Strategies for Local Government Climate Action Plans	4.7-10
Table 4.7-4	Year 2000 Community GHG Emissions Inventory – City of Benicia	4.7-23
Table 4.7-5	Operational GHG Emissions – Housing Element Update	4.7-26
Table 4.8-1	GeoTracker Sites in the City of Benicia	4.8-23
Table 4.8-2	Envirostor sites in the City of Benicia	4.8-24
Table 4.8-3	Active Hazardous Sites in Proximity to Housing Element Sites	4.8-32
Table 4.10-1	City of Benicia Land Use Type Acreage	4.10-3
Table 4.10-2	Summary of City of Benicia's Zoning Code	4.10-4
Table 4.10-3	Zoning Districts Permitting Residential Uses.....	4.10-5
Table 4.10-4	Bay Area 2050 Consistency Analysis – Housing Strategies.....	4.10-9
Table 4.11-1	Typical Noise Levels	4.11-4
Table 4.11-2	Human Reaction to Typical Vibration Levels	4.11-5
Table 4.11-3	Maximum Amplified Sound Levels (dB).....	4.11-9
Table 4.11-4	Noise Level Performance Standards for Noise Sensitive Land Uses.....	4.11-9
Table 4.11-5	Maximum Allowable Sound Levels (dB).....	4.11-10
Table 4.11-6	Building Architectural Damage Limits	4.11-13
Table 4.11-7	Reference Construction Equipment Noise Levels.....	4.11-14

TABLE OF CONTENTS

Table 4.11-8	Maximum Allowable Noise Exposure for New Noise-Sensitive Uses From Transportation Noise Sources	4.11-16
Table 4.11-9	Vibration Levels for Construction Equipment	4.11-18
Table 4.12-1	Population Trends in the City Of Benicia and Solano County (2012-2022).....	4.12-6
Table 4.12-2	City of Benicia and Solano County Employment Trends (2012-2022)	4.12-6
Table 4.12-3	City of Benicia Employment BY Industry (2020).....	4.12-7
Table 4.12-4	Housing Growth Trends in the City of Benicia and Solano County	4.12-7
Table 4.12-5	Housing Characteristics in The City of Benicia and Solano County (2022)	4.12-8
Table 4.12-6	2023-2031 Regional Housing Needs Allocation (RHNA)	4.12-8
Table 4.12-7	Plan Bay Area 2040 Benicia Projections.....	4.12-9
Table 4.12-8	Maximum Unit Buildout Growth	4.12-12
Table 4.12-9	Realistic Unit Buildout Growth.....	4.12-12
Table 4.13-1	Schools within Benicia	4.13-10
Table 4.13-2	Potential New Students Generated From Realistic Units	4.13-14
Table 4.13-3	Potential New Students Generated From Maximum Units	4.13-14
Table 4.13-4	Benicia's Parks AND Recreational Facilities	4.13-21
Table 4.13-5	The City of Benicia's Parkland Service Summary	4.13-24
Table 4.14-1	Arterials within the City of Benicia	4.14-5
Table 4.14-2	List of Collector Streets within the City of Benicia	4.14-6
Table 4.14-3	Classification of Bicycle Facilities.....	4.14-6
Table 4.14-4	Residential VMT per Resident for the City of Benicia	4.14-9
Table 4.14-5	Housing Element Unit Residential VMT per Resident.....	4.14-11
Table 4.14-6	Cumulative Year (2040) Solano Countywide Boundary VMT per Service Population	4.14-11
Table 4.16-1	UWMP Water Supply Summary in Acre-Feet	4.16-15
Table 4.16-2	UWMP Forecast Water Use in Acre-Feet.....	4.16-16
Table 6-1	Comparison of Project Alternatives to the Proposed Project	6-24
Table 6-2	Comparison of Alternatives to Project Objectives	6-25

1. Executive Summary

This chapter presents an overview of the proposed 2023–2031 Housing Element Update and Health and Safety Element Update, pursuant to the California Environmental Quality Act (CEQA), herein referred to as the “proposed project.” This executive summary also provides conclusions of the analyses contained in Sections 4.1 through 4.16 of this Draft Environmental Impact Report (Draft EIR), a summary of the alternatives to the proposed project, issues to be resolved, and a summary of Housing Element Inventory sites that are in a historic district or in a mapped hazard area. For a complete description of the proposed project, refer to Chapter 3, *Project Description*. For a discussion of alternatives to the proposed project, see Chapter 6, *Alternatives*.

This Draft EIR addresses the environmental effects associated with adoption and implementation of the proposed project. An EIR is a public document designed to provide the public, local, and state governmental agency decision-makers with an analysis of potential environmental consequences to support informed decision-making. CEQA requires that local government agencies, prior to taking action on projects over which they have discretionary approval authority, consider the environmental consequences of such projects.

This Draft EIR has been prepared pursuant to the requirements of CEQA (California Public Resources Code, Division 13, Section 21000, et seq.) and the State CEQA Guidelines (Title 14 of the California Code of Regulations, Division 6, Chapter 3, Section 15000, et seq.) to determine if the proposed project could have a significant impact on the environment. Information for this Draft EIR was obtained through on-site field observations; analysis of adopted plans and policies; review of available studies, reports, data, and similar literature in the public domain; and specialized environmental assessments (e.g., air quality, greenhouse gas emissions, noise, and transportation). The City of Benicia as the Lead Agency has reviewed and revised as necessary all submitted draft plans, technical studies, and reports to reflect its own independent judgement including relying on applicable City of Benicia technical personnel and consultants and review of all technical reports.

1.1 ENVIRONMENTAL PROCEDURES

This Draft EIR has been prepared to assess the environmental effects associated with implementation of the proposed project. The six main objectives of this document as established by CEQA are:

- To disclose to decision-makers and the public the significant environmental effects of proposed activities.
- To identify ways to avoid or reduce environmental impacts.
- To prevent environmental impacts through implementation of feasible alternatives or mitigation measures

EXECUTIVE SUMMARY

- To disclose significant environmental effects.
- To foster interagency coordination in the review of projects.
- To enhance public participation in the planning process.

An EIR is the most comprehensive form of environmental documentation identified in the CEQA statute and in the CEQA Guidelines. It provides the information needed to assess the environmental consequences of a proposed project, to the extent feasible. EIRs are intended to provide an objective, factually supported, full-disclosure analysis of any environmental consequences associated with a proposed project which may have the potential to result in significant, adverse environmental impacts. An EIR is also one of various decision-making tools used by a lead agency to consider the merits and disadvantages of a project that is subject to its discretionary authority. Prior to approving a proposed project, the lead agency must consider the information contained in the EIR, determine whether the EIR was properly prepared in accordance with CEQA and the CEQA Guidelines, determine that it reflects the independent judgement of the lead agency, adopt findings concerning the proposed project's significant environmental impacts and alternatives, and if needed, adopt a Statement of Overriding Considerations if the proposed project would result in significant impacts that cannot be avoided.

1.1.1 EIR ORGANIZATION

This Draft EIR is organized into the following chapters:

- **Chapter 1: Executive Summary.** Summarizes the environmental consequences that would result from implementation of the proposed project, describes recommended mitigation measures, and indicates the level of significance of environmental impacts before and after mitigation.
- **Chapter 2: Introduction.** Provides an overview describing the Draft EIR document.
- **Chapter 3: Project Description.** Describes the proposed project in detail, including the characteristics, objectives, and the structural and technical elements of the proposed action.
- **Chapter 4: Environmental Analysis.** Organized into 16 sections corresponding to the environmental resource categories identified in Appendix G of the CEQA Guidelines, this section provides a description of the physical environmental conditions in the vicinity of the proposed project as they existed at the time of the Notice of Preparation was published, from both a local and regional perspective. Additionally, this chapter provides an analysis of the potential environmental impacts of the proposed project, and recommended mitigation measures, if required, to reduce the impacts to less than significant where possible, and to reduce their magnitude or significance when impacts cannot be reduced to a less-than-significant level. The environmental setting included in each section provides baseline physical conditions, which provide a context, which lead agencies use to determine the significance of environmental impacts resulting from the proposed project. Each section also includes a description of the thresholds used to determine if a significant impact would occur; the methodology to identify and evaluate the potential impacts of the proposed project; and the potential cumulative impacts associated with the proposed project.
- **Chapter 5: Significant Unavoidable Adverse Impacts.** Discusses the significant and unavoidable impacts as a result of project implementation.

- **Chapter 6: Alternatives.** Consider alternatives to the proposed project, including the CEQA-required “No Project” Alternative.
- **Chapter 7: CEQA-Mandated Sections.** Discusses impacts found not to be significant, significant irreversible changes, and growth inducement as a result of the proposed project.
- **Chapter 8: Organizations and Persons Consulted.** Lists the people and organizations that were contacted during the preparation of this EIR for the proposed project.
- **Appendices:** The appendices for this document (presented in PDF format on a thumb drive (USB) attached to the back cover) contain the following supporting documents:

1.1.2 TECHNICAL APPENDICES

CEQA Guidelines Section 15147 states that the “information contained in an EIR shall include summarized...information sufficient to permit full assessment of significant environmental impacts by reviewing agencies and members of the public,” and that the “[p]lacement of highly technical and specialized analysis and data in the body of an EIR shall be avoided through the inclusion of supporting information and analyses as appendices to the main body of the EIR.” The individual technical studies, reports, and supporting documentation that comprise the technical appendices are on a CD-ROM for hard copies of this EIR, or on the City’s website:

<https://www.ci.benicia.ca.us/housingelement>

The technical studies are as follows:

- Appendix 2-1 NOP and NOP Comments
- Appendix 3-1 City of Benicia Housing Element Update
- Appendix 3-2 City of Benicia Health and Safety Element: Background Report, Climate Change Vulnerability Report, and Draft Policies
- Appendix 3-3 Housing Opportunity Sites Overlay Zone Draft Text
- Appendix 4.2-1 Air Quality and Greenhouse Gas Emissions
- Appendix 4.14-1 City of Benicia Housing Element Update – VMT Analysis
- Appendix 4.15-1 Tribal Response Letters

1.1.3 TYPE AND PURPOSE OF THIS DEIR

According to Section 15121(a) of the CEQA Guidelines, the purpose of an EIR is to:

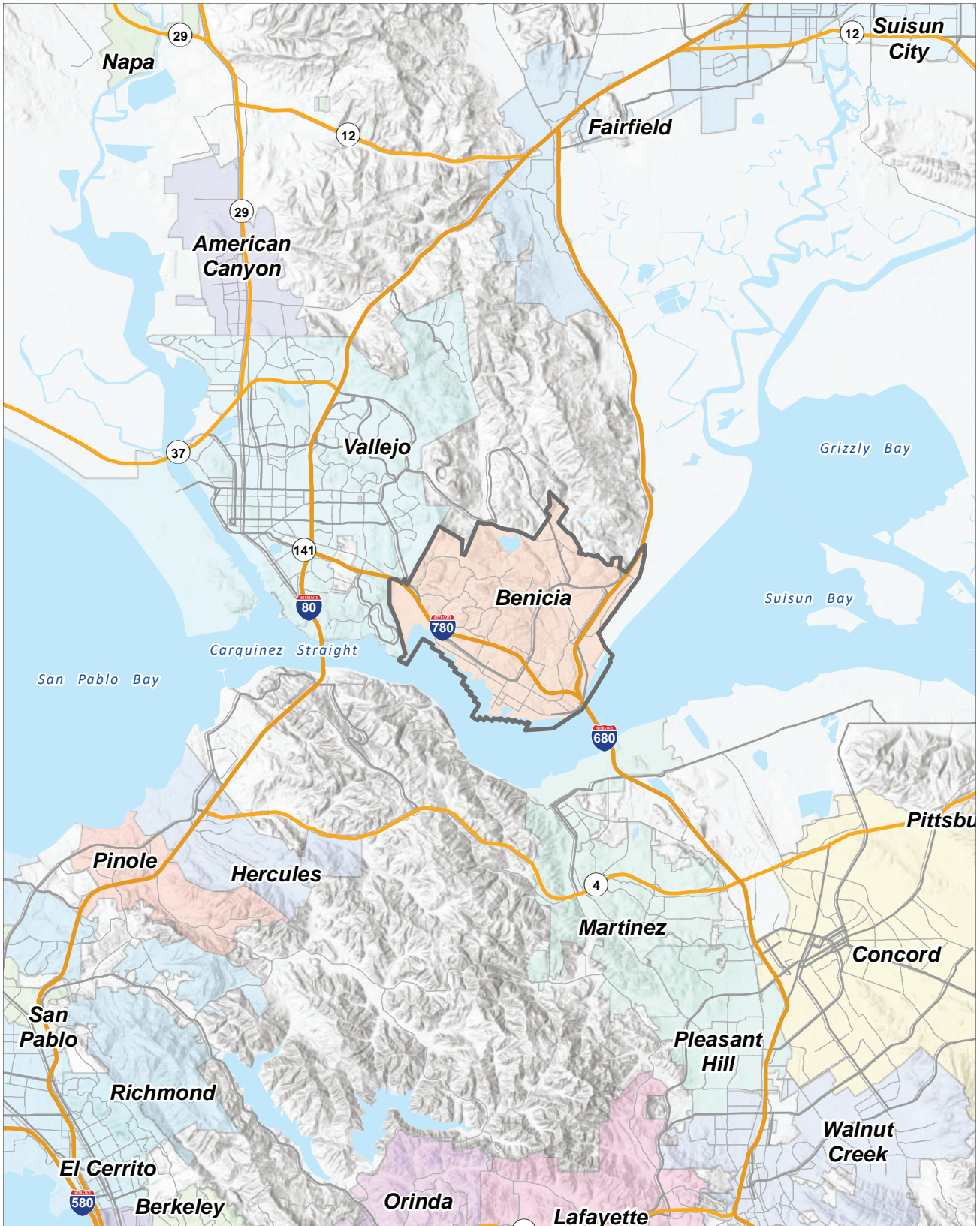
Inform public agency decision makers and the public generally of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project.

EXECUTIVE SUMMARY

This DEIR has been prepared in accordance with CEQA with the City of Benicia as the Lead Agency. This DEIR assesses the potential environmental consequences of implementing the proposed project and identifies Mitigation Measures and Alternatives to the proposed project that would avoid or reduce significant impacts. This DEIR is intended to inform decision-makers, other responsible agencies, and the general public as to the nature of the proposed project's potential environmental impacts.

1.2 PROJECT LOCATION

The City of Benicia is in the San Francisco Bay Area on the southern edge of Solano County. It borders the City of Vallejo to the west, unincorporated County land to the north, the Delta-Bay to the east, and the Carquinez Strait to the south, as shown in Figure 1-1, *Regional Location*, and Figure 1-2, *Citywide Aerial*. The City encompasses approximately 14 square miles with a population of approximately 26,000. It is accessible via Interstate 780 (I-780) and Interstate 680 (I-680).



Source: PlaceWorks, 2022



City Boundary

Figure 1-1
Regional Location



Source: PlaceWorks, 2022



City Boundary

Figure 1-2
Citywide Aerial

1.3 PROJECT SUMMARY

Housing Element

The Housing Element is a State-mandated element of the General Plan with specific technical requirements. This element prioritizes efficient land use and the integration of environmental, social, and economic needs to ensure that the demands of the present eight-year planning cycle will not compromise the ability of future generations to meet their own needs. As a policy document, the Housing Element would not result in physical changes to the environment but encourages the provision of housing within the land use designations shown in the Land Use Element of the General Plan. The Housing Element Update identifies policy direction to meet the housing needs of the City by preserving existing homes and prioritizing housing creation. The draft 2023-2030 Housing Element Update is included as Appendix 3-1 of this DEIR.

Pursuant to state requirements, the City has identified 73 parcels on approximately 117 acres as opportunity sites (refer to Table B in Appendix D of the Housing Element, Appendix 3-1). The opportunity sites are parcels that the City is proposing to redesignate and/or rezone to accommodate residential or increased residential development. These sites are shown in Table 3-3, *Opportunity Sites*. If all sites are developed at 100 percent of their proposed maximum allowable density, they would contribute 2,963 units to the City's housing stock.

The Housing Element Update also identified 107 additional parcels on 39.65 acres that are suitably zoned for residential development and do not require any designation or zone changes (refer to Table A in Appendix D of the Housing Element, Appendix 3-1). If all sites are developed at 100 percent of their proposed maximum allowable density, they would contribute 621 units to the City's housing stock. These sites are shown in Table 3-4, *Suitably Designated/Zoned Sites*. These sites are included here for informational purposes but will not be evaluated in this EIR as there is no change in land use designation or zone district. The location of all sites, labeled by the categories described in Chapter 3, are shown on Figures 3-1a, *Benicia Housing Element Inventory Sites #1*, 3-1b, *Benicia Housing Element Inventory Sites #2*, 3-1c, *Benicia Housing Element Inventory Sites #3*, 3-1d, *Benicia Housing Element Inventory Sites #4*, and 3-1e, *Benicia Housing Element Inventory Sites #5*.

The rezoning effort would also include the establishment of a new overlay zone that would apply in combination with the underlying (base) zoning. The overlay approach is still considered a "rezone" and would result in a change to the permitted uses and development standards to align with the densities identified in the opportunity sites list. The proposed overlay zone would allow a residential multifamily density of up to 30 dwelling units per acre for all residential land use categories, Community Commercial, Business and Professional Offices, Public and Quasi Public. Additionally, under the Overlay Zone, for any parcel legally existing as of January 1, 2023, four multifamily dwelling units are permitted on the parcel regardless of the parcel size, provided that the project complies with all other applicable standards. A maximum height of 35 feet / 3 stories is allowed under the Overlay and Town Core Zoned parcels have a maximum permitted height of 40 feet under the Overlay.

EXECUTIVE SUMMARY

Other changes to zoning are called for in the Housing Element draft programs to address state law and local objectives related to density bonuses, accessory dwelling units, emergency shelters including low barrier navigation centers, reasonable accommodation, employee housing, residential care facilities, single-room occupancy units, and inclusionary zoning.

Safety Element Update

The draft Community Health and Safety Element, included as Appendix 3-2 to this DEIR, conveys goals, policies, and actions to minimize the hazards to public health and safety in the City of Benicia. The goal of the Safety Element Update is to reduce the risk of injury, death, property loss, and other hardships to acceptable levels. The Element identifies the natural and human-caused hazards that affect existing and future development and provides guidelines for protecting residents, employees, visitors, and other community members. The Element describes present and expected future conditions and sets policies and standards for improved public safety to minimize physical harm to the buildings and infrastructure in and around the City of Benicia and to reduce damage to local economic systems, community services, and ecosystems. New Safety goals, policies, and programs would establish new policy, but does not approve/authorize any project that would result in a physical change in the environment. Much of the information in a Safety Element is used to inform project-level environmental analysis and in this instance the information was used to help evaluate the proposed housing element sites.

1.4 ISSUES TO BE RESOLVED

Section 15123(b)(3) of CEQA Guidelines requires that an EIR identify issues to be resolved, including the choice among alternatives and whether or how to mitigate significant impacts. With regard to the proposed project, the major issues to be resolved include decisions by the lead agency as to:

1. Whether this DEIR adequately describes the environmental impacts of the project.
2. Whether the benefits of the project override those environmental impacts which cannot be feasibly avoided or mitigated to a level of insignificance.
3. Whether the proposed land use changes are compatible with the character of the existing area.
4. Whether the identified goals, policies, or mitigation measures should be adopted or modified.
5. Whether there are other mitigation measures that should be applied to the project besides the Mitigation Measures identified in the DEIR.
6. Whether there are any alternatives to the project that would substantially lessen any of the significant impacts of the proposed project and achieve most of the basic project objectives.

1.5 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Under CEQA, a significant impact on the environment is defined as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the proposed project. Table 1-1, *Summary of Impacts and Mitigation Measures*, summarizes the conclusions of the environmental analysis contained in this DEIR and presents a summary of impacts and mitigations identified.

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
AESTHETICS			
AES-1: The project would not have a substantial adverse effect on a scenic vista.	Less than significant	No mitigation measures are required	Less than significant
AES-2: The project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	Less than significant	No mitigation measures are required	Less than significant
AES-3: The project would not substantially degrade the existing visual character or quality of public views in non-urbanized areas nor would the project conflict with applicable zoning and other regulations governing scenic quality in urban areas.	Less than significant	No mitigation measures are required	Less than significant
AES-4: The project would not generate substantial light or glare that would adversely affect day or nighttime views in the area.	Less than significant	No mitigation measures are required	Less than significant
AIR QUALITY			
AIR-1: The project could conflict with or obstruct implementation of the BAAQMD Clean Air Plan	Potentially significant.	Mitigation Measure AIR-1a: Implement Mitigation Measures AIR-2a for construction and Mitigation Measures AIR-2b, and TRANS-1 for operation. Implementation of Mitigation Measure AIR-3c for localized impacts.	Significant and unavoidable.
AIR-2: Buildout of the project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under applicable federal or State ambient air quality standard.	Potentially significant.	Mitigation Measure AIR-2a: Prior to discretionary approval by the City for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future project applicants shall prepare and submit a technical assessment evaluating potential project construction-related air quality impacts to the City for review and approval. The evaluation shall be prepared in conformance with the Bay Area Air Quality Management District (BAAQMD) methodology for assessing air quality impacts identified in their CEQA Air Quality Guidelines. If construction-related criteria air pollutants are determined to have the potential to exceed the BAAQMD-adopted thresholds of significance, the City shall require feasible mitigation measures to reduce air quality emissions. Potential measures may include: Require implementation of the BAAQMD Best Management Practices for fugitive dust control, such as:	Significant and unavoidable.

EXECUTIVE SUMMARY

- Water all active construction areas at least twice daily or as often as needed to control dust emissions. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever possible.
- Apply water twice daily or as often as necessary to control dust or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).
- Sweep public streets daily (with water sweepers using reclaimed water if possible) in the vicinity of the project site, or as often as needed, to keep streets free of visible soil material.
- Hydro-seed or apply non-toxic soil stabilizers to inactive construction areas.
- Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles (e.g., dirt, sand).
- Limit vehicle traffic speeds on unpaved roads to 15 mph.
- Replant vegetation in disturbed areas as quickly as possible.
- Install sandbags or other erosion control measures to prevent silt runoff from public roadways.

Emissions control measures such as:

- Using construction equipment rated by the United States Environmental Protection Agency as having Tier 4 interim or higher exhaust emission limits.
- Ensuring construction equipment is properly serviced and maintained to the manufacturer's standards.
- Limiting nonessential idling of construction equipment to no more than five consecutive minutes.
- Using zero- or low-VOC paints for coating of architectural surfaces whenever possible.

Measures shall be incorporated into appropriate construction documents (e.g., construction management plans) and shall be verified by the City.

See Mitigation Measures AIR-1a, AIR-1b, and TRANS-1.

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
<p>AIR-3: Construction activities associated with the project could expose sensitive receptors to substantial pollutant concentrations.</p>	<p>Potentially significant.</p>	<p>Mitigation Measure AIR-2b: Prior to discretionary approval by the City for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future project applicants shall prepare and submit a technical assessment evaluating potential project operation-phase-related air quality impacts to the Community Development Department for review and approval. The evaluation shall be prepared in conformance with Bay Area Air Quality Management District (BAAQMD) methodology in assessing air quality impacts identified in their CEQA Air Quality Guidelines. If operation-related air pollutants are determined to have the potential to exceed the BAAQMD-adopted thresholds of significance, the Community Development Department require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions during operational activities. The identified measures shall be included as part of the conditions of approval. Possible mitigation measures to reduce long-term emissions could include, but are not limited to the following:</p> <ul style="list-style-type: none"> ▪ Design new residents to meet the energy efficiency standards of the Residential Voluntary Measures of CALGreen. ▪ Applicant-provided appliances shall be Energy Star-certified appliances or appliances of equivalent energy efficiency (e.g., dishwashers, refrigerators, clothes washers, and dryers). Installation of Energy Star-certified or equivalent appliances shall be verified by the City during plan check <p>Mitigation Measure AIR-3: Applicants for construction within 1,000 feet of residential and other sensitive land use projects (e.g., hospitals, nursing homes, day care centers), as measured from the property line of the project to the property line of the source/edge of the nearest travel lane, shall submit a health risk assessment (HRA) to the City prior to future discretionary project approval. The HRA shall be prepared in accordance with policies and procedures of the Office of Environmental Health Hazard Assessment (OEHHA) and the BAAQMD. The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children ages 0 to 16 years. If the HRA shows that the incremental cancer risk exceeds ten in one million (10E-06), PM2.5 concentrations exceed 0.3 µg/m3, or the appropriate noncancer hazard index exceeds 1.0, the applicant will be required to identify and demonstrate that mitigation measures are capable of reducing potential cancer and non-cancer risks to an acceptable level (i.e., below ten in one million or a hazard index of 1.0), including appropriate</p>	<p>Less than significant.</p>

EXECUTIVE SUMMARY

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
<p>AIR-4: The project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.</p>	<p>Less than significant.</p>	<p>enforcement mechanisms. Measures to reduce risk may include, but are not limited to:</p> <ul style="list-style-type: none"> ▪ Use of construction equipment rated as US EPA Tier 4 Interim for equipment of 50 horsepower or more. ▪ Use of construction equipment fitted with Level 3 Diesel Particulate Filters for all equipment of 50 horsepower or more. <p>Measures identified in the HRA shall be included in the environmental document and/or incorporated into the site development plan as a component of the proposed project. Prior to issuance of any construction permit, the construction contractor shall ensure that all construction plans submitted to the Community Development Department clearly show incorporation of all applicable mitigation measures.</p>	<p>Less than significant.</p>
BIOLOGICAL RESOURCES			
<p>BIO-1: Development of the proposed project could impact sensitive species in the City.</p>	<p>Potentially Significant</p>	<p>Mitigation Measure BIO-1: Prior to the issuance of a building permit, all projects must provide documentation that the site does not include special status species (e.g., Threatened or Endangered species, CNPS List 1B and 2 plants, or species protected under Section 15380 of CEQA) If the species are found on the site, focused surveys shall be conducted prior to any ground disturbance activities . The documentation shall ensure that botanical surveys are conducted during the appropriate blooming period. If no special status species are found on the project site, no additional action is necessary and the project can continue. If special status species are found, no ground disturbance can occur and the project must either avoid the special status species, or develop a mitigation plan approved by the City in consultation with the California Department of Fish and Wildlife. If off site replacement is the only mitigation option available, the performance criteria shall be at a ratio specified by the resource agency such as the Army Corps of Engineers or the California Department of Fish and Wildlife.</p> <p>Mitigation Measure BIO-2: Prior to the issuance of the first action and/or permit which would allow for site disturbance (e.g., grading permit), a detailed mitigation plan shall be prepared by a qualified biologist for approval by the City, the USFWS, and CDFW shall include: (1) the responsibilities and qualifications of personnel to</p>	<p>Less than Significant with Mitigation Incorporated.</p>

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
BIO-2: Development of the proposed project could impact sensitive natural communities, including wetland and riparian habitats.	Potentially significant.	<p>implement and supervise the plan; (2) site selection; (3) site preparation and planting implementation; (4) a schedule; (5) maintenance plan/guidelines; (6) a monitoring plan; and (7) long-term preservation requirements.</p> <p>Mitigation Measure BIO-3: Prior to the issuance any ground disturbance, the City shall require a habitat connectivity/wildlife corridor evaluation for future development that may impact existing connectivity areas and wildlife linkages. The results of the evaluation shall be incorporated into the project’s biological report required in Mitigation Measure BIO-1. The evaluation shall also identify the project design features that would reduce potential impacts and maintain habitat and wildlife movement. To this end, the City shall incorporate the following measures, for projects impacting wildlife movement corridors:</p> <ul style="list-style-type: none"> ▪ Encourage clustering of development ▪ Avoid sensitive biological resources identified in the analysis ▪ Provide shield lighting adjacent to sensitive habitat areas ▪ Provide physical or distance buffers between development and wetland/riparian areas ▪ Require wildlife-passable fence designs (e.g., 3-strand barbless wire fence) on property boundaries. 	Less than Significant with Mitigation Incorporated.
BIO-3: Development pursuant to the proposed project could adversely impact wildlife movement in and surrounding the City.	Potentially significant.	<p>See Mitigation Measure BIO-3.</p> <p>Mitigation Measure BIO-4: Ground disturbance activities involving vegetation removal shall be conducted between September 16 and March 14. If construction occurs inside the peak nesting season (between March 15 and September 15), a preconstruction survey (or possibly multiple surveys) by a qualified biologist is recommended prior to construction activities to identify any active nesting locations. If the biologist does not find any active nests within the project site, the construction work shall be allowed to proceed. If the biologist finds an active nest within the project site and determined that the nest may be impacted, the biologist shall delineate an appropriate buffer zone around the nest, and the size of the buffer zone shall depend on the affected species and the type of construction</p>	Less than Significant with Mitigation Incorporated.

EXECUTIVE SUMMARY

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
<p>BIO-4: The proposed project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, adopted habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.</p>	<p>Less than significant.</p>	<p>activity. Any active nests observed during the survey shall be mapped on an aerial photograph. Only construction activities (if any) that have been approved by a biological monitor shall take place within the buffer zone until the nest is vacated. The biologist shall serve as a construction monitor when construction activities take place near active areas to ensure no inadvertent impacts on these nests occur. Results of the preconstruction survey and any subsequent monitoring shall be provided to the California Department of Fish and Wildlife and the City.</p> <p>No mitigation measures are required.</p>	<p>Less than significant.</p>
<p>CULTURAL RESOURCES</p>			
<p>CULT-1: The project would cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.</p>	<p>Potentially significant.</p>	<p>Mitigation Measure CULT-1: Prior to any demolition work or significant alterations to any building or structure that is 45 years old or older, the City shall ensure that a qualified architectural historian who meets the Secretary of the Interior’s Professional Qualification Standards evaluate the building or structure for eligibility for listing on the National Register, California Register, and as a City Historic Landmark.</p> <p>Mitigation Measure CULT-2: Prior to any demolition work or significant alterations initiated at known historical resource or a resource identified via implementation of Mitigation Measure CULT-1, the City shall ensure that a qualified architectural historian who meets the Secretary of the Interior’s Professional Qualification Standards identifies character-defining features of each historical resource. According to guidance from the National Park Service, a historical resource “must retain... the essential physical features [i.e., character-defining features] that enable it to convey its historic identity. The essential physical features are those features that define both why a property is significant...and when it was significant” (National Park Service 1997). The identification of character-defining features is necessary for complete documentation of each historical resource as well as appropriate public interpretation and salvage plans.</p>	<p>Significant and unavoidable.</p>

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
<p>CULT-2: The project could cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.</p>	<p>Potentially significant.</p>	<p>Mitigation Measures CULT-3: Prior to any demolition work or significant alterations initiated of a known historical resource or a resource identified via implementation of Mitigation Measure CULT-1, the City shall ensure that a qualified architectural historian who meets the Secretary of the Interior’s Professional Qualification Standards thoroughly documents each building and associated landscaping and setting. Documentation shall include still photography and a written documentary record of the building to the National Park Service’s standards of the Historic American Buildings Survey (HABS) or the Historic American Engineering Record (HAER), including accurate scaled mapping and architectural descriptions. If available, scaled architectural plans will also be included. Photos include large-format (4”x5”) black-and-white negatives and 8”x10” enlargements. Digital photography may be substituted for large-format negative photography if archived locally. The record shall be accompanied by a report containing site-specific history and appropriate contextual information. This information shall be gathered through site-specific and comparative archival research and oral history collection as appropriate. Copies of the records shall be submitted to the Northwest Information Center at Sonoma State University. CEQA Guidelines Section 15064.5(b)(3) states that a project that follows the Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings or the Secretary of the Interior’s Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (1995), shall be considered as mitigated to a level of less than significant. Therefore, if under the project-by-project review described in Mitigation Measure CULT-1 a structure is determined to be a historical resource as defined by CEQA, the Secretary of the Interior’s guidelines referenced above shall be followed for demolition, rehabilitation, and/or alternation projects.</p> <p>Mitigation Measure CULT-4: Prior to construction activities, the project applicant shall retain a qualified archaeologist to monitor all ground-disturbing activities in an effort to identify any unknown archaeological resources. If cultural resources are discovered during ground disturbing activities, all ground disturbance activities within 50 feet of the find shall be halted until a meeting is convened between the developer, archaeologist, tribal representatives, and the Director of the Community Development Department or his or her designee. At the meeting, the significance of the discoveries shall be discussed and after consultation with tribal representatives, developer, and archaeologist, and a decision shall be made, with the concurrence of the Director of the Community Development Department, as to the appropriate</p>	<p>Less than significant with mitigation incorporated.</p>

EXECUTIVE SUMMARY

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
mitigation (documentation, recovery, avoidance, etc.) for the cultural resources.			
CULT-3: The project could disturb any human remains, including those interred outside of dedicated cemeteries.	Potentially significant.	<p>Mitigation Measure CULT-5: It is understood by all parties that unless otherwise required by law, the site of any burial of Native American human remains or associated grave goods shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, pursuant to the specific exemption set forth in California Government Code 6254(r), and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code 6254(r).</p> <p>Mitigation Measure CULT-6: If human remains are encountered, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made the necessary findings as to the origin. Further, pursuant to Public Resources Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the County Coroner determined the remains to be Native American, the Native American Heritage Commission shall be contacted within the period specified by law (24 hours). Subsequently, the Native American Heritage Commission shall identify the “most likely descendant.” The most likely descendant shall then make recommendations and engage in consultation concerning the treatment of the remains as provided in Public Resources Code Section 5097.98..</p>	Less than significant with mitigation incorporated.
ENERGY			
ENE-1: The project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.	Less than significant.	No mitigation measures are required.	Less than significant.
ENE-2: The project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency.	Less than significant.	No mitigation measures are required.	Less than significant.

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
GEOLOGY AND SOILS			
GEO-1: The project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; ii) Strong seismic ground shaking; iii) Seismic-related ground failure, including liquefaction; iv) Landslides, mudslides, or other similar hazards.	Less than significant.	No mitigation measures are required.	Less than significant.
GEO-2: The project would not result in substantial soil erosion or the loss of topsoil.	Less than significant.	No mitigation measures are required.	Less than significant.
GEO-3: The project would be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.	Less than significant.	No mitigation measures are required.	Less than significant.
GEO-4: The project would be located on expansive soil, as defined by Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.	Less than significant.	No mitigation measures are required.	Less than significant.
GEO-5: Future development in the plan area would require connection to the City’s sewer system.	Less than significant.	No mitigation measures are required.	Less than significant.
GEO-6: The project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	Potentially significant.	<p>Mitigation Measure GEO-1: In the event of any fossil discovery, regardless of depth or geologic formation:</p> <ul style="list-style-type: none"> ▪ Excavations within a 50-foot radius of the find shall be temporarily halted or diverted. ▪ Ground-disturbance work shall cease until a City-approved, qualified paleontologist determines whether the resource requires further study. ▪ The paleontologist shall document the discovery as needed, in accordance with Society of Vertebrate Paleontology standards (Society of Vertebrate Paleontology 1995) as appropriate, evaluate the potential resource, and 	Less than significant with mitigation incorporated.

EXECUTIVE SUMMARY

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
		assess the significance of the finding under the criteria set forth in CEQA Guidelines Section 15064.5. <ul style="list-style-type: none"> ▪ The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before construction activities are allowed to resume at the location of the find. ▪ If is not feasible, the paleontologist shall prepare an excavation plan for mitigating the effect of construction activities on the discovery. The excavation plan shall be submitted to the City of Benicia for review and approval prior to implementation. ▪ All construction activities shall adhere to the recommendations in the excavation plan. 	
GREENHOUSE GAS EMISSIONS			
GHG-1: The project would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	Potentially significant	Mitigation Measure GHG-1a: New development on Housing Element sites shall provide electric vehicle (EV) charging infrastructure as specified in the California Green Building Standards Code (CALGreen) Tier 2 standards. Mitigation Measure GHG-1b: New development on Housing Element sites shall not include natural gas appliances or natural gas plumbing.	Significant and unavoidable.
GHG-2: The project would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.	Less than significant.	No mitigation measures are required.	Less than significant.
HAZARDS AND HAZARDOUS MATERIALS			
HAZ-1: The project would not create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials.	Potentially significant.	HAZ-1: Prior to issuance of any building permit for a structure identified on the County Assessor records of having been constructed prior to 1978, the applicant shall disclose whether lead paint exists on the structure. If lead paint exists on the structure, lead must be contained during demolition activities (California Health & Safety Code Sections 17920.10 and 105255). HAZ-2: Prior to issuance of any building permit for a structure identified on the County Assessor records of having been constructed prior to 1970, the applicant shall disclose whether asbestos exists on the structure. If asbestos exists on the structure, the applicant shall use the procedures specified in subsections 303.1 through 303.13 of the Bay Area Air Quality Management District Regulation 11 Rule 2 of Asbestos Demolition, Renovation and Manufacturing.	Less than significant.

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
HAZ-2: The project would not 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.	No mitigation measures are required.	Less than significant.
HAZ-3: The project would not emit hazardous emissions or handle hazardous materials, substances or waste within ¼-mile of an existing or proposed school.	Less than significant.	No mitigation measures are required.	Less than significant.
HAZ-4: Implementation of the proposed project could facilitate residential development of a site that is on a list of hazardous materials sites.	Less than significant.	No mitigation measures are required.	Less than significant.
HAZ-5: The proposed project would include sites located in the vicinity of an airport or within the jurisdiction of an airport land use plan.	Less than significant.	No mitigation measures are required.	Less than significant.
HAZ-6: The proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	Less than significant.	No mitigation measures are required.	Less than significant.
HYDROLOGY AND WATER QUALITY			
HYD-1: The project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.	Less than significant.	No mitigation measures are required.	Less than significant.
HYD-2: The project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.	Less than significant.	No mitigation measures are required.	Less than significant.
HYD-3: The project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: i) result in substantial erosion or siltation on- or off-site; ii) substantially	Less than significant.	No mitigation measures are required.	Less than significant.

EXECUTIVE SUMMARY

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or iv) impede or redirect flood flows.	Less than significant.	No mitigation measures are required.	Less than significant.
HYD-4: The project would not in a flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.	Less than significant.	No mitigation measures are required.	Less than significant.
HYD-5: The project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	Less than significant.	No mitigation measures are required.	Less than significant.
LAND USE AND PLANNING			
LU-1: The project would not physically divide an established community.	No impact	No mitigation measures are required.	No impact
LU-2: The project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	Less than significant.	No mitigation measures are required.	Less than significant.
NOISE			
NOI-1: The project would not result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards.	Potentially significant.	Mitigation Measure NOI-1: The construction contractors shall implement the following measures for construction activities associated with the proposed project. <ul style="list-style-type: none"> ■ Construction plans submitted to the City shall identify these measures on demolition, grading, and construction plans submitted to the City and the City’s Planning and Building Department(s) shall verify that submitted grading, demolition, and/or construction plans include these notations prior to issuance of demolition, grading, and/or building permits: ■ During the entire active construction period, equipment and trucks used for project construction shall use the best-available noise control techniques available. (e.g., mufflers, equipment re-design, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds). 	Less than significant with mitigation incorporated.

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
<p>NOI-2: The project would not result in generation of excessive groundborne vibration or groundborne noise levels.</p>	<p>Potentially significant</p>	<ul style="list-style-type: none"> ■ Impact tools (e.g., jack hammers and hoe rams) shall be hydraulically or electrically powered wherever possible. Where the use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used along with external noise jackets on the tools. ■ Stationary equipment, such as generators and air compressors shall be located as far as possible from nearby noise-sensitive uses. ■ Stockpiling shall be located as far as possible from nearby noise-sensitive receptors. ■ Construction traffic shall be limited, to approved haul routes established by the City’s Planning and Building Department(s). ■ At least 10 days prior to the start of construction activities, a sign shall be posted at the entrance(s) to the job site, clearly visible to the public, that includes permitted construction days and hours, as well as the telephone numbers of the City’s and contractor’s authorized representatives that are assigned to respond in the event of a noise or vibration complaint. If the authorized contractor’s representative receives a complaint, they shall investigate, take appropriate corrective action, and report the action to the City. ■ Signs shall be posted at the job site entrance(s), within the on-site construction zones, and along queueing lanes (if any) to reinforce the prohibition of unnecessary engine idling. All other equipment shall be turned off if not in use for more than 5 minutes. ■ During the entire active construction period, the use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only. The construction manager shall 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 in compliance with all safety requirements and laws. <p>Mitigation Measure NOI-2: NOI-2a: Prior to issuance of a building permit for a project requiring pile driving during construction within 135 feet of fragile structures, such as historical resources, 100 feet of non-engineered timber and masonry buildings (e.g., most residential buildings), or within 75 feet of engineered concrete and masonry (no</p>	<p>Less than significant with mitigation incorporated.</p>

EXECUTIVE SUMMARY

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
		<p>plaster); or a vibratory roller within 25 feet of any structure, the project applicant shall prepare a noise and vibration analysis to assess and mitigate potential noise and vibration impacts related to these activities. A qualified and experienced acoustical consultant or engineer shall conduct this noise and vibration analysis. The vibration levels shall not exceed Federal Transit Administration (FTA) architectural damage thresholds (e.g., 0.12 inches per second [in/sec] peak particle velocity [PPV] for fragile or historical resources, 0.2 in/sec PPV for nonengineered timber and masonry buildings, and 0.3 in/sec PPV for engineered concrete and masonry). If vibration levels would exceed this threshold, alternative uses such as drilling piles as opposed to pile driving and static rollers as opposed to vibratory rollers shall be used. If necessary, construction vibration monitoring shall be conducted to ensure vibration thresholds are not exceeded.</p> <p>NOI-2b: New residential projects (or other noise-sensitive uses) located within 200 feet of existing railroad lines shall be required to conduct a groundborne vibration and noise evaluation consistent with Federal Transit Administration (FTA)-approved methodologies to determine the extent of potential impact. If the soil or construction techniques must be modified to result in vibration levels at or below 0.006 PPV, the report shall include the recommendation that shall be included in the construction plans. If the interior vibration level cannot be reduced to 0.006 peak particle velocity (PPV), construction of new residential buildings cannot occur.</p>	
<p>NOI-3: Implementation of the proposed project does not expose future residents to excessive levels of airport-related noise</p>	<p>No impact.</p>	<p>No mitigation measures are required.</p>	<p>No impact.</p>
<p>POPULATION AND HOUSING</p>			
<p>POP-1: Implementation of the project would not induce substantial unplanned population growth or growth for which inadequate planning has occurred, either directly or indirectly.</p>	<p>Less than significant.</p>	<p>No mitigation measures are required.</p>	<p>Less than significant.</p>
<p>POP-2: Implementation of the project would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.</p>	<p>Less than significant.</p>	<p>No mitigation measures are required.</p>	<p>Less than significant.</p>

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
PUBLIC SERVICES AND RECREATION			
PS-1: The project would not result in the need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives.	Less than significant.	No mitigation measures are required.	Less than significant.
PS-2: The project would not result in the need for new or physically altered police facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives.	Less than significant.	No mitigation measures are required.	Less than significant.
PS-3: The project would not result in the need for new or physically altered school facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, or other performance objectives.	Less than significant.	No mitigation measures are required.	Less than significant.
PS-4: The project would not result in the need for new or physically altered library facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, or other performance objectives.	Less than significant.	No mitigation measures are required.	Less than significant.
PS-5: The project would not result in the need for new or physically altered park facilities or other recreational facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, or other performance objectives.	Less than significant.	No mitigation measures are required.	Less than significant.
TRANSPORTATION			
TRANS-1: The project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities	Less than significant.	No mitigation measures are required.	Less than significant.

EXECUTIVE SUMMARY

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
TRANS-2: The project would conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).	Potentially significant	TRANS-1: Individual projects that do not screen out from VMT analysis shall provide a quantitative VMT analysis consistent with the methodology in the City of Benicia Local Guidelines for CEQA Review (Guidelines). Projects which result in a significant impact shall provide VMT mitigation as described in the Guidelines, consisting of the following options: <ul style="list-style-type: none"> ▪ Modify the project’s characteristics to reduce VMT generated by the project. This might involve changing the density or mixture of land uses on the project site or changing the project’s location to one that is more accessible by transit or other travel modes. ▪ Implement transportation demand management (TDM) or physical design measures to reduce VMT generated by the project. The full range of travel demand management measures are listed in the Guidelines. ▪ Participate in a VMT impact fee program and/or VMT mitigation exchange or banking program. Currently there are no fee programs, banks, or exchanges that Benicia development could participate in, but if future programs are developed this would be an option. 	Significant and unavoidable.
TRANS-3: The project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	Less than significant.	No mitigation measures are required.	Less than significant.
TRANS-4: The project would not result in inadequate emergency access.	Less than significant.	No mitigation measures are required.	Less than significant.
TRIBAL CULTURAL RESOURCES			
TCR-1: The proposed project would cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or a resource determined to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Public Resources Code Public Resources Code § 5024.1.	Potentially Significant.	Mitigation Measure TCR-1: In the event that Native American human remains are found during the ground-disturbing activities of a project, the determination of Most Likely Descendant (MLD) under California Public Resources Code Section 5097.98 will be made by the Native American Heritage Commission (NAHC) upon notification of the NAHC of the discovery of said remains at a project site. Mitigation Measure TCR-2: Treatment of Native American Remains. In the event that Native American human remains are found during development of a project and the applicable tribe(s) or one of its members is determined to be MLD pursuant to Mitigation Measure TCR-1, the following provisions shall apply:	Less than significant with mitigation incorporated.

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
		<ul style="list-style-type: none"> ■ The Medical Examiner shall immediately be notified; ground disturbing activities in that location shall cease; and the applicable tribe(s) shall be allowed, pursuant to California Public Resources Code Section 5097.98(a), to: <ol style="list-style-type: none"> 1. Inspect the site of the discovery, and 2. Make determinations as to how the human remains and grave goods should be treated and disposed of with appropriate dignity. ■ The applicable tribe(s) shall complete its inspection and make its MLD recommendation within 48 hours of getting access to the site. The Yocha Dehe Wintun Nation shall have the final determination as to the disposition and treatment of human remains and grave goods. Said determination may include avoidance of the human remains, reburial on-site, or reburial on tribal or other lands that will not be disturbed in the future. ■ The applicable tribe(s) may wish to rebury said human remains and grave goods or ceremonial and cultural items on or near the site of their discovery, in an area which will not be subject to future disturbances over a prolonged period of time. Reburial of human remains shall be accomplished in compliance with the California Public Resources Code Sections 5097.98(a) and (b). <p>Mitigation Measure TCR-3: In the event that Native American human remains are discovered, the site of any reburial of Native American human remains shall not be disclosed and will not be governed by public disclosure requirements of the California Public Records Act, Cal. Govt. Code § 6250 et seq., unless otherwise required by law. The Medical Examiner shall withhold public disclosure of information related to such reburial pursuant to the specific exemption set forth in California Government Code Section 6254(r). The applicable tribe(s) will require that the location for reburial is recorded with the California Historic Resources Inventory System (CHRIS) on a form that is acceptable to the CHRIS center. The tribe(s) may also suggest that the landowner enter into an agreement regarding the confidentiality of site information that will run with title on the property.</p> <p>Mitigation Measure TCR-4: In the event that cultural items are found onsite, all such items, including ceremonial items and archaeological items, should be turned over</p>	

EXECUTIVE SUMMARY

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
		<p>to the applicable tribe(s) for appropriate treatment, unless otherwise ordered by a court or agency of competent jurisdiction. The project proponent should waive any and all claims to ownership of tribal ceremonial and cultural items, including archaeological items, which may be found on a project site in favor of the applicable tribe(s). If any intermediary, for example, an archaeologist retained by the project proponent) is necessary, said entity or individual shall not possess those items for longer than is reasonably necessary, as determined solely by the applicable tribe(s).</p> <p>Mitigation Measure TCR-5: In the event that additional significant site(s) not identified as significant in a project environmental review process, but are later determined to be significant, are located within a project impact area, such sites will be subjected to further archaeological and cultural significance evaluation by the project proponent, lead agency, and the applicable tribe(s) to determine if additional mitigation measures are necessary to treat sites in a culturally appropriate manner consistent with CEQA requirements for mitigation of impacts to cultural resources. If there are human remains present that have been identified as Native American, all work will cease for a period of up to 30 days in accordance with Federal Law.</p>	
UTILITIES AND SERVICE SYSTEMS			
UTIL-1: The project would not require or result in the relocation or construction of new or expanded wastewater treatment facilities, the construction or relocation of which could cause significant environmental effects.	Less than significant.	No mitigation measures are required.	Less than significant.
UTIL-2: The project would result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project’s projected demand in addition to the provider’s existing commitments.	Less than significant.	No mitigation measures are required.	Less than significant.
UTIL-3: The project would not require or result in the relocation or construction of new or expanded water facilities, the construction or relocation of which could cause significant environmental effects.	Less than significant.	No mitigation measures are required.	Less than significant.
UTIL-4: The project would have sufficient water supplies available to serve the project and reasonably	Less than significant.	No mitigation measures are required.	Less than significant.

EXECUTIVE SUMMARY

TABLE 1-1 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Significant Impact	Significance Without Mitigation	Mitigation Measures	Significance With Mitigation
foreseeable future development during normal, dry, and multiple dry years.			
UTIL-5: The project would not require or result in the relocation or construction of new or expanded storm water drainage facilities, the construction or relocation of which could cause significant environmental effects.	Less than significant.	No mitigation measures are required.	Less than significant.
UTIL-6: The project would not generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.	Less than significant.	No mitigation measures are required.	Less than significant.
UTIL-7: The project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste.	Less than significant.	No mitigation measures are required.	Less than significant.

EXECUTIVE SUMMARY

1.6 SUMMARY OF SENSITIVE SITES

Table 1-2, *Sensitive Sites*, summarizes the sites in the Housing Element Sites Inventory that have been identified, through the analysis of this DEIR, as being sensitive to an impact. These include sites in historic districts that may impact historic resources in addition to sites that overly hazards identified in the Safety Element Update.

TABLE 1-2		SENSITIVE SITES			
APN	Historic District ¹	Very High or High Liquefaction Hazard ²	High Landslide Hazard ³	Flood Hazard Zone (100-Year or 500-Year Floodplain) ⁴	Constrained Evacuation Access ⁵
Opportunity Sites					
087011530					
086062110					
089062030		X			
088141060	X		X		
088141070					
088113010					
088113030					
088113020					
087144010					
087144060					
087122200					
086047040					
088091120					
088091110					
088091100					
087200090					
087143130					
089074100			X		
089074330			X		
089074030					
089074020			X		
080180050		X		X	
080180150		X		X	
080180110		X		X	
080180130		X		X	
087011810			X		
086151110					
087200100					
087200040					
087200050					
087200060					
087200070					
087200080			X		
087200130					
087200120					
087161010					
087161140					
087161150					
087161220					

EXECUTIVE SUMMARY

TABLE 1-2 SENSITIVE SITES					
APN	Historic District¹	Very High or High Liquefaction Hazard²	High Landslide Hazard³	Flood Hazard Zone (100-Year or 500-Year Floodplain)⁴	Constrained Evacuation Access⁵
079020360				X	
087144100					
089371110	X			X	
089371020	X	X		X	
089053110					
089053100		X		X	
089053090		X		X	
089053010					
088111070					
088111080					
088111090					
088111120					
088111110					
089044090	X				
080140670	X				
086050030					
086050040					
089052290	X				
087021160					
089076120					
089076130					
089076140					
089076090					
080150260	X				
080150320	X				
080150330	X				
089052160	X				
089173190	X				
089115160	X				
089044320	X				
089044330	X				
089072170	X				
089072160	X				
089072150	X				
Suitably Designated/ Zoned Sites					
086041140			X		
086046280			X		X
086050030					
086050040					
086091760					
086382010					
087044180					
087070520					
087070530					
087072050					
087072060					
087073270					
087074150					
087093190					X
087112160					

EXECUTIVE SUMMARY

TABLE 1-2 SENSITIVE SITES					
APN	Historic District ¹	Very High or High Liquefaction Hazard ²	High Landslide Hazard ³	Flood Hazard Zone (100-Year or 500-Year Floodplain) ⁴	Constrained Evacuation Access ⁵
087112170					
087112180					
087134370					
087134510					
087134660					
087134670					
087142300			X		
087142320					
087154100	X				
087161010					
087161140					
087161150					
087161220					
088012500					
088083310					
088164050					
088182320					
088215040					
088215050					
088215060					
088215070					
088230050					
089012310					
089021150					
089021190		X			
089031130					
089034020					
089034040					
089072150					
089072170	X				
089074030			X		
089074020					
089074330					
089074100					
089076090					
089076120			X		
089076130			X		
089076140			X		
089092410					
089092680				X	
089092710			X	X	
088166020					
089053090					
088131070					
089034100				X	
088114030					
089032060			X	X	
089032050			X	X	
089032030		X	X	X	
087074160					
087073020					

EXECUTIVE SUMMARY

TABLE 1-2 SENSITIVE SITES					
APN	Historic District ¹	Very High or High Liquefaction Hazard ²	High Landslide Hazard ³	Flood Hazard Zone (100-Year or 500-Year Floodplain) ⁴	Constrained Evacuation Access ⁵
088181060					
089014320				X	
089014310				X	
088032010					
088014020					
086101330					
088164240					
089064100					
086291020					
083011920					X
086091800					
088131240					
080140630	X				
080140640	X				
086691040					
086694030					
088092150					
088124040					
088092040					
088131210					
089052290					
089044320					
089044330					
087200090					
089043100	X				
088124130					
080150390	X				
080150380	X				
080150400	X				
080150410	X				
080222010	X				
080150010	X				
080150330					
089371030	X			X	
089372090	X			X	
088124140					
088123140					
088102040					
088102140					
088102050					
088121110					
TOTAL	29	10	17	16	3

¹ See Figures 4.4-1 and 4.4-2 in Chapter 4.4, *Cultural Resources*

² See Figure 4.6-3 (A-E) in Chapter 4.6, *Geology and Soil*

³ See Figure 4.6-4 (A-E) in Chapter 4.6, *Geology and Soil*

⁴ See Figure 4.9-1 (A-E), Chapter 4.9, *Hydrology and Water Quality*

⁵ See Figure 1, *Evacuation Routes and Residential Parcels with Evacuation Constraints*, in the Health and Safety Element Update (Appendix 3-2)

EXECUTIVE SUMMARY

This page intentionally left blank.

2. Introduction

2.1 PURPOSE OF THE ENVIRONMENTAL IMPACT REPORT

The California Environmental Quality Act (CEQA) requires that all state and local governmental agencies consider the environmental consequences of projects over which they have discretionary authority before taking action on those projects. This Draft Environmental Impact Report (DEIR) has been prepared to satisfy CEQA and meet the CEQA Guidelines. The Environmental Impact Report (EIR) is the public document designed to provide decision makers and the public with an analysis of the environmental effects of the proposed project, to indicate possible ways to reduce or avoid environmental damage and to identify alternatives to the project. The EIR must also disclose significant environmental impacts that cannot be avoided; growth inducing impacts; effects not found to be significant; and significant cumulative impacts of all past, present, and reasonably foreseeable future projects.

The lead agency means “the public agency which has the principal responsibility for carrying out or approving a project which may have a significant effect upon the environment” (CEQA § 21067). The City of Benicia has the principal responsibility for approval of the proposed project. For this reason, the City of Benicia is the CEQA lead agency for this project.

The intent of the DEIR is to provide sufficient information on the potential environmental impacts of the proposed project to allow the City of Benicia to make an informed decision regarding approval of the project. Specific discretionary actions to be reviewed by the City are described in Section 3.4, *Intended Use of the EIR*.

The DEIR has been prepared in accordance with requirements of the:

- California Environmental Quality Act (CEQA) of 1970, as amended (Public Resources Code § 21000, *et seq.*)
- State Guidelines for the Implementation of the CEQA of 1970 (CEQA Guidelines), as amended (California Code of Regulations § 15000, *et seq.*)

2.1.1 NOTICE OF PREPARATION

The City of Benicia issued a Notice of Preparation (NOP) on June 2, 2022 (See Appendix 2-1, *NOP and NOP Comments*). A scoping meeting was held on June 9, 2022, to receive oral comments and the CEQA-mandated scoping period for this EIR was held from June 2, 2022, to July 5, 2022, during which interested agencies and the public could submit comments about environmental concerns regarding the proposed project to be addressed in the EIR. During this time, the City of Benicia received comment letters from a variety of State and local agencies and individuals as well as oral and written comments from the public (see Appendix 2-1, *NOP and NOP Comments*, for all comment letters received). The comments received are summarized in Table 2-1, *NOP Comment Summary*.

INTRODUCTION

TABLE 2-1 NOP COMMENT SUMMARY

Commenting Agency/Person	Date	Comment Summary	Issue Addressed In EIR:
Public Agencies			
California Department of Transportation	06/05/22	<ul style="list-style-type: none"> ▪ Recommends Traffic Impact analysis to examine the potential impacts of proposed 2022 draft Benicia housing opportunities site as well as determine the number of off-street parking created for each unit within the each of the opportunity sites ▪ Requests the city review the noise policies in the General Plan that apply to future developments proposed in the proposed Opportunities sites 1, 3, and 5 that would reside within 150 feet of the I-780 mainline ▪ Requests the lead agency, to fully discuss financing, scheduling, implementation responsible, and monitoring for all the proposed mitigation measures ▪ States that the any Caltrans facilities that might be impacted by the project, should meet the American Disabilities Act (ADA), as well as bicycle and pedestrian access during the construction 	Section 4.14, <i>Transportation</i> Section 4.11, <i>Noise</i>
California Department of Fish and Wildlife	07/01/22	<ul style="list-style-type: none"> ▪ Recommends creating a procedure or checklist for evaluating subsequent project impacts on biological resources to determine if they are within the scope of Program EIR or if additional environment document is needed; future analysis should include special status species, and sensitive habitat. ▪ Recommends providing baseline habitat assessments for special -status plant, fish and wildlife species located within the or near project area, information from multiple sources ▪ Recommends surveys to be conducted for special status species, and special status plant species prior to project implementation ▪ Requests that information developed in EIRs and negative declaration be incorporated into a database 	Section 4.3, <i>Biological Resources</i>
California Geological Survey		<ul style="list-style-type: none"> ▪ Recommends the city address Tsunami inundation areas in the EIR, and include a figure and discussion of Tsunami inundation Areas in the updated Safety Element 	Section 4.9, <i>Hydrology and Water Quality</i>
Public/Organization			
Marilyn Bardet	06/05/22	<ul style="list-style-type: none"> ▪ Requests the DEIR to describe the three basic element of the General Plan’s keystone goal of “sustainability”- environmental, social, and economic, with scenarios of extreme climate conditions ▪ Requests the DEIR to discuss cases in which development would occur on all available parcel cited by HEU and the effects of permitting SB35 projects without CEQA review ▪ Request discussion of rezones, and potential cumulative impacts related to population increased as project by CVAU ▪ Requests the safety element update recommend new General policies that would measurably better protect public health and safety from existing hazards ▪ Requests the discussion conundrum that could occur throughout the city for proposed 	Section 4.1, <i>Aesthetics</i> Section 4.2, <i>Air Quality</i> Section 4.4, <i>Cultural Resources</i> Section 4.8 <i>Hazards and Hazardous Materials</i> Section 4.10, <i>Land Use and Planning</i> Section 4.14, <i>Transportation</i> Section 4.15, <i>Tribal Cultural Resources</i>

INTRODUCTION

Commenting Agency/Person	Date	Comment Summary	Issue Addressed In EIR:
		SB35 projects, and review of SB35 projects in future <ul style="list-style-type: none"> ▪ Request identification and distinctions conferred on Arsenal Historic District, and District C ▪ Requests full scope of cumulative impact, especially on East Side regarding improvement/ impact ▪ Request analysis on the air quality, aesthetics, cultural resources, hazards, Land use Planning, Transportation, Tribal Cultural Resource, Recreation in regard to Arsenal/Jefferson Ridge 	
Thomas J. Carlon	06/30/22	<ul style="list-style-type: none"> ▪ Questions the lack of public outreach plan ▪ Questions the citizens ability to assist in review in areas of land use compatibility, impact to schools, public services, traffic, noise, water ▪ States that methodology appears shallow, and questions the city selection for PlaceWorks for the EIR 	Section 4.12, <i>Population and Housing</i> Section 4.11, <i>Noise</i> Section 4.14, <i>Transportation</i> Section 4.10, <i>Land Use and Planning</i>
Donald J. Dean	07/03/22	<ul style="list-style-type: none"> ▪ Requests that all sites must be evaluated whether they are opportunity sites or long-standing sites ▪ Requests that project must be evaluated against existing conditions, and analysis should be updated for current conditions ▪ Requests impact on historic resources to be evaluated, and alternative with no housing in arsenal to be evaluated 	Section 4.12, <i>Population and Housing</i> Section 4.4, <i>Cultural Resource</i>
Steven Goetz	06/28/22	<ul style="list-style-type: none"> ▪ Requests the EIR to evaluate biological resources impacted by vegetation control measures, creek restoration projects, water quality from vegetation management strategies 	Section 4.3, <i>Biological Resources</i>
Natalie Marcis	06/28/22	<ul style="list-style-type: none"> ▪ Requests EIR project description to include the total development potential of the draft Housing Element, and consider the environmental impacts of housing development on that site ▪ States that housing development on Jefferson Ridge would impact the scenic vistas, and asks to evaluate these impacts ▪ Requests evaluation of potential for housing development at Arsenal to expose sensitive receptors to substantial pollutant concentrations ▪ Requests further such evaluation on cultural resource for Jefferson Ridge, Hazards, Land use Planning, Recreation, Transportation, and Tribal Cultural Resource 	Section 4.4, <i>Cultural Resources</i> Section 4.2, <i>Air Quality</i> Section 4.8, <i>Hazards and Hazardous Materials</i> Section 4.10, <i>Land use and Planning</i>

INTRODUCTION

2.2 EIR SCOPE

This is a Program EIR that examines the potential environmental impacts of the proposed City of Benicia Housing Element and Safety Element Updates. This EIR serves as a Program EIR under CEQA Guidelines section 15168. According to CEQA Guidelines section 15168(b), use of a program EIR can provide advantages, including:

- (1) Provide an occasion for a more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action,
- (2) Ensure consideration of cumulative impacts that might be slighted in a case-by-case analysis,
- (3) Avoid duplicative reconsideration of basic policy considerations,
- (4) Allow the Lead Agency to consider broad policy alternatives and program wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts, and
- (5) Allow reduction in paperwork.

As a Program EIR, this document focuses on the overall effects of the proposed project and is a discussion of cumulative impacts evaluating the entirety of the action. The analysis does not examine the effects of any project on a specific property that may occur during the lifespan of the proposed Plan. Any impacts associated with development that are not fully evaluated within the scope of this EIR may require further environmental analysis. However, the City envisions that this Program EIR may be used to eliminate or reduce the scope of future environmental review for individual projects that are consistent with the proposed Plan pursuant to CEQA Guidelines Section 21083.3 and other streamlining provisions authorized by CEQA. For a complete listing of environmental topics covered in this DEIR, see Chapter 4, *Environmental Analysis*.

2.2.1 IMPACTS CONSIDERED LESS THAN SIGNIFICANT

CEQA Guidelines Section 15128 allows environmental issues for which there is no likelihood of significant impacts to be “scoped out” and not analyzed further in the EIR. It was determined that several resource categories would not result in significant impacts and thus are not further analyzed in this DEIR. A list of the resource categories or thresholds “scoped out” is included in Chapter 7, CEQA-Mandated Sections, of this DEIR, and including the following environmental topics:

- Agriculture and Forestry Resources
- Mineral Resources
- Recreation
- Wildfire

2.2.2 POTENTIALLY SIGNIFICANT ADVERSE IMPACTS

The City determined that nine environmental factors have potentially significant impacts if the proposed project is implemented.

- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Noise
- Transportation
- Tribal and Cultural Resources

2.2.3 UNAVOIDABLE SIGNIFICANT ADVERSE IMPACTS

The DEIR identifies six significant and unavoidable adverse impacts, as defined by CEQA, that would result from implementation of the proposed project. Unavoidable adverse impacts may be considered significant on a project-specific basis, cumulatively significant, and/or potentially significant. The City must prepare a “statement of overriding considerations” before it can approve the project, attesting that the decision-making body has balanced the benefits of the proposed project against its unavoidable significant environmental effects and has determined that the benefits outweigh the adverse effects, and therefore, the adverse effects are considered acceptable. The impacts that were found in the DEIR to be significant and unavoidable are:

Air Quality

- **AIR-1:** The project could conflict with or obstruct implementation of the BAAQMD Clean Air Plan.
- **AIR-2:** Buildout of the project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under applicable federal or State ambient air quality standard.

Biological Resources

- **BIO-1:** Development of the proposed project could impact sensitive species in the City.

Greenhouse Gas Emissions

- **GHG-1:** The project would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Cultural Resources

- **CULT-1:** The project would cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.

INTRODUCTION

Transportation

- **TRANS-2:** The project would conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).

2.3 INCORPORATION BY REFERENCE

Some documents are incorporated by reference into this DEIR, consistent with Section 15150 of the CEQA Guidelines, and they are available for review at the City.

- City of Benicia General Plan and EIR (SCH # 1997122023)
- City of Benicia Municipal Code

2.4 Public Review and Final EIR Certification

The DEIR is being circulated for public review for 45 days from November 4, 2022, through December 19, 2022. Interested agencies and members of the public are invited to provide written comments on the DEIR to the City at the following address or email address:

Jason R. Hade, AICP, Planning Manager,
City of Benicia Community Development Department
250 East L Street, Benicia, CA 94510
JHade@ci.benicia.ca.us

Upon completion of the 45-day public review and comment period, the City will prepare responses that address all substantive written and oral comments on the DEIR's environmental analyses that are received within the specified review period. The responses to comments and any revisions to the DEIR initiated by City staff will be prepared as a Final EIR document. The DEIR and its Appendices, together with the Final EIR, will constitute the EIR for the project.

The DEIR, Notice of Availability, and other supporting documents, such as technical reports prepared as part of the EIR process are available to the public for review at the following locations:

- Online: <https://www.ci.benicia.ca.us/planning>
- In-Person: Benicia Public Library, 150 East L. Street, Benicia, CA 94510
- State Clearinghouse website at: <https://ceqanet.opr.ca.gov/Project/2022060021>

2.5 MITIGATION MONITORING

CEQA Section 21081.6 requires that the lead agency adopt a mitigation monitoring and reporting program for any project for which it has made findings pursuant to CEQA 21081. Section 15097(b) of the CEQA Guidelines allow that when "...the project at issue is the adoption of a general plan, specific plan, community plan or other plan-level document (zoning, ordinance, regulation, policy), the monitoring plan shall apply to policies and any other portion of the plan that is a mitigation measure or adopted

INTRODUCTION

alternative. The monitoring plan may consist of policies included in plan-level documents. The annual report on general plan status required pursuant to the Government Code is one example of a reporting program for adoption of a city or county general plan.” For purposes of this project the general plan annual report will be used to document compliance with the proposed project.

Throughout this DEIR, mitigation measures are identified, where applicable, and presented in language that will facilitate preparation of a Mitigation Monitoring and Reporting Plan (MMRP). As required under CEQA, a MMRP will be prepared and presented to the City Council for adoption at the time of certification of the Final EIR for the project and will identify the timing and roles and responsibilities for implementation of adopted mitigation measures.

INTRODUCTION

This page intentionally left blank.

3. Project Description

3.1 PROJECT LOCATION

The proposed project encompasses all properties in the City of Benicia (see Figure 1-1, *Regional Location*, and Figure 1-2, *Citywide Aerial*) which is located on the southern edge of Solano County, in the San Francisco Bay Area. It borders the City of Vallejo to the west, unincorporated County land to the north, the Delta-Bay to the east, and the Carquinez Strait to the south. The City encompasses approximately 14 square miles with a population of approximately 26,000. It is accessible via Interstate 780 (I-780) and Interstate 680 (I-680).

3.2 STATEMENT OF OBJECTIVES

Objectives for the 2023-2030 Housing Element Update and Community Health and Safety Element Update (proposed project) will aid decision makers in their review of the project and associated environmental impacts:

1. Update the General Plan's Housing Element to comply with State-mandated housing requirements and to address the maintenance, preservation, improvement, and development of housing in the City between 2023 and 2031.
2. Include an adequate inventory of housing sites and rezone the sites as necessary to meet the required Regional Housing Needs Allocation and to provide an appropriate buffer.
3. Update the Safety Element to be consistent with the state requirements, as presented in Section 65302(g) of the California Government Code, and to address climate adaptation and resiliency.
4. To affirmatively further fair housing (AFFH).
5. Incentivize the development of housing, particularly affordable housing, suited to special needs and all income levels.

3.3 PROJECT BACKGROUND

State law requires every city and county in California to have an adopted comprehensive long-range general plan with specific contents in order to provide a vision for the jurisdiction's future. The general plan is the principal policy document for guiding future conservation and development in the city. The City

PROJECT DESCRIPTION

of Benicia’s General Plan addresses the seven “elements,” which are mandated under State law. The City is proposing to update its General Plan’s Housing Element and Safety Element.

The City’s Housing Element was last adopted on November 18, 2014. In accordance with State law, this Housing Element covers the planning period from January 31, 2015 through January 31, 2023. State law requires that the City update its Housing Element to implement the most recent regional housing needs allocation on or before January 31, 2023. In accordance with State law, the planning period for the updated Housing Element (referred to as the RHNA “6th Cycle”) will cover January 31, 2023 through January 31, 2031.

California Government Code Section 65302(c) mandates that each jurisdiction include a housing element in its general plan. The housing element is required to identify and analyze existing and projected housing needs, and include statements of the city’s goals, policies, quantified objectives, and scheduled programs for the preservation, improvement, and development of housing. State law (Government Code Sections 65580-65589) mandates the content of the City’s Housing Element and requires an analysis of:

- Population and employment trends;
- The city’s fair share of the regional housing needs;
- Household characteristics;
- An inventory of land suitable for residential development;
- Zone or zones where emergency shelters are allowed;
- Governmental and non-governmental constraints on the improvement, maintenance, and development of housing;
- Special housing needs;
- Opportunities for energy conservation; and
- Publicly assisted housing developments that may convert to non-assisted housing developments.

The purpose of these requirements is to demonstrate adequate housing resources to meet the assigned Regional Housing Needs Allocation (RHNA) for all housing categories, including housing for very low-income and low-income households. The California Department of Housing and Community Development (HCD) allocates regional housing needs numbers to the Association of Bay Area Governments (ABAG), which in turn allocates to cities and the unincorporated county their “fair share” of the region’s projected housing needs, also known as RHNA. The housing needs are assigned based on household income groupings over the planning period for each specific jurisdiction’s housing element.

To demonstrate housing resources for the very low-income, low-income, moderate-income, and above moderate-income housing categories, HCD requires that the City provide enough vacant land to accommodate at least 750 housing units, as seen in Table 3-1, *2023-2031 Regional Housing Needs Allocation (RHNA)*. HCD measures affordability through density, if higher density equates to affordability.

PROJECT DESCRIPTION

The City is amending the General Plan and the Zoning Ordinance, to provide adequate site(s) including allowing 20 dwelling units per acre or greater on sites that have been assigned units that address the lower-income RHNA. There will be no minimum density on these sites.

TABLE 3-1 2023-2031 REGIONAL HOUSING NEEDS ALLOCATION (RHNA)

Income Category	Area Median Income Percentage	2023-2031 RHNA
Very-Low Income	0-50%	212
Low-Income	51-80%	127
Moderate-Income	81-120%	123
Above-Moderate Income	>120%	288
TOTAL		750

Source: Solano County, 6th Cycle Regional Housing Needs Plan, 2021

3.3.1 DESCRIPTION OF THE PROJECT

Housing Element Update

The Housing Element is one of the required elements of the General Plan. As a policy document, the Housing Element does not normally result in physical changes to the environment but encourages the provision of affordable housing within the land use designations shown in the Land Use Element of the General Plan. The Housing Element identifies policy direction to meet the housing needs of the City by preserving existing homes and clarifying priorities for housing creation.

The proposed Housing Element will include an overview of housing policies and programs and will identify locations that can accommodate future housing. State law emphasizes the importance of an adequate land supply by requiring each Housing Element to identify “...sites...to facilitate and encourage the development of a variety of types of housing for all income levels...” (Government Code Section 65583(c)(1)). To provide for new housing, enough land must be zoned to allow for the construction of a variety of housing at densities that will satisfy the objectives of the Housing Element, including meeting the City’s RHNA. The land must also have access to appropriate public services, such as water, sewage treatment, and roads.

Note to Reader. The NOP for this project identified the following sites as having a potential for housing. Between the preparation of the NOP and this DEIR, the sites listed in the table below were removed from consideration and is therefore not included in the subsequent analysis:

PROJECT DESCRIPTION

TABLE 3-2 SITES REMOVED FROM INVENTORY

APN	Acres	Zoning	Proposed Zoning	Proposed Density	Maximum Dwelling Units	Realistic Development Capacity
0086350070	17.60	OS	OS with Overlay Zone	30	240	184
86212010	13.83	OS	OS with Overlay Zone	30	81	62
88111020	0.26	CG	MU-I	44	11	8
88111100	0.16	CG	MU-I	44	7	5
86350070	42.4; appx. 2.7 acres developable	OS	OS with Overlay Zone	30	81	62
87401010	5.38 (developable TBD)	OS	OS with Overlay Zone	30	TBD	TBD
87402350	5.16 total; appx. 2.1 acres that aren't linear OS behind residences	OS	OS with Overlay Zone	30	63	
80161130	0.22	RS	RS with Overlay Zone	30	7	5
89372180	0.43	TC	TC with Overlay Zone	29.9	13	9
87121230	2.13; appx 0.53 acres developable	RS	RS with Overlay	30	16	12
87141060	1.62	CC	CC with Overlay	30	49	37
89025080	0.36	CC	CC with Overlay	30	11	8
88083350	1.5	RS	RS with Overlay Zone	30	45	34
87114220	0.44	CC	CC with Overlay	30	13	10
87153340	0.21	CC	CC with Overlay	30	6	4
87611030	0.21	CC	CC with Overlay	30	6	4
89012250	0.76	CC	CC with Overlay	30	23	17
89081180	0.57 (appx. 0.2 acres developable)	RS	RS with Overlay	30	6	4
86162110	3.76; appx. 2.75 acre parking lot developable	RS	RS with Overlay	30	83	63
87511150	2.05; appx. 1.2 acre parking lot developable	RS	RS with Overlay	30	36	27
181260090	20; appx. 2.0 acres developable	OS	OS with Overlay Zone	30	60	46
88042180	0.05	RM	RM with Overlay Zone	30	2	2
88042160	0.36	RM	RM with Overlay Zone	30	11	8
88042060	0.08	RM	RM with Overlay Zone	30	2	1
88042190	0.07	RM	RM with Overlay Zone	30	2	1
86250250	2.45; appx. 0.80 acres developable	RS	RS with Overlay	30	24	18
87134050	0.43 (assume 1 total acre is developable across all parcels)	OS	OS with Overlay Zone	30		
87134120	0.57 (assume 1 total acre is developable across all parcels)	OS	OS with Overlay Zone	30	30	23
87134690	0.08 (assume 1 total acre is developable across all parcels)	OS	OS with Overlay Zone	30		
87074100	0.43	CO	CO with Overlay Zone	30	13	9
87074110	0.22	RS	RS with Overlay Zone	30	7	5
87074120	0.22	RS	RS with Overlay Zone	30	7	5
87074130	0.42	CO	CO with Overlay Zone	30	13	9

PROJECT DESCRIPTION

APN	Acres	Zoning	Proposed Zoning	Proposed Density	Maximum Dwelling Units	Realistic Development Capacity
88083390	0.52	PD	MU-L	30	16	12
88083360	0.35	CG	MU-L	30	11	8
89441070	0.46	CC	CC with Overlay	30	14	10
86041250	0.82	CC	CC with Overlay	30	25	18
86047100	0.18	RS	RS with Overlay	30	5	4
86047110	0.13	RS	RS with Overlay	30	4	3
86047030	0.02		--	30	1	1
86047050	0.23	RS	RS with Overlay	30	7	5
86047080	0.07	RS	RS with Overlay	30	2	1
88131250	0.49	MU-I	MU-I	44	22	16

Pursuant to state requirements, the City has identified 73 parcels on approximately 117 acres as opportunity sites (refer to Table B in Appendix D of the Housing Element, Appendix 3-1). The opportunity sites are parcels that the City is proposing to redesignate and/or rezone to accommodate residential or increased residential development. These sites are shown in Table 3-3, *Opportunity Sites*. If all sites are developed at 100 percent of their proposed maximum allowable density, they would contribute 2,963 units to the City’s housing stock.

The Housing Element Update also identified 107 additional parcels on 39.65 acres that are suitably zoned for residential development and do not require any designation or zone changes (refer to Table A in Appendix D of the Housing Element, Appendix 3-1). If all sites are developed at 100 percent of their proposed maximum allowable density, they would contribute 635 units to the City’s housing stock. These sites are shown in Table 3-4, *Suitably Designated/Zoned Sites*. These sites are included here for informational purposes but will not be evaluated in this EIR as there is no change in land use designation or zone district.

Collectively, all 181 sites that will be used by the City to meet its RHNA, will be referred to as the Housing Element Sites Inventory. These 180 sites would contribute a total of 2,277 units¹ to meet the City’s RHNA. This EIR also evaluates the conservative possibility that all sites are developed to 100 percent of their allowed density which would produce a total of 3,584 units. The location of all sites labeled by the categories described here, are shown on Figures 3-1a, *Benicia Housing Element Inventory Sites #1*, 3-1b, *Benicia Housing Element Inventory Sites #2*, 3-1c, *Benicia Housing Element Inventory Sites #3*, 3-1d, *Benicia Housing Element Inventory Sites #4*, and 3-1e, *Benicia Housing Element Inventory Sites #5*. For purposes of this EIR, only sites that require a change in the General Plan Land Use Designation and/or Zone District will be evaluated.

¹ This total is based on allowed the density of each parcel and the historic residential development trends in the City. See Section 3.1.2, *Realistic Development Capacity*, of Appendix 3-1

PROJECT DESCRIPTION

Housing Opportunity Sites Zoning Overlay

Other changes to zoning are called for in the Housing Element draft programs to address state law and local objectives related to density bonuses, accessory dwelling units, emergency shelters including low barrier navigation centers, reasonable accommodation, employee housing, residential care facilities, single-room occupancy units, and inclusionary zoning.

The City also proposes an overlay zone that would apply in combination with the underlying (base) zoning for some of the Housing Element Inventory sites. The overlay approach is still considered a “rezone” and would result in a change to the permitted uses and development standards to align with the densities identified in the opportunity sites list. However, it would allow the City to focus the rezoning in a manner that specifically aligns with the Housing Element and to keep existing underlying land use rights and entitlements intact. The overlay is applied to sites under the City’s control (where development of another type of use is not anticipated) or on sites that are residentially zoned. The Overlay District applies to any parcel in the Housing Opportunity Sites Inventory that is in a Single Family Residential (RS), Medium Density Residential (RM), High Density Residential (RH), Public and Semipublic (PS), Community Commercial (CC) or Office Commercial (OC) District, or in a zone of the Downtown Mixed Use Master Plan.

The proposed overlay zone would allow a residential multifamily density of up to 30 dwelling units per acre for all residential land use categories, Community Commercial, Business and Professional Offices, Public and Quasi Public. Additionally, under the Overlay Zone, for any parcel legally existing as of January 1, 2023, four multifamily dwelling units are permitted on the parcel regardless of the parcel size, provided that the project complies with all other applicable standards. A maximum height of 35 feet / 3 stories is allowed under the Overlay and Town Core Zoned parcels have a maximum permitted height of 40 feet under the Overlay. Furthermore, any housing proposed in this overlay district is required to comply with the City’s Objective Planning and Design Standards for Mixed-Use Residential and Multifamily Development pursuant to section 17.70.430 of the Benicia Municipal Code.

PROJECT DESCRIPTION

TABLE 3-3 OPPORTUNITY SITES

APN	Acreage	Current General Plan Designation ¹	Current Zoning District ²	Proposed General Plan Designation	Proposed Zoning ²⁻³	Total Realistic Units ⁴	Maximum Allowable Units ⁵
087011530	3.61	Public/Quasi-Public	RS	Low Density Residential	RS with Overlay Zone	11	15
086062110	1.00	Low Density Residential	RS	Low Density Residential	RS with Overlay Zone	15	20
089062030	0.21	Low Density Residential	RS	Low Density Residential	RS with Overlay Zone	4	6
088141060	5.16	Public/Quasi-Public	PS	Public/Quasi-Public	PS with Overlay Zone	8	14
088141070	0.22	Public/Quasi-Public	PS	Public/Quasi-Public	PS with Overlay Zone	6	7
088113010	0.37	Public/Quasi-Public	PS	Public/Quasi-Public	PS with Overlay Zone	6	7
088113030	0.11	Public/Quasi-Public	PS	Public/Quasi-Public	PS with Overlay Zone	5	6
088113020	0.17	Public/Quasi-Public	PS	Public/Quasi-Public	PS with Overlay Zone	5	5
087144010	0.38	High Density Residential	RM	Medium Density Residential	RM with Overlay Zone	8	11
087144060	0.02	High Density Residential	RM	Medium Density Residential	RM with Overlay Zone	1	1
087122200	0.43	Low Density Residential	RS	High Density Residential	RH with Overlay Zone	9	13
086047040	0.84	Low Density Residential	RS	High Density Residential	RH with Overlay Zone	15	25
088091120	0.24	Low Density Residential	RS	Low Density Residential	RS with Overlay Zone	5	7
088091110	0.24	Low Density Residential	RS	Low Density Residential	RS with Overlay Zone	5	7
088091100	0.24	Low Density Residential	RS	Low Density Residential	RS with Overlay Zone	5	7
087200090	0.38	General Commercial	CG	High Density Residential	RH with Overlay Zone	1	11
087143130	1.63	Low Density Residential	RS	High Density Residential	RH with Overlay Zone	26	34
089074100	0.22	High Density Residential	RM	Medium Density Residential	RM with Overlay Zone	4	7
089074330	0.80	High Density Residential	RM	Medium Density Residential	RM with Overlay Zone	15	24
089074030	0.43	Low Density Residential	RS	Low Density Residential	RS with Overlay Zone	8	13
089074020	0.29	Low Density Residential	RS	Low Density Residential	RS with Overlay Zone	5	9
080180050	10.35	Limited Industrial	LI	High Density Residential	RH with Overlay Zone	147	310
080180150	6.86	Limited Industrial	LI	High Density Residential	RH with Overlay Zone	98	205
080180110	0.03	Limited Industrial	LI	High Density Residential	RH with Overlay Zone	4	4
080180130	18.48	Limited Industrial	LI	High Density Residential	RH with Overlay Zone	263	554
087011810	1.01	Office Commercial	CO	Mixed Use Infill	MU-I	34	44
086151110	13.67	General Commercial	CG	Mixed Use Infill	MU-I	463	601
087200100	0.47	General Commercial	CG	Mixed Use Infill	MU-I	15	21
087200040	0.51	General Commercial	CG	Mixed Use Infill	MU-I	17	22
087200050	1.19	General Commercial	CG	Mixed Use Infill	MU-I	40	52

PROJECT DESCRIPTION

APN	Acreage	Current General Plan Designation ¹	Current Zoning District ²	Proposed General Plan Designation	Proposed Zoning ²⁻³	Total Realistic Units ⁴	Maximum Allowable Units ⁵
087200060	1.88	General Commercial	CG	Mixed Use Infill	MU-I	63	83
087200070	0.67	General Commercial	CG	Mixed Use Infill	MU-I	22	29
087200080	0.73	General Commercial	CG	Mixed Use Infill	MU-I	24	32
087200130	0.77	General Commercial	CG	Mixed Use Infill	MU-I	26	34
087200120	1.15	General Commercial	CG	Mixed Use Infill	MU-I	38	51
087161010	0.47	Low Density Residential	RS	High Density Residential	RH with Overlay Zone	9	14
087161140	0.08	Low Density Residential	RS	High Density Residential	RH with Overlay Zone	0	2
087161150	0.09	Low Density Residential	RS	High Density Residential	RH with Overlay Zone	1	3
087161220	0.46	Low Density Residential	RS	High Density Residential	RH with Overlay Zone	9	14
079020360	2.47	General Commercial	CG	Mixed Use Infill	MU-I	34	109
087144100	0.12	Community Commercial	CC	Community Commercial	CC with Overlay Zone	2	4
089371110	1.66	Downtown Commercial	NG	Downtown Commercial	NG with Overlay Zone	17	23
089371020	0.43	Downtown Commercial	NG	Downtown Commercial	NG with Overlay Zone	9	13
089053110	0.43	Public/Quasi-Public	PS	Public/Quasi-Public	PS with Overlay Zone	9	13
089053100	0.22	Public/Quasi-Public	PS	Public/Quasi-Public	PS with Overlay Zone	5	7
089053090	0.22	Public/Quasi-Public	PS	Public/Quasi-Public	PS with Overlay Zone	5	7
089053010	0.43	Downtown Mixed Use	NG-O	Downtown Mixed Use	NG-O with Overlay Zone	9	13
088111070	0.37	General Commercial	CG	Mixed Use Infill	MU-I	12	16
088111080	0.19	General Commercial	CG	Mixed Use Infill	MU-I	6	8
088111090	0.49	General Commercial	CG	Mixed Use Infill	MU-I	16	22
088111120	0.05	General Commercial	CG	Mixed Use Infill	MU-I	2	2
088111110	0.37	General Commercial	CG	Mixed Use Infill	MU-I	12	16
089044090	0.43	Downtown Commercial	TC	Downtown Commercial	TC with Overlay Zone	9	13
080140670	9.41	Public/Quasi-Public	PS	High Density Residential	RH with Overlay Zone	130	169
086050030	0.16	Low Density Residential	RS	Medium Density Residential	RM with Overlay Zone	2	5
086050040	0.13	Low Density Residential	RS	Medium Density Residential	RM with Overlay Zone	2	4
089052290	0.21	Downtown Commercial	NG	Downtown Commercial	NG with Overlay Zone	0	6
087021160	20.12	Public/Quasi-Public	PS	Public/Quasi-Public	PS with Overlay Zone	63	83
089076120	0.14	Low Density Residential	RS	Low Density Residential	RS with Overlay Zone	2	4
089076130	0.14	Low Density Residential	RS	Low Density Residential	RS with Overlay Zone	2	4
089076140	0.14	Low Density Residential	RS	Low Density Residential	RS with Overlay Zone	2	4

PROJECT DESCRIPTION

APN	Acreage	Current General Plan Designation ¹	Current Zoning District ²	Proposed General Plan Designation	Proposed Zoning ²⁻³	Total Realistic Units ⁴	Maximum Allowable Units ⁵
089076090	0.34	Low Density Residential	RS	Low Density Residential	RS with Overlay Zone	6	10
080150260	0.29	Office Commercial	CO	Office Commercial	CO with Overlay Zone	6	9
080150320	0.71	General Commercial	CG	Office Commercial	CO with Overlay Zone	5	21
080150330	0.51	General Commercial	CG	Office Commercial	CO with Overlay Zone	2	15
089052160	0.09	Downtown Mixed Use	TC-O	Downtown Mixed Use	TC-O with Overlay Zone	2	3
089173190	0.12	Downtown Mixed Use	TC-O	Downtown Mixed Use	TC-O with Overlay Zone	2	4
089115160	0.14	Downtown Commercial	TC	Downtown Commercial	TC with Overlay Zone	3	4
089044320	0.14	Downtown Mixed Use	TC-O	Downtown Mixed Use	TC-O with Overlay Zone	1	4
089044330	0.11	Downtown Mixed Use	TC-O	Downtown Mixed Use	TC-O with Overlay Zone	1	3
089072170	0.22	High Density Residential	RM	Medium Density Residential	RM with Overlay Zone	4	7
089072160	0.22	High Density Residential	RM	Medium Density Residential	RM with Overlay Zone	5	7
089072150	0.21	High Density Residential	RM	Medium Density Residential	RM with Overlay Zone	3	6
TOTAL	117.29					1,830	2,963

¹ RLD = Residential Low Density
HDR = High Density Residential
OC = Office Commercial
CC = Community Commercial
DC = Downtown Commercial
OS = Open Space
LI = Limited Industrial
² CG = Commercial General
PD = Planned Development
TC = Town Core
NG = Neighborhood General
NG-O = Neighborhood General Office
PS = Public and Semi-Public
CO = Commercial Office
RS = Single Family Residential
RM = Medium Density Residential
TC-O = Town Core Open
³ RH = High Density Residential
MU-I = Mixed Use Infill District
MU-L = Mixed Use Limited District

⁴ “Realistic units” refers to the development capacity that is used in the Housing Element for the purposes of calculating the City’s RHNA. It is based on allowed the density and historic residential development trends in the City and corresponds to 77 percent of the development capacity of each site in the inventory.

⁵ “Maximum Allowable Units” is the site’s acreage multiplied by its proposed maximum allowed density (units/acre).

PROJECT DESCRIPTION

TABLE 3-4 SUITABLY DESIGNATED/ZONED SITES

APN	Acreage	Current General Plan Designation ¹	Current Zoning Designation ²	Total Realistic Units ³	Maximum Allowable Units ⁴
086041140	0.24	RLD	RS	1	2
086046280	0.16	RLD	RS	1	1
086050030	0.13	RLD	RS	1	1
086050040	0.14	RLD	RS	1	1
086091760	0.18	RLD	RS	1	1
086382010	0.23	RLD	RS	1	2
087044180	0.21	RLD	RS	1	1
087070520	0.22	RLD	RS	1	2
087070530	0.33	RLD	RS	1	2
087072050	0.14	RLD	RS	1	1
087072060	0.13	RLD	RS	1	1
087073270	0.30	RLD	RS	1	2
087074150	0.31	RLD	RS	1	2
087093190	0.54	RLD	RS	2	4
087112160	0.17	RLD	RS	1	1
087112170	0.17	RLD	RS	1	1
087112180	0.22	RLD	RS	1	2
087134370	0.45	RLD	RS	1	3
087134510	0.13	RLD	RS	1	1
087134660	0.12	RLD	RS	1	1
087134670	0.13	RLD	RS	1	1
087142300	0.16	RLD	RS	1	1
087142320	0.16	RLD	RS	1	1
087154100	0.36	RLD	RS	1	3
087161010	0.47	RLD	RS	1	3
087161140	0.08	RLD	RS	1	1
087161150	0.09	RLD	RS	1	1
087161220	0.46	RLD	RS	1	3
088012500	0.24	RLD	RS	1	2
088083310	0.14	RLD	RS	1	1
088164050	0.46	RLD	RS	1	3
088182320	0.38	RLD	RS	1	3
088215040	0.19	RLD	RS	1	1
088215050	0.18	RLD	RS	1	1
088215060	0.23	RLD	RS	1	2
088215070	0.20	RLD	RS	1	1
088230050	0.08	RLD	PD	1	1
089012310	0.16	RLD	RS	1	1
089021150	0.17	RLD	RS	1	1

PROJECT DESCRIPTION

APN	Acreage	Current General Plan Designation ¹	Current Zoning Designation ²	Total Realistic Units ³	Maximum Allowable Units ⁴
089021190	0.19	RLD	RS	1	1
089031130	0.14	RLD	RS	1	1
089034020	0.24	RLD	RS	1	2
089034040	0.25	RLD	RS	1	2
089072150	0.21	RLD	RS	1	1
089072170	0.21	RLD	RS	1	1
089074030	0.35	RLD	RS	1	2
089074020	0.29	RLD	RS	1	2
089074330	0.8	RLD	RS	3	6
089074100	0.22	RLD	RS	1	2
089076090	0.36	RLD	RS	1	3
089076120	0.17	RLD	RS	1	1
089076130	0.14	RLD	RS	1	1
089076140	0.14	RLD	RS	1	1
089092410	0.24	RLD	RS	1	2
089092680	0.20	RLD	RS	1	1
089092710	0.36	RLD	RS	1	3
088166020	0.53	RLD	RS	2	4
089053090	0.12	RLD	RS	1	1
088131070	0.18	RLD	RS	1	1
089034100	0.55	RLD	RS	2	4
088114030	0.14	RLD	RS	1	1
089032060	0.19	RLD	RS	1	1
089032050	0.20	RLD	RS	1	1
089032030	0.20	RLD	RS	1	1
087074160	0.14	RLD	RS	1	1
087073020	0.18	MDR	RS	1	1
088181060	0.16	RLD	RS	1	1
089014320	0.31	Parks	RS	1	2
089014310	0.33	RLD	RS	1	2
088032010	0.36	RLD	RS	1	3
088014020	0.12	RLD	RS	1	1
086101330	0.23	RLD	RS	1	2
088164240	0.30	RLD	RS	1	2
089064100	0.22	RLD	RS	1	2
086291020	0.13	RLD	RS	1	1
083011920	0.12	MDR	RS	1	1
086091800	0.23	RLD	RS	1	2
088131240	0.11	RLD	RM	1	2
080140630	1.67	HDR	RM	18	23

PROJECT DESCRIPTION

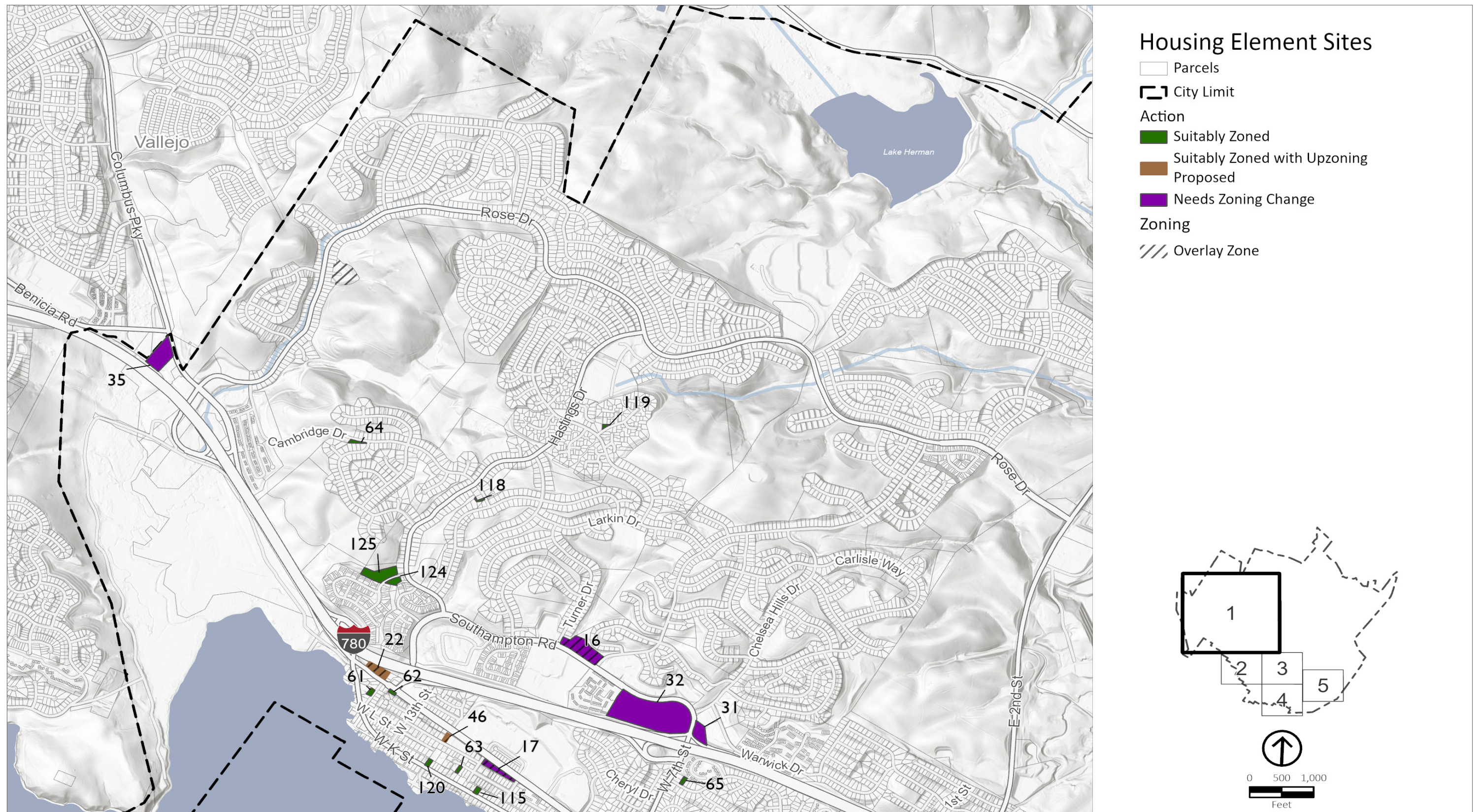
APN	Acreage	Current General Plan Designation ¹	Current Zoning Designation ²	Total Realistic Units ³	Maximum Allowable Units ⁴
080140640	1.95	HDR	RM	21	27
086691040	0.48	MDR	RM	5	7
086694030	2.16	MDR	RM	23	30
088092150	0.14	MU-I	MU-I	4	6
088124040	0.31	MU-I	MU-I	10	14
088092040	0.45	MU-I	MU-I	15	20
088131210	0.19	MU-L	MU-L	4	6
089052290	0.18	Commercial Downtown	NG	4	5
089044320	0.16	Downtown Mixed Use	TC-O	2	3
089044330	0.11	Downtown Mixed Use	TC-O	1	2
087200090	0.45	GC	CG	7	10
089043100	0.25	Commercial Downtown	TC	5	7
088124130	0.52	MU-I	MU-I	17	23
080150390	0.55	LA MU	CO	8	12
080150380	3.65	LA MU	CO	59	77
080150400	1.46	LA MU	CO	23	31
080150410	1.55	LA MU	CO	25	32
080222010	0.65	LA MU	PD	14	14
080150010	0.56	OC	CO	9	12
080150330	0.57	OC	CG	9	12
089371030	0.83	Commercial Downtown	TC	19	25
089372090	0.85	Commercial Downtown	TC	19	26
088124140	0.26	MU-I	MU-I	3	11
088123140	0.14	MU-I	MU-I	4	6
088102040	0.43	MU-I	MU-I	14	19
088102140	0.14	MU-I	MU-I	4	6
088102050	0.44	MU-I	MU-I	14	19
088121110	0.14	MU-I	MU-I	4	6
TOTAL	39.65			447	621

¹ RLD = Residential Low Density
 MDR = Medium Density Residential
 HDR = High Density Residential
 MU-I = Mixed Use Infill District
 MU-L = Mixed Use Limited District
 GC = General Commercial
 LA MU = Lower Arsenal Mixed Use
 OC = Office Commercial

² RS = Single Family Residential
 PD = Planned Development
 RM = Medium Density Residential
 NG = Neighborhood General
 TC-O = Town Core Open
 TC = Town Core
 CG = General Commercial District

³ “Realistic units” refers to the development capacity that is used in the Housing Element for the purposes of calculating the City’s RHNA. It is based on allowed the density and historic residential development trends in the City and corresponds to 77 percent of the development capacity of each site in the inventory.

⁴ “Maximum Allowable Units” is the site’s acreage multiplied by its current maximum allowed density (units/acre).



Source: Placeworks 2022

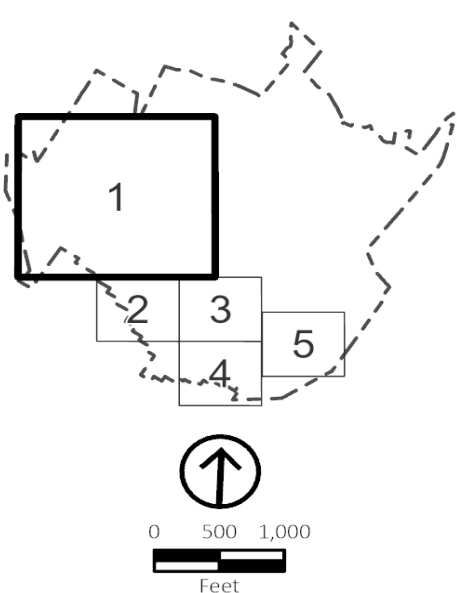
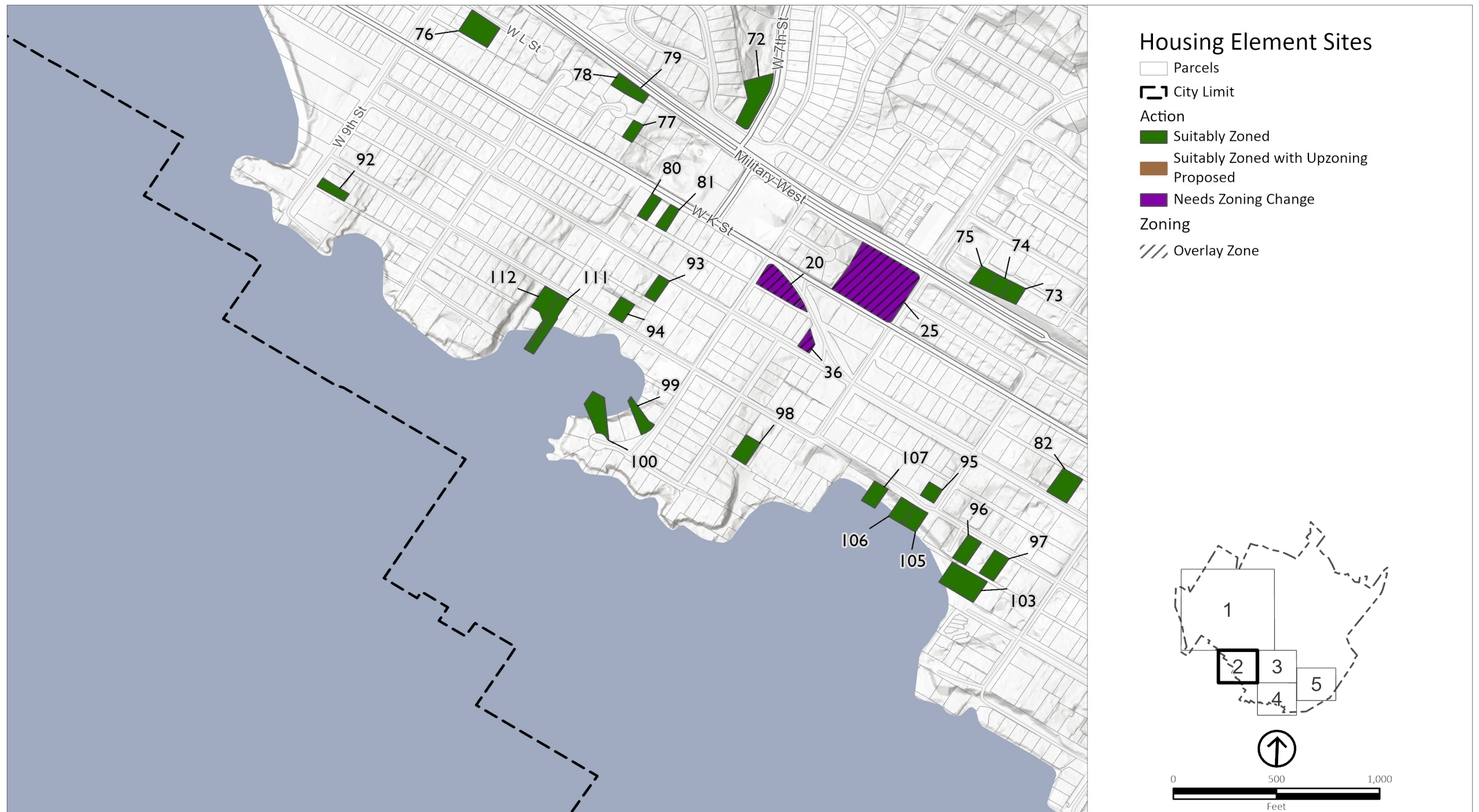


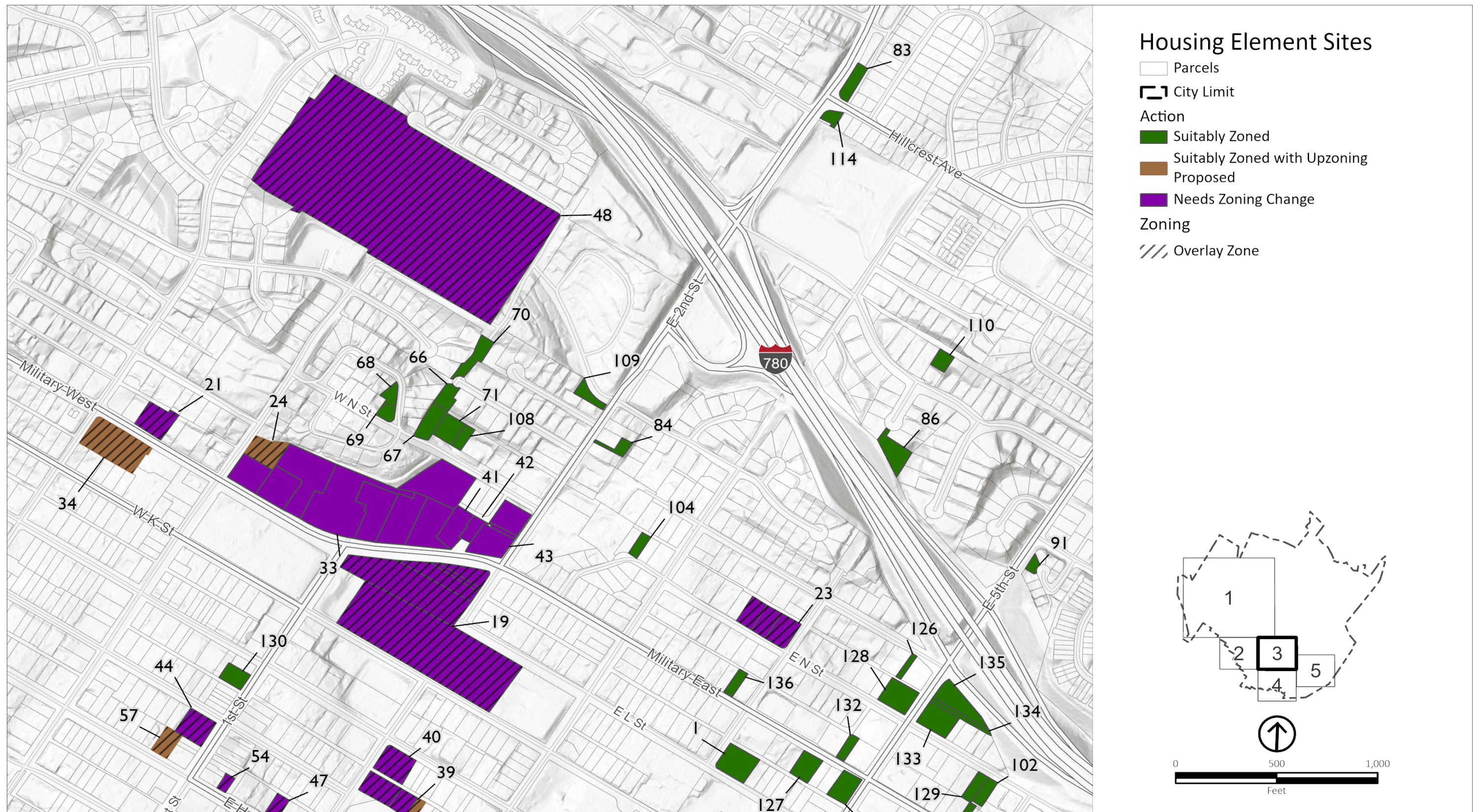
Figure 3-1a

Housing Element Sites Inventory #1



Source: Placeworks 2022

Figure 3-1b
Housing Element Sites Inventory #2



Source: Placeworks 2022

Figure 3-1c
Housing Element Sites Inventory #3



Source: Placeworks 2022

Figure 3-1d
Housing Element Sites Inventory #4



Source: Placeworks 2022

Figure 3-1e
Housing Element Sites Inventory #5

PROJECT DESCRIPTION

This page intentionally left blank.

Safety Element Update

The safety-related section of the Benicia Community Health and Safety Element is a state-mandated General Plan element that must identify potential natural and human-created hazards that could affect the City of Benicia's (City's) residents, businesses, and services. The purpose of the Community Health and Safety Element is to establish a framework that anticipates these hazards and prepares the community to minimize exposure to these risks. The existing Community Safety Element was adopted in 1999 and includes policies that address both health-related concerns and hazards to the community. The hazards section of the chapter covers geologic hazards, flood hazards, fire hazards, hazardous materials and waste, utility hazards, and air quality hazards.

The Community Health and Safety Element conveys the City's goals, policies, and actions to minimize the hazardous situations and protect and improve public health in and around Benicia. It identifies the natural and human-caused hazards that affect existing and future development, describes present and expected future conditions, and sets policies and standards for improved public safety. This includes efforts to minimize physical harm to the buildings and infrastructure in and around Benicia to reduce damage to local economic systems, community services, and ecosystems.

Some degree of risk is inevitable because the potential for many disasters cannot be eliminated completely, and the ability to predict such disasters is limited. However, the Community Health and Safety Element aims to reduce this risk through the following functions:

- Developing a framework by which safety considerations are introduced into the land use planning process.
- Facilitating the identification and mitigation of hazards for new development, and strengthens existing codes, project review, and permitting processes.
- Presenting policies directed at identifying and reducing hazards in existing development.
- Strengthening preparedness planning and post-disaster reconstruction policies for earthquake, flood, dam inundation, wildland fire, and other relevant hazards.
- Identifying how natural and climate-related hazards are likely to increase in frequency and intensity in the future and provides policies to increase community resilience through preparedness and adaptation.

The Community Health and Safety Element addresses the topic of public health and safety following state requirements, as presented in Section 65302(g) of the California Government Code. State law requires that the Community Health and Safety Element contains background information and policies to address multiple natural hazards, analyze the vulnerabilities from climate change and contain policies to improve climate change resilience, and assess residential areas with evacuation constraints. The public safety issues in Benicia include emergency preparedness and response, flood and inundation hazards, seismic

PROJECT DESCRIPTION

and geologic hazards, fire hazards, hazardous waste, and materials, as well as climate-related hazards, such as drought, extreme heat, and severe weather. The Community Health and Safety Element identifies goals and policies for each of these hazards.

3.4 INTENDED USE OF THE EIR

This is a program EIR that examines the potential environmental impacts of the proposed project. It is the intent of the DEIR to evaluate the environmental impacts of the proposed project, thereby enabling the City of Benicia, other responsible agencies, and interested parties to make informed decisions. The anticipated approvals required for this project are:

Lead Agency	Action
City of Benicia City Council	<ul style="list-style-type: none"> ▪ Certification of the Program EIR ▪ Rezone housing sites consistent with the 6th Cycle Housing Element. ▪ Adoption of the 2023-2031 Housing Element. ▪ Adoption of the Safety Element ▪ Adoption of Findings of Fact and Statement of Overriding Considerations (if required) ▪ Adoption of the Mitigation Monitoring Program ▪ Adoption of any ordinances, guidelines, programs, actions, or other mechanisms that implement the Housing Element ▪ Adoption of any ordinances, guidelines, programs, actions, or other mechanisms that implement the Safety Element. ▪ Adoption of the Housing Opportunity Sites Overlay District. ▪ Other zoning text amendments to the City’s Zoning Ordinance to comply with changes in state law and implementation of the Housing Element programs
Responsible Agency	Action
California Department of Housing and Community Development	Review and certification of Housing Element

3.5 REFERENCES

Solano, County of. 2021, September. Solano County 6th Cycle Regional Housing Needs Plan.
<https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=35622>

PROJECT DESCRIPTION

This page intentionally left blank.

4. *Environmental Analysis*

Chapter 4 examines the environmental setting of the proposed project, analyzes its effects and the significance of its impacts, and recommends mitigation measures to reduce or avoid impacts. This chapter has a separate section for each environmental issue area that was determined to need further study in the EIR. This scope was determined in the Notice of Preparation (NOP), which was published on June 2, 2022 (see Appendix 2-1), and through public and agency comments received during the NOP comment period from June 2, 2022, to July 5, 2022 (see Appendix 2-1). Environmental issues and their corresponding sections are:

- 4.1 Aesthetics
- 4.2 Air Quality
- 4.3 Biological Resources
- 4.4 Cultural Resources
- 4.5 Energy
- 4.6 Geology and Soils
- 4.7 Greenhouse Gas Emissions
- 4.8 Hazards and Hazardous Materials
- 4.9 Hydrology and Water Quality
- 4.10 Land Use and Planning
- 4.11 Noise
- 4.12 Population and Housing
- 4.13 Public Services
- 4.14 Transportation
- 4.15 Tribal Cultural Resources
- 4.16 Utilities and Service Systems

Sections 4.1 through 4.16 provide a detailed discussion of the environmental setting, impacts associated with the proposed project, and mitigation measures designed to reduce significant impacts where required and when feasible. The residual impacts following the implementation of any mitigation measures are also discussed.

Organization of Environmental Analysis

To assist the reader with comparing information between environmental issues, each section is organized under 10 major headings:

- Environmental Setting
- Thresholds of Significance
- Proposed Housing Element Policies

ENVIRONMENTAL ANALYSIS

- Proposed Safety Element Policies
- Environmental Impacts
- Cumulative Impacts
- Level of Significance Before Mitigation
- Mitigation Measures
- Level of Significance After Mitigation
- References

In addition, Chapter 1, *Executive Summary*, has a table that summarizes all impacts by environmental issue.

Terminology Used in this Draft EIR

The level of significance is defined for each impact in this DEIR. Although the criteria for determining significance are different for each topic area, the environmental analysis applies a uniform classification of the impacts based on definitions consistent with CEQA and the CEQA Guidelines:

- **No Impact.** The project would not change the environment.
- **Less than Significant.** The project would not cause any substantial, adverse change in the environment.
- **Less than Significant with Mitigation Incorporated.** The EIR includes mitigation measures that avoid substantial adverse impacts on the environment.
- **Significant and Unavoidable.** The project would cause a substantial adverse effect on the environment, and no feasible mitigation measures are available to reduce the impacts to a less than significant level.

4.1 AESTHETICS

This section describes the regulatory framework and existing conditions related to aesthetics, and the potential impacts of the proposed City of Benicia Housing Element and Safety Element Updates.

4.1.1 ENVIRONMENTAL SETTING

4.1.1.1 REGULATORY FRAMEWORK

State Regulations

Caltrans Scenic Highway Program

In 1963, California's Scenic Highway Program was created to preserve and protect the natural scenic beauty of California highways and adjacent corridors through special conservation treatment. The state laws governing this program are in the Streets and Highways Code, Section 260 to 263, and Caltrans oversees the program. Caltrans defines a scenic highway as any freeway, highway, road, or other public right-of way that traverses an area of exceptional scenic quality. Suitability for designation as a State Scenic Highway is based on three criteria described in Caltrans' Guidelines for Official Designation of Scenic Highways (2008) (Caltrans 2022):

- **Vividness.** The extent to which the landscape is memorable. This is associated with the distinctiveness, diversity, and contrast of visual elements.
- **Intactness.** The integrity of visual order and the extent to which the natural landscape is free from visual intrusions (e.g., buildings, structures, equipment, grading).
- **Unity.** The extent to which development is sensitive to and visually harmonious with the natural landscape.

Local Regulations

City of Benicia General Plan

The Land Use and Growth Management, Circulation, Visual Character, and Open Space and Conservation elements of the General Plan (1999) contains policies that are applicable to visual resources for the proposed project.

Land Use and Growth Management Element

- Policy 2.1.1: Ensure that new development is compatible with adjacent existing development and does not detract from Benicia's small-town qualities and historic heritage.
- Policy 2.1.2: Make efficient use of land in new development areas consistent with the surrounding neighborhood.

AESTHETICS

Circulation Element

- Policy 2.27.2: Ensure the continuation of the following City policies in discussions with Caltrans about changes to I-670 and I-780:
 - A) Preserve the Lake Herman interchange vista look-out and rest area.

Visual Character Element

- Policy 3.7.1: Ensure that new development is compatible with the surrounding architectural neighborhood character
- Policy 3.9.1: Preserve vistas along I-78 and I-680
- Policy 3.9.2: Work with the State to complete and maintain landscaping of I-680 and I-780

Open Space and Conservation Element

- Policy 3.15.1: Preserve and protect, through a variety of methods, a pattern of open space buffers and greenbelts throughout the Planning Area.
- Policy 3.15.2: Preserve public views of public open space and maintain existing vistas (including the Northern Area vistas) wherever possible.

City of Benicia Municipal Code

Section 17.70.240 – Performance Standards

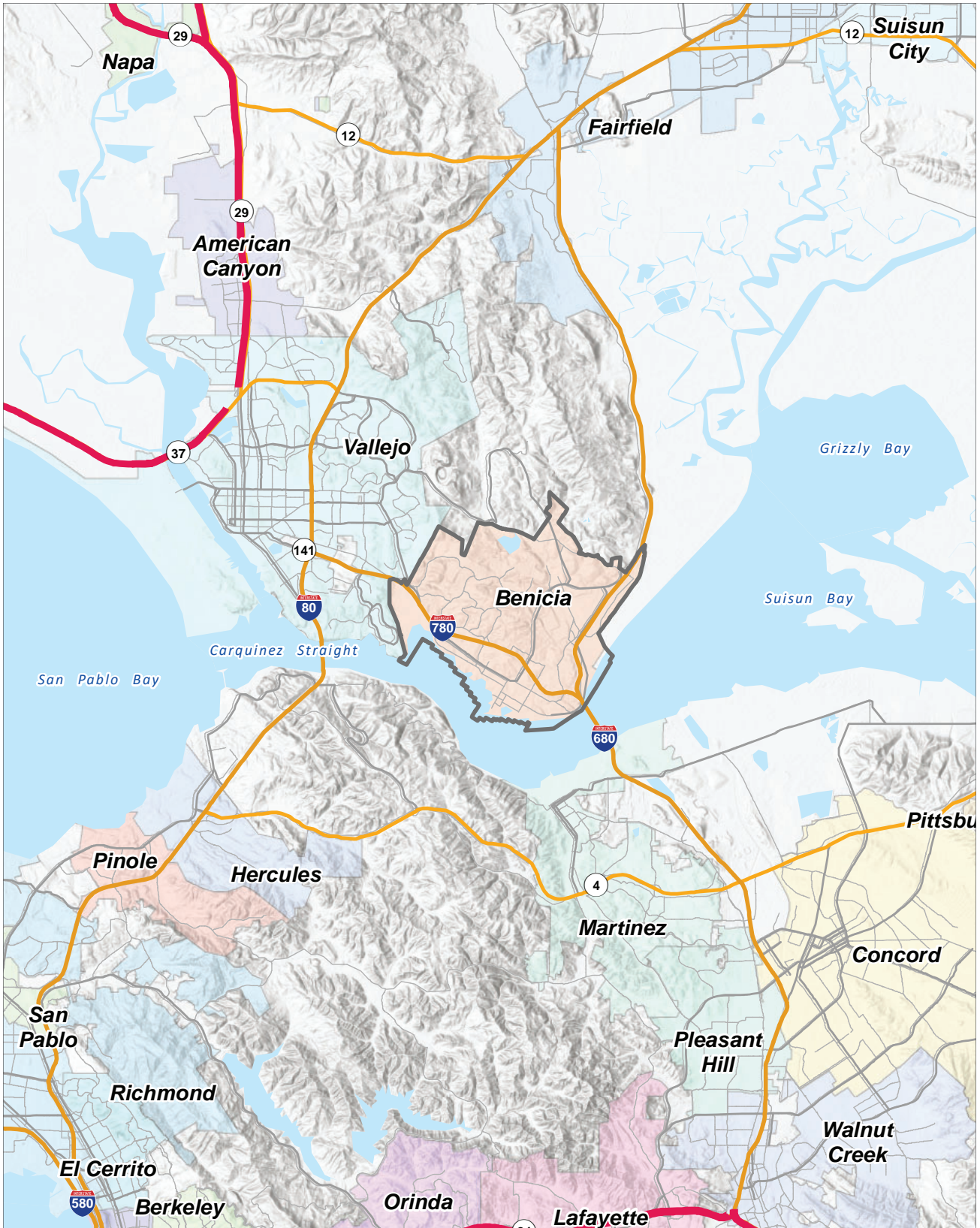
This section establishes performance standards to all use classification in all zoning districts including glare. The section states mirrored, or highly reflective glass shall not cover more than 20 percent of a building surface visible from a street unless an applicant submits surface information demonstrating to the satisfaction of the community development director.

Chapter 17.82 – Trees and Views

The intent of these regulations is to provide guidelines and standards to resolve disputes between neighbors, balancing tree- and view-related values in the interest of public health, safety, and welfare. (Ord. 87-4 N.S., 1987).

Chapter 17.108 – Design Review

The Design Review Chapter is intended to ensure that the location and configuration of structures are visually harmonious with surrounding sites and structures and new development is consistent with specific design guidelines developed for use within the community.



Source: Scenic Highways: California State Scenic Highway, 2022



City Boundary

State Scenic Routes

Figure 4.1-1

Designates State Scenic Highway within/near City of Benicia

AESTHETICS

This page intentionally left blank.

4.1.1.2 EXISTING CONDITIONS

The City of Benicia includes scenic views such as the Carquinez Strait, marshlands, rolling hills, open space, and undeveloped foothills of northern Contra Costa County. Benicia is a waterfront city with marsh and shoreline open space resources the along Carquinez Strait and the Suisun Bay. The Strait provides a waterway connection from San Pablo Bay and San Francisco Bay to the Sacramento and San Joaquin River Delta. Benicia's waterfront on the Carquinez Strait includes a Port with frequent ship traffic along the Strait. The Carquinez Strait is crossed by two highway bridges: the Carquinez Bridge on Interstate 80 (I-80) and the Benicia-Martinez on Interstate 680 (I-680) as well as the rail crossing below the Benicia-Martinez Bridge.

City-Designated Scenic Routes

The General Plan outlines three principal routes that provide visual access to scenic resources: I-780 between Glen Cove Road and the Benicia-Martinez Bridge; I-680 between Morrow Lane and the Benicia-Martinez Bridge; and Lake Herman Road (Benicia 1999, pg. 113).

State Freeway 680

State Freeway 680 (I-680) can be accessed from the southern and northern borders of Benicia. As Benicia is approached from the south from the Benicia-Martinez bridge there is a panoramic view of Suisun Bay, the Carquinez Strait, the Benicia Industrial Park, downtown Benicia, the Benicia Hills, and Sky Valley Open Space to the north of the City. Within the City limits, the visual experience along I-680 can be characterized by open hillsides and Benicia's industrial area. When traveling from north to south, this route displays Susin Bay on the east. Rolling hills can be seen in the west above and below Lake Herman Road when traveling from south to north of this route. Relatively flat areas adjacent to the marshes include industry sites and there is a large petroleum refinery that is highly visible along this route.

Interstate Freeway 780

At the southern edge of the city, where State Freeway 780 (I-780) diverges from the I-680 intersection of Benicia, drivers transition from the panoramic views of the Benicia-Martinez Bridge to views of the Benicia hills and residential development to the north and views of the Carquinez Strait and open hills of northern Contra Costa County to the south. Entrance from west of Benicia on I-780 provides drivers with similar views.

Lake Herman Road

This route runs along the northern edge of Benicia. The visual experience of this route is characterized by rolling grassy hills to the north and south, Lake Herman to the south, and views of Suisun Bay and the Carquinez Strait to the south at the Road's eastern terminus.

AESTHETICS

4.1.2 THRESHOLDS OF SIGNIFICANCE

The proposed project would result in significant aesthetics impact if it would:

1. Have a substantial adverse effect on a scenic vista.
2. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
3. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality.
4. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

4.1.3 PROPOSED HOUSING ELEMENT POLICIES

There are no policies in the Housing Element Update applicable to Aesthetics.

4.1.4 PROPOSED SAFETY ELEMENT POLICIES

There are no policies in the Safety Element Update applicable to Aesthetics.

4.1.5 ENVIRONMENTAL IMPACTS

AES-1	The project would not have a substantial adverse effect on a scenic vista.
-------	--

Housing Element Update

The Housing Element Update (HEU) identifies locations around the City of Benicia that are intended to accommodate future housing and require a land use designation and/or zone change to meet the City's Regional Housing Needs Allocation (RHNA). All parcels in Table 3-3, *Opportunity Sites*, are currently zoned for urban uses, however the development footprint and the building height(s) may increase as a result of the proposed project. Sites being rezoned from Single Family Residential (RS) to Medium Density Residential (RM) or High Density Residential (RH) will now have a building height maximum of 35 feet rather than the current 30 feet. Under Section 17.24.030 (k), *RS, RM, and RH districts- Property Regulations*, of the Benicia Municipal Code, sites in residential areas located west of First Street, and further located within the first 150 feet of the shoreline behind the highest tide mark, will continue to have a maximum building height of 24 feet in height despite a change in zoning. There are approximately nine sites located west of First Street and within the first 150 feet of the shoreline behind the highest tide mark: (89034100), (89032060), (89032050), (89032030), (089092680), (89092710), (89014320), (89014310), (89081180). Maximum building coverage will increase from 40 percent to 50 percent for

properties rezoned from single-family to high density residential. The minimum required landscaping would not change.

All Housing Element sites are currently planned for urban development by the General Plan and Zoning Ordinance. While the proposed project would allow for a different type of development (i.e., changing from commercial to residential or single family to multifamily), all the development will be required to comply with the City’s building and design standards which would ensure that new development complements existing development. Chapter 17.108, Design Review, of the City’s Municipal Code requires design review by the Historic Preservation Review Commission or staff on new development projects in some instances.

As indicated in the General Plan, scenic vistas can be viewed from I-680, I-780, and Lake Herman Road. The lands surrounding these routes are currently developed with a variety of urban uses, including homes. There are approximately seven proposed housing sites along the I-780 corridor which could potentially impact scenic views as shown in Table 4.1-1, *Housing Element Sites along the I-780 Corridor*.

TABLE 4.1-1 HOUSING ELEMENT SITES ALONG THE I-780 CORRIDOR

APN	CURRENT DESIGNATION/ZONE	PROPOSED DESIGNATION/ZONE
Suitably Zoned Sites		
088182320	Residential Low Density/RLD	Single Family Residential/RS
080140640	High Density Residential/HDR	Medium Density Residential/RM
080140630	High Density Residential/HDR	Medium Density Residential/RM
Opportunity Sites		
086151110	General Commercial/CG	Mixed Use Infill/ MU-I
080140670	Public/Quasi-Public/PS	High Density Residential with Overlay Use/RH with Overlay Zone
079020360	General Commercial/CG	Mixed Use Infill/ MU-I
086047040	Low Density Residential	High Density Residential with Overlay Use

As shown in Table 4.1, there are three suitably zoned and two opportunity sites along the I-780 corridor zoned as residential which would be subject to design review thus ensuring new development does not unnecessarily block scenic views. There are also two opportunity sites along the I-780 corridor that are zoned as General Commercial (GC) and proposed to Mixed Use Infill (MU-I). Based on Benicia’s Zoning Code, maximum building zones for commercial zones are 40 feet and 35 feet for mixed-use districts, the proposed designations would decrease the maximum building height. Thus, lessening the impact of future development along this route from the HEU. In addition, sites proposed to MU-I would be required to follow standards set in Chapter 17.26, Mixed Use Districts, of the Municipal Code. This chapter includes design standards to streamline development proposals while also ensuring high quality design that fits into the existing context. The Mixed-Use Districts also includes objective design standards for Mixed-Use and Multifamily Development as mentioned in Section 17.26.040, Additional standards for all mixed-use districts, in the Municipal Code. Based on current building heights from each zoning designation, as noted in Title 17 of the Benicia Municipal Code, the HEU would reduce maximum building heights, increase maximum building heights in residential uses, or keep the same maximum building heights. Sites in Table 3.3, *Suitably Designated/Zoned Sites*, would have similar limitations in regard to building height. As shown

AESTHETICS

in Table 3.2, *Opportunity Sites*, sites currently zoned as commercial and industrial (Office Commercial, General Commercial, and Limited Industrial) would be changed to Mixed Use Infill which would decrease the maximum height of those building heights which would lessen the impacts to blocking views. Sites zoned as commercial or mixed use (Community Commercial, Downtown Commercial, Downtown Mixed-Use, Office Commercial, General Commercial) would adopt an overlay which would allow for permitted building heights of 35 feet, resulting in the decrease of commercial zones' building heights and no change in mixed use districts' building heights. As mentioned above, low density residential (RS) sites would either change to medium density residential (RM) or high density residential (RH) which would increase the maximum height. While design review could reduce building heights, the proposed project is not increasing them except as noted in the discussion, and in Impact AES-3 below. The potential for the state to remove the City's ability to decrease a building height from an existing zone district does not constitute a change to existing conditions resulting from the proposed project and does not result in an environmental impact.

The General Plan also includes policies protecting scenic vistas along specific routes listed above such as Policy 3.9.1 which aims to preserve vistas along 1-680 and I-780. Policy 2.27.2 also aims to preserve Lake Herman interchange vista look-out and rest area.

Therefore, with the implementation of the policies in the General Plan, Municipal Code, and the HEU impacts to scenic vistas as a result of the implementation of the HEU would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. Proposed new residential and mixed-use development would predominantly be located in more urbanized areas of the city. As this is a policy document, this update would not have any significant environmental effects related to the City's visual characteristics and aesthetics.

Significance Without Mitigation: Less than significant.

AES-2	The project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
-------	---

Housing & Safety Element Update

According to the California Scenic Highway Mapping System, administered by Caltrans, there are no state-designated scenic highways in the City of Benicia. The nearest designated state scenic highway is State Route (SR) 24 from the east Portal Caldecott Tunnel to the I-680 interchange Nr Walnut Creek in Contra Costa County and I-680 south of that interchange to the Alameda County line. Both scenic routes are approximately fifteen miles south of the Benicia city limits. Given the distance, varying topography, and existing development, implementation of the proposed project would not degrade views of SR-24 or I-680, and no impact would occur.

Significance Without Mitigation: No impact.

AES-3	The project would not substantially degrade the existing visual character or quality of public views in non-urbanized areas nor would the project conflict with applicable zoning and other regulations governing scenic quality in urban areas.
-------	--

Housing Element Update

The Housing Element Update (HEU) identifies locations around the City of Benicia that can accommodate future housing. Open space is primarily located in the northwestern portion of the City of Benicia and provides scenic vistas. The HEU does not propose converting land currently zoned as Open Space (OS) for housing. (See note to reader in Section 3.0 Project Description)

The HEU identifies housing site locations within urbanized and suburbanized areas. Maximum development heights will range between 35 and 40 feet depending on the new zone. Section 17.70.060, Accessory Dwelling Units (ADU), establishes a permitting process and development standards for ADUs to comply with upon issuance of a building permit. This Chapter states some ADUs are exempt from a design review or public hearing; however, still lists regulations specifying maximum size, height, setback, and other development standards. It is important to note that ADUs are already permitted by right in any zone district that allows residential use. Except for public/quasi-public and light industrial zoned lands, all the parcels included in the HEU allow some form of residential use. As such, ADUs would be allowed under existing regulations.

AESTHETICS

The Housing Element includes 17 sites proposed to be rezoned for MU-I and one site suitably zones as MU-L which would be required to follow standards set in Chapter 17.26, Mixed Use Districts, of the Municipal Code as well as the Mixed-Use Districts have Objective Design Standards for Mixed-Use and Multifamily Development as mentioned in Section 17.26.040, Additional standards for all mixed-use districts, in the Municipal Code.

There are 13 opportunity sites and four suitably zones sites in the Housing Element Update inventory within the Downtown Historic District. Under the proposed Housing Opportunity Sites Zoning Overlay, all 13 opportunity sites in the Downtown Historic Conservation District would allow a maximum of 35 feet in height and three stories. Sites in the Downtown Historic District, the redevelopment of these sites would be subject to the provisions in Chapter 17.54, Historic Overlay District (H) which requires that demolition permits be reviewed and approved by the historic preservation review commission. In addition, Housing Element Sites Inventory includes 12 total sites within the boundaries of the Arsenal District. Four of these sites are opportunity sites and eight of these sites are suitably zoned. Development within the Arsenal Historic Conservation District is subject to the design review process of the Arsenal Historic Conservation Plan which ensures that modifications within the Benicia Arsenal Plan Area will continue to maintain the historic integrity of the district.

The City's General Plan provides Policy 2.1.1 ensure that new development is compatible with adjacent existing development and does not detract from Benicia's small-town qualities and historic heritage. Upon implementation of the policies in the General Plan and Municipal Code the proposed project would not substantially degrade the visual character or quality of the City of Benicia since future sites would be introduced in urban areas and any difference in allowed height will not be visually significant from a distance. Impacts would be less than significant.

Safety Element Update

The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's aesthetic resources. No impacts would occur.

Significance Without Mitigation: No impact.

AES-4	The project would not generate substantial light or glare that would adversely affect day or nighttime views in the area.
-------	---

Housing Element Update

The two major causes of light pollution are glare and spill light. Spill light is caused by misdirected light that illuminates outside the intended area. Glare is light that shines directly or is reflected from a surface

into a viewer's eyes. Spill light and glare impacts are effects of a project's exterior lighting on adjoining uses and areas.

Sources of light in the City include building lighting (interior and exterior), security lighting, sign illumination, sports fields lighting, and parking area lighting. These sources of light and glare are mostly associated with residential, commercial, and industrial uses, as well as larger community parks. Other sources of nighttime light and glare include streetlights, vehicular traffic along surrounding roadways, and ambient lighting from surrounding communities.

Future development under the HEU could increase nighttime light and glare because of additional housing. Additionally, the redesignation and rezoning of land to accommodate housing would introduce new sources of light into areas where less light is currently anticipated. However, development projects in the city would be required to comply with the lighting standards of the City Municipal Code in Section 17.70.240, Performance Standards, which sets performance standards for new development to reduce glare from streets. Through the compliance of the Municipal Code and site-planning/design standards pertaining to light and glare, any potential impacts would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address climate change resiliency and adaptation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. No proposed policies could foreseeably result in increased glare production in the City.

Significance Without Mitigation: Less than significant

AESTHETICS

4.1.6 REFERENCES

Benicia, City of. 1999, June 15. Benicia General Plan.

<https://www.ci.benicia.ca.us/index.asp?SEC=0371539A-30D9-4885-B61F-B5038B415DD3&DE=F40DB441-1E06-45F8-82F8-6D632AB9EC85>.

California Department of Transportation (Caltrans). 2022. Scenic Highways: California State Scenic Highway. Accessed July 12, 2022. <https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways>.

4.2 AIR QUALITY

This section describes the potential impacts to air quality due to the buildout of the proposed project in the City. This section describes the regulatory framework and existing conditions, identified criteria used to determine impact significance, provides an analysis of the potential impacts, and identified General Plan Policies and feasible mitigation measures that should minimize any potentially significant impacts.

This evaluation is based on the methodology recommended by the Bay Air Quality Management District (BAAQMD). The analysis focuses on air pollution from regional emission and localized pollutant concentrations. Criteria air pollutant emissions modeling is included in Appendix 4.2-1 of this Draft Environmental Impact Report (EIR). Transportation-sector impacts are based on trip generation and vehicle miles traveled (VMT) provided by Fehr and Peers. Cumulative impacts related to air quality are based on the regional boundaries of the San Francisco Bay Area Air Basin (SFBAAB).

4.2.1 ENVIRONMENTAL SETTING

4.2.1.1 TERMINOLOGY

- **AAQS.** Ambient Air Quality Standards
- **CES.** CalEnviroScreen. CES is a mapping tool that helps identify the California communities most affected by sources of pollution and where people are often especially vulnerable to pollution's effects.
- **Concentrations.** Refers to the amount of pollutant material per volumetric unit of air. Concentrations are measured in parts per million (ppm), parts per billion (ppb), or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).
- **Criteria Air Pollutants.** Those air pollutants specifically identified for control under the Federal Clean Air Act (currently seven—carbon monoxide, nitrogen oxides, lead, sulfur oxides, ozone, and coarse and fine particulates).
- **DPM.** Diesel particulate matter.
- **Emissions.** Refers to the actual quantity of pollutant, measured in pounds per day or tons per year.
- **ppm.** Parts per million.
- **Sensitive receptor.** Land uses that are considered more sensitive to air pollution than others due to the types of population groups or activities involved. These land uses include residential, retirement facilities, hospitals, and schools.
- **TAC.** Toxic air contaminant.
- **$\mu\text{g}/\text{m}^3$.** Micrograms per cubic meter.
- **VMT.** Vehicle miles traveled.

AIR QUALITY

4.2.1.2 AIR POLLUTANTS OF CONCERN

Criteria Air Pollutants

The pollutants emitted into the ambient air by stationary and mobile sources are categorized as primary and/or secondary pollutants. Primary air pollutants are emitted directly from sources. Carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO_x), sulfur dioxide (SO₂), coarse inhalable particulate matter (PM₁₀), fine inhalable particulate matter (PM_{2.5}), and lead (Pb) are primary air pollutants. Of these, CO, SO₂, NO_x, PM₁₀, and PM_{2.5} are “criteria air pollutants,” which means that Ambient Air Quality Standards (AAQS) have been established for them. VOC and NO_x are criteria pollutant precursors that form secondary criteria air pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O₃) and nitrogen dioxide (NO₂) are the principal secondary pollutants. Table 4.2-1, *Criteria Air Pollutant Health Effects Summary*, summarizes the potential health effects associated with the criteria air pollutants

TABLE 4.2-1 CRITERIA AIR POLLUTANT HEALTH EFFECTS SUMMARY

Pollutant	Health Effects	Examples of Sources
Carbon Monoxide (CO)	Chest pain in heart patients Headaches, nausea Reduced mental alertness Death at very high levels	Any source that burns fuel such as cars, trucks, construction and farming equipment, and residential heaters and stoves
Ozone (O ₃)	Cough, chest tightness Difficulty taking a deep breath Worsened asthma symptoms Lung inflammation	Atmospheric reaction of organic gases with nitrogen oxides in sunlight
Nitrogen Dioxide (NO ₂)	Increased response to allergens Aggravation of respiratory illness	Same as carbon monoxide sources
Particulate Matter (PM ₁₀ and PM _{2.5})	Hospitalizations for worsened heart diseases Emergency room visits for asthma Premature death	Cars and trucks (particularly diesels) Fireplaces and woodstoves Windblown dust from overlays, agriculture, and construction
Sulfur Dioxide (SO ₂)	Aggravation of respiratory disease (e.g., asthma and emphysema) Reduced lung function	Combustion of sulfur-containing fossil fuels, smelting of sulfur-bearing metal ores, and industrial processes
Lead (Pb)	Behavioral and learning disabilities in children Nervous system impairment	Contaminated soil

Source: CARB 2022b; South Coast AQMD 2005.

A description of each of the primary and secondary criteria air pollutants and their known health effects is presented below.

- **Carbon Monoxide (CO)** is a colorless, odorless gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. CO is a primary criteria air pollutant. CO concentrations tend to be the highest during winter mornings with little to no wind, when surface-based inversions trap the pollutant at ground levels. The highest ambient CO concentrations are generally found near traffic-congested corridors and intersections. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces its oxygen-carrying capacity. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses. Even healthy people exposed to high CO concentrations can experience headaches, dizziness, fatigue, unconsciousness, and even death (BAAQMD 2017a).
- **Nitrogen Oxides (NO_x)** are a by-product of fuel combustion and contribute to the formation of ground-level O₃, PM₁₀, and PM_{2.5}. The two major forms of NO_x are nitric oxide (NO) and nitrogen dioxide (NO₂). NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. The principal form of NO_x produced by combustion is NO, but NO reacts quickly with oxygen to form NO₂, creating the mixture of NO and NO₂ commonly called NO_x. NO₂ is an acute irritant and more injurious than NO in equal concentrations. At atmospheric concentrations, however, NO₂ is only potentially irritating. NO₂ absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure (BAAQMD 2017a). NO₂ acts as an acute irritant and in equal concentrations is more injurious than NO. At atmospheric concentrations, however, NO₂ is only potentially irritating. There is some indication of a relationship between NO₂ and chronic pulmonary fibrosis. Some increase in bronchitis in children (2 and 3 years old) has also been observed at concentrations below 0.3 parts per million (ppm) (BAAQMD 2017a).
- **Sulfur Dioxide (SO₂)** is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. It enters the atmosphere as a result of burning high-sulfur-content fuel oils and coal and chemical processes at plants and refineries. Gasoline and natural gas have very low sulfur content and do not release significant quantities of SO₂. When sulfur dioxide forms sulfates (SO₄) in the atmosphere, together these pollutants are referred to as sulfur oxides (SO_x). Thus, SO₂ is both a primary and secondary criteria air pollutant. At sufficiently high concentrations, SO₂ may irritate the upper respiratory tract. Current scientific evidence links short-term exposures to SO₂, ranging from 5 minutes to 24 hours, with an array of adverse respiratory effects, including bronchoconstriction and increased asthma symptoms. These effects are particularly adverse for asthmatics at elevated ventilation rates (e.g., while exercising or playing) at lower concentrations and when combined with particulates, SO₂ may do greater harm by injuring lung tissue. (BAAQMD 2017a).

AIR QUALITY

- **Suspended Particulate Matter (PM₁₀ and PM_{2.5})** consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. In the San Francisco Bay Area Air Basin (SFBAAB or Air Basin), most particulate matter is caused by combustion, factories, construction, grading, demolition, agricultural activities, and motor vehicles. Two forms of fine particulates are now recognized and regulated. Inhalable coarse particles, or PM₁₀, include the particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 millionths of a meter or 0.0004 inch) or less. Inhalable fine particles, or PM_{2.5}, have an aerodynamic diameter of 2.5 microns or less (i.e., 2.5 millionths of a meter or 0.0001 inch). Diesel particulate matter (DPM) is also classified a carcinogen. Extended exposure to particulate matter can increase the risk of chronic respiratory disease. PM₁₀ bypasses the body's natural filtration system more easily than larger particles and can lodge deep in the lungs. The EPA scientific review concluded that PM_{2.5} penetrates even more deeply into the lungs, and this is more likely to contribute to health effects—at concentrations well below current PM₁₀ standards. These health effects include premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms (e.g., irritation of the airways, coughing, or difficulty breathing). Motor vehicles are currently responsible for about half of particulates in the SFBAAB. Wood burning in fireplaces and stoves is another large source of fine particulates (BAAQMD 2017a).
- **Ozone (O₃)** is a key ingredient of “smog” and is a gas that is formed when ROG_s and NO_x, both by-products of internal combustion engine exhaust, undergo photochemical reactions in sunlight. O₃ is a secondary criteria air pollutant. O₃ concentrations are generally highest during the summer months when direct sunlight, light winds, and warm temperatures create favorable conditions for its formation. O₃ poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Breathing O₃ can trigger a variety of health problems, including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma; reduce lung function; and inflame the linings of the lungs. Besides causing shortness of breath, it can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Chronic exposure to high ozone levels can permanently damage lung tissue. O₃ can also damage plants and trees and materials such as rubber and fabrics (BAAQMD 2017a).
- **Reactive Organic Gases (ROGs)/Volatile Organic Compounds (VOCs)** are compounds composed primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of ROG_s. Other sources of ROG_s include evaporative emissions from paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by ROG_s, but rather by reactions of ROG_s to form secondary pollutants such as O₃. There are no AAQS established for ROG_s. However, because they contribute to the formation of O₃, the BAAQMD has established a significance threshold for this pollutant (BAAQMD 2017a).
- **Lead (Pb)** is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result

of the phasing out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers. Because emissions of lead are found only in projects that are permitted by the BAAQMD, lead is not an air quality of concern for the proposed project (BAAQMD 2017a).

Toxic Air Contaminants

People exposed to TACs at sufficient concentrations and durations may have an increased chance of getting cancer or experiencing other serious health effects. These health effects can include damage to the immune system as well as neurological, reproductive (e.g., reduced fertility), developmental, respiratory, and other health problems (USEPA 2020). By the last update to the TAC list in December 1999, CARB had designated 244 compounds as TACs (CARB 1999). Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. There are no air quality standards for TACs. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most relevant to the proposed project being particulate matter from diesel-fueled engines.

Diesel Particulate Matter

In 1998, CARB identified DPM as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered TACs. Almost all diesel exhaust particles are 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lungs. Long-term (chronic) inhalation of DPM is likely a lung cancer risk. Short-term (i.e., acute) exposure can cause irritation and inflammatory symptoms and may exacerbate existing allergies and asthma symptoms (USEPA 2002).

Placement of New Sensitive Receptors

Because placement of sensitive land uses falls outside CARB's jurisdiction, CARB developed and approved the *Air Quality and Land Use Handbook: A Community Health Perspective* (2005) to address the siting of sensitive land uses in the vicinity of freeways, distribution centers, rail yards, ports, refineries, chrome-plating facilities, dry cleaners, and gasoline-dispensing facilities. This guidance document was developed to assess compatibility and associated health risks when placing sensitive receptors near existing pollution sources.

CARB's recommendations on the siting of new sensitive land uses identified in Table 4.2-2, *CARB Recommendations for Siting New Sensitive Land Uses*, were based on a compilation of recent studies that evaluated data on the adverse health effects from proximity to air pollution sources.

AIR QUALITY

TABLE 4.2-2 CARB RECOMMENDATIONS FOR SITTING NEW SENSITIVE LAND USES

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 per day, or rural roads with 50,000 vehicles per 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).
Rail Yards	Take into account the configuration of existing distribution centers and avoid locating residences and other sensitive land uses near entry and exit points.
Ports	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.
Refineries	Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or CARB on the status of pending analyses of health risks.
Chrome Platers	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.
Dry Cleaners Using Perchloroethylene	Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Gasoline Dispensing Facilities	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 three or more machines, consult with the local air district. Do not site new sensitive land uses in the same building with perchloroethylene dry cleaning operations.

Source: CARB 2005.

The key observation in these studies is that proximity to air pollution sources substantially increases both exposure and the potential for adverse health effects. There are three carcinogenic TACs that constitute the majority of the known health risks from motor vehicle traffic: DPM from trucks and benzene and 1,3-butadiene from passenger vehicles.

In 2017, CARB provided a supplemental technical advisory to the handbook for near-roadway air pollution exposure, *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways*. Strategies include practices and technologies that reduce traffic emissions, increase dispersion of traffic pollution (or the dilution of pollution in the air), or remove pollution from the air (CARB 2017).

4.2.1.3 REGULATORY FRAMEWORK

AAQS have been adopted at the state and federal levels for criteria air pollutants. In addition, both the state and federal government regulate the release of TACs. Land uses in the City are subject to the rules and regulations imposed by the Bay Area Air Quality AQMD, the California AAQS adopted by the California Air Resources Board (CARB), and National AAQS adopted by the US Environmental Protection Agency (EPA). Federal, state, regional, and local laws, regulations, plans, or guidelines that are potentially applicable to the proposed project are summarized in this section.

Federal and State Regulations

Ambient Air Quality Standards

The Clean Air Act (CCA) was passed in 1963 by the US Congress and has been amended several times. The 1970 Clean Air Act amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting National AAQS and the Prevention of Significant Deterioration program. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The Clean Air Act allows states to adopt more stringent standards or include other pollutants. The California Clean Air Act, signed in 1988, requires all areas of the state to achieve and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the National AAQS.

The National and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect “sensitive receptors” most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both California and the federal government have established health based AAQS for seven air pollutants, which are shown in Table 4.2-3, *Ambient Air Quality Standards for Criteria Pollutants*. These pollutants are ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), coarse inhalable particulate matter (PM₁₀), fine inhalable particulate matter (PM_{2.5}), and lead (Pb). In addition, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles.

AIR QUALITY

TABLE 4.2-3 AMBIENT AIR QUALITY STANDARDS FOR CRITERIA AIR POLLUTANTS

Pollutant	Averaging Time	California Standard ¹	Federal Primary Standard ²	Major Pollutant Sources
Ozone (O ₃) ³	1 hour	0.09 ppm	*	Motor vehicles, paints, coatings, and solvents.
	8 hours	0.070 ppm	0.070 ppm	
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO ₂)	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.18 ppm	0.100 ppm	
Sulfur Dioxide (SO ₂)	Annual Arithmetic Mean	*	0.030 ppm	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	0.075 ppm	
	24 hours	0.04 ppm	0.14 ppm	
Respirable Coarse Particulate Matter (PM ₁₀)	Annual Arithmetic Mean	20 µg/m ³	*	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	50 µg/m ³	150 µg/m ³	
Respirable Fine Particulate Matter (PM _{2.5}) ⁴	Annual Arithmetic Mean	12 µg/m ³	12 µg/m ³	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	*	35 µg/m ³	
Lead (Pb)	30-Day Average	1.5 µg/m ³	*	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Calendar Quarter	*	1.5 µg/m ³	
	Rolling 3-Month Average	*	0.15 µg/m ³	
Sulfates (SO ₄) ⁵	24 hours	25 µg/m ³	No Federal Standard	Industrial processes.
Visibility Reducing Particles	8 hours	ExCo =0.23/km visibility of 10≥ miles	No Federal Standard	Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.

Pollutant	Averaging Time	California Standard ¹	Federal Primary Standard ²	Major Pollutant Sources
Hydrogen Sulfide	1 hour	0.03 ppm	No Federal Standard	Hydrogen sulfide (H ₂ S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation.
Vinyl Chloride	24 hours	0.01 ppm	No Federal Standard	Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents.

Notes: ppm: parts per million; µg/m³: micrograms per cubic meter

*Standard has not been established for this pollutant/duration by this entity.

¹ California standards for O₃, CO (except 8-hour Lake Tahoe), SO₂ (1 and 24 hour), NO₂, and particulate matter (PM₁₀, PM_{2.5}, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

² National standards (other than O₃, PM, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O₃ standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. For PM_{2.5}, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

³ On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

⁴ On December 14, 2012, the national annual PM_{2.5} primary standard was lowered from 15 µg/m³ to 12.0 µg/m³. The existing national 24-hour PM_{2.5} standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary standard of 15 µg/m³. The existing 24-hour PM₁₀ standards (primary and secondary) of 150 µg/m³ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

⁵ On June 2, 2010, a new 1-hour SO₂ standard was established, and the existing 24-hour and annual primary standards were revoked. The 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

Source: CARB 2016.

California has also adopted a host of other regulations that reduce criteria pollutant emissions.

- **AB 1493: Pavley Fuel Efficiency Standards.** Pavley I is a clean-car standard that reduces emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016. In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025.
- **Heavy-Duty (Tractor-Trailer) GHG Regulation.** The tractors and trailers subject to this regulation must either use EPA SmartWay certified tractors and trailers or retrofit their existing fleet with SmartWay-verified technologies. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the heavy-

AIR QUALITY

duty tractors that pull them on California highways. These owners are responsible for replacing or retrofitting their affected vehicles with compliant aerodynamic technologies and low-rolling-resistance tires. Sleeper-cab tractors model year 2011 and later must be SmartWay certified. All other tractors must use SmartWay-verified low-rolling-resistance tires. This rule has criteria air pollutant co-benefits.

- **SB 1078 and SB 107: Renewables Portfolio Standards.** A major component of California’s Renewable Energy Program is the renewables portfolio standard established under Senate Bills 1078 (Sher) and 107 (Simitian). Under this standard, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010.
- **California Code of Regulations (CCR) Title 20: Appliance Energy Efficiency Standards.** The 2006 Appliance Efficiency Regulations (20 CCR secs. 1601–1608) were adopted by the California Energy Commission on October 11, 2006 and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non–federally regulated appliances. This code reduces natural gas use from appliances.
- **24 CCR, Part 6: Building and Energy Efficiency Standards.** Energy conservation standards for new residential and nonresidential buildings adopted by the California Energy Resources Conservation and Development Commission (now the California Energy Commission) in June 1977. This code reduces natural gas use from buildings.
- **24 CCR, Part 11: Green Building Standards Code.** Establishes planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. This code reduces natural gas use from buildings.

Tanner Air Toxics Hot Spot Information and Assessment Act

Public exposure to TACs is a significant environmental health issue in California. In 1983, the California legislature enacted a program to identify the health effects of TACs and reduce exposure to them. The California Health and Safety Code defines a TAC as “an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health” (17 CCR sec. 93000). A substance that is listed as a hazardous air pollutant pursuant to Section 112(b) of the federal Clean Air Act (42 US Code sec. 7412[b]) is a toxic air contaminant. Under State law, the California Environmental Protection Agency, acting through CARB, is authorized to identify a substance as a TAC if it is an air pollutant that may cause or contribute to an increase in mortality or serious illness, or may pose a present or potential hazard to human health.

California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics “Hot Spot” Information and Assessment Act of 1987). The Tanner Air Toxics Act set up a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an “airborne toxics control measure” for sources that emit that TAC. If there is a safe threshold for a substance (i.e., a

point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate “toxics best available control technology” to minimize emissions. To date, CARB has established formal control measures for 11 TACs that are identified as having no safe threshold.

Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High-priority facilities are required to perform a health risk assessment, and if specific thresholds are exceeded, are required to communicate the results to the public through notices and public meetings.

CARB has promulgated the following specific rules to limit TAC emissions:

- **13 CCR Chapter 10 Section 2485.: Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling.** Generally, restricts on-road diesel-powered commercial motor vehicles with a gross vehicle weight rating of greater than 10,000 pounds from idling more than five minutes.
- **13 CCR Chapter 10 Section 2480: Airborne Toxic Control Measure to Limit School Bus Idling and Idling at Schools.** Generally, restricts a school bus or transit bus from idling for more than five minutes when within 100 feet of a school.
- **13 CCR Section 2477 and Article 8: Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets and Facilities Where TRUs Operate.** Regulations established to control emissions associated with diesel-powered TRUs.

Regional Regulations

Bay Area Air Quality Management District

The BAAQMD is the agency responsible for ensuring that the National and California AAQS are attained and maintained in the SFBAAB. Air quality conditions in the SFBAAB have improved significantly since the BAAQMD was created in 1955. The BAAQMD prepares air quality management plans (AQMP) to attain ambient air quality standards in the SFBAAB. The BAAQMD prepares ozone attainment plans for the National O₃ standard and clean air plans for the California O₃ standard. The BAAQMD prepares these air quality management plans in coordination with Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC) to ensure consistent assumptions about regional growth.

Bay Area Air Quality Management District 2017 Clean Air Plan

The BAAQMD adopted the 2017 “Clean Air Plan: Spare the Air, Cool the Climate” (2017 Clean Air Plan) on April 19, 2017, making it the most recently adopted comprehensive plan. The 2017 Clean Air Plan incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2017 Clean Air Plan serves as an update to the adopted Bay Area 2010 Clean Air Plan and continues to provide

AIR QUALITY

the framework for SFBAAB to achieve attainment of the California and National AAQS. The 2017 Clean Air Plan updates the Bay Area’s ozone plan, which is based on the “all feasible measures” approach to meet the requirements of the California Clean Air Act. It sets a goal of reducing health risk impacts to local communities by 20 percent between 2015 and 2020 and lays the groundwork for reducing GHG emissions in the Bay Area to meet the State’s 2030 GHG reduction target and 2050 GHG reduction goal. It also includes a vision for the Bay Area in a post-carbon year 2050 that encompasses the following: Construct buildings that are energy efficient and powered by renewable energy.

- Walk, bicycle, and use public transit for the majority of trips and use electric-powered autonomous public transit fleets.
- Incubate and produce clean energy technologies.
- Live a low-carbon lifestyle by purchasing low-carbon foods and goods in addition to recycling and putting organic waste to productive use.

A comprehensive multipollutant control strategy was developed to be implemented in the next three to five years to address public health and climate change and to set a pathway to achieve the 2050 vision. The control strategy includes 85 control measures to reduce emissions of ozone, particulate matter, TACs, and GHG from a full range of emission sources. These control measures cover the following sectors: (1) stationary (industrial) sources, (2) transportation, (3) energy, (4) agriculture, (5) natural and working lands, (6) waste management, (7) water, (8) super-GHG pollutants, and (9) buildings. The proposed control strategy is based on the following key priorities:

- Reduce emissions of criteria air pollutants and toxic air contaminants from all key sources.
- Reduce emissions of “super-GHGs” such as methane, black carbon, and fluorinated gases.
- Decrease demand for fossil fuels (gasoline, diesel, and natural gas).
 - Increase efficiency of the energy and transportation systems.
 - Reduce demand for vehicle travel, and high-carbon goods and services.
- Decarbonize the energy system.
 - Make the electricity supply carbon-free.
 - Electrify the transportation and building sectors (BAAQMD 2017c).

Community Air Risk Evaluation (CARE) Program

The BAAQMD’s Community Air Risk Evaluation program was initiated in 2004 to evaluate and reduce health risks associated with exposure to outdoor TACs in the Bay Area, primarily DPM. The last update to this program was in 2014. Based on findings of the latest report, DPM was found to account for approximately 85 percent of the cancer risk from airborne toxics. Carcinogenic compounds from gasoline-powered cars and light duty trucks were also identified as significant contributors: 1,3-butadiene contributed 4 percent of the cancer risk-weighted emissions, and benzene contributed 3 percent. Collectively, five compounds—DPM, 1,3-butadiene, benzene, formaldehyde, and acetaldehyde—were

found to be responsible for more than 90 percent of the cancer risk attributed to emissions. All of these compounds are associated with emissions from internal combustion engines. The most important sources of cancer risk-weighted emissions were combustion-related sources of DPM, including on-road mobile sources (31 percent), construction equipment (29 percent), and ships and harbor craft (13 percent). Overall, cancer risk from TAC dropped by more than 50 percent between 2005 and 2015, when emissions inputs accounted for State diesel regulations and other reductions.

The major contributor to acute and chronic non-cancer health effects in the BAAQMD is acrolein (C₃H₄O). Major sources of acrolein are on-road mobile sources and aircraft near freeways and commercial and military airports. Currently CARB does not have certified emission factors or an analytical test method for acrolein. Since the appropriate tools needed to implement and enforce acrolein emission limits are not available, BAAQMD does not conduct health risk screening analysis for acrolein emissions.

Assembly Bill 617 Community Action Plans

AB 617 (C. Garcia, Chapter 136, Statutes of 2017) was signed into law in July 2017 to develop a new community-focused program to reduce exposure more effectively to air pollution and preserve public health in environmental justice communities. AB 617 directs CARB and all local air districts to take measures to protect communities disproportionately impacted by air pollution through monitoring and implementing air pollution control strategies.

On September 27, 2018, CARB approved the BAAQMD's recommended communities for monitoring and emission reduction planning. The State approved communities for year 1 of the program as well as communities that would move forward over the next five years. Bay Area recommendations included all the Community Air Risk Evaluation areas, areas with large sources of air pollution (refineries, seaports, airports, etc.), areas identified via statewide screening tools as having pollution and/or health burden vulnerability, and areas with low life expectancy (BAAQMD 2019a).

Year 1 Communities:

- *West Oakland.* The West Oakland community was selected for the BAAQMD's first Community Action Plan. In 2017, cancer risk from sources in West Oakland (local sources) was 204 in a million. The primary sources of air pollution in West Oakland include heavy trucks and cars, port and rail sources, large industries, and to a lesser extent other sources such as residential sources (i.e., wood burning). The majority (over 90 percent) of cancer risk is from DPM (BAAQMD 2019b).
- *Richmond.* Richmond was selected for a community monitoring plan in year 1 of the AB 617 program. The Richmond area is in western Contra Costa County and includes most of the city of Richmond and portions of El Cerrito. It also includes communities just north and east of Richmond, such as San Pablo and several unincorporated communities, including North Richmond. The primary goals of the Richmond monitoring effort are to leverage historical and current monitoring studies, to better characterize the area's mix of sources, and to more fully understand the associated air quality and pollution impact (BAAQMD 2019a).

AIR QUALITY

Year 2 to 5 Communities: East Oakland/San Leandro, Eastern San Francisco, the Pittsburg-Bay Point area, San Jose, Tri-Valley, and Vallejo are slated for action in years 2 to 5 of the AB 617 program (BAAQMD 2019a).

BAAQMD Rules and Regulations

Regulation 7, Odorous Substances

Sources of objectionable odors may occur within the City. BAAQMD's Regulation 7, Odorous Substances, places general limitations on odorous substances and specific emission limitations on certain odorous compounds. Odors are also regulated under the BAAQMD Regulation 1, Rule 1-301, Public Nuisance, which states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property." Under the BAAQMD's Rule 1-301, a facility that receives three or more violation notices within a 30-day period can be declared a public nuisance.

Other BAAQMD Regulations

In addition to the plans and programs described above, the BAAQMD administers a number of specific regulations on various sources of pollutant emissions that would apply to the proposed project:

- Regulation 2, Rule 2, Permits, New Source Review
- Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants
- Regulation 2, Rule 6, Permits, Major Facility Review
- Regulation 6, Rule 1, General Requirements
- Regulation 6, Rule 2, Commercial Cooking Equipment
- Regulation 8, Rule 3, Architectural Coatings
- Regulation 8, Rule 4, General Solvent and Surface Coatings Operations
- Regulation 11, Rule 2, Asbestos, Demolition, Renovation and Manufacturing

Solano County Transportation Authority

2019 Solano County Congestion Management Program

The Solano County Transportation Authority prepares and adopts a Congestion Management Program (CMP). CMP development is guided by the Metropolitan Transportation Commission (MTC), who publishes guidelines in odd numbered years. The most recent guidance was published in 2019. The CMP provides a roadmap to reduce congestion, improve mobility, and increase overall sustainability of the

transportation system in the county. Consistent with State law, and the MTC's Regional Transportation Plan the CMP contains the following components: traffic LOS standards, performance element to evaluate current and future multi-modal system performances, seven-year capital improvement program (CIP), program to analyze the impacts of land use decisions, and a travel demand element to promote more transportation alternatives.

Association of Bay Area Governments / Metropolitan Transportation Commission

Plan Bay Area 2050

MTC and ABAG jointly released Plan Bay Area 2050 on October 21, 2021 (ABAG/MTC 2021). Plan Bay Area provides transportation and environmental strategies to continue to meet the regional transportation related GHG reduction goals of Senate Bill 375. Strategies to reduce GHG emissions include focusing housing and commercial construction in walkable, transit-accessible places; investing in transit and active transportation; and shifting the location of jobs to encourage shorter commutes. To achieve MTC's/ABAG's sustainable vision for the Bay Area, the Plan Bay Area land use concept plan for the region concentrates the majority of new population and employment growth in the region in Priority Development Areas (PDAs). PDAs are transit-oriented, infill development opportunity areas within existing communities. An overarching goal of the regional plan is to concentrate development in areas where there are existing services and infrastructure rather than allocate new growth to outlying areas where substantial transportation investments would be necessary to achieve the per capita passenger vehicle, vehicle miles traveled, and associated GHG emissions reductions.

Local Regulations

Benicia General Plan

The Community Health and Safety Element, Response to Hazards, and Circulation Chapters of the current General Plan includes in the following policies that protect air resources in Benicia.

- **Policy 2.22.1:** Work closely with the School District in addressing traffic congestion near schools.
- **Policy 4.9.1:** Establish whether a significant air pollution problem exists in Benicia and the City's role in resolving it.
- **Policy 4.10.1:** Support implementation of Bay Area Clean Air Plan
- **Policy 4.10.2:** Encourage designs and land use strategies that reduce automobile use and promote mixed use, jobs/housing balance, telecommuting, bicycle, and pedestrian facilities, and transit.
- **Policy 4.14.1:** Implement non-point source pollution strategies.
- **Policy 4.20.1:** Establish buffer zones between sensitive land uses and those land uses which involve the significant use, storage, or disposal of hazardous materials, hazardous waste, or toxic air contaminants.

AIR QUALITY

Benicia Municipal Code

The Benicia Municipal Code includes various directives to minimize adverse impacts to air quality in the city of Benicia. The Ordinance Code is organized by title, division, chapter, section, and in some cases articles.

- **Chapter 15.18, California Green Building Standards Code:** Section 5.18.010, Adoption by reference, incorporates the CCR Title 24, Part 11, California Green Building Standards Code. On Nov. 1, 2022, the CC introduced an ordinance adopting the 2022 Building Codes – 2nd reading is scheduled for November 15th and the ordinance will go into effect on January 1, 2023. Section 15.03 F in Chapter 15.03 adopts the California Green Building Standards Code, 2022 edition, is adopted in its entirety with no amendments, deletions, or additions.
- **Chapter 15.38, Streamlined Permitting for Residential Rooftop Solar:** Section 15.38.020, Purpose, allows for an expedited, streamlined solar permitting process that complies with the Solar Rights Act and AB 2188 to achieve timely and cost-effective installations of small residential rooftop solar energy systems. (The requirements related to Streamlined Permitting for Residential Rooftop Solar are moving to Chapter 15.35 and the purpose statement is the same as is quoted here but as of Jan. 1, 2023 it will be in Section 15.35.020.)

4.2.1.4 EXISTING CONDITIONS

San Francisco Bay Area Air Basin Conditions

California is divided geographically into air basins for the purpose of managing the air resources of the State on a regional basis. An air basin generally has similar meteorological and geographic conditions throughout. The State is divided into 15 air basins. The City of Benicia is in the SFBAAFB. The discussion below identifies the natural factors in the Air Basin that affect air pollution. Air pollutants of concern are criteria air pollutants and TACs. Federal, State, and local air districts have adopted laws and regulations intended to control and improve air quality.

The BAAQMD is the regional air quality agency for the SFBAAB, which comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties; the southern portion of Sonoma County; and the southwestern portion of Solano County. Air quality in this area is determined by such natural factors as topography, meteorology, and climate, in addition to the presence of existing air pollution sources and ambient conditions (BAAQMD 2017a).

Meteorology

The SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which distort normal wind flow patterns. The Coast Range splits in the Bay Area, creating a western coast gap, the Golden Gate, and an eastern coast gap, the Carquinez Strait, which allows air to flow in and out of the Bay Area and the Central Valley. The climate is dominated by the strength and location of a

semi-permanent, subtropical high-pressure cell. During the summer, the Pacific high-pressure cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below the surface because of the northwesterly flow produces a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold-water band, resulting in condensation and the presence of fog and stratus clouds along the Northern California coast. In the winter, the Pacific high-pressure cell weakens and shifts southward, resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential.

Wind Patterns

During the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately south of Mount Tamalpais in Marin County, the northwesterly winds accelerate considerably and come more directly from the west as they stream through the Golden Gate. This channeling of wind through the Golden Gate produces a jet that sweeps eastward and splits off to the northwest toward Richmond and to the southwest toward San José when it meets the East Bay hills. Wind speeds may be strong locally in areas where air is channeled through a narrow opening, such as the Carquinez Strait, the Golden Gate, or the San Bruno gap.

The air flowing in from the coast to the Central Valley, called the sea breeze, begins developing at or near ground level along the coast in late morning or early afternoon and the sea breeze deepens and increases in velocity while spreading inland. Under normal atmospheric conditions, the air in the lower atmosphere is warmer than the air above it. In the winter, the SFBAAB frequently experiences stormy conditions with moderate to strong winds, as well as periods of stagnation with very light winds. Winter stagnation episodes (i.e., conditions where there is little mixing, which occurs when there is a lack of or little wind) are characterized by nighttime drainage flows in coastal valleys. Drainage is a reversal of the usual daytime air-flow patterns; air moves from the Central Valley toward the coast and back down toward the Bay from the smaller valleys within the SFBAAB.

Temperature

Summertime temperatures in the Air Basin are determined in large part by the effect of differential heating between land and water surfaces. Because land tends to heat up and cool off more quickly than water, a large-scale gradient (differential) in temperature is often created between the coast and the Central Valley, and small-scale local gradients are often produced along the shorelines of the ocean and bays. The temperature gradient near the ocean is also exaggerated, especially in summer, because of the upwelling of cold water from the ocean bottom along the coast. On summer afternoons, the temperatures at the coast can be 35 degrees Fahrenheit (°F) cooler than temperatures 15 to 20 miles inland; at night, this contrast usually decreases to less than 10°F. In the winter, the relationship of minimum and maximum temperatures is reversed. During the daytime the temperature contrast between the coast and inland areas is small, whereas at night the variation in temperature is large.

AIR QUALITY

Precipitation

The Air Basin is characterized by moderately wet winters and dry summers. Winter rains (November through March) account for about 75 percent of the average annual rainfall. The amount of annual precipitation can vary greatly from one part of the Air Basin to another, even within short distances. In general, total annual rainfall can reach 40 inches in the mountains, but it is often less than 16 inches in sheltered valleys.

During rainy periods, ventilation (rapid horizontal movement of air and injection of cleaner air) and vertical mixing (an upward and downward movement of air) are usually high, and thus pollution levels tend to be low (i.e., air pollutants are dispersed more readily into the atmosphere rather than accumulate under stagnant conditions). However, during the winter, frequent dry periods do occur, where mixing and ventilation are low and pollutant levels build up.

Wind Circulation

Low wind speed contributes to the buildup of air pollution because it allows more pollutants to be emitted into the air mass per unit of time. Light winds occur most frequently during periods of low sun (fall and winter, and early morning) and at night. These are also periods when air pollutant emissions from some sources are at their peak, namely, commuter traffic (early morning) and wood-burning appliances (nighttime). The problem can be compounded in valleys, when weak flows carry the pollutants up-valley during the day, and cold air drainage flows move the air mass down-valley at night. Such restricted movement of trapped air provides little opportunity for ventilation and leads to buildup of pollutants to potentially unhealthy levels.

Inversions

An inversion is a layer of warmer air over a layer of cooler air. Inversions affect air quality conditions significantly because they influence the mixing depth (i.e., the vertical depth in the atmosphere available for diluting air contaminants near the ground). There are two types of inversions that occur regularly in the SFBAAB. Elevation inversions are more common in the summer and fall, and radiation inversions are more common during the winter. The highest air pollutant concentrations in the SFBAAB generally occur during inversions.

Attainment Status of the SFBAAB

The AQMP provides the framework for air quality basins to achieve attainment of the State and federal AAQS through the State Implementation Plan. Areas that meet AAQS are classified attainment areas, and areas that do not meet these standards are classified nonattainment areas. Severity classifications for O₃ range from marginal, moderate, and serious to severe and extreme.

- **Unclassified:** A pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.

- **Attainment:** A pollutant is in attainment if the AAQS for that pollutant was not violated at any site in the area during a three-year period.
- **Nonattainment:** A pollutant is in nonattainment if there was at least one violation of an AAQS for that pollutant in the area.
- **Nonattainment/Transitional:** A subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the AAQS for that pollutant.

The attainment status for the SFBAAB is shown in Table 4.2-4, Attainment Status of Criteria Pollutants in the *San Francisco Bay Area Air Basin*. The SFBAAB is currently designated a nonattainment area for California and National O₃, California and National PM_{2.5}, and California PM₁₀ AAQS.

TABLE 4.2-4 ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SAN FRANCISCO BAY AREA AIR BASIN

Pollutant	State	Federal
Ozone – 1-hour	Nonattainment	Classification revoked (2005)
Ozone – 8-hour	Nonattainment (serious)	Nonattainment (marginal) ¹
PM ₁₀	Nonattainment	Unclassified/Attainment ²
PM _{2.5}	Nonattainment	Unclassified/Attainment
CO	Attainment	Attainment
NO ₂	Attainment	Unclassified
SO ₂	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	Attainment	Unclassified/Attainment
All others	Unclassified/Attainment	Unclassified/Attainment

¹ Severity classification current as of February 13, 2017.

² In December 2014, US EPA issued final area designations for the 2012 primary annual PM_{2.5} National AAQS. Areas designated “unclassifiable/attainment” must continue to take steps to prevent their air quality from deteriorating to unhealthy levels. The effective date of this standard is April 15, 2015.

Source: BAAQMD 2017b

Existing Ambient Air Quality

Existing levels of ambient air quality and historical trends and projections in the City are best documented by measurements taken by the BAAQMD. The BAAQMD has 24 permanent monitoring stations around the Bay Area. The nearest station is the Vallejo-304 Tuolumne Street Monitoring Station, which monitors O₃, NO₂, and PM_{2.5}. The Concord-2975 Treat Blvd Monitoring Station is the closest station which monitors PM₁₀. Data from both monitoring stations are summarized in Table 4.2-5, *Ambient Air Quality Monitoring Summary*. The data show that the area regularly exceeds the State and federal one-hour, eight-hour O₃ standards and federal PM_{2.5}, and occasionally exceeds the State and federal PM₁₀ in the last three recorded years.

AIR QUALITY

TABLE 4.2-5 AMBIENT AIR QUALITY MONITORING SUMMARY

Pollutant/Standard	Number of Days Thresholds Were Exceeded and Maximum Levels		
	2019	2022	2021
Ozone (O₃)			
State 1-Hour ≥ 0.09 ppm (Days exceed threshold)	0	1	1
State & Federal 8-hour ≥ 0.070 ppm (Days exceed threshold)	1	1	1
Max. 1-Hour Conc. (ppm)	0.092	0.096	0.099
Max. 8-Hour Conc. (ppm)	0.076	0.07	0.072
Nitrogen Dioxide (NO₂)			
State 1-Hour ≥ 0.18 ppm (Days exceed threshold)	0	0	0
Federal 1-Hour ≥ 0.100 ppm (Days exceed threshold)	0	0	0
Max. 1-Hour Conc. (ppm)	0.052	0.0484	0.039
Coarse Particulates (PM₁₀)			
State 24-Hour > 50 µg/m ³ (Days exceed threshold)	0	1	1
Federal 24-Hour > 150 µg/m ³ (Days exceed threshold)	0	1	0
Max. 24-Hour Conc. (µg/m ³)	36	167	26
Fine Particulates (PM_{2.5})			
Federal 24-Hour > 150 µg/m ³ (Days exceed threshold)	0	12	0
Federal Max. 24-Hour Conc. (µg/m ³)	30.5	152.7	32.0

ppm = parts per million; parts per billion, µg/m³ = micrograms per cubic meter
 Data for O₃, NO₂, PM₁₀ and PM_{2.5} obtained from the Vallejo-304 Tuolumne Street Monitoring Station
 Data for PM₁₀ obtained from the Concord-2975 Treat Blvd Monitoring Station
 Source: CARB 2022a.

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases.

Residential areas are considered sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Other sensitive receptors include retirement facilities, hospitals, and schools. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial, commercial, retail, and office areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

Existing Emission Sources

Existing sources of criteria pollutant and TACs emissions in the City of Benicia principally include area, energy, and mobile sources. Area source emissions are generated from the use of landscaping equipment, paints and coatings, and other non-point source fuel and aerosol applications. Energy source emissions are generated through the consumption of on-site natural gas for building space and water heating. Mobile source emissions for development projects are generated from the consumption of transportation fuels. As the City of Benicia currently has a mix of predominately residential, commercial, and retail land uses, the above emission sources exist in the City.

4.2.2 THRESHOLDS OF SIGNIFICANCE

According to the CEQA Guidelines Appendix G Environmental Checklist, to determine whether impacts to air quality are significant environmental effects, the following questions are analyzed and evaluated. Where available, the significance criteria established by the applicable air quality management district or air pollution control district (e.g., BAAQMD) may be relied on to make the appropriate impact significance determination.

The proposed project would result in significant air quality impacts if it would:

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

BAAQMD Plan-Level Significance Criteria

The BAAQMD CEQA Air Quality Guidelines were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. They also include recommended assessment methodologies for air toxics, odors, and greenhouse gas emissions. In June 2010, the BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of the CEQA Guidelines. These thresholds are designed to establish the level at which the BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA.

In May 2011, the updated BAAQMD CEQA Air Quality Guidelines were amended to include a risk and hazards threshold for new receptors and modified procedures for assessing impacts related to risk and hazard impacts; however, this later amendment regarding risk and hazards was the subject of the

AIR QUALITY

December 17, 2015, California Supreme Court decision (California Building Industry Association v BAAQMD), which clarified that CEQA does not require an evaluation of impacts of the environment on a project. The Supreme Court also found that CEQA requires the analysis of exposing people to environmental hazards in specific circumstances, including the location of development near airports, schools near sources of toxic contamination, and certain exemptions for infill and workforce housing. The Supreme Court also held that public agencies remain free to conduct this analysis regardless of whether it is required by CEQA. To account for these updates, the BAAQMD published a new version of the Guidelines dated May 2017, which includes revisions made to address the Supreme Court's opinion. This latest version of the BAAQMD CEQA Guidelines was used to prepare the analysis in this EIR.

Clean Air Plan Consistency

Under its plan-level review criteria, which apply to long-range plans such as the proposed project, the BAAQMD recommends a consistency evaluation of the plan with its current Air Quality Plan Management (AQMP) control measures. The BAAQMD considers a plan to be consistent with the applicable AQMP, which is currently the 2017 Clean Air Plan, if it is consistent with below considerations:

- Does the project support the primary goals of the AQMP?
- Does the project include applicable control measures from the AQMP?
- Does the project disrupt or hinder implementation of any AQMP control measure?
- Does the project result in VMT growth that is equal to or less than the projected population growth over the same timeframe?

Criteria Air Pollutants and Ozone Precursors

Plan-Level

The BAAQMD has identified thresholds of significance for criteria air pollutant and ozone precursor emissions, including ROG, NO_x, PM₁₀, and PM_{2.5}. These significance thresholds are recommended by the BAAQMD as de minimis thresholds for individual development projects, meaning they represent a level of air pollutant emissions at which impacts to air quality become potentially significant and could contribute to a potential or existing violation of federal and State AAQS. Development projects below the significance thresholds are not expected to generate sufficient air pollutant emissions to violate any air quality standard or contribute substantially to an existing or projected violation of federal or State AAQS.

According to the BAAQMD's CEQA Air Quality Guidelines, long-range plans (e.g., general plans) present unique challenges for assessing air quality impacts. Because of the SFBAAB's nonattainment status for ozone and particulate matter and the cumulative impacts of population and development growth on air quality, these plans can often have significant and unavoidable adverse air quality impacts. To meet the BAAQMD's recommended plan-level significance thresholds for operational criteria air pollutant and precursor impacts, a proposed plan must satisfy the following criteria:

- Consistency with current Air Quality Management Plan control measures.
- A proposed plan’s VMT or vehicle trips growth is equal to or less than the projected population growth over the same timeframe?

Project-Level

The BAAQMD’s regional significance criteria for projects that exceed the screening thresholds are shown in Table 4.2-6, *BAAQMD Regional (Mass Emissions) Criteria Air Pollutant Significance Thresholds*. Criteria for both the construction and operational phases of the project are shown.

TABLE 4.2-6 BAAQMD REGIONAL (MASS EMISSIONS) CRITERIA AIR POLLUTANT SIGNIFICANCE THRESHOLDS

Air Pollutant	Construction Phase	Operational Phase	
	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Maximum Annual Emissions (Tons/year)
ROG	54	54	10
NO _x	54	54	10
PM ₁₀	82 (Exhaust)	82	15
PM _{2.5}	54 (Exhaust)	54	10
PM ₁₀ and PM _{2.5} Fugitive Dust	Best Management Practices	None	None

Source: BAAQMD 2017a.

If projects exceed the emissions in Table 4.2-6, emissions would cumulatively contribute to the nonattainment status and would contribute in elevating health effects associated to these criteria air pollutants. Known health effects related to ozone include worsening of bronchitis, asthma, and emphysema and a decrease in lung function. Health effects associated with particulate matter include premature death of people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, decreased lung function, and increased respiratory symptoms. Reducing emissions would further contribute to reducing possible health effects related to criteria air pollutants.

However, for projects that exceed the emissions in Table 4.2-6, it is speculative to determine how exceeding the regional thresholds would affect the number of days the region is in nonattainment since mass emissions are not correlated with concentrations of emissions or how many additional individuals in the air basin would be affected by the health effects cited above. The BAAQMD is the primary agency responsible for ensuring the health and welfare of sensitive individuals to elevated concentrations of air quality in the Air Basin and at the present time, it has not provided methodology to assess the specific correlation between mass emissions generated and the effect on health in order to address the issue raised in *Sierra Club v. County of Fresno (Friant Ranch, L.P.) (2018) 6 Cal.5th 502, Case No. S21978* (Friant Ranch).

AIR QUALITY

Ozone concentrations are dependent upon a variety of complex factors, including the presence of sunlight and precursor pollutants, natural topography, nearby structures that cause building downwash, atmospheric stability, and wind patterns. Because of the complexities of predicting ground-level ozone concentrations in relation to the National AAQS and California AAQS, it is not possible to link health risks to the magnitude of emissions exceeding the significance thresholds. To achieve the health-based standards established by the EPA, the air districts prepare air quality management plans that details regional programs to attain the AAQS. However, if a project within the Plan Area exceeds the regional significance thresholds, the project could contribute to an increase in health effects in the basin until such time the attainment standards are met in the Air Basin.

Sensitive Receptor Exposure to Pollutant Concentrations

Local Carbon Monoxide Hotspots

Congested intersections have the potential to create elevated concentrations of CO, referred to as CO hotspots. The significance criteria for CO hotspots are based on the California AAQS for CO, which are 9.0 ppm (8-hour average) and 20.0 ppm (1-hour average). Under a plan-level review, the BAAQMD does not require an evaluation of CO hotspots. With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology, the SFBAAB is in attainment of the California and National AAQS for CO emissions, and CO concentrations in the Air Basin have steadily declined. Because CO concentrations have improved, the BAAQMD does not require a CO hotspot analysis if the following criteria are met (BAAQMD 2017a):

- The project is consistent with an applicable congestion management program established by the County Congestion Management Agency for designated roads or highways, the regional transportation plan, and local congestion management agency plans.
- The project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
- The project traffic would not increase traffic volumes at affected intersection to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

Community Risk and Hazards

The BAAQMD's significance thresholds for local community risk and hazard impacts apply to both the siting of a new source and to the siting of a new receptor. Local community risk and hazard impacts are associated with TACs and PM_{2.5} because emissions of these pollutants can have significant health impacts at the local level. The proposed project would generate TACs and PM_{2.5} during construction activities that could elevate concentrations of air pollutants at the nearby sensitive receptors. The thresholds for construction-related local community risk and hazard impacts are the same as for project operations. The BAAQMD has adopted screening tables for air toxics evaluation during construction (BAAQMD 2010). Construction-related TAC and PM_{2.5} 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 and on-site receptors, as applicable (BAAQMD 2010 and BAAQMD 2017a).

Community Risk and Hazards: Project

Project-level emissions of TACs or PM_{2.5} from individual sources that exceed any of the thresholds listed below are considered a potentially significant community health risk:

- An excess cancer risk level of more than 10 in one million, or a noncancer (i.e., chronic or acute) hazard index greater than 1.0 would be a significant project contribution.
- An incremental increase of greater than 0.3 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) annual average PM_{2.5} from a single source would be a significant project contribution (BAAQMD 2017a).

Community Risk and Hazards: Cumulative

Cumulative sources represent the combined total risk values of each of the individual sources within the 1,000-foot evaluation zone. A project would have a cumulatively considerable impact if the aggregate total of all past, present, and foreseeable future sources within a 1,000-foot radius from the fence line of a source or location of a receptor, plus the contribution from the project, exceeds any of the following:

- An excess cancer risk level of more than 100 in one million or a chronic noncancer hazard index (from all local sources) greater than 10.0.
- 0.8 $\mu\text{g}/\text{m}^3$ annual average PM_{2.5} (BAAQMD 2017a).

In February 2015, Office of Environmental Health Hazard Assessment (OEHHA) adopted new health risk assessment guidance that includes several efforts to be more protective of children's health. These updated procedures include the use of age sensitivity factors to account for the higher sensitivity of infants and young children to cancer causing chemicals, and age-specific breathing rate (OEHHA 2015).

Odor Impacts

The BAAQMD's thresholds for odors are qualitative based on BAAQMD's Regulation 7, Odorous Substances. This rule places general limitations on odorous substances and specific emission limitations on certain odorous compounds. In addition, odors are also regulated under BAAQMD Regulation 1, Rule 1-301, Public Nuisance, which states that no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; or which endangers the comfort, repose, health or safety of any such persons or the public, or which causes, or has a natural tendency to cause, injury or damage to business or property. Under BAAQMD's Rule 1-301, a facility that receives three or more violation notices within a 30-day period can be declared a public nuisance. The BAAQMD has established odor screening thresholds for land uses that have the potential to generate substantial odor complaints, including wastewater treatment plants, landfills or transfer stations, composting facilities, confined animal

AIR QUALITY

facilities, food manufacturing, and chemical plants (BAAQMD 2017a). For a plan-level analysis, BAAQMD requires:

- Potential existing and planned locations of odor sources to be identified.
- Policies to reduce odors.

4.2.3 PROPOSED HOUSING ELEMENT POLICIES

The Housing Element Update contains following policies applicable to Air Quality:

- **Policy 2.07:** The City of Benicia will work with the Association of Bay Area Governments (ABAG) and Solano Transportation Authority to create a regional development pattern that is compact and connected and encourages future population and housing in areas near transit. Future growth in the City of Benicia will be targeted towards Property Development Areas (PDAS) and Priority Production Areas (PPAS) within City limits, where a diversity of housing, jobs, activities, and services are present to meet the daily needs of residents. The Map of the PDAs can be found in Appendix D.
- **Policy 5.03:** The City shall further conduct revitalization efforts and reduce environmental health concerns near industrial uses.

4.2.4 PROPOSED SAFETY ELEMENT POLICIES

The Safety Element Update contains following policies applicable to Air Quality:

- **Policy 1.7:** Work with local agencies and community-based organizations to provide resources (e.g., transportation to resilience centers and N95 masks) to help residents respond to poor air quality events.
- **Policy 4.15.6:** Encourage residents, landlords, and business owners to install filtration units in buildings to reduce health risks during poor air quality events.
- **Policy 6.1:** Support efforts by homeowners and business owners to increase the resilience of their buildings and properties through retrofits, weatherization, and other improvements. Retrofits may include, but are not limited to, efforts that address extreme heat, poor air quality, flood protection, water and energy efficiency, geologic and seismic safety, and fire safety.
- **Policy 6.3:** Establish one or more equitably located community resilience hub(s) in Benicia. Ensure that resilience hub(s) are not in areas at risk from hazard impacts to the extent possible. They should offer refuge from extreme heat and extreme weather events as well as poor air quality and disasters. They should be equipped with renewable energy generation and backup power supplies. Such facilities should be in easily accessible locations and available to all community members. Resilience hubs should provide shelter, water, and electricity during hazard events or disasters.

- **Policy 1.7:** Work with local and regional transportation agencies to help protect primary evacuation routes from being blocked or damaged by a hazard event.

4.2.5 ENVIRONMENTAL IMPACTS

4.2.5.1 METHODOLOGY

Emissions Quantification

Impacts related to air quality resulting from implementation (construction and operation) of the proposed project are discussed below. The impact analysis is based on air quality modeling of the criteria air pollutant and ozone precursor emissions that would result from projected future growth at buildout of the proposed project. To determine the increase in air pollutants as a result of the proposed project, the maximum allowable residential dwelling units envisioned by the proposed project (3,598 units) were estimated by calculating the net change from existing conditions and buildout of the proposed project in 2031. Due to a lack of available information on existing housing units on sites identified to accommodate the envisioned 3,598 dwelling units through 2031, all 3,598 dwelling units are herein considered to be a net increase in housing supply in the City.

CalEEMod Version 2020.4.0 was used to calculate emissions of air pollutants associated with buildout of the proposed project (see Appendix 4.2-1). Please refer to Tables 3-2 and 3-3 in Chapter 3, *Project Description*, for the sites identified to accommodate the housing supply growth envisioned by the proposed project. Due to the variety of housing types that could develop as a result of the proposed project, all new housing units modeled were assumed to best match the “Apartments Low-Rise” land use category in CalEEMod. Consistent with the VMT Analysis prepared by Fehr & Peers for the proposed project (Fehr & Peers, 2022), ITE Code 220 was utilized to identify the weekday and weekend average daily trip (ADT) generation rates for each housing unit and an average trip length of 10 miles was utilized in the emissions modeling. Moreover, all vehicle trips represented in the emissions modeling were assigned to be 100-percent primary, meaning no trip distance or generation discounts were applied for pass-by or diverted trips to provide a conservative emissions estimate.

Consistent with the BAAQMD’s Regulation 6, Rule 3, *Wood-Burning Devices*, no new dwelling units modeled with CalEEMod were assumed to contain any wood-burning devices. In addition, the per-dwelling unit indoor and outdoor water consumption rates utilized in CalEEMod were adjusted to reflect the consumption estimates contained in the City’s 2020 Urban Water Management Plan (Benicia, 2020). No other default values contained in CalEEMod were altered for calculating the emissions generated by the proposed project.

AIR QUALITY

Impacts of the Environment on a Project

BAAQMD’s CEQA Guidelines include methodology for jurisdictions wanting to evaluate the potential impacts from placing sensitive receptors proximate to major air pollutant sources. For assessing community risk and hazards for siting a new receptor, sources within a 1,000-foot radius of a project site are typically considered. Sources are defined as freeways, high volume roadways (with volume of 10,000 vehicles or more per day or 1,000 trucks per day) and permitted sources (BAAQMD 2017a).

Buildout under the proposed project could result in siting sensitive uses (e.g., residential) near sources of emissions (e.g., freeways, industrial uses, etc.). Developing new sensitive land uses near sources of emissions could expose persons that inhabit these sensitive land uses to potential air quality-related impacts. However, the purpose of this environmental evaluation is to identify the significant effects of the proposed project on the environment, not the significant effects of the environment on the proposed project. *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369 (Case No. S213478). Thus, CEQA does not require analysis of the potential environmental effects from siting sensitive receptors near existing sources, and this type of analysis is not provided below in the Impact Analysis section.

While it is generally not within the purview of CEQA to analyze impacts of the environment on a project, the proposed project includes policies which would ensure priority of the health of Benicia’s residents through enforcement of the municipal code and incorporation of design features to minimize air quality impacts and to achieve appropriate health standards. The City’s current General Plan contains several goals, policies, and programs that aim to reduce the potential for sensitive receptor exposure to TACs. For example, General Plan Goal 4.20 aims to promote the reduction in health and safety hazards associated with TACs. Further, Policy 4.20.1 states to establish buffer zones between sensitive land uses and those land uses which involve the significant use, storage, or disposal of TACs.

4.2.5.2 IMPACT ANALYSIS

AIR-1	The project could conflict with or obstruct implementation of the BAAQMD Clean Air Plan.
-------	--

Housing Element Update

The following describes potential air quality impacts of consistency with the AQP from the implementation of the proposed project. The General Plan plays an important role in local agency project review by linking local planning and individual projects to the 2017 Clean Air Plan. It fulfills the CEQA goal of informing decision makers of the environmental efforts of the project under consideration at an early enough stage to ensure that air quality concerns are fully addressed. It also provides the local agency with ongoing information as to whether they are contributing to clean air goals in the Bay Area. The BAAQMD requires a consistency evaluation of a proposed plan with the current AQP control measures. As

previously discussed, the BAAQMD considers project consistency with the AQP in accordance with the following:

- Does the project support the primary goals of the AQP?
- Does the project include applicable control measures from the AQP?
- Does the project disrupt or hinder implementation of any AQP control measures?
- Does the project result in VMT growth that is equal to or less than the projected population growth over the same timeframe?

Bay Area Air Quality Management District 2017 Clean Air Plan Goals

The primary goals of the 2017 Clean Air Plan are to attain the State and federal AAQS, reduce population exposure and protect public health in the Bay Area, reduce GHG emissions and protect the climate. Furthermore, the 2017 Clean Air Plan lays the groundwork for reducing GHG emissions in the Bay Area to meet the State's 2030 GHG reduction target and the long-term GHG reduction goals.

Attain Air Quality Standards

BAAQMD's 2017 Clean Air Plan strategy is based on regional population and employment projections in the Bay Area compiled by ABAG, which are based in part on cities' general plan land use designations. These demographic projections are incorporated into Plan Bay Area. Demographic trends incorporated into Plan Bay Area determine VMT in the Bay Area, which BAAQMD uses to forecast future air quality trends. The SFBAAB is currently designated a nonattainment area for O₃, PM_{2.5}, and PM₁₀ (State AAQS only).

The proposed project will induce population and housing growth due to the RHNA requirement to identify development sites for potential housing, especially for very low-income and low-income households. While the land use amendments and zoning ordinance revisions would indirectly induce growth, the provisions of the housing units are much needed and mandated by the State (see Chapter 4.12, *Population and Housing*). Therefore, the population projections of the proposed project would be consistent with regional projections and meet the State's housing needs.

In addition, as discussed in greater detail under Impact AIR-2, individual development projects facilitated by the proposed project would be required to undergo their own respective CEQA environmental review. In determining whether an individual development project would be considered a project under CEQA that would have potentially significant impacts on local and regional air quality, including consideration of an individual development project's contribution to an existing or forecasted air quality violation, the BAAQMD recommends project-level significance thresholds for criteria pollutants and ozone precursors.

Utilizing the BAAQMD's recommended project-level significance thresholds and considering that the SFBAAB is currently in nonattainment for PM standards, individual development projects facilitated by the proposed project would be considered to have potentially significant site-specific or project-specific

AIR QUALITY

impacts related to the generation of fugitive dust during construction activities if they do not implement Best Management Practices (BMP) targeting dust control and sediment migration. As the SFBAAB is currently designated as a nonattainment area for PM, and considering that the BAAQMD's recommended significance threshold for construction fugitive dust is binary—meaning if a project includes dust control BMPs then construction fugitive dust emissions would be less than significant. Mitigation Measure AIR-2a would be required to ensure that individual development projects facilitated by the proposed project would result in less than significant construction fugitive dust impacts. MM AIR-1a consists of all “Basic Construction Mitigation Measures Recommended for All Proposed Projects” contained in BAAQMD's 2017 CEQA Air Quality Guidelines, which are recommended by the BAAQMD to ensure construction fugitive dust emissions are less than significant.

In addition, construction and operation of the Housing Element site could result emissions that exceed the BAAQMD significance criteria for ozone precursors. As the SFBAAB is currently in nonattainment for O₃ standards, individual development projects facilitated by the proposed project could contribute to this existing violation. Therefore, impacts are considered potentially significant.

Reduce Population Exposure and Protect Public Health

Buildout of the proposed project could result in new sources of TACs and PM_{2.5}. Stationary sources, including smaller stationary sources associated with residential development (e.g., emergency generators and boilers), are subject to review by BAAQMD as part of the permitting process. Adherence to BAAQMD permitting regulations would ensure that new stationary sources of TACs do not expose populations to significant health risk. Mobile sources of air toxics (e.g., truck idling) are not regulated directly by BAAQMD. However, residential development associated with the proposed project would not generate substantial truck traffic or idling. Furthermore, individual development projects would be required to achieve the project-level risk thresholds established by BAAQMD to ensure the sensitive receptor impact resulting from the subject development project would be less than significant.

Reduce GHG Emissions and Protect the Climate

Consistency of the proposed project with State, regional, and local plans adopted for the purpose of reducing GHG emissions are discussed in Chapter 4.7, *Greenhouse Gas Emissions*, of this Draft EIR. Future development allowed by the proposed project would be required to adhere to statewide measures that have been adopted to achieve the GHG reduction targets of AB 32, SB 32, and AB 1279. The proposed project is consistent with regional strategies for infill development identified in *Plan Bay Area 2050*, the City's Climate Action Plan, and the City's Climate Change Adaptation Plan. While the discussed under Impact GHG-1 in Chapter 4.7 identifies that the proposed project would generate a substantial increase in emissions, the discussion under Impact GHG-2 identifies that the proposed project is consistent with State, regional and local plans to reduce GHG emissions. Therefore, the proposed project is consistent with the goal of the *2017 Clean Air Plan* to reduce GHG emissions and protect the climate, and the impact would be less than significant.

2017 Clean Air Plan Control Measures

Table 4.2-7, *Control Measures from the BAAQMD 2017 Clean Air Plan*, identifies the control measures included in the *2017 Clean Air Plan* that are required by BAAQMD to reduce emissions for a wide range of both stationary and mobile sources. As shown in this Table, the proposed project would not conflict with the *2017 Clean Air Plan* and would not hinder BAAQMD from implementing the control measures in the *2017 Clean Air Plan*. Accordingly, impacts would be less than significant.

AIR QUALITY

TABLE 4.2-7 CONTROL MEASURES FROM THE BAAQMD 2017 CLEAN AIR PLAN

Type	Measure Number / Title	Consistency
Stationary Source Control Measures	<ul style="list-style-type: none"> ▪ SS 1 – Fluid Catalytic Cracking in Refineries ▪ SS 2 – Equipment Leaks ▪ SS 3 – Cooling Towers ▪ SS 4 – Refinery Flares ▪ SS 5 – Sulfur Recovery Units ▪ SS 6 – Refinery Fuel Gas ▪ SS 7 – Sulfuric Acid Plants ▪ SS 8 – Sulfur Dioxide from Coke Calcining ▪ SS 9 – Enhanced NSR Enforcement for Changes in Crude Slate ▪ SS 10 – Petroleum Refining Emissions Tracking ▪ SS 11 – Petroleum Refining Facility-Wide Emission Limits ▪ SS 12 – Petroleum Refining Climate Impacts Limit ▪ SS 13 – Oil and Gas Production, Processing and Storage ▪ SS 14 – Methane from Capped Wells ▪ SS 15 – Natural Gas Processing and Distribution ▪ SS 16 – Basin-Wide Methane Strategy ▪ SS 17 – GHG BACT Threshold ▪ SS 18 – Basin-Wide Combustion Strategy ▪ SS 19 – Portland Cement ▪ SS 20 – Air Toxics Risk Cap and Reduction from Existing Facilities ▪ SS 21 – New Source Review for Toxics ▪ SS 22 – Stationary Gas Turbines ▪ SS 23 – Biogas Flares ▪ SS 24 – Sulfur Content Limits of Liquid Fuels ▪ SS 25 – Coatings, Solvents, Lubricants, Sealants and Adhesives ▪ SS 26 – Surface Prep and Cleaning Solvent ▪ SS 27 – Digital Printing ▪ SS 28 – LPG, Propane, Butane ▪ SS 29 – Asphaltic Concrete ▪ SS 30 – Residential Fan Type Furnaces ▪ SS 31 – General Particulate Matter Emission Limitation ▪ SS 32 – Emergency Backup Generators ▪ SS 33 – Commercial Cooking Equipment 	<p>Stationary and area sources are regulated directly by BAAQMD; therefore, as the implementing agency, new stationary and area sources within the City would be required to comply with BAAQMD regulations. BAAQMD routinely adopts/revises rules or regulations to implement the stationary source (SS) control measures to reduce stationary source emissions. Based on the new residential uses under the proposed project, implementation of the proposed project would not hinder the ability of BAAQMD to implement these SS control measures. Major stationary source are more commonly associated with industrial manufacturing or warehousing. However, BAAQMD and the City have existing regulations in place to ensure potential future development under the proposed project would not conflict with the applicable SS control measures. Non-residential land uses may generate small quantities of stationary source emissions during project operation (e.g., emergency generators, dry cleaners, and gasoline dispensing facilities); however, these small-quantity generators would require review by BAAQMD for permitted sources of air toxics, which would ensure consistency with the 2017 Clean Air Plan.</p> <p>The proposed project involves residential uses and would not include major stationary sources of emissions. Boilers and emergency generators for multi-family residential products would be required to follow BAAQMD’s permitting requirements.</p>

TABLE 4.2-7 CONTROL MEASURES FROM THE BAAQMD 2017 CLEAN AIR PLAN

Type	Measure Number / Title	Consistency
	<ul style="list-style-type: none"> ▪ SS 34 – Wood Smoke ▪ SS 35 – PM from Bulk Material Storage, Handling and Transport, Including Coke and Coal ▪ SS 36 – PM from Trackout ▪ SS 37 – PM from Asphalt Operations ▪ SS 38 – Fugitive Dust ▪ SS 39 – Enhanced Air Quality Monitoring ▪ SS 40 – Odors 	
Transportation Control Measures	<ul style="list-style-type: none"> ▪ TR 1 – Clean Air Teleworking Initiative ▪ TR 2 – Trip Reduction Programs ▪ TR 3 – Local and Regional Bus Service ▪ TR 4 – Local and Regional Rail Service ▪ TR 5 – Transit Efficiency and Use ▪ TR 6 – Freeway and Arterial Operations ▪ TR 7 – Safe Routes to Schools and Safe Routes to Transit ▪ TR 8 – Ridesharing, Last-Mile Connection ▪ TR 9 – Bicycle and Pedestrian Access and Facilities ▪ TR 10 – Land Use Strategies ▪ TR 11 – Value Pricing ▪ TR 12 – Smart Driving ▪ TR 13 – Parking Policies ▪ TR 14 – Cars and Light Trucks ▪ TR 15 – Public Outreach and Education ▪ TR 16 – Indirect Source Review ▪ TR 17 – Planes ▪ TR 18 – Goods Movement ▪ TR 19 – Medium and Heavy Duty Trucks ▪ TR 20 – Ocean Going Vessels ▪ TR 21 – Commercial Harbor Craft ▪ TR 22 – Construction, Freight and Farming Equipment ▪ TR 23 – Lawn and Garden Equipment 	<p>Transportation (TR) control measures are strategies to reduce vehicle trips, vehicle use, VMT, vehicle idling, and traffic congestion for the purpose of reducing motor vehicle emissions. Although most of the TR control measures are implemented at the regional level—that is, by MTC or Caltrans—the 2017 Clean Air Plan relies on local communities to assist with implementation of some measures.</p> <p>The development under the proposed project would be reviewed based on current General Plan policies. The Circulation and Community Health & Safety Element contains the following goals and policies to expand the pedestrian and bicycle network:</p> <p>Goal 2.15: Provide a comprehensive system of pedestrian and bicycle routes which link the various components of the community: employment centers, residential areas, commercial areas, schools, parks, and open space.</p> <p>Policy 2.15-1: Make pedestrian and bicycle circulation, and safety improvements a high priority for transportation funding, utilizing locally generated revenues and State and federal grants.</p> <p>Goal 2.20: Provide a balanced street system to serve automobiles, pedestrians, bicycles, and transit, balancing vehicle-flow improvements with multi-modal considerations.</p> <p>Policy 2.20-1: Provide and promote a range of travel alternatives to the use of the private automobile.</p> <p>Policy 2.21-2: Encourage new development patterns that facilitate bicycling, walking, and transit for commute, shopping, recreation, and school trips.</p> <p>Policy 4.10-1: The Bay Area Clean Air Plan provides a strategy for attaining all the air quality standards in the nine-county Bay Area Air Quality Management District. Benicia would demonstrate consistency with the Bay Area Clean Air Plan by implementing Transportation Control Measures (TCMs) including expanding employer assistance programs, improving bicycle access and facilities, improving arterial traffic management,</p>

AIR QUALITY

TABLE 4.2-7 CONTROL MEASURES FROM THE BAAQMD 2017 CLEAN AIR PLAN

Type	Measure Number / Title	Consistency
		<p>establishing transit use incentives, and adopting a local clean air plan, policies, and programs.</p> <p>Policy 4.10-2: Encourage designs and land use strategies that reduce automobile use and promote mixed use, jobs/housing balance, telecommuting, bicycle, and pedestrian facilities, and transit.</p> <p>The following goals and policies also reduce vehicle travel in the City.</p> <p>Goal 2.18: Encourage the provision of convenient rail service to Benicia with a station near the Benicia Bridge.</p> <p>Policy 2.18-1: Work with BART, Caltrans, BCDC, the Solano Transportation Authority, and MTC in planning a rail station near the Benicia-Martinez Bridge.</p> <p>Policy 2.19-1: Work with MTC to establish ferry service. Communicate regularly with them regarding plans and funding for ferry service.</p> <p>Goal 2.21: Encourage Benicia residents and employees to use alternatives to the single-occupant automobile.</p> <p>Policy 2.21-1: Provide and promote a range of travel alternatives to the use of the private automobile.</p>
<p>Energy and Climate Control Measures</p>	<ul style="list-style-type: none"> ▪ EN 1 – Decarbonize Electricity Production ▪ EN 2 – Renewable Energy Decrease Electricity Demand 	<p>The energy and climate (EN) control measures are intended to reduce energy use as a means to reducing adverse air quality emissions.</p> <p>The development under the proposed project would be reviewed based on current General Plan policies. The Open Space & Conservation of Resources and the Community Health & Safety Element contains the following goals and policies that align with the City’s goals to meet the State’s carbon neutrality initiatives:</p> <p>Goal 3.27: Improve energy efficiency.</p> <p>Policy 3.27-1: Promote energy conservation in all new development and during rehabilitation of existing homes.</p> <p>Goal 4.10: Support improved regional air quality.</p> <p>The Bay Area Clean Air Plan provides a strategy for attaining all the air quality standards in the nine-county Bay Area Air Quality Management District. Benicia would demonstrate consistency with the Bay Area Clean Air Plan by implementing Transportation Control Measures (TCMs) including expanding employer assistance programs, improving bicycle access and facilities, improving arterial traffic management, establishing transit use incentives, and adopting a local clean air plan, policies, and programs</p>

TABLE 4.2-7 CONTROL MEASURES FROM THE BAAQMD 2017 CLEAN AIR PLAN

Type	Measure Number / Title	Consistency
Buildings Control Measures	<ul style="list-style-type: none"> ▪ BL 1 – Green Buildings ▪ BL 2 – Decarbonize Buildings ▪ BL 3 – Market-Based Solutions ▪ BL 4 – Urban Heat Island Mitigation 	<p>Furthermore, new developments accommodated under the proposed project would be built to comply with the latest Building Energy Efficiency Standards and CALGreen standards. Therefore, implementation of the proposed project would not conflict with these EN control measures.</p> <p>The buildings (BL) control measures focus on working with local governments to facilitate adoption of best GHG emissions control practices and policies.</p> <p>The development under the proposed project would be reviewed based on current General Plan policies. The Open Space & Conservation of Resources and the Community Services Element contains the following goals, policies, and measures to promote energy efficiency and sustainability:</p> <p>Policy 2.36-4: Encourage public and private uses to minimize water use and to recycle processed water whenever and wherever feasible.</p> <p>Policy 3.27-1: Promote energy conservation in all new development and during rehabilitation of existing homes.</p> <p>In addition, as stated, new developments accommodated under the proposed project would be built to comply with the latest Building Energy Efficiency Standards and CALGreen standards. Thus, the proposed project would not conflict with these BL control measures.</p>
Agriculture Control Measures	<ul style="list-style-type: none"> ▪ AG 1 – Agricultural Guidance and Leadership ▪ AG 2 – Dairy Digesters ▪ AG 3 – Enteric Fermentation ▪ AG 4 – Livestock Waste 	<p>Agricultural practices in the Bay Area accounts for a small portion, roughly 1.5 percent, of the Bay Area GHG emissions inventory. The GHGs from agriculture include methane and nitrous oxide, in addition to carbon dioxide. While the Agriculture (AG) control measures target larger scale farming practices that are not included in the proposed project, the housing sites identified under the proposed project do not constitute any sites which currently host commercial agricultural operations.</p> <p>Therefore, implementation of the proposed project would not conflict with these AG control measures.</p>
Natural and Working Lands Control Measures	<ul style="list-style-type: none"> ▪ NW 1 -- Carbon Sequestration in Rangelands ▪ NW 2 – Urban Tree Planting ▪ NW 3 – Carbon Sequestration in Wetlands 	<p>The control measures for the natural and working lands sector focus on increasing carbon sequestration on rangelands and wetlands.</p> <p>The development under the proposed project would be reviewed based on current General Plan policies. The Community Development & Sustainability and the Open Space and Conservation of Resources Element contains the following policies and measures to promote carbon sequestration:</p> <p>Policy 2.30-6: Continue to establish appropriate uses and programs for Lake Herman Regional Park that (a) preserve and maintain its natural condition and scenic value while providing for increased, passive, low impact recreational opportunities and (b) maintain</p>

AIR QUALITY

TABLE 4.2-7 CONTROL MEASURES FROM THE BAAQMD 2017 CLEAN AIR PLAN

Type	Measure Number / Title	Consistency
Water Control Measures	<ul style="list-style-type: none"> ▪ WR 1 – Limit GHGs from publicly owned treatment works (POTWs) ▪ WR 2 – Support Water Conservation 	<p>and/or enhance Lake Herman’s wetlands to attract a variety of wildlife to the area; (c) preserve rock outcroppings and creekside vegetation.</p> <p>Policy 3.7-4: Where feasible, install and maintain landscape (planter) strips that separate sidewalks from the streets.</p> <p>Policy 3.9-2: Work with the State to complete and maintain landscaping of I680 and I-780.</p> <p>Policy 3.15-5: Encourage the landscaping of existing open spaces, and landscape new open spaces with native plants.</p> <p>Goal 3.20: Protect and enhance native vegetation and habitats.</p> <p>Policy 3.20-1: Protect native grasslands, oak woodlands, and riparian habitat.</p> <p>Policy 3.20-3: Encourage preservation of existing trees. Especially preserve and protect mature, healthy trees whenever practicable, particularly where such trees are of significant size or are of significant aesthetic value to the immediate vicinity or to the community as a whole.</p> <p>Policy 3.20-4: Require protection of movement corridors.</p> <p>Goal 3.21: Permanently protect and enhance wetlands so that there is no net loss of wetlands within the Benicia Planning Area.</p> <p>Policy 3.21-1: Encourage avoidance and enhancement of sensitive wetlands as part of future development.</p> <p>Policy 3.21-2: Require replacement for wetlands eliminated as a result of development at a higher wetlands value and acreage than the area eliminated.</p> <p>Policy 3.21-4: Restore and increase marshland areas.</p>
		<p>The 2017 Clean Air Plan includes measures to reduce water use.</p>
		<p>The development under the proposed project would be reviewed based on current General Plan policies. The Community Development & Sustainability Element contains the following goals and measures to increase plumbing water efficiency and reduce landscape water use:</p>
		<p>Policy 2.30-3: Incorporate water conservation into park planning and design.</p>
		<p>Policy 2.36-3: Implement measures to reduce water consumption.</p>
		<p>Policy 2.36-4: Encourage public and private uses to minimize water use and to recycle processed water whenever and wherever feasible.</p>
		<p>Policy 2.40-2: Promote use of reclaimed wastewater where feasible.</p>

TABLE 4.2-7 CONTROL MEASURES FROM THE BAAQMD 2017 CLEAN AIR PLAN

Type	Measure Number / Title	Consistency
Super-GHG Control Measures	<ul style="list-style-type: none"> ▪ SL 1 – Short-Lived Climate Pollutants ▪ SL 2 – Guidance for Local Planners ▪ SL 3 – GHG Monitoring and Emissions Measurements Network 	<p>Super-GHGs include methane, black carbon and fluorinated gases. The compounds are sometimes referred to as short-lived climate pollutants because their lifetime in the atmosphere is generally fairly short. Measures to reduce super GHGs are addressed on a sector-by-sector basis in the 2017 Clean Air Plan. Through ongoing implementation of the City’s CAP, the County will continue to reduce local GHG emissions, meet State, regional, and local reduction targets, which would ensure implementation of the proposed project would not conflict with these SL control measures.</p> <p>The development under the proposed project would be reviewed based on current General Plan policies. The Open Space & Conservation of Resources Element contains the following goals and policies for encouraging use of renewable energy.</p> <p>Goal 3.27: Improve energy efficiency.</p> <p>Policy 3.27-1: Promote energy conservation in all new development and during rehabilitation of existing homes.</p>
Further Study Control Measures	<ul style="list-style-type: none"> ▪ FSM SS 1 – Internal Combustion Engines ▪ FSM SS 2 – Boilers, Steam Generator and Process Heaters ▪ FSM SS 3 – GHG Reductions from Non Cap-and Trade Sources ▪ FSM SS 4 – Methane Exemptions from Wastewater Regulation ▪ FSM SS 5 – Controlling start-up, shutdown, maintenance, and malfunction (SSMM) Emissions ▪ FSM SS 6 – Carbon Pollution Fee ▪ FSM SS 7 – Vanishing Oils and Rust Inhibitors ▪ FSM SS 8 – Dryers, Ovens and Kilns ▪ FSM SS 9 – Omnibus Rulemaking to Achieve Continuous Improvement ▪ FSM BL 1 – Space Heating ▪ FSM AG 1 – Wineries 	<p>The majority of the further study control measures apply to sources regulated directly by BAAQMD. Because BAAQMD is the implementing agency, new and existing sources of stationary and area sources in the project area would be required to comply with these additional further study control measures in the 2017 Clean Air Plan.</p>

Source: BAAQD 2017a.

AIR QUALITY

Growth Projections for VMT and Population

As previously discussed, one of the criteria for determining project consistent with the current AQP is comparing the Planning Area’s VMT growth with population growth. Fehr & Peers prepared a VMT Analysis (2022) for the proposed project which estimated the weekday citywide VMT generation for the proposed project in the Base Year (2015) No Project and Cumulative Year (2040) With Project scenarios. As the Cumulative Year (2040) With Project scenario accounts for the planned growth in housing supply through 2031 and does not contemplate further housing supply growth beyond 2031, the Cumulative Year (2040) With Project citywide VMT estimates are utilized herein to represent the proposed project’s buildout year of 2031. Similarly, as the Base Year (2015) No Project scenario considers pre-COVID 19 traffic behavior to avoid underestimating existing traffic volumes, the Base Year (2015) No Project citywide VMT estimates are utilized herein to represent existing conditions.

Table 4.2-8, Table 4.2- *Citywide Projected Generated Total VMT*, displays the VMT estimates resulting from implementation of the proposed project, as drawn directly from the Fehr & Peers VMT Analysis.

TABLE 4.2-8 CITYWIDE PROJECT GENERATED TOTAL VMT

Year	No Project ¹	With Project ¹	Net Change ²	Adjusted Net Change ³
Base Year (2015)	1,842,591	2,002,321	159,730	242,698
Cumulative Year (2040)	2,321,305	2,449,385	128,080	194,608

Notes:

- 1 The above estimates are drawn directly from the Fehr & Peers VMT Analysis (2022) prepared for the proposed project, which assumes a buildout of 2,368 dwelling units.
- 2 The Net Change estimates are derived in the Fehr & Peers VMT Analysis by applying an average trip generation rate of approximately 6.74 ADT (ITE Code 220) per unit to the assumed 2,368 dwelling unit buildout (15,973 ADT) with an average trip length of 10 miles.
- 3 Due to the VMT Analysis prepared for the proposed project only accounting for 2,368 new units while the proposed project would accommodate up to 3,598 new units, the Net Change VMT estimates were adjusted to reflect 3,598 dwelling units by multiplying the original Net Change VMT estimates by 3,598/2,368.

Source: Fehr & Peers. 2022, October 10. City of Benicia Housing Element Update - VMT Analysis.

Table 4.2-9, *Comparison of the Change in Population and VMT in the City of Benicia*, displays the Base Year (2015) No Project and Adjusted Cumulative Year (2040) With Project, which accounts for the Adjusted Net Change estimates contained in Table 4.2-8. To determine the growth in population and VMT citywide with and without implementation of the proposed project, the 2015 citywide population estimates are provided with the Base Year (2015) No Project citywide VMT estimates, and the 2031 citywide population estimates are provided with the Adjusted Cumulative Year (2040) With Project citywide VMT estimates.

TABLE 4.2-9 COMPARISON OF THE CHANGE IN POPULATION AND VMT IN THE CITY OF BENICIA

Category	Base Year (2015)	Cumulative Year (2040)	Change from Existing	
			Change	%
Population ¹	27,422	35,399	7,977	29.1%
Daily VMT ²	1,842,591	2,515,913	673,322	36.5%
VMT/person ³	67.19	71.07	+84.41	+25.6%

Notes:

- ¹ City Population in 2015 was drawn from the California Department of Finance's Table E-5 Population and Housing Estimates. City Population for Cumulative Year (2040) was identified by taking the current citywide population (2022) and adding the 8,743 new residents accommodated by the proposed project through the buildout year of 2031, as described in Chapter 4.12, *Population and Housing*, of this DEIR.
- ² The Base Year (2015) Daily VMT reflects the No Project VMT estimate in Table 4.2-8 while the Cumulative Year (2040) With Project daily VMT reflects the Cumulative Year (2040) No Project plus the Cumulative Year (2040) Adjusted Net Change from Table 4.2-8.
- ³ Daily per Capita VMT estimates are identified by dividing the Daily VMT estimates by the City Population for the corresponding year. It should be noted that the Daily per capita VMT estimates above do not necessarily reflect vehicle miles traveled by each resident as the total Daily VMT estimates include nonresidential VMT.

As shown in Table 4.2-9, buildout of the proposed project in 2031 would result in a greater daily per capita VMT rate than is experienced under existing conditions, which would result in a VMT growth which outpaces population growth. Therefore, the proposed project would be considered inconsistent with the current AQMP, resulting in a potentially significant air quality impact, and would require mitigation.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City’s ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document targeting the mitigation of hazards, this SEU would not conflict with or obstruct implementation of the BAAQMD Clean Air Plan. No impacts would occur.

Significance Without Mitigation: Potentially significant.

Mitigation Measure AIR-1a Implement Mitigation Measures AIR-2a for construction and Mitigation Measures AIR-2b and TRANS-1 for operation. Implementation of Mitigation Measure AIR-3c for localized impacts.

Significance With Mitigation: Significant and unavoidable. Mitigation measure AIR-2b and TRANS-1, would reduce project-level operational emissions, to the extent feasible. Additionally, the proposed project has the potential to increase VMT per person in Benicia. Mitigation Measures TRANS-1 would be required to reduce trip generation and subsequent VMT, where practicable, through implementation of Transportation Demand Management (TDM) programs, participation in VMT

AIR QUALITY

impact fees, and implementation of a suite of VMT reduction measures contained in the California Air Pollution Control Officers Association's (CAPCOA) *Handbook for Analyzing Greenhouse Gas Emission Reductions*. Nonetheless, the actual VMT reduction achieved by each individual project from implementation of MMs TRANS-1 is unknown, and this impact would remain significant and unavoidable after mitigation.

AIR-2	Buildout of the project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under applicable federal or State ambient air quality standard.
-------	--

Housing Element Update

Construction

The proposed project would not directly result in construction of any development or infrastructure; however, future development facilitated by the proposed project would result in short-term construction-related criteria pollutant emissions that have the potential to have an adverse effect on air quality. Short-term criteria pollutant emissions would occur during demolition, site preparation, grading, building construction, paving, and architectural coating activities associated with individual development projects. ROG and NO_x emissions are primarily associated with gasoline and diesel equipment exhaust and the application of architectural coatings. Fugitive dust emissions (PM₁₀ and PM_{2.5}) are primarily associated with site preparation and vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of disturbance area, and VMT by construction vehicles on- and off-site. Typical construction equipment associated with development and redevelopment projects includes dozers, graders, excavators, loaders, and trucks.

Although the exact coverage, location, or duration of future construction projects is unknown at the time of preparation of this Draft EIR, future development activities would generally entail demolition, site preparation, grading, building construction, paving, and painting. Since Benicia is generally a built-out city, many new projects in the City will likely require the demolition of existing structures to make room for newer ones. Fugitive dust emissions would typically be greatest during building demolition, site preparation, and grading activities due to the disturbance of soils and transport of material. NO_x emissions would also result from the combustion of diesel fuels used to power off-road heavy-duty vehicles and equipment (e.g., backhoes, bulldozers, excavators). The types and quantity of equipment, as well as duration of construction activities, would be dependent on project-specific conditions. Larger developments would require more equipment over a longer timeframe than that required for redevelopment of a single, residential home.

The BAAQMD does not recommend plan-level thresholds of significance for construction emissions; however, the BAAQMD does maintain and recommend project-level thresholds of significance for construction emissions that future development projects facilitated by the proposed project would be subject to. In addition, the BAAQMD's CEQA Air Quality Guidelines identify and recommend a series of "Basic" measures to control and reduce construction-related fugitive dust emissions. For all project, the BAAQMD recommends implementation of eight Basic Construction Measures to reduce construction fugitive dust and determines a project's fugitive dust impacts during construction to be less than significant if the following Basic Construction Measures are incorporated into project construction:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, unpaved access roads) shall be watered two time per day.
- All haul trucks transporting soil, sand, or other loos material off-site shall be covered.
- All visible mud or dirt trackout onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- 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 [ACTM] Title 13, Section 2485 of the California Code of Regulations). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly turned 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.
- Prior to the commencement of construction activities, individual project proponents shall post a publicly visible sign with the telephone number and person to contact at the City regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD phone number shall also be visible to ensure compliance with applicable regulations.

As previously discussed, a criterion identified by the BAAQMD for determining plan-level significance with respect to criteria air pollutants and ozone precursors is determining project consistency with the current AQMP control measures, which are intended to ensure the region's achievement and maintenance of attainment of federal and State AAQS. As the SFBAAB is currently designated as a nonattainment area for PM, MM AIR-1a would be required to ensure that individual development projects facilitated by the proposed project would result in less than significant construction fugitive dust impacts.

Significance Without Mitigation: Potentially significant.

AIR QUALITY

Mitigation Measure AIR-2a: Prior to discretionary approval by the City for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future project applicants shall prepare and submit a technical assessment evaluating potential project construction-related air quality impacts to the City for review and approval. The evaluation shall be prepared in conformance with the Bay Area Air Quality Management District (BAAQMD) methodology for assessing air quality impacts identified in their *CEQA Air Quality Guidelines*. If construction-related criteria air pollutants are determined to have the potential to exceed the BAAQMD-adopted thresholds of significance, the City shall require feasible mitigation measures to reduce air quality emissions. Potential measures may include:

- Require implementation of the BAAQMD Best Management Practices for fugitive dust control, such as:
 - Water all active construction areas at least twice daily or as often as needed to control dust emissions. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever possible.
 - Apply water twice daily or as often as necessary to control dust or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
 - Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).
 - Sweep public streets daily (with water sweepers using reclaimed water if possible) in the vicinity of the project site, or as often as needed, to keep streets free of visible soil material.
 - Hydro-seed or apply non-toxic soil stabilizers to inactive construction areas.
 - Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles (e.g., dirt, sand).
 - Limit vehicle traffic speeds on unpaved roads to 15 mph.
 - Replant vegetation in disturbed areas as quickly as possible.
 - Install sandbags or other erosion control measures to prevent silt runoff from public roadways.
- Emissions control measures such as:
 - Using construction equipment rated by the United States Environmental Protection Agency as having Tier 4 interim or higher exhaust emission limits.
 - Ensuring construction equipment is properly serviced and maintained to the manufacturer's standards.

- Limiting nonessential idling of construction equipment to no more than five consecutive minutes.
- Using zero- or low-VOC paints for coating of architectural surfaces whenever possible.

Measures shall be incorporated into appropriate construction documents (e.g., construction management plans) and shall be verified by the City.

Significance With Mitigation: Significant and Unavoidable. MM AIR-2a contains BAAQMD’s “Basic Construction Mitigation Measures Recommended for All Proposed Projects” in the bullet points listed above and contained in the BAAQMD’s 2017 CEQA Air Quality Guidelines, which are recommended by the BAAQMD to ensure construction fugitive dust emissions are less than significant. As such, this fugitive dust emissions would be less than significant with implementation of MM AIR-2a. While Mitigation Measure AIR-2a has the potential to reduce construction exhaust emissions, potential future development projects accommodated under the proposed project (individually or cumulatively) could still exceed the BAAQMD significance thresholds for construction. Therefore, implementation of the proposed project could result in significant construction-related regional air impacts from construction equipment exhaust. However, it would not preclude a finding of less than significant at the project-level.

Operation

The proposed project would accommodate new development that will operate through the planning horizon year 2031. New residential development facilitated by the proposed project would result in long-term area-, energy-, and mobile-source emissions. Area source emissions are the combination of many small emission sources that include use of outdoor landscape maintenance equipment, use of consumer products such as cleaning products, use of fireplaces and hearths, and periodic reapplication of architectural coatings. Criteria pollutants generated from energy sources are principally from the on-site use of natural gas; electricity consumption is not included in energy source emissions as those potential emissions would be generated as the result of the operation of an electricity generation facility which may or may not be within the same air basin and under the same attainment status as the end-use. Mobile source emissions result from the vehicle activity associated with the operation of a given land use development project.

Implementation of the proposed project may result in development of up to 3,598 net new residential units. It should be noted that the proposed project would not itself authorize specific development to occur within the City. Future development projects would be subject to the City’s standard CEQA review process and would be required to assess project-specific emissions in relation to the BAAQMD significance thresholds. As such, MM AIR-1b would require that future development projects prepare project-specific analyses which compare project emissions to the BAAQMD’s project-level significance thresholds and identify and implement mitigation measures, as necessary, to reduce any potential impacts that could occur. Although specific project-level information for potential future development is not available at this

AIR QUALITY

time and the estimation of emissions resulting from future development would be speculative, CalEEMod was utilized to provide an estimate of the potential overall area, energy, and mobile source emissions resulting from the proposed project for informational purposes only (i.e., not for the purpose of determining significance of potential air quality impacts).

CalEEMod Version 2020.4.0 was used to calculate emissions of air pollutants associated with buildout of the proposed project (see Appendix 4.2-1). Please refer to Tables 3-2 and 3-3 in Chapter 3, *Project Description*, for the sites identified to accommodate the housing supply growth envisioned by the proposed project. Due to the variety of housing types that could develop as a result of the proposed project, all new housing units modeled were assumed to best match the “Apartments Low-Rise” land use category in CalEEMod. Consistent with the VMT Analysis prepared by Fehr & Peers for the proposed project (Fehr & Peers, 2022), ITE Code 220 was utilized to identify the weekday and weekend average daily trip (ADT) generation rates for each housing unit and an average trip length of 10 miles was utilized in the emissions modeling. Moreover, all vehicle trips represented in the emissions modeling were assigned to be 100-percent primary, meaning no trip distance or generation discounts were applied for pass-by or diverted trips to provide a conservative emissions estimate.

Consistent with the BAAQMD’s Regulation 6, Rule 3, *Wood-Burning Devices*, no new dwelling units modeled with CalEEMod were assumed to contain any wood-burning devices. In addition, the per-dwelling unit indoor and outdoor water consumption rates utilized in CalEEMod were adjusted to reflect the consumption estimates contained in the City’s 2020 Urban Water Management Plan (Benicia, 2020). No other default values contained in CalEEMod were altered for calculating the emissions generated by the proposed project. The estimated criteria air pollutants resulting from the proposed project are shown in Table 4.2-10, *Proposed Project Criteria Air Pollutant Emissions Forecast*. CalEEMod output files are included as Appendix 4.2-1 of this Draft EIR.

Table 4.2-10 Proposed Project Criteria Air Pollutant Emissions Forecast

Sectors	Criteria Air Pollutant Emissions (Tons per year)			
	VOC	NO _x	PM ₁₀	PM _{2.5}
Proposed Project Land Uses (Year 2031)				
Area	17	<1	<1	<1
Energy	<1	2	<1	<1
Transportation	11	8	29	8
Solid Waste	—	—	<1	<1
Water	—	—	<1	<1
Total Average (Tons/year)	28	10	29	8
BAAQMD Threshold (Tons/year)	10	10	15	10
Total Average (lbs./day)	154	53	161	44
BAAQMD Threshold (lbs./day)	54	54	82	54

Notes: Emissions may not total to 100 percent due to rounding.

As previously mentioned, the emissions estimates contained in Table 4.2-10 provide an estimate of the potential overall area, energy, and mobile source emissions resulting from the proposed project. Buildout of the proposed project could generate a substantial increase in criteria air pollutant emissions that exceeds the BAAQMD regional significance thresholds. Compliance with applicable policies and programs would contribute towards minimizing long-term emissions. However, implementation of the proposed project would still exceed the BAAQMD significance thresholds for operation. Therefore, implementation of the proposed project could result in significant long-term regional air quality impacts.

Consistency with AQMP Control Measures

As previously mentioned, the BAAQMD's plan-level guidance does not require an emissions inventory of criteria air pollutants for plan-level analysis; however, the BAAQMD recommends that one method used for determining plan-level impact significance is to analyze the proposed plan's consistency with the current AQMP control measures. As discussed in Impact AIR-1, the proposed project would be consistent with the applicable 2017 Clean Air Plan control measures, as illustrated in Table 4.2-6. As such, the proposed project would be consistent with the current AQMP control measures, and this impact would be less than significant.

Proposed Plan VMT and Population Growth

As previously mentioned, the BAAQMD's plan-level guidance does not require an emissions inventory of criteria air pollutants for plan-level analysis; however, the BAAQMD recommends that the second method for determining plan-level impact significance is to analyze the proposed plan's projected VMT growth versus its projected population growth from existing conditions through its planning horizon year (2031). If a proposed plan's projected VMT growth outpaces its projected population growth, then that proposed plan would result in a cumulatively considerable net increase in criteria pollutants, and this impact would be potentially significant. As discussed in Impact AIR-1, the VMT growth facilitated by the proposed project would constitute an approximately 36.5 percent growth through 2031 while population growth facilitated by the proposed project would constitute an approximately 29.1 percent growth through 2031. Therefore, the forecasted VMT growth would outpace the forecasted population growth facilitated by the proposed project. As such, this impact would be potentially significant.

Significance Without Mitigation: Potentially significant.

Mitigation Measures: MMs AIR-1a, AIR-1b and TRANS-1.

Mitigation Measure AIR-2b: Prior to discretionary approval by the City for development projects subject to CEQA (California Environmental Quality Act) review (i.e., nonexempt projects), future project applicants shall prepare and submit a technical assessment evaluating potential project operation-phase-related air quality impacts to the Community Development Department for review and approval. The evaluation shall be prepared in conformance with Bay Area Air Quality Management District (BAAQMD) methodology in assessing air quality impacts identified in their CEQA

AIR QUALITY

Air Quality Guidelines. If operation-related air pollutants are determined to have the potential to exceed the BAAQMD-adopted thresholds of significance, the Community Development Department require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions during operational activities. The identified measures shall be included as part of the conditions of approval. Possible mitigation measures to reduce long-term emissions could include, but are not limited to the following:

- Design new residents to meet the energy efficiency standards of the Residential Voluntary Measures of CALGreen.
- Applicant-provided appliances shall be Energy Star-certified appliances or appliances of equivalent energy efficiency (e.g., dishwashers, refrigerators, clothes washers, and dryers). Installation of Energy Star-certified or equivalent appliances shall be verified by the City during plan check.

Significance With Mitigation: Significant and unavoidable. As described in Impact AIR-1 and Mitigation Measures TRANS-1 would minimize vehicle trip and VMT generation; however, actual project-level reductions in VMT from implementation of MMs TRANS-1 cannot be verified at this time. Additionally, operational emissions have the potential to exceed the BAAQMD significance thresholds despite implementation of Mitigation Measure AIR-2b. Therefore, this impact would remain significant and unavoidable after mitigation. However, it would not preclude a finding of less than significant at the project-level.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document targeting the mitigation of hazards, this SEU would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under applicable federal or State ambient air quality standard. No impact would occur.

Significance Without Mitigation: No Impact.

AIR-3 Construction activities associated with the project could expose sensitive receptors to substantial pollutant concentrations.

Housing Element Update

Implementation of the proposed project could facilitate individual development projects that cause or contribute significantly to elevated pollutant concentration levels such that it would expose sensitive receptors to elevated pollutant concentrations. Unlike regional emissions, localized emissions are typically evaluated in terms of air concentration rather than mass so they can be more readily correlated to potential health effects.

Operational – CO Hotspots

Areas of vehicle congestion have the potential to create pockets of CO, called hotspots. These pockets have the potential to exceed the State 1-hour standard of 20 ppm or the 8-hour standard of 9.0 ppm. Since CO is produced in the greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to AAQS is typically demonstrated through an analysis of localized CO concentrations. Hotspots are typically produced at intersections, where traffic congestion is highest because vehicles queue for longer periods and are subject to reduced speeds.

An overarching goal of the Plan Bay Area 2050 is to concentrate development in areas where there are existing services and infrastructure rather than allocate new growth in outlying areas where substantial transportation investments would be necessary to achieve the per capita passenger vehicle VMT and associated GHG emissions reductions. The proposed project would be consistent with the overall goals of the Plan Bay Area 2050. Additionally, the proposed project would not hinder the capital improvements outlined in the Solano County Transportation Authority’s Congestion Management Program (CMP). Thus, the proposed project would not conflict with the CMP.

Furthermore, under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection to more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited—in order to generate a significant CO impact (BAAQMD 2017a). The proposed project would result in an estimated additional 24,269 daily vehicle trips across the City. An industry standard for estimating peak-hour traffic volumes from ADT estimates is to divide the ADT estimate by 10, which would yield a peak-hour traffic volume of 2,427. Therefore, considering the 2,427 additional peak-hour vehicle trips would be distributed across City’s roadway network, the proposed project is not anticipated to increase traffic volumes at affected intersections to more than BAAQMD’s screening criteria of 44,000 vehicles per hour or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited. Therefore, overall, the proposed project would not have the potential to substantially increase CO hotspots at intersections in the city and vicinity. Overall, these components of the proposed project would contribute to reducing congestion and associated emissions. Localized air quality impacts related to mobile-source emissions would therefore be less than significant.

AIR QUALITY

Operational Community Risk and Hazards

Common sources of TAC emissions are stationary sources (e.g., dry cleaners, diesel backup generators, and gasoline stations), which are subject to BAAQMD permit requirements. Buildout of the proposed project could result in new sources of TACs and PM_{2.5}. Stationary sources, including smaller stationary sources associated with residential development (e.g., emergency generators and boilers), are subject to review by BAAQMD as part of the permitting process. Adherence to BAAQMD permitting regulations would ensure that new stationary sources of TACs do not expose populations to significant health risk. Mobile sources of air toxics (e.g., truck idling) are not regulated directly by BAAQMD. However, residential development associated with the proposed project would not generate substantial truck traffic or idling. Furthermore, individual development projects would be required to achieve the project-level risk thresholds established by BAAQMD to ensure the sensitive receptor impact resulting from the subject development project would not be potentially significant.

Construction Community Risk and Hazards

Future construction under the proposed project would temporarily elevate concentrations of TACs and DPM in the vicinity of sensitive land uses during construction activities. Since the details regarding future construction activities are not known at this time, due to this analysis being conducted at a GPU Program level—including phasing of future individual projects, construction duration and phasing, and preliminary construction equipment—construction emissions are evaluated qualitatively in accordance with BAAQMD’s plan-level guidance. Subsequent environmental review of future development projects would be required to assess potential impacts under BAAQMD’s project-level thresholds. However, construction emissions associated with the proposed project could exceed BAAQMD’s project level and cumulative significance thresholds for community risk and hazards. Therefore, construction-related health risk impacts associated with the proposed project are considered significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City’s ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document targeting the mitigation of hazards, this SEU would not result in exposing sensitive receptors to substantial pollutant concentrations. No impact would occur.

Significance Without Mitigation: Potentially significant.

Mitigation Measure AIR-3. Applicants for construction within 1,000 feet of residential and other sensitive land use projects (e.g., hospitals, nursing homes, day care centers), as measured from the property line of the project to the property line of the source/edge of the nearest travel lane, shall submit a health risk assessment (HRA) to the City prior to future discretionary project approval. The HRA shall be prepared in accordance with policies and procedures of the Office of Environmental Health Hazard Assessment (OEHHA) and the BAAQMD. The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children ages 0 to 16 years. If the HRA shows that the incremental cancer risk exceeds ten in one million (10E-06), PM_{2.5} concentrations exceed 0.3 µg/m³, or the appropriate noncancer hazard index exceeds 1.0, the applicant will be required to identify and demonstrate that mitigation measures are capable of reducing potential cancer and non-cancer risks to an acceptable level (i.e., below ten in one million or a hazard index of 1.0), including appropriate enforcement mechanisms. Measures to reduce risk may include, but are not limited to:

- Use of construction equipment rated as US EPA Tier 4 Interim for equipment of 50 horsepower or more.
- Use of construction equipment fitted with Level 3 Diesel Particulate Filters for all equipment of 50 horsepower or more.

Measures identified in the HRA shall be included in the environmental document and/or incorporated into the site development plan as a component of the proposed project. Prior to issuance of any construction permit, the construction contractor shall ensure that all construction plans submitted to the Community Development Department clearly show incorporation of all applicable mitigation measures.

Significance With Mitigation: Less than significant. Mitigation Measure AIR-3 would ensure that discretionary development projects with construction proximate to sensitive receptors achieve the BAAQMD significance criteria of one million (10E-06) cancer risk, PM_{2.5} concentrations exceed 0.3 µg/m³, or the noncancer hazard index exceeds 1.0 by requiring use of newer, lower emitting construction equipment, and would not expose sensitive receptors to substantial pollutant concentrations.

AIR-4	The project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.
-------	--

Housing Element Update

Construction

While odors could be generated during construction activities, the proposed project is a General Plan Housing Element Update and would not directly result in construction of any development project.

AIR QUALITY

Identification of potential impacts to odor receptors resulting from construction-generated odors, such as equipment exhaust, would require project-specific information for future individual land use development projects that is not currently known. As previously discussed, consistent with the BAAQMD's CEQA Air Quality Guidelines, a plan-level analysis must acknowledge odor sources within the Planning Area and identify policies, goals, and objectives aimed at reducing potential odor impacts to ensure that potential impacts would be less than significant.

Operation

According to the BAAQMD's 2017 CEQA Air Quality Guidelines, land uses associated with odor complaints typically include agricultural operations, wastewater treatment plants, landfills, and certain industrial operations such as chemical and other manufacturing. While odors do not themselves present a health risk, they are often considered a nuisance by people who live, work, or otherwise are located near outdoor odor sources. Buildout permitted under the proposed project would not include odor-generating uses, such as composting, greenwaste, and recycling operations; food processing; and painting/coating operations, because these are types of uses are often found in the commercial and/or industrial areas. Increase in residential uses would not generate substantial odors that would affect a substantial number of people. During operation, residences could generate odors from cooking. However, odors from cooking are not substantial enough to be considered nuisance odors that would affect a substantial number of people.

The City's current General Plan contains Goal 2.41, which states "Minimize WWTP operational upsets, potential discharge of inadequately treated wastewater, and the emission of odor and noise." Policy 2.41.2 under Goal 2.41 states "Continue to work with neighbors to implement programs that minimize odor, noise, and potential safety impacts to the neighborhood surrounding the WWTP." In addition, BAAQMD Regulation 7 limits emissions of odorous substances within the Air Basin and would apply to any odor source within the Planning Area. Therefore, compliance with the applicable goals and policies of the current General Plan, as well applicable BAAQMD rules and regulations, would prevent odor emissions from adversely affecting a substantial number of people in the City.

Furthermore, nuisance odors are regulated under BAAQMD Regulation 7, Odorous Substances, which requires abatement of any nuisance generating an odor complaint. In addition, odors are also regulated under BAAQMD Regulation 1, Rule 1-301, Public Nuisance. Compliance with BAAQMD Regulation 7 would ensure that odor impacts associated with the proposed project are minimized. This impact would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade

disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document targeting the mitigation of hazards, this SEU would not result in emissions to adversely affect a substantial number of people. No impact would occur.

Significance Without Mitigation: Less than significant.

AIR QUALITY

4.2.6 REFERENCES

- Association of Bay Area Governments and the Metropolitan Transportation Commission. 2021, October. Plan Bay Area 2050. https://abag.ca.gov/sites/default/files/documents/2021-11/Plan_Bay_Area_2050_October_2021.pdf
- Bay Area Air Quality Management District (BAAQMD). 2010. Appendix C: Sample Air Quality Setting, in California Environmental Quality Act Air Guidelines. https://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/%20Draft_BAAQMD_CEQA_Guidelines_May_2010_Final.ashx.
- _____. 2017a, May. California Environmental Quality Act Air Quality Guidelines. 2017a (revised). http://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.
- _____. 2017b, January 5. Air Quality Standards and Attainment Status. <http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status#thirteen>.
- _____. 2017c, April 19. Final 2018 Clean Air Plan. Spare the Air Cool the Climate, A Blueprint for Clean Air And Climate Protection in the Bay Area. http://www.baaqmd.gov/research-and-research/ceqa/ceqa_guidelines_may2017-pdf. https://www.baaqmd.gov/~media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf
- _____. 2019a, April 19. AB 617 Fact Sheet. San Francisco Bay Area Community Health Protection Program, https://www.baaqmd.gov/~media/files/ab617-community-health/2019_0325_ab617onepager-pdf.pdf?la=en&rev=9f6dcd6de8854fd9853ff0498c6bbdff.
- _____. 2019b, October 2. West Oakland Community Action Plan, <https://www.baaqmd.gov/~media/files/ab617-community-health/west-oakland/100219-files/final-plan-vol-1-100219-pdf.pdf?la=en>.
- Benicia, City of. 1999, June 15. Benicia General Plan. <https://www.ci.benicia.ca.us/index.asp?SEC=0371539A-30D9-4885-B61F-B5038B415DD3&DE=F40DB441-1E06-45F8-82F8-6D632AB9EC85>.
- Benicia, City of. 2020, May 18. 2020 Urban Water Management Plan. [https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/City_of_Benicia_2020_UWMP_-_Final_06.10.21\(1\).pdf](https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/City_of_Benicia_2020_UWMP_-_Final_06.10.21(1).pdf).
- California Air Pollution Control Officers Association (CAPCOA). 2021. California Emissions Estimator Model (CalEEMod). Version 2020.4. Prepared by BREEZE Software, A Division of Trinity Consultants in collaboration with South Coast Air Quality Management District and the California Air Districts.

California Air Resource Board (CARB). 1999. Final Staff Report: Update to the Toxic Air Contaminant List. <https://ww2.arb.ca.gov/sites/default/files/classic/toxics/tac/update98/update98.htm>.

_____. 2005, April. Air Quality and Land Use Handbook: A Community Health Perspective. <http://www.aqmd.gov/docs/default-source/ceqa/handbook/california-air-resources-board-air-quality-and-land-use-handbook-a-community-health-perspective.pdf>.

_____. 2016, May 4. Ambient Air Quality Standards. <https://ww2.arb.ca.gov/sites/default/files/2020-07/aaqs2.pdf>.

_____. 2017, April. Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways https://ww2.arb.ca.gov/sites/default/files/2017-10/rd_technical_advisory_final.pdf.

_____. 2022a (Accessed). Air Pollution Data Monitoring Cards (2016, 2017, 2018, 2019, and 2020), <https://www.arb.ca.gov/adam/topfour/topfour1.php>.

_____. 2022b (Accessed). Common Air Pollutants. <https://ww2.arb.ca.gov/resources/common-air-pollutants>.

Office of Environmental Health Hazard Assessment (OEHHA). 2015, February. Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments. <https://oehha.ca.gov/media/downloads/cnr/2015guidancemanual.pdf>.

Solano Transportation Authority (STA). 2019, October. Solano County Congestion Management Program. https://sta.ca.gov/wp-content/uploads/2019/03/STA-CMP_Draft-Report_10-2-19.pdf

South Coast Air Quality Management District. 2005, May 6. Guidance Document for Addressing Air Quality. Issues in General Plans and Local Planning <https://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf?sfvrsn=4>

US Environmental Protection Agency (USEPA). 2002, May. Health Assessment Document for Diesel Engine Exhaust. Prepared by the National Center for Environmental Assessment, Washington, DC, for the Office of Transportation and Air Quality. EPA/600/8-90/057F. file:///C:/Users/eparks/Downloads/HEALTH_ASSESSMENT_DIESEL.PDF.

_____. 2020, February 3 (mod.). Health and Environmental Effects of Hazardous Air Pollutants. Accessed January 25, 2022. <https://www.epa.gov/haps/health-and-environmental-effects-hazardous-air-pollutants>.

AIR QUALITY

This page intentionally left blank.

4.3 BIOLOGICAL RESOURCES

This section analyzes impacts that could occur to biological resources due to buildout per the proposed Housing Element and Safety Element in the City and provides appropriate mitigation measures to reduce or avoid these impacts.

4.3.1 ENVIRONMENTAL SETTING

4.3.1.1 REGULATORY FRAMEWORK

Federal and State Regulations

Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973, as amended, protects, and conserves any species of plant or animal that is endangered or threatened with extinction, as well as the habitats where these species are found. “Take” of endangered species is prohibited under Section 9 of the FESA. “Take” means to “harass, harm, pursue, hunt, wound, kill, trap, capture, collect, or attempt to engage in any such conduct.” Section 7 of the FESA requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) on proposed federal actions that may affect any endangered, threatened, or proposed (for listing) species or critical habitat that may support the species. Section 4(a) of the FESA requires that critical habitat be designated by the USFWS “to the maximum extent prudent and determinable, at the time a species is determined to be endangered or threatened.” This provides guidance for planners/managers and biologists by indicating locations of suitable habitat and where preservation of a particular species has high priority. Section 10 of the FESA provides the regulatory mechanism for incidental take of a listed species by private interests and nonfederal government agencies during lawful activities. Habitat conservation plans (HCPs) for the impacted species must be developed in support of incidental take permits to minimize impacts to the species and formulate viable mitigation measures.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (MBTA) affirms and implements the United States’ commitment to four international conventions—with Canada, Japan, Mexico, and Russia—to protect shared migratory bird resources. The MBTA governs the take, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. It prohibits the take, possession, import, export, transport, sale, purchase, barter, or offering of these items, except under a valid permit or as permitted in the implementing regulations. USFWS administers permits to take migratory birds in accordance with the MBTA.

BIOLOGICAL RESOURCES

Clean Water Act, Section 404

The United States Army Corps of Engineers (Corps) regulates discharge of dredged or fill material into “waters of the United States.”¹ Any filling or dredging within waters of the United States requires a permit, which entails assessment of potential adverse impacts to Corps wetlands and jurisdictional waters and any mitigation measures that the Corps requires. Section 7 consultation with USFWS may be required for impacts to a federally listed species. If cultural resources may be present, Section 106 review may also be required. When a Section 404 permit is required, a Section 401 Water Quality Certification is also required from the Regional Water Quality Control Board (RWQCB).

Clean Water Act, Section 401 and 402

Section 401(a)(1) of the CWA specifies that any applicant for a federal license or permit to conduct any activity that may result in any discharge into navigable waters shall provide the federal permitting agency with a certification, issued by the state in which the discharge originates, that any such discharge will comply with the applicable provisions of the CWA. In California, the applicable RWQCB must certify that the project will comply with water quality standards. Permits requiring Section 401 certification include Corps Section 404 permits and National Pollutant Discharge Elimination System (NPDES) permits issued by the Environmental Protection Agency (EPA) under Section 402 of the CWA. NPDES permits are issued by the applicable RWQCB. The City is Region 2 (San Francisco Bay).

California Fish and Game Code, Section 1600

Section 1600 of the California Fish and Game Code requires a project proponent to notify the California Department of Fish and Wildlife (CDFW) of any proposed alteration of streambeds, rivers, and lakes. The intent is to protect habitats that are important to fish and wildlife. CDFW may review and place conditions on the project, as part of a Streambed Alteration Agreement (SAA), that address potentially significant adverse impacts within CDFW’s jurisdictional limits.

California Endangered Species Act

The California Endangered Species Act (CESA) generally parallels the main provisions of the FESA and is administered by the CDFW. Its intent is to prohibit take and protect state-listed endangered and threatened species of fish, wildlife, and plants. Unlike its federal counterpart, CESA also applies the take

¹ “Waters of the United States,” as applied to the jurisdictional limits of the Corps under the Clean Water Act, includes all waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the tide; all interstate waters, including interstate wetlands; and all other waters, such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds whose use, degradation, or destruction could affect interstate or foreign commerce; water impoundments; tributaries of waters; territorial seas; and wetlands adjacent to waters. The terminology used by Section 404 of the Clean Water Act includes “navigable waters,” which is defined at Section 502(7) of the act as “waters of the United States, including the territorial seas.”

BIOLOGICAL RESOURCES

prohibitions to species petitioned for listing (state candidates). Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Game Commission. Unlike the FESA, CESA does not include listing provisions for invertebrate species. Under certain conditions, CESA has provisions for take through a 2081 permit or memorandum of understanding (MOU). In addition, some sensitive mammals and birds are protected by the state as “fully protected species.” California “species of special concern” are species designated as vulnerable to extinction due to declining population levels, limited ranges, and/or continuing threats. This list is primarily a working document for the CDFW’s California Natural Diversity Database (CNDDDB), which maintains a record of known and recorded occurrences of sensitive species. Informally listed taxa are not protected per se but warrant consideration in the preparation of biological resources assessments.

Local Regulations

City of Benicia General Plan

The following policies from Chapter 3, Community Identity, of the General Plan pertain to biological resources:

- **Policy 3.19.1:** Protect essential habitat of special-status plant and animal species.
- **Policy 3.20.1:** Protect native grasslands, oak woodlands, and riparian habitat.
- **Policy 3.20.2:** Restore native vegetation, such as birch grasses and oaks, wherever possible for open spaces of existing developed areas.
- **Policy 3.20.3:** Encourage preservation of existing trees. Especially preserve and protect mature, healthy trees whenever practicable, particularly where such trees are of significant size or are of significant aesthetic value to the immediate vicinity or to the community as a whole.
- **Policy 3.20.4:** Require protection of movement corridors.
- **Policy 3.21.1:** Encourage avoidance and enhancement of sensitive wetlands as part of future development.
- **Policy 3.21.2:** Require replacement for wetlands eliminated as a result of development at a higher wetlands value and acreage than the area eliminated.
- **Policy 3.21.4:** Restore and increase marshland areas.

City of Benicia Municipal Code

Chapter 12.24 Trees and Street Trees

The Benicia General Plan recognizes the importance of trees for their place in a natural setting and their contribution to community character and environmental health. Significant portions of the City are covered by trees, the conservation, sustainability, protection, maintenance, and replanting of which is necessary for the health, safety, and welfare of the citizens of the City. The City seeks to protect trees to provide urban wildlife habitat, preserve scenic beauty and aesthetic and privacy characteristics, prevent erosion of topsoil, protect against flood hazards and the risk of landslides, counteract pollutants in the air,

BIOLOGICAL RESOURCES

maintain climatic balance, decrease wind velocities, calm traffic, and reduce public costs of installing and maintaining stormwater drainage systems. The City has therefore determined that reasonable regulation of the removal, alteration, and planting of certain trees is necessary to promote the public health, safety, and general welfare of the community.

4.3.1.2 EXISTING CONDITIONS

Plants

Vegetation in the City is dominated by a cover of non-native grassland and suburban landscape, bordered by important marshlands at Southampton and Suisun Bays. Most of the rolling hills south of the Rose Drive area are developed with urban and suburban uses, interspersed with grassland covered slopes and a few undeveloped ravines (Benicia 1999). The lands of East Second Street and north of I-780 have been highly disturbed by past military and existing industrial uses. Grasslands cover most of the rangeland to the north of East Second Street and the Lake Herman Road area throughout the northeastern hills. Major creeks, drainages, and the fringe of Lake Herman in the undeveloped Northern Area support freshwater marsh and riparian vegetation, which varies from cattail to willow forest and scrub (Benicia 1999). Scattered oaks in the northeastern hills, primarily on the north and east-facing slopes west of I-680. Small areas of northern coastal scrub, freshwater seeps, remnant native grasslands, and stands of eucalyptus also occur in the northern portion of the City. The following vegetation types exist in the City:

- Non-native Grassland – occupy most of the City.
- Developed Areas – ornamental landscaping is planted throughout developed areas and around rural residences.
- North Coastal Salt Marsh and Coastal Brackish Marsh – marshland natural communities occur along the Carquinez Strait and Suisun Bay.
- Coastal Live Oak Woodland – occurs in the northeastern portion of the City.
- Willow Riparian Forest and Willow Scrub – riparian vegetation occurs along stream courses and the eastern fringe of Lake Herman.
- Valley Needlegrass Grassland – remnant native grasslands are found in the northern area.
- Northern Coastal Scrub – scattered in grassland areas.

Wildlife

The marshlands and extensive tracts of undeveloped land contribute to a diverse assemblage of resident and migrant wildlife (Benicia 1999). Habitat types of particular importance to wildlife include the marshlands and open water Carquinez Strait and Suisun Bay, areas of well-developed riparian forest and scrub, and oak woodlands. The following habitats differ in its relative value to specific species:

- Urbanized Habitat – have low to poor wildlife habitat value; urban wildlife diversity depends on the extent of landscaping, remaining open space, and proximity to natural habitat. Urban areas provide habitat for several species of native mammals (squirrel, raccoon, and skunk).

BIOLOGICAL RESOURCES

- Tidal and Marshland Habitat – Carquinez Strait and Suisun Bay are of regional importance to fish and wildlife, providing habitat for aquatic plants and animals, open water habitat for birds, and serving as the major movement corridor between San Pablo Bay and the Delta.
- Grassland Habitat – native and nonnative grasslands support a variety of mammals, birds, and reptiles, and provide foraging for raptors.
- Freshwater Marsh and Riparian Habitat – provides a source of drinking water, protective cover, and movement corridors, as well as provides nesting and roosting for numerous resident birds, and stopovers for migrant songbirds.
- Oak Woodland Habitat – abundant seed crops (acorns, madrone, poison oak, and toyon berries) are important food sources for black-tailed deer, woodpeckers, and other wildlife.
- Rock Outcrops – provide unique habitat for wildlife include perches for raptors and ledges for nests.
- Eucalyptus Habitat – this naturalized species provides important nesting habitat for raptors and other birds, and cover for larger mammals.

Special Status Species and Sensitive Natural Communities

A record search indicates several plant and animal species with special status in the City, mostly in the tidal marshland habitat (Benicia 1999).

4.3.2 THRESHOLDS OF SIGNIFICANCE

The proposed project would result in significant biological resources impacts if it would:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plan, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.
3. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

BIOLOGICAL RESOURCES

6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

4.3.3 PROPOSED HOUSING ELEMENT POLICIES

There are no policies in the Housing Element Update applicable to Biological Resources.

4.3.4 PROPOSED SAFETY ELEMENT POLICIES

The Safety Element does not include policies regarding biological resources.

4.3.5 ENVIRONMENTAL IMPACTS

BIO-1	Development of the proposed project could impact sensitive species in the City.
-------	---

Housing Element Update

Although the proposed housing sites are all within the urbanized area of the City, any development of vacant or partially vacant land could result in a direct or indirect loss of sensitive plants or wildlife. Indirect impact may include habitat modification, increased human/wildlife interactions, habitat fragmentation, encroachment by invasive weeds, and area-wide changes in surface water flows and general hydrology due to construction of buildings, parking, sidewalks, and other impervious surfaces.

Even with the adherence to the General Plan policies and compliance with state and federal laws, individual projects may require more detailed evaluations of biological resources and formation of mitigation measures by a qualified biologist. Implementation of Mitigation Measures BIO-1 and BIO-2 would protect special status species and ensure that project design or avoidance mitigation would reduce impacts to a less than significant level. The implementation of Mitigation Measure BIO-3 would require an evaluation of habitat connectivity/wildlife corridors, which would protect special status species and reduce impacts to less than significant.

Recent actions by the State Legislature have removed discretionary actions from the City for some types of affordable housing projects. By establishing a class of housing projects that are ministerial, subsequent environmental analysis under CEQA may be avoided. This has the potential to affect sensitive biological resources that are traditionally evaluated during the CEQA process. To ensure that the natural environment is addressed on a project-specific basis, Mitigation Measures BIO-1 and BIO-2 require documentation prepared by a qualified biologist accompany any request for ground disturbance, and Mitigation Measure BIO-3 requires a habitat connectivity/wildlife corridor evaluation.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's biological resources. No impacts would occur.

Significance Without Mitigation: Potentially significant.

Mitigation Measures:

- BIO-1 Prior to the issuance of a building permit, all projects must provide documentation that the site does not include special status species (e.g., Threatened or Endangered species, CNPS List 1B and 2 plants, or species protected under Section 15380 of CEQA) If the species are found on the site, focused surveys shall be conducted prior to any ground disturbance activities . The documentation shall ensure that botanical surveys are conducted during the appropriate blooming period. If no special status species are found on the project site, no additional action is necessary, and the project can continue. If special status species are found, no ground disturbance can occur and the project must either avoid the special status species, or develop a mitigation plan approved by the City in consultation with the California Department of Fish and Wildlife. If off site replacement is the only mitigation option available, the performance criteria shall be at a ratio specified by the resource agency such as the Army Corps of Engineers or the California Department of Fish and Wildlife.
- BIO-2 Prior to the issuance of the first action and/or permit which would allow for site disturbance (e.g., grading permit), a detailed mitigation plan shall be prepared by a qualified biologist for approval by the City, the USFWS, and CDFW shall include: (1) the responsibilities and qualifications of personnel to implement and supervise the plan; (2) site selection; (3) site preparation and planting implementation; (4) a schedule; (5) maintenance plan/guidelines; (6) a monitoring plan; and (7) long-term preservation requirements.
- BIO-3 Prior to the issuance any ground disturbance, the City shall require a habitat connectivity/wildlife corridor evaluation for future development that may impact existing connectivity areas and wildlife linkages. The results of the evaluation shall be incorporated into the project's biological report required in Mitigation Measure BIO-1. The evaluation shall also identify the project design features that would reduce potential impacts and maintain

BIOLOGICAL RESOURCES

habitat and wildlife movement. To this end, the City shall incorporate the following measures, for projects impacting wildlife movement corridors:

- Encourage clustering of development
- Avoid sensitive biological resources identified in the analysis
- Provide shield lighting adjacent to sensitive habitat areas
- Provide physical or distance buffers between development and wetland/riparian areas
- Require wildlife-passable fence designs (e.g., 3-strand barbless wire fence) on property boundaries.

Significant With Mitigation: Less than significant with mitigation incorporated.

BIO-2	Development of the proposed project could impact sensitive natural communities, including wetland and riparian habitats.
-------	--

Housing Element Update

The City includes various wetland and riparian habitats, such as Carquinez Strait, Suisun Bay, and Lake Herman. As indicated in Section 4.3.1.2, above, there are several species that are found in wetland and riparian habitats. General Plan policies, as well as Mitigation Measures BIO-1 and BIO-2 would prevent impacts on special status species by requiring pre-construction surveys and obtaining take permits from appropriate agencies.

As shown in Figures 3-1a through 3-1e, almost all of the properties in Table 3-3 and Table 3-4 are surrounded by existing development and are not considered part of regional migration corridors. There are several housing sites that are adjacent to Carquinez Strait (see Figure 3-1b and Figure 3-d) and Benicia State Recreation Area (see Figure 3-1a, Housing Site #35 is to the east of I-780), which may provide local corridors for wildlife important to the region. Additionally, vacant, or partially developed sites may provide local corridors for wildlife important to the region. Mitigation Measure BIO-3 would require a connectivity evaluation for future projects. Compliance with mitigation measures BIO-1 through BIO-3 would ensure no net loss of waters of the US or waters of the state and protection of resources. Consequently, impacts on sensitive natural communities would be less than significant with mitigation incorporated.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions

BIOLOGICAL RESOURCES

aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City’s biological resources. The proposed safety element would not result in environmental impacts.

Significance Without Mitigation: Potentially significant.

Mitigation Measures:

See Mitigation Measures BIO-1, BIO-2, and BIO-3.

Significance With Mitigation: Less than Significant with Mitigation Incorporated.

BIO-3	Development pursuant to the proposed project could adversely impact wildlife movement in and surrounding the City.
-------	--

Housing Element Update

The City is surrounded by large water bodies many of which provide movement corridors for wildlife, such as the tidal and marshland habitat in Carquinez Strait, San Pablo Bay, and Suisun Bay, and the freshwater marsh and riparian habitats. Several bird species are known to occur within the City, including but not limited to the tidal and marshland habitats, freshwater marsh and riparian habitats, and eucalyptus habitats. Under the proposed project, these birds could be impacted due to future development and removal of vegetation that could be used for nesting. The Migratory Bird Treaty Act administered by the USFWS governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. It prohibits the take, possession, import, export, transport, sale purchase, barter, or offering of these activities, except under a valid permit or as permitted in the implementing regulations. In addition, California law, particularly relevant statutes in the Fish and Game Code, provide protections for birds and their active nests by prohibiting the:

- Take of a bird, mammal, fish, reptile, or amphibian (Fish and Game Code §2000)
- Take, possess, or needlessly destroy the nest or eggs of any bird (§3503)
- Take, possess, or destroy any bird of prey in the other Strigiformes (owls) and Falconiformes (such as falcons, hawks, and eagles) or the nests of eggs of such birds (§3503.5)
- Take or possess any of the 13 fully protected bird species listed in §3511
- Take any nongame bird (i.e., bird that is naturally occurring in California that is not game bird, migratory game bird, or fully protected bird) (§3800)
- Take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such bird, except as provided by rules or regulations adopted by the Secretary of the Interior under the Migratory Bird Treaty Act (§3513)

BIOLOGICAL RESOURCES

- Take, import, export, possess, purchase, or sell any bird (or products of a bird) listed as an endangered or threatened species under the California Endangered Species Act unless the person or entity possesses an Incidental Take Permit or equivalent authorization from CDFW (§§2050 et. seq.).

While future development would occur within the urbanized portions of the City, vegetation removal and proximity to open space areas could constrain wildlife movement. Development under the proposed project would comply with the policies of the General Plan pertaining to protection of wildlife which would reduce impacts. In addition, to avoid conflicts with the MBTA, Mitigation Measures BIO-3 and BIO-4 would reduce potentially significant impacts to less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's biological resources. The proposed safety element would not result in environmental impacts.

Significance Without Mitigation: Potentially significant.

Mitigation Measures:

See Mitigation Measure BIO-3.

BIO-4 Ground disturbance activities involving vegetation removal shall be conducted between September 16 and March 14. If construction occurs inside the peak nesting season (between March 15 and September 15), a preconstruction survey (or possibly multiple surveys) by a qualified biologist is recommended prior to construction activities to identify any active nesting locations. If the biologist does not find any active nests within the project site, the construction work shall be allowed to proceed. If the biologist finds an active nest within the project site and determined that the nest may be impacted, the biologist shall delineate an appropriate buffer zone around the nest, and the size of the buffer zone shall depend on the affected species and the type of construction activity. Any active nests observed during the survey shall be mapped on an aerial photograph. Only construction activities (if any) that have been approved by a biological monitor shall take place within the buffer zone until the nest is vacated. The biologist shall serve as a construction monitor when construction activities take place near active areas to ensure no inadvertent impacts on these nests occur. Results of the

BIOLOGICAL RESOURCES

preconstruction survey and any subsequent monitoring shall be provided to the California Department of Fish and Wildlife and the City.

Significance With Mitigation: Less than Significant with Mitigation Incorporated.

BIO-4	The proposed project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, adopted habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. [Thresholds B-5 and B-6]
-------	---

Housing Element Update

In addition to the City's tree ordinance, Chapter 12.24, Trees and Street Trees, seeks to protect trees for reasons including but not limited to providing urban wildlife scenic beauty and aesthetic and privacy characteristics, future development under the proposed project would be required to comply with the policies of the General Plan that protect sensitive biological resources. Therefore, future development under the proposed project would be required to comply with applicable policies and plans governing biological resources in the City and impacts would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's biological resources. The proposed safety element would not result in environmental impacts.

Significance Without Mitigation: Less than significant.

BIOLOGICAL RESOURCES

4.3.6 REFERENCES

Benicia, City of. 1999, June 15. Benicia General Plan.

<https://www.ci.benicia.ca.us/index.asp?SEC=0371539A-30D9-4885-B61F-B5038B415DD3&DE=F40DB441-1E06-45F8-82F8-6D632AB9EC85>.

4.4 CULTURAL RESOURCES

Cultural resources are comprised of both archaeological and historical resources. Archaeology studies human artifacts, such as places, objects, and settlements that reflect group or individual religious, cultural, or everyday activities. Historical resources include sites, structures, objects, or places that are at least 45 years old and are significant for their engineering, architecture, cultural use or association, etc. In California, historic resources cover human activities over the past 12,000 years. Cultural resources provide information on scientific progress, environmental adaptations, group ideology, or other human advancements. This section of the Draft EIR evaluates the potential for implementation of the proposed project to impact cultural resources in the City of Benicia.

4.4.1 ENVIRONMENTAL SETTING

4.4.1.1 REGULATORY FRAMEWORK

Federal Regulations

National Historic Preservation Act

The National Historic Preservation Act of 1966 (NHPA) coordinates public and private efforts to identify, evaluate, and protect the nation's historic and archaeological resources. The act authorized the National Register of Historic Places, which lists districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture.

State Regulations

California Public Resources Code

Archaeological, paleontological, and historical sites are protected under a wide variety of state policies and regulations in the California Public Resources Code (PRC). In addition, cultural and paleontological resources are recognized as nonrenewable resources and receive protection under the PRC and CEQA.

California Public Resources Code 5097.9–5097.991 provides protection to Native American historical and cultural resources, and sacred sites and identifies the powers and duties of the Native American Heritage Commission. It also requires notification to descendants of discoveries of Native American human remains and provides for treatment and disposition of human remains and associated grave goods.

California Register of Historic Resources

The California Register of Historic Resources is the state version of the National Register of Historic Resources program. It was enacted in 1992 and became official January 1, 1993. The California Register was established to serve as an authoritative guide to the state's significant historical and archaeological resources. Resources that may be eligible for listing include buildings, sites, structures, objects, and

CULTURAL RESOURCES

historic districts. According to subsection (c) of the PRC Section 5024.1, a resource may be listed as a historical resource in the California Register if it meets any of the four National Register criteria.

California Health and Safety Code

California Health and Safety Code Section 7050.5 requires that if human remains are discovered at a project site, disturbance of the site shall halt and remain halted until the coroner has investigated the circumstances, manner, and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative. If the coroner determines that the remains are not subject to his or her authority and recognizes or has reason to believe the human remains are those of Native American descent, he or she shall contact, by telephone within 24 hours, the NAHC.

Mills Act

Under the Mills Act, California Government Coded Sections 50280 et seq., a city or county may contract with the owner of any qualified historical property to restrict the use of the property. The owner continues to preserve the property, and in some instances rehabilitate it, and the State reduces property taxes. In Benicia, the City has 41 active Mills Act contracts with owners of properties in the Historic District (see Chapter 17.54, *H Historic Overlay District* in the local regulations section below) The contracts are for ten years and automatically renew annually unless cancelled or nonrenewed.

Local Regulations

City of Benicia General Plan

The following policies from Chapter 3, Community Identity, pertain to historic, and cultural resources.

- **Policy 3.3.1:** Encourage reuse of historical buildings; if feasible, encourage relocation rather than demolition.
- **Policy 3.1.2:** Enhance the economic potential of historic and architectural assets.
- **Policy 3.1.3:** Preserve historic trees and landscapes. (Refer to the Arsenal Historic Conservation Plan, November 1993, for guidance on historic tree and landscaping).
- **Policy 3.1.6:** Promote restoration of public and privately-owned historic and architecturally significant properties.
- **Policy 3.1.5:** Permit new development, remodeling, and buildings renovation in historic districts when consistent with the policies of the applicable Historic Conservation Plan.
- **Policy 3.2.1:** Ensure the protection and preservation of artifacts in known, and as yet unidentified, areas.
- **Program 3.2.A:** Work with the California Archaeological Inventory to develop an inventory of existing and potential archaeological sites.
- **Program 3.2.B:** Refer development proposals that may adversely affect archaeological sites to the California Archaeological Inventory.

- **Program 3.2.C:** Develop City regulations regarding inspections, code enforcement, and regulation of pot hunters.
- **Program 3.2.D:** Require that all sites with archaeological resources likely to be disturbed by a proposed project be analyzed by a qualified archaeologist and an appropriate program developed to mitigate any impacts from the project.

Benicia Arsenal Historic Conservation Plan (1993)

Under Benicia Municipal Code: Chapter 17.54 – *H Historic Overlay District* (discussed in detail below), a conservation plan must be prepared for areas zoned as historic districts. The Benicia Arsenal Historic Conservation Plan (BAHCP) was published in 1993 and sets forth policies and guidelines for development in the Benicia Arsenal District and its four designated sub-districts. This district includes 345 acres of land originally donated by the town's founders for use as a military reservation on the south-east side of the City, as shown in Figure 2, *National Register Historic Districts and Properties of the Benicia Arsenal* in the BAHCP (p. 7) (Benicia 1993). The purpose of the Conservation Plan is to ensure that new construction and modifications within the Benicia Arsenal plan area are undertaken in a manner that maintains the historic integrity of the district. The plan outlines the design guidelines applicable to most projects and sites within the Historic Arsenal area.

The plan also identified various landmark buildings, including cultural resources listed on state and local historic register, and identified important Historic American buildings listed in a 1970's survey.

The following are objectives guide the plan's approach to conservation in the Arsenal District:

- Establish and reinforce the distinct qualities of individual subdistricts.
- Preserve, maintain, and promote appropriate adaptive reuse of historic buildings, especially those recognized as being of landmark quality.
- Preserve important natural features, including hillsides, slopes, and vegetation which have been identified as integral to the district's character or to a particular building's setting.
- Maintain established plantings which are an integral feature of a building's historic setting;
- Maintain key views of historic structures and the water;
- Maintain the character of existing site improvements and features such as retaining walls, timber guard rails, and so on, which are appropriate to the scale and design of nearby buildings when found not to create or continue a life/safe issue; and
- Encourage public and private site and urban design improvements which harmonize with each
- Maintain sub-district's character and clarify key access points and circulation route.

CULTURAL RESOURCES

Downtown Historic Conservation Plan (1990)

Benicia's second historic district is in the downtown area, as shown in the figure on page 7 of the Downtown Historic Conservation Plan. Pursuant to Benicia Municipal Code Chapter 17.54, *Historic Overlay District (H)*, the City prepared the Downtown Historic Conservation Plan to ensure that modifications within the Downtown Area are undertaken in such a manner to maintain the historic integrity of the district. In accordance with the Historic Overlay District regulations, this conservation plan addresses a range of issues relating to design and land use. The primary way in which these protections are implemented by the Plan are through its design guidelines and design review process which apply to most projects inside the Downtown Historic Overlay District. These projects are subject to design review approval by either the Historic Preservation Review Commission or the Community Development Director.

The following are the objectives of the design guidelines outlined in the plan:

- Preserve the integrity of individual historic buildings and the architectural features which are integral to them.
- Minimize alterations and new construction that weaken the historic integrity of individual buildings and the scale, character and streetscape of the district overall.
- Encourage new development that respects and enhances the visual character of the area, without attempting to replicate literally the buildings of another era.
- Emphasize and enhance First Street as the retail and pedestrian focus of the downtown as well as its historic link to the waterfront.
- Promote improvements within the public right-of-way which will unify both residential and commercial areas into a cohesive and recognizable district.
- Recognize the unique waterfront location of the district and the opportunities it affords.
- Preserve the existing residential character of those commercially zoned streets which intersect with First Street.

Downtown Mixed-Use Master Plan (2007)

The Downtown Mixed Use Master Plan provides a vision for the Downtown Mixed Use Project area which is fully within the city's Downtown Historic District. The Specific Plan includes four zones, unique to this area, with extensive design requirements. The following are goals are stated in the Plan:

- Park Road from Benicia Bridge path to East Military currently has no accommodations for either bicyclists or pedestrians, and improving the road is central to connecting Downtown Benicia and the Arsenal Historic District to the new bridge path.
- Extending the bike lanes from West Military to the Arsenal Historic District will require eliminating some on-street parking on East Military.

- As the Arsenal Historic District is developed, care should be taken to ensure good bicycle access along Adams Street, including bicycle lanes where widths permit – particularly in the uphill direction. Where widths are inadequate, traffic calming is appropriate. This access may continue east to Bayshore Road if security and access issues with the Port can be addressed.
- Continuing the shoreline trail along Bayshore Road or the shoreline itself would also be desirable, if security and access issues with the Port can be addressed
- Drawing more business into Downtown Benicia, from both Benicia residents and visitors;
- Supporting building improvements to retain existing retail and office users, and to attract new businesses; and
- Stimulating reinvestment in historic and non-historic buildings along First Street

City of Benicia Municipal Code

Chapter 17.54, Historic Overlay District (H)

In 1979, the City enacted a provision within its zoning ordinance to create a special historic overlay district that could be combined with any underlying zoning district. This ordinance enables the city or the property owners to initiate the process to designate a historic district or landmark district.

The Historic Overlay District may be combined with any zoning district. Section 17.54.030 states the land use and development in an Historic Overlay District shall comply with the base district for which the site is zoned. However, the community development director may grant a use permit for an exception to the land use regulations of the base district with which an H district is combined when such an exception is necessary to permit the preservation or restoration of an historic or architecturally significant building, structure, or site.

The design review process is conducted in accordance with Chapter 17.108, *Design Review*, of the Code (17.54.100). The design review of projects in an H District is subject to the approval of the Historic Preservation Review Commission (17.108.060). The City requires that permits for construction, alteration, enlargement or demolition of a building or structure located in an H district or of a designated landmark shall not be obtained without the prior approval of the community development director or the historic preservation review commission. Prior approval of the community development director or the historic preservation review commission is not required for permit applications of an emergency nature to rehabilitate an unsafe building or to demolish the structure for the same reasons (17.54.100).

Section 17.54.100, *Demolition and design review procedures*, of the Benicia Municipal Code outlines the following process for demolitions and alterations of a building or structure located in an H district.

1. For Demolitions.

- a. If, after review of the request for a demolition permit, the historic preservation review commission determines that the structure itself has historical, architectural or cultural

CULTURAL RESOURCES

interest or value, the commission may withhold approval for demolition for 180 days (from the date of commission action) or until environmental review is completed, whichever occurs later.

During the 180 days, the historic preservation review commission may direct the planning department to consult with recognized historic preservation organizations and other civic groups, public agencies and interested citizens; make recommendations for acquisition of property by public or private bodies or agencies; explore the possibility of moving one or more structures or other features; and take any other reasonable measures.

At the end of the 180-day period, the demolition permit shall be issued if environmental review determines there will not be a significant impact on the environment and all requirements of this title are met or, if there may be substantial environmental damages, that specific economic, social or other considerations make infeasible the mitigation measures or alternatives identified during environmental review.

- b. If, after review of the request for a demolition permit, the historic preservation review commission determines that the building or structure has no substantial historical, architectural, or cultural interest or value, a building permit for demolition may be issued.
2. **For New Construction or Alterations.** The director or the commission shall not grant design approval for new construction or alterations unless it finds that the proposed new construction or alteration will be compatible with and help achieve the purposes of the H district
3. **For Removal or Alteration of Certain Landscape Materials.** The director's or commission's approval shall be required for removal or alteration of landscape materials identified as significant resources by the historic district conservation plan. Removal or alteration of such landscape materials shall require a finding that the proposed removal or alteration will not affect the character of the H district, or that the safety of persons or property requires the removal or alteration. No provisions of this subsection shall be construed as restricting routine maintenance of landscape materials.

4.3.1.2 EXISTING CONDITIONS

Archeological Sites

Known archeological sites in the City include an underwater site located at the Matthew Turner Park. Remains of the Stamboul, a whaling ship, originally designed and built on the east coast to ship ice from New England to India is currently sunken there. Stamboul is listed in the National Register of Historic Places. There are other archaeological sites within the city limits, located in the vicinity of Lake Herman Road, the Suisun Bay marsh, and possibly in the Arsenal and Downtown areas (Benicia 1999).

Historical Districts

The City of Benicia has two historical districts that are zoned with an Historic Overlay District overlay (as discussed in Chapter 17.54, *Historic Overlay District (H)*, above). The Downtown Historic District encompasses the downtown commercial and residential area centered along First Street. The Arsenal Historic District shares the boundaries of the former Benicia Arsenal of the United States Army. The City adopted conservation plans for these districts in 1990 and 1993 for the Downtown Historic District and Arsenal Historic District, respectively. In 2004 and 2005, the City conducted an intensive survey of the historical resources in the City, focusing on the Downtown, its adjacent areas, and the former Benicia Arsenal. DPR 523 forms were prepared for all eligible buildings and the survey was conducted under the standards of the Certified Local Government Program and the California Register of Historical Resources.

Downtown Historic District

Settlement in the downtown area began soon after the town was platted in 1847. Growth in the city increased when the State Capitol was briefly in Benicia from 1853-1854 and continued throughout the 19th century. The downtown gradually became historic and the cultural heart of the city. Recognizing the historical significance in the downtown area, the city established its first historic district in 1969. Figure 4.4-1, *Downtown Historic District and Housing Element Sites*, shows the proposed housing sites within the Downtown Historic District.

Arsenal Historic District

Arsenal district boundary includes 345 acres of land east of the city and adjacent to the Carquinez Strait donated originally by the town's founder for use as a military reservation. Buildings around this area were developed for the needs of the army. The arsenal district also includes residential areas, and quarters scattered throughout. The open space, landscape features, and urban design elements recognized as contributing to the Arsenal District include the following: the former Barracks Parade Ground, the Military Cemetery, the rolling hills that form the setting for the Storehouses (Camel Barns), Ammunition Shops, and Magazines on the northern part of the district (Benicia 1993). Figure 4.4-2, *Arsenal Historic District and Housing Element Sites*, shows the proposed housing sites within the Arsenal Historic District.

Historical Sites

Historical sites in the City of Benicia are mainly located in Downtown Historic District and the Arsenal Historic District. However, as seen on Figure 3.1 in the General Plan (p. 99), several historic sites, including the Turner Shipyards site, is located in another historically sensitive area of the City—its waterfront.

The National Register of Historic Places lists the following sites in the City:

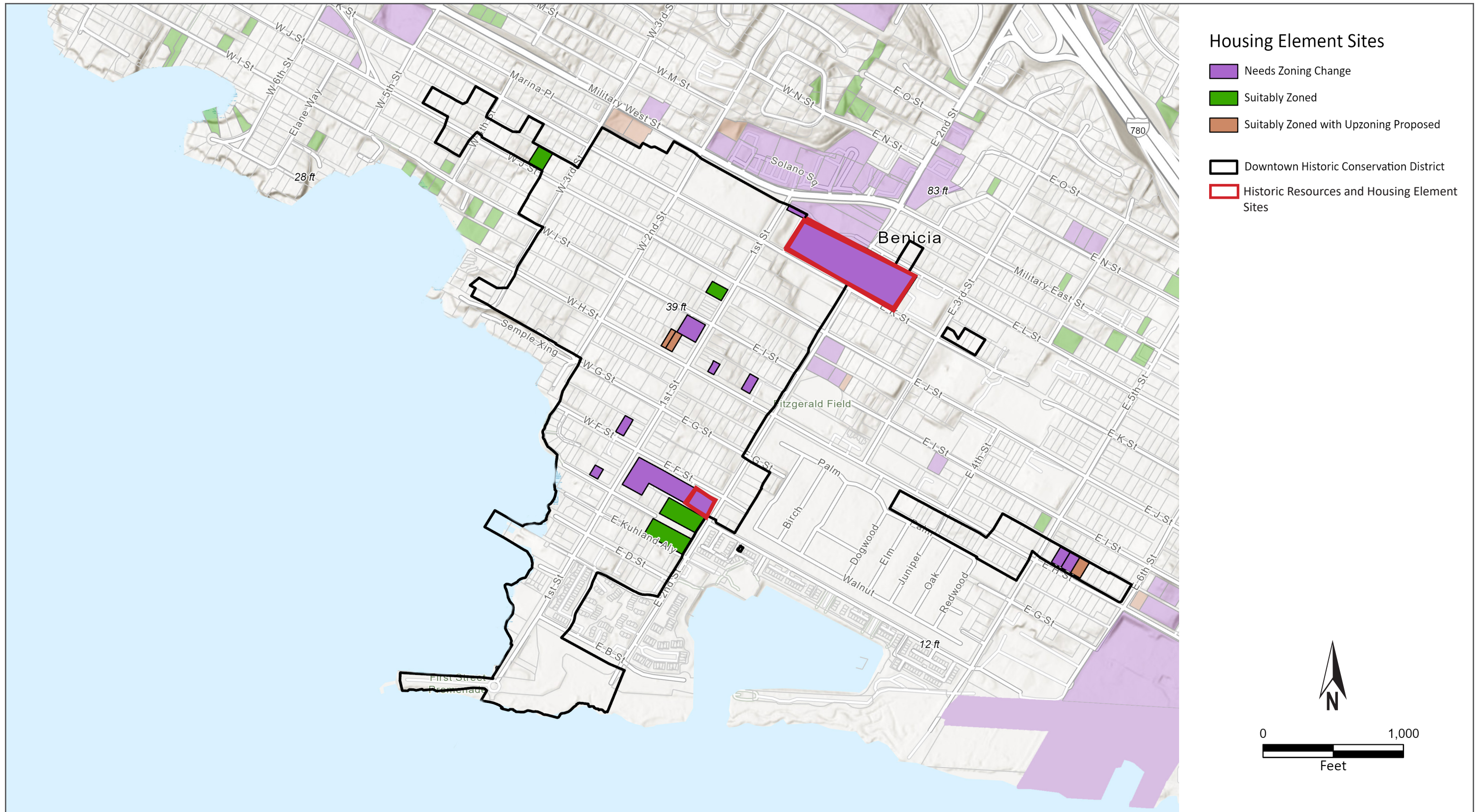
- USCGC STORIS Cutter (ship vessel structure) at U.S. Maritime Administration National Defense Reserve Fleet, Suisun Bay
- Von Pfister General Store (building) at Von Pfister Alley

CULTURAL RESOURCES

- Benicia Capitol State Historic Park at 1st and G Street.
- Old Masonic Hall (building) at 106 W. J Street.
- Benicia Arsenal (district) at Army Point and I-680
- Crooks Mansion (building) at 285 W. G Street.
- Carr House (building) at 165 E. D Street.
- Fischer, Joseph, House (building) at 135 G Street.
- STAMBOUL (Whaling Bark) (site) at Foot of W. 12th Street.
- Benicia Southern Pacific Railroad Passenger Depot (building) 90 1st St.
- Benicia City Cemetery (district) is bounded by Riverhill Drive., Riverview Terrace, Shirley Drive., and Incline Place.

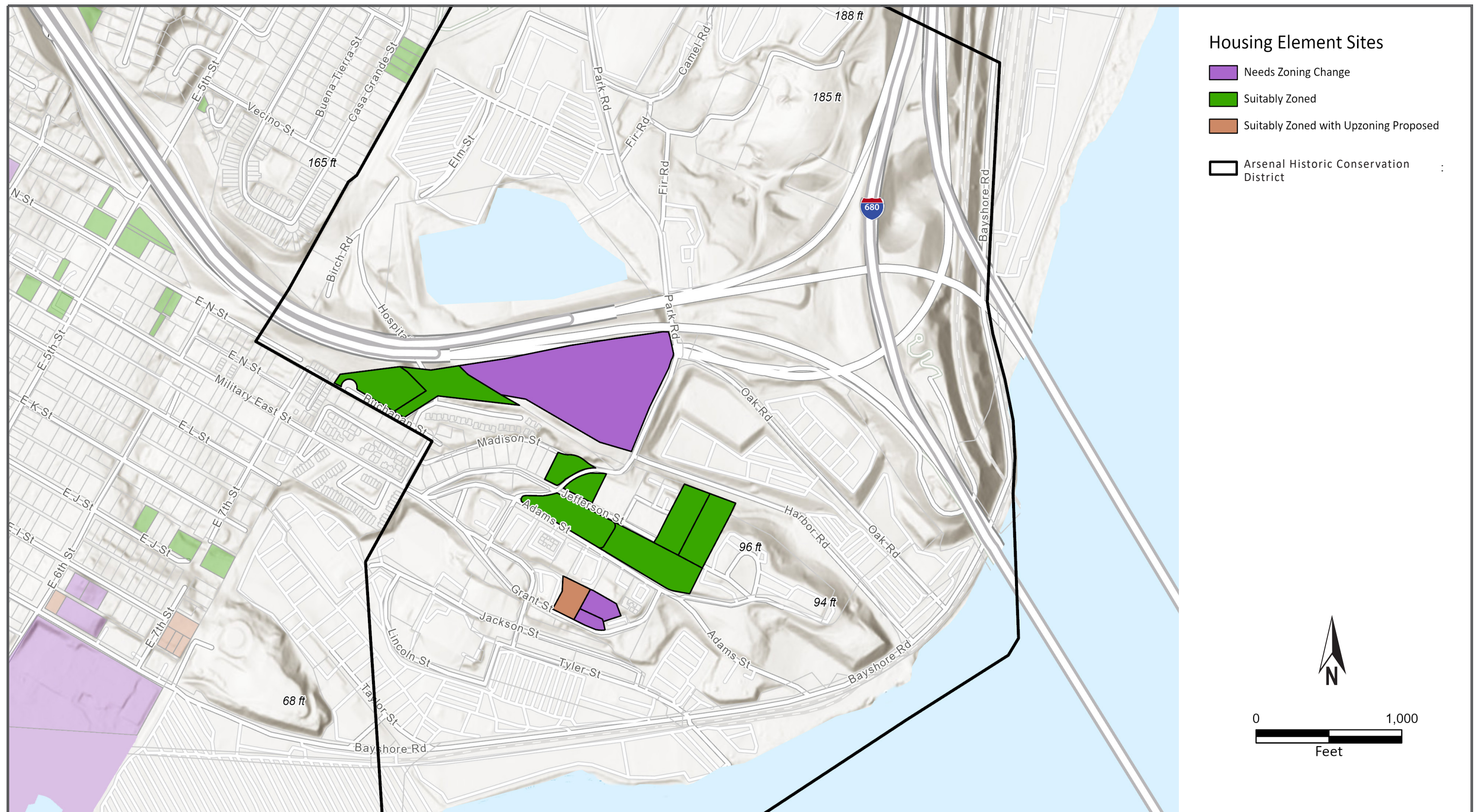
The California Office of Historic Preservation also lists the following properties in Benicia:

- NO. 153 Benicia Capitol on the NW corner of 1st and G Streets.
- NO. 174 First Building Erected in California by Masonic Lodge For Use as a Hall on 110 W J Street.
- NO. 175 Site of First Protestant Church at Benicia City Park, K Street between 1st and 2nd Streets.
- NO. 176 Benicia Arsenal at the Main gate of port area, intersection of Adams and Jefferson Streets (also listed in the National Register Historic Places)
- NO. 177 Site of Former Benicia Barracks at Francesca Terrace Park, across from the Benicia National Guard Armory, 711 Hillcrest Avenue.



Source: Placeworks 2022, Benicia 2022

Figure 4.4-1
Downtown Historic District and Housing Element Sites



Source: Placeworks 2022, Benicia 2022

Figure 4.4-2
Arenal Historic District and Housing Element Sites

4.4.2 THRESHOLDS OF SIGNIFICANCE

The proposed project would result in significant cultural resources impacts if it would:

1. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.
2. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.
3. Disturb any human remains, including those interred outside of dedicated cemeteries.

4.4.3 PROPOSED HOUSING ELEMENT POLICIES

There are no policies in the Housing Element Update applicable to Cultural Resources or Tribal Cultural Resources.

4.4.4 PROPOSED SAFETY ELEMENT POLICIES

There following policy is applicable to the protection of historic resources:

- **Policy 2.1:** Coordinate with the San Francisco Bay Conservation and Development Commission and other relevant state or federal agencies to monitor and respond to changes in sea level.
- **Policy 2.2:** Coordinate with external agencies and pursue funding to inform the public about risks pertaining to sea level rise and flooding through interactive maps, community outreach efforts, and other efforts.
- **Policy 2.3:** Prepare a sea level rise and flooding adaptation plan for the downtown area and industrial park. The plan should offer strategies for effective sea level rise adaptation and flood protection, identify potential funding opportunities, assess the threshold of sea level rise that the community should plan for, and offer recommendations for capital projects and development standards
- **Policy 2.4:** Partner with the Adapting to Rising Tides Program, property owners, and community based organizations to conduct a managed retreat feasibility study that identifies specific assets at risk and evaluates the cost of facilitating managed retreat or alternative approaches to preparing for sea level rise. The study should be used as a guide to assist the City in prioritizing riparian and marshland restoration projects and other natural infrastructure projects to protect against both inland and shoreline flooding.
- **Policy 4.11.4:** Encourage retrofitting of existing City-owned buildings, including unreinforced masonry buildings as identified by the Building Safety Division, to improve resiliency to geologic and seismic hazards.
- **Policy 4.11.5:** Develop a program to implement State laws aimed at identification, inventory, and retrofit of existing vulnerable unreinforced masonry structures.

CULTURAL RESOURCES

- **Policy:** Evaluate vulnerabilities to climate change and natural hazards in the Downtown Historic District and prioritize adaptation strategies that increase resilience to known hazards such as seismic, flooding, and sea level rise.

4.4.5 ENVIRONMENTAL IMPACTS

CULT-1	The project would cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5
--------	---

Housing Element Update

The City undertook a survey of its historic resources in 2004 and 2005 which was conducted under the standards of the Certified Local Government Program and the California Register of Historical Resources. This survey and subsequent updates to this survey identified the historic resources discussed below. The HEU would increase the developable housing density on 13 sites in the Downtown Historic Conservation District, all of which are proposed to include the Housing Opportunity Sites Overlay District Zone. The proposed project would also increase the allowable density of four sites in the Arsenal Historic Conservation District, all of which are proposed to include the Housing Opportunity Sites Overlay District Zone. 29 total sites, including both opportunity sites and suitably designated/zoned sites, in the Housing Element Sites Inventory are in the City's designated historic districts, the Downtown Historic District and the Arsenal Historic District. Two Housing Element Sites in the Downtown Historic District include historic resources listed in the City's Historic Resources Inventory, as shown in Figure 4.4-1. No sites identified in the Arsenal contain listed historic resources.

Downtown Historic District.

As shown in Figure 4.4-1, there are 13 opportunity sites in the inventory within the Downtown Historic Conservation District, and 4 additional sites in the inventory that are "suitably zoned". These sites and their designations/zones are also displayed in Table 4.4.1, *Housing Element Sites in the Downtown Historic District*. Development of these sites would be subject to the design review procedures outlined in the Downtown Historic Conservation Plan in addition to zoning regulations found in the Benicia Municipal Code and the Downtown Mixed Use Master Plan. Two parcels within the Housing Element Sites Inventory contain recognized historic resources included in the City's historic properties inventory.

- APN 0089-371-020 on 190 East F Street is an opportunity site in the Housing Element Sites Inventory of 0.43 acres that is currently designated Downtown Commercial and zoned Neighborhood General. The site would be rezoned to Neighborhood General with Housing Overlay Zone. A maximum of 13 units would be allowed under the proposed designation. It is designated as a 6L site on the City's Landmark Sites map which are sites that were "determined ineligible for local listing or designation through local government review process [but] may warrant special consideration in local planning" (Benicia 2009a, Benicia 2022a). On this site sits a

CULTURAL RESOURCES

T-plan building with a narrow, gabled front façade, this building may have originated as a Greek Revival cottage (Benicia 2009b). The house was previously evaluated as a potential contributor to the Downtown Historic District. However, a substantial level of alteration has taken place which has resulted in a loss of integrity to the point that it does not qualify for listing as a contributor in a historic district recognized by the California Register of Historic Places (Benicia 2009b). The proposed project would allow the development of residential units on this site which would irreversibly alter the historic resource on this site and create a significant, unavoidable impact.

- APN 088-141-060 on 190 East L Street is 5.16 acres and currently designated as Public/Quasi-Public and zoned Public and Semi-Public. It is proposed to be rezoned to Public and Semi-Public with Housing Overlay Zone which would allow a maximum of 14 units to be developed on the parcel. According to the City's evaluation of the resource on this site, it is a 1951 building was designed by George Sellon, the architect of the City Hall. It was designed as a free-standing addition to the Benicia High School and provided gymnasium facilities for the school. The building is an example of Modernist institutional architecture (Benicia 2009c). It is listed a "contributor" site. Contributing buildings are defined as buildings of an age and/or that are representative of common styles and building types in the District, but which are not outstanding enough to merit individual recognition (Benicia 2009a). The Housing Element would allow for the development of residential units on this site which would irreversibly alter the historic resource on this site and create a significant, unavoidable impact.

Under the proposed Housing Opportunity Sites Zoning Overlay, all 13 opportunity sites in the Downtown Historic Conservation District would allow a maximum density of 30 dwelling units per acre at a maximum of 35 feet in height and three stories. This would apply to any parcel with a minimum site area per unit of 1,452 square feet that is legally existing as of January 31, 2023. On these parcels, four multifamily dwelling units would be permitted, regardless of parcel size, as long as the project complies with all other applicable standards. The Town Core Zone, under which two parcels in the Downtown Historic Conservation District area are currently zoned, would change from a 2.5 story height limit to a 3 story height limit. Three-story development currently exists on First Street and historically, several buildings of this height have existed on the lower end of First Street. Redevelopment of these sites could adversely affect resources identified in a local historical resource survey. Like most sites in the Downtown Historic District, the redevelopment of these sites would be subject to the provisions in Chapter 17.54, *Historic Overlay District (H)*, which requires that demolition permits be reviewed and approved by the historic preservation review commission. As part of this process, environmental review of the sites would be conducted. Under Section 17.54.100 of the Code, a demolition permit shall be issued if environmental review determines there will not be a significant impact or if there may be substantial environmental damages, that specific economic, social, or other considerations make infeasible the mitigation measures or alternatives identified during environmental review. While this review process may identify that the demolition of a historic site would not result in significant impacts, without project-level analyses, this impact would be significant and unavoidable.

CULTURAL RESOURCES

TABLE 4.4-1 HOUSING ELEMENT SITES IN THE DOWNTOWN HISTORIC DISTRICT

APN	Address	Current Designation/Zone ¹	Proposed Designation/Zone
Suitably Zoned Sites			
087-154-100	West J Street and West Third Street	RLD/RS	---
089-043-100	921 First Street	Commercial Downtown/TC	---
089-371-030	E Street Lot	Commercial Downtown/TC	---
089-372-090	E Street Lot	Commercial Downtown/TC	---
Opportunity Sites			
089-072-170	500 block of East H Street	High Density Residential/RM	RM with Overlay Zone
089-072-160	535 East H Street	High Density Residential/RM	RM with Overlay Zone
089-052-160	First block of East H Street	Downtown Mixed Use/ TC-O	TC-O with Overlay Zone
089-173-190	100 block of West E Street	Downtown Mixed Use/ TC-O	TC-O with Overlay Zone
089-371-110	560 First Street	Downtown Commercial/NG	NG with Overlay Zone
089-371-020*	190 East F Street	Downtown Commercial/NG	NG with Overlay Zone
089-044-090	827 First Street	Downtown Commercial/TC	TC with Overlay Zone
089-052-290	163 East H Street	Downtown Commercial/NG	NG with Overlay Zone
089-115-160	125 West F Street	Downtown Commercial/TC	TC with Overlay Zone
088-141-060*	190 East L Street	Public Quasi-Public/PS	PS with Overlay Zone
089-072-150	543 East H Street	High Density Residential/RM	RM with Overlay Zone
089-044-320	111 West H Street	Downtown Mixed Use/TC-O	TC-O with Overlay Zone
089-044-330	111 West H Street	Downtown Mixed Use/TC-O	TC-O with Overlay Zone

* Sites that include locally recognized historic resources

¹ RLD = Residential Low Density
RS = Single Family Residential
TC = Town Core
RM = Medium Density Residential
TC-O = Town Core Open
NG = Neighborhood General
PS = Public and Semi-Public

Arsenal Historic District

As discussed above in Section 4.4.1, the Arsenal Historic District is recognized as a National Historic Place and State Landmark in addition to its designation as a Historic District under Chapter 17.54 of the City’s Municipal Code. The Housing Element Sites Inventory includes 12 total sites within the boundaries of the Arsenal District, as shown in Figure 4.4-2 and in Table 4.4-2, *Housing Element Sites in the Arsenal Historic District*. Four of these sites are opportunity sites that would be rezoned for the purposes of accommodating residential development potential that did not previously exist or accommodating increased residential density. These sites and their proximity to historic resources in the Arsenal Plan Area can be described as follows:

- APN 0080-150-260 on 1043 Grant Street is a 0.29-acre site and currently designated as Office Commercial and zoned as General Commercial. Its proposed zone is Commercial Office with Overlay Zone. This zone would allow for a maximum of nine units to be developed on the site.

CULTURAL RESOURCES

Commercial use of this parcel would continue to be permitted by its underlying zoning district. It borders a City-designated landmark building, Arsenal Building 45, Barracks, to the West and is adjacent to several other landmark designated areas/buildings including Arsenal Building 48, Shop; Arsenal Building 47, Office (Headquarters) Building; and Arsenal Building 74, Photo Lab.

- APN 0080-150-330 on Grant Street of 0.71-acre and Polk Street and APN 0080-150-320 on 1025 Grant Street of 0.51-acre border each other, as well as APN 080-150-260, analyzed above. These two sites are currently designated and zoned General Commercial and would also both be rezoned to Office Commercial with Housing Overlay Zone. This would allow a maximum of 15 units to be developed on APN 080-150-330 and a maximum of 21 units to be developed on APN 080-150-320. These sites border landmark designated building Arsenal Building 39, Guard House to the north and are similarly adjacent to the landmark sites listed above for APN 0080-150-260.
- APN 080-140-670 on 1471 Park Road is 9.41 acres in size and is currently designated and zoned Public/Quasi-Public and Public/Semi-Public, respectively. This site would be redesignated as High Density Residential and rezoned to Residential High Density with Overlay Zone, allowing a maximum of 169 units. This site is primarily vacant and not adjacent to any landmark designated sites. The site partially overlies six petroleum pipelines owned by Valero Energy Company and contains other industrial uses including two telecommunications towers.

The eight additional Housing Element sites in the Arsenal District are “suitably zoned”. These sites’ land use designations and zones are not proposed to change under the Housing Element Update and corresponding updates to the General Plan Land Use and Zoning maps. Development within the Arsenal Historic Conservation District is subject to the design review process of the Arsenal Historic Conservation Plan which ensures that modifications within the Benicia Arsenal Plan Area will continue to maintain the historic integrity of the district. However, given the close proximity of the Housing Element Opportunity Sites listed above to locally designated historic resources, the increase in development intensity under the proposed Housing Element Opportunity Sites Zoning Overlay could produce a substantial adverse change in the significance of an historical resource through the alteration of its surroundings. Significant and unavoidable impacts to historical resources from the proposed project could include: an increase in development intensity which adversely affects cultural sites or landscapes and the introduction of visual, audible, or atmospheric effects that are out of character with the cultural resource or an alteration to its setting when the setting contributes to the resources’ significance. As a result, the proposed project would have a significant and unavoidable impact to historic resources in the Arsenal Historic Conservation District.

CULTURAL RESOURCES

TABLE 4.4-2 HOUSING ELEMENT SITES IN THE ARSENAL HISTORIC DISTRICT

APN	Address	Current Designation/Zone ¹	Proposed Designation/Zone
Suitably Zoned Sites			
080-140-630	Buchanan Street and Hospital Road	HDR/RM	---
080-140-640	Buchanan Street and Hospital Road	HDR/RM	---
080-150-390	Adams Street and Park Road	LA MU/CO	---
080-150-380	Adams Street and Park Road	LA MU/CO	---
080-150-400	Jefferson Street and Park Road	LA MU/CO	---
080-150-410	Jefferson Street and Park Road	LA MU/CO	---
080-222-010	1451 Park Road	LA MU/PD	---
080-150-010	Jefferson Street and Park Road	OC/CO	---
Opportunity Sites			
080-150-260	1043 Grant Street	Lower Arsenal Mixed Use/CG	CO with Overlay Zone
080-150-330	Grant Street and Polk Street	General Commercial/CG	CO with Overlay Zone
080-140-670	1471 Park Road at 780	Public/Quasi-Public/PS	RH with Overlay Zone
080-150-320	1025 Grant Street	General Commercial/CG	CO with Overlay Zone

¹ HDR = High Density Residential
 RM = Medium Density Residential
 RH = Residential High Density
 CG = Commercial General
 PS = Public and Semi-Public
 CO = Commercial Office
 PD = Planned Development
 LA MU = Lower Arsenal Mixed Use

Additional Impacts

Structures already existing on Opportunity Sites which are 45 years or older could have the potential to be designated as a historic resource pursuant to Section 15064.5. Future development under the proposed project could adversely impact historic resources through changes to accommodate adaptive use, removal, or reconstruction. Known or future historic sites or resources listed in the national, California, or local registers maintained by the City would be protected through state and federal regulations restricting alteration, relocation, and demolition of historical resources. Compliance with the state and federal regulations would ensure that development would not result in adverse impacts to identified historic and cultural resources. While the regulations provide a process for recognizing historic buildings and places, they do not prevent the reuse or modification of them. As such, impacts would be potentially significant.

Mitigation Measures CULT-1 and CULT-2 would ensure that any unknown/unevaluated buildings or structures 45 years or older on Housing Element sites are evaluated for their potential historical significance. Mitigation Measure CULT-3 requires that historic structures on Housing Element sites be documented prior to any demolition or significant alteration and that the Secretary of the Interior’s Guidelines are followed for demolition, rehabilitation, and/or alternation projects.

The development/redevelopment of APN 089-371-020 and APN 088-141-060 could adversely impact historic resources designated by the City’s local historic resource survey, even with the implementation of mitigation measures. For example, the immediate surroundings of these sites and those listed above in the discussion of Opportunity Sites in the Arsenal Historic Conservation District, could be altered to an extent that causes an adverse change in the significance of an historical resource. As such, Impact CULT-1 would be significant and unavoidable.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the city’s ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. According to the proposed Safety Element’s Vulnerability Assessment, the Downtown area is vulnerable the hazards associated with rising sea levels, which includes the Downtown Historic Conservation District’s historic resources. Policies 2.1, 2.2, 2.3, and 2.4 of the proposed Safety Element address this hazard with several strategies including the preparation of a sea level rise and flooding adaptation plan. The City also intends to do a managed retreat study in the downtown area and that Sea Level Rise maps show significant potential impacts to historic resources. Policies 4.11.4 and 4.11.5 also encourage the identification and retrofitting of unreinforced masonry (URM) structures. Several URM buildings exist in the Downtown Historic Conservation District and these policies would help to preserve these buildings by fortifying them against potential geologic hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City’s historic resources. No impacts would occur.

Significance Without Mitigation: Potentially significant.

Mitigation Measures

- CULT-1 Prior to any demolition work or significant alterations to any building or structure that is 45 years old or older, the City shall ensure that a qualified architectural historian who meets the Secretary of the Interior’s Professional Qualification Standards evaluate the building or structure for eligibility for listing on the National Register, California Register, and as a City Historic Landmark.

- CULT-2 Prior to any demolition work or significant alterations initiated at known historical resource or a resource identified via implementation of Mitigation Measure CULT-1, the City shall ensure that a qualified architectural historian who meets the Secretary of the Interior’s Professional Qualification Standards identifies character-defining features of each historical resource. According to guidance from the National Park Service, a historical resource “must retain... the

CULTURAL RESOURCES

essential physical features [i.e., character-defining features] that enable it to convey its historic identity. The essential physical features are those features that define both why a property is significant...and when it was significant” (National Park Service 1997). The identification of character-defining features is necessary for complete documentation of each historical resource as well as appropriate public interpretation and salvage plans. Demolition permits maybe issued under "emergency" work in the event of a major manmade or natural disaster.

CULT-3 Prior to any demolition work or significant alterations initiated of a known historical resource or a resource identified via implementation of Mitigation Measure CULT-1, the City shall ensure that a qualified architectural historian who meets the Secretary of the Interior’s Professional Qualification Standards thoroughly documents each building and associated landscaping and setting. Documentation shall include still photography and a written documentary record of the building to the National Park Service’s standards of the Historic American Buildings Survey (HABS) or the Historic American Engineering Record (HAER), including accurate scaled mapping and architectural descriptions. If available, scaled architectural plans will also be included. Photos include large-format (4”x5”) black-and-white negatives and 8”x10” enlargements. Digital photography may be substituted for large-format negative photography if archived locally. The record shall be accompanied by a report containing site-specific history and appropriate contextual information. This information shall be gathered through site-specific and comparative archival research and oral history collection as appropriate. Copies of the records shall be submitted to the Northwest Information Center at Sonoma State University. CEQA Guidelines Section 15064.5(b)(3) states that a project that follows the Secretary of the Interior’s Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings or the Secretary of the Interior’s Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (1995), shall be considered as mitigated to a level of less than significant. Therefore, if under the project-by-project review described in Mitigation Measure CULT-1 a structure is determined to be a historical resource as defined by CEQA, the Secretary of the Interior’s guidelines referenced above shall be followed for demolition, rehabilitation, and/or alternation projects.

Significance With Mitigation: Significant and unavoidable.

CULT-2	The project could cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.
--------	---

Housing Element Update

Implementation of the proposed project could result in a substantial adverse change in the significance of an archaeological resource, as well as the potential disturbance of currently undiscovered archaeological

CULTURAL RESOURCES

resources on future development sites. The archaeological sensitivity of the Plan Area has yet not been evaluated.

The City of Benicia General Plan contains policies that would mitigate impacts to archaeological resources. Program 3.2 D from General Plan require the services of an archaeologist to conduct archival and field studies on sites with potential archaeological resources. Program 3.2.B requires the City to refer development proposals that may adversely affect archaeological sites to the California Archaeological Inventory. Furthermore, the implementation of Mitigation Measure CULT-4 would further protect any known or unknown archaeological resources from future development or redevelopment on Housing Element sites. Implementation of Mitigation Measure CULT-4 would reduce impacts to archaeological resources to less than significant with mitigation incorporated.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the city's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's archaeological resources. No impacts would occur.

Significance Without Mitigation: Potentially significant.

Mitigation Measures:

CULT-4 Prior to construction activities, the project applicant shall retain a qualified archaeologist to monitor all ground-disturbing activities in an effort to identify any unknown archaeological resources. If cultural resources are discovered during ground disturbing activities, all ground disturbance activities within 50 feet of the find shall be halted until a meeting is convened between the developer, archaeologist, tribal representatives, and the Director of the Community Development Department or his or her designee. At the meeting, the significance of the discoveries shall be discussed and after consultation with tribal representatives, developer, and archaeologist, and a decision shall be made, with the concurrence of the Director of the Community Development Department, as to the appropriate mitigation (documentation, recovery, avoidance, etc.) for the cultural resources.

Significance With Mitigation: Less than significant with mitigation incorporated.

CULTURAL RESOURCES

CULT-3	The project could disturb any human remains, including those interred outside of dedicated cemeteries.
--------	--

Housing Element Update

In the unlikely event that human remains are discovered during grading or construction activities within these sites, compliance with State law (Health and Safety Code § 7050.5) (HSC § 7050.5) would be required. These requirements are imposed on any construction activity in which human remains are detected, and include the following provisions:

- There shall be no further excavation or disturbance of the site or nearby area reasonably suspected to overlie adjacent human remains until:
 - The County coroner is contacted to determine that no investigation of the cause of death is required; and
 - If the coroner determines the remains to be potentially Native American:
 - The coroner shall contact the Native American Heritage Commission within 24 hours.
 - The NAHC shall identify the person or person it believes to be most likely descended from the deceased Native American;
 - The most likely descendant may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of the remains which provides appropriate dignity to the individual and their descendants. This could include associated grave goods as provided in Public Resources Code § 5097.98 (PRC § 5097.98); or
 - Where the following conditions occur, the landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further and future subsurface disturbance pursuant to PRC § 5097.98(e).
 - The NAHC is unable to identify a most likely descendant.
 - The most likely descendant is identified by the NAHC, fails to make a recommendation within 48 hours of being granted access to the site; or
 - The landowner or their authorized representative reject the recommendation of the descendant and mediation by the NAHC fails to provide measures acceptable to the landowner.

State law has several provisions that reduce the potential for impact to cultural resources. These measures, along with mitigation measures CUL-5 and CUL-6 strengthen the state protections for these resources. With mitigation the project would have a less than significant impact on cultural resources.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk,

CULTURAL RESOURCES

seismic risk, flood risk, site contamination, and the city's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's cultural resources. No impacts would occur.

Significance Without Mitigation: Potentially significant.

Mitigation Measures:

- CULT-5 It is understood by all parties that unless otherwise required by law, the site of any burial of Native American human remains or associated grave goods shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, pursuant to the specific exemption set forth in California Government Code 6254(r), and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code 6254(r).
- CULT-6 If human remains are encountered, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made the necessary findings as to the origin. Further, pursuant to Public Resources Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the County Coroner determined the remains to be Native American, the Native American Heritage Commission shall be contacted within the period specified by law (24 hours). Subsequently, the Native American Heritage Commission shall identify the "most likely descendant." The most likely descendant shall then make recommendations and engage in consultation concerning the treatment of the remains as provided in Public Resources Code Section 5097.98.

Significance With Mitigation: Less than significant with mitigation incorporated.

CULTURAL RESOURCES

4.4.6 REFERENCES

- Benicia, City of. 2022a, August 29 (Accessed). Benicia- Historic Properties: Downtown Historic District.
https://www.ci.benicia.ca.us/vertical/Sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/Downtown_Historic_Properties.pdf
- _____. 2022b. 1451 Park Road. <https://www.ci.benicia.ca.us/1451park>
- _____. 2011, February. Historic Context Statement.
https://www.ci.benicia.ca.us/vertical/Sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/Final_Historic_Context_February_2011.pdf
- _____. 2009. Downtown Historic District: Survey and Recommendations.
https://www.ci.benicia.ca.us/vertical/Sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/Survey_report_summary_and_recommendations.pdf
- _____. 2009b, November. Department of Parks and Recreation: Primary Record-190 East F Street.
<https://beniciacarebuild.govoffice2.com/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/190EastFSurvey.PDF>
- _____. 2009c, November. Department of Parks and Recreation: Primary Record-190 East L Street.
<https://beniciacarebuild.govoffice2.com/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/190EastLSurvey.PDF>
- _____. 2007, September. Downtown Mixed Use Master Plan
https://www.ci.benicia.ca.us/vertical/Sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/DT_Mixed_Use_Master_Plan_reduced.pdf
- _____. 1999, June 15. Benicia General Plan. <https://www.ci.benicia.ca.us/index.asp?SEC=0371539A-30D9-4885-B61F-B5038B415DD3&DE=F40DB441-1E06-45F8-82F8-6D632AB9EC85>.
- _____. 1993, November. Arsenal Historic Conservation Plan.
https://www.ci.benicia.ca.us/vertical/Sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/Arsenal_Historic_Conservation_Plan.pdf
- _____. 1990, November. Downtown Historic Conservation Plan.
[https://www.ci.benicia.ca.us/vertical/Sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/Downtown_Historic_Conservation_Plan_08012017\(1\).pdf](https://www.ci.benicia.ca.us/vertical/Sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/Downtown_Historic_Conservation_Plan_08012017(1).pdf)
- California Office of Historic Preservation. 2022, August 29. California Historic Landmarks by County.
https://ohp.parks.ca.gov/?page_id=21527

CULTURAL RESOURCES

National Parks Service. 2022, August 29. National Register Database and Research.
<https://www.nps.gov/subjects/nationalregister/database-research.htm#table>

CULTURAL RESOURCES

This page intentionally left blank.

4.5 ENERGY

This chapter describes the potential energy impacts associated with the adoption and implementation of the Housing and Safety Element Updates (proposed project). This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential energy impacts, and identifies Housing Element policies and feasible mitigation measures that could mitigate any potentially significant impacts.

4.5.1 ENVIRONMENTAL SETTING

Section 21100(b)(3) of CEQA requires that an EIR include a detailed statement setting for the mitigation measures proposed to minimize significant effects on the environment, including but not limited to, measures to reduce the wasteful, inefficient, and unnecessary consumption of energy. Appendix F of the State CEQA Guidelines states that, in order to ensure that energy implications are considered in project decisions, an EIR should include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

In accordance with Appendix F and G of the State CEQA Guidelines, this EIR includes relevant information and analyses that address the energy implications of the proposed project and summarize its anticipated energy needs, impacts, and conservation measures. Information found herein, as well as related aspects of the proposed project's energy implications, are discussed in greater detail elsewhere in this EIR, including Section's 4.2, *Air Quality*, 4.7, *Greenhouse Gas Emissions*, and 4.14, *Transportation*.

4.5.1.1 REGULATORY FRAMEWORK

Federal Regulations

Federal Energy Policy and Conservation Act

The Energy Policy and Conservation Act of 1975 was established in response to the 1973 oil crisis. The act created the Strategic Petroleum Reserve, established vehicle fuel economy standards, and prohibited the export of U.S. crude oil (with a few limited exceptions). It also created Corporate Average Fuel Economy (CAFE) standards for passenger cars starting in model year 1978. The CAFE Standards are updated periodically to account for changes in vehicle technologies, driver behavior, and/or driving conditions.

The federal government issued new CAFE standards in 2012 for model years 2017 to 2025 that required a fleet average of 54.5 miles per gallon (MPG) for model year 2025. However, on March 30, 2020, the United States Environmental Protection Agency (USEPA) finalized an updated CAFE and greenhouse gas (GHG) emissions standards for passenger cars and light trucks and established new standards, covering model years 2021 through 2026, known as the Safer Affordable Fuel Efficient (SAFE) Vehicles Final Rule for Model Years 2021–2026. Under SAFE, the fuel economy standards will increase 1.5 percent per year

ENERGY

compared to the 5 percent per year under the CAFE standards established in 2012. Overall, SAFE requires a fleet average of 40.4 MPG for model year 2026 vehicles (85 Federal Register 24174 (April 30, 2020)).

On December 21, 2021, under direction of Executive Order (EO) 13990 issued by President Biden, the National Highway Traffic Safety Administration repealed Safer Affordable Fuel Efficient Vehicles Rule Part One, which had preempted state and local laws related to fuel economy standards. In addition, on March 31, 2022, the National Highway Traffic Safety Administration finalized new fuel standards in response to EO 13990. Fuel efficiency under the standards proposed will increase 8 percent annually for model years 2024 to 2025 and 10 percent annual for model year 2026. Overall, the new CAFE standards require a fleet average of 49 MPG for passenger vehicles and light trucks for model year 2026, which would be a 10 MPG increase relative to model year 2021 (NHTSA 2022).

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 (Public Law 110-140) seeks to provide the nation with greater energy independence and security by increasing the production of clean renewable fuels; improving vehicle fuel economy; and increasing the efficiency of products, buildings, and vehicles. The Act sets increased Corporate Average Fuel Economy Standards; the Renewable Fuel Standard; appliance energy efficiency standards; building energy efficiency standards; and accelerated research and development tasks on renewable energy sources (e.g., solar energy, geothermal energy, and marine and hydrokinetic renewable energy technologies), carbon capture, and sequestration (USEPA 2022).

Energy Policy Act of 2005

Passed by Congress in July 2005, the Energy Policy Act includes a comprehensive set of provisions to address energy issues. This Act includes tax incentives for energy conservation improvements in commercial and residential buildings, fossil fuel production and clean coal facilities, and construction and operation of nuclear power plants, among other things. Subsidies are also included for geothermal, wind energy, and other alternative energy producers.

National Energy Policy

Established in 2001 by the National Energy Policy Development Group, the National Energy Policy is designed to help the private sector and state and local governments promote dependable, affordable, and environmentally sound production and distribution of energy for the future. Key issues addressed by the energy policy are energy conservation, repair and expansion of energy infrastructure, and ways of increasing energy supplies while protecting the environment.

Natural Gas Pipeline Safety Act of 1968

The Natural Gas Pipeline Safety Act of 1968 authorizes the United States Department of Transportation to regulate pipeline transportation of flammable, toxic, or corrosive natural gas and other gases as well as the transportation and storage of liquefied natural gas. The Pipeline and Hazardous Materials Safety

Administration within the Department of Transportation develops and enforces regulations for the safe, reliable, and environmentally sound operation of the nation's 2.6-million-mile pipeline transportation system.

State Regulations

Warren-Alquist Act

Established in 1974, the Warren-Alquist Act created the California Energy Commission (CEC) in response to the energy crisis of the early 1970s and the state's unsustainable growing demand for energy resources. The CEC's core responsibilities include advancing State energy policy, encouraging energy efficiency, certifying thermal power plants, investing in energy innovation, developing renewable energy, transforming transportation, and preparing for energy emergencies. The Warren-Alquist Act is updated annually to address current energy needs and issues, and its latest edition was in January 2022.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) adopted the Long-Term Energy Efficiency Strategic Plan (LTEESP) in September 2008 and adopted the 2011 Update in Fall of 2010. Overall, the LTEESP provides a framework for energy efficiency in California through the year 2020 and beyond. It articulates a long-term vision, as well as goals for each economic sector, identifying specific near-term, mid-term, and long-term strategies to assist in achieving these goals. This Plan sets forth the following four goals, known as Big Bold Energy Efficiency Strategies, to achieve significant reductions in energy demand (CPUC 2011):

- All new residential construction in California will be zero net energy by 2020¹;
- All new commercial construction in California will be zero net energy by 2030;
- Heating, ventilation and air conditioning commonly referred to as "HVAC" will be transformed to ensure that its energy performance is optimal for California's climate; and
- All eligible low-income customers will be given the opportunity to participate in the low-income energy efficiency program by 2020.

With respect to the commercial sector, the Long-Term Energy Efficiency Strategic Plan notes that commercial buildings, which include schools, hospitals, and public buildings, consume more electricity than any other end-use sector in California. The commercial sector's five billion-plus square feet of space accounts for 38 percent of the State's power use and over 25 percent of natural gas consumption. Lighting, cooling, refrigeration, and ventilation account for 75 percent of all commercial electric use, while space heating, water heating, and cooking account for over 90 percent of gas use. In 2006, office, retail,

¹ Zero net energy buildings are buildings that the total amount of energy used by the building on an annual basis is equal to or less than the amount of renewable energy created on the site.

ENERGY

and schools and colleges were in the top five facility types for electricity and gas consumption, accounting for approximately 10 percent of State's electricity and gas use (CPUC 2011).

The CPUC and CEC have adopted the following goals to achieve zero net energy (ZNE) levels by 2030 in the commercial sector:

- **Goal 1.** New construction will increasingly embrace zero net energy performance (including clean, distributed generation), reaching 100 percent penetration of new starts in 2030.
- **Goal 2.** 50 percent of existing buildings will be retrofit to zero net energy by 2030 through achievement of deep levels of energy efficiency and with the addition of clean distributed generation.

Renewable Portfolio Standard

Senate Bills 1078, 107, X1-2, and Executive Order S 14 08

The California Renewables Portfolio Standard (RPS) Program was established in 2002 under Senate Bill (SB) 1078 (Sher) and 107 (Simitian). The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase the use of eligible renewable energy resources to 33 percent of total procurement by 2020. Initially under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. Executive Order S 14 08 was signed in November 2008, which expanded the State's Renewable Energy Standard to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011 (SB X1-2). The CPUC is required to provide quarterly progress reports on progress toward RPS goals. This has accelerated the development of renewable energy projects throughout the State. For year 2020, the three largest retail energy utilities provided an average of 43 percent of its supplies from renewable energy sources. Community choice aggregators provided an average of 41 percent of its supplies from renewable sources (CPUC 2021).

Senate Bill 350

Governor Jerry Brown signed SB 350 on October 7, 2015, which expands the RPS by establishing a goal of 50 percent of the total electricity sold to retail customers in California per year by December 31, 2030. In addition, SB 350 includes the goal to double the energy efficiency savings in electricity and natural gas final end uses (such as heating, cooling, lighting, or class of energy uses upon which an energy efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also requires the CPUC, in consultation with the CEC, to establish efficiency targets for electrical and gas corporations consistent with this goal. SB 350 also provides for the transformation of the California Independent System Operator into a regional organization to promote the development of regional electricity transmission markets in the western states and to improve the access of consumers served by the California Independent System Operator to those markets, pursuant to a specified process.

Senate Bill 100

On September 10, 2018, Governor Brown signed SB 100, which replaces the SB 350 requirement of 45 percent renewable energy by 2027 with the requirement of 50 percent by 2026 and also raises California's RPS requirements for 2050 from 50 percent to 60 percent. SB 100 also establishes RPS requirements for publicly owned utilities that consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. The bill establishes an overall state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under the Bill, the state cannot increase carbon emissions elsewhere in the western grid or allow resources shuffling to achieve the 100 percent carbon-free electricity target.

Appliance Efficiency Regulations

California's Appliance Efficiency Regulations contain energy performance, energy design, water performance, and water design standards for appliances (including refrigerators, ice makers, vending machines, freezers, water heaters, fans, boilers, washing machines, dryers, air conditioners, pool equipment, and plumbing fittings) that are sold or offered for sale in California (California Code of Regulations Title 20, Parts 1600–1608). These standards are updated regularly to allow consideration of new energy efficiency technologies and methods (CEC 2022).

Title 24, Part 6, Energy Efficiency Standards

Energy conservation standards for new residential and non-residential buildings were adopted by the California Energy Resource Conservation and Development Commission (now the California Energy Commission or CEC) in June 1977 and most recently revised in 2016 (California Code of Regulations Title 24, Part 6). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods.

The 2019 Building Energy Efficiency Standards, which were adopted on May 9, 2018, went into effect starting January 1, 2020. The 2019 Standards move toward cutting energy use in new homes by more than 50 percent and require installation of solar photovoltaic systems for single-family homes and multifamily buildings of three stories and less. The 2019 Standards focus on four key areas: 1) smart residential photovoltaic systems; 2) updated thermal envelope standards (preventing heat transfer from interior to exterior and vice versa); 3) residential and nonresidential ventilation requirements; and 4) nonresidential lighting requirements (CEC 2018b). Under the 2019 Standards, nonresidential buildings would be 30 percent more energy efficient compared to the 2016 Standards, and single-family homes would be 7 percent more energy efficient (CEC 2018a). When accounting for the electricity generated by solar photovoltaic system, single-family homes would use 53 percent less energy compared to homes built to the 2016 Standards (CEC 2018a).

ENERGY

Furthermore, on August 11, 2021, the CEC adopted the 2022 Building Energy Efficiency Standards, which were subsequently approved by the California Building Standards Commission in December 2021. The 2022 standards become effective and replace the existing 2019 standards on January 1, 2023. The 2022 standards will require mixed-fuel single-family homes to be electric-ready to accommodate replacement of gas appliances with electric appliances. In addition, the new standards also include prescriptive photovoltaic system and battery requirements for high-rise, multifamily buildings (i.e., more than three stories) and noncommercial buildings such as hotels, offices, medical offices, restaurants, retail stores, schools, warehouses, theaters, and convention centers (CEC 2021).

Title 24, Part 11, Green Building Standards

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (California Code of Regulations Title 24, Part 11, known as "CALGreen") was adopted as part of the California Building Standards Code. It includes mandatory requirements for new residential and nonresidential buildings throughout California. CALGreen is intended to: 1) reduce GHG emissions from buildings; 2) promote environmentally responsible, cost-effective, healthier places to live and work; 3) reduce energy and water consumption; and 4) respond to the directives by the governor. The mandatory provisions of the California Green Building Code Standards became effective January 1, 2011, and were last updated in 2019. The 2019 Standards became effective on January 1, 2020.

Overall, the code is established to reduce construction waste, make buildings more efficient in the use of materials and energy, and reduce environmental impacts during and after construction. CALGreen contains requirements for construction site selection; stormwater control during construction; construction waste reduction; indoor water use reduction; materials selection; natural resource conservation; site irrigation conservation; and more. It provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. CALGreen also requires building commissioning, which is a process for verifying that all building systems (e.g., heating and cooling equipment and lighting systems) are functioning at their maximum efficiency (CBSC 2019).

Assembly Bill 1493

California vehicle GHG emission standards were enacted under AB 1493 (Pavley I). Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and is anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. California implements the Pavley I Standards through a waiver granted to California by the EPA. In 2012, the EPA issued a Final Rulemaking that sets even more stringent fuel economy and GHG emissions standards for model year 2017 through 2025 light-duty vehicles. In January 2012, the California Air Resources Board approved the Pavley Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single

package of standards. Under California's Advanced Clean Car program, by 2025, new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions (CARB 2013).

Assembly Bill 1279

The California Climate Crisis Act enacted under AB 1279 (Muratsuchi) would declare the policy of the state to achieve net zero greenhouse gas emissions as soon as possible or no later than 2045 and achieve and maintain net negative greenhouse gas emissions thereafter, and to ensure that by 2045, statewide anthropogenic greenhouse gas emissions are reduced to at least 85% below the 1990 levels. The bill would require the state board to work with relevant state agencies to ensure that updates to the scoping plan identify and recommend measures to achieve these policy goals and to identify and implement a variety of policies and strategies that enable carbon dioxide removal solutions and carbon capture, utilization, and storage technologies in California, as specified. The bill would require the state board to submit an annual report.

Title 13, Chapter 9, Article 4.8, Section 2449

Section 2449 of the California Code of Regulations, Title 13, Chapter 9, Article 4.8 was adopted on May 2, 2008 that limits non-essential idling of fleets to no more than five consecutive minutes at any location. This idling restriction applies to all vehicles in California with a diesel-fueled or alternative diesel-fueled off-road engine, unless a waiver provides sufficient justification that such idling is necessary.

Senate Bill 375

In 2008, SB 375, the Sustainable Communities and Climate Protection Act, was adopted to connect the GHG emissions reductions targets established in the 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce vehicle miles traveled (VMT) and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 metropolitan planning organizations (MPOs). The Association of Bay Area Governments (ABAG) is the MPO for the Bay Area region, which includes the City of Benicia. Pursuant to the recommendations of the Regional Transportation Advisory Committee (RTAC), CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target.

Executive Order N-79-20

On September 23, 2020, Executive Order N-79-20 was issued, which sets a time frame for the transition to zero-emissions (ZE) passenger vehicles and trucks in addition to off-road equipment. It directs CARB to develop and propose the following:

ENERGY

- Passenger vehicle and truck regulations requiring increasing volumes of new ZEVs (zero-emission vehicles) sold in the California toward the target of 100 percent of in-state sales by 2035.
- Medium- and heavy-duty vehicle regulations requiring increasing volumes of new ZE trucks and buses sold and operated in California toward the target of 100 percent of the fleet transitioning to ZEVs by 2045 everywhere feasible, and for all drayage trucks to be ZE by 2035.

Strategies to achieve 100 percent zero emissions from all off-road vehicles and equipment operations in California by 2035, in cooperation with other State agencies, the EPA, and local air districts.

Regional Regulations

Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) adopted *Plan Bay Area 2050* on October 21, 2021 (ABAG/MTC 2021). *Plan Bay Area 2050* provides transportation and environmental strategies to continue to meet the regional transportation related GHG reduction goals of SB 375. Under the *Plan Bay Area 2050* strategies, just under half of all Bay Area households would live within one half-mile of frequent transit by 2050, with this share increasing to over 70 percent for households with low incomes. Transportation and environmental strategies that support active and shared modes, combined with a transit-supportive land use pattern, are forecasted to lower the share of Bay Area residents that drive to work alone from over 50 percent in 2015 to 36 percent in 2050. GHG emissions from transportation would decrease significantly as a result of these transportation and land use changes, and the Bay Area would meet the state mandate of a 19-percent reduction in per-capita emissions by 2035 — but only if all strategies are implemented (ABAG/MTC 2021).

To achieve MTC's/ABAG's sustainable vision for the Bay Area, the *Plan Bay Area* land use concept plan for the region concentrates the majority of new population and employment growth in the region in Priority Development Areas (PDAs). PDAs are transit-oriented, infill development opportunity areas within existing communities. An overarching goal of the regional plan is to concentrate development in areas where there are existing services and infrastructure rather than allocate new growth to outlying areas where substantial transportation investments would be necessary to achieve the per capita passenger vehicle, VMT, and associated GHG emissions reductions. In the City of Benicia, there are areas designated within identified PDAs which include the downtown and east 5th street (ABAG/MTC 2022).

Local Regulations

Benicia Municipal Code

The Benicia Municipal Code includes various directives to improve energy efficiency in the City of Benicia. The Ordinance Code is organized by title, division, chapter, section, and in some cases articles.

- **Chapter 15.18, California Green Building Standards Code:** Section 5.18.010, Adoption by reference, incorporates the CCR Title 24, Part 11, California Green Building Standards Code. On Nov. 1, 2022, the CC introduced an ordinance adopting the 2022 Building Codes – 2nd reading is scheduled for November 15th and the ordinance will go into effect on January 1, 2023. Section

15.03 F in Chapter 15.03 adopts the California Green Building Standards Code, 2022 edition, is adopted in its entirety with no amendments, deletions, or additions.

- **Chapter 15.38, Streamlined Permitting for Residential Rooftop Solar:** Section 15.38.020, Purpose, allows for an expedited, streamlined solar permitting process that complies with the Solar Rights Act and AB 2188 to achieve timely and cost-effective installations of small residential rooftop solar energy systems. (The requirements related to Streamlined Permitting for Residential Rooftop Solar are moving to Chapter 15.35 and the purpose statement is the same as is quoted here but as of Jan. 1, 2023 it will be in Section 15.35.020.)

Benicia Climate Action Plan

Benicia completed its Climate Action Plan (CAP), and the City Council adopted the plan on September 15, 2009, which outlines the actions the County will take to address climate change. The purpose of the CAP Plan is to provide objectives and strategies that guide the development and implementation of actions that cut Benicia's greenhouse gas emissions (GHG) to meet its goal of reducing GHG emissions to 2005 levels by 2010 and reducing GHG emissions to 10 percent below 2000 levels by 2020. The reduction strategies and goals in this plan are not to date the Benicia's 2009 Climate Action Plan is not considered a qualified reduction strategy per CEQA Section 15183.5(b)(2).

Benicia General Plan

The Community Identity Chapters of the current General Plan includes in the following policies regarding energy in Benicia.

- **Policy 3.27.1:** Promote energy conservation in all new development and during rehabilitation of existing homes.

4.5.2 THRESHOLDS OF SIGNIFICANCE

The proposed project would result in significant energy impacts if it would:

1. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.
2. Conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

4.5.3 PROPOSED HOUSING ELEMENT POLICIES

- **Goal 2:** Have an adequate supply and mix of housing types to meet existing and future housing needs. Future development in the City will adhere to efficient land use patterns placing housing near transit and services.
- **Policy 2.07:** The City of Benicia will work with the Association of Bay Area Governments (ABAG) and Solano Transportation Authority to create a regional development pattern that is compact

ENERGY

and connected and encourages future population and housing in areas near transit. Future growth in the City of Benicia will be targeted towards Priority Development Areas (PDAs) and Priority Production Areas (PPAs) within City limits, where a diversity of housing, jobs, activities, and services are present to meet the daily needs of residents.

- **Policy 6.01:** Enforce state requirements for energy conservation in new residential projects and encourage residential developers to employ additional energy conservation measures with respect to siting of buildings, landscaping, and solar access.
- **Policy 6.02:** Enforce the California Energy Commission (CEC) energy-efficient requirements in new housing and encourage the installation of energy-saving devices in pre-1975 housing.
- **Policy 6.03:** Encourage Green Building design standards in new construction to achieve increased energy conservation

4.5.4 PROPOSED SAFETY ELEMENT POLICIES

- **Policy 1.5:** Install emergency power supplies at City-owned and operated critical facilities. Emergency power supplies can include power generators and battery storage and should prioritize renewable energy systems where feasible
- **Policy 3.4:** Renovate existing City-owned assets and design future facilities to incorporate renewable energy generation systems, battery storage systems, and energy-efficient design and features, as feasible.
- **Policy 6.1:** Support efforts by homeowners and business owners to increase the resilience of their buildings and properties through retrofits, weatherization, and other improvements. Retrofits may include, but are not limited to, efforts that address extreme heat, poor air quality, flood protection, water and energy efficiency, geologic and seismic safety, and fire safety.
- **Policy 6.3:** Establish one or more equitably located community resilience hub(s) in Benicia. Ensure that resilience hub(s) are not in areas at risk from hazard impacts to the extent possible. They should offer refuge from extreme heat and extreme weather events as well as poor air quality and disasters. They should be equipped with renewable energy generation and backup power supplies. Such facilities should be in easily accessible locations and available to all community members. Resilience hubs should provide shelter, water, and electricity during hazard events or disasters.
- **Policy 6.4:** Encourage new and existing development to incorporate sustainable and energy-efficient features into their facilities, landscapes, and structures.
- **Policy 6.5:** Expand participation in programs and services that provide funding resources for economically disadvantaged households and businesses to conduct energy-efficiency, weatherization, and code compliance retrofits.

4.5.5 ENVIRONMENTAL IMPACTS

4.5.5.1 METHODOLOGY

Wasteful, Inefficient, or Unnecessary Energy Consumption

methodology employed to determine whether a proposed project would result in wasteful, inefficient, or unnecessary consumption of energy resources follows the guidance provided in Appendix F of the CEQA Guidelines as well as the analytical precedent set by *League to Save Lake Tahoe Mountain etc. v. County of Placer* (2022) (75 Cal.App.5th 63, 164-168).

According to Appendix F of the CEQA Guidelines, the goal of conserving energy is translated to include decreasing overall per capita energy consumption; decreasing reliance on fossil fuels such as coal, natural gas, and oil; and increasing reliance on renewable energy sources. In *League to Save Lake Tahoe Mountain etc. v. County of Placer* (2022) (75 Cal.App.5th 63, 164-168), the Appellate Court concluded that the analysis of wasteful, inefficient, and unnecessary energy consumption was not adequate because it did not consider whether additional renewable energy features could be added to the project.

The proposed project would be considered to result in a potentially significant impact if it would result in wasteful, inefficient, or unnecessary consumption of energy resources. Considering the guidance provided by Appendix F of the CEQA Guidelines and the Appellate Court decision in *League to Save Lake Tahoe Mountain etc. v. County of Placer* (2022) (75 Cal.App.5th 63, 164-168), the proposed project would be considered to result in wasteful, inefficient, or unnecessary consumption of energy resources if it would conflict with any of the following energy conservation goals:

- Decrease overall per capita energy consumption.
- Decrease reliance on fossil fuels such as coal, natural gas, or oil.
- Increase reliance on renewable energy sources.

Renewable Energy and Energy Efficiency Plan Consistency

This impact discussion focuses on project consistency with a local plan or policy adopted for the purpose of improving energy efficiency or reliance on renewable energy sources. The proposed project will be analyzed against the relevant policies intended to improve energy efficiency and encourage the use of renewable energy sources. As such, the proposed project would be determined to conflict with the applicable energy efficiency or renewable energy plan if it would not adhere to the applicable energy consumption related measures included in the City's CAP.

ENERGY

ENE-1	The project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.
-------	--

Housing Element Update

Short-Term Construction Impacts

Development projects facilitated by the proposed project would create temporary demands for electricity during construction. Natural gas is not generally required to power construction equipment, and therefore is not anticipated during construction activity. It is anticipated that most electric-powered construction equipment would be hand tools (e.g., power drills, table saws, compressors) and lighting, which would result in minimal electricity usage during construction activities.

Development projects would also temporarily increase demands for energy associated with transportation and off-road equipment operation. Transportation energy use depends on the type and number of trips, VMT, fuel efficiency of vehicles, and travel mode. Energy use during construction would come from the transport and use of construction equipment, delivery vehicles and haul trucks, and construction employee vehicles that would use diesel fuel or gasoline. The use of energy resources by these vehicles would fluctuate according to the construction activity and would be temporary. It is anticipated that most off-road construction equipment, such as those used during demolition and grading, would be gas or diesel powered. In addition, all operation of construction equipment would cease upon completion of project construction. Furthermore, the construction contractors would be required to minimize nonessential idling of construction equipment during construction in accordance with the California Code of Regulations Title 13, Chapter 9, Article 4.8, Section 2449. Such required practices would limit wasteful and unnecessary energy consumption. Also, future projects within City would be similar to projects currently in development within City of Benicia. Overall, there would be no unusual project characteristics anticipated that would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in other parts of California. Therefore, short-term construction activities that occur as a result of implementation of the proposed project would not result in inefficient, wasteful, or unnecessary fuel consumption during construction activities.

Long-Term Impacts During Operation

Operation of potential future development accommodated under the proposed project would create additional demands for electricity and natural gas compared to existing conditions. Operational use of electricity and natural gas would include heating, cooling, and ventilation of buildings; water heating; operation of electrical systems; use of on-site equipment and appliances; lighting; and charging electric vehicles. Land uses accommodated under the proposed project would also result in additional demands for transportation fuels (e.g., gasoline, diesel, compressed natural gas, and electricity) associated with on-

road vehicles. Electricity, natural gas, and transportation fuel consumption estimates during operation of the proposed project are presented in Table 4.5-1, *Year 2031 Forecast Electricity Consumption*.

TABLE 4.5-1 YEAR 2031 FORECAST ELECTRICITY CONSUMPTION

Energy Resource	Annual Energy Consumption
Building – Electricity ¹	14,611,500
Building – Natural Gas ²	35,504,300
Transportation – Electricity ¹	2,323,443
Transportation – Natural Gas ²	1,813
Transportation – Diesel ³	56,946
Transportation – Gasoline ³	2,288,428

¹ Energy resource is expressed in kilowatt-hours (kWh).

² Energy resource is expressed in British thermal units (kBtu).

³ Diesel, compressed natural gas (CNG), and gasoline fuels are expressed in gallons. Electric vehicles are expressed in kilowatt-hours (kWh).

Source: CalEEMod Output; EMFAC 2021 Version 1.0.2; Appendix 4.2-1.

As shown in Table 4.5-1, the maximum 2031 buildout of up to 3,598 new units under the proposed project would result in the annual consumption of an estimate 16,934,943 kWh, 35,504,300 British thermal units, 56,946 gallons of diesel fuel, and 2,288,428 gallons of gasoline fuel. Considering that the introduction of up to 3,598 new units could accommodate an estimate 8,743 new residents, the proposed project is anticipated to result in 1,937 kWh, 4,061 British thermal units, 6.5 gallons of diesel fuel, and 262 gallons of gasoline fuel per capita. As previously discussed, the proposed project would be considered to result in a potentially significant impact if it would result in wasteful, inefficient, or unnecessary consumption of energy resources. Considering the guidance provided by Appendix F of the CEQA Guidelines and the Appellate Court decision in *League to Save Lake Tahoe Mountain etc. v. County of Placer* (2022) (75 Cal.App.5th 63, 164-168), the proposed project would be considered to result in wasteful, inefficient, or unnecessary consumption of energy resources if it would conflict with any of the following energy conservation goals:

- Decrease overall per capita energy consumption.
- Decrease reliance on fossil fuels such as coal, natural gas, or oil.
- Increase reliance on renewable energy sources.

Decreasing Overall Per Capita Energy Consumption

While the electricity and natural gas demand for the City would increase compared to existing conditions as the new energy consumption shown above in Table 4.5-1 account for new units beyond the City’s current housing supply, developments accommodated under the proposed project would be required to comply with the current and future updates to the Building Energy Efficiency Standards and CALGreen. Compliance with CALGreen energy efficiency standards would contribute to reducing the building-related energy demands shown in Table 4.5-1. New and replacement buildings in compliance with these

ENERGY

standards would generally have greater energy efficiency than existing buildings. In addition, not all units envisioned by the proposed project would be constructed under the current California Building Code cycle and would be subject to future iterations of CALGreen and other related building codes. It is anticipated that each update to the Building Energy Efficiency Standards and CALGreen will result in greater building-related per capita energy efficiency and move closer toward buildings achieving zero net energy.

In addition to the Building Energy Efficiency Standards and CALGreen, the Housing Element Update includes a policy to increase energy efficiency and reduce wasteful, inefficient use of energy resources.

- **Policy 6.01:** Enforce state requirements for energy conservation in new residential projects and encourage residential developers to employ additional energy conservation measures with respect to siting of buildings, landscaping, and solar access.
- **Policy 6.02:** Enforce the California Energy Commission (CEC) energy-efficient requirements in new housing and encourage the installation of energy-saving devices in pre-1975 housing.
- **Policy 6.03:** Encourage Green Building design standards in new construction to achieve increased energy conservation

Encouraging sustainable and energy-efficient building practices and using more renewable energy strategies will further reduce building-related per capita energy consumption within the City and move closer toward achieving zero net energy.

Additionally, fuel efficiency of vehicles during the buildout year of 2031 would on average improve compared to vehicle fuel efficiencies experienced under existing conditions, thereby resulting in a lower per capita fuel consumption in 2031 assuming travel distances, travel modes, and trip rates remain the same. The improvement in fuel efficiency would be attributable to regulatory compliance (e.g., CAFE standards), resulting in new cars that are more fuel efficient and the attrition of older, less fuel-efficient vehicles. The CAFE standards are not directly applicable to residents or land use development projects, but to car manufacturers. Thus, City residents do not have direct control in determining the fuel efficiency of vehicles manufactured and that are made available. However, compliance with the CAFE standards by car manufacturers would ensure that vehicles produced in future years have greater fuel efficiency and would generally result in an overall benefit of reducing fuel usage by providing the population of the City more fuel-efficient vehicle options. Considering the proposed project would result in the construction and operation of new buildings which would have on average the same or greater energy efficient designs than current structures and vehicle fuel efficiencies would improve year over year through the buildout year of 2031, the proposed project is anticipated to result in a decrease in overall per capita energy consumption in 2031. As such, the proposed project would be consistent with this energy conservation criterion.

Decreasing Reliance on Fossil Fuels

The proposed project would be considered to conflict with this criterion if it did not take steps to decrease the reliance on fossil fuels. New and replacement buildings in compliance with CALGreen standards would generally have greater energy efficiency than existing buildings. In addition, not all units envisioned by the proposed project would be constructed under the current California Building Code cycle and would be subject to future iterations of CALGreen and other related building codes. It is anticipated that each update to the Building Energy Efficiency Standards and CALGreen will result in greater building-related per capita energy efficiency and move closer toward buildings achieving zero net energy. In addition to the Building Energy Efficiency Standards and CALGreen, the Housing Element Update includes a policy, such as Policies 6.01 through 6.03, to increase energy efficiency and reduce wasteful, inefficient use of energy resources. The new energy efficiency building standards would result in a decrease in per unit or per capita natural gas consumption for space and water heating.

In addition, the proposed project envisions new residential development throughout the City, which would be required to install rooftop solar, as applicable. New single-family residences would be required to comply with Title 24, Part 6, Subchapter 8, Section 150.1(c)14 and new multi-family residences would be required to comply with Title 24, Part 6, Subchapter 11, Section 170.2(f), of the 2022 California Building Code to include rooftop solar systems. Compliance with these codes would decrease overall reliance on fossil fuels for electricity generation as some on-site electricity consumption could be satisfied with on-site electricity generation.

Moreover, as previously discussed, fuel efficiency of vehicles during the buildout year of 2031 would on average improve compared to vehicle fuel efficiencies experienced under existing conditions. In addition to regulatory compliance that would contribute to more fuel-efficient vehicles and less per capita demand in fuels, the Housing Element Update includes policies that will contribute to minimizing overall VMT, and thus incrementally decreasing dependence on fossil fuels for transportation energy needs. The following Housing Element Update policy focus on minimizing VMT through land use and transportation planning efforts that work in conjunction including:

- **Goal 2:** Have an adequate supply and mix of housing types to meet existing and future housing needs. Future development in the City will adhere to efficient land use patterns placing housing near transit and services.
- **Policy 2.07:** The City of Benicia will work with the Association of Bay Area Governments (ABAG) and Solano Transportation Authority to create a regional development pattern that is compact and connected and encourages future population and housing in areas near transit. Future growth in the City of Benicia will be targeted towards Priority Development Areas (PDAs) and Priority Production Areas (PPAs) within City limits, where a diversity of housing, jobs, activities, and services are present to meet the daily needs of residents.

ENERGY

Considering the above, the proposed project would result in the construction and operation of up to 3,598 dwelling units that would be designed compliant to the California Building Code, thereby reducing reliance on fossil fuels for space and water heating. In addition, the proposed project would result in population growth that would result in subsequent increases in transportation energy demand; however, with improving fuel efficiency standards year over year through the buildout year of 2031 and compliance with the EV charging infrastructure requirements contained in the California Building Code, the proposed project would on average reduce reliance on fossil fuels for transportation energy demand. Therefore, the proposed project would be considered consistent with this energy conservation criterion.

Increasing Reliance on Renewable Energy Sources

As previously discussed, the proposed project envisions new residential development throughout the City which would be required to install rooftop solar, as applicable. New single-family residences would be required to comply with Title 24, Part 6, Subchapter 8, Section 150.1(c)14 and new multi-family residences would be required to comply with Title 24, Part 6, Subchapter 11, Section 170.2(f), of the 2022 California Building Code to include rooftop solar systems. Compliance with these codes would directly increase overall reliance on renewable energy sources for electricity generation. Moreover, compliance with the EV charging infrastructure requirements contained in the California Building Code would on average increase reliance on electricity for transportation energy demand. As electricity consumed in California is required to meet the increasing renewable energy mix requirements under the State's RPS and accelerated by SB 100, greater and greater proportions of electricity consumed in buildings and for transportation energy demand envisioned under the proposed project would continue to be sourced from renewable energy sources.

Furthermore, new residences facilitated by the proposed project would be automatically enrolled in MCE service, which provides more renewable-sourced electricity services in addition to those provided by PG&E. While future residents would have the option to opt-out back into PG&E service, MCE would automatically enroll future residents accommodated by the proposed project into their minimum 60 percent renewable "MCE Light Green" electricity service (MCE 2019). In 2021, PG&E's "Base Plan" electricity service consisted of a power mix of 47.7 percent sourced from eligible renewable sources (PG&E 2022a). As future residents have the option to choose an electricity service that relies on renewable sources more for electricity generation than what is minimally required under the State's RPS, and considering that both electricity service providers for the Planning Area would provide incrementally greater and greater proportions of renewably-sourced electricity to City residents, buildout of the proposed project in 2031 would result in an overall increase in reliance on renewable energy sources. As such, the proposed project would be consistent with this energy conservation criterion.

Taking into account the above analysis demonstrating that the proposed project would result in an overall decrease in energy consumption per capita, decrease in reliance on fossil fuels, and increase in renewable energy sources, the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources. As such, this impact would be less than significant.

Safety Element

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not lead to wasteful, inefficient, or unnecessary consumption of energy resources, during construction or operation associated with the proposed project. No impacts would occur.

Significance Without Mitigation: Less than significant.

ENE-2	The project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency.
-------	--

Housing Element Update

California Renewables Portfolio Standard Program

The state's electricity grid is transitioning to renewable energy under California's RPS Program. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. In general, California has RPS requirements of 33 percent renewable energy by 2020 (SB X1-2), 40 percent by 2024 (SB 350), 50 percent by 2026 (SB 100), 60 percent by 2030 (SB 100), and 100 percent by 2045 (SB 100). SB 100 also establishes RPS requirements for publicly owned utilities that consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. The statewide RPS requirements do not directly apply to individual development projects, but to utilities and energy providers such as PG&E, whose compliance with RPS requirements would contribute to the State of California objective of transitioning to renewable energy. In addition, the Board of Supervisors voted to go Deep Green 100 percent renewable (all power which customers buy comes from 100 percent non-polluting wind and solar power) with MCE for the majority of the County's accounts. Even if customers in the County were to opt-out of the Deep Green program, and therefore receive all their electricity from PG&E, 33 percent of PG&E's electricity is generated from renewable energy since 2017 (PG&E 2022b). By 2030, PG&E is set to meet the State's new 60 percent renewable energy mandate set forth in SB 100.

The land uses accommodated under the proposed project would be required to comply with the current and future iterations of the Building Energy Efficiency Standards and CALGreen. Furthermore, as described for impact discussion ENE-1, the proposed project includes Housing Element policies which would support the statewide goal of transitioning the electricity grid to renewable sources. The net increase in energy demand associated with implementation of the proposed project would be within the service capabilities

ENERGY

of MCE and PG&E and would not impede their ability to implement California's renewable energy goals. Therefore, implementation of the proposed project would not conflict with or obstruct implementation of California's Renewables Portfolio Standard program.

City of Benicia Climate Action Plan (CAP)

As discussed in greater detail in Section 4.7, Greenhouse Gas Emissions, the City of Benicia CAP was adopted in 2009 and includes GHG reduction strategies within focus areas to achieve the GHG reduction goals of AB 32 (Benicia 2009). The CAP focus areas applicable to energy conservation include the following:

- **Energy Production** – Residential units constructed in accordance with the Housing Element Update would be required to adhere to the Building and Energy Efficiency Standards under Title 24 and would be encouraged to include additional energy conservation measures with respect to siting of buildings, landscaping, and solar access. Furthermore, the City will continue to implement the Property Assessed Clean Energy (PACE) and Residential Solar Rebate Programs to help finance energy efficiency and renewable energy upgrades to buildings.
- **Transportation and Land Use** – Residential units constructed in accordance with the Housing Element would increase land use density near transportation corridors. Future growth in the City will be targeted towards priority development areas (PDAs) and priority production areas (PPAs).
- **Buildings** – Residential units constructed in accordance with the Housing Element Update would be required to adhere to the Building and Energy Efficiency Standards under Title 24 and would be encouraged to include additional energy conservation measures with respect to siting of buildings, landscaping, and solar access. Furthermore, the City will continue to implement the Property Assessed Clean Energy (PACE) and Residential Solar Rebate Programs to help finance energy efficiency and renewable energy upgrades to buildings.
- **Water and Wastewater** – Residential units constructed in accordance with the Housing Element would be required to have water efficient plumbing and water efficient landscaping in accordance with the California Building Code and the State Model Water Efficient Landscape Ordinance (MWELO). The Suisun-Solano Water Authority also has prepared a Water Shortage Contingency Plan (WSCP) as part of the 2015 Urban Water Management Plan to address reduction in water supply, including a drought or other emergency. Additionally, the City would continue to promote water conservation by partnering with Solano County Water Agency (SCWA) to provide rebates for the Turf Replacement Program as well as work with Public Works Department to ensure adequate capacity of water to accommodate future housing needs.

As demonstrated above, the proposed project would not interfere with the ability to implement the local strategies for energy conservation and renewable energy in the City's CAP, and impacts would be less than significant.

Safety Element

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

Significance Without Mitigation: Less than significant.

ENERGY

4.5.6 REFERENCES

Association of Bay Area Governments and the Metropolitan Transportation Commission. 2021, October 21. Plan Bay Area 2050, https://www.planbayarea.org/sites/default/files/documents/Plan_Bay_Area_2050_October_2021.pdf, accessed July 27, 2022.

_____. 2022 (Accessed). Priority Development Areas (PDAs). <https://opendata-mtc.opendata.arcgis.com/datasets/4df9cb38d77346a289252ced4ffa0ca0/explore?location=37.892240%2C-122.289021%2C9.00>.

Benicia, City of. 1999, June 15. Benicia General Plan. <https://www.ci.benicia.ca.us/index.asp?SEC=0371539A-30D9-4885-B61F-B5038B415DD3&DE=F40DB441-1E06-45F8-82F8-6D632AB9EC85>.

_____. 2009, September 15. Benicia Climate Action Plan. [https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/1-4_\(1\).pdf](https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/1-4_(1).pdf)

California Air Resources Board (CARB). 2013, October 31. State Alternative Fuels Plan – AB 1007. <https://www.arb.ca.gov/fuels/ab1007/ab1007.htm>, accessed July 20, 2022.

California Building Standards Commission (CBSC). 2019, July. 2019 California Code of Regulations Title 24, Part 11. <https://codes.iccsafe.org/content/CAGBSC2019/cover>, accessed July 20, 2022.

California Energy Commission (CEC). 2018a, March. 2019 Building Energy and Efficiency Standards Frequently Asked Questions.

_____. 2018b, May 9. Energy Commission Adopts Standards Requiring Solar Systems for New Homes, First in Nation. <https://www.energy.ca.gov/news/2018-05/energy-commission-adopts-standards-requiring-solar-systems-new-homes-first>.

_____. 2021 Amendments to the Building Energy Efficiency Standards (2022 Energy Code) Draft Environmental Report. CEC-400-2021-077-D.

_____. 2022 May 27 (accessed). Appliance Efficiency Proceedings – Title 20. <https://www.energy.ca.gov/rules-and-regulations/appliance-efficiency-regulations-title-20/appliance-efficiency-proceedings>.

California Public Utilities Commission. 2011, January. CA Energy Efficiency Strategic Plan. <https://www.cpuc.ca.gov/-/media/cpuc-website/files/legacyfiles/c/5303-caenergyefficiencystrategicplan-jan2011.pdf>, accessed July 27, 2022.

- _____. 2021, May. 2021 Padilla Report: Costs and Savings for the RPS Program (Public Utilities Code Section 913.3), https://www.cpuc.ca.gov/-/media/cpuc-website/industries-and-topics/documents/energy/rps/2021-padilla-report_final.pdf.
- MCE. 2019. 2019 Power Content Label, <https://www.energy.ca.gov/filebrowser/download/3240>, accessed July 7, 2022.
- National Highway Traffic Safety Administration (NHTSA). 2022, April 1. USDOT Announces New Vehicle Fuel Economy Standards for Model year 2024-2026. <https://www.nhtsa.gov/press-releases/usdot-announces-new-vehicle-fuel-economy-standards-model-year-2024-2026>, accessed on July 27, 2022.
- Pacific Gas and Electric Company. 2022a. *Building a cleaner, safer energy future*. https://www.pge.com/pge_global/common/pdfs/your-account/your-bill/understand-your-bill/bill-inserts/2022/1022-Power-Content-Label.pdf, accessed October 25, 2022.
- _____. 2022b Renewable Energy, https://www.pgecorp.com/corp_responsibility/reports/2018/bu07_renewable_energy.html#:~:text=PG%26E%20delivers%20some%20of%20the,and%20various%20forms%20of%20bioenergy, accessed July 7, 2022.
- Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks: Final Rule. Vol. 85 Federal Register, No. 84 (April 30, 2020).
- United States Environmental Protection Agency (USEPA). 2022, May 12 (updated). Summary of the Energy Independence and Security Act Public Law 110-140 (2007). <https://www.epa.gov/laws-regulations/summary-energy-independence-and-security-act>.

ENERGY

This page intentionally left blank.

4.6 GEOLOGY AND SOILS

This chapter describes the potential geology and soils impacts associated with the approval and implementation of the proposed project. This chapter describes the regulatory framework and existing conditions, identifies criteria used to determine impact significance, provides an analysis of the potential geology and soils impacts, and identifies policies and feasible mitigation measures, if required, that could mitigate any potentially significant impacts.

4.6.1 ENVIRONMENTAL SETTING

4.6.1.1 REGULATORY FRAMEWORK

This section summarizes regulations for geology and soils at the federal, State, regional, and City level.

4.6.1.2 FEDERAL REGULATIONS

Paleontological Resources Preservation Act

The federal Paleontological Resources Preservation Act of 2002 limits the collection of vertebrate fossils and other rare and scientifically significant fossils to qualified researchers who have obtained a permit from the appropriate State or federal agency. Additionally, it specifies these researchers must agree to donate any materials recovered to recognized public institutions, where they will remain accessible to the public and to other researchers. This Act incorporates key findings of a report, *Fossils on Federal Land and Indian Lands*, issued by the Secretary of Interior in 2000, which establishes that most vertebrate fossils and some invertebrate and plant fossils are considered rare resources (DOI 2000).

4.6.1.3 STATE REGULATIONS

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface fault rupture to structures used for human occupancy. The main purpose of this Act is to prevent the construction of buildings used for human occupancy on top of active faults. This Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards, such as earthquake-induced liquefaction or landslides (CGS 2022a).

This Act requires the State Geologist to establish regulatory zones (known as Earthquake Fault Zones or Alquist-Priolo Zones) around surface traces of active faults, and to issue appropriate maps (CGS 2022a). The maps, which are developed using existing United States Geological Survey's (USGS) 7.5-minute quadrangle map bases, are then distributed to all affected cities, counties, and State agencies for their use in planning and controlling new or renewed construction. Generally, construction within 50 feet of an active fault zone is prohibited.

GEOLOGY & SOILS

Seismic Hazards Mapping Act

The 1990 *Seismic Hazards Mapping Act* addresses seismic hazards such as liquefaction and seismically induced landslides (CGS 2022a). Under this Act, seismic hazard zones are mapped by the State Geologist to assist local governments in land use planning. Section 2691(c) of this Act states that “it is necessary to identify and map seismic hazard zones in order for cities and counties to adequately prepare the safety element of their general plans and to encourage land use management policies and regulations to reduce and mitigate those hazards to protect public health and safety.” Section 2697(a) of the Act states that “cities and counties shall require, prior to the approval of a project located in a seismic hazard zone, a geotechnical report defining and delineating any seismic hazard.”

California Building Code

The State of California provides a minimum standard for building design through Title 24 of the *California Code of Regulations* (CCR), commonly referred to as the “*California Building Code*” (CBC). The CBC is in Part 2 of Title 24 of the CCR. The CBC is updated every three years. It is generally adopted on a jurisdiction-by-jurisdiction basis, subject to further modification based on local conditions. The City of Benicia regularly adopts each new CBC update under the Benicia Municipal Code (BMC) Title 15, *Buildings and Construction*. Through the CBC, the State provides a minimum standard for building design and construction. The CBC contains specific requirements for seismic safety, excavation, foundations, retaining walls, and site demolition.

California Public Resources Code Section 5097

California Public Resources Code (PRC) Section 5097.5 prohibits the destruction or removal of any paleontological site or feature from public lands without the permission of the jurisdictional agency.

California Penal Code Section 622.5

The California Penal Code Section (PC) 622.5 details the penalties for damage or removal of paleontological resources, whether from private or public lands.

4.6.1.4 LOCAL REGULATIONS

Benicia Emergency Operations Plan

The Benicia *Emergency Operations Plan* (EOP), adopted April 2019, formalizes the City’s emergency management approach to reduce vulnerabilities to both natural and man-made disasters. The EOP provides basic guidance for earthquakes, flooding, fire, landslides, severe weather, pandemics and epidemics, as well as hazardous material emergencies. The EOP further includes mitigation programs, which are split into three categories: emergency prevention and protection; response concept of

operations; and recovery concept of operations. Responsibility for preparation and response to a disaster is enforced by the Benicia Emergency Operations Center (Benicia 2019).

Solano County Multi-Jurisdictional Hazard Mitigation Plan

Solano County prepared a multijurisdictional hazard mitigation plan in 2021 to guide county and city officials in protecting the people and property within the county from the effects of natural disasters and hazard events. The MJHMP includes hazard mitigation goals, strategies, and priorities, and provides a comprehensive assessment of Solano County and its municipalities' hazards and vulnerabilities. The priorities of the mitigation programs are to reduce the loss of life, minimize structural damage, reduce disruption of essential services, protect the environment, and promote hazard mitigation as an integrated public policy.

Benicia Municipal Code

The Benicia Municipal Code (BMC) regulates geology, soil, and seismic related issues in the city. The BMC is organized by Title, Chapter, and Section. Most provisions related to geology, soils, and seismic events are in Title 15, *Buildings and Construction*, Title 16, *Subdivisions* and Title 17, *Zoning*, as follows:

- **Chapter 15.28, *Grading and Erosion Control*** provides best practices required ensure safe grading operations that reduce erosion and other soil influences. This Chapter includes specific sections related to soils and geology as follows:
 - **Section 15.28.130, *Excavating, grading and filling - Regulations*** establishes the requirements for excavations, grading and filling in order to ensure soil stabilization at all phases of development.
 - **Section 15.28.140, *Erosion control*** requires best management practices plan and storm water control measures for all active and passive construction sites.
- **Chapter 16.16.040, *Geotechnical Reports*** requires a soils investigation for subdivision applications of five or more parcels to assess the whether the site has geological conditions or other soil issues which, if not mitigated, would lead to structural defects, unless waived by the city engineer. Soils reports are required by the CBO in most new construction.
- **Chapter 17.58, *S Shoreline Protection Overlay District*** establishes an overlay district for shoreline areas in the City with additional requirements for development, including a geologic report for building within 100 feet of any cliff or bluff.

GEOLOGY & SOILS

4.6.1.5 EXISTING CONDITIONS

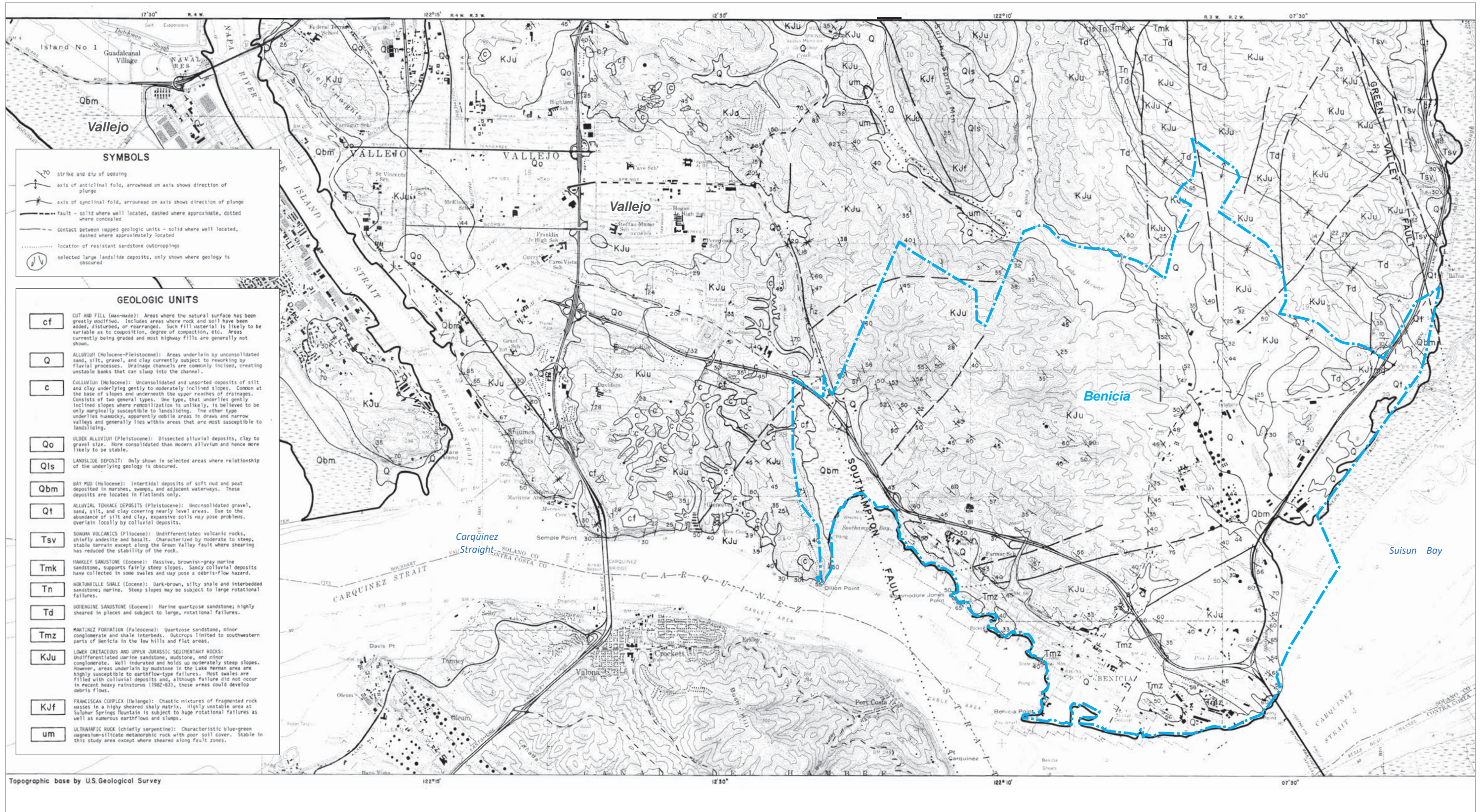
This section describes the existing geology and soils characteristics, natural hazards which pose a health and safety risk, and the presence of paleontological resources in the EIR Study Area.

Geology

The EIR Study Area is located on the north side of the Carquinez Strait, a narrow body of water surrounded by coastal foothills (Norris and Webb 1990). The EIR Study Area is within the Coast Ranges geomorphic province, which is characterized by northwest-southeast trending ranges of low mountains and valleys. The region's northwest trending folds and faults are a result from the colliding plate boundaries making the region seismically active. The outlet for the Sacramento-San Joaquin River system is formed by the regional folding and faulting of the Mesozoic and Tertiary rocks in the foothills north of the Carquinez Strait. The geology of the EIR Study Area is shown in Figure 4.6-1, *Geology Map*.

The EIR Study Area is structurally controlled by faulting from the Green Valley-Concord and Southampton Faults. Drainage in the EIR Study Area generally trends south and east towards the Carquinez Strait and Suisun Bay, respectively (USGS 1980a, 1980b).

Lower Cretaceous and Upper Jurassic Sedimentary Rocks (referred to as "KJu") is the predominant geological unit underneath the EIR Study Area. The KJu geologic unit consists of undifferentiated marine sandstone, mudstone, and minor conglomerate (Bortugno 1987). Other notable geologic units within the EIR Study include Holocene colluvium, Holocene bay mud, Holocene-Pleistocene alluvium, Pleistocene alluvial terrace deposits, Pliocene Sonoma Volcanics, Eocene Domengine Sandstone, Paleocene Martinez Formation, Franciscan Complex (Melange) and ultramafic rock.



Source: State of California, Division of Mines and Geology, 1987

Figure 4.6-1
Geology Map

GEOLOGY & SOILS

This page intentionally left blank.

Soils

Soils in the EIR Study Area primarily consists of soils developed in-situ from the weathering of parent rock and to a lesser extent, alluvial soils. Alluvial soils are characterized by complex layering of gravel, silty sands, sand, and clayey soils. The predominant soil types in the EIR Study Area include variants of Altamont clay and Dibble-Los Osos loams and clay loams (USDA 2022).

Regional Seismicity

The Earth's crust includes tectonic plates that locally collide with or slide past one another along plate boundaries. California is particularly susceptible to such plate movements, notably the largely horizontal or "strike-slip" movements of the Pacific Plate, as it impinges on the North American Plate. In general, earthquakes occur when the accumulated stress along a plate boundary or fault is suddenly released, resulting in seismic slippage. This slippage can vary widely in magnitude, ranging in scale from a few millimeters or centimeters, to tens of feet.

The performance of man-made structures during a major seismic event varies widely due to a number of factors, including location, with respect to active fault traces or areas prone to liquefaction or seismically-induced landslides; the type of building construction (i.e., wood frame, unreinforced masonry, non-ductile concrete frame); the proximity, magnitude, depth, and intensity of the seismic event itself; and many other factors. In general, evidence from past earthquakes shows that wood frame structures tend to perform well during a seismic event, especially when their foundations are properly designed and anchored. Conversely, older, unreinforced masonry structures and non-ductile reinforced concrete buildings (especially those built in the 1960s and early 1970s), do not perform as well, especially if they have not undergone appropriate seismic retrofitting. Applicable building code requirements, such as those found in the CBC, include seismic requirements that are designed to ensure the satisfactory performance of building materials under prescribed seismic conditions.

The City of Benicia is located in a great seismically active region as shown in Figure 4.6-2A through Figure 4.6-2E, *Fault Map*. There are nine major fault zones in the vicinity of the EIR Study Area: the Green Valley-Concord, the Southampton, the Franklin, the West Napa, the Clayton-Marsh Creek, the Hayward-Rodgers Creek, the Calaveras, the Midland, and the San Andreas Faults (USGS 2022). The Green Valley-Concord Fault is located on the extreme northeast corner of the EIR Study Area and has the capacity to generate an earthquake of maximum Magnitude 6.8 and is zoned within an Alquist-Priolo Earthquake Fault Zone in the EIR Study Area (Kleinfelder 2017, CDC 2022). The Southampton Fault, which runs from Southampton Bay through Benicia State Recreation Area on the western side of the EIR Study Area, is an undifferentiated early to middle Pleistocene fault that is considered potentially active, although no significant seismicity has been attributed to it in recent time (CGS 2022b). The Franklin Fault is located about 1.8 miles southwest of the EIR Study Area, is an undifferentiated early to middle Pleistocene fault that is considered potentially active, although no significant seismicity has been attributed to it in recent time (CSG 2022b).

GEOLOGY & SOILS

The West Napa Fault, which is located about 2.5 miles northwest of the EIR Study Area, has the capacity to generate an earthquake of maximum Magnitude 6.7. The Clayton-Marsh Creek Fault (aka Greenville Fault) is located about 10 miles southeast of the EIR Study Area and has the capacity to generate an earthquake of maximum Magnitude 7. The Hayward-Rodgers Creek Fault is located about 10.4 miles southwest of the EIR Study Area and has the capacity to generate an earthquake of maximum Magnitude 7.3. The Calaveras Fault system, located about 14 miles south of the EIR Study Area, marks the eastern margin of the East Bay Hills on a north-south axis and has the capacity to generate an earthquake of up to approximately M 7. The Midland Fault is located about 26.6 miles east of the EIR Study Area and is an undifferentiated early to middle Pleistocene fault that is considered potentially active, although no significant seismicity has been attributed to it in recent time. Lastly, the San Andreas Fault is located about 28.5 miles southwest of the EIR Study Area and has the capacity to generate an earthquake of maximum Magnitude 8. Due to the active fault lines within and surrounding it, the EIR Study Area is historically susceptible to all earthquake-related hazards which include ground rupture, ground shaking, and liquefaction.

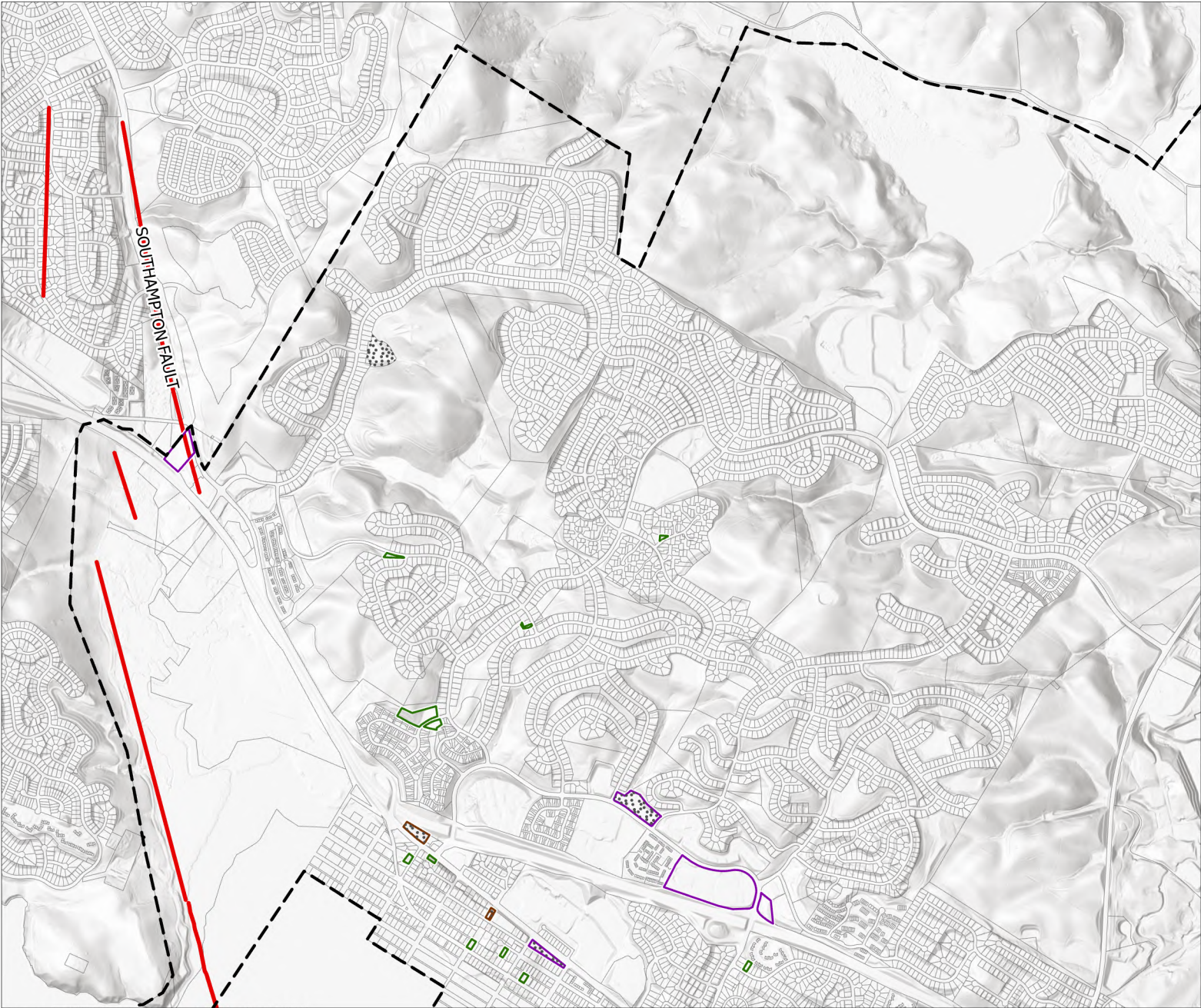
Ground Shaking and Rupture

The most common hazard from a seismic event is ground shaking. While ground shaking due to an earthquake may be experienced many miles from the source of an earthquake, ground rupture is typically confined to the immediate vicinity of any fault line which experiences a significant seismic event. Because the Green Valley-Concord Fault lies beneath the extreme northeastern corner of the EIR Study Area, this area has the potential to experience ground rupture in the event of a strong seismic event.

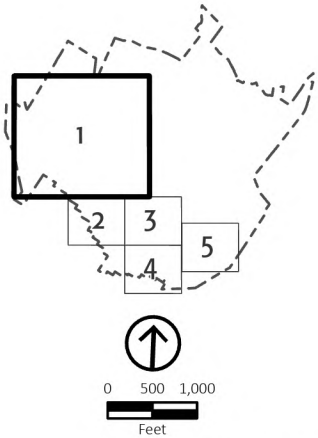
Liquefaction

Liquefaction is a hazard which occurs during prolonged periods of ground shaking in areas with alluvial or granular soils which are less compacted than soil types such as clay. Liquefaction is a result of prolonged ground shaking from a seismic event, which causes a sudden rise of an underground water table. When a water table rises in areas with alluvial and granular soils, the water infiltrates the soil bed and compromises the strength and stability of the soil, which can therefore compromise structures in such areas. As discussed in Section 4.6.1.5, Existing Conditions, *Soils*, the EIR Study Area is largely located atop weathered bedrock, and to a lesser extent, alluvial soils. These alluvial soils, in addition to a shallow water table, mean that there is a localized high risk of liquefaction in the EIR Study Area, particularly within the alluvial deposits as shown in Figure 4.6-3A through Figure 4.6-3E, *Liquefaction Susceptibility Map*.

GEOLOGY AND SOILS



- City Limit
- Overlay Zone
- USGS Quaternary Faults
- Housing Element Sites**
- Suitably Zoned
- Suitably Zoned with Upzoning Proposed
- Needs Zoning Change



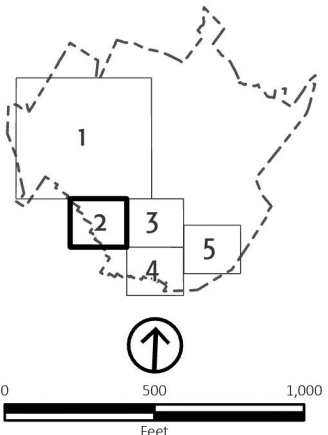
Source: USGS 2006, PlaceWorks 2022

Figure 4.6-2A
Fault Map

GEOLOGY AND SOILS



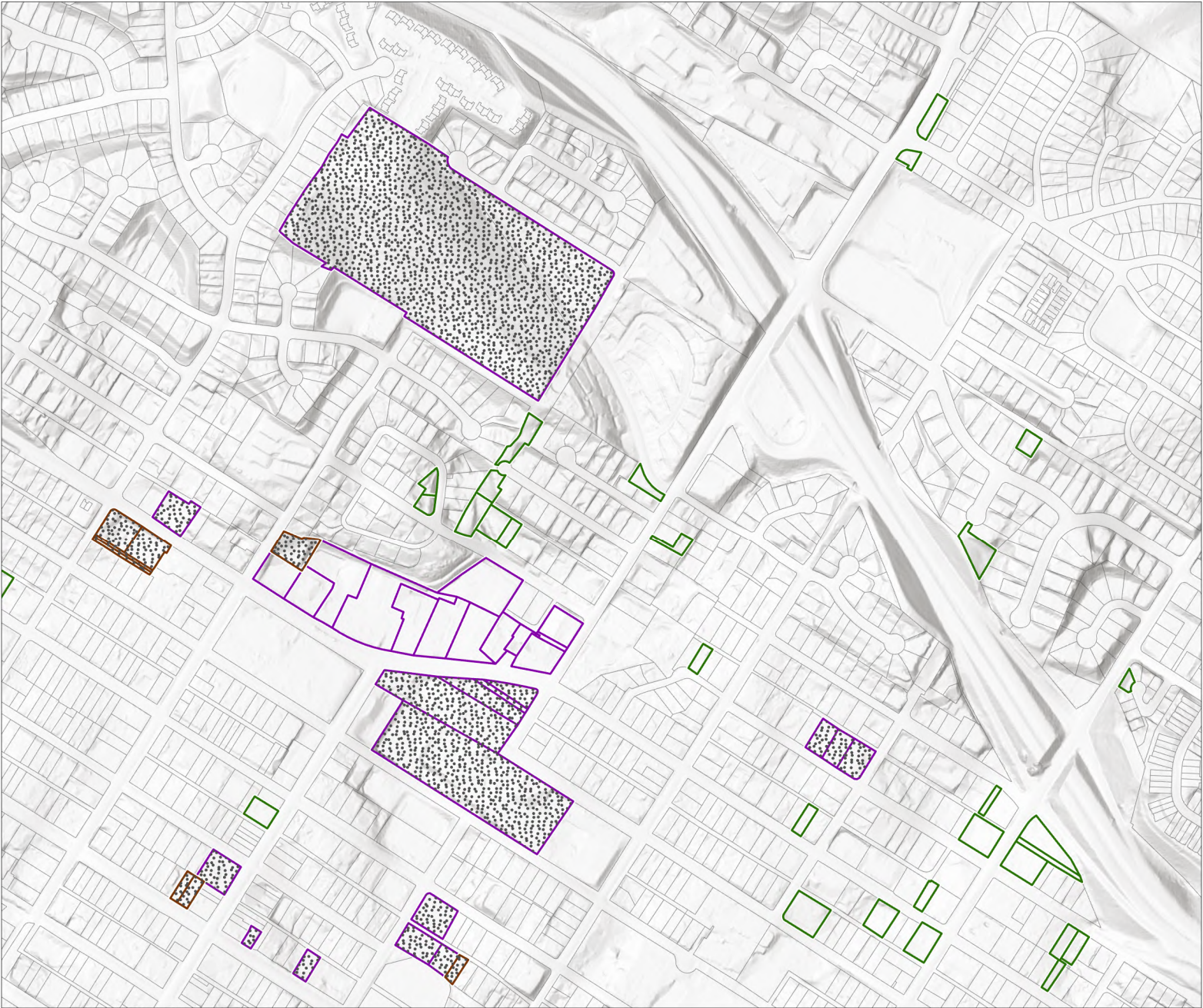
- City Limit
- Overlay Zone
- Housing Element Sites
 - Suitably Zoned
 - Needs Zoning Change








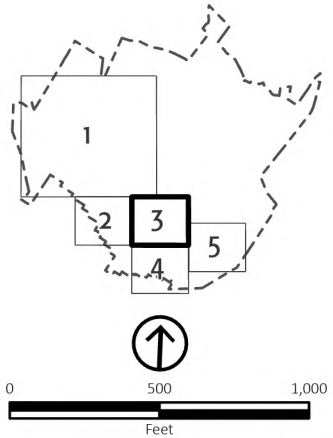
Source: USGS 2006, PlaceWorks 2022

Figure 4.6-2B
Fault Map

GEOLOGY AND SOILS



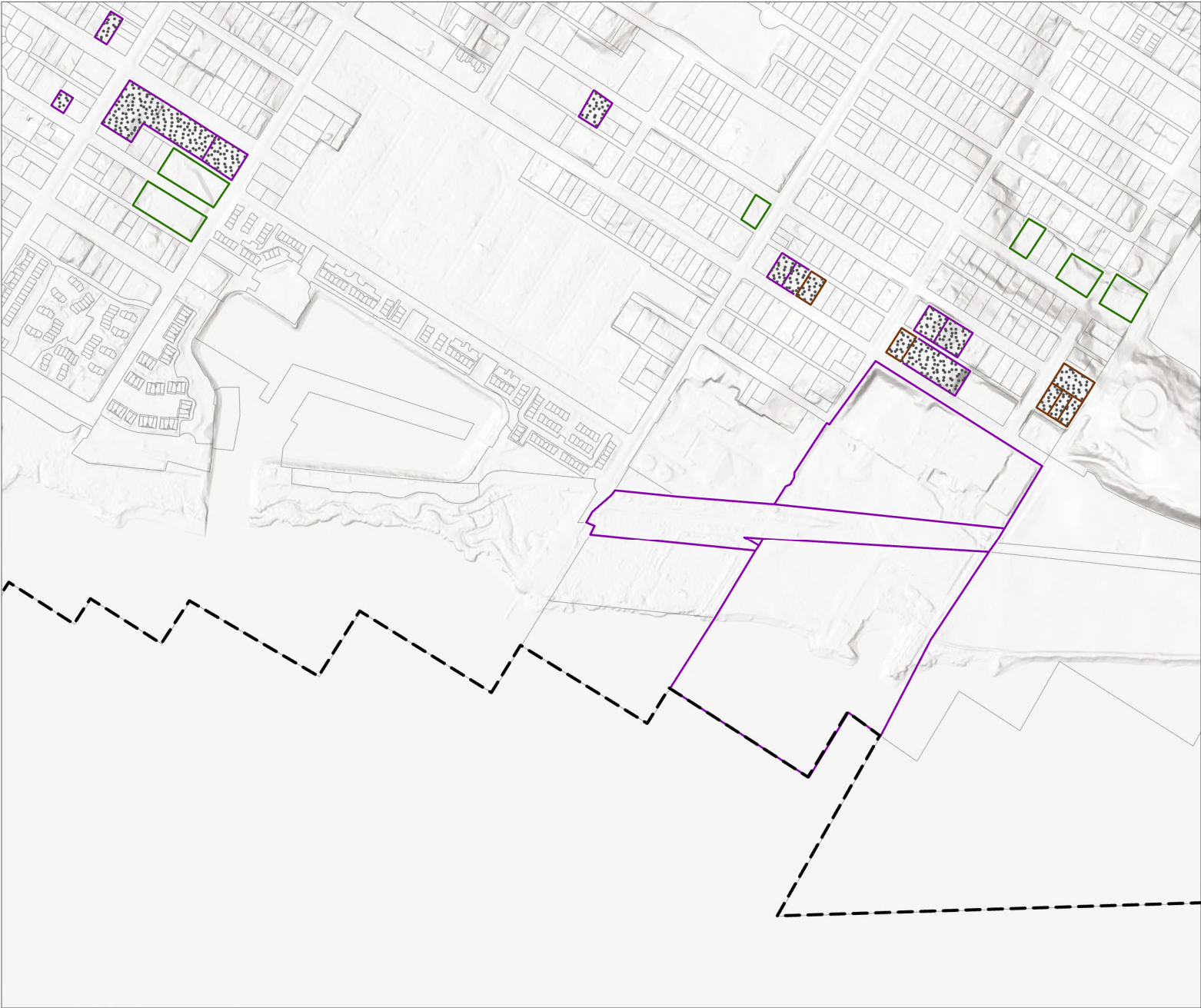
-  City Limit
-  Overlay Zone
- Housing Element Sites**
-  Suitably Zoned
-  Suitably Zoned with Upzoning Proposed
-  Needs Zoning Change



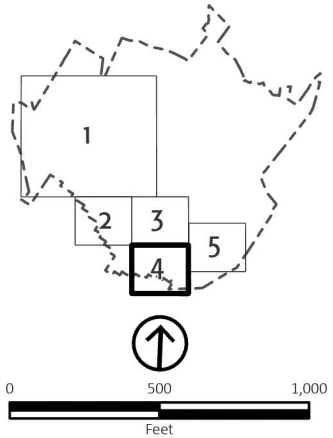
Source: USGS 2006, PlaceWorks 2022

Figure 4.6-2C
Fault Map

GEOLOGY AND SOILS



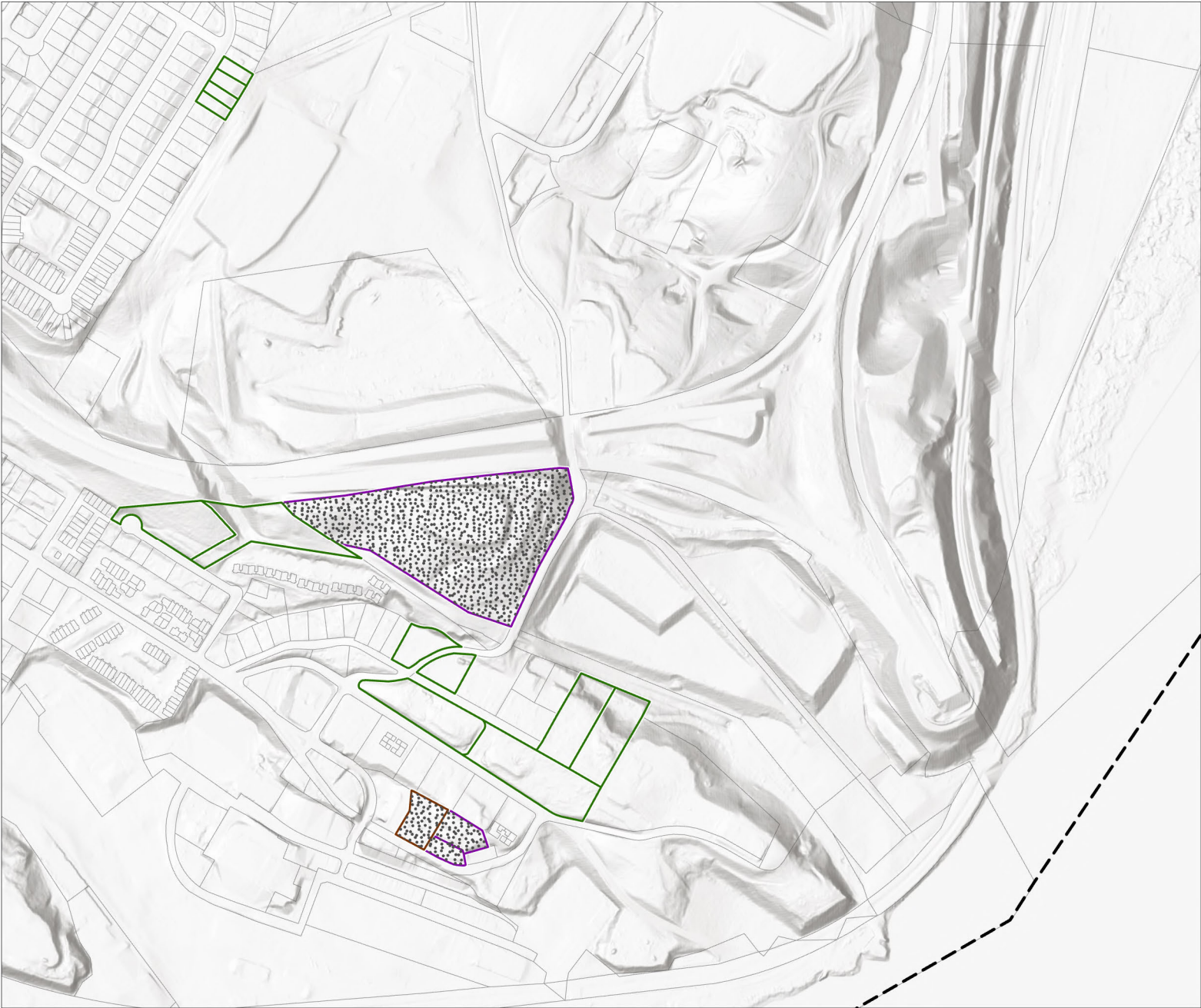
- City Limit
- Overlay Zone
- Housing Element Sites**
- Suitably Zoned
- Suitably Zoned with Upzoning Proposed
- Needs Zoning Change








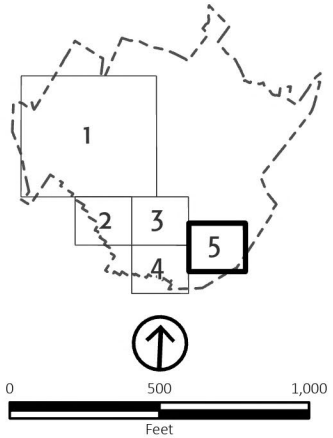
Source: USGS 2006, PlaceWorks 2022

Figure 4.6-2D
Fault Map

GEOLOGY AND SOILS



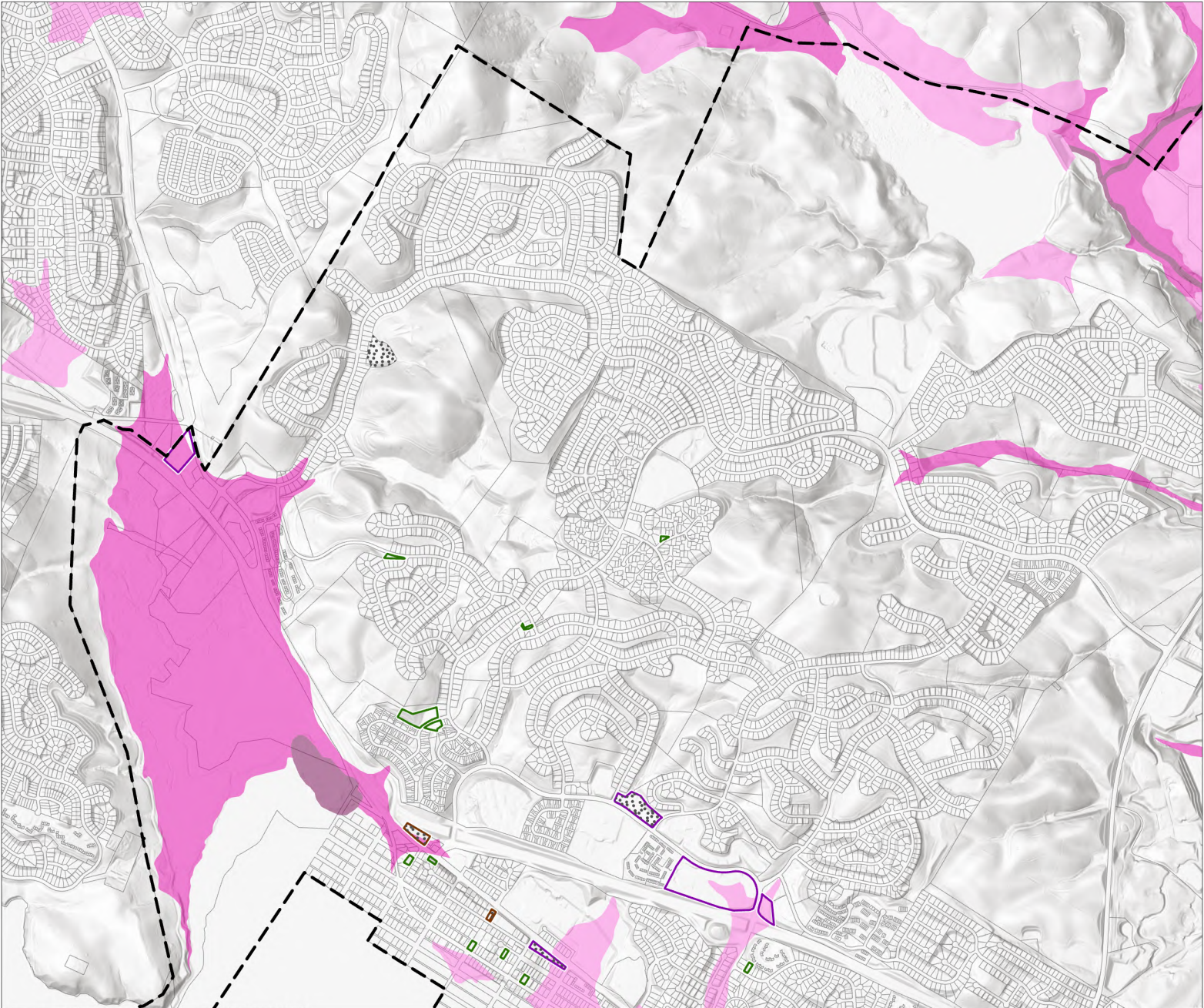
-  City Limit
-  Overlay Zone
- Housing Element Sites**
-  Suitably Zoned
-  Suitably Zoned with Upzoning Proposed
-  Needs Zoning Change



Source: USGS 2006, PlaceWorks 2022

Figure 4.6-2E
Fault Map

GEOLOGY AND SOILS



- City Limit
- Overlay Zone
- Liquefaction Susceptibility
 - Very high
 - Moderate
 - Low
- Housing Element Sites
 - Suitably Zoned
 - Suitably Zoned with Upzoning Proposed
 - Needs Zoning Change

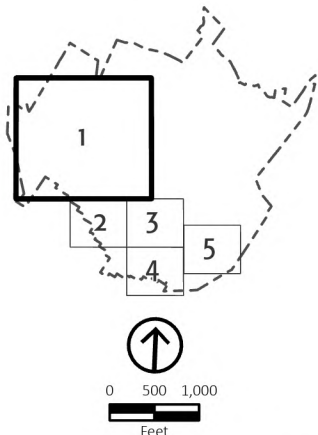
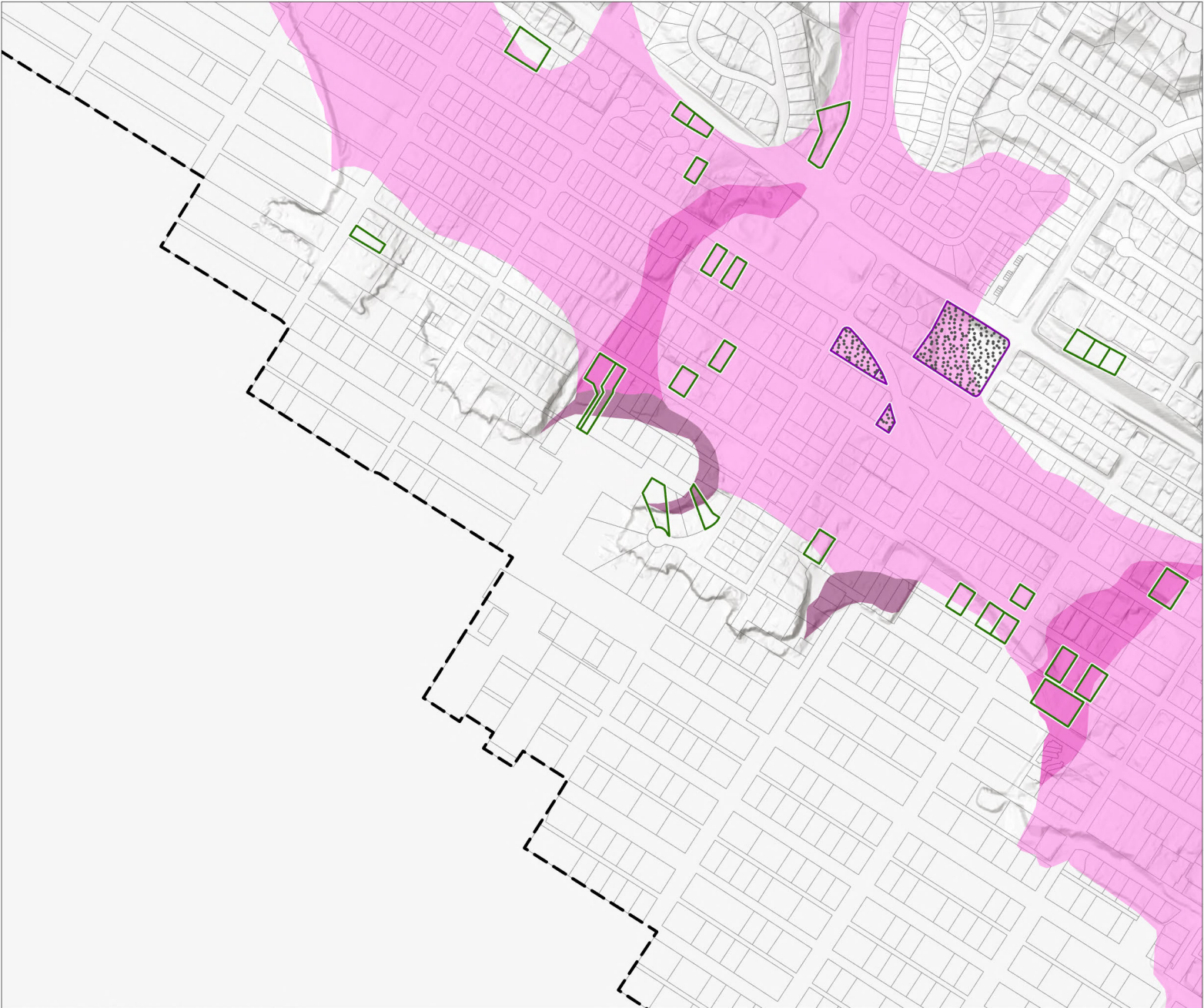


Figure 4.6-3A
Liquefaction Susceptibility

Source: USGS 2006, PlaceWorks 2022

GEOLOGY AND SOILS



- City Limit
- Overlay Zone
- Liquefaction Susceptibility**
 - Very high
 - Moderate
 - Low
- Housing Element Sites**
 - Suitably Zoned
 - Needs Zoning Change

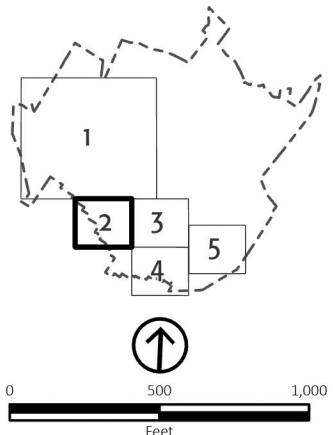
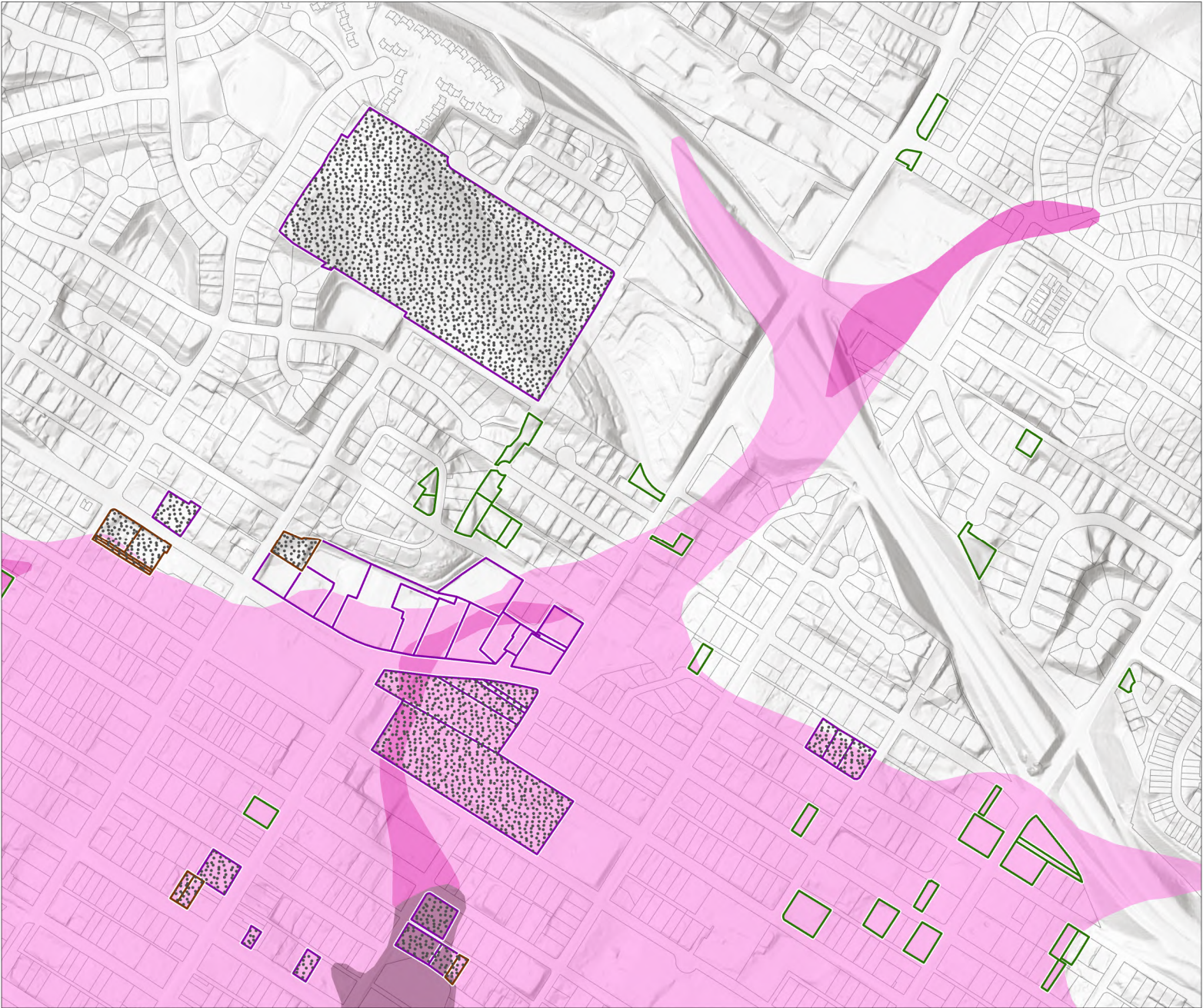


Figure 4.6-3B
Liquefaction Susceptibility

Source: USGS 2006, PlaceWorks 2022

GEOLOGY AND SOILS



- City Limit
- Overlay Zone
- Liquefaction Susceptibility
 - Very high
 - Moderate
 - Low
- Housing Element Sites
 - Suitably Zoned
 - Suitably Zoned with Upzoning Proposed
 - Needs Zoning Change

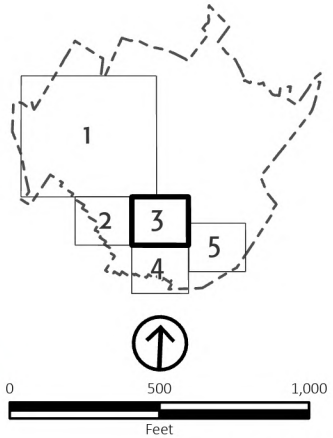
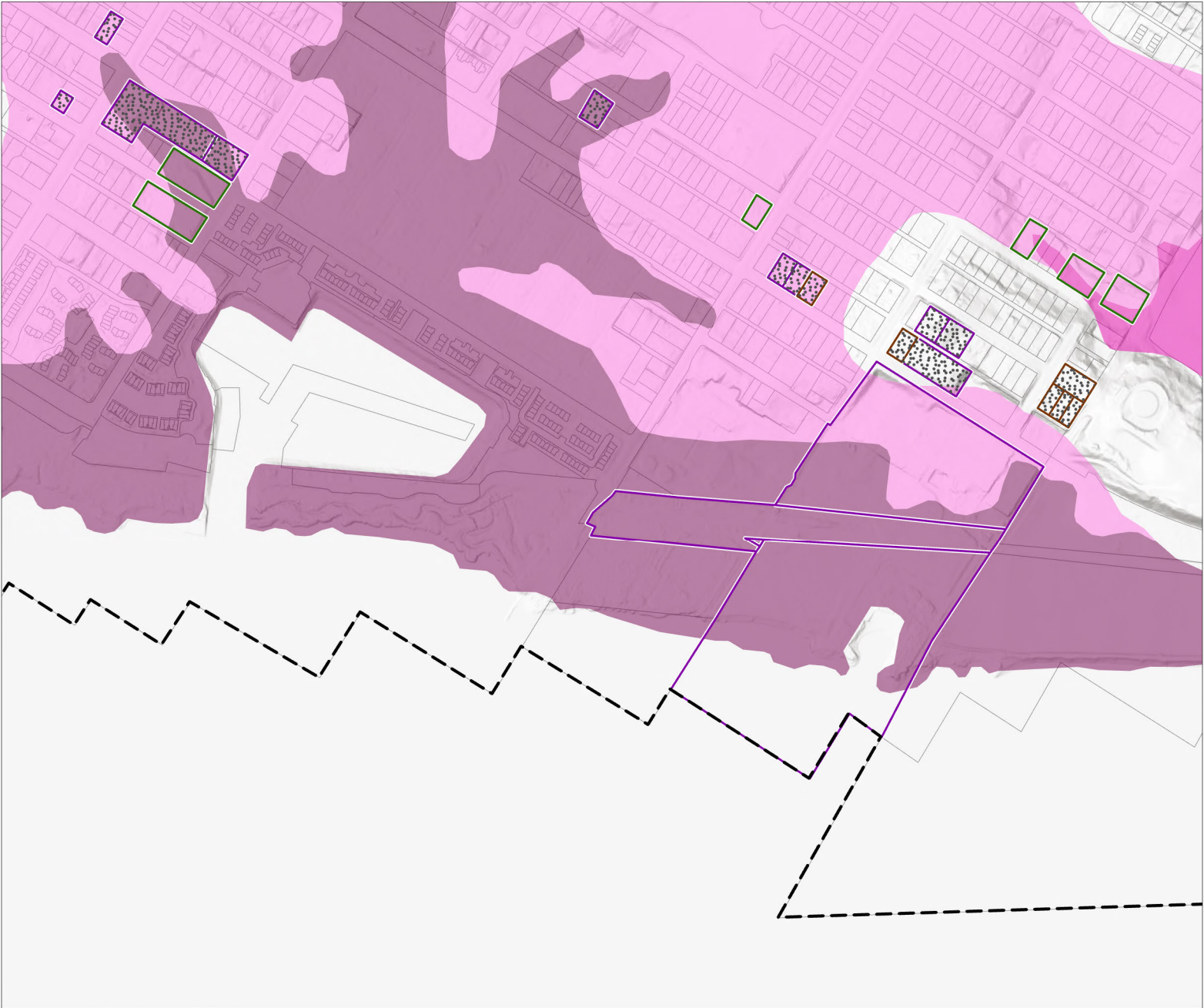


Figure 4.6-3C
Liquefaction Susceptibility

Source: USGS 2006, PlaceWorks 2022

GEOLOGY AND SOILS



- City Limit
- Overlay Zone
- Liquefaction Susceptibility
 - Very high
 - Moderate
 - Low
- Housing Element Sites
 - Suitably Zoned
 - Suitably Zoned with Upzoning Proposed
 - Needs Zoning Change

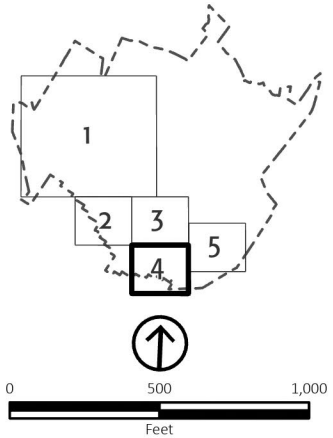


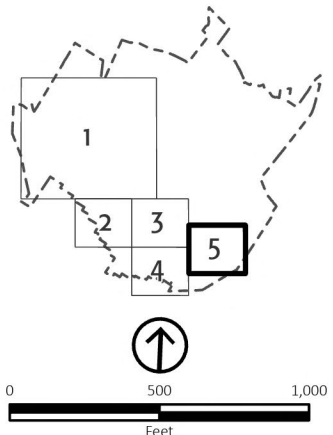
Figure 4.6-3D
Liquefaction Susceptibility

Source: USGS 2006, PlaceWorks 2022

GEOLOGY AND SOILS



- City Limit
- Overlay Zone
- Liquefaction Susceptibility**
 - Very high
 - Moderate
 - Low
- Housing Element Sites**
 - Suitably Zoned
 - Suitably Zoned with Upzoning Proposed
 - Needs Zoning Change



Source: USGS 2006, PlaceWorks 2022

Figure 4.6-3E
Liquefaction Susceptibility

Landslides

Landslides are gravity-driven movements of earth materials that can include rock, soil, unconsolidated sediment, or combinations of such materials. The rate of landslide movement can vary considerably; some move rapidly, as in a soil or rock avalanche, and others “creep,” or move slowly for long periods of time. The susceptibility of a given area to landslides depends on many variables, although the general characteristics that influence landslide hazards are widely acknowledged. Some of the more important contributing factors are:

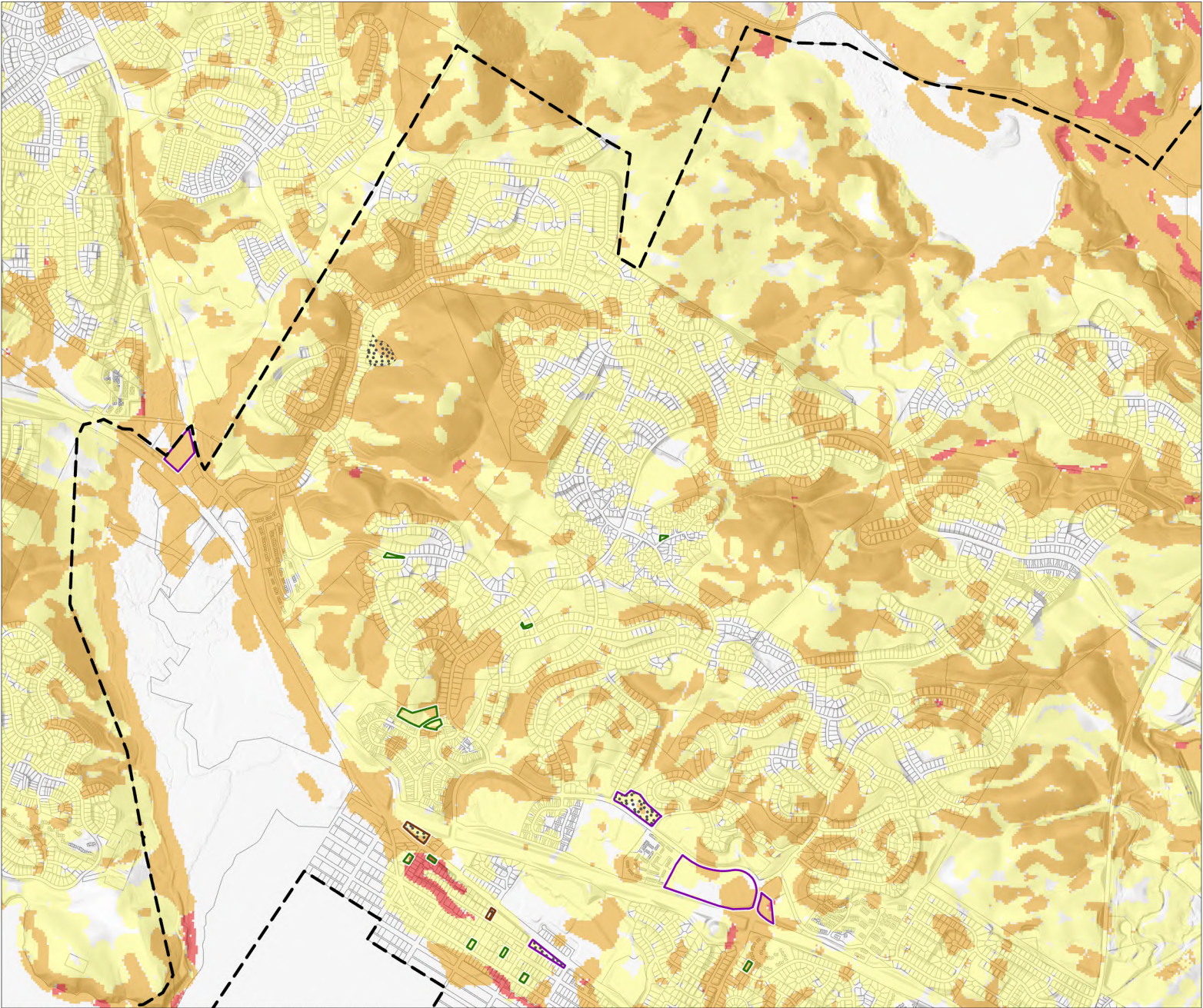
- **Slope Material.** Loose, unconsolidated soils and soft, weak rocks are more hazardous than are firm, consolidated soils or hard bedrock.
- **Slope Steepness.** Most landslides occur on moderate to steep slopes.
- **Structure and Physical Properties of Materials.** This includes the orientation of layering and zones of weakness relative to slope direction.
- **Water Content.** Increased water content increases landslide hazard by decreasing friction and adding weight to the materials on a slope.
- **Vegetation Coverage.** Abundant vegetation with deep roots promotes slope stability.
- **Proximity to Areas of Erosion or Man-Made Cuts.** Undercutting slopes can greatly increase landslide potential.
- **Earthquake Ground Motions.** Strong seismic ground motion can trigger landslides in marginally stable slopes or loosen slope materials, which increases the risk of future landslides.

As depicted in Figure 4.6-4A through Figure 4.6-4E, *Landslide Susceptibility Map*, there are localized areas with high susceptibility for landslides in the EIR Study Area. In the event of a severe earthquake, landslides could possibly be triggered in the hills and slopes within the EIR Study Area as shown on Figure 4.6-4. Due to the differences in the physical characteristics of slope materials, which markedly influence landslide potential, some superficially similar areas may differ widely in terms of landslide hazards. For this reason, site-specific geotechnical investigations are essential to the accurate assessment of potential landslide hazards at any given site.

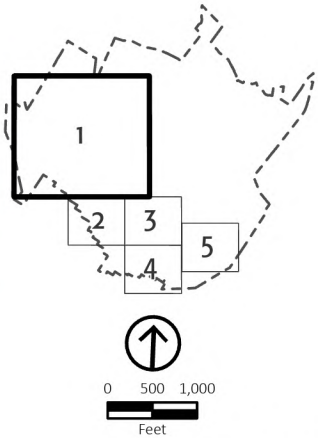
GEOLOGY & SOILS

This page intentionally left blank.

GEOLOGY AND SOILS



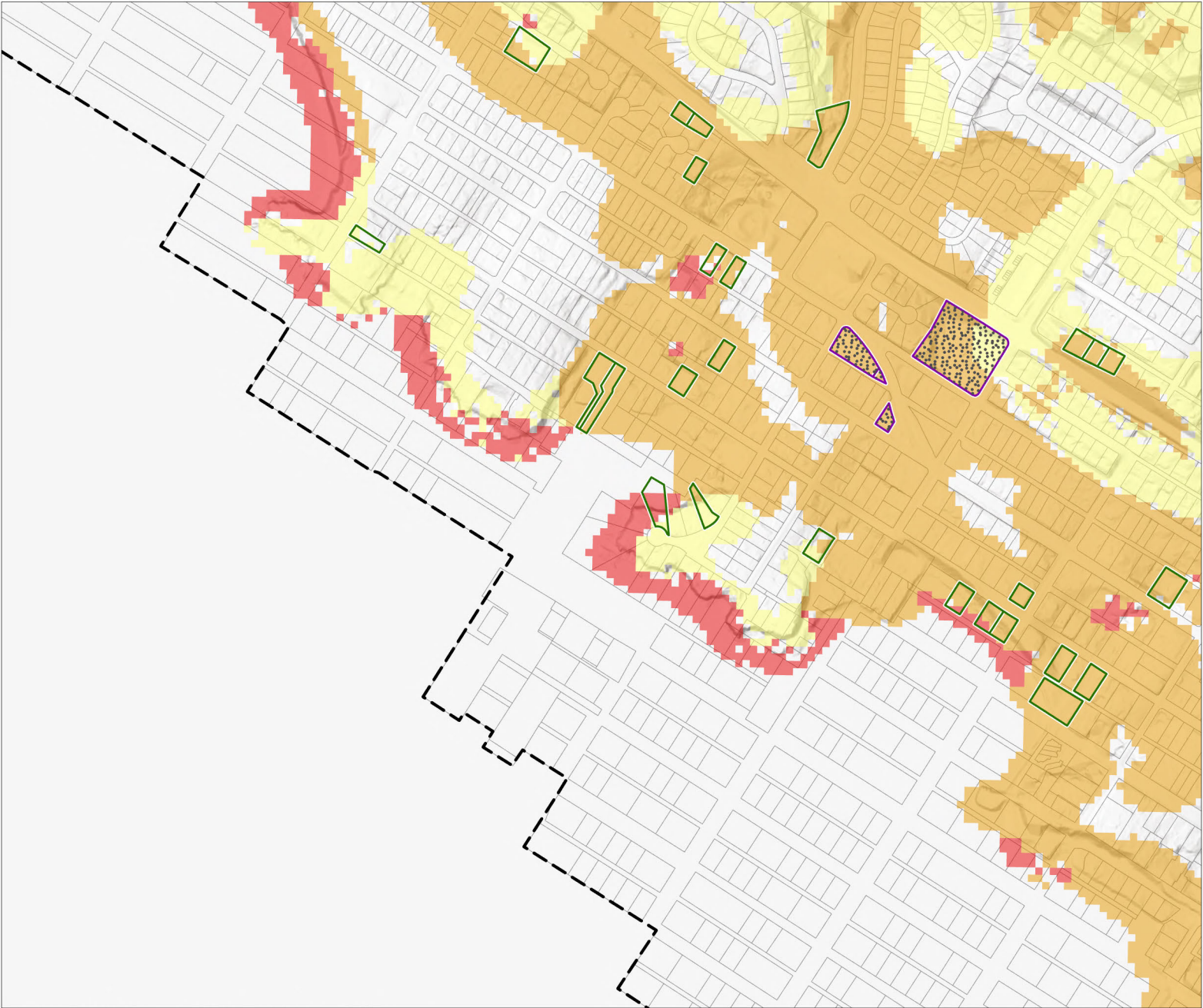
- City Limit
- Overlay Zone
- Landslide Hazards (Solano County MJHMP)
 - High
 - Low
 - Medium
- Housing Element Sites
 - Suitably Zoned
 - Suitably Zoned with Upzoning
 - Needs Zoning Change



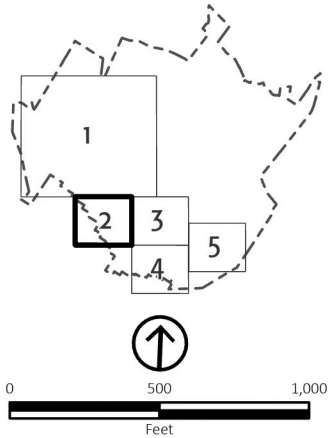
Source: Solano County 2021, PlaceWorks 2022

Figure 4.6-4A
Landslide Susceptibility

GEOLOGY AND SOILS



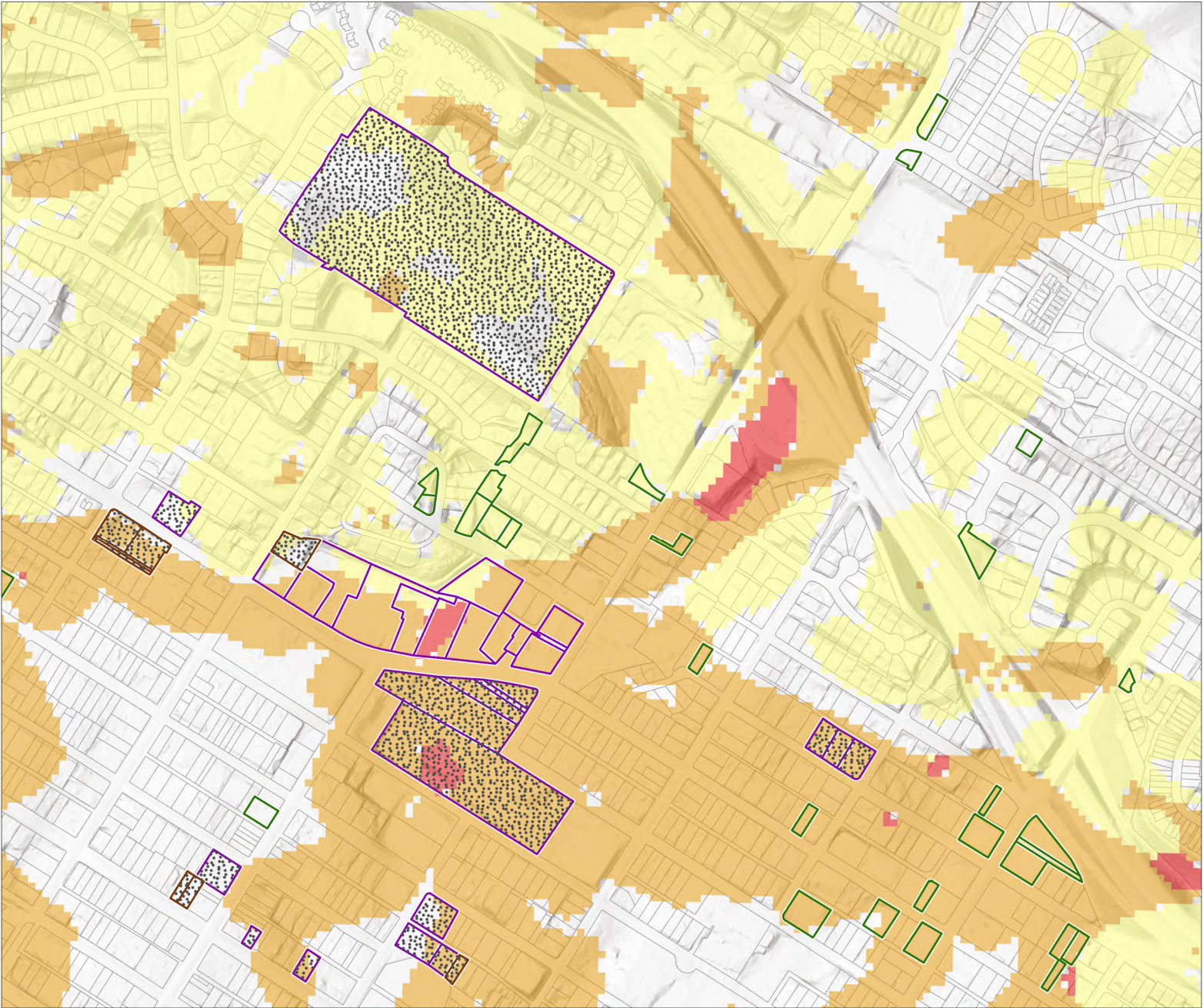
- City Limit
- Overlay Zone
- Landslide Hazards (Solano County MJHMP)
 - High
 - Low
 - Medium
- Housing Element Sites
 - Suitably Zoned
 - Needs Zoning Change



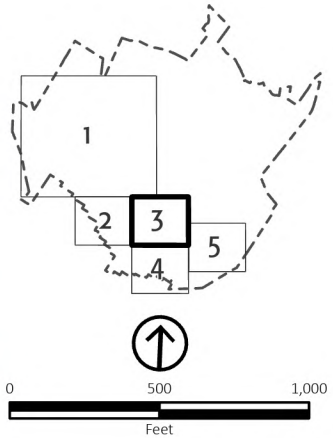
Source: Solano County 2021, PlaceWorks 2022

Figure 4.6-4B
Landslide Susceptibility

GEOLOGY AND SOILS



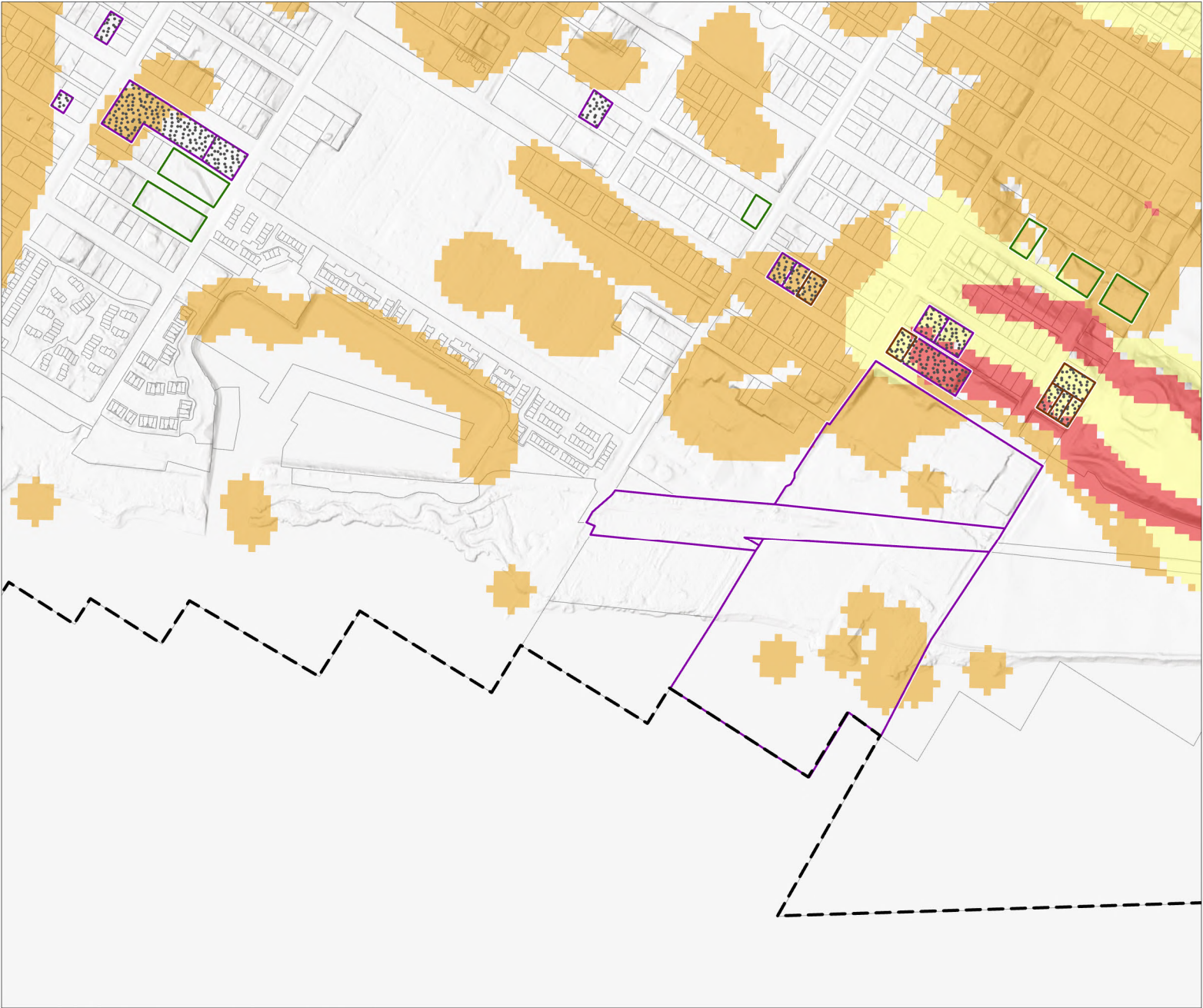
- City Limit
- Overlay Zone
- Landslide Hazards (Solano County MJHMP)
 - High
 - Low
 - Medium
- Housing Element Sites
 - Suitably Zoned
 - Suitably Zoned with Upzoning Proposed
 - Needs Zoning Change



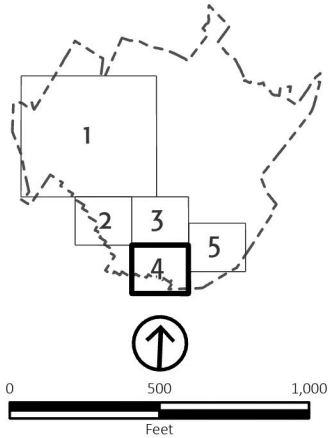
Source: Solano County 2021, PlaceWorks 2022

Figure 4.6-4C
Landslide Susceptibility

GEOLOGY AND SOILS



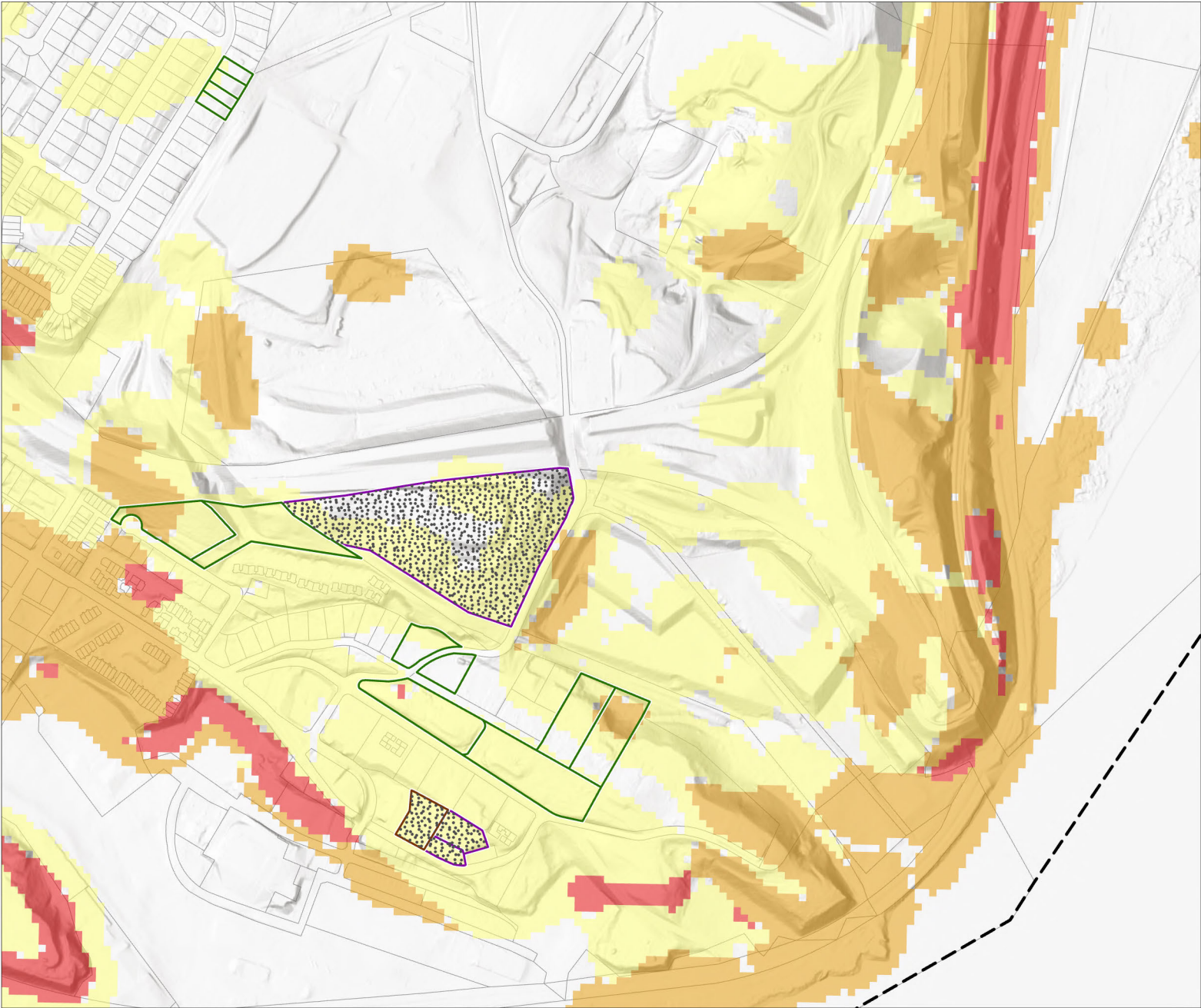
- City Limit
- Overlay Zone
- Landslide Hazards (Solano County MJHMP)**
- High
- Low
- Medium
- Housing Element Sites**
- Suitably Zoned
- Suitably Zoned with Upzoning Proposed
- Needs Zoning Change



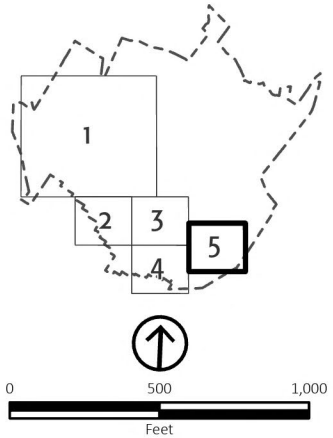
Source: Solano County 2021, PlaceWorks 2022

Figure 4.6-4D
Landslide Susceptibility

GEOLOGY AND SOILS



- City Limit
- Overlay Zone
- Landslide Hazards (Solano County MJHMP)
 - High
 - Low
 - Medium
- Housing Element Sites
 - Suitably Zoned
 - Suitably Zoned with Upzoning Proposed
 - Needs Zoning Change



Source: Solano County 2021, PlaceWorks 2022

Figure 4.6-4E
Landslide Susceptibility

GEOLOGY & SOILS

This page intentionally left blank.

Erosion

Erosion occurs when the upper layers of soil are displaced by erosive agents such as water, ice, snow, air, plants, animals, or anthropogenic forces. Sandy soils on moderate slopes, or clayey soils on steep slopes are susceptible to erosion when exposed to these forces. Erosion can become more frequent when established vegetation is disturbed or removed due to grading, wildfires, or other factors.

As described in Section 4.6.1.5 Existing Conditions, *Geology*, the predominant geological unit of the EIR Study Area are largely marine sandstone, mudstone and minor conglomerate. This unit has a moderate potential for erosion, particularly for the mudstone areas near Lake Herman (Bortugno 1987). The areas most subject to erosion are typically steep with sparse vegetation and exposed areas adjacent to waterways.

Land Subsidence

Land subsidence is a human-induced hazard in which the over-extraction of groundwater causes the depression and caving in of alluvial deposits. Land subsidence is particularly common in areas with fine-grained sediments, such as silt and clay, in which water molecules are partly responsible for the strength of the soil. The over-extraction of groundwater thus causes these soils to shrink which results in sinkholes that may compromise building foundations, pavement, and infrastructure (USGS 2022a).

Land subsidence has not been observed within Solano County, although alluvial deposits within the County are at risk of subsidence if groundwater over-extraction occurs. However, no cases of groundwater over-extraction have been documented in the EIR Study Area (USGS 2022b). The Suisun-Fairfield Valley groundwater basin on the eastern portion of the EIR Study Area has been ranked as low priority by the 2014 Sustainable Groundwater Management Act from the State of California (DWR 2022). Low priority basins are those which have statewide importance but that have not been over-extracted (DWR 2022).

Expansive Soils

Soils classified as expansive are those which change dramatically in volume depending on moisture content. When wet, these soils expand; conversely, when dry, these soils contract. Sources of moisture that trigger an expansion include rainfall, landscape irrigation, utility leakage, and perched groundwater. Expansive soils are typically very fine-grained with a high to very high percentage of clay, typically montmorillonite, smectite, or bentonite clay. Soil tests are often used to identify expansive soils, wherein a soil samples volume and length changes in response to reduced moisture content. A change of 3 percent or greater indicates a moderate to high shrink-swell potential. Such soils are known to cause damage to concrete slabs, structure foundations, and pavement. Areas which have expansive soils must often implement special building and structure design which can withstand such a fluctuation in soil.

GEOLOGY & SOILS

There are clay deposits in much of the EIR Study Area, which could have the potential to swell and contract during moisture events. Soils that have a high to very high potential for shrink-swell properties within the EIR Study Area include Clear Lake clay, Altamont clay, Omni clay loam, Reyes silty clay, and Rincon clay loam (USDA 2022).

Paleontological Resources

Paleontological resources (fossils) are the remains and/or traces of prehistoric plant and animal life exclusive of human remains or artifacts. Fossil remains such as bones, teeth, shells, and wood are found in the geologic deposits (rock formations) in which they were originally buried. Paleontological resources represent a limited, non-renewable, sensitive scientific and educational resource.

The potential for fossil remains at a location can be predicted through previous correlations that have been established between the fossil occurrence and the geologic formations within which they are buried. For this reason, knowledge of the geology of a particular area and the paleontological resource sensitivity of rock formations make it possible to predict where fossils will or will not be encountered.

To identify any known paleontological resources within or in the vicinity of the project site, a record search of the online database maintained by the University of California Museum of Paleontology (UCMP), was conducted on July 28, 2022. The UCMP online locality user records search indicated the presence of paleontological resources in the EIR Study Area (UCMP 2022). Seven specimen localities were documented in the records search were from Pleistocene, Paleocene and Cretaceous age units. Discoveries specifically from the Pleistocene include a mammoth (*Mammuthus* sp.), ancient camel (*Camelops*), and horse (*Equus* sp.). One discovery of marine snails (*Brachysphingus mammilatus*) was made in Paleocene deposits on the Benicia Arsenal property in the EIR Study Area. Lastly, two discoveries of Foraminifera (*Praeglobotruncana loeblichae*) were made in Cretaceous-aged deposits in the EIR Study Area. It is anticipated that due to the rich geologic past within Benicia, there may be significant paleontological resources which have not been unearthed.

4.6.2 THRESHOLD OF SIGNIFICANCE

The proposed project would result in significant geology and soils impacts if it would:

1. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; ii) Strong seismic ground shaking; iii) Seismic-related ground failure, including liquefaction; iv) Landslides, mudslides, or other similar hazards.
2. Result in substantial soil erosion or the loss of topsoil.

3. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.
4. Be located on expansive soil, as defined by Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.
5. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of wastewater.
6. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

4.6.3 PROPOSED HOUSING ELEMENT POLICIES

There are no policies in the Housing Element Update applicable to Geology and Soils.

4.6.4 PROPOSED SAFETY ELEMENT POLICIES

The Safety Element Update contains the following policies applicable to Geology and Soils:

- **Policy 4.11.3:** Identify City infrastructure with seismic vulnerabilities and pursue funding to conduct appropriate seismic retrofits.
- **Program 4.11.3.1:** Develop and adopt a standard for new development that, if met, would reduce landslide risks to negligible levels. Following adoption, require new development in high landslide risk areas, as mapped in Figure 11, to submit studies and plans that demonstrate the development will meet this standard. (Refer to Appendix 3-2 for the proposed Safety Element Update figures).
- **Policy 4.11.4:** Encourage retrofitting of existing City-owned buildings, including unreinforced masonry buildings as identified by the Building Safety Division, to improve resiliency to geologic and seismic hazards.
- **Policy 4.11.5:** Develop a program to implement State laws aimed at identification, inventory, and retrofit of existing vulnerable unreinforced masonry structures.
- **Policy 1.4:** Locate critical facilities outside of mapped hazard zones, including floodplains, areas at risk of sea level rise, dam hazard inundation zones, high landslide hazard areas, Alquist-Priolo fault zones, liquefaction hazard zones, tsunami inundation areas, and the wildland-urban interface. If critical facilities must be in these zones, design and site them to minimize the potential for damage as a result of natural hazards and ensure their ability to remain operational during and after hazard events.
- **Policy 1.9:** Require the disclosure of any known or potential fire and/or inundation or flooding hazards at the time of sale for properties in the wildland-urban interface or projected sea level rise areas within the city, as illustrated in Figure 13, Wildland-Urban Interface, and Figures 3 through 6, which show sea level rise projections for 2050 and 2100. Provide reference information on the City website

GEOLOGY & SOILS

for potential purchasers to consider when reviewing disclosures. (Refer to Appendix 3-2 for the proposed Safety Element Update figures).

- **Policy 6.1:** Support efforts by homeowners and business owners to increase the resilience of their buildings and properties through retrofits, weatherization, and other improvements. Retrofits may include, but are not limited to, efforts that address extreme heat, poor air quality, flood protection, water and energy efficiency, geologic and seismic safety, and fire safety.
- **Policy 6.2:** Evaluate vulnerabilities to climate change and natural hazards in the Downtown Historic District and prioritize adaptation strategies that increase resilience to known hazards such as seismic, flooding, and sea level rise.
- **Policy 6.7:** Conduct a public education campaign to increase awareness of hazards in the community, such as geologic and seismic risks, flooding and sea level rise, wildfire, drought, and extreme heat. Educational campaigns could offer residents information on ways to protect their property and preserve personal health and safety from various hazards.

4.6.5 ENVIRONMENTAL IMPACTS

GEO-1	The project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving: i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; ii) Strong seismic ground shaking; iii) Seismic-related ground failure, including liquefaction; iv) Landslides, mudslides, or other similar hazards.
-------	---

Housing Element Update

The location and underlying geology in the EIR Study Area make it likely to experience seismic hazards, including strong seismic ground shaking, and secondary hazards, like liquefaction.

Earthquake Faults

As stated in Section 4.6.1.5, *Existing Conditions*, the Green Valley-Concord Fault, an active surface fault, is mapped and zoned under the AP Zoning Act in the EIR Study Area. No sites in the Housing Element Sites Inventory are located within a fault zone. California Building Code Section 1803, *Geotechnical Investigations* applies to proposed developments located on active faults pursuant to the Alquist-Priolo Act. Public Resources Code Division 2, Chapter 7.5 requires a surface fault investigation filed by the State Geologist to be provided to the City to prove that all structures proposed for human occupancy do not cross any active fault traces for properties identified within the Alquist-Priolo Earthquake Fault Zone. Such compliance would reduce hazards arising from fault rupture to less than significant.

Strong Seismic Ground Shaking

Ground shaking is responsible for most of the damage from earthquakes and can damage or destroy buildings, structures, pipelines, and infrastructure. The intensity of shaking depends on the type of fault, distance to the epicenter, magnitude of the earthquake, and subsurface geology. The Rodgers Creek-Hayward and Green Valley-Concord faults west and east of the EIR Study Area are potentially capable of producing the most intense ground accelerations. The seismic design of buildings within the plan area is governed by the requirements of the most recent CBC. The CBC has been accepted as the basic design standard in Benicia. All structures that would be constructed pursuant to the proposed Housing Plan Update would be designed to meet or exceed current design standards in the latest CBC. Therefore, new structures are expected to remain standing, but may suffer damage requiring closure and replacement. These project design measures would reduce the exposure of people and structures to harm from strong ground shaking hazards such that there would not be a significant impact.

Seismic-Related Ground Failure

Secondary effects of earthquakes are nontectonic processes such as ground deformation, including fissures, settlement, displacement, and loss of bearing strength, and are the leading causes of damage to structures during a moderate to large earthquake. Secondary effects could lead to ground deformation including liquefaction, lateral spreading, seismically induced landslides, and ground lurching.

Based on the potential for strong ground shaking combined with a groundwater depth of under 50 feet in parts of the plan area, parts of the city are within an area susceptible to liquefaction. As shown on Figure 4.6-3A through Figure 4.6-3E, there are six Housing Element sites in high or very high liquefaction susceptibility zones. All potential future structures constructed in the EIR Study Area would be designed in accordance with current seismic design standards as found in the CBC. Design measures would be implemented according to the most recent CBC, which would reduce the impact of liquefaction and seismic settlement, including, but not limited to, ground improvement techniques such as in-situ densification, load transfer to underlying nonliquefiable bearing layers, and over-excavation and recompaction with engineered fill method. These design measures would reduce the potential exposure of people and structures to the hazard from liquefaction and seismic settlement such that there would not be a significant impact.

Landslides

Marginally stable slopes (including existing landslides) may be subject to landslides caused by earthquakes. The landslide hazard depends on many factors, including existing slope stability, shaking potential, and presence of existing landslides. Landslides, debris flows, or any movement of earth or rock are most common in areas of high topographic relief, such as steep canyon walls or steep hillsides. As shown on Figure 4.6-4A through Figure 4.6-4E, there are several Housing Element sites that overly areas of medium and high landslide susceptibility. Compliance with Hillside Development Overlay District

GEOLOGY & SOILS

requirements would prevent impacts from slope instability. Such compliance would reduce hazards arising from slope instability to less than significant.

Summary

The proposed Safety Element contains goals, policies, and actions that require local planning and development decisions to consider potential impacts to the risk of loss, injury, or death as a result of earthquakes.

Compliance with State, regional, and local regulations pertaining to structural safety regarding fault rupture, ground shaking, liquefaction, and landslides, would ensure that potential future development that results from implementation of the proposed project would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death. Therefore, impacts would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. Several policies in the proposed Safety Element would help to reduce impacts from geologic and seismic hazards on future development on Housing Element sites in addition to other development in the City. Policy 4.11.3 directs the City to identify City infrastructure with seismic vulnerabilities and pursue funding to conduct appropriate seismic retrofits. Program 4.11.3.1 directs the City to develop and adopt a standard for new development that, if met, would reduce landslide risks to negligible levels. Following adoption, require new development in high landslide risk areas to submit studies and plans that demonstrate the development will meet this standard. Policy 4.11.4 encourages retrofitting of existing City-owned buildings, including unreinforced masonry buildings as identified by the Building Safety Division, to improve resiliency to geologic and seismic hazards and Policy 4.11.5 directs the City to develop a program to implement State laws aimed at identification, inventory, and retrofit of existing vulnerable unreinforced masonry structures. Policy 6.1 support efforts by homeowners and business owners to increase the resilience of their buildings and properties through retrofits, weatherization, and other improvements. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's geological hazards. No impacts would occur.

Significance Without Mitigation: Less than significant.

GEO-2	The project would not result in substantial soil erosion or the loss of topsoil.
-------	--

Housing Element

Soils are particularly prone to erosion during the grading phase of development, especially during heavy rains. Substantial soil erosion or the loss of topsoil during construction of future development could undermine structures or minor slopes, which would be a concern during implementation of the proposed project.

BMC Chapter 15.28, *Grading and Erosion Control* requires erosion and sediment be controlled. Erosion control measures can include seeding slopes, installation of temporary dikes and swales, placement of straw bales and filter fences, outlet protection, grass-lined swales, and installation of sediment retention structures, as appropriate for specific sites.

As described in further detail in Chapter 4.10, *Hydrology and Water Quality*, of this Draft EIR, to minimize potential impacts related to erosion, future development pursuant to the proposed project would require compliance with the Construction General Permit (CGP) Water Quality Order 2009-0009-DWQ (as amended by Order No. 2010-0014-DWQ and 2012-006-DWQ), which includes the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP). A SWPPP requires an erosion control plan with the incorporation of best management practices to control erosion during construction. Typical construction best management practices include silt fences, fiber rolls, catch basin inlet protection, water trucks, street sweeping, and stabilization of truck entrance/exits. While this regulation is primarily aimed at water quality, it is another mechanism routinely applied by the City that would help to minimize the risk of erosion.

Adherence to existing regulatory requirements that include, but are not limited to, the CBC and the BMC grading and drainage requirements for new developments, would ensure that impacts associated with substantial erosion and loss of topsoil from potential future development would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's geological hazards.

Significance Without Mitigation: Less than significant.

GEOLOGY & SOILS

GEO-3	The project would be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.
-------	--

Housing Element Update

Unstable geologic units are known to be present within the EIR Study Area. The following sections discuss the hazards associated with landslides, lateral spreading, subsidence, liquefaction, or collapse.

Landslides

As stated in impact discussion GEO-1, although there are substantial hazards with respect to slope instability, based on the mandatory compliance with Hillside Development Overlay District requirements pursuant to the BMC, impacts from slope instability would be reduced to less than significant.

Subsidence

As described in further detail in Chapter 4.6.1.5, *Existing Conditions, Land Subsidence*, land subsidence has not been observed within Solano County, although alluvial deposits within the County are at risk of subsidence if groundwater over-extraction occurs. However, no cases of groundwater over-extraction have been documented in the EIR Study Area (USGS 2022b). Therefore, the potential impact of subsidence is considered less than significant.

Liquefaction and Lateral Spreading

As stated in impact discussion GEO-1, based on the potential for strong ground shaking combined with a groundwater depth of under 50 feet in parts of the EIR Study Area, much of the EIR Study Area is within an area susceptible to liquefaction. All structures constructed in the EIR Study Area would be designed in accordance with current seismic design standards as found in the CBC. Design measures would be implemented according to the most recent CBC, which would reduce the impact of liquefaction and seismic settlement, including, but not limited to, ground improvement techniques such as in-situ densification, load transfer to underlying nonliquefiable bearing layers, and over-excavation and recompaction with engineered fill method. These design measures would reduce the potential exposure of people and structures to the hazard from liquefaction and seismic settlement such that there would not be a significant impact. In addition, based on the additional geological review requirements within Shoreline Protection Overlay District, there would not be a significant impact from ground lurching or lateral spreading.

Settlement and Collapse

Settlement and collapse are likely to exist in areas with alluvial soils. Areas of large settlement can damage, or in extreme cases, destroy structures. The presence of compressible soils in the EIR Study Area represents a hazard to structures and people.

The CBC design code has been adopted by the City and requires that structures be designed to mitigate compressible soils. Methods that could be used to reduce the impact of compressible soils include in-situ densification, transferring the load to underlying non-compressible layers with piles, and overexcavation of compressible soil and recompaction with engineered fill. These design measures, or a combination of them, would reduce the impact of compressible soils to less than significant.

Summary

As determined in impact discussions GEO-1 and GEO-2, future development from implementation of Housing Plan Update would be required to comply with the CBC, which provides regulations for building design and construction to ensure geologic and soil stability. In addition to protections afforded by State laws would require local planning and development decisions to consider potential risks of development on unstable soils or geologic units.

All potential future development from implementation of the proposed project would be required to comply with State and local regulations, including BMC provisions and General Plan goals and policies that minimize impacts related to unstable geologic units and soils where landslide, lateral spreading, subsidence, liquefaction, or collapse could occur in the EIR Study Area. Implementation of the above goals and policies, as well as compliance with State, regional, and local regulations pertaining to structural safety regarding a geologic unit or soils that are unstable and could result in landslides, lateral spreading, subsidence, liquefaction, or collapse, and would ensure that potential future development that results from implementation of the proposed project would not directly or indirectly cause substantial adverse effects. Therefore, impacts would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's geological hazards.

Significance Without Mitigation: Less than significant.

GEOLOGY & SOILS

GEO-4	The project would be located on expansive soil, as defined by Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.
-------	--

Housing Element Update

Based on the presence of clay soils in the EIR Study Area, there is some potential for expansive/shrink-swell soils throughout Benicia (USDA 2022). Expansive soils are possible wherever clays and elastic silts may be present, including alluvial soils and weathered granitic and fine-grained sedimentary rocks. The presence of expansive soils represents a hazard to structures and people. In the event that future development is proposed in these portions of the EIR Study Area the BMC would require that the project site identify any potential geological or seismic hazards early in the process. Specific engineering methods that could be used to reduce the impact of expansive soils include drainage control devices to limit water infiltration near foundations, over-excavation and recompaction of engineered fill method, or support of the foundation with piles.

Compliance with State, regional, and local regulations pertaining to structural safety regarding a geologic unit or soils that are unstable and could result in landslides, lateral spreading, subsidence, liquefaction, or collapse, and would ensure that potential future development that results from implementation of the proposed project would not directly or indirectly cause substantial adverse effects, including the risks to life or property. Therefore, impacts would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's geological hazards.

Significance Without Mitigation: Less than significant.

GEO-5	Future development in the plan area would require connection to the City's sewer system.
-------	---

Housing Element Update

As discussed in Section 13.60.001 of the BMC, wastewater from new lots or parcels would be discharged into the existing public sanitary sewer system serviced by the City of Benicia Therefore, potential future

development in the EIR Study Area is not anticipated to result in the use of septic tanks or alternative wastewater disposal systems.

In addition, as discussed in BMC Chapter 13.72, *Private Sewage Disposal*, the City would allow for the construction of septic tanks or alternative wastewater disposal systems only in cases where the public sanitary sewer system is greater than 300 feet from the nearest building provided that the applicant obtains a County permit and the construction is in accordance with the provisions of the permit, including soil profile characterization and hydrometer tests, bulk density data or percolation test data. Should city facilities become available to a property which has a private sewage disposal system, a connection to the public sanitary sewer system and abandonment of the private sewage disposal system would be required within 90 days of notification at the expense of the applicant.

In summary, implementation of the proposed goals and policies listed above, as well as compliance with State, regional, and local regulations pertaining to structural safety regarding inadequate soils, would ensure that potential future development that results from implementation of the proposed project would not directly or indirectly cause substantial adverse effects. Therefore, potential future development would not result in septic tanks or alternative wastewater disposal systems where soils are not capable of adequately supporting such systems, and there would be no impact.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's geological hazards. No impacts would occur.

Significance Without Mitigation: Less than significant.

GEO-6	The project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.
-------	--

Housing Element Update

As stated in Section 4.6.1.5 *Existing Conditions*, the geology and soils in the EIR Study Area are common throughout the city and region and are not considered to be unique. In addition, the requirements of the Shoreline Protection Overlay District would prevent any intentional destruction of cliffs and bluffs along Benicia's shoreline. However, geological formations underlying the EIR Study Area have the potential to

GEOLOGY & SOILS

contain unique paleontological resources. Potential future development would be required to comply with the federal Paleontological Resources Preservation Act that limits the collection of vertebrate fossils and other rare and scientifically significant fossils to qualified researchers who have obtained a permit from the appropriate state or federal agency and the California Public Resources Code Section 5097 that prohibits the removal of any paleontological site or feature from public lands without the permission of the jurisdictional agency. Ground-disturbing construction activities (e.g., grading and excavation) associated with potential future development in the EIR Study Area could uncover fossilized remains of organisms from prehistoric environments that have not been recorded. The implementation protocols and adherence to the Society of Vertebrate Paleontology standards would ensure the protection of unique paleontological resources during construction of future development. Mitigation Measure GEO-1 would require adherence to these protocols.

In summary, compliance with State, regional, and local regulations pertaining to paleontological resources, in addition to Mitigation Measure GEO-1, would ensure that potential future development that results from implementation of the proposed project would not directly or indirectly cause substantial adverse effects to paleontological resources. Therefore, the impact would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's geological hazards. No impacts would occur.

Significance Without Mitigation: Potentially significant.

Mitigation Measure:

- GEO-1 In the event of any fossil discovery, regardless of depth or geologic formation:
- Excavations within a 50-foot radius of the find shall be temporarily halted or diverted.
 - Ground-disturbance work shall cease until a City-approved, qualified paleontologist determines whether the resource requires further study.
 - The paleontologist shall document the discovery as needed, in accordance with Society of Vertebrate Paleontology standards (Society of Vertebrate Paleontology 1995) as appropriate, evaluate the potential resource, and assess the significance of the finding under the criteria set forth in CEQA Guidelines Section 15064.5.

- The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before construction activities are allowed to resume at the location of the find.
- If is not feasible, the paleontologist shall prepare an excavation plan for mitigating the effect of construction activities on the discovery. The excavation plan shall be submitted to the City of Benicia for review and approval prior to implementation.
- All construction activities shall adhere to the recommendations in the excavation plan.

Significance With Mitigation: Less than significant.

GEOLOGY & SOILS

4.6.6 REFERENCES

- Benicia, City of. 2017. Benicia Local Hazard Mitigation Plan, https://www.ci.benicia.ca.us/vertical/Sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/City_of_Benicia_Final_LHMP_2017.pdf, accessed on July 26, 2022.
- _____. 2019. Benicia Emergency Operations Plan, [https://www.ci.benicia.ca.us/index.asp?SEC=04273A68-D081-4C4D-AA06-08F5B0BFF01B&DE=E5714FE9-4D5F-4758-B08C-08A58892E593#:~:text=The%20City%20of%20Benicia%20Emergency,Incident%20Management%20System%20\(NIMS\)](https://www.ci.benicia.ca.us/index.asp?SEC=04273A68-D081-4C4D-AA06-08F5B0BFF01B&DE=E5714FE9-4D5F-4758-B08C-08A58892E593#:~:text=The%20City%20of%20Benicia%20Emergency,Incident%20Management%20System%20(NIMS)), accessed on July 26, 2022.
- Bortugno, E. J., 1987, Geologic Map in Landslide Hazards in the Benicia-Vallejo Area, Solano County, California, California Geological Survey Open-File Report 86-17 SF, Landslide Hazard Identification Map No. 8, scale 1:24,000.
- California Department of Conservation (CDC). 2022. Data Viewer, <https://maps.conservation.ca.gov/cgs/DataViewer/>, accessed on July 27, 2022.
- California Department of Water Resources (DWR). 2022. SGMA Basin Prioritization Dashboard, <https://gis.water.ca.gov/app/bp-dashboard/final/>, accessed on July 27, 2022.
- California Geological Survey (CGS). Alquist-Priolo Earthquake Fault Zoning Act. 2022a. <https://www.conservation.ca.gov/cgs/alquist-priolo>, accessed on July 26, 2022
- _____. 2022b. Fault Activity Map of California, <https://maps.conservation.ca.gov/cgs/fam/>, accessed on July 26, 2022.
- Kleinfelder, 2017, Geotechnical Engineering Investigation Report, Contra Costa College District Headquarters, 500 Court Street, Martinez, California, dated October 18, <https://webapps.4cd.edu/apps/files/purchasing/misc/Soils%20Report%20District%20Office%20p4006.pdf> accessed on July 26, 2022.
- Norris, R. M., and R. W. Webb, 1990. Geology of California, Second Edition, New York: John Wiley & Sons, Inc.
- United States Department of Agriculture (USDA). 2022. Web Soil Survey, <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>, accessed on July 26, 2022.
- U.S. Department of the Interior (DOI). 2000, May. *Fossils on Federal & Indian Lands, Report of the Secretary of the Interior*. https://www.blm.gov/sites/blm.gov/files/programs_paleontology_quick%20links_Assessment%20of%20Fossil%20Management%20on%20Federal%20%26%20Indian%20Lands%2C%20May%202000.pdf, accessed on July 26, 2022.

United States Geological Survey (USGS). 1980a. 7.5' Topographic Series, Vine Hill, California Quadrangle Map, scale 1:24,000.

_____. 1980b. 7.5' Topographic Series, Benicia, California Quadrangle Map, scale 1:24,000.

_____. 2022a Land Subsidence, https://www.usgs.gov/special-topic/water-science-school/science/land-subsidence?qt-science_center_objects=0#qt-science_center_objects, accessed on July 27, 2022.

_____. 2022b. Areas of Land Subsidence in California, https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html, accessed on July 27, 2022.

United States Geological Survey (USGS). 2022, U.S. Quaternary Faults, <https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=5a6038b3a1684561a9b0aadf88412fcf>, accessed on July 26, 2022.

University of California Museum of Paleontology (UCMP). 2022. Specimen Search, <https://ucmpdb.berkeley.edu/>, accessed July 28, 2022.

GEOLOGY & SOILS

This page intentionally left blank.

4.7 GREENHOUSE GAS EMISSIONS

This section evaluates the potential for the buildout of the proposed project in the City of Benicia to impact greenhouse gas (GHG) emissions in a local and regional context. Because no single project is large enough to result in a measurable increase in global concentrations of GHG, climate change impacts of a project are considered on a cumulative basis.

This evaluation is based on the methodology recommended by the Bay Air Quality Management District (BAAQMD). The analysis focuses on air pollution from regional emission and localized pollutant concentrations. Criteria air pollutant emissions modeling is included in Appendix 4.2-1 of this Draft Environmental Impact Report (EIR). Transportation-sector impacts are based on trip generation and vehicle miles traveled (VMT) provided by Fehr and Peers.

Terminology

The following are definitions for terms used throughout this section.

- **Greenhouse gases (GHG).** Gases in the atmosphere that absorb infrared light, thereby retaining heat in the atmosphere and contributing to a greenhouse effect.
- **Global warming potential (GWP).** Metric used to describe how much heat a molecule of a GHG absorbs relative to a molecule of carbon dioxide (CO₂) over a given period of time (20, 100, and 500 years). CO₂ has a GWP of 1.
- **Carbon dioxide-equivalent (CO₂e).** The standard unit to measure the amount of GHGs in terms of the amount of CO₂ that would cause the same amount of warming. CO₂e is based on the GWP ratios between the various GHGs relative to CO₂.
- **MTCO₂e.** Metric ton of CO₂e.
- **MMTCO₂e.** Million metric tons of CO₂e.

4.7.1 ENVIRONMENTAL SETTING

4.7.1.1 GREENHOUSE GASES AND CLIMATE CHANGE

Human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as GHGs, to the atmosphere. The primary source of these GHGs is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHGs—water vapor, carbon dioxide (CO₂), methane (CH₄), and ozone (O₃)—that are the likely cause of an increase in global average temperatures observed in the 20th and 21st centuries. Other GHGs identified by the IPCC that contributes to global warming to a lesser extent are nitrous oxide (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons,

GREENHOUSE GAS EMISSIONS

perfluorocarbons, and chlorofluorocarbons (IPCC 2001).^{1,2} The major GHGs applicable to the proposed project are briefly described.

- **Carbon dioxide (CO₂)** enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and respiration, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (sequestered) when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH₄)** is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal landfills and water treatment facilities.
- **Nitrous oxide (N₂O)** is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.

GHGs are dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Some GHGs have a stronger greenhouse effect than others. These are referred to as high global warming potential (GWP) gases. The GWP of applicable GHG emissions are shown in Table 4.7-1, *GHG Emissions and Their Relative Global Warming Potential Compared to CO₂*. The GWP is used to convert GHGs to CO₂-equivalence (CO₂e) to show the relative potential that different GHGs have to contribute to the greenhouse effect. For example, under IPCC's Fourth Assessment Report (AR4) GWP values for methane (CH₄), a project that generates 10 metric tons (MT) of CH₄ would be equivalent to 250 MT of CO₂.³

¹ Water vapor (H₂O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals); however, water vapor is not considered a pollutant because it is considered part of the feedback loop rather than a primary cause of change.

² Black carbon contributes to climate change both directly, by absorbing sunlight, and indirectly, by depositing on snow (making it melt faster) and by interacting with clouds and affecting cloud formation. Black carbon is the most strongly light-absorbing component of particulate matter (PM) emitted from burning fuels such as coal, diesel, and biomass. The share of black carbon emissions from transportation is dropping rapidly and is expected to continue to do so between now and 2030 as a result of California's air quality programs. The remaining black carbon emissions will come largely from woodstoves/fireplaces, off-road applications, and industrial/commercial combustion (CARB 2022). However, state and national GHG inventories do not include black carbon due to ongoing work resolving the precise global warming potential of black carbon. Guidance for CEQA documents does not yet include black carbon.

³ CO₂-equivalence is used to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. The global warming potential of a GHG is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere.

GREENHOUSE GAS EMISSIONS

TABLE 4.7-1 GHG EMISSIONS AND THEIR RELATIVE GLOBAL WARMING POTENTIAL COMPARED TO CO₂

GHGs	Second Assessment Report Global Warming Potential Relative to CO ₂ ¹	Fifth Assessment Report Global Warming Potential Relative to CO ₂ ¹	Fifth Assessment Report Global Warming Potential Relative to CO ₂ ¹
Carbon Dioxide (CO ₂)	1	1	1
Methane ² (CH ₄)	21	25	28
Nitrous Oxide (N ₂ O)	310	298	265

Notes: The IPCC published updated GWP values in its Fifth Assessment Report (AR5) that reflect new information on atmospheric lifetimes of GHGs and an improved calculation of the radiative forcing of CO₂. However, GWP values identified in AR4 are used by BAAQMD to maintain consistency in statewide GHG emissions modeling. In addition, the 2017 Scoping Plan Update was based on the GWP values in AR4.

¹ Based on 100 year time horizon of the GWP of the air pollutant compared to CO₂.

² The methane GWP includes direct effects and indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO₂ is not included.

Source: IPCC 1995, 2007, 2013.

Human Influence on Climate Change

For approximately 1,000 years before the Industrial Revolution, the amount of GHGs in the atmosphere remained relatively constant. During the 20th century scientists observed a rapid change in the climate and the quantity of climate change pollutants in the Earth’s atmosphere that is attributable to human activities. The recent Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC) summarizes the latest scientific consensus on climate change. It finds that atmospheric concentrations of CO₂ have increased by 50 percent since the industrial revolution and continue to increase at a rate of two parts per million each year. By the 2030s, and no later than 2040, the world will exceed 1.5°C warming (CARB 2022). These recent changes in the quantity and concentration of climate change pollutants far exceed the extremes of the ice ages, and the global mean temperature is warming at a rate that cannot be explained by natural causes alone. Human activities are directly altering the chemical composition of the atmosphere through the buildup of climate change pollutants (CAT 2006). In the past, gradual changes in the earth’s temperature changed the distribution of species, availability of water, etc. Human activities are accelerating this process so that environmental impacts associated with climate change no longer occur in a geologic time frame but within a human lifetime (IPCC 2007).

Like the variability in the projections of the expected increase in global surface temperatures, the environmental consequences of gradual changes in the Earth’s temperature are hard to predict. Projections of climate change depend heavily upon future human activity. Therefore, climate models are based on different emission scenarios that account for historical trends in emissions and on observations of the climate record that assess the human influence of the trend and projections for extreme weather events. Climate-change scenarios are affected by varying degrees of uncertainty. For example, there are varying degrees of certainty on the magnitude of the trends for:

- Warmer and fewer cold days and nights over most land areas.
- Warmer and more frequent hot days and nights over most land areas.

GREENHOUSE GAS EMISSIONS

- An increase in the frequency of warm spells and heat waves over most land areas.
- An increase in frequency of heavy precipitation events (or proportion of total rainfall from heavy falls) over most areas.
- Larger areas affected by drought.
- Intense tropical cyclone activity increases.
- Increased incidence of extreme high sea level (excluding tsunamis).

Potential Climate Change Impacts for California

There is at least a greater than 50 percent likelihood that global warming will reach or exceed 1.5°C in the near-term, even for the very low GHG emissions scenario (IPCC 2022). Climate change is already impacting California and will continue to affect it for the foreseeable future. For example, the average temperature in most areas of California is already 1°F higher than historical levels, and some areas have seen average increases in excess of 2°F (CalOES 2020). The California Fourth Climate Change Assessment identifies the following climate change impacts under a business-as-usual scenario

- Annual average daily high temperatures in California are expected to rise by 2.7°F by 2040, 5.8°F by 2070, and 8.8°F by 2100 compared to observed and modeled historical conditions. These changes are statewide averages. Heat waves are projected to become longer, more intense, and more frequent.
- Warming temperatures are expected to increase soil moisture loss and lead to drier seasonal conditions. Summer dryness may become prolonged, with soil drying beginning earlier in the spring and lasting longer into the fall and winter rainy season.
- High heat increases the risk of death from cardiovascular, respiratory, cerebrovascular, and other diseases.
- Droughts are likely to become more frequent and persistent through 2100.
- Climate change is projected to increase the strength of the most intense precipitation and storm events affecting California.
- Mountain ranges in California are already seeing a reduction in the percentage of precipitation falling as snow. Snowpack levels are projected to decline significantly by 2100 due to reduced snowfall and faster snowmelt. California's water storage system is designed with the expectation that snow will stay frozen for many months, and that as it melts, it will be stored in a series of reservoirs and dams, many of which are used to generate electricity. Changing waterfall patterns therefore impact both water supply and electricity supply.
- Marine layer clouds are projected to decrease, though more research is needed to better understand their sensitivity to climate change.

GREENHOUSE GAS EMISSIONS

- Extreme wildfires (i.e., fires larger than 10,000 hectares or 24,710 acres) would occur 50 percent more frequently. The maximum area burned statewide may increase 178 percent by the end of the century. Drought and reduced water supplies can increase wildfire risk.
- Exposure to wildfire smoke is linked to increased incidence of respiratory illness.
- Sea level rise is expected to continue to increase erosion of beaches, cliffs, and bluffs. (CalOES 2020).

Global climate change risks to California are shown in Table 4.7-2, *Summary of GHG Emissions Risks to California*, and include impacts to public health, water resources, agriculture, coastal sea level, forest and biological resources, and energy.

TABLE 4.7-2 SUMMARY OF GHG EMISSIONS RISK TO CALIFORNIA

Impact Category	Potential Risks
Public Health Impacts	Heat waves will be more frequent, hotter, and longer Poor air quality made worse Higher temperatures increase ground-level ozone (i.e., smog) levels
Water Resource Impacts	Decreasing Sierra Nevada snow pack Challenges in securing adequate water supply Potential reduction in hydropower Loss of winter recreation
Agricultural Impacts	Increasing temperature Increasing threats from pests and pathogens Expanded ranges of agricultural weeds Declining productivity Irregular blooms and harvests
Coastal Sea Level Impacts	Accelerated sea level rise Increasing coastal floods Shrinking beaches Worsened impacts on infrastructure
Forest and Biological Resource Impacts	Increased risk and severity of wildfires Lengthening of the wildfire season Movement of forest areas Conversion of forest to grassland Declining forest productivity Increasing threats from pest and pathogens Shifting vegetation and species distribution Altered timing of migration and mating habits Loss of sensitive or slow-moving species
Energy Demand Impacts	Potential reduction in hydropower Increased energy demand

Sources: CEC 2006, 2009; CCCC 2012; CNRA 2014; CalEOS 2020

GREENHOUSE GAS EMISSIONS

4.7.1.2 REGULATORY FRAMEWORK

This section summarizes key federal, State, regional, and local regulations and programs related to GHG emissions resulting from the proposed project.

Federal Regulations

The US Environmental Protection Agency (USEPA) announced on December 7, 2009, that GHG emissions threaten the public health and welfare of the American people and that GHG emissions from on-road vehicles contribute to that threat. The EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHG emissions fit within the Clean Air Act definition of air pollutants. The findings do not impose any emission reduction requirements but allow the EPA to finalize the GHG standards proposed in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation (USEPA 2009a).

To regulate GHGs from passenger vehicles, EPA was required to issue an endangerment finding (USEPA 2009b). The finding identified emissions of six key GHGs—CO₂, CH₄, N₂O, hydrofluorocarbons, perfluorocarbons, and SF₆—that have been the subject of scrutiny and intense analysis for decades by scientists in the United States and around the world. The first three are applicable to the project's GHG emissions inventory because they constitute the majority of GHG emissions and, according to guidance by the BAAQMD, are the GHG emissions that should be evaluated as part of a project's GHG emissions inventory.

US Mandatory Report Rule for GHGs (2009)

In response to the endangerment finding, the EPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (large stationary sources, etc.) to report GHG emissions data. Facilities that emit 25,000 MT or more of CO₂e per year are required to submit an annual report.

Update to Corporate Average Fuel Economy Standards (2017 to 2026)

The federal government issued new Corporate Average Fuel Economy (CAFE) standards in 2012 for model years 2017 to 2025, which required a fleet average of 54.5 miles per gallon (MPG) in 2025. However, on March 30, 2020, the EPA finalized an updated CAFE and GHG emissions standards for passenger cars and light trucks and established new standards covering model years 2021 through 2026, known as the Safer Affordable Fuel Efficient (SAFE) Vehicles Final Rule for Model Years 2021 to 2026. Under SAFE, the fuel economy standards will increase 1.5 percent per year compared to the 5 percent per year under the CAFE standards established in 2012. Overall, SAFE requires a fleet average of 40.4 MPG for model year 2026 vehicles (85 Federal Register 24174 (April 30, 2020)).

On December 21, 2021, under the direction of Executive Order (EO) 13990 issued by President Biden, the National Highway Traffic Safety Administration (NHTSA) repealed SAFE Vehicles Rule Part One, which had preempted state and local laws related to fuel economy standards. In addition, the National Highway

GREENHOUSE GAS EMISSIONS

Traffic Safety Administration (NHTSA) announced new proposed fuel standards on March 31, 2022. Fuel efficiency under the new standards proposed will increase 8 percent annually for model years 2024 to 2025 and 10 percent annual for model year 2026. Overall, the new CAFE standards require a fleet average of 49 MPG for passenger vehicles and light trucks for model year 2026, which would be a 10 MPG increase relative to model year 2021 (NHTSA 2022).

State Regulations

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in EO S-03-05, EO B-30-15, EO B-55-18, Assembly Bill 32 (AB 32), AB 1279, Senate Bill 32 (SB 32), and SB 375.

Executive Order S-03-05

EO S-03-05 was signed June 1, 2005, and set the following GHG reduction targets for the state:

- 2000 levels by 2010
- 1990 levels by 2020
- 80 percent below 1990 levels by 2050

Assembly Bill 32, the Global Warming Solutions Act (2006)

AB 32 was passed by the California state legislature on August 31, 2006, to place the state on a course toward reducing its contribution of GHG emissions. AB 32 follows the 2020 tier of emissions reduction targets established in EO S-03-05. CARB prepared the 2008 Scoping Plan to outline a plan to achieve the GHG emissions reduction targets of AB 32.

Executive Order B-30-15

EO B-30-15, signed April 29, 2015, set a goal of reducing GHG emissions in the state to 40 percent of 1990 levels by year 2030. Executive Order B-30-15 also directed CARB to update the Scoping Plan to quantify the 2030 GHG reduction goal for the state and requires state agencies to implement measures to meet the interim 2030 goal as well as the long-term goal for 2050 in EO S-03-05. It also requires the Natural Resources Agency to conduct triennial updates of the California adaptation strategy, *Safeguarding California*, in order to ensure climate change is accounted for in state planning and investment decisions.

Senate Bill 32 and Assembly Bill 197

In September 2016, Governor Brown signed SB 32 and AB 197 into law, making the executive order goal for year 2030 into a statewide mandated legislative target. AB 197 established a joint legislative committee on climate change policies and requires the CARB to prioritize direct emissions reductions rather than the market-based cap-and-trade program for large stationary, mobile, and other sources.

GREENHOUSE GAS EMISSIONS

2017 Climate Change Scoping Plan Update

EO B-30-15 and SB 32 required CARB to prepare another update to the Scoping Plan to address the 2030 target for the state. On December 24, 2017, CARB adopted the 2017 Climate Change Scoping Plan Update, which outlined potential regulations and programs, including strategies consistent with AB 197 requirements, to achieve the 2030 target. The 2017 Scoping Plan established a new emissions limit of 260 MMTCO₂e for the year 2030, which corresponds to a 40 percent decrease in 1990 levels by 2030 (CARB 2017b).

California's climate strategy will require contributions from all sectors of the economy, including an enhanced focus on zero- and near-zero emission (ZE/NZE) vehicle technologies; continued investment in renewables, such as solar roofs, wind, and other types of distributed generation; greater use of low carbon fuels; integrated land conservation and development strategies; coordinated efforts to reduce emissions of short-lived climate pollutants (methane, black carbon, and fluorinated gases); and an increased focus on integrated land use planning, to support livable, transit-connected communities and conservation of agricultural and other lands. Requirements for GHG reductions at stationary sources complement local air pollution control efforts by the local air districts to tighten criteria air pollutants and toxic air contaminants emissions limits on a broad spectrum of industrial sources. Major elements of the 2017 Scoping Plan framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing ZE buses and trucks.
- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030).
- Implementation of SB 350, which expands the Renewables Portfolio Standard (RPS) to 50 percent RPS and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZE trucks.
- Implementing the Short-Lived Climate Pollutant Strategy, which focuses on reducing methane and hydrofluorocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- Continued implementation of SB 375.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

To the degree a project relies on GHG mitigation measures, CARB recommends that lead agencies prioritize on-site design features that reduce emissions, especially from VMT, and direct investments in GHG reductions within the project's region that contribute to potential air quality, health, and economic co-benefits. Where further project design or regional investments are infeasible or not proven to be

GREENHOUSE GAS EMISSIONS

effective, CARB recommends mitigating potential GHG impacts through purchasing and retiring carbon credits (CARB 2017b).

Executive Order B-55-18

Executive Order B-55-18, signed September 10, 2018, sets a goal “to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter.” Executive Order B-55-18 directs CARB to work with relevant state agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal. The goal of carbon neutrality by 2045 is in addition to other statewide goals, meaning not only should emissions be reduced to 80 percent below 1990 levels by 2050, but that, by no later than 2045, the remaining emissions be offset by equivalent net removals of CO₂e from the atmosphere, including through sequestration in forests, soils, and other natural landscapes.

2022 Climate Change Scoping Plan Update

CARB released the Draft 2022 Scoping Plan on May 10, 2022. The Scoping Plan was updated to address the carbon neutrality goals of EO B-55-18. Previous Scoping Plans focused on specific GHG reduction targets for our industrial, energy, and transportation sectors—to meet 1990 levels by 2020, and then the more aggressive 40 percent below that for the 2030 target. Carbon neutrality takes it one step further by expanding actions to capture and store carbon including through natural and working lands and mechanical technologies, while drastically reducing anthropogenic sources of carbon pollution at the same time. The measures in the Scoping Plan would achieve 80 percent below 1990 levels by 2050. Final adoption of the 2022 Scoping Plan is anticipated in late fall 2022 (CARB 2022).

CARB’s 2022 Scoping Plan identifies strategies that would be most impactful at the local level for ensuring substantial progress towards the State’s carbon neutrality goals (see Table 4.7-3, *Priority Strategies for Local Government Climate Action Plans*).

GREENHOUSE GAS EMISSIONS

TABLE 4.7-3 PRIORITY STRATEGIES FOR LOCAL GOVERNMENT CLIMATE ACTION PLANS

Priority Area	Priority Strategies
Transportation Electrification	Convert local government fleets to zero-emission vehicles (ZEV).
	Create a jurisdiction-specific ZEV ecosystem to support deployment of ZEVs statewide (such as permit streamlining, infrastructure siting, consumer education, or preferential parking policies).
VMT Reduction	Reduce or eliminate minimum parking standards in new developments,
	Adopt and implement Complete Streets policies and investments, consistent with general plan circulation element requirements,
	Increase public access to shared clean mobility options (such as planning for and investing in electric shuttles, bike share, car share, transit).
	Implement parking pricing or transportation demand management pricing strategies.
	Amend zoning or development codes to enable mixed-use, walkable, and compact infill development (such as increasing allowable density of the neighborhood).
Building Decarbonization	Preserve natural and working lands.
	Adopt policies and incentive programs to implement energy efficiency retrofits (such as weatherization, lighting upgrades, replacing energy intensive appliances and equipment with more efficient systems, etc.).
	Adopt policies and incentive programs to electrify all appliances and equipment in existing buildings.
	Adopt policies and incentive programs to reduce electrical loads from equipment plugged into outlets (such as purchasing Energy Star equipment for municipal buildings, occupancy sensors, smart power strips, equipment controllers, etc.).
	Facilitate deployment of renewable energy production and distribution and energy storage.

Source: CARB 2022

For CEQA projects for proposed land use developments, CARB recommends demonstrating that they are aligned with State climate goals based on the attributes of land use development that reduce operational GHG emissions while simultaneously advancing fair housing. Attributes that accommodate growth in a manner consistent with the GHG and equity goals of SB 32 have all the following attributes:

- At least 20 percent of the units are affordable to lower-income residents;
- Result in no net loss of existing affordable units;
- Utilize existing infill sites that are surrounded by urban uses, and reuse or redevelop previously developed, underutilized land presently served by existing utilities and essential public services (e.g., transit, streets, water, sewer);
- Include transit-supportive densities (minimum of 20 residential dwelling units/acre), or are in proximity to existing transit (within ½ mile), or satisfy more detailed and stringent criteria specified in the region’s Sustainable Communities Strategy (SCS), for “SCS consistency” that would go further to reduce emissions;
- Do not result in the loss or conversion of the State’s natural and working lands;

GREENHOUSE GAS EMISSIONS

- Use all electric appliances, without any natural gas connections, and would not use propane or other fossil fuels for space heating, water heating, or indoor cooking
- Provide EV charging infrastructure at least in accordance with the California Green Building Standards Code (CalGreen) Tier 2 standards; and
- Relax parking requirements by:
 - Eliminating parking requirements or including maximum allowable parking ratios.
 - Providing residential parking supply at a ratio of <1 parking space per unit.
 - Unbundling residential parking costs from costs to rent or lease. (CARB 2022)

The second approach to project-level alignment with State climate goals is net zero GHG emissions. The third approach to demonstrating project-level alignment with State climate goals is to align with GHG thresholds of significance, which many local air quality management (AQMDs) and air pollution control districts (APCDs) have developed or adopted (CARB 2022).

Assembly Bill 1279

Assembly Bill 1279, signed by Governor Newsom in September 2022, codified the carbon neutrality targets of EO B-55-18 for year 2045 and sets a new legislative target for year 2045 of 85 percent below 1990 levels for anthropogenic GHG emissions. SB 1279 also requires CARB to update the Scoping Plan to address these new targets.

Senate Bill 375

SB 375, the Sustainable Communities and Climate Protection Act, was adopted in 2008 to connect the GHG emissions reduction targets established in the 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce vehicle miles traveled (VMT) and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 metropolitan planning organizations (MPO). Metropolitan Transportation Commission (MTC) is the MPO for the Bay region, which includes Napa, Marin, San Francisco, and Contra Costa counties. Pursuant to the recommendations of the Regional Transportation Advisory Committee, CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target.

2017 Update to the SB 375 Targets

CARB is required to update the targets for the MPOs every eight years. In June 2017, CARB released updated targets and technical methodology and recently released another update in February 2018, which became effective in October 2018. CARB adopted the updated targets and methodology on March

GREENHOUSE GAS EMISSIONS

22, 2018. All SCSs adopted after October 1, 2018, are subject to these new targets. The updated targets consider the need to further reduce VMT, as identified in the 2017 Scoping Plan Update, while balancing the need for additional and more flexible revenue sources to incentivize positive planning and action toward sustainable communities. Like the 2010 targets, the updated SB 375 targets are in units of percent per capita reduction in GHG emissions from automobiles and light trucks compared to 2005. This excludes reductions anticipated from implementation of state technology and fuels strategies and any potential future state strategies such as statewide road user pricing. The proposed targets call for greater per-capita GHG emission reductions from SB 375 than are currently in place, which for 2035 translates into proposed targets that either match or exceed the emission reduction levels in the MPOs' currently adopted sustainable communities strategies (SCS). As proposed, CARB staff's proposed targets would result in an additional reduction of over 8 MMTCO₂e in 2035 compared to the current targets (CARB 2018).

Transportation Sector Specific Regulations

Assembly Bill 1493

California vehicle GHG emission standards were enacted under AB 1493 (Pavley I). Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and is anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. California implements the Pavley I standards through a waiver granted to California by the EPA. In 2012, the EPA issued a Final Rulemaking that sets even more stringent fuel economy and GHG emissions standards for model years 2017 through 2025 light-duty vehicles. (See also the previous discussion in federal regulations under "Update to Corporate Average Fuel Economy Standards [2017 to 2026].") In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combines the control of smog, soot, and GHGs with requirements for greater numbers of ZE vehicles into a single package of standards. Under California's Advanced Clean Car program, by 2025 new automobiles will emit 34 percent less GHG emissions and 75 percent less smog-forming emissions.

Executive Order S-01-07

On January 18, 2007, the state set a new LCFS for transportation fuels sold in the state. EO S 01 07 set a declining standard for GHG emissions measured in CO₂e gram per unit of fuel energy sold in California. The LCFS required a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent by 2020. The standard applied to refiners, blenders, producers, and importers of transportation fuels, and used market-based mechanisms to allow these providers to choose the most economically feasible methods for reducing emissions during the "fuel cycle."

GREENHOUSE GAS EMISSIONS

Executive Order B-16-2012

On March 23, 2012, the state identified that CARB, the California Energy Commission (CEC), the Public Utilities Commission, and other relevant agencies worked with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to accommodate ZE vehicles in major metropolitan areas, including infrastructure to support them (e.g., electric vehicle charging stations). EO B 16-2012 also directed the number of ZE vehicles in California's state vehicle fleet to increase through the normal course of fleet replacement so that at least 10 percent of fleet purchases of light-duty vehicles are ZE by 2015 and at least 25 percent by 2020. The executive order also established a target for the transportation sector of reducing GHG emissions to 80 percent below 1990 levels.

Executive Order N-79-20

On September 23, 2020, Governor Newsom signed EO N-79-20, whose goal is that 100 percent of in-state sales of new passenger cars and trucks will be ZE by 2035. Additionally, the fleet goals for trucks are that 100 percent of drayage trucks are ZE by 2035, and 100 percent of medium- and heavy-duty vehicles in the state are ZE by 2045, where feasible. The EO's goal for the state is to transition to 100 percent ZE off-road vehicles and equipment by 2035, where feasible.

Renewables Portfolio: Carbon Neutrality Regulations

Senate Bills 1078, 107, and X1-2 and Executive Order S 14 08

A major component of California's Renewable Energy Program is the renewables portfolio standard established under Senate Bills 1078 (Sher) and 107 (Simitian). Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. EO S-14-08, signed in November 2008, expanded the state's renewable energy standard to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011 (SB X1-2). Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production decreases indirect GHG emissions from development projects because electricity production from renewable sources is generally considered carbon neutral.

Senate Bill 350

Senate Bill 350 (de Leon) was signed into law in September 2015 and establishes tiered increases to the RPS—40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy-efficiency savings in electricity and natural gas through energy efficiency and conservation measures.

GREENHOUSE GAS EMISSIONS

Senate Bill 100

On September 10, 2018, Governor Brown signed SB 100. Under SB 100, the RPS for public-owned facilities and retail sellers consists of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. SB 100 also established a new RPS requirement of 50 percent by 2026. Furthermore, the bill establishes an overall state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under the bill, the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Senate Bill 1020

SB 1020 was signed into law on September 16, 2022. SB 1020 provides interim RPS targets (90 percent renewable energy by 2035 and 95 percent renewable energy by 2040) and requires renewable energy and zero-carbon resources to reach 100 percent clean electricity by 2045.

Energy Efficiency Regulations

California Building Code: Building Energy Efficiency Standards

Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the CEC) in June 1977 (Title 24, Part 6, of the California Code of Regulations [CCR]). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for the consideration and possible incorporation of new energy efficiency technologies and methods. The 2019 Building Energy Efficiency Standards were adopted on May 9, 2018 and went into effect on January 1, 2020.

The 2019 standards move toward cutting energy use in new homes by more than 50 percent and require the installation of solar photovoltaic systems for single-family homes and multifamily buildings of three stories and less. The 2019 standards focus on four key areas: 1) smart residential photovoltaic systems; 2) updated thermal envelope standards (preventing heat transfer from the interior to the exterior and vice versa); 3) residential and nonresidential ventilation requirements; 4) and nonresidential lighting requirements (CEC 2018). Under the 2019 standards, nonresidential buildings are 30 percent more energy efficient than under the 2016 standards, and single-family homes are 7 percent more energy efficient (CEC 2020). When accounting for the electricity generated by the solar photovoltaic system, single-family homes would use 53 percent less energy compared to homes built to the 2016 standards (CEC 2020).

Furthermore, on August 11, 2021, the CEC adopted the 2022 Building Energy Efficiency Standards, which were subsequently approved by the California Building Standards Commission in December 2021. The 2022 standards become effective and replace the existing 2019 standards on January 1, 2023. The 2022 standards would require mixed-fuel single-family homes to be electric-ready to accommodate

GREENHOUSE GAS EMISSIONS

replacement of gas appliances with electric appliances. In addition, the new standards also include prescriptive photovoltaic system and battery requirements for high-rise, multifamily buildings (i.e., more than three stories) and noncommercial buildings such as hotels, offices, medical offices, restaurants, retail stores, schools, warehouses, theaters, and convention centers (CEC 2021).

California Building Code: CALGreen

On July 17, 2008, the California Building Standards Commission adopted the nation’s first green building standards. The California Green Building Standards Code (24 CCR, Part 11, known as “CALGreen”) was adopted as part of the California Building Standards Code. CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants.⁴ The mandatory provisions of CALGreen became effective January 1, 2011, and were last updated in 2019. The 2019 CALGreen standards became effective on January 1, 2020

2006 Appliance Efficiency Regulations

The 2006 Appliance Efficiency Regulations (20 CCR Sections 1601–1608) were adopted by the CEC on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non–federally regulated appliances. Though these regulations are now often viewed as “business as usual,” they exceed the standards imposed by all other states, and they reduce GHG emissions by reducing energy demand.

Solid Waste Diversion Regulations

AB 939: Integrated Waste Management Act of 1989

California’s Integrated Waste Management Act of 1989 (AB 939, Public Resources Code Section 40050 et seq.) set a requirement for cities and counties throughout the state to divert 50 percent of all solid waste from landfills by January 1, 2000, through source reduction, recycling, and composting. In 2008, the requirements were modified to reflect a per capita requirement rather than tonnage. To help achieve this, the Act requires that each city and county prepare and submit a source reduction and recycling element. AB 939 also established the goal for all California counties to provide at least 15 years of ongoing landfill capacity.

AB 341

AB 341 (Chapter 476, Statutes of 2011) increased the statewide goal for waste diversion to 75 percent by 2020 and requires recycling of waste from commercial and multifamily residential land uses. Section 5.408

⁴ The green building standards became mandatory in the 2010 edition of the code.

GREENHOUSE GAS EMISSIONS

of CALGreen also requires that at least 65 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse.

AB 1327

The California Solid Waste Reuse and Recycling Access Act (AB 1327, Public Resources Code Section 42900 et seq.) requires areas to be set aside for collecting and loading recyclable materials in development projects. The act required the California Integrated Waste Management Board to develop a model ordinance for adoption by any local agency requiring adequate areas for collection and loading of recyclable materials as part of development projects. Local agencies are required to adopt the model or an ordinance of their own.

AB 1826

In October of 2014, Governor Brown signed AB 1826 requiring businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate per week. This law also requires that on and after January 1, 2016, local jurisdictions across the state implement an organic waste recycling program to divert organic waste generated by businesses and multifamily residential dwellings with five or more units. Organic waste means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed with food waste.

Water Efficiency Regulations

SBX7-7

The 20x2020 Water Conservation Plan was issued by the Department of Water Resources (DWR) in 2010 pursuant to Senate Bill 7, which was adopted during the 7th Extraordinary Session of 2009–2010 and therefore dubbed “SBX7-7.” SBX7-7 mandated urban water conservation and authorized the DWR to prepare a plan implementing urban water conservation requirement (20x2020 Water Conservation Plan). In addition, it required agricultural water providers to prepare agricultural water management plans, measure water deliveries to customers, and implement other efficiency measures. SBX7-7 required urban water providers to adopt a water conservation target of a 20 percent reduction in urban per capita water use by 2020 compared to 2005 baseline use.

AB 1881: Water Conservation in Landscaping Act

The Water Conservation in Landscaping Act of 2006 (AB 1881) requires local agencies to adopt the updated DWR model ordinance or an equivalent. AB 1881 also requires the CEC to consult with the DWR to adopt, by regulation, performance standards and labeling requirements for landscape irrigation equipment, including irrigation controllers, moisture sensors, emission devices, and valves, to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water.

Short-Lived Climate Pollutant Reduction Strategy

On September 19, 2016, the Governor signed SB 1383 to supplement the GHG reduction strategies in the Scoping Plan to consider short-lived climate pollutants, including black carbon and methane. Black carbon is the light-absorbing component of fine particulate matter produced during the incomplete combustion of fuels. SB 1383 required the state board, no later than January 1, 2018, to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants to achieve a reduction in methane by 40 percent, hydrofluorocarbon gases by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030. The bill also established targets for reducing organic waste in landfills. On March 14, 2017, CARB adopted the Short-Lived Climate Pollutant Reduction Strategy, which identifies the state's approach to reducing anthropogenic and biogenic sources of short-lived climate pollutants. Anthropogenic sources of black carbon include on- and off-road transportation, residential wood burning, fuel combustion (charbroiling), and industrial processes. According to CARB, ambient levels of black carbon in California are 90 percent lower than in the early 1960s, despite the tripling of diesel fuel use (CARB 2017a). In-use on-road rules were expected to reduce black carbon emissions from on-road sources by 80 percent between 2000 and 2020.

Regional Regulations

Plan Bay Area: Strategy for a Sustainable Region

Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) adopted Plan Bay Area 2050 on October 21, 2021 (ABAG/MTC 2021). Plan Bay Area 2050 provides transportation and environmental strategies to continue to meet the regional transportation-related GHG reduction goals of SB 375. Under the Plan Bay Area 2050 strategies, just under half of all Bay Area households would live within one half-mile of frequent transit by 2050, with this share increasing to over 70 percent for households with low incomes. Transportation and environmental strategies that support active and shared modes, combined with a transit-supportive land use pattern, are forecasted to lower the share of Bay Area residents that drive to work alone from over 50 percent in 2015 to 36 percent in 2050. GHG emissions from transportation would decrease significantly as a result of these transportation and land use changes, and the Bay Area would meet the state mandate of a 19-percent reduction in per-capita emissions by 2035 — but only if all strategies are implemented (ABAG/MTC 2021).

To achieve MTC's/ABAG's sustainable vision for the Bay Area, the Plan Bay Area land use concept plan for the region concentrates the majority of new population and employment growth in the region in Priority Development Areas (PDAs). PDAs are transit-oriented, infill development opportunity areas within existing communities. An overarching goal of the regional plan is to concentrate development in areas where there are existing services and infrastructure rather than allocate new growth to outlying areas where substantial transportation investments would be necessary to achieve the per capita passenger vehicle, VMT, and associated GHG emissions reductions. Parts of the Benicia lies within identified PDAs these areas include the downtown and east 5th street (MTC/ABAG 2022).

GREENHOUSE GAS EMISSIONS

Bay Area Clean Air Plan

BAAQMD adopted the 2017 Clean Air Plan, Spare the Air, Cool the Climate on April 19, 2017. The 2017 Clean Air Plan also lays the groundwork for reducing GHG emissions in the Bay Area to meet the state's 2030 GHG reduction target and 2050 GHG reduction goal. It also includes a vision for the Bay Area in a post-carbon year 2050 that encompasses the following:

- Construct buildings that are energy efficient and powered by renewable energy.
- Walk, bicycle, and use public transit for the majority of trips and use electric-powered autonomous public transit fleets.
- Incubate and produce clean energy technologies.
- Live a low-carbon lifestyle by purchasing low-carbon foods and goods in addition to recycling and putting organic waste to productive use (BAAQMD 2017).

A comprehensive multipollutant control strategy has been developed to be implemented in the next 3 to 5 years to address public health and climate change and to set a pathway to achieve the 2050 vision. The control strategy includes 85 control measures to reduce emissions of ozone, particulate matter, toxic air contaminants, and GHG from a full range of emission sources. These control measures cover the following sectors: 1) stationary (industrial) sources; 2) transportation; 3) energy; 4) agriculture; 5) natural and working lands; 6) waste management; 7) water; and 8) super-GHG pollutants. Overall, the proposed control strategy is based on the following key priorities:

- Reduce emissions of criteria air pollutants and toxic air contaminants from all key sources.
- Reduce emissions of “super-GHGs” such as methane, black carbon, and fluorinated gases.
- Decrease demand for fossil fuels (gasoline, diesel, and natural gas).
 - Increase efficiency of the energy and transportation systems.
 - Reduce demand for vehicle travel, and high-carbon goods and services.
- Decarbonize the energy system.
 - Make the electricity supply carbon-free.
 - Electrify the transportation and building sectors.

Bay Area Commuter Benefits Program

Under Air District Regulation 14, Model Source Emissions Reduction Measures, Rule 1, Bay Area Commuter Benefits Program, employers with 50 or more full-time employees within the BAAQMD are required to register and offer commuter benefits to employees. In partnership with the BAAQMD and the Metropolitan Transportation Commission (MTC), the rule's purpose is to improve air quality, reduce GHG emissions, and decrease the Bay Area's traffic congestion by encouraging employees to use alternative commute modes, such as transit, vanpool, carpool, bicycling, and walking. The benefits program allows employees to choose from one of four commuter benefit options including a pre-tax benefit, employer-provided subsidy, employer-provided transit, and alternative commute benefit.

Local Regulations

Solano County Transportation Authority

2019 Solano County Congestion Management Program

The Solano County Transportation Authority prepares and adopts a Congestion Management Program (CMP). CMP development is guided by the Metropolitan Transportation Commission (MTC), who publishes guidelines in odd numbered years. The most recent guidance was published in 2019. The CMP provides a roadmap to reduce congestion, improve mobility, and increase overall sustainability of the transportation system in the county. Consistent with State law, and the MTC's Regional Transportation Plan the CMP contains the following components: traffic LOS standards, performance element to evaluate current and future multi-modal system performances, seven-year capital improvement program (CIP), program to analyze the impacts of land use decisions, and a travel demand element to promote more transportation alternatives.

City of Benicia

Benicia Ordinance Code

The Benicia Ordinance Code includes various directives to minimize adverse impacts from GHG emissions in the City of Benicia. The Ordinance Code is organized by title, division, chapter, section, and in some cases articles.

- **Chapter 15.18, California Green Building Standards Code:** Section 5.18.010, Adoption by reference, incorporates the CCR Title 24, Part 11, California Green Building Standards Code.
- **Chapter 15.38, Streamlined Permitting for Residential Rooftop Solar:** Section 15.38.020, Purpose, allows for an expedited, streamlined solar permitting process that complies with the Solar Rights Act and AB 2188 to achieve timely and cost-effective installations of small residential rooftop solar energy systems.
- **Chapter 15.39, Streamlined Permitting for (EV) Electric Vehicle Charging Stations:** Section 15.39.020, Purpose, allows for an expedited, streamlined permitting process electric vehicle charging stations.

Benicia Climate Action Plan

Benicia completed its Climate Action Plan (CAP), and the City Council adopted the plan on September 15, 2009, which outlines the actions the County will take to address climate change. The purpose of the CAP Plan is to provide objectives and strategies that guide the development and implementation of actions that cut Benicia's GHG emissions to meet its goal of reducing GHG emissions to 2005 levels by 2010 and reducing GHG emissions to 10 percent below 2000 levels by 2020. The reduction strategies and goals in this plan are no longer consistent with the current Statewide legislative reduction targets codified by SB 32 and AB 1279; therefore, Benicia's 2009 CAP is not considered a qualified reduction strategy per CEQA Section 15183.5(b)(2).

GREENHOUSE GAS EMISSIONS

Benicia General Plan

The Community Health and Safety Element, Response to Hazards, and Circulation Chapters of the current General Plan includes in the following policies that aim to minimize the impacts from greenhouse gas emissions in Benicia.

- **Policy 2.22.1:** Work closely with the School District in addressing traffic congestion near schools.
- **Policy 4.9.1:** Establish whether a significant air pollution problem exists in Benicia and the City's role in resolving it.
- **Policy 4.10.1:** Support implementation of Bay Area Clean Air Plan
- **Policy 4.10.2:** Encourage designs and land use strategies that reduce automobile use and promote mixed use, jobs/housing balance, telecommuting, bicycle, and pedestrian facilities, and transit.
- **Policy 4.14.1:** Implement non-point source pollution strategies.
- **Policy 4.20.1:** Establish buffer zones between sensitive land uses and those land uses which involve the significant use, storage, or disposal of hazardous materials, hazardous waste, or toxic air contaminants.

4.7.1.3 EXISTING CONDITIONS

California's GHG Sources and Relative Contribution

In 2021, the statewide GHG emissions inventory was updated for 2000 to 2019 emissions using the GWPs in IPCC's AR4 (IPCC 2013). Based on these GWPs, California produced 418.2 MMTCO₂e GHG emissions in 2019. California's transportation sector was the single largest generator of GHG emissions, producing 39.7 percent of the state's total emissions. Industrial sector emissions made up 21.1 percent, and electric power generation made up 14.1 percent of the state's emissions inventory. Other major sectors of GHG emissions include commercial and residential (10.5 percent), agriculture and forestry (7.6 percent), high GWP (4.9 percent), and recycling and waste (2.1 percent) (CARB 2021).

Since the peak level in 2004, California's GHG emissions have generally followed a decreasing trend. In 2016, California statewide GHG emissions dropped below the AB 32 target for year 2020 of 431 MMTCO₂e and have remained below this target since then. In 2019, emissions from routine GHG-emitting activities statewide were almost 13 MMTCO₂e lower than the AB 32 target for year 2020. Per capita GHG emissions in California have dropped from a 2001 peak of 14.0 MTCO₂e per person to 10.5 MTCO₂e per person in 2019, a 25 percent decrease.

Transportation emissions continued to decline in 2019 statewide as they had done in 2018, with even more substantial reductions due to a significant increase in renewable diesel. Since 2008, California's electricity sector has followed an overall downward trend in emissions. In 2019, solar power generation continued its rapid growth since 2013. Emissions from high-GWP gases comprised 4.9 percent of

GREENHOUSE GAS EMISSIONS

California's emissions in 2019. This continues the increasing trend as the gases replace ozone-depleting substances being phased out under the 1987 Montreal Protocol. Overall trends in the inventory also demonstrate that the carbon intensity of California's economy (the amount of carbon pollution per million dollars of gross domestic product) has declined 45 percent since the 2001 peak, though the state's gross domestic product grew 63 percent during this period (CARB 2021).

4.7.2 THRESHOLDS OF SIGNIFICANCE

The proposed project would result in significant greenhouse gas emission impacts if it would:

1. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
2. Conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

BAAQMD Significance Criteria

The BAAQMD's *CEQA Thresholds for Evaluating the Significance of Climate Impacts From Land Use Projects and Plans* (2022) contains instructions on how to evaluate, measure, and mitigate GHG impacts generated from land use development projects and plans. For purposes of this analysis, the City of Benicia is using the BAAQMD's current GHG plan-level significance thresholds to evaluate the proposed project's potential impacts related to GHG emissions.

Greenhouse Gas Emission Impacts

The BAAQMD, in their *Justification Report: CEQA Thresholds for Evaluating the Significance of Climate Impacts From Land Use Projects and Plans* (2022) (GHG Justification Report), recommends the use of one of two plan-level criteria to determine the GHG emission impact resulting from a proposed plan. If a proposed plan cannot demonstrate consistency with the BAAQMD-recommended Criterion A or Criterion B, that plan would result in a potentially significant impact related to GHG emissions.

- A. The Plan must meet the State's goals to reduce emissions to 40 percent below 1990 levels by 2030 and carbon neutrality by 2045; or
- B. The Plan must be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).

Fair Share of Carbon Neutrality By Year 2045

To be consistent with BAAQMD's thresholds, plan-level projects should meet an interim milestone of 40 percent below the 1990 emission levels by 2030, consistent with Senate Bill (SB) 32, and *support* the State's goal of carbon neutrality by 2045 (BAAQMD 2022). BAAQMD's 2022 GHG Justification Report includes a discussion of how projects can determine consistency with the State's carbon neutrality goal for 2045. According to the GHG Justification Report, if a land use project incorporates all of the design

GREENHOUSE GAS EMISSIONS

elements necessary for it to be carbon neutral by 2045, then it will contribute its portion of what is needed to achieve the State’s climate goals and will help to solve the cumulative problem.

“A land use project’s fair share will not necessarily include everything that will need to happen in order to achieve carbon neutrality by 2045. There will likely be certain aspects of achieving carbon neutrality that are beyond the scope of how a land use project is designed and thus cannot reasonably be allocated to its “fair share.” For example, becoming carbon neutral by 2045 will require California’s electrical power generators to shift to 100-percent carbon-free energy resources, which is not something that can be controlled through the design of new land use projects. But for those aspects that can be controlled or influenced by how such projects are designed, projects need to address those aspects in order to contribute their “fair share” of what is needed to attain carbon neutrality.”(BAAQMD 2022)

Therefore, to determine the “fair share,” the analysis should therefore focus on the design elements that need to be incorporated into the project in order to lay the foundation for achieving carbon neutrality by 2045.

- **Building Energy Use.** Replacing natural gas with electric power and by eliminating inefficient or wasteful energy usage.
- **Transportation.** Projects need to be designed to reduce project-generated VMT and to provide sufficient electric vehicle (EV) charging infrastructure to support the shift to EVs by providing EV charging infrastructure as specified in the California Green Building Standards Code (CALGreen) Tier 2 standards.

In September 2022, AB 1279 established a target of 85 percent below 1990 emissions levels by 2025. Because this legislative target was adopted after adoption of BAAQMD’s GHG Justification Report, consistency with the target is also considered to support the consistency analysis with State’s carbon neutrality goals.

Benicia-Specific Plan-Level Threshold Options

Option 1 – Target Derived from the 2009 CAP

While the City’s 2000 community GHG emission inventory contained in its CAP does not necessarily represent baseline conditions for this EIR, it does represent a starting point for the City to determine their GHG reduction goals for 2020 and beyond that can be used to establish a target that is consistent with the BAAQMD plan-level thresholds. **Error! Reference source not found.** Table 4.7-4 shows the year 2000 GHG emissions inventory contained in the City’s 2009 CAP. The City’s 2000 community GHG emission inventory represents a starting point for the City to determine their GHG reduction goals for 2020 and beyond. As discussed in the City’s CAP, the City’s 2020 GHG reduction goal consistent with AB 32 would be 10 percent below their 2000 inventory. Estimated emissions from the Vallejo refinery were removed from the community emissions inventory in the 2009 CAP because these are stationary emissions that are not

GREENHOUSE GAS EMISSIONS

typically considered as part of the community emissions. Thus, the City’s 2020 reduction goal is estimated to be approximately 2,923,200 MTCO₂e per year, which are presumed to correspond to their 1990 emissions. A 40 percent reduction below 2020 levels would correspond to the GHG targets of SB 32, and an 85 percent reduction below 2020 levels would be consistent with the carbon neutrality goals of AB 1279. The year 2020, 2030, and 2045 legislative GHG reduction targets for the City are listed below:

- 2020 Target (1990 Levels) = 2,923,200 MTCO₂e (106.1 MTCO₂e per person)⁵
- 2030 Target (SB 32) = 1,753,920 MTCO₂e (60.4 MTCO₂e per person)⁶
- 2045 Target (AB 1279) = 438,480 MCO₂e (13.7 MTCO₂e per person)⁷

TABLE 4.7-4 YEAR 2000 COMMUNITY GHG EMISSIONS INVENTORY – CITY OF BENICIA

Sector	2000 GHG Inventory (MTCO ₂ e/year) ^{1,2}	Percent of Total
Total 2000 Community Emissions	3,248,000	100%
City Population	26,865	NA
City Per Capita Emissions	120.9	NA

Notes:

¹ The 2009 CAP identified that the Vallejo Refinery was 20 percent of the industrial and commercial emissions sector. However, these emissions are regulated separately and are not part of Benicia’s community emissions shown above.

² The transportation sector in the 2009 CAP mobile source emissions is based on a geographic boundary approach and not origin-destination approach.

Source: Benicia 2009, DOF 2012

Option 2 – Net Zero GHG Emissions

For many plan-level documents, a community emissions inventory for 1990, or estimate of the GHG emissions that corresponds to 1990 levels by 2020, may not be available. As a result, for many CEQA plans, it may not be possible to calculate a community threshold (either as a total magnitude or efficiency-based) that corresponds with a 40 percent decrease in 1990 emissions by year 2030 or an 85 percent reduction in 1990 emissions by year 2045 (AB 1279, to align with the State’s carbon neutrality goals). Therefore, as a more conservative approach, a plan-level GHG emissions thresholds of “net zero” is considered to be a conservative threshold that would align with the State’s carbon neutrality goals. A net zero threshold is consistent with AB 1279. Appendix D of the CARB 2022 Draft Scoping Plan recognizes that achieving no net additional increase in GHG emissions, resulting in no contribution to GHG impacts, may be an appropriate overall objective for CEQA projects (CARB 2022).

⁵ Based on a population of 27,540 for year 2020 from the Plan Bay Area 2040 Projections by Jurisdictions. Projections by jurisdiction are not available for Plan Bay Area 2050.

⁶ Based on a population of 29,025 for year 2030 from the Plan Bay Area 2040 Projections by Jurisdictions. Projections by jurisdiction are not available for Plan Bay Area 2050.

⁷ Based on a population of 32,050 for year 2045 interpolated from the Plan Bay Area 2040 Projections by Jurisdictions. Projections by jurisdiction are not available for Plan Bay Area 2050.

GREENHOUSE GAS EMISSIONS

Greenhouse Gas Plan Consistency

To determine whether the proposed project is consistent with the applicable plan or policy adopted for the purpose of reducing GHG emissions, the proposed project is analyzed for consistency with applicable policies contained in the City's CAP, the State's Scoping Plan, and ABAG/MTC's Plan Bay Area.

The Benicia CAP is not a qualified GHG reduction plan under CEQA Guidelines Section 15183.5. Therefore, the BAAQMD's plan-level GHG criteria tailored for the City of Benicia is used to evaluate potential impacts of the proposed project.

4.7.3 PROPOSED HOUSING ELEMENT POLICIES

- **Goal 6:** Housing in Benicia is energy efficient.
 - **Policy 6.01:** Enforce State requirements for energy conservation in new residential projects and encourage residential developers to employ additional energy conservation measures with respect to siting of buildings, landscaping, and solar access.
 - **Policy 6.02:** Enforce the California Energy Commission Energy-Efficiency requirements in new housing and encourage the installation of energy-saving devices in pre-1975 housing.
 - **Policy 6.03:** Encourage Green Building Design Standards in new construction to achieve increased energy conservation.

4.7.4 PROPOSED SAFETY ELEMENT POLICIES

There are no policies in the Safety Element Update applicable to GHG Emissions.

4.7.5 ENVIRONMENTAL IMPACTS

4.7.5.1 METHODOLOGY

Emissions Quantification

Impacts related to air quality resulting from implementation (construction and operation) of the proposed project are discussed below. To determine the increase in emissions as a result of the proposed project, the maximum allowable residential dwelling units envisioned by the proposed project (3,598 units) were estimated by calculating the new change from existing conditions and buildout of the proposed project in 2031. Due to a lack of available information on existing housing units on sites identified to accommodate the envisioned 3,598 dwelling units through 2031, all 3,598 dwelling units are herein considered to be a net increase in housing supply in the City.

GREENHOUSE GAS EMISSIONS

CalEEMod Version 2020.4.0 was used to calculate emissions of air pollutants associated with buildout of the proposed project (see Appendix 4.2-1). Please refer to Tables 3-2 and 3-3 in Chapter 3, Project Description, for the sites identified to accommodate the housing supply growth envisioned by the proposed project. Due to the variety of housing types that could develop as a result of the proposed project, all new housing units modeled were assumed to best match the “Apartments Low-Rise” land use category in CalEEMod. Consistent with the VMT Analysis prepared by Fehr & Peers for the proposed project (Fehr & Peers, 2022), ITE Code 220 was utilized to identify the weekday and weekend average daily trip (ADT) generation rates for each housing unit and an average trip length of 10 miles was utilized in the emissions modeling. Moreover, all vehicle trips represented in the emissions modeling were assigned to be 100-percent primary, meaning no trip distance or generation discounts were applied for pass-by or diverted trips to provide a conservative emissions estimate.

Consistent with the BAAQMD’s Regulation 6, Rule 3, *Wood-Burning Devices*, no new dwelling units modeled with CalEEMod were assumed to contain any wood-burning devices. In addition, the per-dwelling unit indoor and outdoor water consumption rates utilized in CalEEMod were adjusted to reflect the consumption estimates contained in the City’s 2020 Urban Water Management Plan (Benicia, 2020). No other default values contained in CalEEMod were altered for calculating the emissions generated by the proposed project.

4.7.5.2 IMPACT ANALYSIS

GHG-1	The project would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
-------	--

Housing Element Update

Development under the proposed project would contribute to global climate change through direct and indirect emissions of GHG from land uses within the unincorporated County. A Housing Element does not directly result in development without additional approvals. Before any development can occur in the City, it must be analyzed for consistency with the General Plan, zoning requirements, and other applicable local and State requirements; comply with the requirements of CEQA; and obtain all necessary clearances and permits.

Emissions Forecast

The Housing Element Update guides the City’s policies to encourage housing that meets the needs of all residents in the region through 2031. The proposed project is a focused effort, with particular emphasis on compliance with state housing mandates. The community GHG emissions inventory and forecast for the City is shown in Table 4.7-5. Buildout of the up to 3,598 new dwelling units facilitated by the proposed project would result in an estimated 23,201 MTCO₂e GHG emissions per year. As shown therein, the

GREENHOUSE GAS EMISSIONS

increase in residential units and population associated with the proposed project results in slight increase in residential building energy use, solid waste, off-road equipment and land use and sequestration.

TABLE 4.7-5 OPERATIONAL GHG EMISSIONS – HOUSING ELEMENT UPDATE

Emission Source	City of Benicia GHG Emissions (MTCO ₂ e/Year)
Area	189
Energy	3,271
Mobile	18,626
Waste	832
Water	282
Total Net Emissions	23,201
New Residents	8,743
New Resident Per Capita Emissions	2.65

Notes: Emissions may not total to 100 percent due to rounding. Emissions above represent a conservative estimate of net emissions as it does not account for the existing housing supply in the City due to a lack of available information.

Source: Appendix 4.2-1.

Because the sites identified to accommodate the additional housing supply envisioned by the proposed project are largely underutilized or undeveloped, the annual GHG emissions displayed in Table 4.7-5 conservatively represent net new GHG emissions beyond existing community emissions. As such, the proposed project would result in the addition of 23,201 MTCO₂e per year beyond existing conditions.

It should be noted that the majority of annual GHG emissions generated by development facilitated by the proposed project are the result of vehicle use. Energy source emissions, meaning emissions associated with the consumption of electricity and natural gas for power generation, constitute the next largest source of GHG emissions during operation. Table 4.7-5 does not include reductions from State measures targeting mobile and energy sources that have been adopted to reduce GHG emissions, such as:

- The RPS requires increases in renewable electricity supplies.
- The Clean Car Standards require increased fuel efficiency of on-road vehicles and decreased carbon intensity of vehicle fuels.
- The updated Title 24 Building Energy Efficiency Standards require new buildings to achieve increased energy efficiency targets.
- The Low Carbon Fuel Standard (LCFS) mandates reduced carbon intensity of fuels used in off-road equipment.

Consistency with the State's 2030 GHG Reduction Target and 2045 Carbon Neutrality Goal

As previously stated, to determine whether the proposed project would result in a potentially significant impact, the proposed project must demonstrate consistency with the State's 2030 GHG reduction target of 40 percent below 1990 levels and support the State's 2045 GHG reduction target of carbon neutrality.

GREENHOUSE GAS EMISSIONS

Because the sites identified to accommodate the additional housing supply envisioned by the proposed project are largely underutilized or undeveloped, the annual GHG emissions displayed in Table 4.7-5 conservatively represent net new GHG emissions beyond existing community emissions. Therefore, while the proposed project would result in an estimated per capita GHG emission generation of 2.65 MTCO₂e per year, well below the assumed 2030 target and below the target of 85 percent below 1990 levels by 2045, it cannot be determined whether the GHG emissions generated by the proposed project combined with existing Citywide GHG emissions would be consistent with the State's 2030 GHG reduction target or long-term 2045 carbon neutrality goal. Therefore, GHG emissions impacts of the proposed plan are evaluated using Option 2, Net Zero GHG Emission. As documented, the proposed project would result in an increase in GHG emissions on the Housing Element Sites. Therefore, GHG emissions impacts resulting from the proposed project are considered potentially significant.

While growth in the City would cumulatively contribute to GHG emissions impacts, implementation of the Housing Element policies could also help minimizing energy emissions.

- **Goal 6:** Housing in Benicia is energy efficient.
- **Policy 6.01:** Enforce State requirements for energy conservation in new residential projects and encourage residential developers to employ additional energy conservation measures with respect to siting of buildings, landscaping, and solar access.
- **Policy 6.02:** Enforce the California Energy Commission Energy-Efficiency requirements in new housing and encourage the installation of energy-saving devices in pre-1975 housing.
- **Policy 6.03:** Encourage Green Building Design Standards in new construction to achieve increased energy conservation.

While the above Housing Element policies would support GHG emission reductions through individual development projects facilitated by the proposed project, the quantifiable reductions necessary to sufficiently demonstrate the proposed project's consistency with the State's 2030 and 2045 GHG reduction goals cannot be determined. Therefore, MM GHG-1 would be required to further advance the proposed project toward potential consistency with the State's 2030 and 2045 GHG reduction goals. MM GHG-1 would require the City to update the current CAP to extent to the 2030 and/or 2045 GHG reduction goals.

As previously stated, individual development projects facilitated by the proposed project would experience emission reductions from implementation of State measures and strategies to reduce Statewide GHG emissions, such as the LCFS mandate or RPS requirements. In addition, the above Housing Element policies of the proposed project would serve to further support potential GHG reductions for individual development projects facilitated by the proposed project. Nonetheless, because it cannot be determined whether the GHG emissions generated by the proposed project combined with existing Citywide GHG emissions would be consistent with the State's 2030 GHG reduction target or long-term 2045 carbon neutrality goal with or without implementation of MM GHG-1, and emissions from the Housing Element sites have the potential to exceed net zero emissions on a project-by-project basis, GHG

GREENHOUSE GAS EMISSIONS

emissions impacts resulting from the proposed project would remain significant and unavoidable after implementation of MM GHG-1.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document targeting the mitigation of hazards, this SEU would not result in GHG emissions to exceed the GHG reduction targets set by AB 1279 or the State's carbon neutrality goals. No impact would occur.

Significance Without Mitigation: Potentially significant.

Mitigation Measure GHG-1a: New development on Housing Element sites shall provide electric vehicle (EV) charging infrastructure as specified in the California Green Building Standards Code (CALGreen) Tier 2 standards.

Mitigation Measure GHG-1b: New development on Housing Element sites shall not include natural gas appliances or natural gas plumbing.

Significance With Mitigation: Significant and Unavoidable. While mitigation measure GHG-1a and GHG-1b would ensure that development of the Housing Element sites would provide the necessary design elements that would lay a foundation to achieve carbon neutrality by 2045 and contribute their "fair share" to achieving the State's climate goals. None-the-less, GHG emissions associated with the project are conservatively considered significant because individual housing project consistent with the Housing Element update would have the potential to exceed net zero emissions.

GHG-2	The project would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.
-------	---

Housing Element Update

Applicable plans adopted for the purpose of reducing GHG emissions include CARB's Scoping Plan, ABAG's/MTC's Plan Bay Area, and the City of Benicia CAP. A consistency analysis with these plans is presented below.

GREENHOUSE GAS EMISSIONS

CARB Scoping Plan

The CARB Scoping Plan is applicable to state agencies but is not directly applicable to cities/counties and individual projects (i.e., the Scoping Plan does not require local jurisdictions to adopt its policies, programs, or regulations to reduce GHG emissions). However, new regulations adopted by the State agencies from the Scoping Plan result in GHG emissions reductions at the local level. So local jurisdictions benefit from reductions in transportation emissions rates, increases in water efficiency in the building and landscape codes, and other statewide actions that affect a local jurisdiction's emissions inventory from the top down. Statewide strategies to reduce GHG emissions include the LCFS mandate and changes in the corporate average fuel economy standards.

Development projects accommodated under the proposed project are required to adhere to the programs and regulations identified by the Scoping Plan and implemented by state, regional, and local agencies to achieve the statewide GHG reduction goals of AB 32, SB 32, and AB 1279. Future development projects would be required to comply with these state GHG emissions reduction measures because they are statewide strategies. For example, new buildings associated with land uses accommodated by implementing the proposed project would be required to meet the CALGreen and Building Energy Efficiency Standards in effect at the time when applying for building permits. Furthermore, as discussed under the discussion for Impact GHG-1, the proposed project includes Housing Element policies that would help reduce GHG emissions and therefore help achieve GHG reduction goals. Implementation of the proposed project would not obstruct implementation of the CARB Scoping Plan, and impacts would be less than significant.

ABAG/MTC's Plan Bay Area

Plan Bay Area is the Bay Area's regional transportation plan to achieve the passenger vehicle emissions reductions identified under SB 375. *Plan Bay Area 2050* is the current SCS for the Bay Area, which was adopted October 21, 2021 (ABAG/MTC 2021).

In addition to significant transit and roadway performance investments to encourage focused growth, *Plan Bay Area 2050* directs funding to neighborhood active transportation and complete streets projects, climate initiatives, lifeline transportation and access initiatives, safety programs, and PDA planning (MTC 2022). In the City, there are two PDAs designated (MTC 2022).

The proposed project will redesignate and rezone to accommodate residential development, primarily in infill locations, suitable within the City to meet its RHNA. Thus, the project would be consistent with the overall goals of *Plan Bay Area 2050* in concentrating new development in locations where there is existing infrastructure and transit. Therefore, the proposed project would not conflict with the land use concept plan in *Plan Bay Area 2050* and impacts would be less than significant.

GREENHOUSE GAS EMISSIONS

Furthermore, as discussed in Section 4.12, *Population and Housing*, implementation of the proposed project would induce population and housing growth necessary to meet the population growth and housing needs in the City. Thus, the proposed project would provide more housing for residents to both live and work in the City instead of commuting to other areas, which would contribute to minimizing VMT and reducing VMT per service population. Therefore, the proposed project would not interfere with ABAG's/MTC's ability to implement the regional strategies in Plan Bay Area, and impacts would be less than significant.

City of Benicia Climate Action Plan (CAP)

The City of Benicia CAP was adopted in 2009 and includes GHG reduction strategies within focus areas to achieve the GHG reduction goals of AB 32 (Benicia 2009). The CAP focus areas most applicable to the proposed project include the following:

- **Energy Production** – Residential units constructed in accordance with the Housing Element Update would be required to adhere to the Building and Energy Efficiency Standards under Title 24 and would be encouraged to include additional energy conservation measures with respect to siting of buildings, landscaping, and solar access.
- **Transportation and Land Use** – Residential units constructed in accordance with the Housing Element would increase land use density near transportation corridors. Future growth in the City will be targeted towards priority development areas (PDAs) and priority production areas (PPAs).
- **Buildings** – Residential units constructed in accordance with the Housing Element Update would be required to adhere to the Building and Energy Efficiency Standards under Title 24 and would be encouraged to include additional energy conservation measures with respect to siting of buildings, landscaping, and solar access.
- **Water and Wastewater** – Residential units constructed in accordance with the Housing Element would be required to have water efficient plumbing and water efficient landscaping in accordance with the California Building Code and the State Model Water Efficient Landscape Ordinance (MWELO). The Suisun-Solano Water Authority also has prepared a Water Shortage Contingency Plan (WSCP) as part of the 2015 Urban Water Management Plan to address reduction in water supply, including a drought or other emergency. Additionally, the City would continue to promote water conservation by partnering with Solano County Water Agency (SCWA) to provide rebates for the Turf Replacement Program as well as work with Public Works Department to ensure adequate capacity of water to accommodate future housing needs.
- **Solid Waste** – The City is required to adhere to the requirements of AB 341, which increased the waste diversion goal to 75 percent, and the 2019 CALGreen Construction Waste Management Requirements. The City has waste diversion requirements for newly constructed buildings and demolition projects to divert from landfills at least 65 percent of the construction and demolition materials generated at the project sites. Additionally, AB 1826 requires multi-family residential dwellings with five or more units to divert organic waste.

GREENHOUSE GAS EMISSIONS

- **Parks and Open Space** – Development in accordance with the Housing Element would continue to enhance the parks, open space, and tree planting to facilitate health-oriented neighborhoods.

Therefore, the proposed project would not interfere with the ability to implement the local strategies in City of Benicia CAP, and impacts would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document targeting the mitigation of hazards, this SEU would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of result in GHG emissions to exceed the GHG reduction targets set by AB 1279 or the State's carbon neutrality goals. No impact would occur.

Significance Without Mitigation: Less than significant.

GREENHOUSE GAS EMISSIONS

4.7.6 REFERENCES

- Association of Bay Area Governments and the Metropolitan Transportation Commission. 2021, October. Plan Bay Area 2050. https://abag.ca.gov/sites/default/files/documents/2021-11/Plan_Bay_Area_2050_October_2021.pdf
- Bay Area Air Quality Management District (BAAQMD). 2017, April 19. Final 2018 Clean Air Plan. Spare the Air Cool the Climate, A Blueprint for Clean Air and Climate Protection in the Bay Area. http://www.baaqmd.gov/research-and-https://www.baaqmd.gov/~media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf
- Benicia, City of. 1999, June 15. Benicia General Plan. <https://www.ci.benicia.ca.us/index.asp?SEC=0371539A-30D9-4885-B61F-B5038B415DD3&DE=F40DB441-1E06-45F8-82F8-6D632AB9EC85>.
- _____. 2009, September 15. Benicia Climate Action Plan. <https://www.ci.benicia.ca.us/index.asp?SEC=A9D0EFE9-0349-4D1C-BD45-FA5DDA4C94A9&DE=EA2BC0FB-21B5-4185-8C15-122F41127E2F>
- _____. 2016, October. Climate Change Adaptation Plan, Preparing Benicia Resilient Future. https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/Final_Adaptation_Plan.pdf
- California Air Pollution Control Officers Association (CAPCOA). 2021. California Emissions Estimator Model (CalEEMod). Version 2020.4. Prepared by BREEZE Software, A Division of Trinity Consultants in collaboration with South Coast Air Quality Management District and the California Air Districts.
- California Air Resources Board (CARB). 2017a, March. Short-Lived Climate Pollutant Reduction Strategy. <https://www.arb.ca.gov/cc/shortlived/shortlived.htm>.
- _____. 2017b, November. California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target. https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf.
- _____. 2018, February. Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets. https://www.arb.ca.gov/cc/sb375/sb375_target_update_final_staff_report_feb2018.pdf.
- _____. 2021, July 28. California Greenhouse Gas 2000-2019 Emissions Trends and Indicators Report. https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf.
- _____. 2022, May 10. Draft 2022 Scoping Plan. <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents>.

GREENHOUSE GAS EMISSIONS

- California Climate Action Team (CAT). 2006, March. Climate Action Team Report to Governor Schwarzenegger and the Legislature.
https://planning.lacity.org/eir/8150Sunset/References/4.E.%20Greenhouse%20Gas%20Emissions/GHG.23_CalEPA%202006%20Report%20to%20Governor.pdf
- California Climate Change Center (CCCC). 2012, July. Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California.
- California Department of Finance (DOF). 2012. E-4 Population Estimates for Cities, Counties, and the State, 2001-2010, with 2000 & 2010 Census Counts.
<https://dof.ca.gov/forecasting/demographics/estimates/estimates-e4-2000-2010/>.
- California Energy Commission (CEC). 2006. Our Changing Climate: Assessing the Risks to California. 2006 Biennial Report. CEC-500-2006-077. California Climate Change Center.
- _____. 2009, May. The Future Is Now: An Update on Climate Change Science, Impacts, and Response Options for California. CEC-500-2008-0077. http://www.susannemoser.com/documents/CEC-500-2008-071_Moseretal_FutureisNow.pdf.
- _____. 2018. News Release: Energy Commission Adopts Standards Requiring Solar Systems for New Homes, First in Nation. <https://www.energy.ca.gov/news/2018-05/energy-commission-adopts-standards-requiring-solar-systems-new-homes-first>.
- _____. 2020, January. 2019 Building Energy and Efficiency Standards Frequently Asked Questions. http://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf.
- _____. 2021, May 19. Amendments to the Building Energy Efficiency Standards (2022 Energy Code) Draft Environmental Report. CEC-400-2021-077-D.
- California Natural Resources Agency (CNRA). 2014, January. Safeguarding California: Reducing Climate Risk: An Update to the 2009 California Climate Adaptation Strategy.
https://files.resources.ca.gov/docs/climate/materials/2014-01-22_Sacramento_Overview.pdf.
- California Office of Emergency Services (CalOES). 2020, June. California Adaptation Planning Guide.
<https://www.caloes.ca.gov/HazardMitigationSite/Documents/CA-Adaptation-Planning-Guide-FINAL-June-2020-Accessible.pdf>
- Intergovernmental Panel on Climate Change (IPCC). 1995. Second Assessment Report: Climate Change 1995.
- _____. 2001. Third Assessment Report: Climate Change 2001. New York: Cambridge University Press.

GREENHOUSE GAS EMISSIONS

_____. 2007. Fourth Assessment Report: Climate Change 2007. New York: Cambridge University Press.

_____. 2013. Fifth Assessment Report: Climate Change 2013. New York: Cambridge University Press.

_____. 2022, February 2022. Sixth Assessment Report: Climate Change 2022. Impacts, Adaptation and Vulnerability, Summary for Policymakers.
https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf

Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG). 2021 Draft Plan Bay Area 2050. https://www.planbayarea.org/sites/default/files/documents/2021-05/Draft_Plan_Bay_Area_2050_May2021_0.pdf. 2021, May.

_____. 2022, October 4 (accessed). Priority Development Areas (PDAs). <https://opendata-mtc.opendata.arcgis.com/datasets/4df9cb38d77346a289252ced4ffa0ca0/explore?location=37.892240%2C-122.289021%2C9.00>.

National Highway Traffic Safety Administration (NHTSA). 2022, April 1. USDOT Announces New Vehicle Fuel Economy Standards for Model year 2024-2026. <https://www.nhtsa.gov/press-releases/usdot-announces-new-vehicle-fuel-economy-standards-model-year-2024-2026>, accessed on July 27, 2022.

US Environmental Protection Agency (USEPA). 2009a, December. EPA: Greenhouse Gases Threaten Public Health and the Environment: Science Overwhelmingly Shows Greenhouse Gas Concentrations at Unprecedented Levels due to Human Activity.
https://archive.epa.gov/epapages/newsroom_archive/newsreleases/08d11a451131bca585257685005bf252.html.

_____. 2009b, July 18 (accessed). USEPA: Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act.

4.8 HAZARDS AND HAZARDOUS MATERIALS

This chapter describes the regulatory framework and existing conditions on the project site related to hazards and hazardous materials, and the potential impacts from the proposed Housing and Safety Element Update.

4.8.1 ENVIRONMENTAL SETTING

4.8.1.1 REGULATORY FRAMEWORK

Federal Regulations

Emergency Planning Community Right-to-Know Act

The Emergency Planning Community Right-to-Know Act (EPCRA), also known as Title III of the Superfund Amendments and Reauthorization Act, was enacted in October 1986. This law requires any infrastructure at the State and local levels to plan for chemical emergencies. Reported information is then made publicly available so that interested parties may become informed about potentially dangerous chemicals in their communities. EPCRA Sections 301 through 312 are administered by United States Environmental Protection Agency's (EPA) Office of Emergency Management. The EPA's Office of Information Analysis and Access implements the EPCRA Section 313 program. In California, Superfund Amendments and Reauthorization Act Title III is implemented through California Accidental Release Prevention program.

Comprehensive Environmental Response, Compensation, and Liability System (CERCLIS)

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) was developed to protect the water, air, and land resources from the risks created by past chemical disposal practices. Under CERCLA, the United States Environmental Protection Agency (USEPA) maintains a list, known as CERCLIS, of all contaminated sites in the nation that have in the past or are currently undergoing clean-up activities. CERCLIS contains information on current hazardous waste sites, potentially hazardous waste sites, and remedial activities. This includes sites that are on the National Priorities List (NPL) or being considered for the NPL ("Superfund").

Resource Conservation and Recovery Act (RCRA) of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984

RCRA establishes a framework for national programs to achieve environmentally sound management of both hazardous and nonhazardous wastes. RCRA was designed to protect human health and the environment, reduce/eliminate the generation of hazardous waste, and conserve energy and natural resources. RCRA also promotes resource recovery techniques. A waste can legally be considered hazardous if it is classified as ignitable, corrosive, reactive, or toxic. Under RCRA, the U.S. EPA regulates hazardous waste from the time that the waste is generated until its final disposal ("cradle to grave"). The

HAZARDS & HAZARDOUS MATERIALS

Hazardous and Solid Waste Amendments of 1984 (HSWA) both expanded the scope of RCRA and increased the level of detail in many of its provisions. The Hazardous Waste Management subchapter of the RCRA deals with a variety of issues regarding the management of hazardous materials including the export of hazardous waste, state programs, inspections of hazardous waste disposal facilities, enforcement, and the identification and listing of hazardous waste.

Hazard Materials Transportation Act

The transportation of hazardous materials is regulated by the Hazardous Materials Transportation Act (HMTA), which is administered by the Research and Special Programs Administration of the U.S. Department of Transportation (DOT). HMTA provides DOT with a broad mandate to regulate the transport of hazardous materials, with the purpose of adequately protecting the nation against risk to life and property that is inherent in the commercial transportation of hazardous materials. The HMTA governs the safe transportation of hazardous materials by all modes, excluding bulk transportation by water. DOT regulations that govern the transportation of hazardous materials are applicable to any person who transports, ships, causes to be transported or shipped, or is involved in any way with the manufacture or testing of hazardous materials packaging or containers. DOT regulations pertaining to the actual movement govern every aspect of the movement, including packaging, handling, labeling, marking, placarding, operational standards, and highway routing.

Occupational Safety and Health Act

The federal Occupational Safety and Health Act of 1970 authorizes each state (including California) to establish their own safety and health programs with the United States Department of Labor, Occupational Safety and Health Administration's (OSHA) approval. The California Department of Industrial Relations regulates implementation of worker health and safety in California.

OSHA Regulation 29 CFR 1926.62 regulates the demolition, renovation, or construction of buildings involving lead materials. Federal, state, and local requirements also govern the removal of asbestos or suspected asbestos-containing materials (ACMs), including the demolition of structures where asbestos is present. All friable (crushable by hand) ACMs, or non-friable ACMs subject to damage, must be abated prior to demolition following all applicable regulations.

Disaster Mitigation Act of 2000

The Disaster Mitigation Act of 2000 requires state and local governments to prepare mitigation plans that identify hazards, potential losses, mitigation needs, goals, and strategies. It is intended to facilitate cooperation between state and local governments.

HAZARDS & HAZARDOUS MATERIALS

Toxic Substances Control Act

Congress enacted the Toxic Substances Control Act of 1976 to give the EPA the ability to track the 75,000 industrial chemicals currently produced by or imported into the United States. The EPA repeatedly screens these chemicals and can require reporting or testing of any that may pose an environmental or human health hazard. It can ban the manufacture and import of chemicals that pose an unreasonable risk. Also, the EPA has mechanisms in place to track the thousands of new chemicals that industry develops each year with either unknown or dangerous characteristics. It then can control these chemicals as necessary to protect human health and the environment. The Act supplements other federal statutes, including the Clean Air Act and the Toxics Release Inventory under EPCRA.

Federal Response Plan

The Federal Response Plan of 1999 is a signed agreement among 27 federal departments and agencies and other resource providers, including the American Red Cross, that: 1) provides the mechanism for coordinating delivery of federal assistance and resources to augment efforts of State and local governments overwhelmed by a major disaster or emergency; 2) supports implementation of the Robert T. Stafford Disaster Relief and Emergency Act, as well as individual agency statutory authorities; and 3) supplements other federal emergency operations plans developed to address specific hazards. The Federal Response Plan is implemented in anticipation of a significant event likely to result in a need for federal assistance or in response to an actual event requiring federal assistance under a Presidential declaration of a major disaster or emergency. The Federal Response Plan is part of the National Response Framework, which was most recently updated in October 2019.

National Response Framework

The 2019 National Response Framework, published by the Department of Homeland Security, is a guide to how the nation responds to all types of disasters and emergencies. The Framework describes specific authorities and best practices for managing incidents that range from serious local to large-scale terrorist attacks or catastrophic natural disasters. In addition, the Framework describes the principles, roles, and responsibilities, and coordinating structures for responding to an incident, and further describes how response efforts integrate with those of the other mission areas.

State Regulations

California Hazardous Waste Control Act

Under the California Hazardous Waste Control Act, California Health and Safety Code, Division 20, Chapter 6.5, Article 2, Section 25100, et seq., the Department of Toxic Substance Control regulates the generation, transportation, treatment, storage, and disposal of hazardous waste in California. The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; dictate the management of hazardous waste; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in landfills.

HAZARDS & HAZARDOUS MATERIALS

Department of Toxic Substances Control (DTSC) is also the administering agency for the California Hazardous Substance Account Act. California Health and Safety Code, Division 20, Chapter 6.8, Sections 25300 et seq., also known as the State Superfund law, providing for the investigation and remediation of hazardous substances pursuant to State law.

Tanner Act (Assembly Bill 2948)

Although numerous state policies deal with hazardous waste, the most comprehensive is the Tanner Act (California Civil Code § 1793.22), which was adopted in 1986. The Tanner Act governs the preparation of hazardous waste management plans and the siting of hazardous waste facilities in California. To follow the Tanner Act, local or regional hazardous waste management plans need to include provisions that define: 1) the planning process for waste management, 2) the permit process for new and expanded facilities, and 3) the appeals process to the state available for certain local decisions-

California Building Code

The State of California provides a minimum standard for building design through the California Building Code (CBC), which is in Part 2 of Title 24 of the California Code of Regulations. The CBC is based on the 2018 International Building Code with California amendments. The City of Benicia adopted the 2019 CBC and went into effect January 1, 2020. The CBC is updated every three years, the newest edition of the California Building Standards Code is the 2022 edition with an effective date of January 1, 2023..

Underground Storage Tank Program

Releases of petroleum and other products from USTs are the leading source of groundwater contamination in the United States. The RCRA Subtitle I establish regulations governing the storage of petroleum products and hazardous substances in USTs and the prevention and cleanup of leaks. In EPA Region 9 the UST program operates primarily through state agency programs with EPA oversight. In California, the State Water Resources Control Board (SWRCB), under the umbrella of CalEPA, aids local agencies enforcing UST requirements. The purpose of the UST program is to protect public health and safety and the environment from releases of petroleum and other hazardous substances. The program consists of four elements: leak prevention, cleanup, enforcement, and tank tester licensing. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for groundwater cleanup programs, including groundwater analytical data, the surveyed locations of monitoring wells, and other data. The SWRCB's GeoTracker system currently has information submitted by responsible parties for over 10,000 leaking UST (LUST) sites statewide and has been extended to include all SWRCB groundwater cleanup programs, including the LUST, non-LUST (Spill, Leaks, Investigation, and Cleanup), Department of Defense, and landfill programs.

HAZARDS & HAZARDOUS MATERIALS

Hazardous Materials Disclosure Programs

Both the federal government (CFR, EPA, SARA, and Title III) and the state (Health and Safety Code, Division 20, Chapter 6.95, §§ 2500-25520; 19 CCR, Chapter 2, Subchapter 3, Article 4, §§ 2729-2734) require all businesses that handle more than specified amount of hazardous materials or extremely hazardous materials, termed a reporting quantity, to submit a hazardous materials emergency/contingency plan (also known as a hazardous materials business plan) to their local Certified Unified Program Agency (CUPA). 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 including the city of Benicia.

California Department of Forestry and Fire Protection

CAL FIRE has mapped fire threat potential throughout California. CAL FIRE maps fire threat based on the availability of fuel and the likelihood of an area burning (based on topography, fire history, and climate). The threat levels include no fire threat, moderate, high, and very high fire threat. Additionally, CAL FIRE produced a 2019 Strategic Fire Plan for California, which contains goals, objectives, and policies to prepare for and mitigate the effects of fire on California's natural and built environments. CAL FIRE's Office of the State Fire Marshal provides oversight of enforcement of the California Fire Code as well as overseeing hazardous liquid pipeline safety.

California Mutual Aid Fire Protection System

The City of Benicia's fire department responds to other local communities and throughout the State of California through the California Fire Service and Rescue Emergency Mutual Aid. The City of Benicia is a signature to the Solano County Mutual Aid Agreement. This agreement was established to aid with major emergency incidents anywhere in the state. The city maintains mutual-aid agreements with several agencies. When major incidents occur within City limits, the City of Benicia Fire Department must deploy all its resources and depend on mutual-aid agreements with neighboring jurisdictions. When major incidents occur in other jurisdictions, the Benicia Fire Department provides mutual aid while maintaining appropriate staffing levels within Benicia. This includes all other fire departments in Solano County.

Regional Regulations

2022 Solano County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP)

The County of Solano, with other local agencies and special districts, prepared the 2022 Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). Solano County's MJHMP assesses hazard vulnerabilities from natural and human-caused hazards, including risk to people and facilities, and identifies mitigation actions to reduce or eliminate hazard risks in Solano County, including in incorporated communities. The MJHMP includes a dedicated annex for Benicia, which discusses additional information specific to the City of Benicia, with a focus on providing additional details on the planning process, risk assessment, and

HAZARDS & HAZARDOUS MATERIALS

mitigation strategy for the city. The Benicia City Council adopted the MJHMP Benicia Jurisdictional Annex, approved by FEMA in December 2021 (Solano County 2021).

Hazardous Materials Business Plan (HMBP)

The Hazardous Materials Business Plan (HMBP) is administered by the Solano County Environmental Health Services Division which is the certified CUPA. The HMBP requires businesses with hazardous materials in their premises to report the quantity of materials on site to prepare an emergency response plan to address potential incidents. All businesses including farms, federal agencies, state agencies, and local agencies that handle quantities of hazardous materials must complete a HMBP (Solano County 2022).

Travis Air Force Base Land Use Compatibility Plan

The Travis Air Force Base Land Use Compatibility Plan includes policies design aim to ensure future land uses in surrounding area will remain compatible with the realistically foreseeable, ultimate potential aircraft activity at the base. Travis Air Force Base is in Fairfield, approximately 15 miles from the Benicia city limits. The Solano County lies within the Airport Influence Area (AIA) for the Travis Air Force Base Land Use Compatibility Plan. The Travis Air Force Base Land Use Compatibility Plan was most recently adopted by the Solano Airport Land Use Commission (ALUC) in October 2015. The earlier plan, entitled Comprehensive Airport Land Use Plan: Travis Air Force Base, was adopted by the ALUC in 1990 and amended in 1994.

Local Regulations

Household Hazardous Waste Program

Household hazardous waste are household chemicals that are prohibited by law to be thrown into the trash, such as pesticides and household cleaning supplies. Benicia businesses can take their hazardous waste to the Devlin Road Transfer Station for a fee. Residential customers can schedule a door-to-door pick up by calling Republic Services (Benicia 2022b).

Vegetative Fuels Management Plan (VFMP)

Vegetative Fuels Management Plan will include a site-specific approach to creating defensible space between the open space and built environment. The plan will include an evaluation of costs and benefits of vegetation management, a site-specific approach to determining wildfire risk and best management practices, and public engagement to set management goals in line with the values of Benicia residents. This plan will increase the resilience of the city to wildfires in the wildland-urban interface (BFDDPS 2022).

HAZARDS & HAZARDOUS MATERIALS

Valero-Benicia Refinery Alert and Notification System

Assembly Bill No. 1646 requires the Local Implementing Agency (LIA) to develop an integrated Alerting and Notification System, in coordination with local emergency management agencies, local first response agencies, petroleum refineries, and the public. The Solano County Sheriff's Department is the LIA. The Alerting and Notification System will be used to notify the community surrounding the Valero-Benicia Refinery in the event of an incident warranting the use of the notification system (SCDRM 2020, pg.13).

Benicia Incident Notification System

The Benicia Incident Notification System was implemented in 2021 as a response to residents requesting alerts for all situations, regardless of whether it posed an immediate threat to public safety. This tool will notify you via text and/or email about non-emergent incidents such as routine refinery flaring or drift smoke in Benicia. Incident Notifications inform residents of an incident with no immediate impact to their health or safety (Benicia 2022d).

Benicia Fire Department Vegetation Management Program

The Benicia Fire Department administers a vegetation control program. The goal of Vegetation Management is to control plant material to prevent the spread of wildfire by changing the characteristics of the vegetation surrounding homes and other structures. The city of Benicia utilizes multiple approaches in its Vegetation Management Program, including goats, discing, and spraying (Benicia 2022c). The City of Benicia came to an agreement with Goats R US Corporation on March 15, 2022, to provide goat grazing services (Benicia 2022e).

City of Benicia Emergency Operations Plan (EOP)

The Emergency Operations Plan (EOP), adopted April 2019, is the principal guide for the City of Benicia to respond to and mitigate emergencies and disasters within the City of Benicia geographic boundaries. The EOP is intended to facilitate multi-agency and multi-jurisdictional emergency operations and coordination, particularly between local government and the operational area (county boundary) and addresses state and federal response upon request. The EOP provides basic guidance for earthquakes, flooding, fire, landslides, severe weather, pandemics, and epidemics, as well as hazardous material emergencies. The EOP further includes mitigation programs, which are split into three categories: emergency prevention and protection; response concept of operations; and recovery concept of operations.

City of Benicia General Plan

The City of Benicia General Plan Chapter 4, Community Health, and Safety, contains the community's emergency response plan and safety goals, policies, and programs. The chapter also contains goals and policies governing the use and handling of hazardous materials and fire protection in the City.

HAZARDS & HAZARDOUS MATERIALS

Hazardous Materials

- Policy 4.7.2: Establish a “Community Right-to-know” program to promote general public understanding of Benicia’s toxics problems as they affect current and future generations.
- Policy 4.7.3: Protect existing and future development from contaminated sites, hazardous landfill waste and debris, chemical spills, and other hazards including unexploded ordnance and explosive waste.
- Policy 4.7.6: Prohibit residential development on any land formerly operated as landfill or dump, including land formerly owned or used by the military for military wastes, until the waste and contamination is removed with proper agency oversight, or remediated as required by the appropriate regulatory agencies.
- Policy 4.8.1: Evaluate potential hazards and environmental risks to sensitive receptors before approving development.
- Policy 4.16.1: Support the Solano County Hazardous Waste Management Plan and its goals, policies, and Implementation guidelines for hazardous waste reduction, hazardous waste facility siting, hazardous waste handling and disposal, public education and involvement, and program coordination with regulatory requirements.
- Policy 4.16.2: Continue, promote, and expand the City’s Household Hazardous Waste Program.

Fire Hazards

- Policy 4.15.1: Promote the creation and maintenance of natural and artificially constructed firebreaks between development and open space areas through the use of fire resistive landscaping, weed abatement, discing, and other methods.

Emergency Response Plan

- Policy 4.22.1: Provide an early community alert and notification system and safe evacuation plan for emergency incidents.
- Policy 4.22.2: Develop at least two exit routes, where feasible, for new developments. One of the exists could be a pedestrian route.
- Policy 4.22.3: Provide the public with information on specific emergency evacuation routes.

City of Benicia Municipal Code

Chapter 8.08 - Weeds and Rubbish

All weeds growing upon any private property or in any public street or alley within the city and bearing seeds of wingy or downy nature for which, because of having attained such a large growth and being dry, shall have become a fire menace shall constitute a public nuisance and shall be abated as provided in this chapter. Every property owner shall remove weeds and/or debris on their property, including those sides next to, adjoining, or having commonality with public property.

HAZARDS & HAZARDOUS MATERIALS

Chapter 8.28 – Fire Prevention and Life Safety Code

The California Fire Code as adopted and amended shall be enforced by the fire and life safety division in the fire department of the city of Benicia and which shall be operated under the supervision of the fire chief of the fire department. The newest edition of the California Fire Code is the 2022 edition with an effective date of January 1, 2023.

Chapter 15.04 – California Building Code

The 2019 Edition of the California Building Code as published by the International Code Council and as adopted by the California Building Standards Commission in Title 24, Part 2 of the California Code of Regulations, is adopted by reference in this chapter. The newest edition of the California Building Standards Code is the 2022 edition with an effective date of January 1, 2023.

Section 17.70.330 – Electric Transmission Line Easements

All residential uses, schools, and public buildings shall be set back at least 150 feet from the edge of 230 kilovolt electric transmission line easements.

4.8.1.2 EXISTING CONDITIONS

This section describes existing conditions related to hazardous materials, airport hazards, and wildland fire associated with the proposed project.

Airport Hazards

Travis Air Force Base is in Fairfield, approximately 15 miles from Benicia city limits. All of Solano County is within the Airport Influence Area (AIA) for the Travis Air Force Base Airport Land Use Compatibility Plan (ALUCP) – including the City of Benicia. The AIA is divided into Compatibility Zones: A, B1, B2, C, D, and E. Benicia is in Compatibility Zones D and E which are outlying areas that are areas subject to frequent aircraft overflight. Figure 4.8-1, *Travis Air Force Base Compatibility Zones within City of Benicia*, shows the Travis Air Force Base ALUCP Compatibility Zones within the City of Benicia.

Existing Schools

The City of Benicia has five elementary schools (one private), one middle school, two high school (one continuation). There are two schools listed on the Department of Toxic Substances Control's (DTSC) EnviroStor database: Benicia High School and Liberty High School. DTSC completed a review of the Phase I Environmental Site Assessment (Phase I), dated September 14, 2000, for Benicia High School. According to the Phase I Assessment, an underground storage tank was removed from the Benicia High School on August 23, 2000. Following test results from the soil sampled, no contamination was detected and DTSC determined no action necessary on October 5, 2000 (DTSC 2000). DTSC reports materials from the Marina Dredging Project were used as fill for the playing field, and bay mud was used as cover for the fill at Liberty

HAZARDS & HAZARDOUS MATERIALS

High School. However, DTSC determined in 2019 that due to the depth of the soil, contamination does not pose an imminent threat to the public health or the environment (DTSC 2022b).

Fire Hazards

Wildfire is a hazard of high concern for the City of Benicia. There are three types of fires of concern in Benicia: wildfires, wildland-urban interface fires, and structural fires (Benicia 2022a, pg. SE-40).

Wildfires

Factors that affect the spread of wildfires are fuel, weather, and topography. Benicia can be characterized as having a grassland and woodland habitat topography, Mediterranean climate, and seasonal droughts. Grassland and woodland habitat provide flammable fuel, the Mediterranean climate keeps the grass dry and more readily combustible, and the seasonal drought exacerbate fires during the fire season.

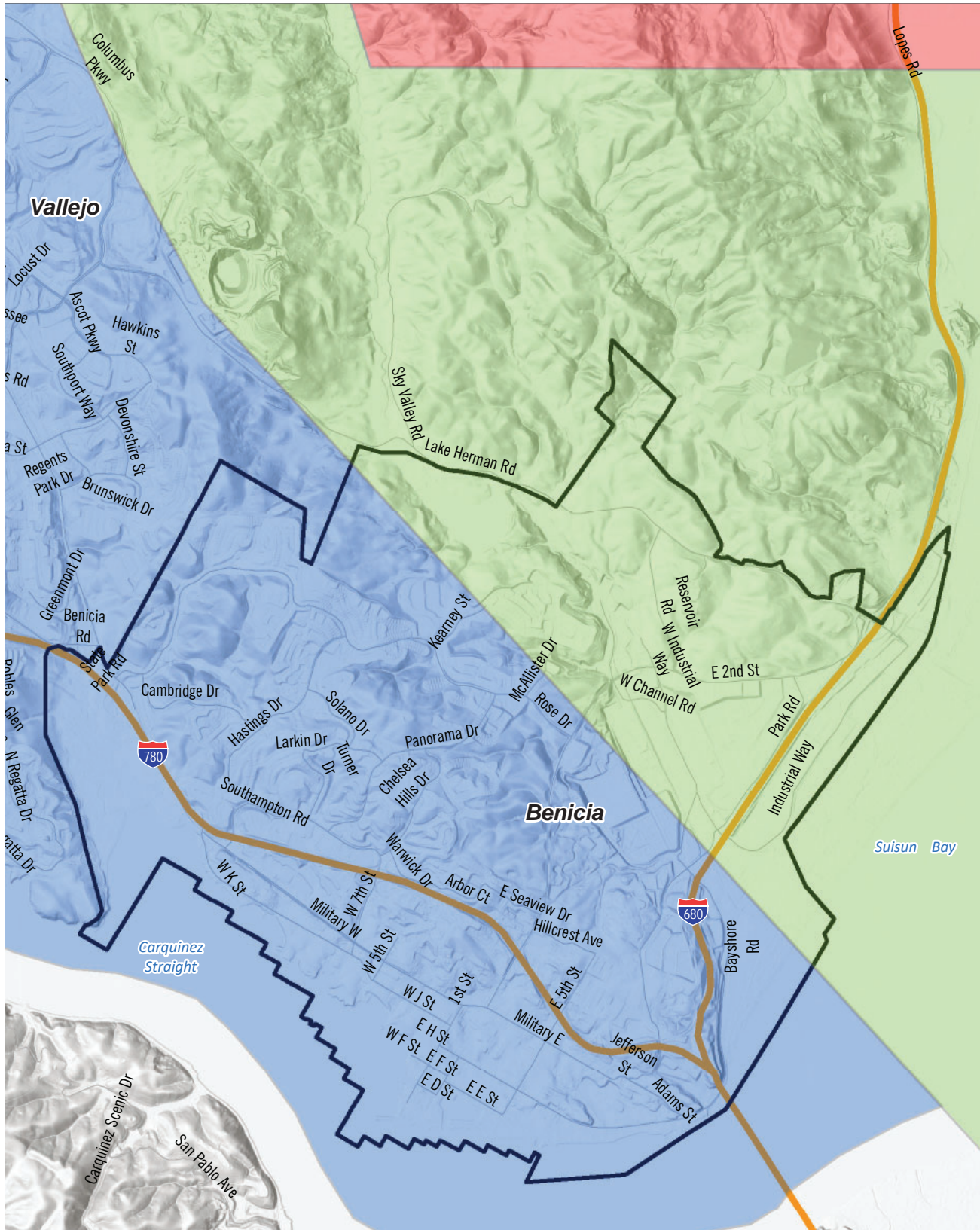
Wildfire potential for Solano County is typically greatest in the months of August, September, and October, when dry vegetation coexists with hot, dry winds (known as Diablo winds). Diablo winds come from the north and northeast region and carries extremely dry air at a high velocity. These hot, dry winds can quickly ignite vegetation and other combustible materials. Areas that are particularly susceptible to wildfires are lands north of the city which include the undeveloped hillsides that run parallel to I-680 and are adjacent to the City of Vallejo.

Wildland-Urban Interface Fires

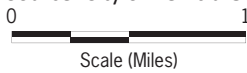
The wildland-urban interface (WUI) is an area where buildings and infrastructure mix with flammable wildland vegetation. The WUI is composed of interface and intermix communities. Intermix WUI refers to areas where housing and wildland vegetation intermingle, while interface WUI refers to areas where housing is in the vicinity of a large and dense wildland vegetation area. As shown in Figure 4.8-2A through Figure 4.8-2E, *Wildland-Urban Interface Fires in the City of Benicia*, WUI areas are located near open space areas and the Benicia Industrial Park. Sites identified near WUI areas, could be exposed to fires that could travel from a fire hazard severity zone north of the city into developed areas south of Lake Herman.

Structural Fires

Structural fires occur in built-up environments, destroying buildings and other structures. Structural fires are largely from human accidents, although deliberate fires (arson) may be a cause of some events. Structural fires occur due to faulty wiring or mechanical equipment and/or combustible construction materials. To minimize structural fires, is to make sure building are complying with the standards set in the City's Fire and building Codes for building and construction.



Source: City of Benicia General Plan, 1999



City Boundary

Travis Air Force Base Compatibility Zones

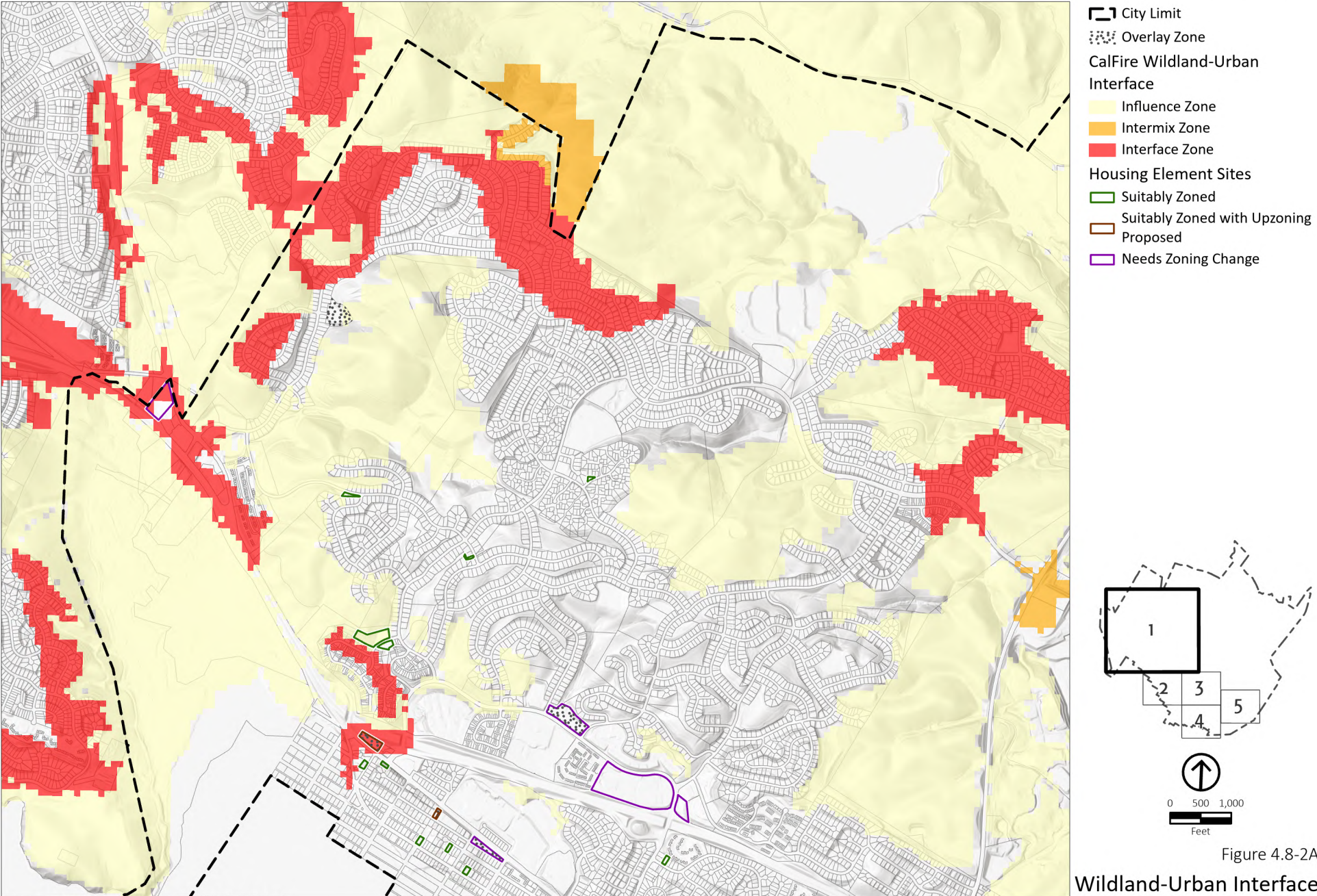


Notes: Appendix B - General Plan amendment pg. J-10.

Figure 4.8-1

Travis Air Force Base Compatibility Zones within the City of Benicia

HAZARDS AND HAZARDOUS MATERIALS



Source: CalFire 2015, PlaceWorks 2022

Figure 4.8-2A
Wildland-Urban Interface

HAZARDS AND HAZARDOUS MATERIALS



- City Limit
- Overlay Zone
- CalFire Wildland-Urban Interface**
- Influence Zone
- Intermix Zone
- Interface Zone
- Housing Element Sites**
- Suitably Zoned
- Needs Zoning Change

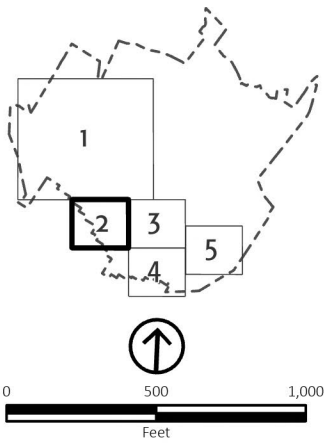
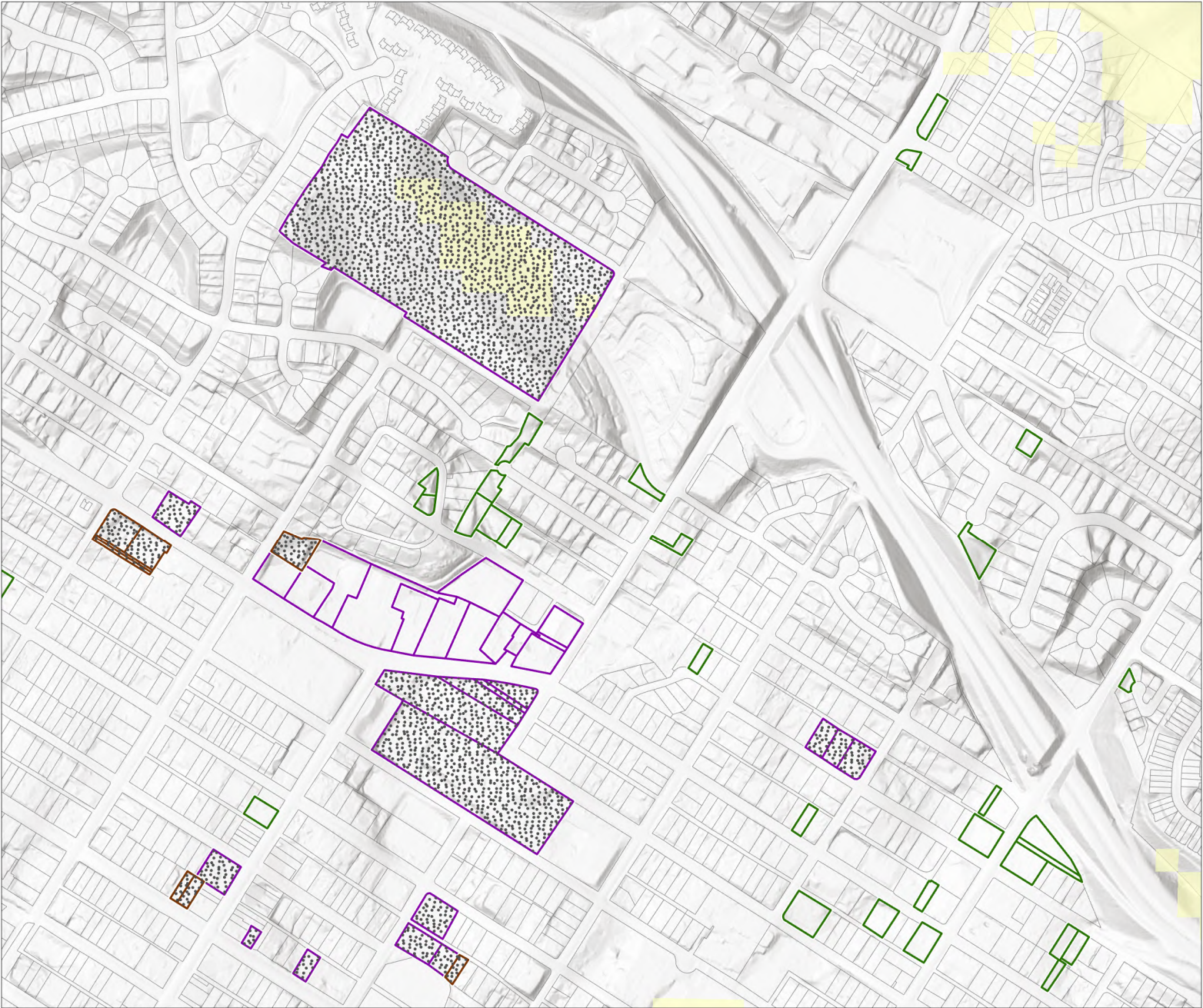


Figure 4.8-2B
Wildland-Urban Interface

Source: CalFire 2015, PlaceWorks 2022

HAZARDS AND HAZARDOUS MATERIALS



- City Limit
- Overlay Zone
- CalFire Wildland-Urban Interface**
- Influence Zone
- Intermix Zone
- Interface Zone
- Housing Element Sites**
- Suitably Zoned
- Suitably Zoned with Upzoning
- Needs Zoning Change

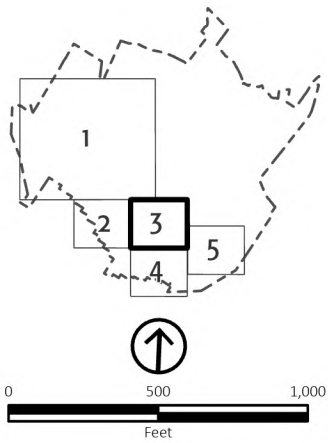
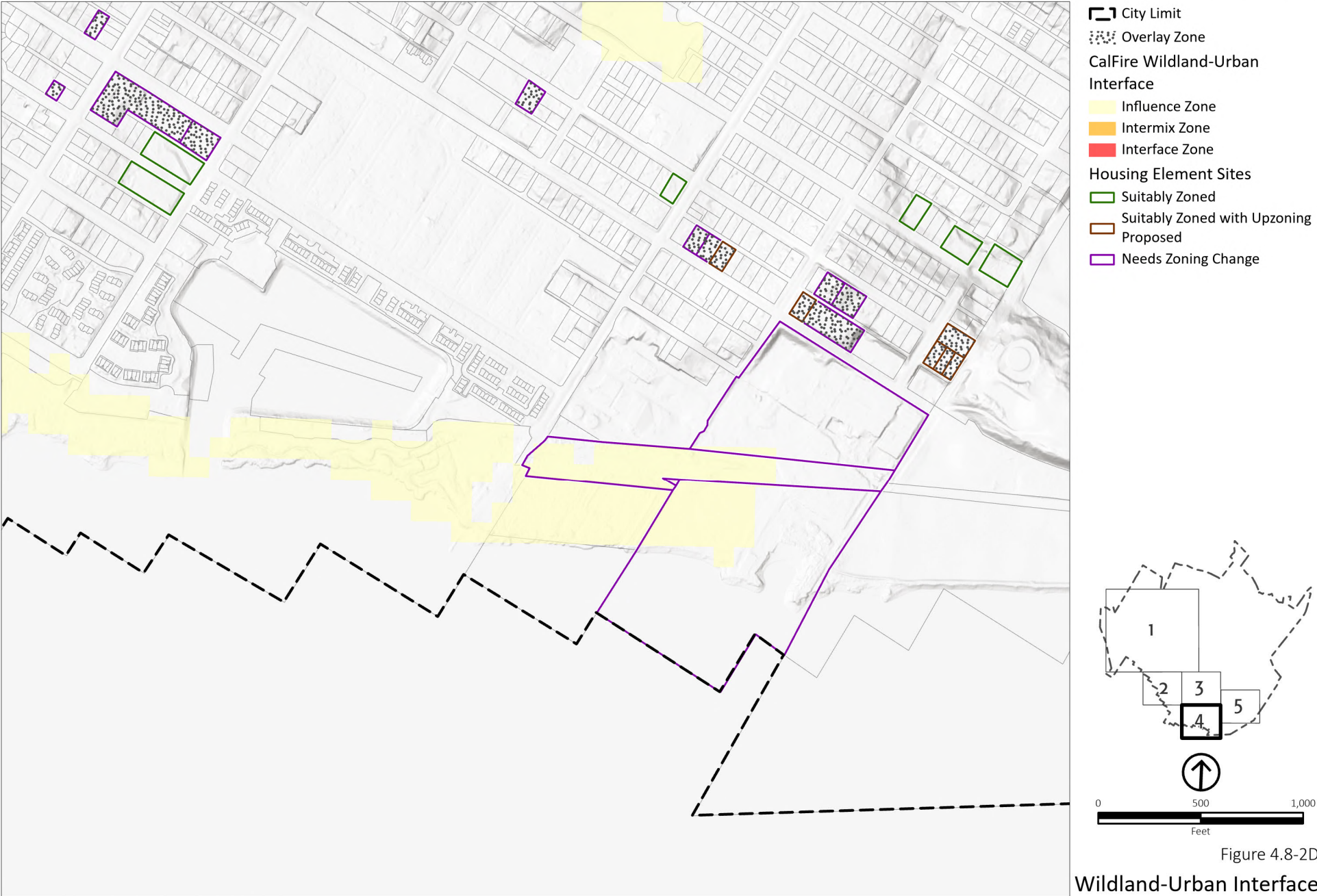


Figure 4.8-2C
Wildland-Urban Interface

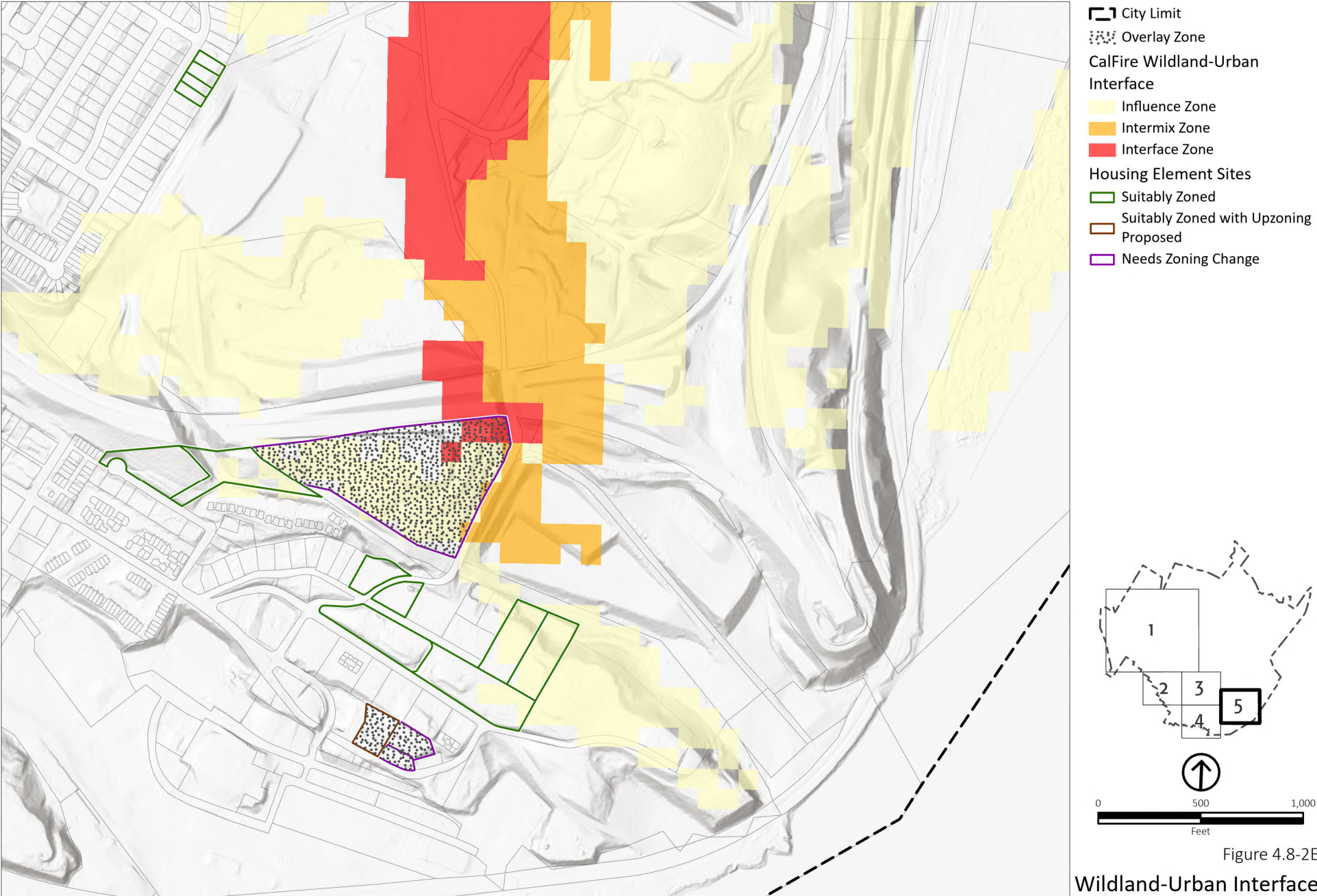
Source: CalFire 2015, PlaceWorks 2022

HAZARDS AND HAZARDOUS MATERIALS



Source: CalFire 2015, PlaceWorks 2022

HAZARDS AND HAZARDOUS MATERIALS



Source: CalFire 2015, PlaceWorks 2022

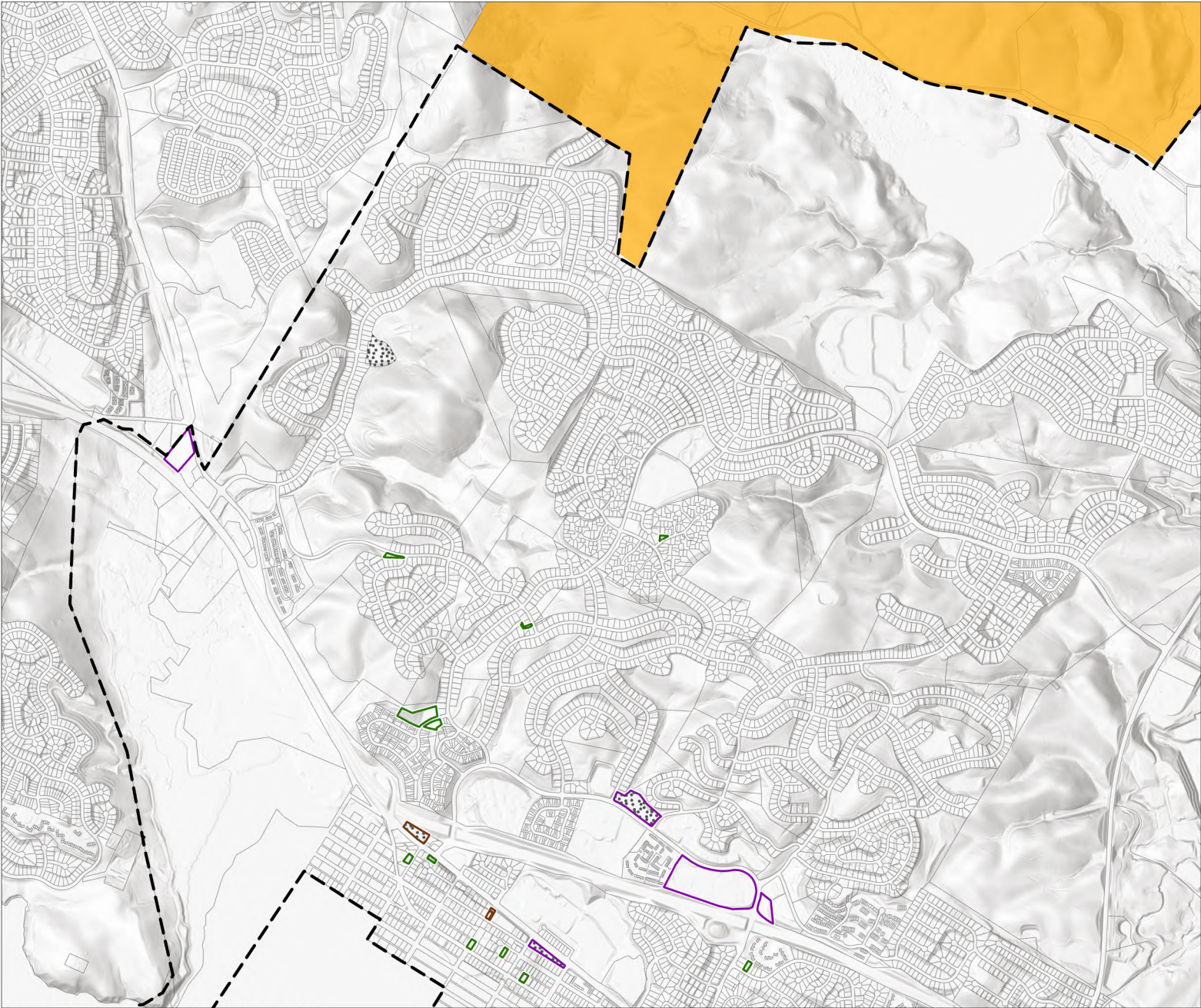
Figure 4.8-2E
Wildland-Urban Interface

HAZARDS & HAZARDOUS MATERIALS

Fire Hazard Zones

CAL FIRE evaluates fire hazard severity risks according to areas of responsibility (i.e., federal, State, and local). According to CAL FIRE, there are no Very High Fire Hazard Severity Zones (VHFHSZ) within the Local Responsibility Area (LRA) or State Responsibility Area (SRA) within the City of Benicia. Figure 4.8-3A through Figure 4.8-3E, *Wildfire Hazard Severity Zone*, shows the areas of fire hazard severity risks surrounding Benicia. The Sky Valley Open Space, which is an SRA north of Benicia is classified as Moderate and High FHSZ. There are residential and industrial uses in proximity to these open space areas, posing potential fire safety problems.

HAZARDS AND HAZARDOUS MATERIALS



- City Limit
- Overlay Zone
- Fire Hazard Severity Zones in State Responsibility Areas
 - High
- Housing Element Sites
 - Suitably Zoned
 - Suitably Zoned with Upzoning Proposed
 - Needs Zoning Change

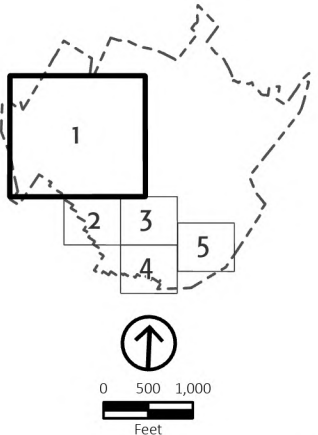


Figure 4.8-3A
Fire Hazard Severity Zones

Source: CalFire 2020, PlaceWorks 2022

HAZARDS AND HAZARDOUS MATERIALS



- City Limit
- Overlay Zone
- Housing Element Sites
- Suitably Zoned
- Needs Zoning Change

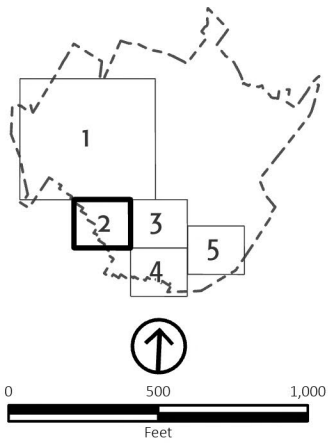


Figure 4.8-3B
Fire Hazard Severity Zones

Source: CalFire 2020, PlaceWorks 2022

HAZARDS AND HAZARDOUS MATERIALS



- City Limit
- Overlay Zone
- Housing Element Sites
 - Suitably Zoned
 - Suitably Zoned with Upzoning Proposed
 - Needs Zoning Change

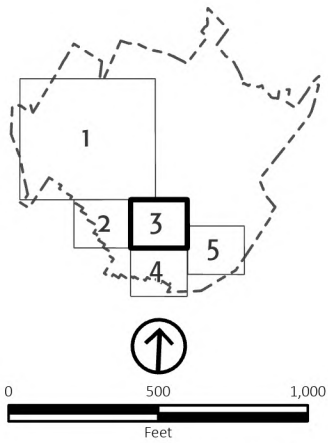
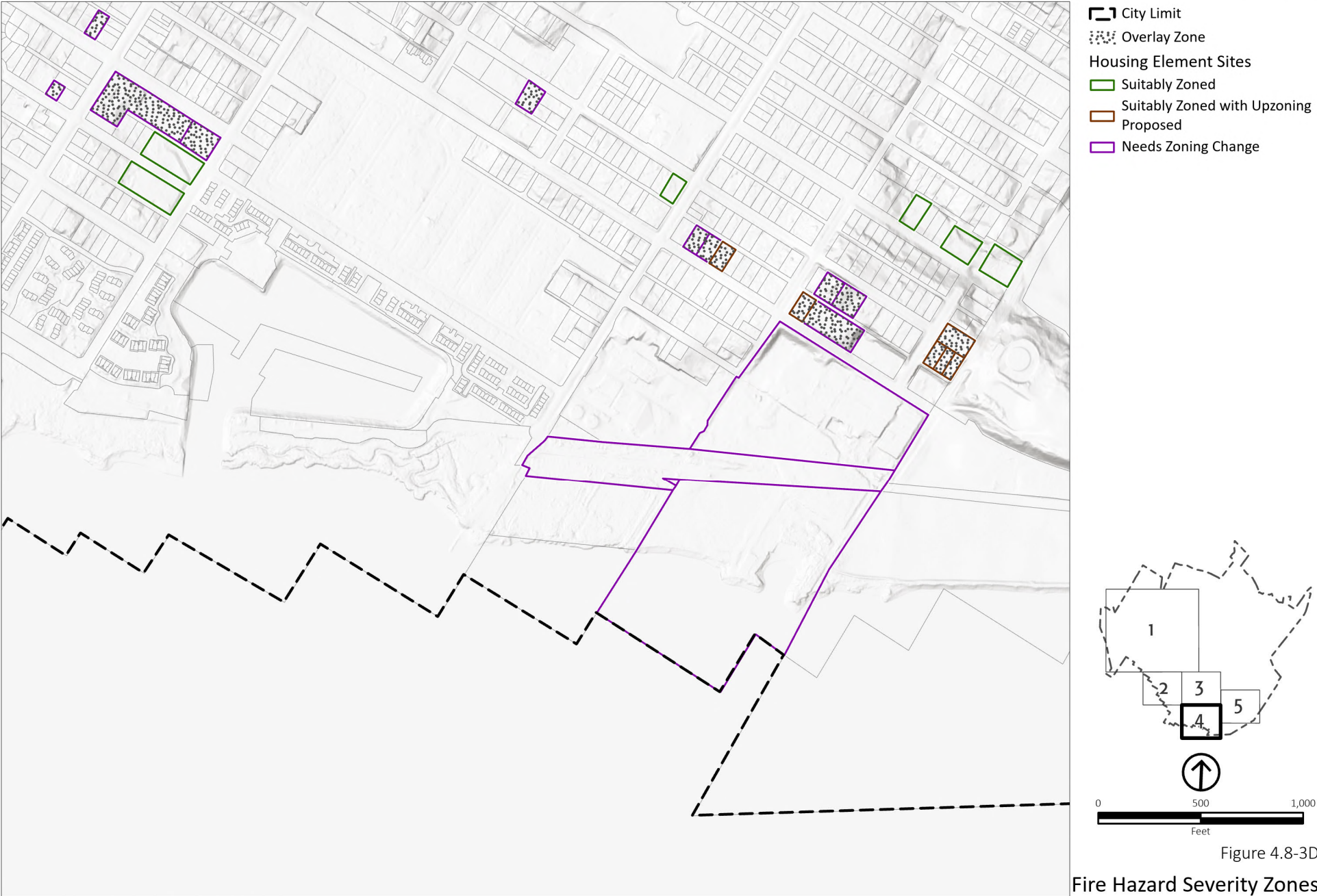


Figure 4.8-3C
Fire Hazard Severity Zones

Source: CalFire 2020, PlaceWorks 2022

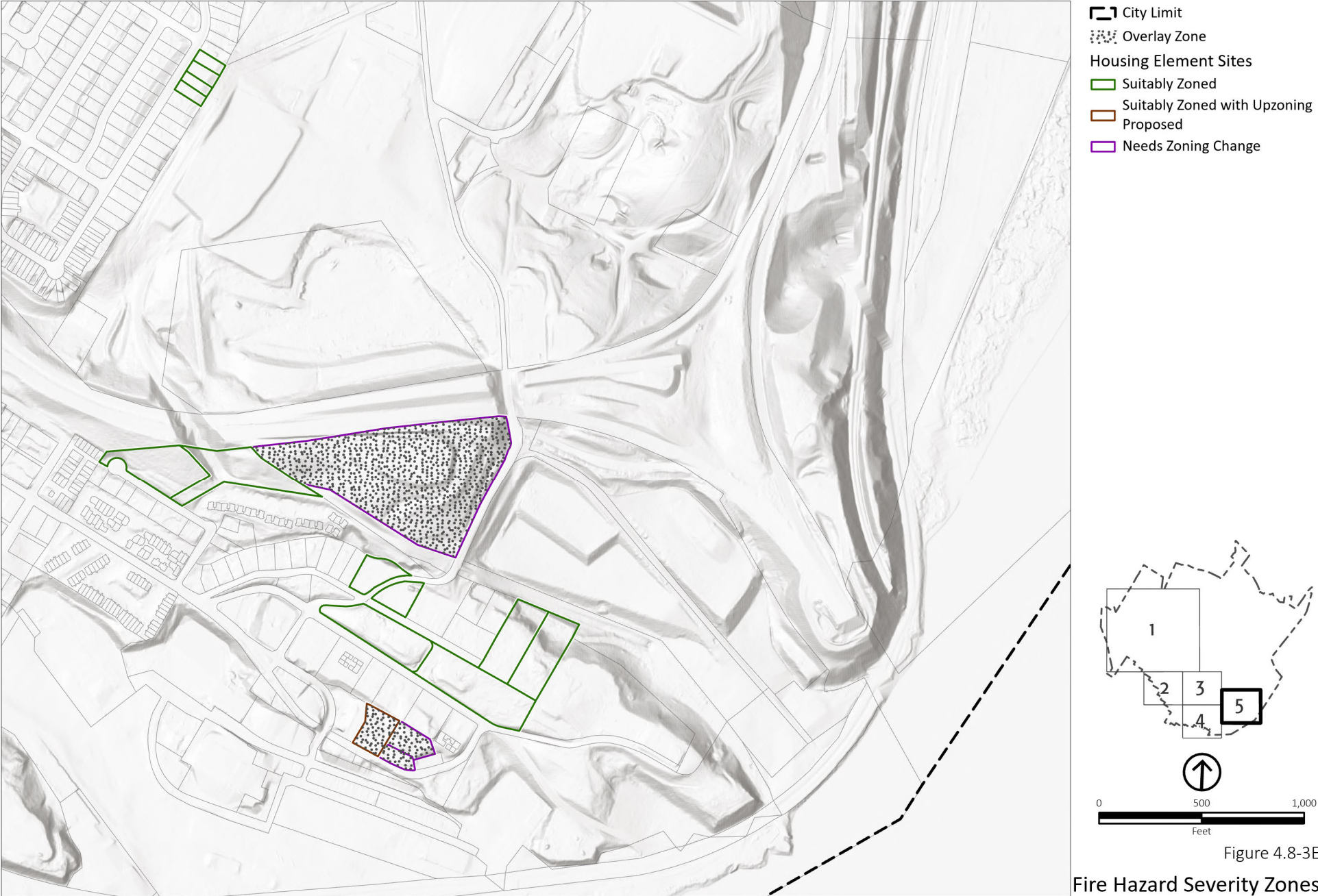
HAZARDS AND HAZARDOUS MATERIALS



Source: CalFire 2020, PlaceWorks 2022

Figure 4.8-3D
Fire Hazard Severity Zones

HAZARDS AND HAZARDOUS MATERIALS



Source: CalFire 2020, PlaceWorks 2022

Figure 4.8-3E
Fire Hazard Severity Zones

HAZARDS & HAZARDOUS MATERIALS

Hazardous Materials

There is one petroleum refinery in the City of Benicia, petroleum refineries in the city as well as nearby locations in communities such as Richmond and Martinez, present a threat to public health due to the risk of water and soil contamination (Benicia 2022a). The Industrial Park is in the eastern portion of Benicia. The Industrial Park area covers over 3,000 acres and includes approximately seven million square feet of building spaces and 600 businesses. The Industrial Park presents a possible threat to public health and the environment from businesses that use hazardous materials and the continued exposure of petroleum products.

Most hazardous materials in the region are transported on truck routes along major roadways that pass-through Benicia, such as I-680 or I-780. Other hazardous materials are transported and imported from the Benicia Port such as petroleum coke and other petroleum products. The most vulnerable areas along this route are the on-/off-ramps and interchanges.

According to the State Water Resources Control Board, there are 66 GeoTracker sites in the city, seven of which are listed as open cases. The Department of Toxic Substances Control reports 18 Envirostor sites in the city, three of which are active sites. Table 4.8-1, *Geotracker Sites in the City of Benicia*, and Table 4.8-2, *Envirostor Sites in the City of Benicia*, summarize the status of the hazardous material sites within the City, none of the proposed housing sites are located on hazardous sites listed in the tables below.

TABLE 4.8-1 GEOTRACKER SITES IN THE CITY OF BENICIA

Types of Sites	Status	Number of Sites
Cleanup Program Site	Completed – Case Closed	7
	Open – Remediation	1
	Open – Verification Monitoring	1
	Open - Inactive	2
	Open – Site Assessment	1
LUST Cleanup	Completed – Case Closed	46
	Open – Site Assessment	1
Subtotal, Open Cases		7
TOTAL		66

Source: SWRCB 2022

HAZARDS & HAZARDOUS MATERIALS

TABLE 4.8-2 ENVIROSTOR SITES IN THE CITY OF BENICIA

TYPES OF SITES	STATUS	NUMBER OF SITES
State Response	Certified	3
	Active	3*
Voluntary Clean up	Inactive – Needs Evaluation	1
	No Further Action	1
School Investigation	No Action Required	1
	Inactive – Needs Evaluation	1
Evaluation	Inactive – Needs Evaluation	1
	No Further Action	1
Tiered Permit	Inactive – Needs Evaluation	1
	No Further Action	1
Corrective Action	Certified – Operation & Maintenance	1
	Closed – Non-operating	2
Permitted Sites		
	Subtotal, Open Cases	3
	TOTAL	17

Source: DTSC 2022

*Sites listed on the Cortese List

4.8.2 THRESHOLDS OF SIGNIFICANCE

The proposed project would result in significant hazards and hazardous materials impacts if it would:

1. Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials.
2. 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.
3. Emit hazardous emissions or handle hazardous materials, substances, or waste within ¼-mile of an existing or proposed school.
4. Be located on a site which is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.
5. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area.
6. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
7. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

HAZARDS & HAZARDOUS MATERIALS

4.8.3 PROPOSED HOUSING ELEMENT POLICIES

There are no policies in the Housing Element Update applicable to Hazards and Hazardous Materials.

4.8.4 PROPOSED SAFETY ELEMENT POLICIES

The Safety Element Update contains following policies applicable to Hazards and Hazardous Materials:

- **Policy 1.4:** Locate critical facilities outside of mapped hazard zones, including floodplains, areas at risk of sea level rise, dam hazard inundation zones, high landslide hazard areas, Alquist-Priolo fault zones, liquefaction hazard zones, tsunami inundation areas, and the wildland-urban interface. If critical facilities must be in these zones, design and site them to minimize the potential for damage as a result of natural hazards and ensure their ability to remain operational during and after hazard events.
- **Policy 1.9:** Require the disclosure of any known or potential fire and/or inundation or flooding hazards at the time of sale for properties in the wildland-urban interface or projected sea level rise areas within the city, as illustrated in Figure 13, Wildland-Urban Interface, and Figures 3 through 6, which show sea level rise projections for 2050 and 2100. Provide reference information on the City website for potential purchasers to consider when reviewing disclosures.
- **Policy 1.7:** Work with local and regional transportation agencies to help protect primary evacuation routes from being blocked or damaged by a hazard event.
- **Policy 4.7.1:** Continue to coordinate with local industries to reduce the risk of hazardous materials releases during anticipated hazard events to ensure continued operations and to prevent the release of hazardous materials.
- **Policy 4.7.2:** Coordinate with the Department of Toxic Substances Control on new development projects and significant grading proposals on documented contaminated sites to avoid the risk of hazardous materials releases within the city.
- **Policy 4.15.1:** Require new developments consisting of 10 dwelling units or more in the wildland-urban interface to provide fire protection plans that include a risk analysis, evacuation plan, defensive space requirements, fire safety requirements for infrastructure, building ignition resistance, fire-protection maintenance, and assess fire response capabilities.
- **Policy 4.15.2:** Provide or connect elderly residents and persons with access and functional needs assistance with resources for maintaining defensible space around their homes.
- **Policy 4.15.3:** Continue to conduct vegetation management and fire risk reduction in the City's open space areas of the community.
- **Policy 4.15.4:** Develop a wildland-urban interface ordinance requiring defensible space measures in the wildland-urban interface, as illustrated in Figure 13, Wildland-Urban Interface.
- **Policy 4.15.5:** Work with local agencies and community-based organizations to provide resources (e.g., transportation to resilience centers and N95 masks) to help residents respond to poor air quality events.
- **Policy 4.15.6:** Encourage residents, landlords, and business owners to install filtration units in buildings to reduce health risks during poor air quality events.

HAZARDS & HAZARDOUS MATERIALS

- **Policy 6.1:** Support efforts by homeowners and business owners to increase the resilience of their buildings and properties through retrofits, weatherization, and other improvements. Retrofits may include, but are not limited to, efforts that address extreme heat, poor air quality, flood protection, water and energy efficiency, geologic and seismic safety, and fire safety.
- **Policy 6.2:** Evaluate vulnerabilities to climate change and natural hazards in the Downtown Historic District and prioritize adaptation strategies that increase resilience to known hazards such as seismic, flooding, and sea level rise.

4.8.5 ENVIRONMENTAL IMPACTS

HAZ-1	The project would not create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials.
-------	---

Housing Element Update

Construction

The proposed project does not propose construction or other development, but rather, provides capacity for future housing development consistent with the State Housing Element Law and the RHNA. The demolition and construction activities associated with future housing development facilitated by the HEU could require transportation of hazardous materials (e.g., asbestos-containing materials, lead-based paint, and/or contaminated soils). The transportation of hazardous materials during the construction phase would be limited in duration.

Most hazardous materials in the region are transported on truck routes along major roadways that pass-through Benicia, such as I-680 or I-780. The most vulnerable areas along this route are the on-/off-ramps and interchanges.

Nevertheless, implementation of the HEU would facilitate additional housing development and would require the transport, use, or disposal of hazardous materials and hazardous wastes within the city.

If accidentally released, these materials could result in exposure risks to communities. The use, storage, transport, and disposal of construction-related hazardous materials and waste is required to conform to existing laws and regulations. For example, Title 8, Industrial Relations § 5192, Hazardous Waste Operations and Emergency Response, states construction workers would need to be qualified and trained on the use, storage, transport, and disposal of construction-related hazardous materials to reduce potential impacts and ensure safety. The City's General Plan also sets policies for the proper disposing and handling of hazardous waste generated. Such as Policy 4.16.1 which supports the Solano County Hazardous Waste Management Plan and its goals, policies, and implementation guidelines for hazardous

HAZARDS & HAZARDOUS MATERIALS

waste reduction, hazardous waste facility siting, hazardous waste handling and disposal, public education, and involvement, and program coordination with regulatory requirements.

Furthermore, the proper safety protocols for handling and disposal of hazardous materials as determined in the various programs set by the Solano County Department of Resource Management, Environmental Health Division (CUPA), such as the Hazardous Materials Business Plan (HMP) which requires business that stores or handles hazardous materials complete a HMBP and submit to CUPA (SCDRM 2020, pg. 48).

In the event of accidental release or exposure to hazardous materials, the type and extent of the contamination would dictate the appropriate response and remediation for the site and the following agencies would be notified: Benicia Fire Department, Valero Benicia Refinery, Solano County HazMat, and Contra Costa County HazMat (EOP 2019). Impacts associated with hazardous materials would be dependent on the location of future residential development and the nature of surrounding land uses. Any future residential development proposals as a result of the implementation of the HEU would require project-specific environmental evaluation under CEQA in order to determine that any potential impact is less than significant in regard to hazardous materials, and project approval would be considered in accordance with local policies and regulations, including the City's General Plan and Municipal Code.

For projects that are not subject to CEQA, the Solano County Department of Resource Management, Environmental Health Services Division implements the Hazardous Waste Generator Program and the Hazardous Waste Treatment/Tiered Permit Program throughout Solano County. The purpose of these programs is to ensure that all hazardous waste generated in Solano County is properly handled, recycled, treated, stored, and disposed. Environmental Health Services staff in these programs inspect facilities that generate hazardous waste, investigate reports of illegal hazardous waste disposal, and respond to emergency spills of hazardous chemicals. Environmental Health Services staff also participate in public education programs designed to inform industries and residents about the laws and regulations regarding safe disposal of hazardous waste. (SCDRM1) In addition, the Bay Area Air Quality Management District (BAAQMD) has regulations that prohibit both asbestos (BAAQMDa) and lead (BAAQMDb) emissions from construction projects. These regulations apply at the time of building permit issuance and are therefore not linked to CEQA.

These regulatory processes and agencies would serve to minimize the future potential therefore making the impacts associated with the HEU less than significant.

Operation

The implementation of the HEU would result in an increase in residential dwellings. Residential development sites within the City are not expected to transport, use, store, or dispose of substantial amounts of hazardous materials, except for common residential-grade hazardous materials such as cleaning supplies, motor oil, electrical waste, paint, fertilizer, and pesticides. Future residents will need to comply with the provisions set forth in Chapter 8.04, Public Maintenance – Nuisance Abatement, from the City Municipal Code, which lists unlawful public nuisances including the storage of hazardous material and

HAZARDS & HAZARDOUS MATERIALS

the penalties associated if not abated. The City's General Plan also includes Policy 4.7.3 requires protection of existing and future development from contaminated sites, hazardous landfill waste and debris, chemical spills, and other hazards including unexploded ordnance and explosive waste. Furthermore, the City of Benicia has a Household Hazardous Waste Collection Program where residents can properly dispose of their household hazard waste by scheduling a curbside pick-up or take to the Benicia Fire Department (Benicia 2022). Therefore, impacts would be less than significant.

Conclusion

Both construction and operation of future residential uses could increase the volumes and types of hazardous materials transported, stored, used, and disposed within the City and pose a potential risk of upset and accidents involving the release of these materials. However, compliance with the General Plan policies, and applicable local, state, and federal regulations for hazardous materials and hazardous waste would avoid, or reduce significant hazardous materials impacts associated with the HEU. Complying with regulations providing protection from potentially hazardous material should result in less than significant impacts from the HEU.

Additionally, approval of the HEU itself, as a policy document update, would not change these regulations and would not provide any goals, policies, or programs that would significantly increase the risk of the release of hazardous materials. Therefore, impacts would be less than significant.

Safety Element Update

The Safety Element Update (SEU) includes policies related to management of hazardous materials and other safety topics related to public safety. These policies could result in the construction of physical improvements to improve safety in the future. Future construction of these physical infrastructure improvements would unlikely involve the transport or disposal of hazardous materials. However, in the event of handling hazardous materials from construction activities, the SEU include policies that would help reduce the potential risk of the accidental release of hazardous materials. As noted in the SEU Policy 4.7.2, The City will coordinate with the Department of Toxic Substances Control on new development projects and significant grading proposals on documented contaminated sites. In addition, Policy 4.7.1 states to continue to coordinate with local industries to reduce the risk of hazardous materials releases during anticipated hazard events to ensure continued operations and to prevent the release of hazardous materials. These policies will help to reduce the potential risk of releasing hazardous materials within the city from future development under the SEU. Therefore, future development proposed in the SEU would not result in significant impacts to hazardous materials. As such, the proposed SEU would not result in a potential accidental release of hazardous materials to people or the environment. Impacts would be less than significant.

Significance Without Mitigation: Potentially Significant.

HAZARDS & HAZARDOUS MATERIALS

HAZ-1: Prior to issuance of any building permit for a structure identified on the County Assessor records of having been constructed prior to 1978, the applicant shall disclose whether lead paint exists on the structure. If lead paint exists on the structure, lead must be contained during demolition activities (California Health & Safety Code Sections 17920.10 and 105255).

HAZ-2: Prior to issuance of any building permit for a structure identified on the County Assessor records of having been constructed prior to 1970, the applicant shall disclose whether asbestos exists on the structure. If asbestos exists on the structure, the applicant shall use the procedures specified in subsections 303.1 through 303.13 of the Bay Area Air Quality Management District Regulation 11 Rule 2 of Asbestos Demolition, Renovation and Manufacturing.

Significance With Mitigation: Less than Significant.

HAZ-2	The project would not 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.
-------	--

Housing Element Update

Construction

Construction projects typically maintain supplies onsite for containing and cleaning small spills of hazardous materials. Construction would also use equipment that would bring hazardous materials to future project sites, including diesel, gasoline, paints, solvents, cement, and asphalt. However, future construction activities would be conducted in accordance with the Storm Water Pollution Prevention Plan (SWPPP) as part of the National Pollution Discharge Elimination System (NPDES) permit. The primary objective of the SWPPP is to identify, construct, implement, and maintain Best Management Practices (BMPs) to reduce or eliminate pollutants in stormwater discharges and authorized non-storm water discharges from the construction site. BMPs for hazardous materials may include, but are not limited to, off-site refueling, placement of generators on impervious surfaces, establishing cleanout areas for cement, etc. While the risk of exposure to hazardous materials cannot be eliminated, adherence to existing regulations would ensure compliance with safety standards related to the use and storage of hazardous materials and with the safety procedures mandated by applicable federal, state, and local laws and regulations. For example, General Plan Policy 4.7.3, which protect existing and future development from chemical spills and other hazards.

Compliance with these regulations and policies would ensure that risks resulting from the routine transportation, use, storage, or disposal of hazardous materials or hazardous wastes associated with future development under the proposed project, and the potential for accident or upset, is less than significant.

HAZARDS & HAZARDOUS MATERIALS

Operation

The implementation of the HEU would result in an increase in residential dwellings. Residential units can accumulate hazardous materials such as cleaning supplies, motor oil, electrical waste, lead paint, fertilizers, and pesticides thus an increase in residential units would result in potential hazardous impacts. Future residents will need to comply with the provisions set forth in Chapter 8.04, Public Maintenance – Nuisance Abatement, from the City Municipal Code, which lists unlawful public nuisances including the storage of hazardous material and the penalties associated if not abated. The City’s General Plan also includes Policy 4.7.3 requires protection of existing and future development from chemical spills, and other hazards. Furthermore, the City of Benicia has a Household Hazardous Waste Collection Program where residents can properly dispose of their household hazard waste by scheduling a curbside pick-up or take to the Benicia Fire Department (Benicia 2022b). Therefore, impacts would be less than significant.

Safety Element Update

The Safety Element Update (SEU) includes policies and actions related to management of hazardous materials and other safety topics related to public safety. These policies could result in the construction of physical improvements to improve safety in the future. Future construction of these physical infrastructure improvements would involve ground-disturbing activities and, if performed near a contaminated site, could result in impacts. As noted in the SEU Policy 4.7.2, The City will coordinate with the Department of Toxic Substances Control on new development projects and significant grading proposals on documented contaminated sites. This policy will help to reduce the potential risk of releasing hazardous materials within the city from future development. Therefore, future development proposed in the SEU would not result in significant impacts to hazardous materials. As such, the proposed SEU would not result in a potential accidental release of hazardous materials to people or the environment. Impacts would be less than significant.

Significance Without Mitigation: Less than significant.

HAZ-3	The project would not emit hazardous emissions or handle hazardous materials, substances or waste within ¼-mile of an existing or proposed school.
-------	--

Housing Element Update

As described under Section 4.8.1.2, *Environmental Setting*, there are five elementary schools, one middle school, one comprehensive senior high school, and one continuation high school in the City. There are approximately 16 housing sites within a quarter mile of these schools.

Future construction from the HEU would be temporary thus would not significantly impact nearby schools. Furthermore, construction workers would need comply with Title 8, Industrial Relations § 5192, Hazardous Waste Operations and Emergency Response, which requires proper training on the use, storage, transport, and disposal of construction-related hazardous materials to reduce potential impacts

HAZARDS & HAZARDOUS MATERIALS

and ensure safety. The operation of future residential units would not generate hazardous emissions or require handling of acutely hazardous materials, substances, and waste. Operational activities of future residential uses would involve the use of potentially hazardous materials (e.g., solvents, cleaning agents, paints, pesticides) typical of residential uses, and when used correctly, these would not result in a significant hazardous impact to nearby schools. Additionally future residents will need to comply with the provisions set forth in Chapter 8.04, Public Maintenance – Nuisance Abatement, from the City Municipal Code, which lists unlawful public nuisances including the storage of hazardous material and the penalties associated if not abated. The General Plan Policy also includes Policy 4.8.1 which evaluates potential hazards and environmental risks to sensitive receptors before approving development. Therefore, impacts would be less than significant.

Safety Element Update

The SEU policies and implementing actions aim to reduce the risk to the community and to ensure protection from foreseeable natural and human caused hazards. The Safety Element policies and implementing actions could include construction of new infrastructure related to emergency access and pedestrian safety. As such, SEU policies could result in community benefits; however, no specific infrastructure improvements or projects are identified in the SEU. As this is a policy document, this update would not have any significant indirect or direct environmental effects related to hazardous materials being handled in the vicinity of a school. Impacts would be less than significant.

Significance Without Mitigation: Less than significant.

HAZ-4	Implementation of the proposed project could facilitate residential development of a site that is on a list of hazardous materials sites.
-------	---

Housing Element Update

Table 4.8-1, and Table 4.8-2, lists one LUST Clean-up site and three Cortese List sites in the City of Benicia. These sites are listed in Table 4.8-3, *Active Hazardous Sites in Proximity to Housing Element Sites*, which state their location and proximity to the closest Housing Element Site.

HAZARDS & HAZARDOUS MATERIALS

TABLE 4.8-3 ACTIVE HAZARDOUS SITES IN PROXIMITY TO HOUSING ELEMENT SITES

Project Name	Status	Project Type	Address	Proximity To Closest Housing Element Site (Miles)
EnviroStor				
Benicia Arsenal Area I, Building 165	Active	State Response	750 Jackson Street	0.1
Benicia Arsenal, Area I, Building 50 Complex	Active	State Response	946 Tyler Road	0.28
Parcel 2-4 (AKA Benicia Industrial Park)	Certified O&M – Land Use Restrictions Only	State Response	2991 Bayshore Road	2.8
GeoTracker				
Benicia 76 (T10000011044)	Open - Site Assessment As Of 10/23/2017	LUST Cleanup Site	505 Military East	0.1

Source: DTSC 2022a; SWRCB 2022

As described in Impact HAZ-1 and Impact HAZ-2, there are a numerous existing and proposed regulatory processes that would serve to minimize potential impacts through the review for hazardous material contamination and an assessment for hazardous building materials which could, upon disturbance during construction, be released to the environment or, upon future occupation, cause a hazard to the public due to exposure to hazardous materials above the applicable regulatory exposure limits.

It is possible that construction activities resulting from the HEU could occur within or adjacent to a Cortese List site. However, any development on or next to any of site such as those pursuant to Government Code 65962.5 would require environmental site assessment by a qualified professional to ensure that the relevant projects would not disturb hazardous materials on any of the hazardous materials or plumes of hazardous materials diffusing from one of the hazardous materials sites, and that any proposed development would not create a substantial hazard to the public or the environment. Phase I Environmental Site Assessments are also required for land purchasers to qualify for the Innocent Landowner Defense under CERCLA and to minimize environmental liability under other laws such as RCRA. Properties contaminated by hazardous substances are also regulated at the local, state, and federal level and are subject to compliance with stringent laws and regulations for investigation and remediation. For example, compliance with the CERCLA, RCRA, California Code of Regulations, Title 22, and related requirements would remedy all potential impacts caused by hazardous substance contamination. The City’s General Plan also includes Policy 4.20.1 which requires buffer zones between sensitive land uses and those land uses which involve the significant use, storage, or disposal of hazardous materials, hazardous waste, or toxic air contaminants.

Therefore, development of Housing Element Inventory Sites would result in a less than significant impact upon compliance with existing laws and regulations.

HAZARDS & HAZARDOUS MATERIALS

Safety Element Update

The SEU includes policies and implementing actions that aim to reduce the risk to the community and ensure protection from foreseeable natural and human-caused hazards. The SEU policies and implementing actions could affect the design and construction of planned developments such as adding features associated with emergency access and pedestrian safety. However, future infrastructure improvements or projects identified in the SEU would not place residential development on or adjacent to hazardous materials sites as the SEU includes policies regarding placing development near known hazardous materials. Specifically, Policy 4.7.2 which states coordinating with the Department of Toxic Substances Control on new development projects and significant grading proposals on documented contaminated sites to avoid the risk of hazardous materials releases within the city. The SEU would not have any significant indirect or direct environmental effects related to future projects being located on a site fitting the Cortese List criteria. Impacts would be less than significant.

Significance Without Mitigation: Less than significant.

HAZ-5	The proposed project would include sites located in the vicinity of an airport or within the jurisdiction of an airport land use plan.
-------	--

Housing Element Update

The General Plan states all of Solano County is within the Airport Influence Area (AIA) for the Travis Air Force Base Airport Land Use Compatibility Plan (ALUCP). As shown in Figure 4.8-1, the City of Benicia is within Compatibility Zones D and E. These zones are areas subject to frequent aircraft overflight. There are limitations on the height of structures and additional airspace review for both Compatibility Zones.

Compatibility Zone D requires Airport Land Use Commission (ALUC) review for objects that are 200 feet or higher above ground level (AGL). There are no safety requirements for Zone D. As a condition for approval of development within Zone D, a notice regarding aircraft operational impacts on the property shall be attached the property deed. Acceptable interior noise levels are the same as the underlying compatibility zone.

Compatibility Zone E requires ALUC review for all proposed buildings or structures that are 200 feet or higher AGL. Zone E does not have constraints on the types of land uses, densities, or intensities regarding housing units. The noise criteria are the same as the underlying compatibility zone.

The proposed project will be subject to Airport Land Use Compatibility review by the Solano County Airport Land Use Commission with respect to the Land Use Compatibility Plan and the Travis Air Force Base Land Use Compatibility Plan. Any future development proposals that may result after the HEU would require project-specific environmental evaluation either under CEQA, or for General Plan compliance, to determine that any potential impacts are less than significant with regard to the Travis Air Force Base

HAZARDS & HAZARDOUS MATERIALS

Airport, and project approval would be considered in accordance with local policies and regulations. Therefore, impacts would be less than significant.

Safety Element Update

The SEU includes policies and implementing actions that aim to reduce the risk to the community and ensure protection from foreseeable natural and human-caused hazards. The SEU policies and implementing actions could affect the design and construction of planned developments such as adding features associated with emergency access and pedestrian safety. However, no specific infrastructure improvements or projects are identified in the SEU. The SEU would not result in impacts to noise-sensitive land uses.

Significance Without Mitigation: Less than significant.

HAZ-6	The proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
-------	---

Housing Element Update

The HEU is a policy document and does not include any specific development proposal; however future housing development would result in construction activities that could temporarily affect roadways, emergency response times, or evacuation routes from road closures and/or utility improvements. The proposed project would also increase the number of people who may need to evacuate the City in the event of an emergency.

To address such impacts, The Solano County Multi-Jurisdictional Hazard Mitigation Plan (Solano MJHMP) annex the City of Benicia. The adoption of the Solano MJHMP details the hazard mitigation planning elements specific to the City of Benicia. Annex documents the City's mitigation planning process and identifies local hazards and emergency response for natural and manmade disasters in Benicia. The Solano MJHMP identifies the most significant natural and manmade hazards affecting the City and provides planning and mitigation strategies. As a Disaster Mitigation Act of 200 requirement, the Solano MJHMP updates every five years, therefore foreseeable development under the HEU would be required to comply with applicable codes and regulations pertaining to emergency response and evacuation plans adopted and maintained by the City. The City of Benicia has also prepared an Emergency Operations Plan (EOP) that identifies and allocates resources in response to emergencies. The EOP details the City's emergency planning, organizational, and response policies and procedures and responsibilities for reach City department during an emergency. In addition, any closure of public right-of-way (ROW) for construction purposes would be subject by the Public Works Department. Development under the HEU is not expected to interfere or conflict with existing plans of future implementation efforts.

HAZARDS & HAZARDOUS MATERIALS

Additionally, future housing development would be required to comply with the provisions of the 2019 CFC and the 2019 CBC which would ensure fire and emergency access through all phases of construction and operation as mentioned in the City's Municipal Code, Chapter 8.28.010, Fire Prevention and Life Safety Code. During construction, the future projects would be required to comply with all applicable provisions of the CFC to ensure fire safety during the construction phase. The City's General Plan also includes Policy 4.22.2 which requires at least two exit routes for developments and Policy 4.22.3 which provides the public with information on specified emergency evacuation routes. Both these policies provide proper safety measures and routes in the event of an emergency.

Future residential projects under the HEU would need to be evaluated for impacts regarding emergency response issues. Therefore, the implementation of the HEU itself would not create substantial impacts to adopted emergency response plan or emergency evacuation plan, as it is a policy-level document. Compliance with applicable laws and regulations regarding emergency preparedness as well as General Plan policies would ensure that future projects pursuant to the HEU would not interfere with an adopted emergency response plan or emergency evacuation plan, and impacts would be less than significant.

Safety Element Update

The Benicia SEU Background Report identifies residential parcels with evacuation constraints, meaning that they are at least a half mile from a major roadway and may have access to only one emergency evacuation route (Benicia 2022, pg. SE-13). Based on Figure 1, *Evacuation Routes and Residential Parcels with Evacuation Constraints*, in the Health and Safety Element Update (see Appendix 3-2), there are three identified sites (APN: 083011920, 086046280, 087093190) with constrained evacuation access. Implementing the HEU could place a strain on evacuation routes and cause roads to become congested and slow down evacuation of the community or specific neighborhoods. The SEU policies addresses adding measures associated with emergency access and pedestrian safety. Specifically, Policy 1.7 which establishes working with local and regional transportation agencies to help protect primary evacuation routes from being blocked or damages by a hazard event. In addition, Policy 4.15.1 which requires new developments consisting of 10 dwelling units or more in the wildland-urban interface to provide fire protection plans that include evaluation plan. The implementation of these policies, the SEU would not have any significant indirect or direct environmental effects related to implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts would be less than significant.

Significance Without Mitigation: Less than significant.

HAZARDS & HAZARDOUS MATERIALS

HAZ-7	The project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.
-------	---

Housing Element Update

The HEU would increase the number of housing units the City. As shown in Figure 4.8-3A through Figure 4.8-3E, there are no housing sites on or adjacent to state-designated fire hazard severity zones; however, there are housing sites within or adjacent to the Wildland-Urban Interface zones as shown in Figure 4.8-2A through Figure 4.8-2E. Increasing housing sites in these areas could have the potential to increase WUI and structural fires. Future residential projects would be required to comply with the regulations and requirements set forth in the City's Municipal Code regarding fire safety measures to reduce the risk of wildfires. For example, Chapter 8.08, Weeds and Rubbish, of the City's Municipal Code, details the removal for dry brush and vegetation from private property and public streets to prevent wildfire damage, and Section 17.70.330, Electric transmission line easements, of the City's Municipal Code sets a minimum 150 feet setback from the edge of 230 kilovolt electric transmission line easement from any residential uses. The Fire Department also administers the Vegetation Management Plan, which helps to mitigate fire impacts by controlling plant material surrounding homes and other structures (Benicia 2022c). The General Plan also includes policies aimed to reduce wildfire hazards in Benicia; for example, Policy 4.15.1 promotes the creation and maintenance of natural and artificially constructed firebreaks between development and open space areas through the use of fire resistant landscaping, weed abatement, dicing and other methods.

According to CAL Fire, there are no Very High Fire Hazard Severity Zones (VHFHSZ) within the Local Responsibility Area (LRA) for the City of Benicia. However, the City of Benicia borders the Sky Valley-Cordelia Hills Open Space in the north which is a fire hazard severity zone within the State Responsibility Area and classified as Moderate and High FHSZ. There are no proposed housing sites along the northern border of Benicia.

Compliance with applicable laws and regulations regarding emergency preparedness as well as General Plan policies would ensure that HEU would not expose people or structures to a significant risk of loss, injury, or death, involving wildland fires, and impacts would be less than significant.

Safety Element Update

The SEU policies and implementing actions could affect the design and construction of planned developments such as adding features associated with wildfire mitigation. The SEU will include additional policies to further promote wildfire hazard reduction which include:

HAZARDS & HAZARDOUS MATERIALS

- **Policy 4.15.1:** Require new developments consisting of 10 dwelling units or more in the wildland-urban interface to provide fire protection plans that include a risk analysis, evacuation plan, defensive space requirements, fire safety requirements for infrastructure, building ignition resistance, fire-protection maintenance, and assess fire response capabilities.
- **Policy 4.15.3:** Continue to conduct vegetation management and fire risk reduction in the City's open space areas of the community.
- **Policy 4.15.4:** Develop a wildland-urban interface ordinance requiring defensible space measures in the wildland-urban interface, as illustrated in Figure 13, Wildland-Urban Interface.
- **Policy 6.1:** Support efforts by homeowners and business owners to increase the resilience of their buildings and properties through retrofits, weatherization, and other improvements. Retrofits may include, but are not limited to, efforts that address extreme heat, poor air quality, flood protection, water and energy efficiency, geologic and seismic safety, and fire safety.
- **Policy 6.6:** Work to underground power lines throughout the community, as feasible, especially in high-risk areas, and coordinate with the Pacific Gas and Electric Company (PG&E) to fund and implement efforts in mapped wildfire risk areas.
- **Policy 6.7:** Conduct a public education campaign to increase awareness of hazards in the community, such as geologic and seismic risks, flooding and sea level rise, wildfire, drought, and extreme heat. Educational campaigns could offer residents information on ways to protect their property and preserve personal health and safety from various hazards.

Those policies will enhance public safety without significantly augmenting the cost of development. Therefore, impacts regarding the SEU would be less than significant.

Significance Without Mitigation: Less than significant.

HAZARDS & HAZARDOUS MATERIALS

4.8.6 REFERENCES

- Bay Area Air Quality Management District (BAAQMDa), 1982. Regulation 11 Hazardous Pollutants Rule 1 Lead. <https://www.baaqmd.gov/~media/dotgov/files/rules/reg-11-rule-1-lead/documents/rg1101.pdf?la=en&rev=fd252b866ea84a28911d3e9e3f2fff3c>
- Bay Area Air Quality Management District (BAAQMdb)and 1998. Regulation 11 Rule 2 Asbestos Demolition, Renovation and Manufacturing. <https://www.baaqmd.gov/~media/dotgov/files/rules/reg-11-rule-2-asbestos-demolition-renovation-and-manufacturing/documents/rg1102.pdf?la=en&rev=bac2a923da314dc893aa7e5bd61366b7>
- Benicia, City of. 1999. General Plan
- Benicia, City of. 2022a. City of Benicia Community Health and Safety Element Background Report.
- _____. 2022b, September 13 (accessed). Garbage and Recycling Collection. https://www.ci.benicia.ca.us/index.asp?SEC=062081F8-224D-4655-986F-278EBB6E3DF2&DE=0AE07AED-79F2-45BF-A245-A4B96204556A&Type=B_BASIC.
- _____. 2022c, September 13 (accessed). Vegetation Management. <https://www.ci.benicia.ca.us/index.asp?SEC=18120EE0-1AB7-499E-9CEA-70D83B3DF154&DE=A5145940-39B8-47BA-B86F-4B341BC12614>.
- _____. 2022d, October 18 (accessed). Notifications. <https://www.ci.benicia.ca.us/index.asp?SEC=9D1FDDDB4-1BD4-464C-835F-39A7E00DA2EBhttps://www.ci.benicia.ca.us/index.asp?SEC=9D1FDDDB4-1BD4-464C-835F-39A7E00DA2EB>.
- _____. 2022e, October 18 (accessed). Agreement for Vegetation Management Services. https://legistarweb-production.s3.amazonaws.com/uploads/attachment/pdf/1281211/2._Agreement_for_Vegetation_Management_Services.pdf
- City of Benicia Fire Department and Dynamic Planning + Science (BFDDPS). 2022, September 13 (accessed). City of Benicia Vegetation Fuels Management Plan. <https://storymaps.arcgis.com/stories/aac933c4ca02470ab0d0e120955c5d31>
- Department of Toxic Substances Control (DTSC). 2000. Phase 1 Letter Benicia High School (APN 86-152-090) Addition. https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/6388624429/Phase%201%20Letter%20Benicia%20High%20Addition.pdf

HAZARDS & HAZARDOUS MATERIALS

_____. 2022a, August 02 (accessed). EnviroStor. <http://www.envirostor.dtsc.ca.gov/public/>.

_____. 2022b, September 14 (accessed). EnviroStor, Liberty High School (60002834).
https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=60002834

Solano, County of. 2021. Multi-Jurisdiction Hazard Mitigation Plan, Benicia Jurisdictional Annex

_____. 2022, September 13 (accessed). Hazardous Materials and Waste.
https://www.solanocounty.com/depts/rm/environmental_health/hazmat/default.asp

Solano County Department of Resource Management (Solano DRM). 2015, October 5. Travis Air Force Base Land Use Compatibility Plan.
<https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=34765>

Solano County Department of Resource Management, Environmental Health Division (SCDRM). 2020. Solano County CUPA Operational Area Plan for Emergency Response to Hazardous Materials Incidents.
<https://www.solanocounty.com/civicax/filebank/blobdload.aspx?blobid=26884><https://www.solanocounty.com/civicax/filebank/blobdload.aspx?blobid=26884>

Solano County Department of Resource Management, Environmental Health Division (SCDRM1). 2022. CCR Title 22, Division 4.5, Chapter 11, Appendix X:
https://web.csulb.edu/colleges/cnsm/safety/documents/hazardous_chemicals.pdfhttps://web.csulb.edu/colleges/cnsm/safety/documents/hazardous_chemicals.pdf, #75 for asbestos and #406 for lead compounds.

State Water Resources Control Board (SWRCB). 2022, August 02 (accessed). GeoTracker.
<http://geotracker.waterboards.ca.gov/>.

HAZARDS & HAZARDOUS MATERIALS

This page intentionally left blank.

4.9 HYDROLOGY AND WATER QUALITY

This section of the Draft Environmental Impact Report (DEIR) evaluates the potential impacts of the proposed Housing Element Update and Safety Element Update (proposed project) to hydrology and water quality conditions in the City of Benicia. A summary of the relevant regulatory policies and the existing hydrologic setting is followed by a discussion of the potential project impacts, and when necessary, provide appropriate mitigation.

4.9.1 ENVIRONMENTAL SETTING

4.9.1.1 REGULATORY FRAMEWORK

Federal Regulations

Clean Water Act

The United States Environmental Protection Agency (USEPA) is the lead federal agency responsible for water quality management. The Clean Water Act (CWA) is the primary federal law that governs water quality control activities by the USEPA and the states. The CWA regulates direct and indirect discharge of pollutants; sets water quality standards for all contaminants in surface waters; and makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a permit is obtained under its provisions. The CWA mandates permits for wastewater and stormwater discharges; requires states to establish site-specific water quality standards for navigable bodies of water; and regulates other activities that affect water quality and nonpoint sources of pollution.

Under federal law, the USEPA has published water quality regulations under Volume 40 of the Code of Federal Regulations. Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the CWA, water quality standards consist of two elements: (1) designated beneficial uses of the water body in question and (2) criteria that protect the designated uses. Section 304(a) requires the USEPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. In California, the USEPA has delegated authority to the SWRCB and its RWQCBs to identify beneficial uses and adopt applicable water quality objectives.

When water quality does not meet CWA standards and compromises designated beneficial uses of a receiving water body, Section 303(d) of the CWA requires that water body be identified and listed as “impaired”. Once a water body has been designated as impaired, a Total Maximum Daily Load (TMDL) must be developed for the impairing pollutant(s). A TMDL is an estimate of the total load of pollutants from point, nonpoint, and natural sources that a water body may receive without exceeding applicable

HYDROLOGY & WATER QUALITY

water quality standards, with a factor of safety included. Once established, the TMDL allocates the loads among current and future pollutant sources to the water body.

CWA Section 402- National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) permit program was established by the CWA to regulate municipal and industrial discharges to surface waters of the United States, including discharges from municipal separate storm sewer systems (MS4). Federal NPDES permit regulations have been established for broad categories of discharges, including point-source municipal waste discharges and nonpoint-source stormwater runoff. NPDES permits generally identify effluent and receiving water limits on allowable concentrations and/or mass emissions of pollutants in the discharge; prohibitions on discharges not specifically allowed under the permit; and provisions that describe required actions by the discharger, including industrial pretreatment, pollution prevention, self-monitoring, and other activities.

Under the National Pollutant Discharge Elimination System (NPDES) program, all facilities that discharge pollutants into waters of the United States are required to obtain a NPDES permit.

Requirements for stormwater discharges are also regulated under this program. In California, the NPDES permit program is administered by the State Water Resources Control Board (SWRCB) through the nine Regional Water Quality Control Boards (RWQCBs). The City of Benicia is within the jurisdiction of the San Francisco Bay RWQCB (Region 2). The City of Benicia is a permittee under the Phase II Small Municipal Separate Storm Sewer System (MS4) permit reissued by SWRCB in 2013 as part of the NPDES permit (Water Quality Order No. 2013-0001-DWQ, General Permit No. CAS000004).

Safe Drinking Water Act

The federal Safe Drinking Water Act (SDWA) regulates drinking water quality nationwide and gives the US Environmental Protection Agency (EPA) the authority to set drinking water standards, such as the National Primary Water regulations (NPDWRs or primary standards). The NPDWRs protect drinking water by limiting the levels of specific contaminants that can adversely affect public health. All public water systems that provide service to 25 or more individuals must meet these standards. Water purveyors must monitor for contaminants on fixed schedules and report to the EPA when a maximum contaminant level (MCL) is exceeded. MCL is the maximum permissible level of a contaminant in water that is delivered to any use of a public water system. Contaminants include organic and inorganic chemicals (e.g., minerals), substances that are known to cause cancer, radionuclides (e.g., uranium and radon), and microbial contaminants (e.g., coliform and E. coli). The MCL list typically changes every three years as the EPA adds new contaminants or revises MCLs. The California Department of Public Health's Division of Drinking Water and Environmental Management is responsible for implementation of the SDWA in California.

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations limiting

HYDROLOGY & WATER QUALITY

development in floodplains. FEMA also issues Flood Insurance Rate Maps (FIRMs) that identify which land areas are subject to flooding. These maps provide flood information and identify flood hazard zones in the community. The design standard for flood protection is established by FEMA. FEMA's minimum level of flood protection for new development is the 100-year flood event, also described as a flood that has a 1-in-100 chance of occurring in any given year.

As required by the FEMA regulations, all development constructed within the 100-year floodplain or a Special Flood Hazard Area (as delineated on the FIRM) must be elevated so that the lowest floor is at or above the base flood elevation level. The term "development" is defined by FEMA as any human-made change to improved or unimproved real estate, including but not limited to buildings, other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, and storage of equipment or materials. Per these regulations, if development in these areas occurs, a hydrologic and hydraulic analysis must be performed prior to the start of development and must demonstrate that the development does not cause any rise in base flood elevation levels, because no rise is permitted within regulatory floodways. Upon completion of any development that changes existing Special Flood Hazard Area boundaries, the NFIP directs all participating communities to submit the appropriate hydrologic and hydraulic data to FEMA for a FIRM revision, as soon as practicable, but not later than six months after such data become available.

State Regulations

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Act (Water Code sections 13000 et seq.) is the basic water quality control law for California. This Act established the SWRCB and divided the state into nine regional basins, each under the jurisdiction of a RWQCB. The SWRCB is the primary State agency responsible for the protection of California's water quality and groundwater supplies. The RWQCBs carry out the regulation, protection, and administration of water quality in each region. Each regional board is required to adopt a water quality control plan, or basin plan, that recognizes and reflects the regional differences in existing water quality, the beneficial uses of the region's ground and surface water, and local water-quality conditions and problems. As stated previously, Contra Costa County is within the jurisdiction of both the San Francisco Bay RWQCB (Region 2) and the Central Valley RWQCB (Region 5). The Porter-Cologne Act also authorizes the SWRCB and RWQCBs to issue and enforce waste discharge requirements, NPDES permits, Section 401 water quality certifications, or other approvals.

Statewide General Construction Permit

Construction projects of one acre or more of land area must comply with the requirements of the SWRCB Construction General Permit (Order No. 2009-009-DWQ as amended by 2010-0014-DWQ and 2012-0006-DWQ). Under the terms of the permit, applicants must file Permit Registration Documents (PRDs) with the SWRCB prior to the start of construction, including a Notice of Intent (NOI), risk assessment, site map, Storm Water Pollution Prevention Plan (SWPPP), annual fee, and signed certification statement.

HYDROLOGY & WATER QUALITY

The SWPPP must demonstrate conformance with applicable Best Management Practices (BMP), including a site map that shows the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the project location. The SWPPP must list BMPs that would be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources. Additionally, the SWPPP must contain a visual monitoring program, a chemical monitoring program for nonvisible pollutants if there is a failure of the BMPs, and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. A new Construction General Permit has been drafted by the SWRCB and should be adopted in September 2022.

State Water Resources Control Board Trash Amendments

On April 7, 2015, the SWRCB adopted an amendment to the Water Quality Control Plan for Ocean Waters of California to control trash and Part 1, Trash Provisions, of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California. They are collectively referred to as "the Trash Amendments". The Trash Amendments apply to all surface waters of California and include a land-use-based compliance approach to focus trash controls on areas with high trash-generation rates. Areas such as high density residential, industrial, commercial, mixed urban, and public transportation stations are considered priority land uses. There are two compliance tracks for Phase I and Phase II MS4 permittees:

- Track 1: Permittees must install, operate, and maintain a network of certified full capture systems in storm drains that capture runoff from priority land uses.
- Track 2: Permittees must implement a plan with a combination of full capture systems, multibenefit projects, institutional controls, and/or other treatment methods that have the same effectiveness as Track 1 methods.

The Trash Amendments provide a framework for permittees to implement their provisions, which is provided in Section C.10, Trash Reduction Load, of the MS4 permits. Full compliance must occur within 10 years of the permit, and permittees must also meet interim milestones such as average load reductions of 10 percent per year.

Water Conservation in Landscaping Act of 2006

The Water Conservation in Landscaping Act includes the State of California's Model Water Efficient Landscape Ordinance (MWELo), which requires cities and counties to adopt landscape water conservation ordinances. The MWELo was revised in July 2015 via Executive Order B-29-15 to address the ongoing drought and build resiliency for future droughts. State law requires all land use agencies, which includes cities and counties, to adopt a WELO that is at least as efficient as the MWELo prepared by the DWR. The 2015 revisions to the MWELo improve water conservation in the landscaping sector by promoting efficient landscapes in new developments and retrofitted landscapes. The revisions increase water efficiency by requiring more efficient irrigation systems, incentives for grey water usage, improvements in on-site stormwater capture, and limiting the portion of landscapes that can be covered in high-water-use

HYDROLOGY & WATER QUALITY

plants and turf. New development projects that include landscape areas of 500 square feet or more are subject to the MWEL. This applies to residential, commercial, industrial, and institutional projects that require a permit, plan check, or design review. The previous landscape size threshold for new development projects ranged from 2,500 square feet to 5,000 square feet. The size threshold for rehabilitated landscapes has not changed and remains at 2,500 square feet. The City of Benicia has adopted the MWEL, as codified in Chapter 15.37, *Mandatory Construction Waste Reduction, Disposal and Water Efficient Landscaping*, of the Benicia Municipal Code.

Sustainable Groundwater Management Act

Section 10720.1 of the Sustainable Groundwater Management Act (SGMA), effective January 1, 2015, established a framework of priorities and requirements to facilitate sustainable groundwater management throughout California. The legislative intent of the SGMA is for groundwater to be managed in California's groundwater basins by local public agencies and newly-formed Groundwater Sustainability Agencies (GSAs). Specifically, the SGMA establishes a definition of "sustainable groundwater management," requires that a Groundwater Sustainability Plan be adopted for the most important groundwater basins in California, establishes a timetable for adoption of Groundwater Sustainability Plans, empowers local agencies to manage basins sustainably, establishes basic requirements for Groundwater Sustainability Plans, and provides for a limited State role.

Regional Regulations

San Francisco Bay Regional Water Quality Control Board

Portions of Contra Costa County that drain to the San Francisco Bay are within the jurisdiction of the San Francisco Bay RWQCB (Region 2). The San Francisco Bay RWQCB addresses regionwide water quality issues through the creation and triennial update of the San Francisco Bay Basin Water Quality Control Plan (Basin Plan). The Basin Plan was adopted in 1995 and most recently amended May 4, 2017. This Basin Plan designates beneficial uses of the State waters within Region 2, describes the water quality that must be maintained to support such uses, and provides programs, projects, and other actions necessary to achieve the standards established in the Basin Plan. The Water Quality Control Policy for the Enclosed Bays and Estuaries of California, as adopted by the SWRCB in 1995 and last amended in 2018, also provides water quality principles and guidelines to prevent water quality degradation and protect the beneficial uses of waters of enclosed bays and estuaries. The San Francisco Bay RWQCB also administers the MS4 permit for the City of Benicia.

Local Regulations

City of Benicia Stormwater Management Plan

The City of Benicia is required by the Environmental Protection Agency, under the provisions of the National Pollution Discharge Elimination System (NPDES) Phase II regulations and the State Water Resources Control Board Phase II General Permit requirements, to develop and implement a Storm Water

HYDROLOGY & WATER QUALITY

Management Plan (SWMP). The SWMP is intended to reduce pollutants that may be present in storm water runoff from streets and property within the city limits. The City intends to control and manage its storm water in compliance with the provisions of the State General Storm Water Permit by applying for coverage under the Phase II General Permit as regulated by the State Water Resources Control Board San Francisco Bay Region 2. The SWMP is a five-year program that implements the General Permit through a series of measures and practices that are designed to address storm water pollution before it is discharged into the receiving water. The receiving water for the City of Benicia is the Carquinez Strait. The plan includes six elements called Minimum Control Measures (MCMs) that identify a responsible department within the city designated to carry-out the measure, what Best Management Practices (BMPs) are to be implemented that are expected to achieve pollution reduction, what methods would be used to measure BMP effectiveness, and an implementation timetable (Benicia 2008).

City of Benicia General Plan

The following goals, policies, and programs in Chapter 2, Community Development and Sustainability, Section D, Community Services, are applicable to hydrology and water quality:

- **Policy 2.36.2:** Continue to pursue and secure adequate water sources of the highest quality available.
- **Program 2.36.A:** Pursue use of reclaimed wastewater—especially for major industrial users—where feasible.
- **Policy 2.36.3:** Implement measures to reduce water consumption.
- **Program 2.36.B:** Initiate water conservation programs and conduct drought contingency planning.
- **Program 2.36.C:** Continue to implement City-adopted water conservation Best Management Practices.
- **Program 2.36.D:** Continue to require development to utilize adopted City standards for low-water-use landscaping.
- **Policy 2.36.4:** Encourage public and private uses to minimize water use and to recycle processed water whenever and wherever feasible.
- **Program 2.36.E:** Promote the retrofitting of public buildings with water conservation features.
- **Policy 2.37.1:** Work with the RWQCB to protect groundwater quality.
- **Policy 2.37.2:** Ensure the cleanup of groundwater contamination resulting from the IT Panoche Hazardous Waste Facility.
- **Policy 2.38.1:** Continue to require the use of feasible and practical Best Management Practices (BMP) to protect receiving waters from adverse effects of construction and urban runoff.
- **Program 2.38.A:** Continue the Storm Water Pollution Prevention Program (SWPPP) and the Industrial Pretreatment Program, and continue to implement the Erosion Control Ordinance.

HYDROLOGY & WATER QUALITY

- **Program 2.39.A:** Continue to cooperate in regional efforts by organizations such as the CALFED Program to improve the quality of the City's source water.
- **Program 2.39.B:** Continue to optimize treatment operations in conjunction with the implementation of the City's five- and 10-year Capital Improvements Programs.

The following goals, policies, and programs in Chapter 3, Community Identity, Section D, Open Space and Conservation of Resources, are applicable to hydrology and water quality:

- **Policy 3.22.1:** Avoid development that will degrade existing lakes and streams.
- **Program 3.22.A:** Require that all development in watersheds flowing into lakes and unchannelized streams include features to preserve run-off water quality.
- **Program 3.22.B:** Require a minimum setback of 25 feet from the top of bank of streams and ravines. Do not allow development within the setback.
- **Policy 3.23.1:** Ensure the biological, chemical, and physical integrity of Lake Herman.
- **Program 3.23.A:** Continue to monitor water quality in Lake Herman and at upstream sources of potential pollution.
- **Policy 3.23.2:** Prohibit uses that would adversely affect water quality (such as motorized boats or swimming).
- **Goal 3.24:** Protect watersheds.
- **Policy 3.24.1:** Identify the Benicia watersheds to preserve.

The following goals, policies, and programs in Chapter 4, Community Health and Safety, Section C, Responses to Hazards, are applicable to hydrology and water quality:

- **Policy 4.12.1:** Regulate runoff from new development so that post-development site peak flow rates are no greater than pre-development levels.
- **Policy 4.12.2:** Upgrade existing drainage facilities as necessary to correct localized drainage problems.
- **Policy 4.12.3:** Ensure that new development pays its fair share cost of drainage system improvements.
- **Program 4.12.A:** Prepare a new citywide storm drain master plan.
- **Program 4.12.B:** Adopt a combination of drainage improvement fees and other mechanisms to fund drainage improvements.
- **Program 4.12.C:** Accelerate implementation of the existing Storm Drain Master Plan.

HYDROLOGY & WATER QUALITY

- **Policy 4.12.4:** Where practicable, discourage the use of storm drain systems, and promote stormwater management strategies which maximize opportunities for absorption of rainfall, overland conveyance of runoff, non-reservoir surface storage, and other measures that reduce development-induced impacts on peak flow rates.
- **Policy 4.13.1:** Continue to implement the floodplain management policy currently followed by the City.
- **Program 4.13.A:** Require all potential developers in the Sulphur Springs Creek floodplain to provide flood hazard mitigation measures that ensure the subject properties are not at risk of flooding during the FEMA-designated 100-year base flood.
- **Policy 4.13.2:** Promote non-structural solutions to flood problems, where feasible.
- **Program 4.13.B:** Where appropriate, promote the use of stormwater retention basins rather than standard engineering modifications to natural channels.
- **Program 4.13.C:** Encourage use of meandering drainage channels in all new developments and wherever channels are replaced.
- **Program 4.14.A:** Inform businesses and the public of current technology and standards for preventing ground and surface water contamination, and regulations governing hazardous material use, storage, and disposal, plus agency reporting requirements.
- **Program 4.14.B:** Continue to communicate with State, regional, and local agencies and legislatures to relay information on Benicia's current and potential water quality contamination concerns, particularly regarding hazardous waste sites, existing and closed landfills, new and existing waste-generating industries and commercial operations, and City waste disposal and water/sewage treatment facilities.
- **Policy 4.14.1:** Implement non-point source pollution strategies.

City of Benicia Municipal Code

Chapter 15.28, Grading and Erosion Control

This section sets forth rules and regulations to control excavation, grading and earthwork construction, including fills and embankments; establishes requirements for storm water management during construction for the prevention and control of erosion and sedimentation; establishes the administrative procedure for issuance of permits; and provides for approval of plans and inspection of grading construction.

For all grading work an erosion control plan shall be submitted to include the placement of structural and nonstructural storm water controls that prevent erosion during construction and post-construction. Erosion control plans for large-scale projects (50 acres or 200 lots, whichever is less), or when directed by the city engineer in sensitive areas, shall be prepared by a hydrologist specializing in erosion control.

HYDROLOGY & WATER QUALITY

For projects on sites equal to or greater than one acre, or projects that result in the disturbance of less than one acre and are part of a larger plan of development that disturbs an area of five acres or more, the application shall comply with the requirements of the State Water Resources Control Board's General Construction Activity Storm Water Permit program. The notice of intent (NOI) form and storm water pollution prevention plan (SWPPP) shall be furnished to the city as part of the application and prior to issuance of any grading permit.

Chapter 15.64, Storm Water Management and Discharge Control

The intent of this chapter is to protect and enhance the water quality in the City of Benicia's watercourses pursuant to, and consistent with, the Porter-Cologne Water Quality Control Act (Water Code Section 13000 et seq.), the federal Clean Water Act (33 U.S.C. Section 1251 et seq.) and the goals of the City of Benicia General Plan. This chapter also codifies the provisions of the City's National Pollutant Discharge Elimination System (NPDES) permit that require implementation of appropriate source control and site design measures and storm water treatment measures for projects that create or replace 2,500 square feet of impervious area.

Key specifications of the ordinance include:

- Eliminating non-storm water discharges to the municipal separate storm drain;
- Controlling the discharge to municipal separate storm drains from spills, dumping, or disposal of materials other than storm water;
- Reducing pollutants in storm water discharges to waters of the United States to the maximum extent practicable;
- Complying with applicable State and federal laws;
- Minimizing increases in nonpoint source pollution caused by storm water runoff from development that would otherwise degrade local water quality; and
- Reducing storm water runoff rates and volumes and nonpoint source pollution whenever possible, through storm water management controls and ensuring that these management controls are properly maintained and pose no threat to public safety.

Section 15.40.070, Basis for establishing the areas of special flood hazard

The areas of special flood hazard identified by the Federal Emergency Management Agency or the Federal Insurance Administration in a scientific and engineering report entitled "Flood Insurance Study for the City of Benicia" dated August 3, 2016, with an accompanying Flood Insurance Rate Map (FIRM), and all subsequent amendments and/or revisions are hereby adopted by reference and declared to be a part hereof. The Flood Insurance Study is the minimum area of applicability and may be supplemented by studies for other areas which allow implementation and which are recommended to the City Council by the floodplain administrator.

HYDROLOGY & WATER QUALITY

Chapter 15.48, Provisions for Flood Hazard Reduction

Chapter 15.48, Provision for Flood Hazard Reduction requires that in all areas of special flood hazard, all new construction and substantial improvements shall be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure, be constructed with materials resistant to flood damage, be constructed by methods and practices that minimize flood damages, and be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

As outlined in 15.48.010, Standards of construction, all new construction or substantial improvements of residential structures shall have the lowest floor (including basement):

- In AE, AH, A1-30 zones, elevated to or above the base flood elevation.
- In an AO zone, elevated above the highest adjacent grade to a height equal to or exceeding the depth number specified in feet on the FIRM, or elevated at least two feet above the highest adjacent grade if no depth number is specified.
- In an A zone, without BFEs specified on the FIRM (unnumbered A zone), elevated to or above the base flood elevation; as determined under by the floodplain administrator

The following standards apply to subdivisions, as outlined in Section 15.48.030 of the Code:

- All preliminary subdivision proposals shall identify the flood hazard areas and the elevation of the base flood. In addition, all new subdivision proposals and other proposed development, greater than 50 lots or five acres, whichever is lesser, shall provide a hydrologic and hydraulic study in areas without a base flood elevation (BFE).
- All final subdivision plans will provide the elevation of proposed structure(s) and pads. If the site is filled above the base flood, the final pad elevation shall be certified by a registered professional engineer or surveyor and provided to the floodplain administrator.
- All subdivision proposals shall be consistent with the need to minimize flood damage.
- All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage.
- All subdivisions shall provide adequate drainage to reduce exposure to flood hazards.

The following standards apply to coastal high hazard areas, as established in Section 15.040.070 of the code:

- All new construction and substantial improvements shall be elevated on adequately anchored pilings or columns and securely anchored to such pilings or columns so that the lowest horizontal portion of the structural members of the lowest floor (excluding the pilings or columns) is elevated to or above the base flood elevation.

- All new construction shall be located on the landward side of the reach of mean high tide.
- All new construction and substantial improvements shall have the space below the lowest floor free of obstructions or constructed with breakaway walls. Such temporarily enclosed space shall not be used for human habitation.
- Fill shall not be used for structural support of buildings.
- Manmade alteration of sand dunes which would increase potential flood damage is prohibited.

4.9.1.2 EXISTING CONDITIONS

Watersheds

The City is located where the foothills of California's Coast Range meet Carquinez Strait. Elevations range from approximately 100 feet above mean sea level (amsl) to 40 feet amsl. Sulphur Springs Creek and its main tributary, Paddy Creek, form the largest watershed within the City. Of the approximately 18 square mile watershed area, the upper six square miles lies in the Vallejo Sphere of Influence (Benicia 2007). Paddy Creek, which drains a three-square mile watershed, joins the lower reach of Sulphur Springs Creek just below the Lake Herman outlet. The Lake Herman reservoir on Sulphur Springs Creek stores watershed runoff along with excess water from the North Bay Aqueduct, a component of the State Water Project and the City's principal potable water supply (Benicia 2007). The reservoir is typically filled during the spring and drawn down during the summer and fall. The City overlies several other watersheds including the Southampton Bay Watershed, the West Benicia Watershed, the East 3rd and H Street Watershed on the South portion of the City that drain into the Carquinez Strait and the Goodyear Slough Watershed which drains into Suisun Bay (Benicia 1999a).

Water Resources

The Carquinez Strait is a narrow body of water in the San Francisco Bay Estuary links Suisun Bay to the east with San Pablo Bay to the west. Maximum depths in the channel reach 88 feet. Large scale eddying effects downstream of the Army Point pier and Benicia Point produce shoaling along the majority of the Benicia waterfront. Depths within this shallow zone range from a couple of feet in the mudflats of Southampton Bay to roughly 20 feet within 200 to 1000 feet of the shoreline (Benicia 1999b).

The City's water supply was historically derived from Sulphur Springs Creek watershed but expanded to include various supplies from both the Putah Creek drainage and Sacramento River watershed. Although the City still uses supplies from Sulphur Springs Creek watershed to serve its urban and industrial demands, it currently relies on supplies derived from the State Water Project (SWP), via the North Bay Aqueduct and Solano Project, via Putah South Creek to meet its needs (Benicia 2021). The SWP has rights to water originating from the Sacramento and San Joaquin Rivers, and it stores water in Lake Oroville. The Northbay Aqueduct is an underground pipeline that runs from Barker Slough in the Delta to Cordelia Forebay in western Fairfield. Water is pumped from the Cordelia Forebay to Napa County, Vallejo, and

HYDROLOGY & WATER QUALITY

Benicia (SCWA 2021). The Solano Project derives water from Lake Berryessa. The Putah South Canal ends near the town of Cordelia (USBR 2016).

Water Quality

Physical, chemical and biological characteristics of waters in the Carquinez Strait vary according to the magnitude of Delta outflows, tidal currents and other factors such as insolation, turbulent mixing by winds, resuspension of deposited sediments and urban/industrial and agricultural discharges. When Delta outflow is significant, an entrapment zone forms in the Strait. An entrapment zone is an area of no-net motion. The enhanced mixing that occurs in this zone results in a cycling and concentration of particulate matter that produces more turbid waters. A review of the California 2021-2022 Integrated Report Map shows that the Carquinez Strait is on the Clean Water Act 303(d) list of impaired water bodies. The Bay waters were listed in 1998 on the basis of ambient water toxicity and detections of diazinon. However, recent measures of toxicity show that ambient water toxicity no longer exists in Bay waters (SWRCB 2018). However, the Carquinez Strait remains listed as a Category 5 condition water body for Chlordane, DDT, Dieldrin, TCDD, Furan Compounds, Invasive Species, Mercury, PCB's, and Selenium (SWQRCB 2022).

Lake Herman is considered by the City to be vulnerable to urban runoff, herbicides and pesticides application, cattle grazing operations, and historic mining operations (City of Benicia 2020). It is also listed on the Clean Water Act 303 (d) list of impaired water bodies for mercury pollution (SWQRCB 2022). Lake Berryessa and parts of Putah Creek are vulnerable to illegal activities/unauthorized dumping and herbicide application (City of Benicia 2020). Lake Beryessa is listed for Mercury and pH pollution and Putah Creek is listed for Mercury pollution (SWQRCB 2022).

Groundwater Resources

The City is not located within a designated groundwater basin (as specified by the San Francisco Bay Regional Water Quality Control Board Basin Plan), although it is located immediately to the west of the Suisun-Fairfield Valley Groundwater Basin, one of 28 identified groundwater basins under the jurisdiction of the RWQCB. The Suisun-Fairfield basin covers 133,600 acres and is the second largest groundwater basin in Solano County. It occurs to the west of the English Hills and is not used in a significant capacity due to low yields and poor water quality (Benicia 2007). According to the City's 2020 Urban Water Management Plan, the City does not use groundwater as a potable water source and has only conceptual plans to conjunctively use groundwater in the future in coordination with neighboring agencies (Benicia 2021).

Flooding

Historically, floods are one of the most frequent natural hazards impacting communities in Solano County, including Benicia. There are five types of flood events that might occur within Benicia: flash, urban stormwater, levee, and tidal flooding. The Carquinez Strait experiences seasonal flooding as a result of heavy rain that flows throughout the watershed and into rivers and tributaries that feed into the narrow tidal strait. This strait is part of the tidal estuary of the Sacramento and the San Joaquin rivers that drain

HYDROLOGY & WATER QUALITY

into the San Francisco Bay. Flooding throughout the Carquinez Strait is influenced by the amount of water these rivers deliver over a period of time. During heavy and prolonged rainfall, these rivers contribute to the tidal flooding experienced in Benicia.

The 100- and 500-year floodplains in Benicia include the areas along the shoreline, lower downtown, as well as the Benicia State Recreation Area, along the channelized drainage of Sulphur Springs Creek, and wetlands adjacent to the Benicia Industrial Park. These areas are shown on As shown in Figure 4.9-1A through Figure 4.9-1E, *Flood Hazards Zones with Housing Element Sites*. The City experiences repeated inland flooding in several places due to proximity to the shoreline. Historically, flooding has occurred in lower Downtown Benicia in the footprint of the historic coastal salt marsh, at the Benicia Wastewater Treatment Plant, and the Channel Road area in the Benicia Industrial Park. Most notably, lower Downtown Benicia experiences nuisance flooding centered along East Second Street and B Street during high tide events. The lower downtown area, Benicia Wastewater Treatment Plant, and the Channel Road area in the Benicia Industrial Park have historically experienced flooding that has not only flooded buildings, but also the roadways and infrastructure supporting these areas.

During heavy rainfall events, the City is subject to flooding of low-lying residential areas along the shoreline near Downtown Benicia. Regular flooding of residential areas occurs during high tide and storm events, primarily between East Second Street and East Fifth Street, including the areas south of E Street. Residential areas that have historically been impacted by flooding include Portside Village and other properties surrounding the Benicia Marina, including the Rancho Benicia mobile home park, and some homes along the 300 block of East I Street. The City's Fire Department supports a sandbag program to help residents and businesses prepare for flooding events in the City (City of Benicia 2022a).

4.9.2 THRESHOLDS OF SIGNIFICANCE

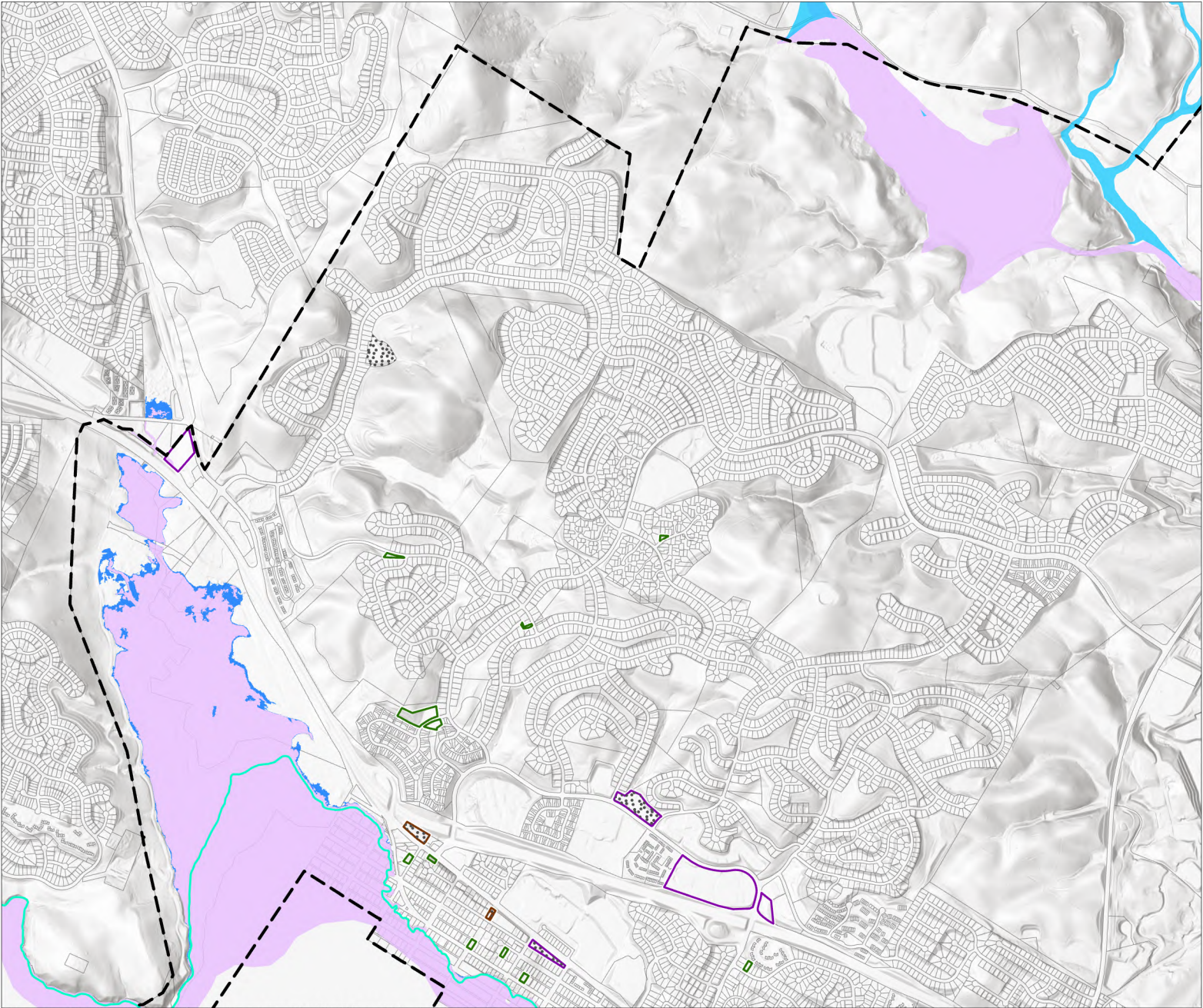
The proposed project would result in significant hydrology and water quality impacts if it would:

1. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.
2. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: i) result in substantial erosion or siltation on- or off-site; ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or iv) impede or redirect flood flows.
4. In a flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.
5. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

HYDROLOGY & WATER QUALITY

This page intentionally left blank.

HYDROLOGY AND WATER QUALITY



- City Limit
- Overlay Zone
- Existing Shoreline
- 100 Year Flood Zone**
- 100 Year Flood Zone
- Inland Flooding (Solano County MJHMP)**
- 100 year floodplain
- 500 year floodplain
- Housing Element Sites**
- Suitably Zoned
- Suitably Zoned with Upzoning Proposed
- Needs Zoning Change

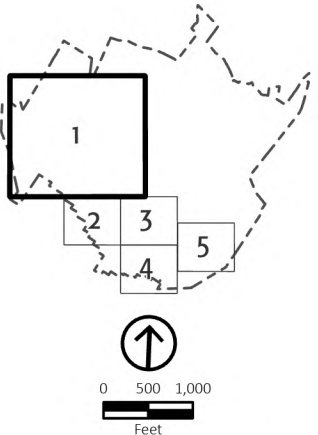
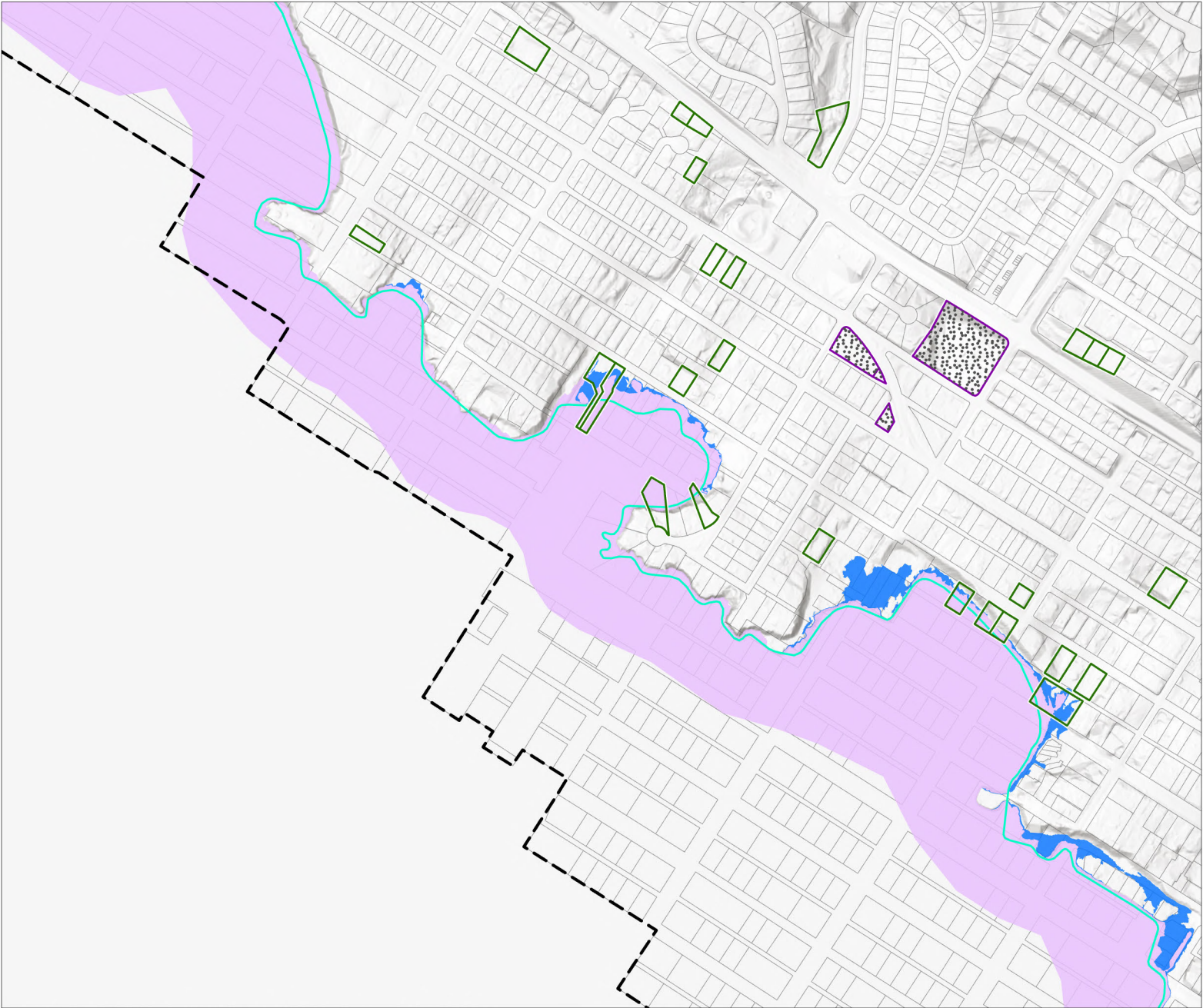


Figure 4.9-1A
Flood Hazard Zones

Source: DWR 2008, Solano County 2021, PlaceWorks 2022

HYDROLOGY AND WATER QUALITY



- City Limit
- Overlay Zone
- Existing Shoreline
- Inland Flooding (Solano County MJHMP)
- 100 year floodplain
- 500 year floodplain
- Housing Element Sites
- Suitably Zoned
- Needs Zoning Change

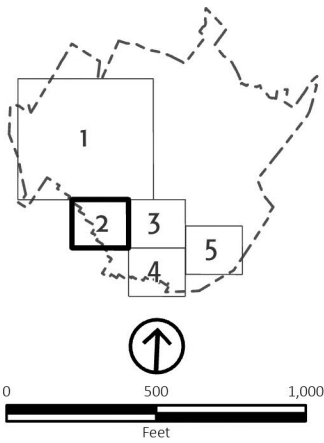









Figure 4.9-1B
Flood Hazard Zones

Source: DWR 2008, Solano County 2021, PlaceWorks 2022

HYDROLOGY AND WATER QUALITY



-  City Limit
-  Overlay Zone
- Inland Flooding (Solano County MJHMP)
-  100 year floodplain
-  500 year floodplain
- Housing Element Sites
-  Suitably Zoned
-  Suitably Zoned with Upzoning Proposed
-  Needs Zoning Change

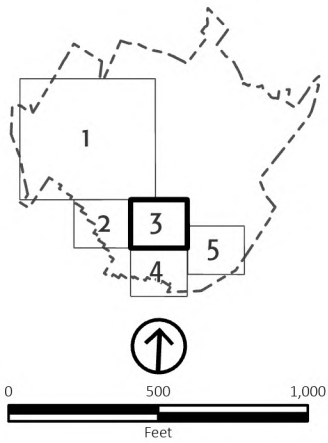
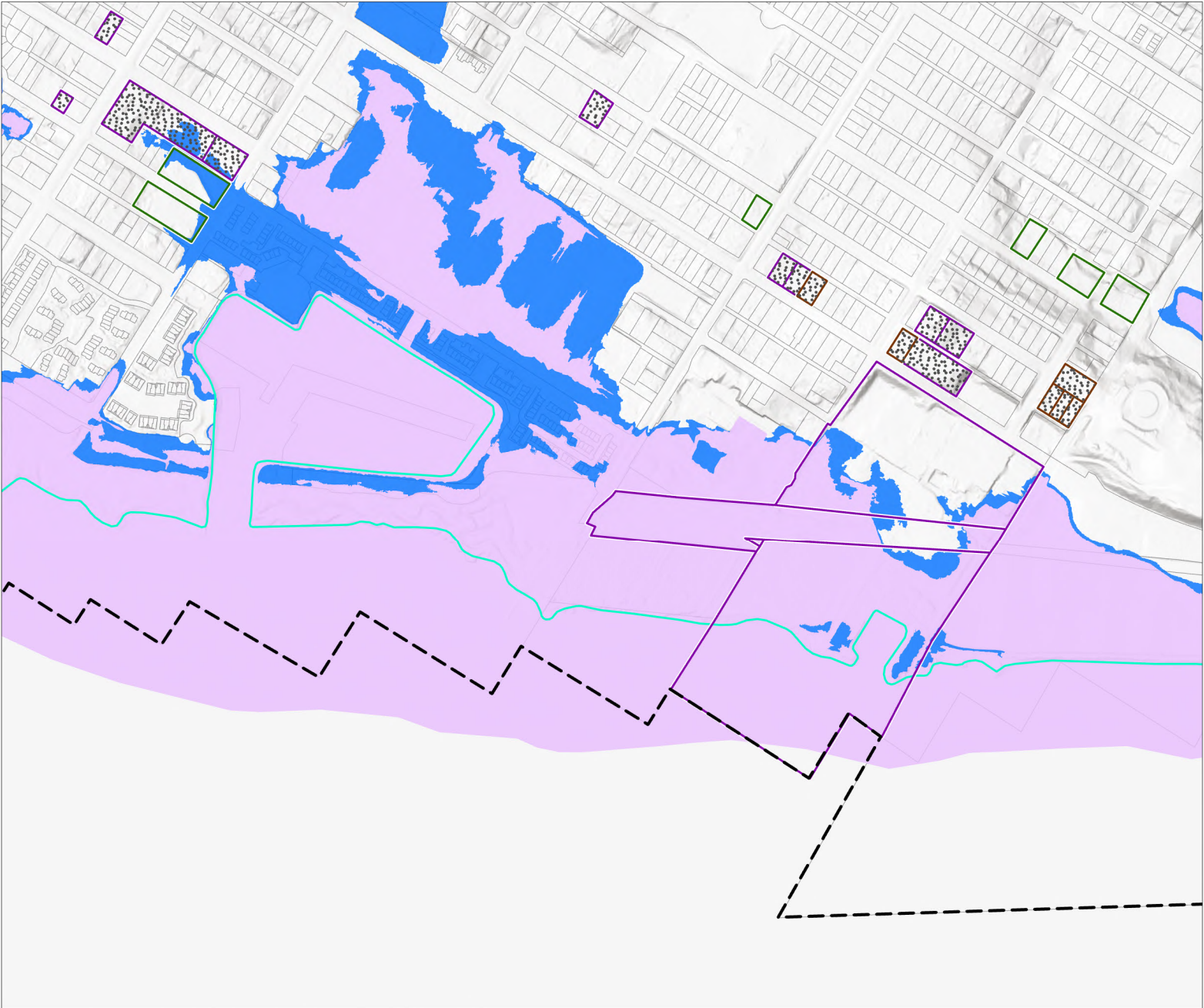


Figure 4.9-1C
Flood Hazard Zones

Source: DWR 2008, Solano County 2021, PlaceWorks 2022

HYDROLOGY AND WATER QUALITY



- City Limit
- Overlay Zone
- Existing Shoreline
- Inland Flooding (Solano County MJHMP)**
- 100 year floodplain
- 500 year floodplain
- Housing Element Sites**
- Suitably Zoned
- Suitably Zoned with Upzoning Proposed
- Needs Zoning Change

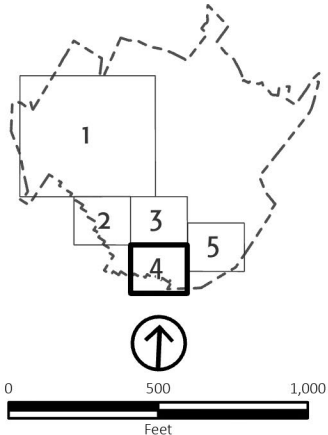
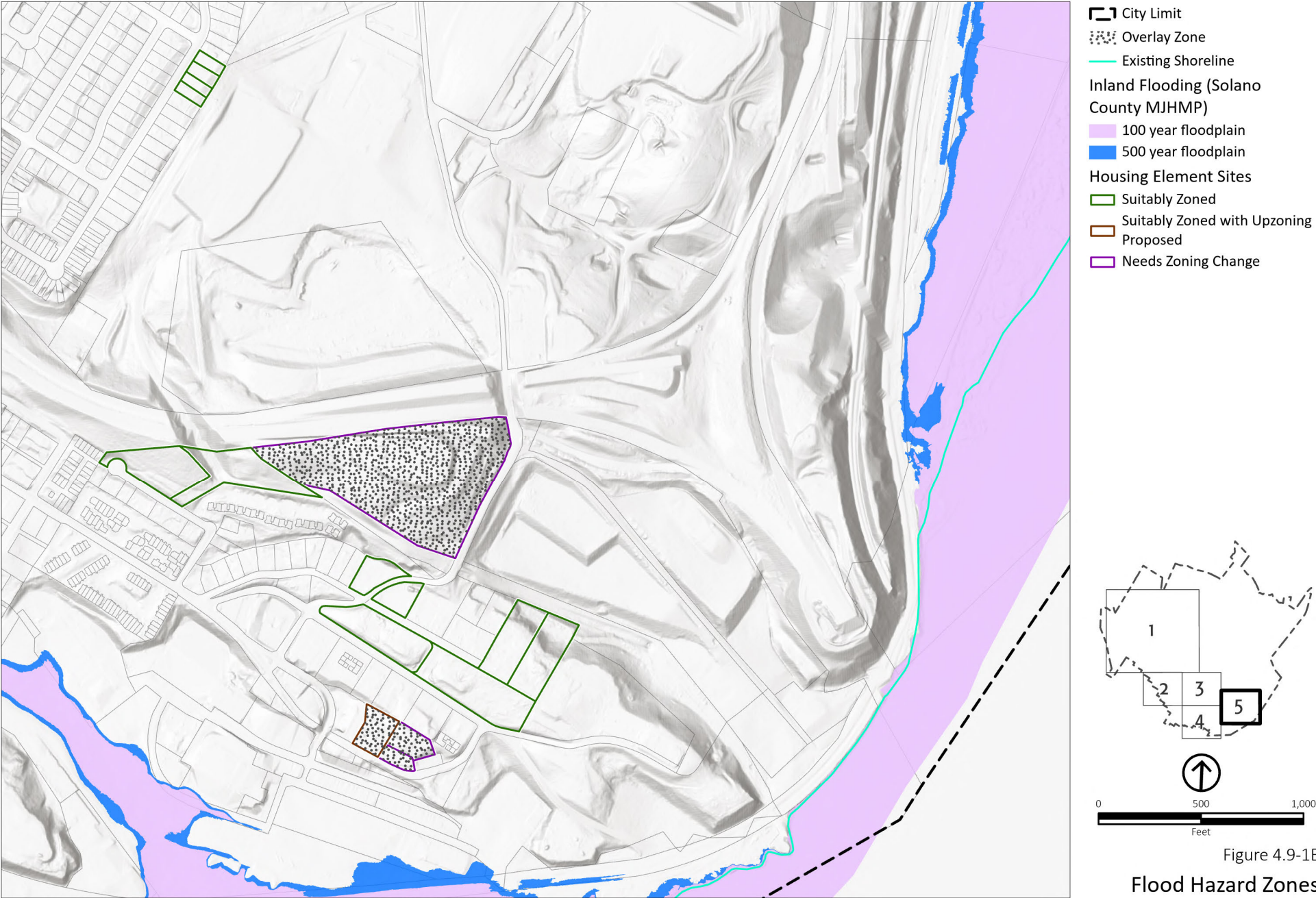


Figure 4.9-1D
Flood Hazard Zones

Source: DWR 2008, Solano County 2021, PlaceWorks 2022

HYDROLOGY AND WATER QUALITY



Source: DWR 2008, Solano County 2021, PlaceWorks 2022

Figure 4.9-1E
Flood Hazard Zones

HYDROLOGY & WATER QUALITY

This page intentionally left blank.

4.9.3 PROPOSED HOUSING ELEMENT POLICIES

There are no policies in the Housing Element Update applicable to water quality and hydrology.

4.9.4 PROPOSED SAFETY ELEMENT POLICIES

The following policies from the proposed Safety Element are applicable to Hydrology and Water Quality:

- **Policy 1.4:** Locate critical facilities outside of mapped hazard zones, including floodplains, areas at risk of sea level rise, dam hazard inundation zones, high landslide hazard areas, Alquist-Priolo fault zones, liquefaction hazard zones, tsunami inundation areas, and the wildland-urban interface. If critical facilities must be in these zones, design and site them to minimize the potential for damage as a result of natural hazards and ensure their ability to remain operational during and after hazard events.
- **Policy 1.9:** Require the disclosure of any known or potential fire and/or inundation or flooding hazards at the time of sale for properties in the wildland-urban interface or projected sea level rise areas within the city, as illustrated in Figure 13, Wildland-Urban Interface, and Figures 3 through 6, which show sea level rise projections for 2050 and 2100. Provide reference information on the City website for potential purchasers to consider when reviewing disclosures. (Refer to Appendix 3-2 for the proposed Safety Element Update figures).
- **Policy 4.12.1:** Increase the use of stormwater management, including use and restoration of natural systems and green infrastructure throughout the city and create a flood mitigation plan.
- **Policy 4.12.2:** Encourage use of green infrastructure and permeable paving materials to reduce flood risk on public and private property.
- **Policy 4.13.1:** Pursue funding to improve and retrofit the Benicia Marina to withstand king tide events, shoreline flooding, and sea level rise. Work with marina owners and lessees to improve marina facilities to withstand king tide events, shoreline flooding, and sea level rise.
- **Policy 4.13.2:** Pursue funding to retrofit City infrastructure in 100-year floodplains as needed and ensure they conform to existing 100-year floodplain elevation standards.
- **Program 4.13.2.1:** Seek opportunities to conduct flood fighting training for appropriate City staff in coordination with the Benicia Community Emergency Response Team.
- **Policy 4.13.3:** Assist low-resourced residents and residents with access and functional needs to install flood-control measures on their properties where feasible, prioritizing those in residential areas of lower Downtown Benicia.
- **Policy 2.1:** Coordinate with the San Francisco Bay Conservation and Development Commission and other relevant state or federal agencies to monitor and respond to changes in sea level.
- **Policy 2.2:** Coordinate with external agencies and pursue funding to inform the public about risks pertaining to sea level rise and flooding through interactive maps, community outreach efforts, and other efforts.

HYDROLOGY & WATER QUALITY

- **Policy 2.3:** Prepare a sea level rise and flooding adaptation plan for the downtown area and industrial park. The plan should offer strategies for effective sea level rise adaptation and flood protection, identify potential funding opportunities, assess the threshold of sea level rise that the community should plan for, and offer recommendations for capital projects and development standards.
- **Policy 2.4:** Partner with the Adapting to Rising Tides Program, property owners, and community-based organizations to conduct a managed retreat feasibility study that identifies specific assets at risk and evaluates the cost of facilitating managed retreat or alternative approaches to preparing for sea level rise. The study should be used as a guide to assist the City in prioritizing riparian and marshland restoration projects and other natural infrastructure projects to protect against both inland and shoreline flooding.
- **Policy 6.1:** Support efforts by homeowners and business owners to increase the resilience of their buildings and properties through retrofits, weatherization, and other improvements. Retrofits may include, but are not limited to, efforts that address extreme heat, poor air quality, flood protection, water and energy efficiency, geologic and seismic safety, and fire safety.
- **Policy:** Evaluate vulnerabilities to climate change and natural hazards in the Downtown Historic District and prioritize adaptation strategies that increase resilience to known hazards such as seismic, flooding, and sea level rise.

4.9.5 ENVIRONMENTAL IMPACTS

HYD-1	The project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.
-------	--

Housing Element Update

Construction

Clearing, grading, excavation, and other construction activities have the potential to impact water quality due to soil erosion and increases in the amount of silt and debris carried in runoff. Additionally, the use of construction materials such as fuels, solvents, and paints may present a risk to surface water quality. The refueling and parking of construction vehicles and other equipment onsite during construction may result in oil, grease, or related pollutant leaks and spills that could discharge into the storm drain system.

Stormwater runoff from the City is ultimately discharged, to the Carquinez Strait, which is hydrologically connected to San Francisco Bay; both water bodies are on the list of impaired water bodies compiled by the San Francisco Bay Regional Water Quality Control Board (RWQCB) pursuant to the federal Clean Water Act. Because the State is required to develop action plans and establish Total Maximum Daily Loads (TMDLs) to improve water quality within these water bodies, uncontrolled discharge of pollutants into them is considered particularly detrimental.

HYDROLOGY & WATER QUALITY

Generally, new development that entails “land disturbance” of one acre or more requires the project sponsor to obtain coverage under Construction General Permit (CGP) Order 2009-0009-DWQ, administered by the RWQCB. The CGP requires project sponsors to implement construction Best Management Practices (BMPs) at the project site to control both stormwater and non-stormwater discharges. Additionally, all development projects in Benicia are required by Municipal Code Section 15.64.090 to prepare and implement an Erosion and Sediment Control Plan (ESCP), which must be approved by the authorized enforcement official prior to issuance of a grading permit, building permit, or other discretionary permit issued by the City. The ESCP must also implement appropriate erosion and sedimentation BMPs, consistent with the California Stormwater Quality Association’s recommendations. Measures to control non-stormwater discharges such as spills, leakage, and dumping must be addressed through structural as well as nonstructural BMPs. The City is authorized by Municipal Code Section 15.64.120 to conduct routine inspections of construction sites to verify that the BMPs are being properly implemented.

Implementation of the SWPPP and ESCP throughout the construction phase of the future housing sites would address anticipated and expected pollutants of concern from construction activities. General Plan Policy 2.38.1 directs the City to continue to require the use of feasible and practical Best Management Practices to protect receiving waters from adverse effects of construction and urban runoff. Program 2.38.A also directs the City to continue the Storm Water Pollution Prevention Program (SWPPP) and the Industrial Pretreatment Program, and continue to implement the Erosion Control Ordinance. As a result, water quality impacts associated with future construction activities would be less than significant.

Operation

Residential development has the potential to generate pollutants, such as nutrients, pesticides, sediment, trash, and debris, oxygen demanding substances, oil and grease, and pathogens. These pollutants could eventually end up in stormwater discharged from the site and impact downstream watercourses. However, development proposed under the proposed project would be subject to the MS4 permits of the RWQCB.

Operational stormwater discharges from new development are regulated under the National Pollutant Discharge Elimination System (NPDES), administered by the RWQCB under authority of the U.S. Environmental Protection Agency. In accordance with the NPDES, the RWQCB regulates stormwater discharges via municipal stormwater permits issued to the cities, counties, water districts, and flood control districts under its jurisdiction in the San Francisco Bay Area. The City of Benicia is a permittee under the Phase II Small Municipal Separate Storm Sewer System (MS4) permit reissued by the State Water Resources Control Board (SWRCB) in 2013 as part of the NPDES permit (Water Quality Order No. 2013-0001-DWQ, General Permit No. CAS000004).

Chapter 15.64, Storm Water Management and Discharge Control, of the Benicia Municipal Code mandates compliance with the Phase II Municipal Stormwater Permit provisions. Pursuant to Municipal Code Section 15.64.070, stormwater discharges in violation of the Phase II Municipal Stormwater Permit

HYDROLOGY & WATER QUALITY

will be held liable by the City. Provision E.12 of the permit requires the jurisdictions covered by the permit to regulate development projects to control pollutants in runoff from newly created or replaced impervious surfaces. The requirements depend on the amount of new or replacement impervious surfaces that would be created by a given project. Small projects that create or replace between 2,500 and 5,000 square feet of impervious area, excluding linear underground/overhead utility projects, must implement at least one measure to reduce stormwater runoff, for example, by dispersing runoff to landscaped areas or using pervious pavements. These projects are also required to:

- Limit clearing, grading, and soil compaction;
- Minimize impervious surfaces;
- Conserve natural areas of the site as much as possible consistent with local General Plan policies;
- Comply with stream setback ordinances/requirements; and
- Protect slopes and channels against erosion.

Projects other than individual single-family homes that create or replace 5,000 square feet or more of impervious surfaces are subject to all of the measures listed above for small projects. Additionally, they must include the following features:

- All excess stormwater runoff (i.e., that which does not percolate into the site's pervious surfaces) must be discharged into on-site bioretention or other facilities sized and designed according to the criteria set forth in the Bay Area Stormwater Management Agencies Association's (BASMAA) Design Guidance for Stormwater Treatment and Control for Projects in Marin, Sonoma, Napa, and Solano Counties (January 2019). The facilities must be designed and sized to provide short-term storage during peak storm events as well as on-site biofiltration treatment of the captured stormwater.
- Source control measures designed to prevent discharge of pollutants from pollution sources that are applicable to a site and/or project. Examples of potential sources of pollutants include accidental spills or leaks; interior floor drains; elevator shaft sump pumps; interior parking garages; pesticide and herbicides applied to landscaping; pools, spas, ponds, and decorative fountains; commercial food service areas; refuse areas and dumpsters; industrial processes; outdoor equipment storage; vehicle and equipment cleaning, maintenance, and repair; fuel-dispensing areas; loading docks; fire sprinkler test water; roofing, gutters, and rooftop equipment; and plazas, sidewalks, and parking lots.
- Preparation and implementation of an Operation and Maintenance (O&M) Plan that provides for ongoing maintenance of the bioretention facilities in perpetuity. The O&M Plan must identify the individual(s) responsible for maintaining the stormwater controls and self-inspection records and a schedule for implementing the plan, among other requirements. The City has the right to conduct inspections to ensure proper implementation of the O&M Plan.

Projects that create or replace 1 acre or more of impervious surfaces are also subject to hydromodification management (HM) requirements. In addition to the requirements described above, Benicia Municipal Code Section 15.64.090 also requires the applicant for each new development and

HYDROLOGY & WATER QUALITY

redevelopment project subject to the postconstruction stormwater control measures described above (including small projects), or where required by the nature and extent of a proposed project and where deemed appropriate by the City, to submit a Stormwater Control Plan (SCP) that meets the criteria in the most recent version of the BASMAA Post Construction Manual. The SCP is separate and distinct from the ESCP required for construction activity, described above. The SCP must follow the appropriate SCP template in the BASMAA Post Construction Manual, based on the project type. The SCP must be approved by the City prior to issuance of a grading, or building, or other City-issued permit.

Although new development facilitated by the proposed project could introduce new sources of stormwater pollutants to the City that could adversely affect downstream water quality, mandatory compliance with all of the construction and post-construction stormwater controls described above would minimize the potential for adverse effects on water quality. Therefore, construction and operation of new development under the HEU would have a less than significant effects on water quality.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's surface water or groundwater resources. No impacts would occur.

Significance Without Mitigation: Less than significant.

HYD-2	The project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
-------	--

Housing Element Update

A significant impact would occur if development under the proposed project would result in a net reduction in the underground aquifer volume or lower the groundwater table. As noted in Section 4.9.1.2, the City is not located in a defined groundwater basin as identified by the Department of Water Resources and the City does currently use groundwater as a potable water source. The City coordinates with the Solano County Water Agency to provide the majority of its water supplies from the SWP through the North Bay Aqueduct and South Putah Creek through the Solano Water Project (City of Benicia 2020). The City also has contracts with the State of California for Sacramento River water supplies, a water supply

HYDROLOGY & WATER QUALITY

agreement with the Solano Irrigation District and the City of Vallejo, and appropriate water rights to Sulphur Springs Creek (City of Benicia 2020). Future residential uses constructed under the HEU would not be in a defined groundwater basin. Additionally, given that the City is not dependent on groundwater as its main water supply, and that the City is not in a defined basin, the proposed project would not substantially interfere with sustainable management of groundwater resources. Furthermore, General Plan Policy 2.37.1 requires the City to work with the RWQCB to protect groundwater quality which would also help to reduce any impacts to groundwater. Impacts would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to groundwater resources. No impacts would occur.

Significance Without Mitigation: Less than significant.

HYD-3	The project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: i) result in substantial erosion or siltation on- or off-site; ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or iv) impede or redirect flood flows.
-------	---

Housing Element

Construction-related impacts relating to erosion or siltation both on and off-site are discussed in Impact HYD-1. As discussed in Impact HYD-1, the ESCP and SCP requires that future development projects under the HEU implement measures to minimize erosion effects that could occur both during and after completion of construction.

Site-specific evaluation of hydrological impacts would be conducted as development is proposed per individual site. However, the development of some sites in the Housing Element sites inventory may result in the alteration of waterways and have potential adverse effects to existing surface drainage patterns

HYDROLOGY & WATER QUALITY

caused by the creation of new impervious surfaces. These would be minimized through the required construction and post-construction stormwater controls and measures for minimizing erosion. As noted in Impact HYD-1, projects creating or replacing 5,000 square feet or more of impervious surfaces will be required to provide onsite stormwater treatment facilities with retention capacity designed to prevent an increase in the peak rate and volume of stormwater discharged from the site during storm conditions. Additionally several General Plan policies regulate hydrological impacts including Policy 4.12.1 which requires the City to regulate runoff from new development so that post-development site peak flow rates are no greater than pre-development levels. Policy 4.12.4 states that where practicable, the City should discourage the use of storm drain systems and promote stormwater management strategies which maximize opportunities for absorption of rainfall, overland conveyance of runoff, non-reservoir surface storage, and other measures that reduce development-induced impacts on peak flow rates. Program 4.13.B states that where appropriate, promote the use of stormwater retention basins rather than standard engineering modifications to natural channels. Program 4.13.C states, encourage use of meandering drainage channels in all new developments and wherever channels are replaced.

With implementation of these required measures, the projects under the Housing Element would not result in substantial erosion or siltation on- or off-site or substantially increase the rate or amount of surface runoff in a manner that could result in flooding on- or off- site. Impacts would be less than significant.

Benicia Municipal Code Chapter 15.64, Storm Water Management and Discharge Control, requires small projects, those creating between 2,500 and 5,000 square feet of impervious area to implement at least one measure to reduce stormwater runoff, for example, by dispersing runoff to landscaped areas or using pervious pavements. Larger projects (under 1 acre) would be required to implement all applicable source control measures listed in Provision E.12 of the Phase II Municipal Stormwater Permit, which would ensure that the incremental contribution to stormwater runoff from such projects would not be considerable. Such projects would be required to implement low impact development design, site design measures, storm water treatment measures and hydromodification management measures ensuring that there would be no increase in stormwater runoff in comparison with existing conditions. Increases in runoff shall be managed in accordance with the post-construction measures requirements. Furthermore, General Plan Policy 4.12.1; Policy 4.12.2, which requires the City to upgrade existing drainage facilities as necessary to correct localized drainage problems; and Policy 4.12.3, which requires the City to ensure that new development pays its fair share cost of drainage system improvements would help reduce impacts to the City's storm drainage system. Therefore, impacts to the capacity of existing or planned stormwater drainage would be a less than significant.

As noted in Impact HYD-1, site-specific evaluation would be required as development is proposed to determine the potential impacts a development project could have on the existing floodwater flow of a site and its surroundings. The terrain of the City varies between the flat, low-lying land that borders the Carquinez Strait and the rolling hills that encompass the northern and eastern sides of the City. As Housing Element sites are proposed in all areas of the City, each proposed project would have varying

HYDROLOGY & WATER QUALITY

drainage patterns. Future development projects that would create 5,000 square feet or more of impervious surfaces would be required to include stormwater collection facilities that would capture, detain, and treat stormwater prior to discharge into underlying soils and/or into the existing offsite storm drainage system. In the event of flooding of the site, these facilities would collect flood water and discharge it as the storm drainage system emptied out. While there is expected to be minor redirection of floodwaters caused by new buildings where such structures do not already exist, the onsite stormwater collection, detention, and treatment facilities would serve to incrementally reduce flood waters encroaching on a given site. Furthermore, General Plan Policy 4.13.1 requires the City to continue to implement the floodplain management policy. Program 4.13.A requires all potential developers in the Sulphur Springs Creek floodplain to provide flood hazard mitigation measures that ensure the subject properties are not at risk of flooding during the FEMA-designated 100-year base flood. Policy 4.13.2 requires the City to promote non-structural solutions to flood problems, where feasible. Program 4.13.B states that where appropriate, promote the use of stormwater retention basins and bioswales rather than standard engineering modifications to natural channels. Adherence to these policies and programs would also reduce impacts from development under the Housing Element to be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. Including Policies 1.4, 1.9, 4.12.1, 4.12.2, 4.13.1, 4.13.2, 4.13.3, 2.1, 2.2, 2.3, 2.4 and 6.1 that would reduce exposure to flood risks current residents of the City and future development under the Housing Element. As this is a policy document, this SEU would not have any significant physical environmental effects on drainage. No impacts would occur.

Significance Without Mitigation: Less than significant.

HYD-4	The project would not in a flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.
-------	--

Housing Element

As shown in Figure 4.9-1A through Figure 4.9-1E, *Flood Hazards Zones with Housing Element Sites*, several Housing Element sites are within mapped areas of increased flood hazard including 100-year and 500-year floodplains. Sites in such areas would be required to adhere to the development specifications in City's Municipal Code Chapter 15.48, Provisions for Flood Hazard Reduction. This Chapter requires that in all areas of special flood hazard, all new construction and substantial improvements shall be designed (or

HYDROLOGY & WATER QUALITY

modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure, be constructed with materials resistant to flood damage, be constructed by methods and practices that minimize flood damages, and be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

As discussed in Section 4.9.1.1, Chapter 15.48 also includes standards for the development of subdivisions in flood hazard areas in addition to standards for coastal high hazard areas. Additionally, General Plan Policy 4.13.1, states, continue to implement the floodplain management policy currently followed by the City; Program 4.13.A requires all potential developers in the Sulphur Springs Creek floodplain to provide flood hazard mitigation measures that ensure the subject properties are not at risk of flooding during the FEMA-designated 100-year base flood; and Policy 4.13.2 directs the City to promote non-structural solutions to flood problems, where feasible. Compliance with these standards would reduce impacts of flooding on future development of Housing Element sites to less than significant.

Figure 4.9-2A through Figure 4.9-2E, *Tsunami Inundation Areas*, illustrates the areas of the City that may be subject to inundation from tsunamis, which occur primarily along the Benicia shoreline and adjacent to Bayshore Road in the southern limits of the City. All other areas subject to inundation are made up of coastal salt marsh. No Housing Element sites are located with the areas shown in Figure 4.9-2A through Figure 4.9-2E.

A seiche is a free or standing wave oscillation(s) of the surface of water in an enclosed or semi enclosed basin that may be initiated by an earthquake. Given the size and configuration of San Francisco Bay and the geographic location of the City, the potential for a seiche to affect the City of Benicia is even lower than the inundation risk from tsunami, addressed above. With minimal potential for inundation by flood and no potential for inundation by tsunami or seiche, there would be little to no potential for the future project sites to release pollutants into waters resulting from inundation. The HEU would have a less than significant impact due to releasing pollutants during inundation of future project sites.

Safety Element Update

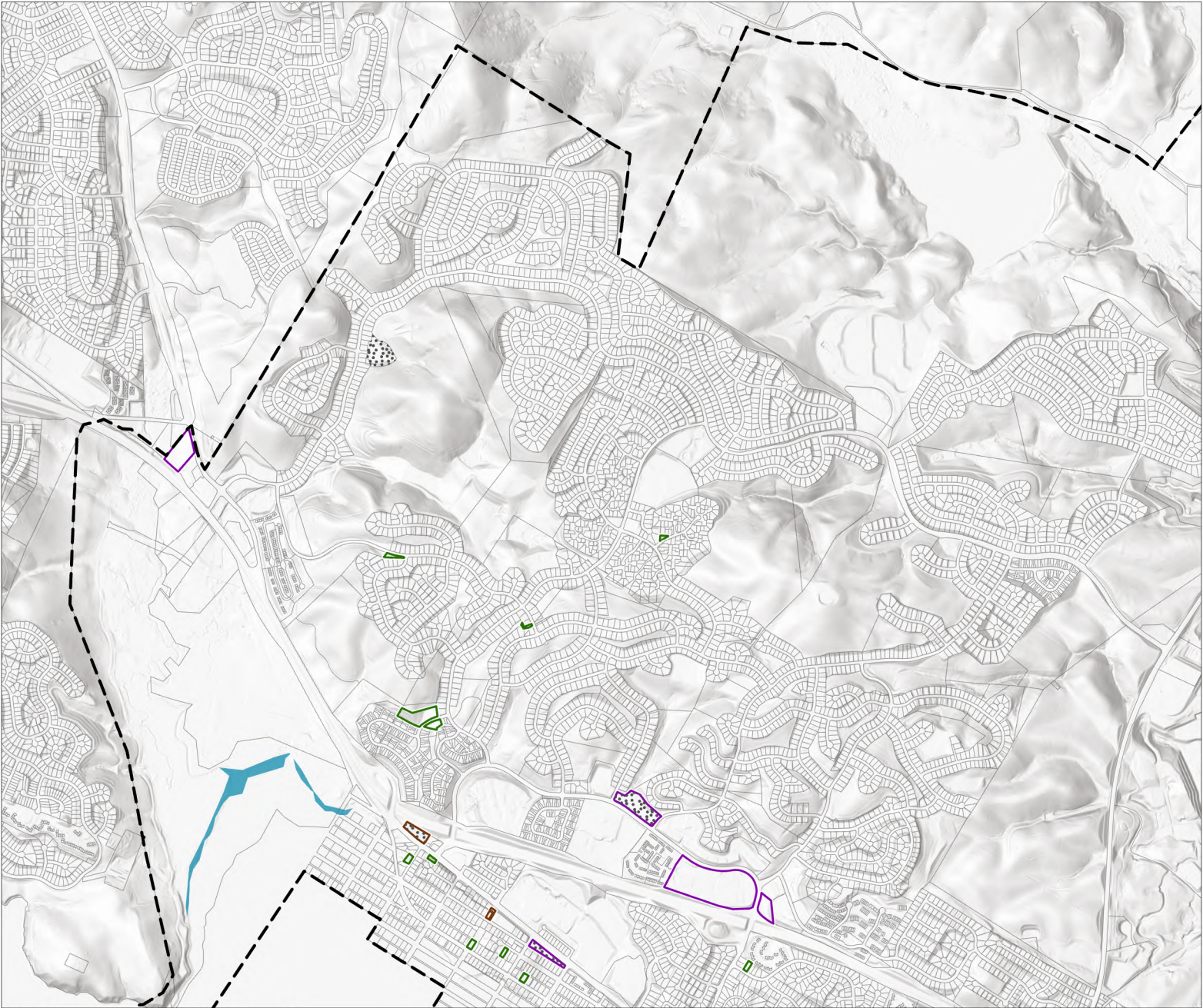
California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. Including policies 1.4, 1.9, 4.12.1, 4.12.2, 4.13.1, 4.13.2, 4.13.3, 2.1, 2.2, 2.3, 2.4 and 6.1 that would reduce exposure to flood risks current residents of the City and future development under the Housing Element. As this is a policy document, this SEU would not have any significant physical environmental effects on drainage. No impacts would occur.

Significance Without Mitigation: Less than significant.

HYDROLOGY & WATER QUALITY

This page intentionally left blank.

HYDROLOGY AND WATER QUALITY



- City Limit
- Overlay Zone
- Tsunami Inundation Area
- Housing Element Sites**
- Suitably Zoned
- Suitably Zoned with Upzoning Proposed
- Needs Zoning Change

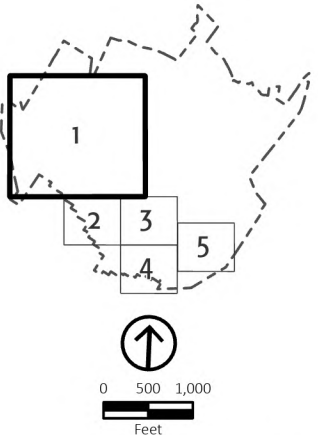
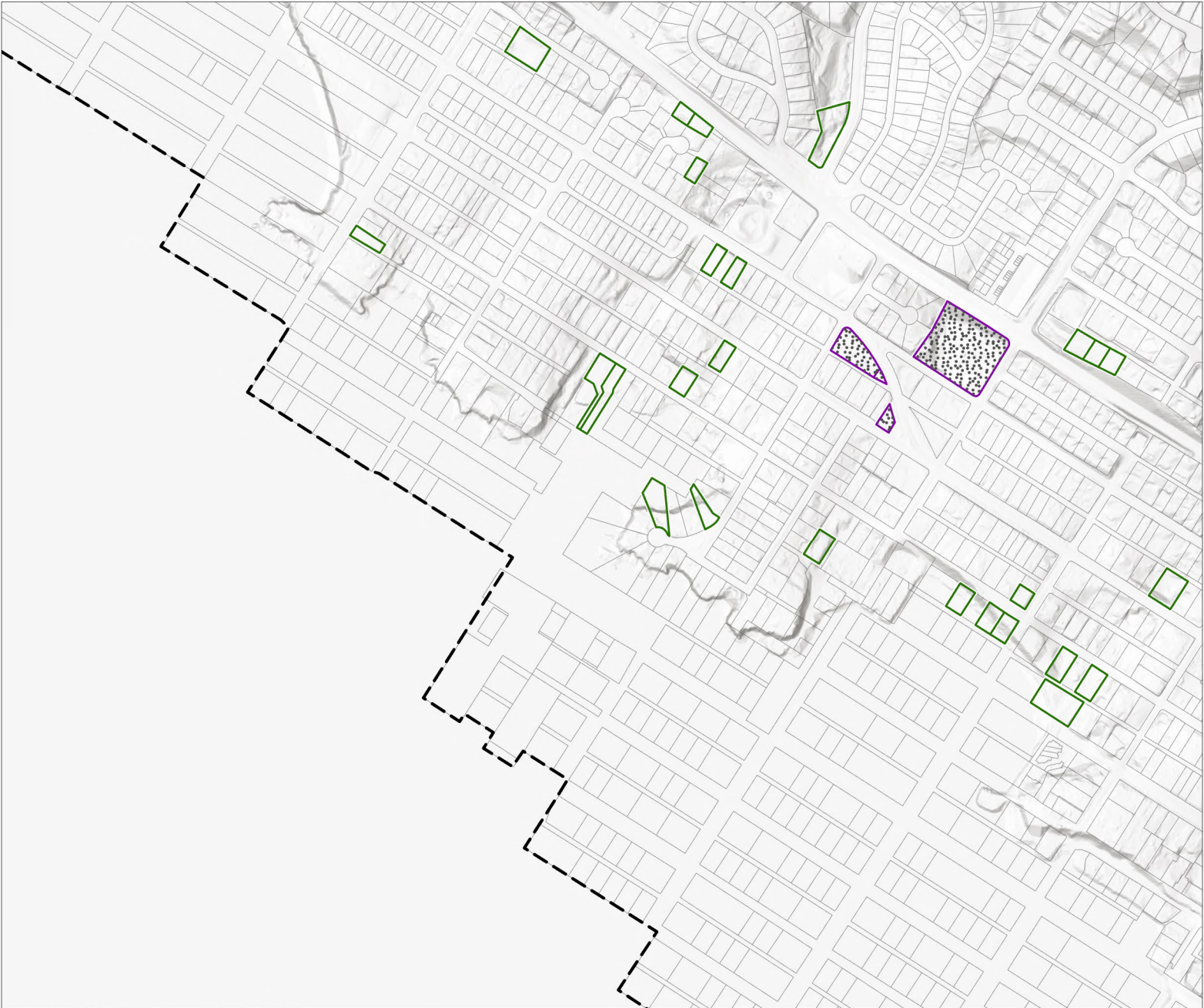


Figure 4.9-2A
Tsunami Inundation Areas

Source: DOC 2009, PlaceWorks 2022

HYDROLOGY AND WATER QUALITY



- City Limit
- Overlay Zone
- Housing Element Sites
 - Suitably Zoned
 - Needs Zoning Change

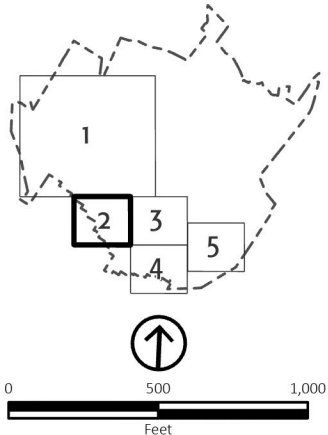
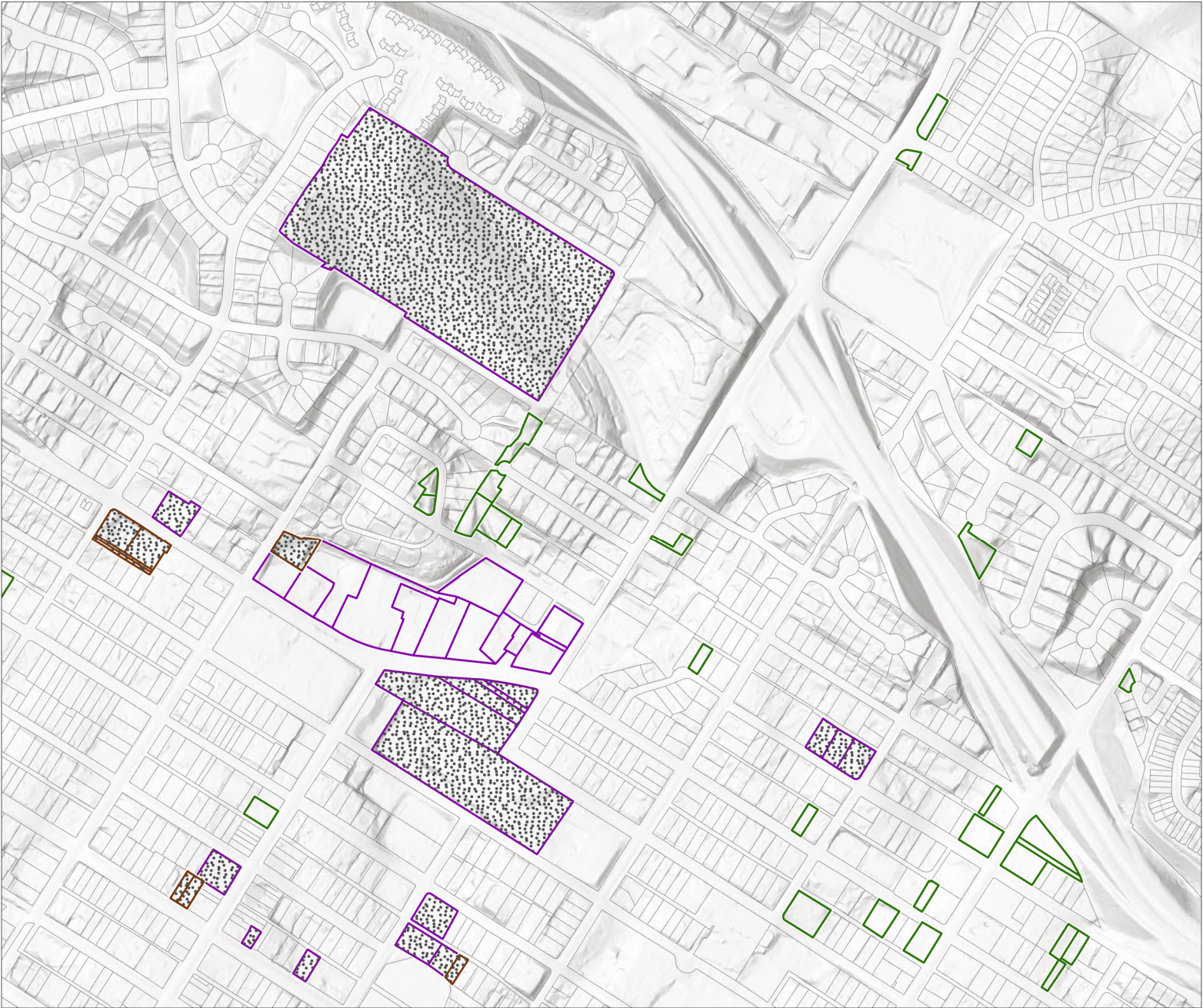







Figure 4.9-2B
Tsunami Inundation Areas

Source: DOC 2009, PlaceWorks 2022

HYDROLOGY AND WATER QUALITY



-  City Limit
-  Overlay Zone
- Housing Element Sites**
-  Suitably Zoned
-  Suitably Zoned with Upzoning Proposed
-  Needs Zoning Change

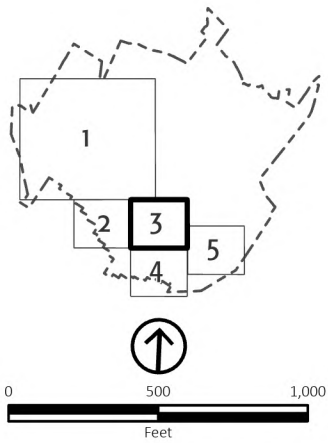
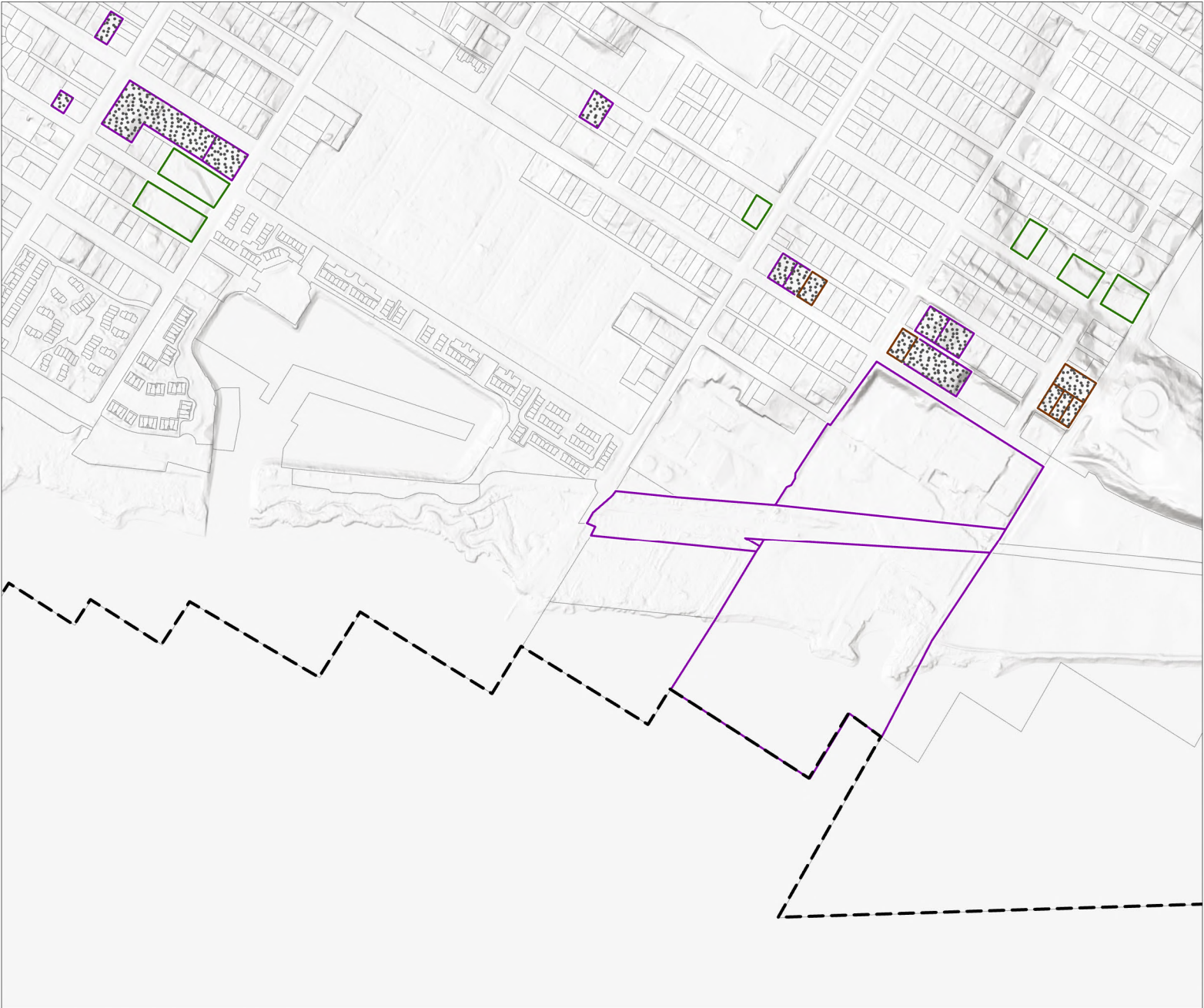


Figure 4.9-2C
Tsunami Inundation Areas

Source: DOC 2009, PlaceWorks 2022

HYDROLOGY AND WATER QUALITY



- City Limit
- Overlay Zone
- Housing Element Sites
 - Suitably Zoned
 - Suitably Zoned with Upzoning Proposed
 - Needs Zoning Change

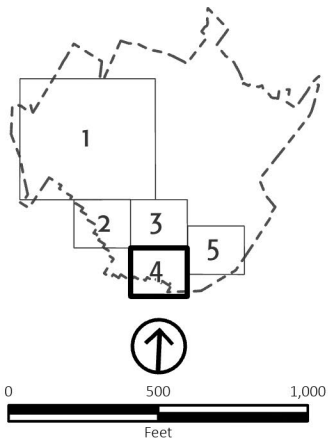
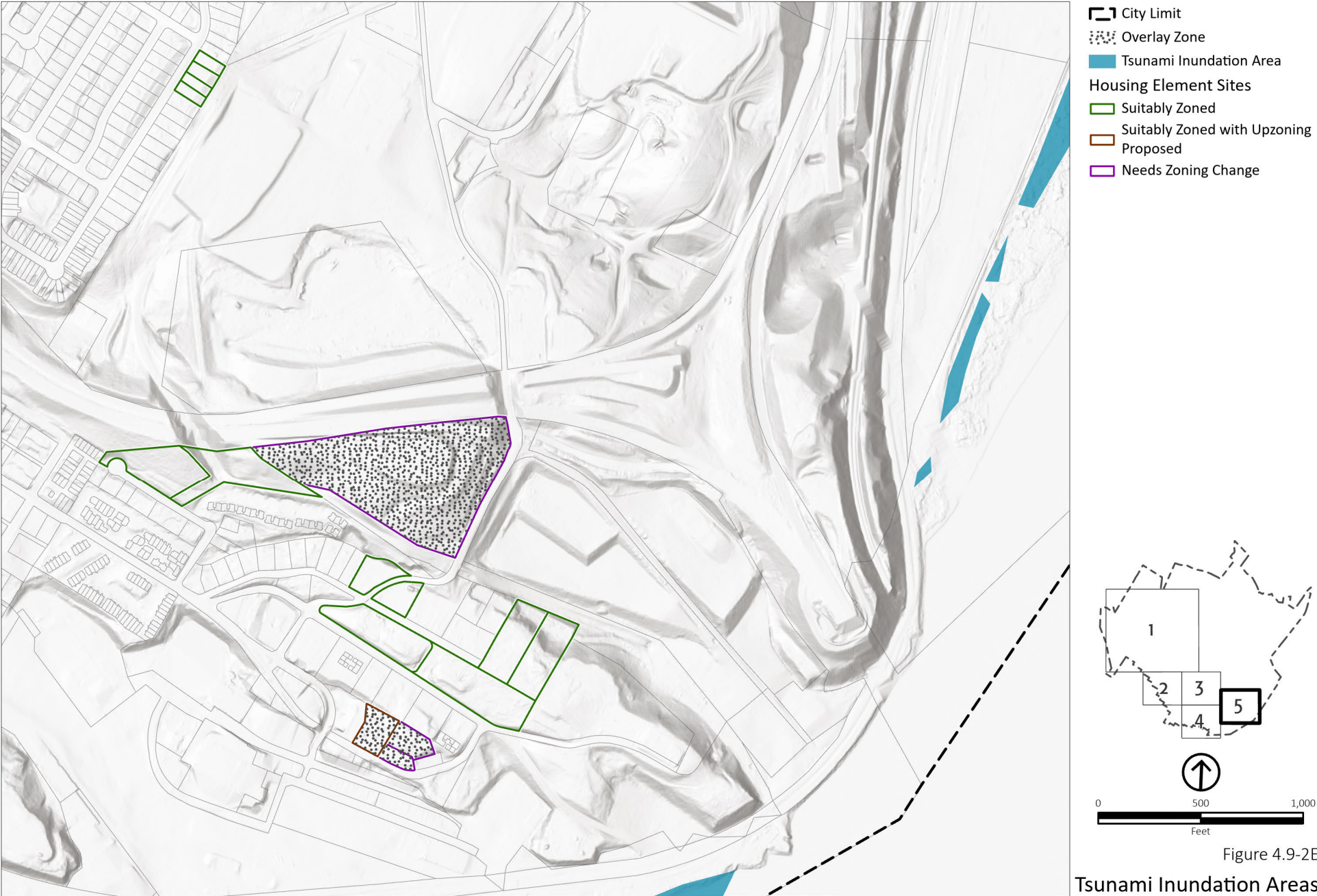


Figure 4.9-2D
Tsunami Inundation Areas

Source: DOC 2009, PlaceWorks 2022

HYDROLOGY AND WATER QUALITY



Source: DOC 2009, PlaceWorks 2022

Figure 4.9-2E
Tsunami Inundation Areas

HYDROLOGY & WATER QUALITY

This page intentionally left blank.

HYDROLOGY & WATER QUALITY

HYD-5	The project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.
-------	--

Housing Element

Water Quality Control Plan

The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the master water quality control planning document adopted by the San Francisco Bay Regional Water Quality Control Board (RWQCB) in accordance with the Porter-Cologne Water Quality Control Act of 1969 (CWQCB 2017). Among other provisions, the Basin Plan establishes conditions (discharge prohibitions) that must be met at all times. These include restrictions on discharge of wastewater, wastewater sludge, biocides (i.e., pesticides, herbicides, copper, etc.), oils, and a wide range of solid materials, including silt, sand, and clay. Point source discharges must be made in accordance with waste discharge requirements (WDRs) established by the RWQCB in accordance with the NPDES program described in Impact HYD-1.

Future development projects under the HEU would be required to comply with the NPDES regulations pertaining to construction and operation of new development sites, described in detail in Impact HYD-1, above. By complying with the applicable provisions of these regulations, potential water pollutants generated by construction and operation of projects would be minimized and would not adversely affect surface or groundwater quality. Therefore, the proposed project would not conflict with or obstruct implementation of the applicable water quality control plan. Impacts would be less than significant.

Sustainable Groundwater Management Plan

The Sustainable Groundwater Management Act (SGMA) requires Groundwater Sustainability Agencies (GSAs) to form in the State's high- and medium-priority basins and subbasin. For groundwater basins designed as medium or high priority, the SGMA requires the responsible GSA to prepare and adopt a Groundwater Sustainability Plan (GSP). Under certain conditions, including where a GSA has performed an analysis that demonstrates the groundwater basin under its purview has been operated within its sustainable yield over a period of at least 10 years, the GSA may prepare an Alternative to a GSP. The GSPs or Alternative GSPs must encompass an entire basin or subbasin and must demonstrate that the basin can achieve sustainable groundwater management within 20 years of adoption of the plan.

The City of Benicia is located in a Very Low priority basin, and there is no designated GSA for the Suisun-Fairfield Valley that underlies the City (DWR 2022). Since there is no adopted GSP covering the groundwater basin underlying the City, there is no potential for the development under the HEU to obstruct the implementation of an applicable GSP. Furthermore, as discussed in Impact HYD-2, the City does not have plans to pump groundwater and new development under the Housing Element would have a negligible effect on groundwater recharge in the area. Consequently, there is no potential for the project to substantially interfere with the management of groundwater supplies. Therefore, impacts would be less than significant.

HYDROLOGY & WATER QUALITY

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not conflict with or obstruct implementation of a water quality control plan. No impacts would occur.

Significance Without Mitigation: Less than significant.

4.9.6 REFERENCES

- Benicia, City of (Benicia). 2022b, August 8 (Accessed). Stormwater Management Program (webpage).
<https://beniciacarebuild.govoffice2.com/index.asp?SEC=A084AADB-AB11-4EBA-9711-3A04EBD71FBB&DE=1ED6C8A1-92BD-4476-BDEA-88BC462D57D9&pri=0>
- ____. 2022a, July. City of Benicia Community Health and Safety Element Background Report- Administrative Draft.
- ____. 2021, May 18. 2020 Urban Water Management Plan.
[https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/City_of_Benicia_2020_UWMP_-_Final_06.10.21\(1\).pdf](https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/City_of_Benicia_2020_UWMP_-_Final_06.10.21(1).pdf)
- ____. 2020. City of Benicia 2020 Annual Water Quality Report.
[https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/2020_Water_Quality_Annual_Report_20210607_Website_version\(3\).pdf](https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/2020_Water_Quality_Annual_Report_20210607_Website_version(3).pdf)
- ____. 2008. City of Benicia Stormwater Management Plan.
https://www.waterboards.ca.gov/water_issues/programs/stormwater/swmp/benicia_swmp.pdf
- ____. 2007, June 19. Lower Arsenal Specific Plan EIR.
- ____. 1999a, June 15. Benicia General Plan.
- ____. 1999b, January. Benicia General Plan Draft Environmental Impact Report.
- California Department of Water Resources (DWR). 2022, August 13 (Accessed). SGMA Portal, All Posted GSA Notices. <https://sgma.water.ca.gov/portal/gsa/all>
- California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). 2017, May 4. San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan).
<https://www.epa.gov/sites/default/files/2014-12/documents/ca2-sanfrancisco-basin.pdf>
- State Water Resources Control Board (SWRCB). 2022. 2020 California 303(d) List of Water Quality Limited Segments.
https://www.waterboards.ca.gov/water_issues/programs/tmdl/2020_2022state_ir_reports_revised_final/apx-c-catereports/category5_report.shtml
- ____. 2018. Final California 2018 Integrated Report (303(d) List /305(b) Report) Supporting Information – Regional Board 2- San Francisco Bay Region.
https://www.waterboards.ca.gov/water_issues/programs/tmdl/2018state_ir_reports_final/apx_c_state_factsheets/00117.shtml

HYDROLOGY & WATER QUALITY

____. 2013, July 1. Phase II Small Municipal Separate Sewer System MS4 Program.

https://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/phase_ii_municipal/provisions_phaseii_smallms4permit.pdf

Solano County Water Agency (SCWA). 2021. North Bay Aqueduct- History. <https://www.scwa2.com/north-bay-aqueduct/>

U.S. Department of the Interior Bureau of Reclamation (USBR). 2016, April. Mid-Pacific Region, Solano Project. <https://www.usbr.gov/mp/mpr-news/docs/factsheets/solano-project.pdf>

4.10 LAND USE AND PLANNING

This section of the Draft Environmental Impact Report (DEIR) evaluates the potential impacts to land use in City of Benicia from implementation of the Benicia Housing Element Update DEIR.

Land use impacts can be either direct or indirect. Direct impacts are those that result in land use incompatibilities, or division of neighborhoods or communities. This section focuses on direct land use impacts. Indirect impacts are secondary effects resulting from land use policy implementation, such as an increase in demand for public utilities or services, or increased traffic on roadways. Indirect impacts are addressed in the other sections of this DEIR.

4.10.1 ENVIRONMENTAL SETTING

4.10.1.1 REGULATORY FRAMEWORK

Regional Regulations

Association of Bay Area Governments (ABAG)

The Association of Bay Area Governments (ABAG) is a regional planning agency incorporating various local governments in the San Francisco Bay Area in California. It encompasses nine counties surrounding the San Francisco Bay, including Solano County. ABAG is responsible for conducting the Bay Area's Regional Housing Needs Allocation (RHNA) process every eight years via the Housing Methodology Committee in conjunction with local elected officials and staff, stakeholders, and residents from around the region.

The California Department of Housing and Community Development (HCD) has approved the ABAG Regional Housing Needs Allocation (RHNA) Plan. HCD's approval comes after action by the ABAG Executive Board to approve the Final RHNA, which occurred in December 16, 2021. The Final RHNA Plan distributes the Bay Area's portion of the state housing needs to local within the nine-county region and reports the methodology used for determining the RHNA.

Jurisdictions in Solano County formed a subregion to complete a separate RHNA process on behalf of all jurisdictions in the county. The Solano Subregion adopted its final RHNA allocations on November 18, 2021, and Benicia's RHNA is 750 units, distributed by very low income, low income, moderate income, and above moderate households (ABAG 2021).

LAND USE & PLANNING

Local Regulations

City of Benicia General Plan

The following policies, which pertain to land use and planning, are included in the Land use Element of the General Plan. The following policies are referenced as in the Benicia General Plan 1999:

- **Policy 2.1.1:** Ensure that new development is compatible with adjacent existing development and does not detract from Benicia’s small-town qualities and historic heritage.
- **Policy 2.1.4:** Strive to preserve significant areas of vegetation and open space when approving development projects.
- **Policy 2.2.1:** Protect and maintain agricultural and rural land uses, hillsides, two-lane curving roads, watershed, riparian corridors, and upland grasslands.
- **Policy 2.6.2** Other land uses should not adversely affect existing industrial and commercial land uses.
- **Policy 2.6.5** Establish and maintain a land buffer between industrial/commercial uses and existing and future residential uses for reasons of health, safety, and quality of life.
- **Policy 2.8.1** Avoid encroachment by future incompatible uses, and where possible, reduce encroachment of existing incompatible uses in concert with Policy 2.11.1.
- **Policy 2.11.1** Retain and expand the mix of compatible and balanced uses in the lower Arsenal area.
- **Policy 2.11.2** Continue to allow live/work uses in the lower Arsenal where it can be demonstrated that adequate buffers exist, including noise buffers, and that the presence of residents would not significantly constrain industrial operations, including the flow of goods and materials.

4.10.1.2 EXISTING CONDITIONS

The City of Benicia is located along the north bank of Carquinez Strait and is east of Vallejo. The city covers total of 14 square miles, which includes open water as well as 12.8 square miles of land. It also has seasonal or permanent wetlands. Table 4.10-1, *City of Benicia Land Use Type Acreage*, provides an overview of the land use categories within Benicia as they were inventoried at the time of the General Plan adoption in 1999.

The city has varied range of density with different zoning district. The Zoning Ordinance includes three residential zoning districts, four commercial districts, two mixed use districts, one industrial district, one open space district, and four form-based districts that allow residential development. The maximum residential density allowed is 40 units per acre. Table 4.10-2, *Summary of City of Benicia’s Zoning Code*, lists the zone district and land uses allowed in each district Table 4.10-3, *Zoning Districts Permitting Residential Uses*.

LAND USE & PLANNING

TABLE 4.10-1 CITY OF BENICIA LAND USE TYPE ACREAGE

Land Use Type	Acres	Percent of Total Land Area
Industrial	2,578	32%
Parks/Open Space	2,046	25%
Residential	1,733	21%
Transportation	1,195	15%
Commercial	381	5%
Public/ Quasi-Public	230	3%
Total	8,163	100%

Source: City of Benicia. 1999. Benicia General Plan.
Note: Numbers may not reflect recent zoning efforts

LAND USE & PLANNING

TABLE 4.10-2 SUMMARY OF CITY OF BENICIA’S ZONING CODE

Base District Designator	Base District Name	General Uses
RS	Single Family Residential District	Single family residential use, either in neighborhoods or in conjunction with agricultural pursuits; duplexes, triplexes, and fourplexes.
RH	High-Density Residential District	Housing types include apartments and townhouses with relatively high land coverage at appropriate locations
RM	Medium-Density Residential District	Older residences converted to duplexes and new townhouses or cluster housing with landscaped open space for resident’s use.
MU-I	Mixed use-Infill	Public open space, publicly available parking, infrastructure improvements, and public arts
MU-L	Mixed use-Limited	Facilitate production of housing across a range of housing types, including single family homes, duplexes, townhouses, and smaller multifamily building
CC	Community Commercial District	Businesses serving the daily needs of nearby residential areas
CO	General Commercial District	Landscaped environment for offices of residential scale, and for residential development
CG	General Commercial District	Full range of retail and service businesses deemed suitable for location in Benicia
CW	Waterfront Commercial District	Developments for waterfront around Benicia marina and along the shoreline at appropriate location
IL	Limited Industrial District	Provides buffer between the General Industrial areas, and the rest of the city
IG	General Industrial District	Least restrictive, and intended to allow a great deal of flexibility for industrial development
IW	Water -Related Industrial District	Port terminals and water dependent, related industrial uses such as warehousing and storage
IP	Industrial Park District	Fabrication areas, packaging facilities, quality control laboratories, and refining accessory uses such as maintenance shops, storage areas
OS	Open Space District	Provide suitable classification for large public or private sites permanently designated for park or open space use
PS	Public and Semipublic District	Government offices, public safety facilities, waste facility
PD	Planned Development District	Allows existing uses or development in accordance with a PD Plan or specific plan, consistent with the General Plan
Overlay District		
HD	Hillside Development Overlay District	Environmental equilibrium development consistent with existing vegetation, soils, geology, slopes, and drainage patterns
H	Historic Overlay District	Development tailored to the character and significance of each historic district through a conservation plan
S	Shoreline Protection Overlay District	Development compatible with the established physical scale of the area
NC	Neighborhood Conservation Overlay District	Development following a plan and set of regulations that will facilitate maintenance and upgrading of the neighborhood
IS	Interim Study Overlay District	Development shall be done according to review of development proposal in areas where changes in zoning regulations are contemplated
MP	Master Plan Overlay District	Unsubdivided areas of the city consistent with the general plan

TABLE 4.10-3 ZONING DISTRICTS PERMITTING RESIDENTIAL USES.

Residential Uses	RS	RM	RH	CC	CO	CG	CW	IL	OS	MU-I	MU-L
Single-Family	P	P	P	P	P	--	P	--	P	--	P
Multifamily	--	P	P	P	P	--	P	--	--	L	P
Group Residential	--	U	U	--	--	U	--	--	--	L	P
Work/Live Units	--	--	--	P	--	P	P	U	--	L	P
Family Day Care, Large (9 to 14 children)	P	P	P	U	U	--	U	U	--	L	L
Family Day Care, Small (8 or fewer children)	P	P	P	U	U	--	U	U	--	P	P
Residential Care, General, 7 or more clients	--	U	U	U	U	--	--	--	--	--	--
Residential Care, Limited, 6 or fewer clients	P	P	P	U	--	--	P	--	--	L	P
Accessory Dwelling Units	P	P	P	P	P	--	P	--	P	L	P
Mobile Homes and Manufactured Housing	P	P	P	P	P	--	P	--	P	--	P
Emergency Shelter	--	P	--	--	P	P	--	--	--	P	P
Transitional Housing	P	P	P	P	P	--	P	--	P	L	P
Supportive Housing	P	P	P	P	P	--	P	--	P	L	P
Low-Barrier Navigation Center	--	--	--	--	--	--	--	--	--	--	--
Employee Housing ¹	--	--	--	--	--	--	--	--	--	--	--
Single-Room Occupancy	--	--	--	--	--	--	--	--	--	--	--

¹ Program 3.05 is proposed to allow housing in full compliance with the Employee Housing Act (Benicia 2022, pg. 137).

P: Permitted

U: Use Permit

L: Limited

--: Not allowed

Source: City of Benicia Zoning Ordinance last updated January 20, 2022.

LAND USE & PLANNING

4.10.2 THRESHOLDS OF SIGNIFICANCE

The proposed project would result in significant land use and planning impacts if it would:

1. Physically divide an established community.
2. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

4.10.3 PROPOSED HOUSING ELEMENT POLICIES

- **Policy 1.01:** To the extent possible and within the city's control, the city shall facilitate the production of housing that is affordable to people with a wide range of incomes.
- **Policy 2.01:** Require affordable housing in residential development under the inclusionary housing program.
- **Policy 2.02:** Require decision makers to give equal preference to on site construction of inclusionary housing units, and all other in-lieu alternative options.
- **Policy 2.03:** Maintain an adequate supply of residential land in appropriate land use designation and zoning categories to accommodate the city's regional housing needs allocation.
- **Policy 2.04:** Disperse affordable housing throughout the city to avoid concentration in any one part of the city.
- **Policy 3.01:** Facilitate the development of shelter for the homeless, transitional, and supportive housing, housing for seniors, and housing for person with physical, development, or mental disabilities.
- **Policy 4.02:** Limit the conversion of residential structures to nonresidential uses and affordable units to market rate.
- **Policy 6.01:** Enforce state requirements for energy conservation in new residential projects and encourage residential developers to employ additional energy conservation measures with respect to siting of buildings, landscaping, and solar access.
- **Policy 6.02:** Enforce the California energy commission energy-efficiency requirements in new housing and encourage the installation of energy-saving devices in pre-1975 housing.
- **Policy 6.03:** Encourage green building design standards in new construction to achieve increased energy conservation.

4.10.4 PROPOSED SAFETY ELEMENT POLICIES

There are no policies in the Safety Element Update applicable to Land Use and Planning.

4.10.5 ENVIRONMENTAL IMPACTS

LU-1 The project would not physically divide an established community.

Housing Element Update

Pursuant to Government Code Section 65863, also known as the “no-net-loss” law, the City must identify a sufficient number of sites with capacities to accommodate the units assigned to the City in its RHNA. Therefore, part of the proposed project is the inclusion of a Housing Element Sites Inventory which is a list of sites that can be developed with residential units. As shown in Table 3-4, *Suitable Designated Sites*, there are sites 447 realistic units and 621 maximum units listed that are “suitably zoned”. These sites do not require a designation or zone change to accommodate residential development. As shown in Table 3-3, *Opportunity Sites*, there are 1,830 “realistic” units and 2,963 “maximum” units in the inventory referred to as “opportunity sites”, which would require a zone to accommodate residential development or increased residential development. Together, the total sites contributed to the City’s RHNA under this Housing Element Update, is 3,584 “maximum” units and 2,277 “realistic” units.

The Department of Housing and Community Development (HCD) also recommends that jurisdictions create a buffer in the housing element inventory of at least 15 to 30 percent more capacity than required. The City of Benicia has committed to providing a 15 percent buffer, providing 113 additional affordable units over the City’s designated RHNA of 750 units. In total the City has identified space for a total of 2,277 units under the more “realistic” unit’s scenario.

The Housing Element is a policy-level document that does not propose site-specific development. As shown on Figures 3-1a through 3-1e the sites are within the developed City and expand on the existing surrounding land uses. Therefore, the proposed project would not physically divide an established community. Division of an established community occurs because of new developments and construction of projects that act a barrier between two or more constituent parts of the community. Future residential development associated with the proposed project would occur on several parcels of land designated for residential and non-residential use. The proposed would result in changes in density and rezoning of some of the sites, based on RHNA estimates. Opportunity sites have been identified throughout the City, rather than concentrated in a single area, and therefore, would not physically divide an established community.

The City’s General Plan include policies which would avoid future residential development from dividing established community. For example, Policy 2.6.5 requires a buffer between industrial and commercial uses from existing future residential uses and Policy 2.8.1 which states future development to avoid encroachment by future incompatible uses. Additionally, the Housing Element includes policies to facilitate equitable distribution of the housing throughout the City such as Policy 2.03 which states to maintain an adequate supply of residential land in appropriate land use designation and zoning categories and Policy 2.04 which disperses affordable housing throughout the city to avoid concentration in any one part of the city. Implementation of these policies would ensure that future residential development would

LAND USE & PLANNING

not divide an established community and would be compatible with surrounding uses. Therefore, impacts would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to land use and planning. No impacts would occur.

Significance Without Mitigation: Less than Significant.

LU-2	The project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.
------	---

Housing Element Update

The Housing Element Update (HEU) addresses the state mandate to update the housing element of the local general plan and accommodate the housing obligation designated in the 6th cycle of the RHNA. The RHNA quantifies the need for housing within each jurisdiction during specified planning periods. The Housing Element Update, and the RHNA identified the need for 863 additional homes in the city (including the "no-net-loss" buffer), including 212 very low income, 127 low income, 123 moderate income, and 288 above moderate-income housing (Solano County 2021).

To meet the RHNA obligations, the HEU would redesignate, and rezone parcels to meet the State's requirements for Benicia's portion of the regional housing need estimates. The city has identified 73 parcels on approximately 117 acres as opportunity sites. An additional 107 parcels on 39.65 acres of "suitably zoned/designated" sites would accommodate remaining housing needs through the sites' existing designations and zoning. The implementation of the HEU would not conflict with the RHNA allocations for the City, as the increase in housing units would be required in order to meet the State-mandated allocation. Impacts would be less than significant.

Plan Bay Area 2050

Plan Bay Area 2050 is a 30-year plan that charts a course for a Bay Area that is affordable, connected, diverse, healthy, and vibrant for all residents through 2050 and beyond (Plan Bay Area 2021). Thirty-five strategies comprise the heart of the Plan to improve housing, the economy, transportation, and the environment. Table 4.10-4, *Plan Bay Area 2050 Consistency Analysis – Housing Strategies*, shows the proposed project’s consistency with the housing strategies of Plan Bay Area 2050.

TABLE 4.10-4 BAY AREA 2050 CONSISTENCY ANALYSIS – HOUSING STRATEGICS

Housing Strategies	Consistency Analysis
H1. Further strengthen renter protection beyond state law.	Consistent. The proposed project includes Policy HE-P5.01 which will continue to provide a point of contact for referral of discrimination complaints would prohibit discrimination of renters.
H2. Preserve existing affordable housing	Consistent. The proposed project includes the following policies which aim to streamline residential development including affordable housing, solicit public participation by all economic groups to implement the housing element, and provide incentives for affordable housing, and increase the affordable housing supply: Policy HE-P1.02, Policy HE-P1.03, Policy HE-P1.05, Policy HE-P2.01, and Policy HE-4.04.
H3. Allow a greater mix of housing densities and types in Growth Geographies.	Consistent. The proposed project would include a variety of housing types and densities throughout the City. Additionally, Policy HE-P2.04 which allows dispersal of affordable housing throughout the city to avoid concentration in any one part of the City.
H4. Build adequate affordable housing to ensure homes for all.	Consistent. See Strategy H2. Specifically, Policy HE-P1.03 which states soliciting public participation by all economic segments of the community to implement the Housing Element. And Policy HE-P1.02 which states the City will expediate the review of residential development proposal that include affordable housing
H5. Integrate affordable housing into all major housing projects.	Consistent. See Strategy H2. Specifically, Policy HE-P1.02 which states the City will expediate the review of residential development proposal that include affordable housing units.
H6. Transform aging malls and office parks into neighborhoods.	Consistent. The proposed project would redesignate land currently designated for non-residential use to residential uses (such as commercia, public/semi-public, and mixed-use parcels).
H7. Provide targeted mortgage, rental and small business assistance to Equity Priority Communities.	Consistent. The proposed project includes Policy HE-P2.05 stating seeking appropriate private, local, state, and federal funding to subsidize costs of housing for extremely low-, very low-, low-, and moderate-income households in Benicia.
H8. Accelerate reuse of public and community-owned land for mixed-income housing and essential services.	Consistent. See Strategy H6.

Source: Plan Bay Area 2021

As shown Table 4.10-4, the HEU would be consistent with the Plan Bay Area 2050 housing strategies. Therefore, impacts would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk,

LAND USE & PLANNING

seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate man-made and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to land use and planning. No impacts would occur.

Significance Without Mitigation: Less than significant.

4.10.6 REFERENCES

Association of Bay Area Governments (ABAG). 2022. Final Regional Housing Needs Allocation (RHNA) Plan: San Francisco Bay Area, 2023-2031, https://abag.ca.gov/sites/default/files/documents/2022-04/Final_RHNA_Methodology_Report_2023-2031_March2022_Update.pdf.

Benicia, City of. 1999, June 15. Benicia General Plan.
<https://www.ci.benicia.ca.us/index.asp?SEC=0371539A-30D9-4885-B61F-B5038B415DD3&DE=F40DB441-1E06-45F8-82F8-6D632AB9EC85>.

_____. 2022. August. 2023-2031 Housing Element.
Plan Bay Area. 2021, October. Plan Bay Area 2050. <https://www.planbayarea.org/finalplan2050>

Solano County. 2021, September. 6th Cycle Regional Housing Needs Plan.
<https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=35622>

LAND USE & PLANNING

This page intentionally left blank.

4.11 NOISE

This section evaluates the potential for implementation of the Housing Element Update and Safety Element to result in noise and vibration impacts in the City of Benicia.

4.11.1 ENVIRONMENTAL SETTING

4.11.1.1 NOISE AND VIBRATION FUNDAMENTALS

Noise is defined as unwanted sound and is known to have adverse effects on people, including hearing loss, speech and sleep interference, physiological responses, and annoyance. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as “noisiness” or “loudness.” Following are brief definitions of terminology used in this section.

Glossary

- **Sound.** A disturbance created by a vibrating object, which when transmitted by pressure waves through a medium such as air, is capable of being detected by the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Decibel (dB).** A unitless measure of sound on a logarithmic scale.
- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **Equivalent Continuous Noise Level (L_{eq}).** The mean of the noise level, energy averaged over the measurement period.
- **L_{max} .** The maximum root-mean-square noise level during a measurement period.
- **Statistical Sound Level (L_n).** The sound level that is exceeded “n” percent of time during a given sample period. For example, the L_{50} level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period), which is half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the “median sound level.” The L_{10} level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the “intrusive sound level.” The L_{90} is the sound level exceeded 90 percent of the time and is often considered the “effective background level” or “residual noise level.”
- **Day-Night Sound Level (L_{dn} or DNL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the sound levels occurring during the period from 10:00 pm to 7:00 am.

NOISE

- **Community Noise Equivalent Level (CNEL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the levels occurring during the period from 7:00 pm to 10:00 pm, and 10 dB added to the sound levels occurring during the period from 10:00 pm to 7:00 am. Note: For general community/environmental noise, CNEL and L_{dn} values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered to be equivalent/interchangeable and are treated therefore in this assessment.
- **Peak Particle Velocity (PPV).** The peak rate of speed at which soil particles move (e.g., inches per second) due to ground vibration.
- **Sensitive Receptor.** Noise- and vibration-sensitive receptors include land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes are examples.
- **Vibration Decibel (VdB).** A unitless measure of vibration, expressed on a logarithmic scale and with respect to a defined reference vibration velocity. In the U.S., the standard reference velocity is 1 micro-inch per second (1×10^{-6} in/sec).

Sound Fundamentals

Sound is a pressure wave transmitted through the air. It is described in terms of loudness or amplitude (measured in decibels), frequency or pitch (measured in Hertz [Hz] or cycles per second), and duration (measured in seconds or minutes). The standard unit of measurement of the loudness of sound is the decibel. The human ear is not equally sensitive to all frequencies. Sound waves below 16 Hz are not heard at all and are “felt” more like a vibration. Similarly, while people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz. Since the human ear is not equally sensitive to sound at all frequencies, a special frequency dependent rating scale is usually used to relate noise to human sensitivity. The A-weighted decibel scale performs this compensation by weighting frequencies in a manner approximating the sensitivity of the human ear.

Changes of 1 to 3 dBA are detectable under quiet, controlled conditions and changes of less than 1 dBA are usually indiscernible. A 3 dBA change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dBA is readily discernable to most people in an exterior environment whereas a 10 dBA change is perceived as a doubling (or halving) of the sound.

As mentioned, Noise is defined as unwanted sound and is known to have adverse effects on people, including hearing loss, speech and sleep interference, physiological responses, and annoyance. Based on these known adverse effects of noise, the federal government, the State of California, and many local governments have established criteria to protect public health and safety and to prevent disruption of certain human activities.

Sound Measurement

Sound pressure is measured through the A-weighted measure to correct for the relative frequency response of the human ear. That is, an A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the human ear's de-emphasis of these frequencies.

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale, representing points on a sharply rising curve. On a logarithmic scale, an increase of 10 dBA is 10 times more intense than 1 dBA, 20 dBA is 100 times more intense, and 30 dBA is 1,000 times more intense. A sound as soft as human breathing is about 10 times greater than 0 dBA. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. Ambient sounds range from 30 dBA (very quiet) to 100 dBA (very loud).

Sound levels are generated from a source and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. This phenomenon is known as "spreading loss." For a single point source, sound levels decrease by approximately 6 dBA for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by on-site operations from stationary equipment or activity at a project site. If noise is produced by a line source, such as highway traffic, the sound decreases by 3 dBA for each doubling of distance in a hard-site environment. Line source noise in a flat environment with absorptive vegetation decreases by 4.5 dBA for each doubling of distance.

Time variation in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called L_{eq}), or alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. For example, the L_{50} noise level represents the noise level that is exceeded 50 percent of the time. Half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the L_2 , L_8 and L_{25} values represent the noise levels that are exceeded 2, 8, and 25 percent of the time, or 1, 5, and 15 minutes per hour. These " L_n " values are typically used to demonstrate compliance for stationary noise sources with a city's or county's noise ordinance, as discussed below. Other values typically noted during a noise survey are the L_{min} and L_{max} . These values represent the minimum and maximum root-mean-square noise levels obtained over the measurement period.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law, cities, and counties require that, for planning purposes, an artificial dBA increment be added to quiet time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level or Day-Night Noise Level. The CNEL descriptor requires that an artificial increment of 5 dBA be added to the actual noise level for the hours from 7:00 pm to 10:00 pm and 10 dBA for the hours from 10:00 pm to 7:00 am. The L_{dn} descriptor uses the same methodology except that there is no artificial increment added to the hours between 7:00 pm and 10:00 pm. Both descriptors give the same 24-hour

NOISE

level (i.e., typically within 1 dBA of each other), though the CNEL is only slightly more restrictive (i.e., higher); therefore, they are used interchangeably in this assessment.

Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects our entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure, functions of the heart, and the nervous system. Extended periods of noise exposure above 90 dBA can result in permanent hearing damage. When the noise level reaches 120 dBA, even short-term exposure causes a tickling sensation in the ear, called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation becomes painful, called the threshold of pain. Table 4.11-1, *Typical Noise Levels*, shows typical noise levels from familiar noise sources.

TABLE 4.11-1 TYPICAL NOISE LEVELS

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Onset of physical discomfort	120+	
	110	Rock Band (near amplification system)
Jet Flyover at 1,000 feet	100	
Gas Lawn Mower at 3 feet	90	
Diesel Truck at 50 feet, at 50 mph	80	Food Blender at 3 feet Garbage Disposal at 3 feet
Noisy Urban Area, Daytime	70	Vacuum Cleaner at 10 feet Normal speech at 3 feet
Commercial Area Heavy Traffic at 300 feet	60	Large Business Office Dishwasher Next Room
Quiet Urban Daytime	50	
Quiet Urban Nighttime Quiet Suburban Nighttime	40	Theater, Large Conference Room (background)
	30	Library Bedroom at Night, Concert Hall (background)
Quiet Rural Nighttime	20	
	10	Broadcast/Recording Studio
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: Caltrans 2013a.

Vibration Fundamentals

Vibration is an oscillating motion in the earth. Like noise, vibration is transmitted in waves, but through the earth or solid objects. Unlike noise, vibration is typically of a frequency that is felt rather than heard.

Vibration can be natural—such as earthquakes, volcanic eruptions, or landslides—or manmade, such as explosions, heavy machinery, or trains. Both natural and manmade vibration may be continuous, such as from operating machinery, or impulsive, as from an explosion.

As with noise, vibration can be described by both its amplitude and frequency. Amplitude can be characterized in three ways—displacement, velocity, and acceleration. Particle displacement is a measure of the distance that a vibrated particle travels from its original position; for the purposes of soil displacement, is typically measured in inches or millimeters. Particle velocity is the rate of speed at which soil particles move in inches per second or millimeters per second. Table 4.11-2, *Human Reaction to Typical Vibration Levels*, presents the human reaction to various levels of peak particle velocity.

TABLE 4.11-2 HUMAN REACTION TO TYPICAL VIBRATION LEVELS

Vibration Level Peak Particle Velocity (in/sec)	Human Reaction	Effect on Buildings
0.006–0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments
0.10	Level at which continuous vibration begins to annoy people	Virtually no risk of “architectural” (i.e., not structural) damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk to “architectural” damage to normal dwelling—houses with plastered walls and ceilings
0.4–0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause “architectural” damage and possibly minor structural damage

Source: Caltrans 2020a.

Vibrations also vary in frequency, and this affects perception. Typical construction vibrations fall in the 10 to 30 Hz range and usually occur around 15 Hz. Traffic vibrations exhibit a similar range of frequencies; however, due to their suspension systems, buses often generate frequencies around 3 Hz at high vehicle speeds. It is less common, but possible, to measure traffic frequencies above 30 Hz.

The way in which vibration is transmitted through the earth is called propagation. As vibration waves propagate from a source, the energy is spread over an ever-increasing area such that the energy level striking a given point is reduced with the distance from the energy source. This geometric spreading loss is inversely proportional to the square of the distance. Wave energy is also reduced with distance as a result of material damping in the form of internal friction, soil layering, and void spaces. The amount of

NOISE

attenuation provided by material damping varies with soil type and condition as well as the frequency of the wave.

4.11.1.2 REGULATORY FRAMEWORK

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, and local governments have established standards and ordinances to control noise.

Federal Regulations

Federal Highway Administration

Proposed federal or federal-aided highway construction projects at a new location, or the physical alteration of an existing highway that significantly changes the horizontal or vertical alignment or increases the number of through-traffic lanes, require an assessment of noise and consideration of noise abatement per 23 CFR Part 772, “Procedures for Abatement of Highway Traffic Noise and Construction Noise.” The Federal Highway Administration (FHWA) has adopted noise abatement criteria for sensitive receivers—such as picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals—when “worst-hour” noise levels approach or exceed 67 dBA L_{eq} (Caltrans 2020b).

US Environmental Protection Agency

In addition to FHWA standards, the EPA has identified the relationship between noise levels and human response. The EPA determined that over a 24-hour period, an L_{eq} of 70 dBA will result in some hearing loss. Interference with activity and annoyance will not occur if exterior levels are maintained at an L_{eq} of 55 dBA and interior levels at or below 45 dBA. These levels are relevant to planning and design and useful for informational purposes, but they are not land use planning criteria because they do not consider economic cost, technical feasibility, or the needs of the community; therefore, they are not mandated.

The EPA also set 55 dBA L_{dn} as the basic goal for exterior residential noise intrusion. However, other federal agencies, in consideration of their own program requirements and goals, as well as the difficulty of actually achieving a goal of 55 dBA L_{dn} , have settled on the 65 dBA L_{dn} level as their standard. At 65 dBA L_{dn} , activity interference is kept to a minimum, and annoyance levels are still low. It is also a level that can realistically be achieved.

US Department of Housing and Urban Development

The US Department of Housing and Urban Development (HUD) has set the goal of 65 dBA L_{dn} as a desirable maximum exterior standard for residential units developed under HUD funding (This level is also generally accepted within the State of California). Although HUD does not specify acceptable interior

noise levels, standard construction of residential dwellings typically provides 20 dBA or more of attenuation with the windows closed. Based on this premise, the interior L_{dn} should not exceed 45 dBA.

Occupational Health and Safety Administration

The federal government regulates occupational noise exposure common in the workplace through the Occupational Health and Safety Administration (OSHA) under the EPA. Noise limitations would apply to the operation of construction equipment and could also apply to any proposed industrial land uses. Noise exposure of this type is dependent on work conditions and is addressed through a facility's Health and Safety Plan, as required under OSHA, and is therefore not addressed further in this analysis.

State Regulations

California Building Code

The California Building Code (CBC) is Title 24 of the California Code of Regulations. CBC Part 2, Volume 1, Chapter 12, Section 1206.4, Allowable Interior Noise Levels, requires that interior noise levels attributable to exterior sources not exceed 45 dBA in any habitable room. The noise metric is evaluated as either the L_{dn} or the CNEL, whichever is consistent with the noise element of the local general plan.

The State of California's noise insulation standards for non-residential uses are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 11, California Green Building Standards Code (CALGreen). CALGreen noise standards are applied to new or renovation construction projects in California to control interior noise levels resulting from exterior noise sources. Proposed projects may use either the prescriptive method (Section 5.507.4.1) or the performance method (5.507.4.2) to show compliance. Under the prescriptive method, a project must demonstrate transmission loss ratings for the wall and roof-ceiling assemblies and exterior windows when located within a noise environment of 65 dBA CNEL or higher. Under the performance method, a project must demonstrate that interior noise levels do not exceed 50 dBA L_{eq(1hr)}.

Airport Noise Standards

California Code of Regulations Title 21, Subchapter 6, Airport Noise Standards, establishes 65 dBA CNEL as the acceptable level of aircraft noise for persons living in the vicinity of airports. Noise-sensitive land uses are generally incompatible in locations where the aircraft exterior noise level exceeds 65 dBA CNEL, unless an aviation easement for aircraft noise has been acquired by the airport proprietor or the residence is a high-rise with an interior CNEL of 45 dBA or less in all habitable rooms and has an air circulation or air conditioning system, as appropriate. Assembly Bill (AB) 2776 requires any person who intends to sell or lease residential properties in an airport influence area to disclose that fact to the person buying the property.

NOISE

Local Regulations

Benicia General Plan

The following goals and policies that pertain to noise from the Community Health and Safety Element of the General Plan. The policies are referenced as in the Benicia General Plan 1999.

- **Policy 4.23.1:** Evaluate the compatibility of proposed projects with respect to existing and future transportation noise levels by utilizing Tables 4-3 and 4-4.
- **Policy 4.23.2:** Use noise damping building standards, site design landscaping, and setbacks instead of sound walls, wherever possible.
- **Policy 4.23.3:** Use available techniques such as building insulation, berms, building design and orientation, buffer yards, and staggered operating hours to minimize noise at the source.
- **Policy 4.23.4:** Control development of noise-sensitive land uses in areas exposed to existing or projected noise which exceed the levels specified in Tables 4-3 and 4-4 unless the project includes specific, effective mitigation measures to reduce interior and exterior noise levels to those specified in Tables 4-3 and 4-4.
- **Policy 4.23.6:** Attempt to reduce noise in areas already highly impacted by excessive noise.

Benicia Municipal Code

On June 19, 2018, the City Council approved changes to Benicia Municipal Code Title 8 (Healthy and Safety) and Title 17 (Zoning Ordinance) related to noise and amplified sound. On June 5, 2018, the City Council amended the Downtown Mixed Use Master Plan (DMUMP) related to amplified music. These changes allow amplified music in commercial zones and along First Street with the approval of a Use Permit (Benicia 2022a).

Section 8.20.080 – Sound-Amplifying Equipment – Use Regulations

This section sets the use of sound-amplifying equipment for commercial purposes and noncommercial purposes shall only permit sounds from either music and/or human speech. Table 4.11-3, *Maximum Amplified Sound Levels (dB)*, shows daily operating conditions and the maximum amplified sound levels from sound-amplifying equipment. “Sound-amplifying equipment” means any machine or device for the amplification of the human voice, music, or any other sound

TABLE 4.11-3 MAXIMUM AMPLIFIED SOUND LEVELS (dB).

Noise Zone	9 A.M. -8 P.M. ²	8 P.M. – 9:30 P.M. ^{1,2}
Residential Neighborhoods	75	70
Area within One Block of First Street	75	70
Commercial (all) and First Street	80	75 Mon-Thurs 80 Fri-Sat
Industrial	N/A	N/A

¹ Temporary Use Permit or Use Permit required

² No amplified sound after 6 p.m. Sundays

Source: City of Benicia Noise Ordinance (last updated June 19, 2018).

Section 8.20.120 – Noise Sensitive Land Uses

This section sets the noise level performance standards for new development in noise sensitive land uses. Noise sensitive land uses includes residences, transient lodging, hospitals, nursing homes, theaters, auditoriums, churches, schools, and libraries. Table 4.11-4, *Noise Level Performance Standards for Noise Sensitive Land Uses*, shows the noise level performance standards and operational conditions.

TABLE 4.11-4 NOISE LEVEL PERFORMANCE STANDARDS FOR NOISE SENSITIVE LAND USES

LAND USE	Exterior (L _{EQ} DBA) ^{2,3}		Interior (L _{EQ} DBA) ^{2,3}	
	Daytime	Nighttime	Daytime	Nighttime
	7 a.m. – 10 p.m.	10 p.m. – 7 a.m.	7 a.m. – 10 p.m.	10 p.m. – 7 a.m.
Residential	55	50	40	35
Transient Lodging	55	50	40	35
Hospitals	--	--	40	35
Nursing Homes	55	50	40	35
Theaters, Auditoriums	--	--	35	35
Churches	55	50	40	40
Schools	55	50	45	45
Libraries	55	50	45	45

¹ The noise level performance standards shall be applied to a typical hour of operation. When a peak hour of operation is expected to occur consistently during daily or weekly operations, the standards shall also be applied to those operations.

² Noise levels shall be lowered by five dB for tonal noises (humming, high-pitched tones, speech music, or recurring impulsive noises). This lowering of the standard does not apply to residential units established in conjunction with industrial or commercial caretaker dwellings.

³ For noise sources that occur on an infrequent basis and are safety equipment (such as flaring or pressure relief valves), a maximum noise level of 75 dB is acceptable, as measured from the receiver’s property line.

Source: City of Benicia Noise Ordinance (last updated June 19, 2018).

Section 8.20.140 – Machinery, Equipment, Fans, and Air Conditioning

This section states that it is unlawful for any person to operate any machinery, equipment, pump, fan, air conditioning apparatus, or similar mechanical device in any manner to create any noise which would cause the noise level at the property line of any property to exceed the maximum allowable noise level (Section 8.20.190) by more than three decibels.

NOISE

Section 8.20.150 – Construction of Buildings and Projects

This section sets regulations for operating equipment or performing any outside construction work on buildings and projects in residential zones, areas in the Downtown Mixed Use Master Plan, or within a 500 feet radius of both these areas. Hours of operations must be prior to 7:00 a.m. or after 7:00 p.m. on Monday through Friday, or prior to 8:00 a.m. or after 7:00 p.m. on Saturdays, or anytime on Sundays. Grading permits must be issued to work within these identified areas; however, no permit shall be required to perform emergency work as defined in BMC 8.20.020.

Section 8.20.190 – Maximum Allowable Sound Level

This section sets the maximum allowable noise levels by noise zone as shown in Table 4.11-5, *Maximum Allowable Sound Levels (dB)*.

TABLE 4.11-5 MAXIMUM ALLOWABLE SOUND LEVELS (dB)

Noise Zone	7 A.M. – 8 P.M.	8 P.M. – 10 P.M.	10 P.M. – 7 P.M.
Residential Neighborhoods	60	55	50
Area Within One Block of First Street	60	55	55
Commercial (all) and First Street	60	60	60
Industrial	75	75	75

Source: City of Benicia Noise Ordinance (last updated June 19, 2018).

4.11.1.3 EXISTING CONDITIONS

Mobile Sources

The City of Benicia is traversed through Interstate 780 (I-780) and Interstate 680 (I-680) as shown in Figure 1-1, *Regional Location*, and Figure 1-2, *Citywide Aerial*. These two interstates bisect residential, commercial, and industrial areas therefore mobile sources along these routes means that noise levels from the I-780 and I-680 can be heard throughout the City.

The City of Benicia is also consisting of the Port of Benicia, located on the southern boundary of the city and on northern bank of the Carquinez Strait. The Port of Benicia sits on 645 acres with 140,000 sq/ft of vehicle processing buildings within the within the 4,000-acre Benicia Industrial Park (Benicia 2022b). Mobile sources from the port include vehicles from the main arteries I-680 and I-780 freeways, Union Pacific rail service, and ships from the dock.

Other mobile sources include trucks, cars, motorcycles, leaf blowers, lawn mowers, and other portable maintenance equipment. These are considered normal sounds of a City and are regulated by the City’s noise ordinance (Section 8.20.140).

Traffic Noise

Movement of cars on roadways generates noise. While some of the noise comes from the engine and exhaust, at higher speeds tires and wind noise predominate. Major roadways such as I-680, I-780, Lake Herman Road and City arterials carry larger volumes of traffic at higher speeds. Noise from the interstate can be heard throughout the City depending on weather conditions and traffic volume.

Aircraft Noise

Travis Air Force Base is in Fairfield, approximately 15 miles from Benicia city limits. The City of Benicia is within the Airport Influence Area (AIA) for the Travis Air Force Base Airport Land Use Compatibility Plan (ALUCP). The AIA is divided into Compatibility Zones: A, B1, B2, C, D, and E (Solano DRM 2015). Benicia is in Compatibility Zones D and E which are outlying areas that are areas subject to frequent aircraft overflight (see *Figure 4.8-1, Travis Air Force Base Compatibility Zones, within City of Benicia*). The Travis ALUCP does not set noise level criteria for these Zones.

Railroad Noise

The Union Pacific Railroad travels along the Union Pacific Bridge which crosses the Carquinez Strait at mile 7.0, between Matinez and Benicia. The railroad bridge lies between the Interstate 680 Northbound (upstream) and Southbound (downstream) highway bridges (USCG 2022). The Benicia Industrial Park is served by two rail lines served by Union Pacific Railroad. They provide transcontinental "piggyback" services such as transporting loaded truck trailers on flat cars (Benicia 2022b). Trains are required to sound their warning whistle near "at-grade" vehicle crossings to warn pedestrians and motorists of the oncoming train and when entering or leaving a station. At a distance of 100 feet, a train warning whistle can generate maximum noise levels of about 100 to 105 dBA.

Fixed Noise Sources

Stationary sources of noises may occur from all types of land uses. Residential uses would generate noise from landscaping, maintenance activities, and air conditioning systems. Commercial uses would generate noise from heating, ventilation, air conditioning (HVAC) systems, loading docks and other sources. Industrial uses may generate HVAC systems, loading docks and oil refinery machinery and activity. Noise generated by residential or commercial uses are generally short and intermittent. Industrial uses may generate noise on a more continual basis due to the nature of its activities. Nightclubs, outdoor dining areas, gas stations, car washes, fire stations, drive-throughs, swimming pool pumps, school playgrounds, athletic and music events, and public parks are other common noise sources.

Outdoor Activity Areas: Common outdoor activity areas of multi-family dwellings, back yards of single-family dwellings, and designated outdoor recreation/activity areas for transient lodging, hospitals, nursing, and personal care facilities.

NOISE

Existing Vibrations

Commercial and industrial operations in the City can generate varying degrees of ground vibration, depending on the operational procedures and equipment. Such equipment-generated vibrations spread through the ground and diminish with distance from the source. The effect on buildings in the vicinity of the vibration source varies depending on soil type, ground strata, and receptor-building construction. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight structural damage at the highest levels.

4.11.2 THRESHOLDS OF SIGNIFICANCE

The proposed project would result in significant noise impacts if it would:

1. 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 in other applicable local, state, or federal standards.
2. Generation of excessive groundborne vibration or groundborne noise levels.
3. For a project located within the vicinity of a private airstrip or an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport, if the project would expose people residing or working in the project area to excessive noise levels.

Construction Noise Thresholds

The City of Benicia does not have specific limits or thresholds for construction noise but rather limits the times of construction as shown in Section 8.20.150 of the Municipal Code.

Stationary Noise Thresholds

The City's Municipal Code Section 8.20.120, Noise sensitive land uses, provides exterior and interior noise standards for new development with new stationary noise sources as shown in Table 4.11-8, *Maximum Allowable Noise for New-Sensitive uses from Transportation Noise Sources*. For the purposes of this analysis, these standards are used to determine significant stationary noise impacts.

Transportation Noise Thresholds

A project will normally have a significant effect on the environment related to noise if it will substantially increase the ambient noise levels for adjoining areas. Most people can detect changes in sound levels of approximately 3 dBA under normal, quiet conditions, and changes of 1 to 3 dBA are detectable under quiet, controlled conditions. Changes of less than 1 dBA are usually indiscernible. A change of 5 dBA is readily discernible to most people in an exterior environment. Based on this, the following thresholds of significance, similar to those recommended by the Federal Aviation Administration (FAA), are used to

assess traffic noise impacts at sensitive receptor locations. A significant impact would occur if traffic noise increase would exceed:

- 1.5 dBA in ambient noise environments of 65 dBA CNEL and higher
- 3 dBA in ambient noise environments of 60 to 64 dBA CNEL
- 5 dBA in ambient noise environments of less than 60 dBA CNEL

Vibration Thresholds

The City does not have specific limits or thresholds for construction vibration. Therefore, the recommended criteria by the Federal Transit Administration (FTA) for vibration damage shown in Table 4.11-6, *Building Architectural Damage Limits*, is used in this analysis.

Building Category	PVV (in/sec)
I. Reinforced concrete, steel, or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Nonengineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

Source: FTA 2018.

4.11.3 PROPOSED HOUSING ELEMENT POLICIES

There are no policies in the Housing Element Update applicable to Noise.

4.11.4 PROPOSED SAFETY ELEMENT POLICIES

There are no policies in the Safety Element Update applicable to Noise.

4.11.5 ENVIRONMENTAL IMPACTS

NOI-1	The project would not result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards.
-------	--

Housing Element Update

Construction

The proposed project is intended to result in the construction of future dwelling units which would generate temporary noise level increases on and adjacent to existing development in the City.

NOISE

Construction is performed in distinct steps, each of which has its own mix of equipment, and, consequently, its own noise characteristics. Table 4.11-7, *Reference Construction Equipment Noise Levels*, lists typical construction equipment noise levels recommended for noise-impact assessments based on a distance of 50 feet between the equipment and noise receptor.

TABLE 4.11-7 REFERENCE CONSTRUCTION EQUIPMENT NOISE LEVELS

Construction Equipment	Typical Max Noise Level at 50 feet	Construction Equipment	Typical Max Noise Level at 50 feet
	(dBA L _{max}) ¹		(dBA L _{max}) ¹
Air Compressor	80	Pile-Driver (Impact)	101
Backhoe	80	Pile-Driver (Sonic)	95
Ballast Equalizer	82	Pneumatic Tool	85
Ballast Tamper	83	Pump	77
Compactor	82	Rail Saw	90
Concrete Mixer	85	Rock Drill	95
Concrete Pump	82	Roller	85
Concrete Vibrator	76	Saw	76
Crane, Derrick	88	Scarifier	83
Crane, Mobile	83	Scraper	85
Dozer	85	Shovel	82
Generator	82	Spike Driver	77
Grader	85	Tie Cutter	84
Impact Wrench	85	Tie Handler	80
Jack Hammer	88	Tie Inserter	85
Loader	80	Truck	84
Paver	85		

Source: FTA 2018.

As shown, construction equipment generates high levels of noise, with maximums ranging from 76 to 101 dBA. Construction of individual developments associated with implementation of the HEU would temporarily increase the ambient noise environment and would have the potential to affect noise sensitive land uses in the vicinity of an individual project. Construction noise levels are highly variable and dependent upon the specific locations, site plans, construction details of individual projects. Significant noise impacts may occur from operation of heavy earth-moving equipment and truck haul operations that would occur during the construction phase of an individual development.

The City’s Noise Ordinance includes noise mitigation measures such as limiting hours of operation for construction and the maximum allowable noise standards for specific land uses. For example, Section 8.20.150, Construction of buildings and projects, sets hours of operations in areas of residential zones, districts within the Downtown Mixed Use Master Plan, or a radius of 500 feet from a residential or downtown mixed-use district. Construction activities will also need to comply with Section 8.20.190, Maximum allowable sound level, which sets maximum allowable noise levels in corresponding land uses unless otherwise permitted to exceed these performance standards as (shown in Table 4.11-5 in this EIR). Furthermore Section 8.20.140, Machinery, equipment, fans and air conditioning, requires stationary equipment not exceed the maximum allowable noise level (shown in Table 4.11-5 in this EIR) by more

than three decibels. The General Plan Noise Element also includes policies to help reduce or eliminate excessive noise during construction. Specifically, Policy 4.23.3 includes using available techniques such as buffer yards and operating hours to minimize noise at the source. Policy 4.23.4 also states to control development of noise-sensitive land uses in areas exposed to existing or projected noise which exceed the levels specified in Tables 4-4 (Shown as Table 4.11-4 in this EIR) unless the project includes specific and effective mitigation measures to reduce noise levels. Even with the application of noise attenuation policies from the General Plan and municipal code it is likely that construction noise will affect adjacent sensitive receptors, therefore construction noise impacts associated with implementation of the proposed project are considered potentially significant.

Operation

The proposed project would expose nearby noise sensitive receivers to noise from operations associated with increased traffic and stationary operational noise. All new residential development under the proposed project would need to comply with the policies in the City's Noise Element and Noise Ordinance which would reduce noise impacts to less than significant.

Operational Traffic

Implementation of the proposed project would facilitate new residential development and would impact offsite sensitive receptors due to project-related traffic. Vehicle trips associated with the proposed project would increase traffic volumes throughout the City along the entire existing roadway network. The total additional vehicle trips would be dispersed throughout the City associated with each proposed housing site. As such traffic from the proposed project would represent an incremental increase in traffic on individual roadways and less than significant impact on noise.

The City's Noise Element includes Policy 4.23.4 which states to control development of noise-sensitive land uses in areas exposed to existing or projected noise which exceed the levels specified in Tables 4-3 (Shown as Table 4.11-8 in this DEIR) unless the project includes specific and effective mitigation measures to reduce noise levels. Where noise-sensitive projects are proposed within areas which exceed standards in Table 4.11-8 future development will need to prepare a report that performs a project specific analysis of noise impacts and recommend mitigation measures to reduce noise levels in the site to comply with standards set in Table 4.11-8. Following the noise level standards set in the City's Noise Element for noise exposure from transportation noise sources will result in less than significant impact.

NOISE

TABLE 4.11-8 MAXIMUM ALLOWABLE NOISE EXPOSURE FOR NEW NOISE-SENSITIVE USES FROM TRANSPORTATION NOISE SOURCES

Land Use	Outdoor Activity Areas	INTERIOR SPACES	
	LDN/CNEL, DB	L _{DN} /DB	L _{EQ} , DB ²
Residential	60 ³	45	--
Transient Lodging	65 ⁴	45	
Hospitals, Nursing Homes	60 ³	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls	60 ³	--	40
Office Buildings, Commercial Uses, Industrial, Manufacturing, Utilities	--	--	45
Schools, Libraries, Museums	60 ³	--	45
Playgrounds, Neighborhood Parks	65	--	--

¹ Where the location of outdoor activity areas is unknown, or does not exist, the exterior noise level standard will be applied to the property line of the receiving land use. Refer to glossary for definition of outdoor activity area.

² As determined for a typical worst-case hour during periods of use.

³ Where it is not possible to reduce noise in outdoor activity areas to 60 dB Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table. If these noise levels cannot be complied with this will constitute a significant environmental impact.

⁴ In the case of hotel/motel facilities or other transient lodging, with no proposed outdoor activity areas such as pool areas, only the interior noise level criterion will apply.

⁵ Standards would only apply to areas requiring good speech intelligibility such as offices, conference rooms, etc.

Source: Noise Element, Benicia 1999

Operational Stationary Noise

Implementation of the proposed project would facilitate the addition of new residential units throughout the City. New residential development would result in the installation of heating, ventilation, and air conditions (HVAC) systems. Future residential units would need to comply with the City’s Municipal Code, Section 8.20.140, Machinery, equipment, fans, and air conditioning, which states that any noise produced from these devices shall not exceed the maximum allowable noise level (shown in Table 4.11-5) by more than three decibels. Following the regulations in the City’s Noise Ordinance will result in impacts related to stationary noise to be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City’s ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. the SEU would not result in specific development and any implementation actions that could facilitate new construction and operation activities would be compliant with the City’s General Plan and noise ordinance resulting in a less than significant impact.

Significance Without Mitigation: Potentially significant.

Mitigation Measure NOI-1: Project applicants shall implement the following measures for construction activities associated with the proposed project. Construction plans submitted to the City shall identify these measures on demolition, grading, and construction plans and the City's Planning and Building Safety Divisions shall verify that submitted grading, demolition, and/or construction plans include these notations prior to issuance of demolition, grading, and/or building permits:

- During the entire active construction period, equipment and trucks used for project construction shall use the best-available noise control techniques available. (e.g., mufflers, equipment re-design, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds).
- Impact tools (e.g., jack hammers and hoe rams) shall be hydraulically or electrically powered wherever possible. Where the use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used along with external noise jackets on the tools.
- Stationary equipment, such as generators and air compressors shall be located as far as possible from nearby noise-sensitive uses.
- Stockpiling shall be located as far as possible from nearby noise-sensitive receptors.
- Construction traffic shall be limited, to approved haul routes established by the City's Planning and Building Safety Divisions
- At least 10 days prior to the start of construction activities, a sign shall be posted at the entrance(s) to the job site, clearly visible to the public, that includes permitted construction days and hours, as well as the telephone numbers of the City's and contractor's authorized representatives that are assigned to respond in the event of a noise or vibration complaint. If the authorized contractor's representative receives a complaint, they shall investigate, take appropriate corrective action, and report the action to the City.
- Signs shall be posted at the job site entrance(s), within the on-site construction zones, and along queueing lanes (if any) to reinforce the prohibition of unnecessary engine idling. All other equipment shall be turned off if not in use for more than 5 minutes.
- During the entire active construction period, the use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only. The construction manager shall 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 in compliance with all safety requirements and laws.

Significance With Mitigation: Less than significant with mitigation incorporated.

NOISE

NOI-2	The project would not result in generation of excessive groundborne vibration or groundborne noise levels.
-------	--

Housing Element Update

Construction Vibration Impacts

Construction activity at projects within the plan area would generate varying degrees of ground vibration, depending on the construction procedures and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish with distance from the source. The effect on buildings in the vicinity of the construction site varies depending on soil type, ground strata, and receptor-building construction. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight structural damage at the highest levels. Vibration from construction activities rarely reaches the levels that can damage structures but can achieve the audible and perceptible ranges in buildings close to the construction site. Table 4.11-9, *Vibration Levels for Construction Equipment*, lists reference vibration levels for construction equipment.

TABLE 4.11-9 VIBRATION LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	Approximate PPV Vibration Level at 25 Feet (in/sec)
Pile Driver, Impact (Upper Range)	1.518
Pile Driver, Impact (Typical)	0.644
Pile Driver, Sonic (Upper Range)	0.734
Pile Driver, Sonic (Typical)	0.170
Vibratory Roller	0.210
Large Bulldozer	0.089
Caisson Drilling	0.089
Loaded Trucks	0.076
Jackhammer	0.035
Small Bulldozer	0.003

Source: FTA 2018.
 PPV = peak particle velocity.

As shown in Table 4.11-9, vibration generated by construction equipment has the potential to be substantial, since it can exceed the FTA criteria for architectural damage. (E.g., 0.12 inches per second [in/sec] PPV for fragile or historical resources, 0.2 in/sec PPV for nonengineered timber and masonry buildings, and 0.3 in/sec PPV for engineered concrete and masonry.) Construction details and equipment for future project-level developments under the proposed project are not known at this time but may cause vibration impacts. This potential for vibration impact is greater in the historic district where building may be more fragile than those of more recent construction. As such, this would be a potentially significant impact.

Operational Vibration Impacts

Operational vibration is typically associated with commercial and industrial uses which can generate varying levels of ground borne vibration, depending on operational procedures and equipment. Other sources of ground borne vibration include rail traffic and subways. The proposed project would allow for the future development of residential uses with conventional road traffic that is not anticipated to generate significant levels of operational vibration. Therefore, impacts would be less than significant.

Rail Vibration Impacts

Placement of new receptors near existing or future rail right-of-way could expose people to substantial vibration levels, depending on the proximity to rail alignments and depending on the type of rail and daily frequency of service. The Union Pacific Railroad travels along the Union Pacific Bridge and there are housing sites near (maximum 30 miles from the Union Pacific Bridge). Regarding rail vibration, it is extremely rare for operations to cause substantial or even minor cosmetic damage to buildings. However, due to the programmatic nature of this analysis, specific distances from transit types to future residential uses cannot be determined at this time because project-specific details are unknown. Therefore, this impact would be potentially significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. While the SEU would not result in specific development, certain implementation actions could facilitate new construction and operation activities that may expose noise-sensitive receivers to noise from construction and operations that may exceed the thresholds identified in the City's Noise Element and/or Municipal Code.

Significance Without Mitigation: Potentially significant.

Mitigation Measure NOI-2:

NOI-2a Prior to issuance of a building permit for a project requiring pile driving during construction within 135 feet of fragile structures, such as historical resources, 100 feet of non-engineered timber and masonry buildings (e.g., most residential buildings), or within 75 feet of engineered concrete and masonry (no plaster); or a vibratory roller within 25 feet of any structure, the project applicant shall prepare a noise and vibration analysis to assess and mitigate potential noise and vibration impacts related to these activities. A

NOISE

qualified and experienced acoustical consultant or engineer shall conduct this noise and vibration analysis. The vibration levels shall not exceed Federal Transit Administration (FTA) architectural damage thresholds (e.g., 0.12 inches per second [in/sec] peak particle velocity [PPV] for fragile or historical resources, 0.2 in/sec PPV for nonengineered timber and masonry buildings, and 0.3 in/sec PPV for engineered concrete and masonry). If vibration levels would exceed this threshold, alternative uses such as drilling piles as opposed to pile driving and static rollers as opposed to vibratory rollers shall be used. If necessary, construction vibration monitoring shall be conducted to ensure vibration thresholds are not exceeded.

NOI-2b New residential projects (or other noise-sensitive uses) located within 200 feet of existing railroad lines shall be required to conduct a groundborne vibration and noise evaluation consistent with Federal Transit Administration (FTA)-approved methodologies to determine the extent of potential impact. If the soil or construction techniques must be modified to result in vibration levels at or below 0.006 PPV, the report shall include the recommendation that shall be included in the construction plans. If the interior vibration level cannot be reduced to 0.006 peak particle velocity (PPV), construction of new residential buildings cannot occur.

Significance With Mitigation: Less than significant.

NOI-3	Implementation of the proposed project does not expose future residents to excessive levels of airport-related noise.
-------	---

Housing Element Update

The City of Benicia is within the Airport Influence Area (AIA) for the Travis Air Force Base Airport Land Use Compatibility Plan (ALUCP). Specifically, Compatibility Zones D and E which are outlying areas that are areas subject to frequent aircraft overflight (see Figure 4.8-1, in Chapter 4.8, *Hazards and Hazardous Materials*). However, the HEU would not introduce housing sites near noise-sensitive land uses from the Travis Air Force Base Airport Land Use as shown in Figure 2 of the Travis ALUCP (Solano DRM). Therefore, there would be no impacts.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions

aim to address and mitigate manmade and natural disasters. The SEU would not result in the development of noise-sensitive land uses, no impacts would occur.

Significance Without Mitigation: No impact.

NOISE

4.11.6 REFERENCES

Benica, City of. 1999, June 15. Benicia General Plan.

<https://www.ci.benicia.ca.us/index.asp?SEC=0371539A-30D9-4885-B61F-B5038B415DD3&DE=F40DB441-1E06-45F8-82F8-6D632AB9EC85>

_____. 2022a, September 20 (accessed). Amplified Sound and Noise.

<https://www.ci.benicia.ca.us/amplifiedsound>

_____. 2022b, September 20 (accessed). Port & Rail. <https://www.beniciabusiness.com/port-rail>

Caltrans. 2013, September. Technical Noise Supplement (“TeNS”).

_____. 2020a, April. Transportation and Construction Vibration Guidance Manual.

_____. 2020b, April. *Traffic Noise Analysis Protocol For New Highway Construction, Reconstruction, and Retrofit Barrier Projects*.

FTA (Federal Transit Administration). 2018, September. *Transit Noise and Vibration Impact Assessment Manual*. US Department of Transportation.

Solano County Department of Resource Management (Solano DRM). 2015, October 5. Travis Air Force Base Land Use Compatibility Plan.

<https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=34765>

United States Coast Guard (USCG). 2022, September 20 (accessed). Benicia Martinez Railroad Bridge.

<https://www.pacificarea.uscg.mil/Our-Organization/District-11/District-Units/Sector-San-Francisco/VTS-San-Francisco/Benicia-Martinez-Railroad-Bridge/>.

4.12 POPULATION AND HOUSING

This chapter describes the regulatory framework and existing conditions related to population and housing, and the potential impacts of the City of Benicia Housing Element and Safety Element Updates. The physical environmental effects associated with the project, many of which also pertain to issues of population growth and residential land use compatibility (e.g., noise, transportation, air quality) are evaluated in other sections of this EIR. Current and projected population trends, and demographics are provided in this section, as well as characteristics and current conditions of the area's housing stock and projected needs.

4.12.1 ENVIRONMENTAL SETTING

4.12.1.1 REGULATORY FRAMEWORK

State Regulations

California General Plan Law

California Housing Element law (Government Code Sections 65580 to 65589.11) includes provisions related to the requirements for housing elements of local government general plans. Among these requirements are an assessment of housing needs and an inventory of resources and constraints relevant to meeting these needs. Additionally, in order to assure that counties and cities recognize their responsibilities in contributing to the attainment of the State housing goals, the California Government Code calls for local jurisdictions to plan for, and facilitate the construction of, their fair share of the region's projected housing needs, known as the Regional Housing Needs Allocation (RHNA).

The Housing Crisis Act

Senate Bill 330 (SB 330), or the Housing Crisis Act of 2019, aims to address California's housing shortage by expediting the approval process for housing development of all types, particularly in regions suffering the worst housing shortages and highest rates of displacements. To address the crisis, this bill prohibits some local discretionary land use controls currently in place and generally requires cities to approve all housing developments that comply with current zoning codes and general plans. SB 330 requires that a housing development project only be subject to the ordinances, policies, and standards adopted and in effect when a preliminary application is submitted, notwithstanding the provisions of the HAA or any other law, subject to certain exceptions.

State Density Bonus Law

The State Density Bonus Law (California Government Code Sections 65915-65918) encourages the development of affordable and senior housing, including up to a 50 percent increase in project densities for most projects, depending on the amount of affordable housing provided. Cities and counties are

POPULATION & HOUSING

required to grant a density bonus and other incentives or concessions to housing projects which contain one of the following:

- At least 5 percent of the housing units are restricted to very low income residents.
- At least 10 percent of the housing units are restricted to lower income residents.
- At least 10 percent of the housing units in a for-sale common interest development are restricted to moderate income residents.
- 100 percent of the housing units (other than manager's units) are restricted to very low, lower and moderate income residents (with a maximum of 20 percent moderate).
- At least 10 percent of the housing units are for transitional foster youth, disabled veterans or homeless persons, with rents restricted at the very low income level.
- At least 20 percent of the housing units are for low income college students in housing dedicated for full-time students at accredited colleges.
- The project donates at least one acre of land to the city or county for very low income units, and the land has the appropriate general plan designation, zoning, permits and approvals, and access to public facilities needed for such housing.
- The project is a senior citizen housing development (no affordable units required).
- The project is a mobile home park age-restricted to senior citizens (no affordable units required).

The City of Benicia has adopted the State Density Bonus law by reference in Section 17.70.270, *Affordable Housing Density Bonus and Other Incentives*, in its Municipal Code.

Assembly Bill 1397

California's AB 1397 amended sections 65580, 65583, and 65583.2 of the Government Code, relating to housing by revising what could be included in a local government's inventory of land suitable for residential development. AB 1397 changed the definition of land suitable for residential development to increase the number of multifamily sites. Identified sites must be "available" and "suitable" for residential development and have a "realistic and demonstrated potential" for redevelopment during the planning period. In addition, AB 1397 requires housing element inventory sites to be 0.5 acre to 10 acres, have sufficient infrastructure, or be included in a program to provide such infrastructure, to support and be accessible for housing development. The local government must specify the realistic unit count for each site and whether it can accommodate housing at various income levels.

Senate Bill 166

SB 166 (2017) requires a local government to ensure that its housing element inventory can accommodate its share of the regional housing need throughout the planning period. It prohibits them from reducing, requiring, or permitting the reduction of the residential density to a lower residential

density than what was used by the California Department of Housing and Community Development for certification of the housing element, unless the city or county makes written findings supported by substantial evidence that the reduction is consistent with the adopted general plan, including the housing element. In such cases, any remaining sites identified in the housing element update must be adequate to accommodate the jurisdiction's share of the regional housing need. A local government may reduce the residential density for a parcel only if it identifies sufficient sites remaining within the housing element as replacement sites, so that there is no net loss of residential unit capacity.

Regional Regulations

Association of Bay Area Governments (ABAG)

The Association of Bay Area Governments (ABAG) is the comprehensive regional planning agency and council of governments for the nine-county San Francisco Bay Area Region. Its members include the counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano and Sonoma counties and 101 cities and towns of the San Francisco Bay region.

ABAG determines the distribution of affordable housing in the region through its Regional Housing Needs Allocation process. For the period from 2023 to 2031, HCD has identified a need of more than 441,000 housing units in the Bay Area, more than double the amount from the last eight-year cycle (187,000 units between 2015 and 2023). Housing needs are distributed for very low income, low income, moderate income, and above moderate households (ABAG 2021).

As discussed in Chapter 3, *Project Description*, jurisdictions in the Bay Area are currently updating their housing elements for the 6th Cycle, representing the eight year planning period from 2023 to 2031. ABAG adopted the Final Regional Housing Needs (RHNA) Plan for the region in December, 2021 (ABAG 2021). Jurisdictions in Solano County formed a subregion to complete a separate RHNA process on behalf of all jurisdictions in the county. The Solano Subregion adopted its final RHNA allocations on November 18, 2021 and Benicia's RHNA is 750 units, distributed among four income categories. The housing allocation for Benicia for Regional Housing Needs Allocation (RHNA) by income group is shown in Table 4.12-7. The City's HEU must plan for housing that meets this RHNA, plus an appropriate buffer. The City of Benicia will provide a 15 percent buffer, providing 113 additional affordable units.

Plan Bay Area 2040 and Plan Bay Area 2050

Plan Bay Area 2040 is a joint regional planning document prepared jointly by ABAG and the Metropolitan Transportation Commission (MTC) that utilizes a multipronged strategy to address housing affordability, transportation requirements, the region's widening income disparities and economic hardships faced by low- and middle-income workers, and the Bay Area's vulnerabilities to natural disasters such as earthquakes and floods. Three principal issues form the core of the Action Plan:

POPULATION & HOUSING

- *Housing*: Lower the share of income spent on housing and transportation costs, lessen displacement risk, and increase the availability of housing affordable to low- and moderate-income households.
- *Economic Development*: Improve transportation access to jobs, increase middle wage job creation, and maintain the region's infrastructure.
- *Resilience*: Enhance climate protection and adaptation efforts, strengthen open space protections, create healthy and safe communities, and protect communities against natural hazards.

As discussed previously, based on the RHNA allocations for housing units from ABAG and Solano County, each jurisdiction must update their housing element to show the proposed allocations of housing. While the RHNA focuses on the eight-year cycle, Plan Bay Area 2040 focuses also on the long-term vision for growth through 2040. In October, 2021, ABAG and MTC adopted an updated plan; Plan Bay Area 2050 (ABAG & MTC, 2021). While the plan has been adopted, it will take up to three years for the plan's growth forecast to be integrated into MTC's transportation model, after which updates to each county's transportation model will take place. For these reasons, and for purposes of this EIR, Plan Bay Area 2040 is the regional plan that forms the basis for population, housing and employment projections in this EIR.

Local Regulations

Benicia Municipal Code

Section 17.70.270 – Affordable Housing Density Bonus and Other Incentives

The City of Benicia adopts the provision of California Government Code Section 66915 through 65918 regarding affordable housing density bonuses, concessions and other incentives. The ordinance requires that all applicants for projects that receive an affordable housing density bonus, development concession and/or reduction in parking standards shall enter into an affordable housing density bonus agreement with the city of Benicia.

Section 17.70.320 – Inclusionary Housing

Adopted in 2000, the city's inclusionary housing ordinance requires that a percentage of inclusionary units shall be developed in every residential development, or land dedicated for residential development, or an in-lieu fee shall be collected, or some combination of the foregoing shall be required, to support the development of lower-income housing. Specifically, any residential development of for-sale units where there are 10 or more units shall include 10 percent of the total number of market rate dwelling units within the development as units affordable to, and occupied by, very-low- and low-income households, for a minimum of 30 years from the recordation of each resale control agreement or affordable rental restriction agreement, as the case may be, for the units.

City of Benicia General Plan

Jobs and housing in the City of Benicia is guided by the policies in the Community Development and Sustainability and Community Health and Safety Chapters of the 1999 General Plan. The labels of the policies correspond to those seen in the General Plan.

- **Policy 2.5.1:** Diversify the mix of economic development programs in the city to include new programs that address Downtown revitalization, tourism, waterfront development, and clusters of related businesses.
- **Policy 2.6.3:** Facilitate continued development of the Industrial Park. Especially encourage general industrial uses to locate in the basin northeast of Downtown (around Industrial Way between East Second and the freeway).
- **Policy 2.11.2:** Continue to allow live/work uses in the lower Arsenal where it can be demonstrated that adequate buffers exist, including noise buffers, and that the presence of residents would not significantly constrain industrial operations, including the flow of goods and materials.
- **Policy 2.12.1:** Emphasize retail sales and service businesses along First Street, preferring retail commercial on the street level and encouraging other commercial, office, and housing as important supporting uses on upper floors.
- **Policy 2.12.2:** Permit a mix of residential and commercial uses including detached single-family homes and live/work quarters in the first row of blocks east and west of First Street. Allow small retail commercial businesses on parcels closest to First Street, and small, less intense uses (such as offices, personal services, and bed-and-breakfast establishments) anywhere within the block.
- **Policy 2.13.1:** Direct new commercial ventures first, towards Downtown, and second, to other existing economic centers (instead of dispersing resources to new areas).

4.12.1.2 EXISTING CONDITIONS

Population

According to the Department of Finance's (DOF) estimates, the population in Benicia had risen steadily over the first half of the last decade, reaching a peak in 2017 at 27,507 before declining below the 2012 level at 26,656 in 2022. Table 4.12-2, *Population Trends in the City of Benicia and Solano County* shows the County growing by 7.38 percent from 2012 to 2022 while the City of Benicia decreases by -1.48 percent over the same period. There were 26,630 households in Benicia in January 2022 (DOF 2022).

POPULATION & HOUSING

TABLE 4.12-1 POPULATION TRENDS IN THE CITY OF BENICIA AND SOLANO COUNTY (2012-2022)

Year	City of Benicia		Solano County	
	Population	Percent Change	Population	Percent Change
2012	27,057	--	416,495	--
2013	27,160	0.38%	419,493	0.72%
2014	27,290	0.48%	423,383	0.93%
2015	27,422	0.48%	426,849	0.82%
2016	27,436	0.05%	430,315	0.81%
2017	27,507	0.26%	435,186	1.13%
2018	27,386	-0.44%	436,813	0.37%
2019	27,248	-0.50%	438,205	0.32%
2020	27,087	-0.59%	453,491	3.49%
2021	26,995	-0.34%	449,964	-0.78%
2022	26,656	-1.26%	447,241	-0.61%
TOTAL CHANGE¹	-401	-1.48%	30,746	7.38%

Source: DOF 2021, 2022

¹ Change between 2012 and 2022

Employment

To assess California’s economic health, the California Employment Development Department (EDD) provides labor market statistics for the state and different geographic regions of California. Table 4.12-2, *City of Benicia and County of Solano Employment Trends (2012-2022)*, illustrates employment trends from 2012 to 2022 for both the City and Solano County. Both the City of Benicia and Solano County experienced yearly increases in employment from 2012 until 2019. However, both the City and the County saw the largest yearly increase in jobs among all ten years between 2021 and 2022.

TABLE 4.12-2 CITY OF BENICIA AND SOLANO COUNTY EMPLOYMENT TRENDS (2012-2022)

Year	City of Benicia		Solano County	
	Annual Employment	Percent Change	Annual Employment	Percent Change
2012	13,300	--	180,300	--
2013	13,500	1.50%	183,800	1.94%
2014	13,700	1.48%	187,000	1.74%
2015	14,100	2.92%	192,200	2.78%
2016	14,200	0.71%	195,800	1.87%
2017	14,300	0.70%	198,000	1.12%
2018	14,400	0.70%	200,700	1.36%
2019	14,300	-0.69%	200,400	-0.15%
2020	12,900	-9.79%	181,700	-9.33%
2021	13,100	1.55%	183,400	0.94%
2022 ¹	13,600	3.82%	191,500	4.42%
TOTAL CHANGE²	300	2.26%	11,200	6.21%

Source: EDD 2022a

¹ Source EDD 2022b, employment in July 2022

² Change between 2012 and 2022

Table 4.12-3, *City of Benicia Employment by Industry (2020)*, shows the breakdown of the City’s employment by occupation and industry. According to the data, the largest industry sector in 2020 was educational services, and health care and social assistance, which accounted for approximately 17.84

POPULATION & HOUSING

percent of civilian jobs. According to the American Community Survey, the City had an employed civilian labor force (16 years and older) of 10,020 persons in 2020.

TABLE 4.12-3 CITY OF BENICIA EMPLOYMENT BY INDUSTRY (2020)

Industry	Employment in 2020	Percent of Total
Agriculture, forestry, fishing and hunting, and mining	22	0.22%
Construction	943	9.41%
Manufacturing	1,102	11.00%
Wholesale trade	369	3.68%
Retail trade	644	6.43%
Transportation and warehousing, and utilities	700	6.99%
Information	437	4.36%
Finance and insurance, and real estate and rental and leasing	1,098	10.96%
Professional, scientific, and management, and administrative and waste management services	1,305	13.02%
Educational services, and health care and social assistance	1,788	17.84%
Arts, entertainment, and recreation, and accommodation and food services	433	4.32%
Other services, except public administration	467	4.66%
Public administration	712	7.11%
TOTAL	10,020	

Source: Census 2020

Housing

Housing production in the City has increased at an average rate of 0.05 percent each year from 2012 to 2022 with an average of six units added each year. The County has added an average of 1,021 units each year, growing at an average rate of 0.65 percent yearly. As shown in Table 4.12-4, *Housing Growth Trends in the City of Benicia and Solano County*, housing in the City has increased by 0.5 percent from 2012-2022 and housing in the County has increased by 6.6 percent.

TABLE 4.12-4 HOUSING GROWTH TRENDS IN THE CITY OF BENICIA AND SOLANO COUNTY

Year	City of Benicia		Solano County	
	Housing Units	Percent Change	Housing Units	Percent Change
2012	11,327	--	153,612	--
2013	11,326	-0.01%	154,111	0.32%
2014	11,327	0.01%	154,782	0.44%
2015	11,329	0.02%	155,440	0.43%
2016	11,331	0.02%	156,375	0.60%
2017	11,332	0.01%	157,555	0.75%
2018	11,341	0.08%	158,786	0.78%
2019	11,344	0.03%	159,586	0.50%
2020	11,377	0.29%	162,237	1.66%
2021	11,381	0.04%	162,792	0.34%
2022	11,383	0.02%	163,820	0.63%
TOTAL CHANGE¹	56	0.5%	10,208	6.6%

Source: DOF 2021, 2022

¹ Change between 2012 and 2022

POPULATION & HOUSING

As shown in Table 4.12-5, *Housing Characteristics in the City of Benicia and Solano County (2022)*, the most common housing type in both the City and the County are single detached housing units. However, the City contains a greater share multiple-family housing and single-family attached housing than the County, with nearly 25 percent of the City’s housing stock composed of multiple-family homes. As noted in Table 4.12-6, the City has a lower vacancy rate than the County and both the City of Benicia and Solano County have a lower vacancy rate than the state of California, which has a vacancy rate of 6.7 percent (DOF 2022).

TABLE 4.12-5 HOUSING CHARACTERISTICS IN THE CITY OF BENICIA AND SOLANO COUNTY (2022)

Type	City of Benicia		Solano County	
	Housing Units	Percent of Total	Housing Units	Percent of Total
Single-family Detached	7,500	65.9%	117,808	71.9%
Single-family Attached	852	7.5%	6,874	4.2%
Multiple-family (Two to Four)	1,178	10.3%	11,467	7.0%
Multiple-family (Five Plus)	1,614	14.2%	22,984	14.0%
Mobile Homes	239	2.1%	4,686	2.9%
Vacancy Rate		3.7%		4.3%
Persons/Household		2.43		2.79

Source: DOF 2022

In the 2023–2031 Housing Element Cycle (6th cycle), the City’s RHNA obligation is a minimum of 750 new housing units, as shown in Table 4.12-6, *2023-2031 Regional Housing Needs Allocation*. Given that 100 percent of potential housing sites will not be developed to full potential, the City is required to provide a buffer of approximately 113 dwelling units (approximately 15 percent over and above the RHNA obligation) to provide for no net loss. Therefore, the City has identified space for over 863 new homes for the 2023–2031 RHNA cycle. A total of 2,341 units¹ will contributed to the City’s RHNA through the sites in its Housing Element Sites Inventory.

TABLE 4.12-6 2023-2031 REGIONAL HOUSING NEEDS ALLOCATION (RHNA)

Income Category	Benicia RHNA	Solano County RHNA ¹
Very-Low Income	212	2,083
Low-Income	127	1,612
Moderate-Income	123	1,832
Above-Moderate Income	288	4,745
TOTAL	750	10,992

Source: Solano County, 6th Cycle Regional Housing Needs Plan, 2021

¹ Total RHNA for all jurisdictions in Solano County

¹ This figure is the total “realistic units” and includes both Opportunity Sites and Suitably Designated/Zoned sites per Tables 3-2 and 3-3 in Chapter 3, *Project Description*.

Growth Projections

As described in section 4.12.1.1, *Regulatory Framework*, ABAG creates reports forecasting changes to the Bay Area population and economy on behalf of its RTP/SCS process. The Plan Bay Area 2040 Growth Pattern shows the RTP/SCS's projected household and job growth for the region until 2040. As seen in Table 4.12-7, *Plan Bay Area 2040 Benicia Projections*, the population in the City is expected to increase by 12.55 percent between 2020 and 2040. Housing units would increase by 7.9 percent between 2020 and 2040 and would increase jobs by 17.38 percent.

TABLE 4.12-7 PLAN BAY AREA 2040 BENICIA PROJECTIONS

	2010	2015	2020	2025	2030	2035	2040	Percent Increase ¹
Population	27,090	26,985	27,570	28,275	29,060	29,385	30,735	13.46%
Households	10,685	10,615	10,845	11,130	11,400	11,425	11,865	11.04%
Housing Units	10,515	10,515	10,515	10,630	10,725	10,845	11,345	7.89%
Jobs	12,840	13,820	14,550	15,990	16,655	17,050	17,080	33.02%

Source: ABAG & MTC 2018

¹ Percent Increase between 2010 and 2040

4.12.2 THRESHOLDS OF SIGNIFICANCE

The proposed project would result in significant population and housing impacts if it would:

1. Induce substantial unplanned population growth or growth for which inadequate planning has occurred, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).
2. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

4.12.3 PROPOSED HOUSING ELEMENT POLICIES

- **Policy 1.01:** To the extent possible and within the city's control, the city shall facilitate the production of housing that is affordable to people with a wide range of incomes.
- **Policy 1.02:** The City will expedite the review of residential development proposals that include affordable housing units
- **Policy 1.04:** The City will review and revise regulatory standards necessary to comply with state housing law.
- **Policy 1.05:** The City will continue to provide incentives for affordable housing
- **Policy 2.01:** Require affordable housing in residential development under the inclusionary housing program.

POPULATION & HOUSING

- **Policy 2.02:** Require decision makers to give equal preference to on site construction of inclusionary housing units, and all other in-lieu alternative options.
- **Policy 2.03:** Maintain an adequate supply of residential land in appropriate land use designation and zoning categories to accommodate the City's Regional Housing Needs Allocation.
- **Policy 2.04:** Disperse affordable housing throughout the city to avoid concentration in any one part of the city.
- **Policy 2.05:** Seek appropriate private, local, state, and federal funding to subsidize costs of housing for extremely low-, very low-, and moderate-income households in Benicia.
- **Policy 2.06:** Encourage the development of second and third story residential units along first street in downtown Benicia.
- **Policy 2.07:** The City of Benicia will work with the Association of Bay Area Governments (ABAG) and Solano Transportation Authority to create a regional development pattern that is compact and connected and encourages future population and housing in areas near transit. Future growth in the City of Benicia will be targeted toward Priority Development Areas, and Priority Production Areas within City limits, where a diversity of housing, jobs, and activities, and services are present to meet the daily needs of residents.
- **Policy 3.0.5:** The City shall encourage housing development that meets the special needs of persons with disabilities, including individuals that are developmentally disabled, and ensure that multiple family developments comply with the handicapped provisions of the California Building Code and Americans with Disabilities Act.
- **Policy 4.01:** Apply for private, state, and federal funding assistance to rehabilitate homes where needed.
- **Policy 4.02-** Limit the conversion of residential structures to nonresidential uses and affordable units to market rate.
- **Policy 4.03:** Encourage continued upkeep of existing economically viable mobile home parks and work with the state to ensure regulatory compliance.
- **Policy 5.03:** The City shall further conduct revitalization efforts and reduce environmental health concerns near industrial uses.

4.12.4 PROPOSED SAFETY ELEMENT POLICIES

There are no policies in the Safety Element Update applicable to Population and Housing.

4.12.5 ENVIRONMENTAL IMPACTS

POP-1	Implementation of the project would not induce substantial unplanned population growth or growth for which inadequate planning has occurred, either directly or indirectly.
-------	---

Housing Element Update

The proposed project would update the City’s Housing Element and plan for development of additional housing. As the Housing Element itself is a plan, it would not induce “unplanned growth” per this threshold.

While no development is directly proposed by the HEU, construction associated with the development of sites in the Housing Sites Inventory would require contractors and laborers as projects are developed. However, the City expects that the supply of general construction labor would be available from the local and regional labor pool. The implementation of the HEU would not result in a long-term increase in employment from short-term construction activities. As the Housing Element would primarily result in residential development as opposed to job-generating development, the impacts of employment increases in the City are not further evaluated in this analysis.

Implementation of the HEU would provide for the development of additional housing units in the City resulting in an increase in the City’s population. The sites identified to meet the City’s RHNA could be developed with up to 3,584 housing units at their maximum capacity. These sites include both the “opportunity sites” that would require a zoning change to allow for residential development or increased residential development capacity as well as the sites that are suitably zoned for residential development and would not require such changes. These sites are shown in Tables 3-3 and 3-4 in Chapter 3, *Project Description*. Using the City’s DOF average persons per household, the development of these units would contribute to an estimated population increase of 8,708² which is an approximately 33 percent increase to the City’s 2022 population. As shown in Table 4.12-8, *Maximum Unit Buildout Growth*, maximum buildout of these sites would increase the City’s total housing units to 14,981 which exceeds the growth projected for the City by ABAG for 2030 housing units by 4,242 units and the 2040 housing units by 3,622 units. This growth would also exceed the City’s population projection for 2030 by 6,304 residents and 4,629 residents in 2040. However, this scenario is highly conservative as it is unlikely that 100 percent of sites would be developed at 100 percent of their capacity.

² This figure assumes that all residents of development under the Housing Element are new residents to the City.

POPULATION & HOUSING

TABLE 4.12-8 MAXIMUM UNIT BUILDOUT GROWTH

	Housing Units	Population ¹
Maximum Unit Buildout	3,584	8,708
Maximum Unit Buildout + City Existing	14,967	35,364
Percent Increase	31.48%	32.67%
<hr/>		
Plan Bay Area 2040 Projection (2030)	10,725	29,060
Plan Bay Area 2040 Projection (2040)	11,345	30,735

Note: Population of the buildout was calculated by multiplying the maximum housing units added under the buildout (see Tables 3-3 and 3-4 in Chapter 3, *Project Description*) by the average persons/household of the City of Benicia as reported by the DOF, shown in Table 4.12-6. “Existing” refers to the 2022 population and housing unit of the City shown in Tables 4.12-1 and 4.12-5.

¹ This assumes that all residents of development under the Housing Element are new residents to the City

As discussed in Chapter 3, Sites Inventory and Analysis, of the Housing Element, a “realistic development capacity” was used to determine the most probable yield of units at sites in the inventory. The City chose an average yield of 77 percent of maximum allowed density, as based on development trends observed in the City over the last several years. As shown in Table 4.12-9, *Realistic Unit Buildout Growth*, the “realistic” buildout of the HEU is 2,277 housing units which would accommodate the City’s RHNA and its no-net-loss buffer. This buildout includes both the “opportunity sites” that would require a zoning change to allow for residential development or increased residential development capacity as well as the sites that are suitably zoned for residential development and would not require such changes. Like the maximum unit buildout, if all sites in the Housing Element inventory were to be developed, the resulting housing units would also exceed ABAG’s projection for the number of housing units in the City by 2040. Additionally, the population added under the “realistic unit” scenario would exceed ABAG’s population projection for 2030 and 2040.

TABLE 4.12-9 REALISTIC UNIT BUILDOUT GROWTH

	Housing Units	Population ¹
Realistic Unit Buildout	2,277	5533
Realistic Unit Buildout + City Existing	13,660	32,189
Percent Increase	20%	20.76%
<hr/>		
Plan Bay Area 2040 Projection (2030)	10,725	29,060
Plan Bay Area 2040 Projection (2040)	11,345	30,735

Note: Population of the buildout was calculated by multiplying the realistic housing units added under the buildout (see Tables 3-2 and 3-3 in Chapter 3, *Project Description*) by the average persons/household of the City of Benicia as reported by the DOF, shown in Table 4.12-6. “Existing” refers to the 2022 population and housing unit of the City shown in Tables 4.12-1 and 4.12-5.

¹ This assumes that all residents of development under the Housing Element are new residents to the City

While both scenarios exceed the projections made by ABAG Plan Bay Area 2040, it is important to note that the identification of housing sites in the City’s Housing Element does not mean that they will be developed at the estimated unit counts or level of affordability. Additionally, as noted, Plan Bay Area 2040’s projections were released in 2018 and Draft Plan Bay 2050 has since superseded them. The Plan Bay Area 2050 projections, when released in full, will likely reflect the region’s 2021 RHNA and result in increased housing and population projections for many jurisdictions. Furthermore, the purpose of the Housing Element is to promote increased housing growth within the City to housing meet the needs of

POPULATION & HOUSING

the region and state. Several laws passed in the last several years including the Housing Crisis Act of 2019 (Senate Bill 330), aim to address the need for more housing and expedite approvals for housing projects in order to respond the State’s housing crisis. Housing Element Policy 2.07 would also ensure that growth in the City under the Housing Element would be coordinated with the needs and goals of the region by directing the City of Benicia to work with ABAG and Solano Transportation Authority to create a regional development pattern that is compact and connected and encourages future population and housing in areas near transit. Because the Benicia HEU would be accommodating “planned” growth and would help meet the State’s housing needs, impacts would be less than significant.

Safety Element

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City’s ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document targeting the mitigation of hazards, this SEU would not induce any substantial unplanned growth. No impacts would occur.

Significance Without Mitigation: Less than significant.

POP-2	Implementation of the project would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.
-------	--

Housing Element

As described in Section 3.1.6 of the Housing Element, the sites selected for the inventory were selected based on land availability and capacity. The factors considered to choose these sites consisted of many elements including but not limited to, vacancy status, City ownership, site size, proximity to existing residential services, and amenities, few or limited physical constraints, expressed property owner interest, and community input received. Some of the sites proposed are currently vacant and others are developed with a variety of uses. The Housing Element Update would not displace people because the proposed project would create additional housing in sites that are vacant or increase housing density in residential and mixed use zones.

Several Housing Element Update policies target the prevention of displacement and the provision of affordable housing options including Policy 4.02, which states the City will limit the conversion of residential structures to non-residential uses and affordable units to market-rate. Additionally, if sites with

POPULATION & HOUSING

existing development are developed at higher residential densities, there would be no net loss in housing and no replacement housing would need to be constructed. Policy 4.03 encourages the continued upkeep of existing economically viable mobile home parks and work with the state to ensure regulatory compliance and Policy 5.03 states that the City shall further conduct revitalization efforts and reduce environmental health concerns near industrial uses. Furthermore, according to the RHNA for the 2023-2031 Housing Element Cycle, the City's share of regional housing needs is 750 new units. The proposed project would increase the number of housing units in the City by approximately 3,598 maximum allowable units or 2,288 realistic units, thereby increasing the City's housing supply. The proposed Housing Element policies and inventory sites would not displace people or housing but increase the number of housing units in the City. Impacts would be less than significant.

Safety Element

California Government Code Section 65302(g) requires all local jurisdictions to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document targeting the mitigation of hazards, this SEU would not displace significant numbers of people nor necessitate the construction of replacement housing. No impacts would occur.

Significance Without Mitigation: Less than significant.

4.12.6 REFERENCES

Association of Bay Area Governments & Metropolitan Transportation Commission (ABAG & MTC). 2021. Plan Bay Area 2050. Adopted October 21, 2021. <https://www.planbayarea.org/digital-library/plan-bay-area-2050>

_____. 2018. Plan Bay Area Projections 2040. <http://projections.planbayarea.org/#about>

Benicia, City of. 2014, November 28. City of Benicia Housing Element 2015-2023. <https://beniciacarebuild.govoffice2.com/vertical/Sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/2015-2023HousingElement.pdf?&pri=0>

_____. 1999. City of Benicia General Plan. [https://www.ci.benicia.ca.us/vertical/Sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/General_Plan_-_Reduced_-_Updated_-_Updated_2016-compressed\(1\)\(1\).pdf](https://www.ci.benicia.ca.us/vertical/Sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/General_Plan_-_Reduced_-_Updated_-_Updated_2016-compressed(1)(1).pdf)

Department of Finance. 2022. E-5 Population and Housing Estimates for Cities, Counties, and the State, January 2021-2022, with 2020 Benchmark. <https://dof.ca.gov/forecasting/demographics/estimates/e-5-population-and-housing-estimates-for-cities-counties-and-the-state-2020-2022/>

_____. 2021. E-5 Population and Housing Estimates for Cities, Counties, and the State, January 2010-2020, with 2010 Benchmark. <https://dof.ca.gov/forecasting/demographics/estimates/estimates-e5-2010-2021/>

Employment Development Department (EDD). 2022a, July 17 (Accessed). Annual Unemployment Rates (Labor Force) 2010-2022. <https://www.labormarketinfo.edd.ca.gov/cgi/dataanalysis/labForceReport.asp?menuchoice=LABFORCE>

_____. 2022b. Monthly Labor Force Data for Cities and Census Designated Places July 2022. <https://www.labormarketinfo.edd.ca.gov/data/labor-force-and-unemployment-for-cities-and-census-areas.html>

Solano County. 2021, September. 6th Cycle Regional Housing Needs Plan. <https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=35622>

US Census Bureau. 2020. 2020 American Community Survey 5-Year Estimates- Table S2404, Industry by Sex for the Full-Time, Year-Round Civilian Employed Population 16 Years or Over. <https://data.census.gov/cedsci/table?q=benicia%20city&t=Industry&g=0500000US06095>

POPULATION & HOUSING

This page intentionally left blank.

4.13 PUBLIC SERVICES

This chapter describes public services provided in the project vicinity and evaluates the potential impacts to public services that could result from the proposed project. In each section, a summary of the relevant regulatory setting and existing conditions are followed by a discussion of proposed projects.

This chapter covers the following public services:

- Fire Protection
- Police Protection
- Schools
- Libraries
- Parks and Recreation

Public and private utilities and service systems, including water, wastewater, and solid waste services and systems, are addressed in Section 4.16, *Utilities and Service Systems*.

4.13.1 FIRE PROTECTION SERVICES

4.13.1.1 ENVIRONMENTAL SETTING

This section describes the current regulations, resources, and response time for fire protection services in the City of Benicia.

Regulatory Framework

State Regulations

California Building Code

The California Building Code (CBC) which is in Part 2 of Title 24 of the California Code of Regulations, establishes the minimum State building standards. The CBC is currently updated every three years. The City of Benicia adopted the 2019 CBC and went into effect January 1, 2020. It is based on the 2018 International Building Code but has been amended to account for California conditions. The CBC is generally adopted on a jurisdiction-by-jurisdiction basis, subject to further modification based on local conditions. Commercial and residential buildings are plan-checked by City building officials for compliance with the CBC. Sections 13000 et seq. of the California Health and Safety Code include fire regulations for building standards (also in the California Building Code), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training. The newest edition of the California Building Standards Code is the 2022 edition with an effective date of January 1, 2023.

PUBLIC SERVICES

California Fire Code

The California Fire Code (CFC) incorporates, by adoption, the International Fire Code of the International Code Council, with California amendments. This is the official Fire Code for the State and all political subdivisions. It is in Part 9 of California Code of Regulations Title 24. Like the CBC, the CFC is revised and published approximately every three years by the California Building Standards Commission. The most recent update is effective January 1, 2020. The CFC contains regulations for safeguarding life and property from fire hazards, including setting certain building requirements regarding hazardous materials, storage, and occupancy.

Local Regulations

City of Benicia Municipal Code

Chapter 8.28, Fire Prevention and Life Safety Code

The California Fire Code as adopted and amended shall be enforced by the fire and life safety division in the fire department of the city of Benicia and which shall be operated under the supervision of the fire chief of the fire department.

Chapter 15.04, California Building Code

The 2019 Edition of the California Building Code as published by the International Code Council and as adopted by the California Building Standards Commission in Title 24, Part 2 of the California Code of Regulations, is adopted by reference in this chapter.

California Mutual Aid Fire Protection System

The City of Benicia is signatory to the California Mutual Aid Fire Protection System. This agreement was established to aid with major emergency incidents anywhere in the state. The city maintains mutual-aid agreements with several agencies. When major incidents occur within the City, the City of Benicia Fire Department must deploy all its resources and depend on mutual-aid agreements with neighboring jurisdictions. When major incidents occur in other jurisdictions, the City of Benicia Fire Department provides mutual aid to other areas while maintaining appropriate staffing within City limits. This includes all other fire departments in Solano County.

2021 Benicia Fire Department Vegetation Management Contract

The Benicia Fire Department administers a vegetation control program. The goal of Vegetation Management is to control plant material to prevent the spread of wildfire by changing the characteristics of the vegetation surrounding homes and other structures. The city of Benicia utilizes multiple approaches in its Vegetation Management Program, including goats, discing, and spraying.

Vegetative Fuels Management Plan (VFMP)

Vegetative Fuels Management Plan will include a site-specific approach to creating defensible space between the open space and built environment. The plan will include an evaluation of costs and benefits of vegetation management, a site-specific approach to determining wildfire risk and best management practices, and public engagement to set management goals in line with the values of Benicia residents. This plan will increase the resilience of the city to wildfires in the wildland-urban interface (BFDDPS 2022).

Existing Conditions

The City is served by the Benicia Fire Department (BFD). The BFD provides emergency response to fires, paramedic level Emergency Medical Services (EMS), vehicle accidents, technical and water rescues, hazardous materials incidents, explosions, floods, earthquakes, and non-emergency public service calls. BFD services approximately 28,114 people with a 17.7 square mile jurisdiction. The BFD two fire stations: Station 11 located at 150 Military West and Station 12 located in 601 Hastings Drive. The BFD also operated one fire museum located at 900 East 2nd Street. The BFD 2021 average response time is 4.43 minutes for all emergency calls (BFD 2021). The BFD reported 2,761 number of calls, 60% were emergency medical calls and 40% were fire and other incidents, for the year 2021 (BFD 2021). The BFD has three Type 1 Engines, one OES Engine, one aerial ladder truck, one rescue vehicle, two Type 3 brush engines, two Type 5 brush units, one water tender, and one incident support unit (BFD 2021).

4.13.1.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant impact related to fire protection if it would:

- Result in substantial adverse physical impacts associated with the provision of or need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives.

4.13.1.3 PROPOSED HOUSING ELEMENT POLICIES

There are no policies in the Housing Element Update applicable to Fire Protection Services.

4.13.1.4 PROPOSED SAFETY ELEMENT POLICIES

The Safety Element Update contains the following policies applicable to Fire Protection Services:

- **Policy 1.3:** Maintain inter-jurisdictional cooperation and coordination, including mutual-aid agreements, with fire protection agencies.
- **Policy 1.6:** Ensure that communication systems used by emergency responders and key City staff have sufficient redundancy and resiliency to meet City needs during and after a hazard event.

PUBLIC SERVICES

- **Policy 1.7:** Work with local and regional transportation agencies to help protect primary evacuation routes from being blocked or damaged by a hazard event.
- **Policy 4.15.1:** Require new developments consisting of 10 dwelling units or more in the wildland-urban interface to provide fire protection plans that include a risk analysis, evacuation plan, defensive space requirements, fire safety requirements for infrastructure, building ignition resistance, fire-protection maintenance, and assess fire response capabilities.
- **Policy 4.15.3:** Continue to conduct vegetation management and fire risk reduction in the City's open space areas of the community.
- **Policy 4.15.5:** Develop a wildland-urban interface ordinance requiring defensible space measures in the wildland-urban interface, as illustrated in Figure 13, Wildland-Urban Interface.

4.13.1.5 IMPACT DISCUSSION

PS-1	The project would not result in the need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives.
------	--

Housing Element Update

While no specific development proposals are directly associated with the Housing Element Update (HEU), future development of housing units would increase the number of residents in the City to 5,533 under realistic units build out or 8,708 under maximum units build out, either scenario would increase demand for fire protection services and thus the potential need for additional facilities.

The increase in population as a result of the HEU would be expected to generate more service calls. New fire personnel, vehicles, and equipment would be required to provide adequate response times to serve future development. Therefore, the BFD's costs to maintain equipment and facilities, and to train and equip personnel would also increase. However, the additional personnel and materials costs would likely be gradual as the increase in population, because of development under the proposed project, would occur incrementally. Additionally, the City of Benicia participates in the Mutual Aid Fire Protection System with all other fire departments in Solano County in which case future proposed sites within service boundaries can be serviced by these fire departments without additional new facilities needing to be built. However, sites proposed outside of these fire departments service boundaries would need additional fire stations to meet response time of under 6 minutes and 59 seconds.

To reduce the demand of fire protection services, future development would need to comply with the fire safety measures in the City's Municipal Code Chapter 8.28, Fire Prevention and Life Safety Code, and Chapter 15.04, California Building Code. These Codes would regulate new structures related to safety provisions, emergency planning, fire-resistant construction, fire protection systems, and appropriate

emergency access throughout a site. All construction work requiring a construction permit must be granted before any disturbance from the project therefore future housing developments would be subject to review and approval by the Benicia Fire Department. Requiring an inspection for new residential buildings will ensure adequate fire safety measures are implemented before occupancy. The City's General Plan also includes Policy 2.28.1 which requires that new development not reduce the levels of service in existing neighborhoods below City standards in regard to public services.

The need for additional or expansion of existing fire protection facilities would need to go under CEQA review. New fire protection facilities would be disclosed and mitigated, as feasible, at a project-specific level. In addition, the City of Benicia's Capital Improvement Program (CIP) would be used as a management tool to facilitate the planning and construction of specific projects such as additional fire protection facilities if needed. With the compliance of the CEQA review, Ordinance Code regulations, and CIP would mitigate the impacts related to fire protection services to less than significant. No additional mitigation measures are required beyond compliance with the Municipal Code and state regulations.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. Proposed new residential and mixed-use development would be predominantly located in more urbanized areas of the city. The SEU includes policies to reduce and mitigate potential fire hazards for future proposed sites in the wildland-urban interface such as:

- **Policy 4.15.1:** Require new developments consisting of 10 dwelling units or more in the wildland-urban interface to provide fire protection plans that include a risk analysis, evacuation plan, defensive space requirements, fire safety requirements for infrastructure, building ignition resistance, fire-protection maintenance, and assess fire response capabilities.
- **Policy 4.15.3:** Continue to conduct vegetation management and fire risk reduction in the City's open space areas of the community.
- **Policy 4.15.5:** Develop a wildland-urban interface ordinance requiring defensible space measures in the wildland-urban interface, as illustrated in Figure 13, Wildland-Urban Interface.

Compliance with the applicable policies would help alleviate impacts to fire protection services. SEU policies and implementing actions could affect the design and construction of planned developments, including e.g., addition of design elements related to emergency access and pedestrian safety. No specific infrastructure improvements or projects are identified in the Safety Element Update. Implementation of the Safety Element Update (SEU) would update current policies and potentially result in emergency access

PUBLIC SERVICES

improvements but would not increase development. Therefore, the SEU would not result in effects related to the increased demand for fire protection services.

Significance Without Mitigation: Less than significant.

4.13.2 POLICE SERVICES

This section describes regulations, resources, and response times for police law enforcement that apply to the proposed project.

Regulatory Framework

City of Benicia General Plan

The City of Benicia General Plan includes policies relevant to police services and applicable to the project.

- **Policy 2.28.1:** Require that new development not reduce the levels of service in any neighborhoods below City standards.
- **Policy 4.6.1:** Encourage building designs that help to reduce crime
- **Policy 4.6.3:** Maintain an adequate officer-to population ratio in all areas, as approved by the City Council

City of Benicia Municipal Code

Chapter 9.44 – Alarm Systems

The purpose of this chapter is to regulate response to burglar, holdup, and other alarms as well as encourage alarm users to reduce the high number of false alarms with repairing, training, and installation of their alarm systems.

Existing Conditions

The City of Benicia Police Department (BPD) provides police services to City residents. The Department operates out of a single station located at 200 East L Street. The BPD is staffed with 33 officers, 20 non-sworn employees, 2 reserve officers, and 10 volunteers. The BPD is led by the Chief of Police, and it is organized into three divisions: Operations, Investigations and Services (BPD 2022). A Lieutenant provides general management direction and control for each division. Operations Division consisting of uniformed patrol and traffic enforcement, the Services Division provides the people, equipment, and training to support programs in the department, and the Investigations Unit consists of criminal detectives, Property and Evidence, School Resource Officers, and the Family and Youth Service Bureau (Benicia 2022a, pg. 44).

4.13.2.2 STANDARD OF SIGNIFICANCE

The proposed project would result in a significant impact related to police protection if it would:

- Result in substantial adverse physical impacts associated with the provision of or need for new or physically altered police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives.

4.13.2.3 PROPOSED HOUSING ELEMENT POLICIES

There are no policies in the Housing Element Update applicable to Police Protection Services.

4.13.2.4 PROPOSED SAFETY ELEMENT POLICIES

There are no policies in the Safety Element Update applicable to Police Protection Services.

4.13.2.5 IMPACT DISCUSSION

PS-2	The project would not result in the need for new or physically altered police facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives.
------	---

Housing Element Update

Buildout of the proposed project will result in a population increase of 5,533 under the realistic units buildout or 8,708 under the maximum units buildout, either scenario would increase demand for police protection services and thus the potential need for additional police facilities. The HEU proposes housing sites within city limits which is currently developed and receiving law enforcement services from the Benicia Police Department. However, the HEU would increase the number of residents and generate expansion or additional facilities to accommodate future growth.

Implementation of the HEU would increase demand for law enforcement services over time. The BPD would evaluate its budget annually to provide adequate police to accommodate additional growth; however, the additional personnel and materials costs would likely be gradual as the increase in population would occur incrementally over time. The costs associated with hiring of additional officers would be funded through property taxes and development fees. Furthermore, the City's General Plan includes policies related to police protection services in the City of Benicia including Policy 4.6.3 which requires that the City maintain an adequate officer-to population ratio as approved by the City Council and Policy 2.28.1 which requires that new development not reduce the levels of service in existing neighborhoods below City standards.

PUBLIC SERVICES

Depending on the population growth in the area and/or staff additions, the City of Benicia may require modifications to existing facilities or the addition of new facilities. The construction new facilities or modifications to existing facilities would be subject to subsequent environmental review. Compliance with the policies in the City's General Plan as well as subsequent project-level CEQA review would reduce impacts to police services in Benicia. The potential impacts on law enforcement services generated by the proposed project will be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. Proposed new residential and mixed-use development would be predominantly located in more urbanized areas of the city. SEU policies and implementing actions could affect the design and construction of planned developments, including e.g., addition of design elements related to emergency access and pedestrian safety. No specific infrastructure improvements or projects are identified in the Safety Element Update. Implementation of the Safety Element Update (SEU) would update current policies and potentially result in emergency access improvements but would not increase development. Therefore, the SEU would not result in effects related to the increased demand for police protection services.

Significance Without Mitigation: Less than significant.

4.13.3 SCHOOLS

This section describes the existing regulations and conditions with regard to schools serving the City of Benicia, as well as the proposed project's potential impacts to schools.

4.13.3.1 ENVIRONMENTAL SETTING

Regulatory Framework

State Regulations

Senate Bill 50

Senate Bill (SB) 50 (funded by Proposition 1A, approved in 1998) limits the power of cities and counties to require mitigation of school facilities impacts as a condition of approving new development and provides instead for a standardized developer fee. SB 50 generally provides for a 50/50 State and local school facilities funding match. SB 50 also provides for three levels of statutory impact fees. The application level depends on whether State funding is available, whether the school district is eligible for State funding and whether the school district meets certain additional criteria involving bonding capacity, year-round school, and the percentage of moveable classrooms in use.

Mitigation Fee Act (California Government Code 66000-66008)

Enacted as Assembly Bill (AB) 1600, the Mitigation Fee Act requires a local agency establishing, increasing, or imposing an impact fee as a condition of development to identify the purpose of the fee and the use to which the fee is to be put. The agency must also demonstrate a reasonable relationship between the fee and the purpose for which it is charged, and between the fee and the type of development plan on which it is to be levied. The Act came into force on January 1, 1989.

Mello-Roos Community Facilities Act

The Mello-Roos Community Facilities Act, Government Code Section 53311 et seq., provides an alternative method of financing certain public capital facilities and services through special taxes. This State law empowers local agencies to establish Community Facilities Districts (CFDs) to levy special taxes for facilities such as libraries.

Local Regulations

City of Benicia General Plan

The City of Benicia General Plan includes policies to encourage school districts to maintain and enhance existing educational opportunities. The following policies are applicable to the proposed project.

PUBLIC SERVICES

- **Policy 2.34.1:** Approve new residential projects only if adequate school facilities are available or will be available when needed.

City of Benicia Municipal Code

Chapter 3.32, Interim School Facilities

The purpose of this chapter is to provide a method for financing interim school facilities necessitated by new residential developments causing conditions of overcrowding.

Existing Conditions

The city is served by the Benicia Unified School District (BUSD). As shown in Figure 4.13-1, *Schools within the City of Benicia* and Table 4.13-1, *Schools within Benicia*, the City of Benicia has four elementary schools, one middle school, one comprehensive senior high school, and one continuation high school. The student population for grades K-12 is approximately 4,900. The district employs 220 teachers and 150 classified employees (BUSD 2022). The City of Benicia also has one private elementary school, St. Dominic’s Elementary School.

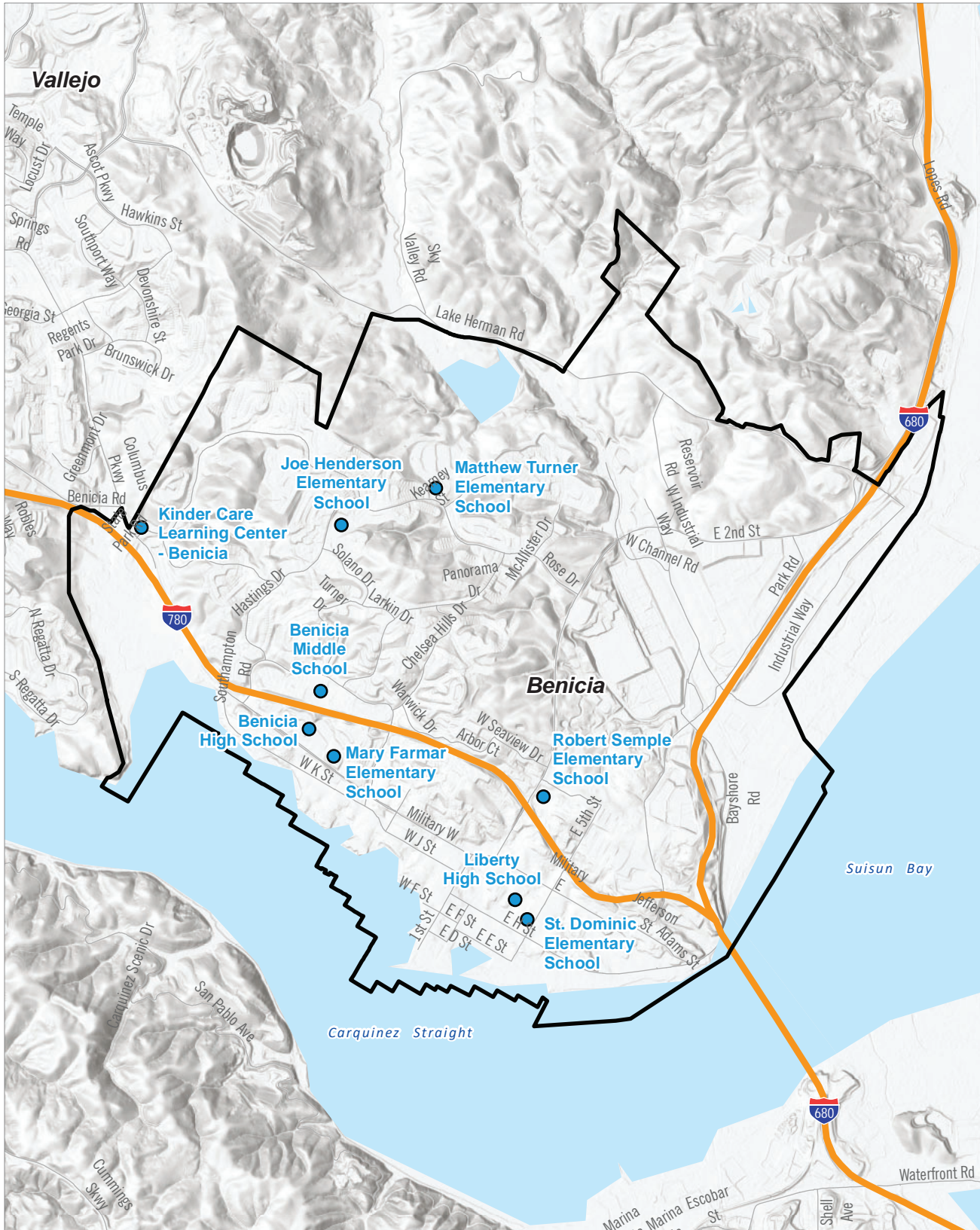
TABLE 4.13-1 SCHOOLS WITHIN BENICIA

School	Grade Level	Enrollment ¹	Average Class Size	Location
Benicia High School	9-12	1,447	28	1101 Military W, Benicia, CA 94510
Liberty High School ²	9-12	67	16	350 E J St, Benicia, CA 94510
Benicia Middle School	6-8	977	26	1100 Southampton Rd, Benicia, CA 94510
Joe Henderson Elementary	K-5	534	26	650 Hastings Dr, Benicia, CA 94510
Mary Farmar Elementary	K-5	418	26	901 Military W, Benicia, CA 94510
Matthew Turner Elementary	K-5	474	25	540 Rose Dr, Benicia, CA 94510
Robert Semple Elementary	K-5	441	26	2015 E 3rd St, Benicia, CA 94510

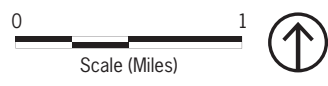
Source: Dataquest 2022

¹ Enrollment for the 2021-2022 school year

² Continuation High School



Source: City of Benicia



City Boundary Schools

Figure 4.13-1

Schools within the City of Benicia

PUBLIC SERVICES

This page intentionally left blank.

4.13.3.2 STANDARD OF SIGNIFICANCE

The proposed project would result in a significant impact related to schools if it would:

- Result in substantial adverse physical impacts associated with the provision of or need for new or physically altered school facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives

4.13.3.3 PROPOSED HOUSING ELEMENT POLICIES

There are no policies in the Housing Element Update applicable to School Services.

4.13.3.4 PROPOSED SAFETY ELEMENT POLICIES

There are no policies in the Safety Element Update applicable to School Services.

4.13.3.5 IMPACT DISCUSSION

PS-3	The project would not result in the need for new or physically altered school facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, or other performance objectives.
------	---

Housing Element Update

Implementation of the HEU would increase the number of housing units in the city by to 2,277 under realistic units build out or 3,584 under maximum units build out. If all the parcels in the Housing Element sites inventory were to be developed to their maximum allowable capacity, then the resulting dwelling units would be expected to generate 1,088 students under realistic units and 1,713 under maximum allowable units, as shown in Table 4.13-2, *Potential New Students Generated from Realistic Units* and Table 4.13-3, *Potential New Students Generated from Maximum Units*, within the district over the course of the Housing Element Update Cycle period. It should be noted that this analysis is conservative as it assumed that not only would all housing sites listed in Table 3-2, would be redesignated, but that all the housing sites in the Housing Element Sites Inventory would be developed to their maximum allowable density.

PUBLIC SERVICES

TABLE 4.13-2 POTENTIAL NEW STUDENTS GENERATED FROM REALISTIC UNITS

Grade Level	Single-Family Sgf	Multi-Family Sgf	Average Sgf	Realistic Units	New Students ¹
Elementary K-6	0.3	0.10	0.2	2,277	455
Middle School 7-8	0.14	0.045	0.063		143
High School 9-12	0.16	0.055	0.215		490
Total					1,088

Source: General Plan 1999

SGF = Student Generation Factor

¹ An average of the single-family and multi-family student generation factors are used to calculate the total

TABLE 4.13-3 POTENTIAL NEW STUDENTS GENERATED FROM MAXIMUM UNITS

Grade Level	Single-Family Sgf	Multi-Family Housing Sgf	Average Sgf ¹	Maximum Units	New Students
Elementary K-6	0.3	0.10	0.2	3,584	720
Middle School 7-8	0.14	0.045	0.063		227
High School 9-12	0.16	0.055	0.215		774
Total					1,713

Source: General Plan 1999

SGF = Student Generation Factor

¹ An average of the single-family and multi-family student generation factors are used to calculate the total

Based on the existing student generation factors, the HEU could result in an approximately additional 1,088 students or 1,713 students to be enrolled at the BUSD schools. This increase in enrollment may require the construction of additional elementary schools, a middle school, and a high school. However, the housing units associated with the HEU would be distributed across the city therefore the growth generated by the HEU would not be burden by one specific school. Instead depending on the rate of development and the location of the future housing sites, the specific need for one of each school type may not be necessary. In addition, based on conversation with Chief Business Official at Benicia Unified School District, Tim Rahill, indicated that school capacity would not be of concern as students would be distributed throughout the district. Such new students generated from the HEU approximately half of the students would be distributed through secondary schools and other half distributed amongst elementary schools.¹

Pursuant to Government Code Section 65996, school districts are allowed to collect impact fees from developers of new residential development. This legislation finds school fees imposed through the Education Code are deemed to be full mitigation for new development projects. The Benicia Unified School District school impact fees would be imposed on future development within its district's boundaries. Fees paid by the developer would be used to offset the impact of the number of new students generated by future residential development under the HEU and maintain adequate public-school facilities. Furthermore, Senate Bill 50 provides that the statutory fees found in the Government and

¹ Suzanne Thorsen, Community Development Director, 2022, September 7, email to PlaceWorks.

Education Codes are the exclusive means of considering and mitigating for school impacts. Imposition of the statutory fees constitutes full and complete mitigation (Government Code Section 65995(b)).

Future residential development must also comply with the goals and policies set forth regarding school facilities in the city's General Plan. Such as Policy 2.34.1 which states approval of new residential projects may occur only if adequate school facilities are available or will be available when needed.

Compliance with the above-mentioned state and local regulations would ensure that impacts related to schools would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's schools. No impacts would occur.

Significance Without Mitigation: Less than significant.

4.13.4 LIBRARIES

4.13.4.1 ENVIRONMENTAL SETTING

Regulatory Framework

State Regulations

Mello-Roos Community Facilities Act

The Mello-Roos Community Facilities Act, Government Code Section 53311 *et seq.*, provides an alternative method of financing certain public capital facilities and services through special taxes. This State law empowers local agencies to establish Community Facilities Districts (CFDs) to levy special taxes for facilities such as libraries.

PUBLIC SERVICES

Local Regulations

City of Benicia General Plan

The City of Benicia General Plan contains policies to encourage adequate library facilities to serve the residents of the City. Implementation of the following policy would reduce impacts related to demand for library services.

- **Policy 3.4.1:** Maintain and expand library services

City of Benicia Municipal Code

Chapter 5.37, Library Impact Fee

The city council declares the imposition of impact fees on new development that can impact Benicia's Public Library level of service. The purpose of the library fee is to fund the library facilities reasonably necessary to serve new development and ensure that new development pays for its fair share of library facilities.

Measure L

Originally passed in 1998 as Measure B, Measure L will extend the existing transactions and use tax at a rate of one-eighth of one percent to benefit the Benicia Public Library and other public libraries in Solano County. In return the money collected funds for more books, hours, and programs for youth.

Existing Conditions

The Benicia Public Library services the City of Benicia and has been opened since June 19, 1993. The Benicia Public Library is in 150 East L St and is open seven days a week. The Public Library includes an art gallery with rotating exhibits, a Literacy Program, and a Friends of the Library group as well as diverse volunteer opportunities. The Benicia Public Library provides a wide range of materials in all formats—books, movies, music, audiobooks, electronic books, and research resources. Patrons can access the Library catalog and their own account information 24 hours a day (BLD 2022).

Library funding comes primarily from four sources (BPL 2022):

- The City's General Fund is spent on books, staff, and operational expenses.
- Grants from the State of California and private organizations to provide enhanced services for special programs.
- Interlibrary loan funds support resource sharing between libraries
- Measure L monies promote additional staffing and services offered by the library.

4.13.4.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant impact related to libraries if it would:

- Result in substantial adverse physical impacts associated with the provision of or need for new or physically altered library facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives.

4.13.4.3 PROPOSED HOUSING ELEMENT POLICIES

There are no policies in the Housing Element Update applicable to Library Services.

4.13.4.1 PROPOSED SAFETY ELEMENT POLICIES

There are no policies in the Safety Element Update applicable to Library Services.

4.13.4.2 IMPACT DISCUSSION

PS-4	The project would not result in the need for new or physically altered library facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, or other performance objectives.
------	--

Housing Element Update

Future housing development would increase demand for library services over time to the extent that expansion and/or construction of new facilities could be required. Future development would generate new tax revenues and funding sources for the Benicia Public Library consist of property taxes; state assistance; and revenue from fines, fees, and other miscellaneous revenue. Additionally, development or expansion of libraries would be subject to environmental review and impact mitigation per CEQA.

The City's Municipal Code, Chapter 5.37, Library Impact Fee, establishes that a library fee will be imposed on new development for the purpose of funding library facilities reasonably necessary to serve new residential buildings. The library impact fee can help to libraries maintain an adequate level of services while also requiring new development pay for its fair share of library services. Future residential development must also comply with the goals and policies set forth library facilities in the city's General Plan. Such as Policy 3.4.1 which states to maintain and expand library services.

Compliance with the above-mentioned local regulations in the City's General Plan and Municipal Code would ensure that impacts related to schools would be less than significant.

PUBLIC SERVICES

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's library services. No impacts would occur.

Significance Without Mitigation: Less than significant.

4.13.5 PARKS AND RECREATION

4.13.5.1 ENVIRONMENTAL SETTING

Regulatory Framework

State Regulations

1975 Quimby Act (California Government Code Section 66477)

The 1975 Quimby Act (California Government Code Section 66477) authorizes cities and counties to adopt ordinances requiring that developers set aside land, donate conservation easements, or pay fees for park improvements. Revenues generated through the Quimby Act cannot be used for operation and maintenance of park facilities. A 1982 amendment (AB 1600) requires agencies to clearly show a reasonable relationship between the public need for the recreation facility or parkland and the type of development project upon which the fee is imposed. Cities with a high ratio of park space to inhabitants can set a standard of up to 5 acres per 1,000 persons for new development. Cities with a lower ratio can only require the provision of up to 3 acres of park space per 1,000 persons. The calculation of a city's park space to population ratio is based on a comparison of the population count of the last federal census to the amount of City-owned parkland.

Local Regulations

City of Benicia General Plan

The City's General Plan Community Development and Sustainability Element provides guidance for preservation of the City's open spaces, as well as identify the parks and recreation facilities available to local residents. The Element contains the following selected policies:

- **Policy 2.30.1:** Enhance existing city recreation facilities and programs
- **Policy 2.12.4:** Create a social, recreational, and economic anchor at the waterfront end of First Street by establishing a waterfront park which provides a site for community festivals, preserves open space, and allows commercial and civic uses at the Depot site.

1997 Benicia Parks, Trails, & Open Space Master Plan

This plan is the City's guiding document for parks, open space, and trails. The Master Plan will serve as a long-range planning and asset management document that provides a framework for understanding the financial investments needed to maintain and improve the parks, trails, and open space assets the City owns. The plan will provide a better understanding of the current and future maintenance needs and a capital improvement program to guide reinvestment. The City of Benicia has begun work to update the 1997 Parks, Trails, and Open Space Master Plan to guide the planning, maintenance, development, and rehabilitation of Benicia's parks, trails, and open space system.

Urban Waterfront Enhancement Master Plan

The Urban Waterfront Enhancement Master Plan (UWE Master Plan), adopted October 2014 by the Benicia City Council, includes designs for improvements to the waterfront between First Street and the Marina. The Plan is intended to improve and enhance the existing First Street Green, expand trail access, and incorporate park amenities such as observation platforms, plazas, seating areas, public art, and interpretive signage.

City of Benicia Municipal Code

Chapter 5.39, Parkland Improvement Impact Fee

The purpose of the parkland improvement impact fee is to fund the creation and improvement of park facilities, including, but not limited to, the planning, designing, developing, and improving of existing and newly acquired park facilities reasonably necessary to serve new development

Existing Conditions

The Parks and Community Services (Recreation) Department offers a variety of recreational facilities and protects natural areas for the residents of Benicia. The Parks Division of the Parks & Community Services Department manages 28 parks totaling approximately 700 acres, including a 577-acre regional park and a 50-acre community park, all of which is managed under a system Master Plan that was adopted in 1997 (Benicia 2022d). Table 4.13-4, *Benicia's Parks & Facility Amenities*, summarizes parks and recreation facilities as well as the amenities each one offers. The General Plan provides standards for regional, community, and neighborhood parks.

- Neighborhood Park: 3.5 acres per 1,000 people

PUBLIC SERVICES

- Community Park: 2.5 acres per 1,000 people
- Regional Park: 10.0 acre per 1,000 people

Neighborhood Parks

The Benicia Recreation Department designates 10 neighborhood parks which make up of approximately 21 acres of parkland. Table 4.13-4 designated the neighborhood parks and their amenities.

Community Parks

Benicia Community Park is 50-acres in size and the eastern portion includes a Skate Park (X-Park). Table 4.13-4 lists the rest of the park's amenities.

Regional Parks

Lake Herman Regional Park is a 577-acre lake and open space area located at the northernmost edge of the city. The park is designed to serve the city's entire population and the greater Benicia region. It includes a wide variety of passive recreation opportunities and amenities, including a 106-acre lake and open field that are used for many large and regional events.

State

Benicia State Recreation Area covers 469-acres and is located along the shores of the Southampton Bay at the northwestern edge of Benicia and is 1.5 miles west of the outskirts of Benicia on I-780, taking the Columbus Parkway exit. The area contains wetlands, marshes, grassy hillsides, and rocky beaches along the narrowest portion of the Carquinez Strait. The area provides 2 miles of roads for cyclists, runners, walkers, equestrians, and roller skaters as well as provides space for picnicking, bird watching, and fishing (CDPR 2022).

TABLE 4.13-4 BENICIA’S PARKS AND RECREATIONAL FACILITIES

	Facility Name	Acres	Location	Amenities												
				Picnic Area	Playground	Restroom	Turf Area	Ballfield	Basketball court	Scenic View	Fishing	Reserve Facility	Tennis Courts	BBQ	Bocce Ball	X-Park
1	Alvarez 9th Street Park/ Boat Launch	6.0	Foot of West 9th Street		x	x	x				x	x				
2	Benicia Community Center	--	370 East L Street	x		x	x		x				x			
3	Benicia Community Park (Big Slide Park)	50.0	540 Rose Drive/Dempsey Drive	x	x	x	x	x					x		x	x
4	Benicia Marina Green/Pavilion	--	Benicia Marina - north corner			x	x				x		x			
5	Benicia Point Pier	--	End of First Street			x					x	x				
6	Bridgeview Park (N)	4.5	Shirley Drive				x		x	x						
7	Channing Circle Park (N)	2.5	800 Channing Circle		x		x				x					
8	City Gym	--	180 East L Street			x			x				x			
9	City Park	4.5	First Street at Military West	x	x	x	x						x		x	
10	Civic Center Park	3.5	Across from 150 East K Street	x		x								x	x	x
11	Clock Tower	--	1189 Washington Street			x					x		x			
12	Duncan Graham Park (N)	2.0	Linda Vista at Vista Grande		x		x		x							
13	Ethelree Saraiva Park (N)	0.5	East 6th Street at East L Street	x	x		x		x							x
14	First Street Green	--	First & B Streets				x				x					
15	Fitzgerald Field	4.0	2nd Street at East H Street			x		x					x			
16	Francesca Terrace Park	5.0	Foot of Hillcrest Avenue	x	x	x	x		x							x
17	Frank Skillman Park (N)	3.0	Rose Drive at Gallagher	x	x		x		x							x
18	Gateway Park (N)	0.5	Barton Way		x		x									
19	Jack London Park	7.7	Rose Drive at Hastings	x	x	x	x	x	x				x			x
20	James Lemos Swim Center	--	181 East J Street			x	x									
21	Lake Herman Regional Park	--	7 Lake Herman Road	x		x	x				x	x				x
22	Maria & Ribeiro Baseball Fields	--	East 3rd at East H Street			x		x					x			
23	Matthew Turner Park	2.5	Foot of West 12th Street	x			x				x	x				
24	Overlook Park (N)	--	Seaview Drive	x	x		x				x					
25	Park Solano (N)	2.0	Hastings & Solano Drives	x	x		x									x

PUBLIC SERVICES

			Amenities													
Facility Name	Acres	Location	Picnic Area	Playground	Restroom	Turf Area	Ballfield	Basketball court	Scenic View	Fishing	Reserve Facility	Tennis Courts	BBQ	Bocce Ball	X-Park	
26	Phenix Dog Park	--	Northwest corner of Benicia Community Park			x	x									
27	Senior Center	--	1201 East 2nd Street			x					x					
28	Southampton Park (N)	6.0	Chelsea Hills Drive at Panorama			x	x	x					x			
29	Turnbull Park	--	Benicia Marina - southern jetty			x		x	x							
30	Waters End Park (N)	--	500 McCallister			x	x	x	x							
31	Willow Glen Park	4.5	West K Street at West 7th Street				x	x	x							

(N) Designates Neighborhood Park
 Source: Parks Department 2022

4.13.5.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant recreation impact if it would:

1. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
2. Include recreational facilities or require the construction of expansion of recreational facilities which might have an adverse physical effect on the environment.

4.13.5.3 PROPOSED HOUSING ELEMENT POLICIES

There are no policies in the Housing Element Update applicable to Parks and Recreation Services.

4.13.5.1 PROPOSED SAFETY ELEMENT POLICIES

There are no policies in the Safety Element Update applicable to Parks and Recreation Services.

4.13.5.2 IMPACT DISCUSSION

PS-5	The project would not result in the need for new or physically altered park facilities or other recreational facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, or other performance objectives.
------	--

Housing Element Update

Buildout of the proposed project will result in a population increase of 5,533 under realistic units or 8,708 under maximum units build out the City of Benicia. The City's General Plan sets level of service standards for each park type. The City's Park Department reports an approximate 700 acres of parkland (CDPR 2022). According to the Department of Finance's (DOF) estimates, the population in Benicia is currently 26,656 (DOF 2022). Based on the standards set as shown in Table 4.13-5, *The City of Benicia's Parkland Service Summary*, the existing amount of amount of parkland does not currently meet the City's parkland standards for Neighborhood nor Community but does for regional parks. As shown in Table 4.13-5, the neighborhood parks need 72.3 acres, 16.6 acres for community parks, and has a surplus of 310.4 acres for regional parks. Table 4.13-5 also shows the acres needed to meet park standards for buildout scenarios under maximum and realistic units. Under both scenarios, the addition of the proposed residents plus the project population for the city would result in a deficit amount for all park types. Thus, the HEU would result in the need for new additional park facilities.

PUBLIC SERVICES

TABLE 4.13-5 THE CITY OF BENICIA’S PARKLAND SERVICE SUMMARY

Park Type	Acres	Park Standard (Acres/1,000)	Existing Population (2022) ¹	Acres Needed To Meet Park Standard	Buildout Population Under Maximum Units ²	Acres Needed To Meet Park Standard	Buildout Population Under Realistic Units ³	Acres Needed To Meet Standard
Neighborhood	21	3.5		72.3		196.1		185.0
Community	50	2.5	26,656	16.6	35,364	105.1	32,189	97.1
Regional	577	10		-310.4		43.2		11.5

¹DOF 2022

²HEU projected population under maximum units (8,708) plus City’s project population growth in 2040 (26,656) equaling 35,364 units

³HEU projected population under realistic units (5,533) plus City’s project population growth in 2040 (26,656) equaling 32,189 units

However, this does not consider the City of Benicia's State Recreation Area which consists of 469-acres which can potentially offset the increase in demand for parkland. In addition, the City of Benicia also includes additional recreational facilities as listed in Table 4.13-4. Future development under the HEU would be required to comply with Chapter 5.39, Parkland Improvement Impact Fee, of the City of Benicia Municipal Code, which requires payment of development impact fees to fund the creation and improvement of park facilities. As well as the City's General Plan Policies such as Policy 2.30.1 which states to enhance existing city recreation facilities and programs and Policy 2.12.4 which includes the creation of a waterpark at the end of First Street.

In addition, the City is currently updating its Parks, Trails, and Open Space Master Plan which will serve as a long-range planning and asset management document which will provide a better understanding of the current and future maintenance needs and a capital improvement program to guide reinvestment (Benicia 2021). Improvements to park facilities would be completed in alignment with the Parks Trails and Open Space Master Plan. The proposed Housing Element Update would increase the number of housing units in the City; thereby increasing the number of residents. The increase in population would result in an increase demand for recreational facilities in the City. Future parkland and recreational facilities developed in the city would be subject to subsequent project-level environmental review as well as compliance with the policies in the General Plan and regulations in the Municipal Code. Therefore, the incremental demand for parks associated with the proposed project would be considered a less than significant impact.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's parks and recreation services. No impacts would occur.

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would

PUBLIC SERVICES

not have any significant physical environmental effects related to the City's parks and recreation facilities. No impacts would occur.

Significance Without Mitigation: Less than significant.

4.13.6 REFERENCES

- Association of Bay Area Governments (ABAG). 2018. Play Bay Area Projections 2040.
https://mtc.ca.gov/sites/default/files/Projections_2040-ABAG-MTC-web.pdf
- Benicia, City of. 1999a. Benicia General Plan.
- _____. 2021, April 7. Press Release – City of Benicia Parks, Trails, and Open Space Master Plan Update Begins. https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/Press_Release_-_Benicia_Parks_Trails_and_Open_Space_Update_Begins.pdf
- _____. 2022b, September 15 (accessed). 2021-2023 Biennial Budget.
<https://www.ci.benicia.ca.us/pcs>
- _____. Benicia Library Department (BLD). 2022c, July 31 (accessed). Message from the Director.
<https://www.ci.benicia.ca.us/library>
- _____. 2022d, September 15 (accessed). Parks and Community Services Department.
<https://www.lovebeniciaparks.com/about.html>
- Benicia Fire Department (BFD). 2021. Annual Report. <https://www.ci.benicia.ca.us/fireadmin>.
- Benicia Parks and Community Services Department (Parks Department) 1997. Final Benicia Parks, Trails, and Open Space Master Plan.
- _____. 2022, July 31 (accessed). Park Information and Picnic Rentals.
<https://www.ci.benicia.ca.us/parks>
- Benicia Police Department (BPD). 2022, July 31 (accessed). About Us.
<https://www.ci.benicia.ca.us/index.asp?SEC=4015C1E5-87BC-4F15-BBDB-49FDED7BC70D>
- Benicia Public Library (BPL). 2022, September 15 (accessed). Support the Library.
<https://www.benicialibrary.org/support>
- Benicia Unified School District (BUSD). 2022, July 31 (accessed). About Benicia Unified School District.
<https://beniciaunified.org/our-district/about-our-district/#:~:text=The%20district%20is%20governed%20by,K%2D12%20is%20approximately%204%2C900>
- California Department of Education (CDE). 2022a, July 31 (accessed). DataQuest.

PUBLIC SERVICES

<https://dq.cde.ca.gov/dataquest/dataquest.asp>

_____2022b, July 31 (accessed). Enrollment Data 2021-2022. <https://www.cde.ca.gov/SchoolDirectory/>

California Department of Parks and Recreation (CDPR). 2022, July 31 (accessed). Benicia State Recreation Area.

https://www.parks.ca.gov/?page_id=476

Department of Finance. 2022. E-5 Population and Housing Estimates for Cities, Counties, and the State, January 2021-2022, with 2020 Benchmark.

Suzanne Thorsen (Community Development Director). 2022, September 7. Email to Placeworks.

United States Census Bureau (U.S. Census Bureau). 2022, July 31 (accessed). QuickFacts.
<https://www.census.gov/quickfacts/fact/table/beniciacitycalifornia/HSD310220>

4.14 TRANSPORTATION

This chapter describes the regulatory framework and existing conditions on the project site related to transportation, and the potential impacts of the Housing Element Update. Transportation-sector impacts are based on trip generation and vehicle miles traveled (VMT) provided by Fehr and Peers.

The analysis in this section is based in part on the following technical reports:

- *City of Benicia Housing Element Update – VMT Analysis*, Fehr & Peers, October 10, 2022

A complete copy of the study is included in the technical appendices to this Draft EIR (Appendix 4.14-1)

4.14.1 ENVIRONMENTAL SETTING

4.14.1.1 REGULATORY FRAMEWORK

State Regulations

Senate Bill 743 (SB 743)

Passed in 2013, California Senate Bill (SB) 743 changes the focus of transportation impact analysis in CEQA from measuring impacts to drivers, to measuring the impact of driving. The change replaces Level of Service (LOS) as a performance metric with a vehicle mile traveled (VMT) metric. This shift in transportation impact focus is intended to better align transportation impact analysis and mitigation outcomes with the State's goals to reduce greenhouse gas (GHG) emissions, encourage infill development, and improve public health through development of multimodal transportation networks. LOS or other delay metrics may still be used to evaluate the impact of projects on drivers as part of land use entitlement review and impact fee programs. In December 2018, the Natural Resources Agency finalized updates to Section 15064.3 of the CEQA Guidelines, including the incorporation of SB 743 modifications. The Guidelines' changes were approved by the Office of Administrative Law and as of July 1, 2020 are now in effect statewide.

Regional Regulations

Solano Transportation Authority

Solano Transportation Authority (STA) serves as the Congestion Management Agency (CMA) for Solano County. One of the CMA's responsibilities is to analyze the impacts of local land use decisions on the regional transportation system known as Congestion Management Process (the CMP system). The major goals of the CMP are to:

- Maintain mobility on Solano County's streets and highways;
- Ensure that the Solano County transportation system operates effectively as part of the larger Bay Area and northern California transportation systems;

TRANSPORTATION

- Conform with and support implementation of MTC’s adopted Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), Plan Bay Area 2040;
- Align the CMP with the federal transportation bill, Moving Ahead for Progress in the 21st Century (MAP-21);
- Share information and organization with the Solano County Comprehensive Transportation Plan;
- Provide a basis for the STA to review and comment upon land use proposals that may impact roadways and intersections listed in the CMP

The STA will comment on any environmental impact report prepared for proposed land use development projects and will require that an analysis of CMP system facilities be performed with the STA travel demand model. If a proposed project is projected to cause a segment of the CMP system to deteriorate below the adopted LOS standard, a deficiency plan must be prepared to provide mitigation for that impact.

Solano County Active Transportation Plan 2020

Adopted in 2020, the Solano County Active Transportation Plan provides a framework to help the Solano Transportation Authority (STA) improve active transportation conditions throughout Solano County. The Plan builds upon previous active transportation planning efforts and consolidates STA’s separate Countywide Bicycle, Pedestrian, Safe Routes to School, and Safe Routes to Transit Plans into one cohesive Plan (STA 2022). The Solano County Active Transportation Plan 2020 includes local jurisdiction plans such as Benicia Active Transportation Plan.

Solano Countywide Pedestrian Transportation Plan 2012

The Solano Countywide Pedestrian Transportation Plan is the Solano Transportation Authority’s (STA) reference document for planning and supporting pedestrian system improvements and investments in seven cities including Benicia. The main purpose of the Solano Countywide Pedestrian Plan is to encourage the development of a unified regional pedestrian system throughout Solano County.

Metropolitan Transportation Commission

MTC is the agency designated with the decision-making authority for the Bay Area for regional transportation issues. MTC prepares a Regional Transportation Plan which describes transportation investments in the Bay Area for the next 20 years. These transportation investments are directed at the “Metropolitan Transportation System” (MTS) which includes the regionally significant components of the Bay Area’s transportation network. Components of the MTS located in Benicia include the freeways, East 2nd Street, Lake Herman Road, Military between I-780 and East 2nd St., the Port of Benicia, Benicia Transit Services, and the Union Pacific rail line. State and federal statutes require that MTC find a project or program consistent with the Regional Transportation Plan before allocating certain State funds and any federal funds for that project or program.

Local Regulations

City of Benicia Local Guidelines for CEQA Review

The City of Benicia's Local Guidelines for CEQA were updated on September 6, 2022, by Resolution No. 22-111. The Resolution describes a methodology for compliance with the requirements of Senate Bill 743 (SB 743) regarding analysis of vehicle miles traveled (VMT) for land use projects that are subject to the California Environmental Quality Act (CEQA). This guidance is intended to provide methodology by which Land Use Projects will be evaluated and assist the City of Benicia in its CEQA VMT analyses (Benicia 2022a).

Benicia Road Complete Streets Project

The Benicia Road Complete Streets Project is a landscape and beautification project on and around Benicia Road. The project seeks to revitalize the major thoroughfare with improved pedestrian, cyclist, and transit facilities in a multi-modal friendly environment. Details of this robust improvement project include road widening, a 2" overlay, ADA compliant pedestrian walkways, and all new roadway striping. The project site is on Benicia Road, west of Highway 80, between the City/County Limits on Beach and Lemon Streets (Solano County 2022).

Urban Waterfront Enhancement Master Plan

The Urban Waterfront Enhancement Master Plan (UWE Master Plan), adopted October 2014 by the Benicia City Council, includes designs for improvements to the waterfront between First Street and the Marina. The Plan is intended to improve and enhance the existing First Street Green, expand trail access, and incorporate park amenities such as observation platforms, plazas, seating areas, public art, and interpretive signage.

City of Benicia Municipal Code

Chapter 5.38 – Transportation Impact Mitigation Fee

The purpose of the transportation impact mitigation fee is to fund the planning, design, development, and construction of transportation facilities reasonably necessary to serve new development and ensure that new development pays for its fair share of transportation facilities.

Chapter 10.10 – Traffic, Pedestrian and Bicycle Committee and Traffic Engineer

This chapter appoints the powers and duties of the traffic engineer to place official traffic control devices or signals when improvements are required or authorized to be placed or maintained.

TRANSPORTATION

Chapter 10.16 – Stopping, Standing or Parking

This chapter sets design standards for transportation design features such as stop signs, curb markings, and parking.

Chapter 12.6 – Repair and Construction of Sidewalks and Alleys

This chapter states the council may on its own initiative, or on report or complaint of a resident of the city or of the street superintendent stating that conditions exist in any curb, sidewalk area or alley in the city which require repairs or construction, order the administrator to make a complete study of the situation and report findings to the council.

City of Benicia General Plan

The Circulation Element of the General Plan contains policies that are applicable to the traffic and circulation for the proposed project. The policies are referenced as in the Benicia General Plan 1999.

- **Policy 2.14.1:** Give priority to pedestrian safety, access and transit over automobile speed and volume.
- **Policy 2.14.2:** Discourage Street widening and the removal of on-street parking to ease traffic flow.
- **Policy 2.15.1:** Make pedestrian and bicycle circulation, and safety improvements a high priority for transportation funding, utilizing locally generated revenues and State and federal grants.
- **Policy 2.15.2:** Encourage the development of pedestrian paths in hill areas to link neighborhoods to schools, parks, employment centers and convenience commercial destinations.
- **Policy 2.16.1:** Provide for adequate public access in all forms (walks, building, transportation) in conformance with the Americans for Disability Act (ADA).
- **Policy 2.17.1:** Continue to provide transit service to all—and subsidized paratransit service to all qualified—potential users, including youth, the elderly and the disabled, modifying routes and schedules as demand changes.
- **Policy 2.20.1:** Maintain at least Level of Service D on all city roads, street segments and intersections.
- **Policy 2.20.2:** Seek alternatives to road widening.
- **Policy 2.23.1:** Provide adequate on-street and off-street parking.
- **Policy 2.23.2:** Reduce the visibility of parking lots.
- **Policy 2.24.1:** Continue to ensure public access to private roads in the industrial and Port areas.

- **Policy 2.26.2:** Encourage the preservation of I-780 as four lanes, but support spot widening at selected locations (e.g., the approach to the Benicia-Martinez Bridge o/off merge lanes) to address future capacity problems while still maintaining a four-lane mainline freeway.

4.14.1.2 EXISTING CONDITIONS

Roadway Network

Regional Access

Benicia contains freeway that serve the communities living through a regional roadway network. These networks are frequently used by the residents and the employed for intra-city travel. Transportation in Benicia accounts for 1,195 acres and 15% of total land area (Benicia 1999). The freeways in Benicia include Interstate-680 (I-680), Interstate-780 (I-780), and Interstate-80 (I-80). The I-680 is a north to south four lane freeway located on the eastern edge of Benicia, providing access to the I-80 and Sacramento to the north and Walnut Creek and San Francisco East Bay to the south. I-780 is an east to west four lane freeway that connects I-680 in Benicia to I-80 in Vallejo.

Arterials

The primary function of arterial streets is to move traffic relatively long distances and connect freeways to local-serving street networks. Arterials typically operate at relatively high speeds and can serve between 10,000 and 40,000 vehicles per day; minor arterials may carry fewer than 10,000 vehicles per day. Major arterials connect freeways to minor arterials, other major arterials, and collector streets. A minor arterial roadway connects major arterials to collector and local streets. Table 4.14-1, *Arterials within the City of Benicia*, shows the major and minor arterial roadways located in Benicia.

TABLE 4.14-1 ARTERIALS WITHIN THE CITY OF BENICIA

Major Arterial	Minor Arterial
East Second Street	Rose Drive
Industrial Way	Park Road
Lake Herman Road	Oak Street
Military East-Military West	Bayshore Road
Adams Street	Hillcrest Ave. between E.2 nd and E.5 th Streets.
Southampton Road	East Fifth Street
	New Park- East Second Connector Road
	First St. between Military and East "H" Street
	Cambridge Drive
	Panorama Drive from Southampton Road to Rose Drive
	Chelsea Hills Drive
	Hasting Drive
	West Seventh Street from West "K" Street to Military West

Source: Benicia 1999

TRANSPORTATION

Collector Streets

Collector streets are a low to moderate capacity road that moves traffic from local streets to arterial roads. Collector Streets are two lanes wide and connect local streets to minor and major arterials. Collector streets serve the marina, and the various residential and industrial area within the city of Benicia. Table 4.14-2, *List of Collector Streets within the City of Benicia*, lists the collector streets within the city.

TABLE 4.14-2 LIST OF COLLECTOR STREETS WITHIN THE CITY OF BENICIA

Street	Address
Channel Road	Larkin Drive between Turner and Panorama
Kearny Street	West "K" / West J Street
McAllister Street	West 5 th St/ Sherman Dr. (north of Military)
Arguello Street	First Street South of East "H" Street
Solano Drive (Hasting to Larkin)	East "H" Street
Turner Drive	East "D" Street between First Street and East Second
Warwick Drive	East "E" Street between East 2 nd and East 5 th Streets
Seaview Drive	E. Second Street between East "H" and East "D" Streets

Source: Benicia 1999

Pedestrian Facilities

The pedestrian network within Benicia consists largely of sidewalk infrastructure supported by crossing treatments, multi-use paved trails, and unpaved recreational trails. Benicia currently has an overall Walk Score of 33 out of 100, indicating that most trips require a car. The city currently has a total of 142 miles of sidewalks. There are approximately 250 miles of maximum potential sidewalk coverage (Solano ATP 2020, pg. 4).

Bicycle Facilities

The city of Benicia classifies bicycle facilities based on the Caltrans classification system for off road (Class I) and on road (Class II and Class III) facilities. The city of Benicia has bicycle facilities that serve the waterfront, Western Downtown, and northern residential areas (Benicia 1999). Benicia has a 125-mile roadway network, 20 lane miles of which currently have designated bicycle facilities. This includes eight miles of shared-use paths, six miles of bike lanes, and six miles of bike routes (Solano ATP 2020, pg.4)

TABLE 4.14-3 CLASSIFICATION OF BICYCLE FACILITIES

Classification	Type	Description
Class I	Bicycle Path	Paved path separated from automobile traffic by a curb and landscaped strip or routed through an open space area. Motorized vehicles are prohibited, may be combined with a pedestrian trail.
Class II	Bicycle Lane	Paved extension of roadway designated exclusively for bicyclists.
Class III	Bicycle Route	Signed routes where bicycles share roadways with vehicular traffic, no separate right-of-way is provided for bicyclists.

Source: City of Benicia, 1999

Public Transit

The only form of transit that directly serves Benicia is bus transit. However, the SolTrans bus system does connect residents to passenger rail (BART) and ferry service, in east bay and Vallejo respectively. SolTrans provides an intercity fixed-route service through Benicia, which provides service to the ferry terminal, the Lemon/Curtola Park and Ride stop in Vallejo, the Sun Valley Mall, and the Walnut Creek BART station in Contra Costa County. In addition to its fixed-route transit services, Benicia funds a local Dial-a-Ride program open to the public and has seasonal buses to serve the school system. Connection to the ferry and BART system provides access to Alameda, Contra Costa, Marin, San Francisco, San Mateo, and Santa Clara Counties. The service is provided under contract with a transportation services company. By car, Benicia residents may also connect to Amtrak services in Martinez, a national rail transit service.

4.14.2 THRESHOLDS OF SIGNIFICANCE

The proposed project would result in significant transportation impacts if it would:

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

4.14.3 PROPOSED HOUSING ELEMENT POLICIES

The Housing Element Update contains following policy applicable to Transportation:

- **Policy 2.07:** The City of Benicia will work with the Association of Bay Governments (ABAG) and Solano Transportation Authority to create a regional development pattern that is compact and connected and encourages future growth in the City of Benicia will be targeted towards Priority development areas (PDAS) and priority production areas (PPAS) within City limits, where a diversity of housing, jobs, activities, and services are present to meet the daily needs of residents. The map of the PDAS can be found in Appendix D.

4.14.4 PROPOSED SAFETY ELEMENT POLICIES

The Safety Element Update contains following policy applicable to Transportation:

- **Policy 1.7:** Work with local and regional transportation agencies to help protect primary evacuation routes from being blocked or damaged by a hazard event.

TRANSPORTATION

- **Policy 4.2:** Coordinate with the Solano Transportation Authority to increase shading and heat-mitigating materials on pedestrian walkways and at transit stops.
- **Policy 4.15.1:** Require new developments consisting of 10 dwelling units or more in the wildland-urban interface to provide fire protection plans that include a risk analysis, evacuation plan, defensive space requirements, fire safety requirements for infrastructure, building ignition resistance, fire-protection maintenance, and assess fire response capabilities.

4.14.5 ENVIRONMENTAL IMPACTS

4.14.5.1 METHODOLOGY

Conclusions made under impact discussion TRANS-2 is based on VMT analysis provided by Fehr and Peers. VMT analysis from Fehr & Peers make calculations based on 2,368 multifamily housing units which at the time provided accurate number of the dwelling units. However, as described in Chapter 3, Project Description, the Housing Element Update (HEU) proposed 3,598 total maximum units and 2,288 total realistic units. Though numbers do not reflect the HEU dwelling units, this analysis is used only to observe the possible changes to VMT based on increasing residential units within a City and County over a span of approximately 20 years.

Travel Demand Model and VMT Metrics

A full set of the Solano-Napa Activity Base Model (SNABM) inputs and outputs were provided to Fehr & Peers by the Solano Transportation Authority (STA) in May 2021; this data reflects the latest model updates (prepared in August 2020) to incorporate land use and transportation network assumptions consistent with MTC's Plan Bay Area 2040, the regional transportation plan (2017 RTP) at the time of model development.

The model has a Base Year of 2015 and Horizon Year of 2040. VMT was calculated SNABM output for Base Year (2015), Base Year With Project, Cumulative (2040) No Project, and Cumulative (2040) With Project conditions. The Base Year (2015) model was used to assess CEQA baseline conditions due to the effects the COVID-19 pandemic. The Cumulative Year (2040) model was used for the Cumulative No Project scenario. Note that the Year 2040 model contains residential and non-residential growth throughout the city.

The following metrics were developed using CEQA Transportation Impact Analysis:

- **Residential VMT per Resident:** Total VMT associated with residential units divided by the number of residents, evaluated for the No Project and With Project conditions.
- **Project's Effect on Total Countywide VMT (Boundary VMT) per Service Population:** An evaluation of the change in total vehicle travel within Solano County divided by the service population (all residents and employees), compared between the No Project and With Project conditions.

Project-generated VMT is the metric used to evaluate how the project VMT changes (increases or decreases) between the No Project and With Project scenarios, which captures both VMT increases due to the project land use growth and other VMT changes resulting from changes in travel behavior due to the land use change; however, it does not evaluate a project’s effect on VMT across an entire roadway system. The Project’s effect on VMT (boundary VMT) compares the total VMT on all roadways within a boundary (i.e., the City of Benicia or Solano County) for the No Project and With Project scenarios.

Residential VMT per resident was estimated based on the locations of the Housing Element units in the city as represented in SNABM. Specifically, for each traffic analysis zone (TAZ) in the model that contains Housing Element sites, its value for residential VMT per resident was used to represent the VMT rate of the new housing developments at these sites, as it is expected that the VMT characteristics of new residents at the development sites will be similar to those of the existing residents near the sites. The aggregate effect of adding the Housing Element units to these TAZs is then summed to produce residential VMT per resident for the city as a whole, and for the subset of TAZs within the city that contain Housing Element sites.

Significance Thresholds for Transportation Impact Evaluation

According to the *City of Benicia Local Guidelines for CEQA Review*, for residential projects, the project generated residential VMT per resident constitutes a significant impact if it is higher than the baseline citywide average residential VMT per resident. For the cumulative year, the project’s performance under future cumulative conditions is compared to the baseline year citywide average residential VMT per resident; this captures whether future project performance may improve over baseline performance, due to changes in the land use and transportation context which would in turn affect project trip characteristics. As shown in Table 4.14-4, *Residential VMT per Resident for the City of Benicia*, sets a threshold of the baseline city wide average residential VMT per resident. The second metric for cumulative impact analysis is whether the total countywide VMT per service population increases due to the project. Table 4.14-6, *Cumulative Year (2040) Solano Countywide Boundary VMT per Service Population*, shows the project’s effect on regional VMT. If the project does not increase countywide VMT per service population, the impact would be less than significant.

TABLE 4.14-4 RESIDENTIAL VMT PER RESIDENT FOR THE CITY OF BENICIA

Variable	Amount
Benicia Base Year Residential Vehicle Miles Traveled (A)*	830,275
Benicia Base Year Total Number of Residents (B)	26,405
Benicia Base Year Citywide Residential VMT per Resident (Threshold) (A/B = C)	31.4

Notes: *Total VMT generated by the residents in the City of Benicia. Commercial trips are not included
Source: SNABM; Fehr & Peers, September 2022.

TRANSPORTATION

TRANS-1	The project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.
---------	--

Housing Element Update

The proposed Housing Element Update (HEU) does not include site specific designs showing driveway locations and therefore there are no specific details to review and assess impacts on pedestrian, bicycle, and transit facilities. As part of the standard development review process, the city would require all future development of identified HEU inventory sites to go through a review of pedestrian, bicycle, and transit facilities in the area surrounding the individual development project to ensure that future developments do not conflict with existing or planned facilities supporting those travel modes.

All pedestrian, bicycle, and transit facilities proposed would be designed using the appropriate City design standards. Any request to modify or develop new transit, bicycle, and pedestrian facilities would be subject to and designed in accordance with all applicable General Plan policies. Such as Policy 2.17.1 which requires to make pedestrian and bicycle circulation and safety improvements a high priority for transportation funding, Policy 2.20.1 states to continue to provide transit service to all potential users and modify routes and schedules as demand changes, and Policy 2.20.1 which requires all city roads, street segments, and intersection maintain at least a Level of Service D. Furthermore, new development under the HEU would need to comply with Transportation Impact Fees which fund the planning, design, development, and construction of transportation facilities reasonably necessary to serve new development. This fee is collected at the time of building permit.

As individual development proposals under the Housing Element would be evaluated for consistency with the Solano County and City of Benicia plans including the Congestion Management Program, the Solano Countywide Pedestrian Transportation Plan, Benicia Active Transportation Plan, and the Downtown Mixed-Use and Urban Waterfront Enhancement Master Plans, the impact of implementing the HEU would be less than significant.

Safety Element Update

The Safety Element Update (SEU) aims to reduce the potential impacts resulting from fires, floods, droughts, earthquakes, landslides, climate change, and other hazards. Other locally relevant safety issues—such as emergency response, hazardous materials spills, wildfires, and seismic activity. The SEU would not result in conflicts with other land use plans, policies, and regulations (e.g., the SCAG RTP/SCS, the Zoning Code, Specific Plans). Impacts would be less than significant.

Significance Without Mitigation: Less than significant.

TRANS-2	The project would conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).
---------	--

Housing Element Update

The sites selected by the City as potential sites to meet its RHNA are primarily in infill locations within existing residential communities. According to the Office of Planning and Research (OPR) Guidelines on Evaluating Transportation Impacts in CEQA, residential projects that are in areas with low VMT, and that incorporate features such as density, mix of uses, transit accessibility, will tend to exhibit lower VMT (OPR 2018). Moreover, as mentioned in the *City of Benicia Local Guidelines for CEQA*, for residential projects, the project generated residential VMT per resident constitutes a significant impact if it is higher than the baseline citywide average residential VMT per resident. As shown in Table 4.14-5, *Housing Element Unit Residential VMT per Resident*, under both the Base Year and Cumulative with HEU conditions, the residential VMT per resident falls below the citywide average. Based on the significant threshold established in Table 4.14-4, under both the Base Year and the Cumulative Year related to residential VMT per resident may be considered less than significant for the HEU.

TABLE 4.14-5 HOUSING ELEMENT UNIT RESIDENTIAL VMT PER RESIDENT

Variable	Base Year	Cumulative Year
Housing Element Planning Area		
Residential Vehicle Miles Traveled (A)	645,850	718,614
Total Number of Residents (B)	22,361	24,026
Residential VMT per Resident (A/B=C)	28.9	29.9
Initial Impact Assessment		
Residential VMT per Resident Threshold	31.4	31.4
Impact Conclusion	Potentially Less than Significant	Potentially Less than Significant

Note: Total VMT generated by the residents in the Housing Element Planning Area. Commercial trips are not included.
Source: SNABM; Fehr & Peers, September 2022.

The second metric for cumulative impact analysis is whether the total countywide VMT per service population increases due to the project. As shown in Table 4.14-6, the implementation of the HEU does not increase the countywide VMT per service population; therefore, this impact may be considered less than significant for the HEU.

TABLE 4.14-6 CUMULATIVE YEAR (2040) SOLANO COUNTYWIDE BOUNDARY VMT PER SERVICE POPULATION

Metric	No Project	With Project
Service Population	649,825	654,696
Total Countywide VMT	17,370,232	17,498,312
Countywide VMT per Service Population	26.7	26.7
Does VMT/Service Population Increase with Project?	---	No

Source: SNABM; Fehr & Peers, September 2022.

TRANSPORTATION

As shown in Table 4.14-5 and Table 4.14-6, VMT impacts of the Project (Housing Element Update) could be considered less than significant. However, because this is a program-level analysis, the impacts of individual projects developed under the Housing Element cannot be evaluated. While many of the potential development sites are in low-VMT areas as defined in the City of Benicia Local Guidelines for CEQA Review and may therefore be eligible for screening from a VMT impact analysis (i.e., be presumed to have a less than significant impact with respect to VMT), not all development sites are in such areas nor are all housing units taken into in the analysis. In addition, individual project characteristics at any development site may warrant a VMT impact assessment which may indicate a significant impact.

The California Air Pollution Control Officers Association (CAPCOA) Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity (December 2021). The CAPCOA Handbook provides detailed requirements, calculation steps, and limitations for assessing the VMT reduction effectiveness of each measure, including reductions from combinations of measures. Trip reduction strategies included in the may include, but are not limited to, the following:

1. Provision of bus stop improvements or on-site mobility hubs
2. Pedestrian improvements, on site or off-site, to connect to nearby transit stops, services, schools, shops, etc.
3. Bicycle programs including bike purchase incentives, storage, maintenance programs, and on-site education program
4. Enhancements to the citywide bicycle network
5. Parking reductions and/or fees set at levels sufficient to incentivize transit, active transportation, or shared modes
6. Cash allowances, passes, or other public transit subsidies and purchase incentives
7. Providing enhanced, frequent bus service
8. Implementation of shuttle service
9. Compliance with a future City or County VMT/TDM ordinance
10. Participation in a future City or County VMT fee program
11. Participate in a future City or County VMT exchange or mitigation bank programs

Because the effectiveness of the above measures in reducing an individual project's VMT impact to a less than significant level cannot be determined in this analysis, the impact for projects which do not screen out from VMT impact analysis would conservatively remain significant and unavoidable with mitigation.

Safety Element Update

Implementation Safety Element Update (SEU) is policy-based and does not identify any changes to the transportation network in the City. The SEU would not result in any changes to daily VMT because proposed policy changes would improve the risk of death, injuries, property damage, and economic and social disruption resulting from fires, floods, droughts, earthquakes, landslides, climate change, and other hazards, and would not affect daily travel patterns. The SEU policies and implementing actions would encourage the design and construction of planned developments, such as addition of design elements related to emergency access and pedestrian safety. Therefore, the SEU would result in a less-than-significant impacts.

Significance Without Mitigation: Potentially significant.

Mitigation Measure:

TRANS-1: Individual projects that do not screen out from VMT analysis shall provide a quantitative VMT analysis consistent with the methodology in the *City of Benicia Local Guidelines for CEQA Review (Guidelines)*. Projects which result in a significant impact shall provide VMT mitigation as described in the *Guidelines*, consisting of the following options:

- Modify the project's characteristics to reduce VMT generated by the project. This might involve changing the density or mixture of land uses on the project site or changing the project's location to one that is more accessible by transit or other travel modes.
- Implement transportation demand management (TDM) or physical design measures to reduce VMT generated by the project. The full range of travel demand management measures are listed in the Guidelines.
- Participate in a VMT impact fee program and/or VMT mitigation exchange or banking program. Currently there are no fee programs, banks, or exchanges that Benicia development could participate in, but if future programs are developed this would be an option.

Significance With Mitigation: Significant and unavoidable.

TRANSPORTATION

TRANS-3	The project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
---------	---

Housing Element Update

Future development projects under the HEU, including new roadway, bicycle, pedestrian, and transit infrastructure improvements, would be subject to, and designed in accordance with City standards and specifications which address potential design hazards including sight distance, driveway placement, and signage and striping. Additionally, any new transportation facilities, or improvements to such facilities associated with subsequent projects would be constructed based on industry design standards and best practices consistent with the City's ordinance code, building design and inspection requirements, in addition to any applicable community-based transportation plans. The City's evaluation of projects' access and circulation will incorporate analysis with respect to City standards for vehicular level of service and queueing, as well as for service to pedestrians, bicyclists, and transit users. In addition, subsequent projects under the HEU would need to comply with the policies in the General Plan's circulation which promotes safe design features. Such as Policy 2.15.1 which states making pedestrian and bicycle circulation and safety improvements as a high priority for transportation funding. Therefore, the HEU would result in a less-than-significant impact to transportation hazards. New developments under the HEU would also need to adhere to the Transportation Impact Mitigation Fee ordinance which requires new development pay for its fair share of transportation facilities and avoid placing a strain on existing facilities which could become a hazardous. Therefore, the HEU would result in a less-than-significant impact to transportation hazards.

Safety Element Update

The SEU policies and implementing actions could affect the design and construction of planned developments however it would not substantially increase hazards due to a geometric design feature or incompatible rather reduce those impacts. Such as Policy 1.7 which establishes working with local and regional transportation agencies to help protect primary evacuation routes from being blocked or damaged by a hazard event. As well as Policy 4.2 which states to coordinate with the Solano Transportation Authority to increase shading and heat mitigating materials on pedestrian walkways and at transit stop. However, no specific infrastructure improvements or projects are identified in the SEU. The SEU would not have any significant indirect or direct environmental effects related to increasing hazards from geometric design features or incompatible uses. Impacts would be less than significant.

Significance Without Mitigation: Less than significant.

TRANS-4 The project would not result in inadequate emergency access.

Housing Element Update

Applicable development under the HEU would be subject to the provisions of the 2019 California Fire Code and the 2019 California Building Code which would ensure fire and emergency access through all phases of construction and operation as mentioned in the City's Municipal Code, Chapter 8.28.010, Fire Prevention and Life Safety Code. Future projects would be required to comply with all applicable provisions of the CFC to ensure fire safety during the construction phase. The City's General Plan also includes Policy 4.22.2 which requires at least two exit routes for developments and Policy 4.22.3 states providing the public with information on specified emergency evacuation routes. Both these policies provide proper safety measures and routes in the event of an emergency.

Emergency access to new development sites proposed under the HEU would be subject to review by the City and responsible emergency service agencies, thus ensuring the projects would be designed to meet all emergency access and design standards. Therefore, impacts would be less than significant.

Safety Element Update

The SEU policies and implementing actions could affect the design and construction of planned developments such as adding features associated with emergency access and pedestrian safety. Such as Policy 1.7 which establishes working with local and regional transportation agencies to help protect primary evacuation routes from being blocked or damaged by a hazard event. As well as Policy 4.2 which states to coordinate with the Solano Transportation Authority to increase shading and heat mitigating materials on pedestrian walkways and at transit stop. However, no specific infrastructure improvements or projects are identified in the SEU. The SEU would not have any significant indirect or direct environmental effects related to inadequate emergency access. Impacts would be less than significant.

Significance Without Mitigation: Less than significant.

TRANSPORTATION

4.14.6 REFERENCES

Benicia, City of. 1999, June 15. Benicia General Plan.

<https://www.ci.benicia.ca.us/index.asp?SEC=0371539A-30D9-4885-B61F-B5038B415DD3&DE=F40DB441-1E06-45F8-82F8-6D632AB9EC85>.

_____. 2022a, September 06. Local Guidelines for CEQA Review.

_____. 2022b, September 16. Bus/ Transit Services.

<https://www.ci.benicia.ca.us/index.asp?SEC=A379C68E-E910-4FDC-8197-F3A4B1F7FFA1>

Office of Planning and Research (OPR). 2018, December. Technical Advisory on Evaluating Transportation Impacts in CEQA. https://opr.ca.gov/ceqa/docs/20190122-743_Technical_Advisory.pdf

Solano, County of. 2022, September 19 (accessed). Benicia Road Complete Streets Project – Coming Soon.

https://www.solanocounty.com/depts/rm/public_works/engineering_surveying_division/projects/benicia_road_complete_streets_project/default.asp

Solano Transportation Authority (STA). 2022, September 19 (accessed). Solano Countywide Active Transportation Plan 2020.

https://sta.ca.gov/documents_and_report/solano-countywide-active-transportation-plan/#:~:text=Adopted%20in%202020%2C%20the%20Solano,transportation%20conditions%20throughout%20Solano%20County.

Solano County Active Transportation Plan. 2020. Local Jurisdiction Plan: Benicia Active Transportation Plan (ATP). <https://sta.ca.gov/wp-content/uploads/2020/06/Benicia.pdf>

4.15 TRIBAL CULTURAL RESOURCES

Tribal cultural resources include landscapes, sacred places, or objects with a cultural value to a California Native American tribe. This section of the Draft Environmental Impact Report (DEIR) evaluates the potential for the proposed project to impact tribal cultural resources in the City of Benicia.

4.15.1 ENVIRONMENTAL SETTING

4.15.1.1 REGULATORY FRAMEWORK

Federal Regulations

Archaeological Resources Protection Act

The Archaeological Resources Protection Act (United States Code, Title 16, Sections 470aa-mm) became law on October 31, 1979, and has been amended four times. It regulates the protection of archaeological resources and sites that are on federal and Indian lands.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (United States Code, Title 25, Sections 3001 et seq.) is a federal law passed in 1990 that provides a process for museums and federal agencies to return certain Native American cultural items—such as human remains, funerary objects, sacred objects, or objects of cultural patrimony—to lineal descendants and culturally affiliated Indian tribes.

State Regulations

California Public Resources Code

Archaeological resources are protected pursuant to a wide variety of state policies and regulations enumerated under the California Public Resources Code (PRC). In addition, cultural resources are recognized as a nonrenewable resource and therefore, receive protection under the California PRC and CEQA.

California Public Resources Code 5097.9-5097.991 provides protection to Native American historical and cultural resources, and sacred sites and identifies the powers and duties of the NAHC. It also requires notification to descendants of discoveries of Native American human remains and provides for treatment and disposition of human remains and associated grave goods.

TRIBAL CULTURAL RESOURCES

California Health and Safety Code

California Health and Safety Code Section 7050.5 requires that if human remains are discovered on a project area, disturbance of the site shall halt and remain halted until the coroner has conducted an investigation into the circumstances, manner, and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation or to his or her authorized representative. If the coroner determines that the remains are not subject to his or her authority and recognizes or has reason to believe the human remains are those of Native American, he or she shall contact, by telephone within 24 hours, the NAHC.

California Register of Historical Resources

The California Register of Historic Resources is the state version of the National Register of Historic Resources program. It was enacted in 1992 and became official January 1, 1993. The California Register was established to serve as an authoritative guide to the state's significant historical and archaeological resources. Resources that may be eligible for listing include buildings, sites, structures, objects, and historic districts. According to subsection (c) of the PRC Section 5024.1, a resource may be listed as a historical resource in the California Register if it meets any of the four National Register criteria.

California Senate Bill 18

Existing law provides limited protection for Native American prehistoric, archaeological, cultural, spiritual, and ceremonial places. These places may include sanctified cemeteries, religious sites, ceremonial sites, shrines, burial grounds, prehistoric ruins, archaeological or historical sites, Native American rock art inscriptions, or features of Native American historic, cultural, and sacred sites.

Senate Bill 18 (SB 18) was signed into law in September 2004 and went into effect on March 1, 2005. It places new requirements upon local governments for developments within or near "traditional tribal cultural places" (TTCP). Per SB 18, the law requires local jurisdictions to provide opportunities for involvement of California Native American tribes in the land planning process for the purpose of preserving traditional tribal cultural places. The Final Tribal Guidelines recommend that the NAHC provide written information as soon as possible but no later than 30 days after receiving a request to inform the lead agency if the proposed project is determined to be in proximity to a TTCP and another 90 days for tribes to respond to a local government if they want to consult to determine whether the project would have an adverse impact on the TTCP. There is no statutory limit on the consultation duration. Forty-five days before the action is publicly considered by the local government council, the local government refers action to agencies, following the CEQA public review time frame. The CEQA public distribution list may include tribes listed by the NACH who have requested consultation or it may not. If the NAHC, the tribe, and interested parties agree upon the mitigation measures necessary for the proposed project, they would be included in the project's EIR. If both the City of Benicia and the tribe agree the adequate mitigation or preservation cannot be taken, neither party is obligated to take action.

TRIBAL CULTURAL RESOURCES

SB 18 is triggered before the adoption, revision, amendment, or update of a city's or county's general plan. Although SB 18 does not specifically mention consultation or noise requirements for adoption of amendment of specific plans, the Final Guidelines advises that SB 18 requirements extend to specific plans as well, because state planning law requires local governments to use the same process for amendment or adoption of specific plans as general plans (defined in Government Code § 65453). In addition, SB 18 provides a new definition of TTCP requiring a traditional association of the site with Native American traditional beliefs, cultural practices, or ceremonies, or the site must be shown to actually have been used for activities related to traditional beliefs, cultural practices, or ceremonies (previously, the site was defined to required only an association with traditional beliefs, practices, lifeways, and ceremonial activities). SB 18 also amended Civil Code Section 815.3 and added California Native American tribes to the list of entities that can acquire and hold conservation easements for the purpose of protecting their cultural places.

Assembly Bill 52

AB 52 took effect July 15, 2015, and requires inclusion of a new section in CEQA documents titled Tribal Cultural Resources, which includes heritage sites. Under AB 52, a tribal cultural resource is defined similarly to tribal cultural places under SB 18—sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either included or eligible for inclusion in the California Register of Historic Resources or included in a local register of historical resources. The lead agency, supported by substantial evidence, chooses at its discretion to treat the resources as a tribal cultural resource.

Similar to SB 18, AB 52 requires consultation with tribes at an early stage to determine whether the project would have an adverse impact on the TCR and define mitigation to protect them. Per AB 52, within 14 days of deciding to undertake a project or determining that a project application is complete, the lead agency must provide written notification to all tribes who have requested it. The tribe then has 30 days of receiving the notification to respond if it wishes to engage in consultation. The lead agency must initiate consultation within 30 days of receiving the request from the tribe. Consultation concludes when both parties have agreed on measures to mitigate or avoid a significant effect to a tribal cultural resource, or a party, after a reasonable effort in good faith, decides that mutual agreement cannot be reached. Regardless of the outcome of consultation, the CEQA document must disclose significant impacts on tribal cultural resources and discuss feasible alternatives or mitigation that avoid or lessen the impact.

Local Regulations

City of Benicia General Plan

The following policies from Chapter 3, Community Identity, of the General Plan pertain to tribal cultural resources:

- **Policy 3.1.3:** Preserve historic trees and landscapes. Refer to the Arsenal Historic Conservation Plan, November 1993, for guidance on historic trees and landscaping).

TRIBAL CULTURAL RESOURCES

- **Policy 3.2.1:** Ensure the protection and preservation of artifacts in known, and as yet unidentified, areas.

4.15.1.2 EXISTING CONDITIONS

Native American Period

The Vallejo-Benicia area was originally settled by the Southern Patwin group of Native Americans. The Southern Patwin inhabited areas west of the Sacramento River and north of the Carquinez Strait. By the beginning of the 20th century, the Southern Patwin were extinct (Benicia 1999).

The Patwin were a hunting and gathering society that depended mostly on acorns and marine supplies for sustenance. They settled next to water; the nearest Patwin villages were located on the Napa River near Fairfield, and there are mortar sites at the Benicia State Recreation Area. Although early explorers reported seeing villages on the north shore of the Carquinez Strait and mapped a village at the head of Southampton Bay, it remains unclear if this region was regularly inhabited, how it was used, and who used it.

Modern-Day Benicia

The City of Benicia is urbanized with a variety of developed land uses found throughout the City, such as residential, commercial, mixed-use, industrial, and public/quasi-public land uses as well as open space areas intended for conservation and/or recreation. The majority of the City's open space areas are located in the northern and western portion of the City.

4.15.2 THRESHOLDS OF SIGNIFICANCE

The proposed project would result in significant tribal cultural resources impacts if it would:

1. Cause a substantial adverse change in the significance of a Tribal Cultural Resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:
 - i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or
 - ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resource Code Section 5024.1. In applying the criteria set forth in subdivision (c) of the Public Resource Code Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance to a California Native American tribe.

4.15.3 PROPOSED HOUSING ELEMENT POLICIES

There are no policies in the Housing Element Update applicable to Tribal Resources.

4.15.4 PROPOSED SAFETY ELEMENT POLICIES

There are no policies in the Safety Element Update applicable to Tribal Resources.

4.15.5 ENVIRONMENTAL IMPACTS

TCR-1	The proposed project would cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or a resource determined to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Public Resources Code Public Resources Code § 5024.1. [Threshold TCR-1]
-------	---

Housing Element Update

In accordance with AB 52 and SB 18 requirements, the City sent invitation letters to representatives of the Native American contacts provided by the NAHC on May 19, 2022, formally inviting tribes to consult with the City on the Housing and Safety Elements Update. The Intent of the Tribal consultations is to provide an opportunity for interested Native American contacts to work together with the City during the project planning process to identify and protect tribal cultural resources. Response letters were received from the following tribes (see Appendix 4.15-1):

- **Colusa Indian Community Council – Cachil Dehe Band of Wintun Indians.** The Tribe sent a letter to the City on May 31, 2022, stated that they do not have capacity to consult on the proposed project but deferred all correspondence to the Yocha Dehe Wintun Nation.
- **Confederated Villages of Lisjan Nation.** The Tribe sent a letter to the City on June 9, 2022, and requested consultation. The City consulted with the Tribe on September 28, 2022. During this consultation, the Tribe expressed concerns regarding potential impacts to tribal cultural resources on housing opportunity sites located near the Carquinez Strait. The City provided draft mitigation measures to the Tribe for review on September 28, 2022, but no response has been received as of the publishing of this Draft EIR.
- **Yocha Dehe Wintun Nation.** The Tribe sent a letter to the City on June 23, 2022, stating that the project area is within the aboriginal territories of the Yocha Dehe Wintun Nation and requests that the City incorporate the Tribe’s Treatment Protocol in the mitigation measures for the proposed project (see Mitigation Measures TCR-1 through TCR-5). No further consultation was requested from the Tribe.

TRIBAL CULTURAL RESOURCES

Future development could include grading in portions of the City that may have sensitive tribal cultural resources. Grading and construction activities of undeveloped areas or redevelopment that requires more intensive soil excavation than needed for the existing development could potentially cause disturbance to tribal cultural resources by potentially unearthing previously unknown/unrecorded tribal cultural resources.

Mitigation measures TCR-1 through TCR-5 require that before any development or redevelopment activities can occur, the site must be analyzed for conformance with the applicable local, state, and federal requirements, and must comply with the requirements of CEQA. The City will work with the tribe to address any artifacts unearthed during construction in accordance with the mitigation measures. By working with the tribe and following the mitigation measures, impacts to tribal cultural resources will be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's tribal cultural resources. No impacts would occur.

Significance Without Mitigation: Potentially Significant.

Mitigation Measures:

TCR-1 Inadvertent Discovery of Native American Human Remains. In the event that Native American human remains are found during the ground-disturbing activities of a project, the determination of Most Likely Descendant (MLD) under California Public Resources Code Section 5097.98 will be made by the Native American Heritage Commission (NAHC) upon notification of the NAHC of the discovery of said remains at a project site.

TCR-2 Treatment of Native American Remains. In the event that Native American human remains are found during development of a project and a tribe(s) is determined to be MLD pursuant to Mitigation Measure TCR-1, the following provisions shall apply:

- The Medical Examiner shall immediately be notified; ground disturbing activities in that location shall cease; and the applicable shall be allowed, pursuant to California Public Resources Code Section 5097.98(a), to:

TRIBAL CULTURAL RESOURCES

1. Inspect the site of the discovery, and
2. Make determinations as to how the human remains and grave goods should be treated and disposed of with appropriate dignity.
 - The applicable tribe(s) shall complete its inspection and make its MLD recommendation within 48 hours of getting access to the site. The tribe(s) shall have the final determination as to the disposition and treatment of human remains and grave goods. Said determination may include avoidance of the human remains, reburial on-site, or reburial on tribal or other lands that will not be disturbed in the future.
 - The applicable tribe(s) may wish to rebury said human remains and grave goods or ceremonial and cultural items on or near the site of their discovery, in an area which will not be subject to future disturbances over a prolonged period of time. Reburial of human remains shall be accomplished in compliance with the California Public Resources Code Sections 5097.98(a) and (b).

TCR-3 Non-Disclosure of Location of Reburials. In the event that Native American human remains are discovered, the site of any reburial of Native American human remains shall not be disclosed and will not be governed by public disclosure requirements of the California Public Records Act, Cal. Govt. Code § 6250 et seq., unless otherwise required by law. The Medical Examiner shall withhold public disclosure of information related to such reburial pursuant to the specific exemption set forth in California Government Code Section 6254(r). The applicable tribe(s) will require that the location for reburial is recorded with the California Historic Resources Inventory System (CHRIS) on a form that is acceptable to the CHRIS center. The tribe(s) may also suggest that the landowner enter into an agreement regarding the confidentiality of site information that will run with title on the property.

TCR-4 Treatment of Cultural Resources. In the event that cultural items are found onsite, all such items, including ceremonial items and archaeological items, should be turned over to the applicable tribe(s) for appropriate treatment, unless otherwise ordered by a court or agency of competent jurisdiction. The project proponent should waive any and all claims to ownership of tribal ceremonial and cultural items, including archaeological items, which may be found on a project site in favor of the applicable tribe(s). If any intermediary, for example, an archaeologist retained by the project proponent) is necessary, said entity or individual shall not possess those items for longer than is reasonably necessary, as determined solely by the applicable tribe(s).

TCR-5 Inadvertent Discoveries. In the event that additional significant site(s) not identified as significant in a project environmental review process, but are later determined to be significant, are located within a project impact area, such sites will be subjected to further archaeological and cultural significance evaluation by the project proponent, lead agency, and the applicable tribe(s) to determine if additional mitigation measures are necessary to treat sites in a culturally appropriate manner consistent with CEQA requirements for mitigation of

TRIBAL CULTURAL RESOURCES

impacts to cultural resources. If there are human remains present that have been identified as Native American, all work will cease for a period of up to 30 days in accordance with Federal Law.

Significance Without Mitigation: Less than significant with mitigation incorporated.

4.15.6 REFERENCES

Benicia, City of. 1999, June 15. Benicia General Plan.

<https://www.ci.benicia.ca.us/index.asp?SEC=0371539A-30D9-4885-B61F-B5038B415DD3&DE=F40DB441-1E06-45F8-82F8-6D632AB9EC85>.

TRIBAL CULTURAL RESOURCES

This page intentionally left blank.

4.16 UTILITIES AND SERVICE SYSTEMS

This chapter describes the regulatory framework and existing conditions on the project site related to aesthetics, and the potential impacts of the proposed Housing Element. The analysis examines water supply, wastewater, storm drainage, field utilities (water and wastewater) and street maintenance, solid waste, energy supply, and telecommunications. Each subsection includes a description of existing facilities and infrastructure, applicable service goals, potential environmental impacts resulting from the implementation of the proposed project, and cumulative impacts. The analysis in this section is based in part on the determinations of adequate infrastructure capacity made in the 2022 Housing Element Update for the housing sites.

4.16.1 WASTEWATER TREATMENT AND COLLECTION

4.16.1.1 ENVIRONMENTAL SETTING

Regulatory Framework

Federal Regulations

Clean Water Act

The Clean Water Act (CWA) is the primary federal legislation governing surface water quality protection. The statute employs a variety of regulatory and nonregulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters so that they can support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water.

National Pollutant Discharge Elimination System

The NPDES program, Section 402 of the Clean Water Act, controls direct discharges into navigable waters. Direct discharges, or point source discharges, are from sources such as pipes and sewers. NPDES permits, issued by either the EPA or an authorized state/tribe, contain industry-specific, technology-based, and/or water-quality-based limits and establish pollutant monitoring and reporting requirements. (The EPA has authorized 40 states to administer the NPDES program.)

UTILITIES & SERVICE SYSTEMS

Local Regulations

City of Benicia Municipal Code

Chapter 15.64, Stormwater Management and Discharge Control

Chapter 15.64, Stormwater Management and Discharge Control, of Municipal Code is intended to carry out the conditions in the city's Phase II small municipal separate storm sewer system (MS4) National Pollutant Discharge Elimination System (NPDES) permit, Water Quality Order No. 2013-0001-DWQ, General Permit No. CAS000004 (Phase II Storm Water Permit). Section 15.64.090, Best Management Practices and Standards, requires that any person engaged in activities that will or may result in pollutants entering the city storm drain system shall undertake all practicable measures to cease such activities, and/or eliminate or reduce such pollutants. These measures are outlined in this section and include but are not limited to, erosion-control BMPs, sediment control BMPs, and pollution prevention practices. Additionally, an Erosion and Sediment Control Plan is required for projects involving grading and a Storm Water Control Plan is required for projects that create or replace between 2,500 and 5,000 square feet of impervious area.

Chapter 13.50, Pretreatment and Source Control of Wastewater Disposal or Discharge

As stated in Section 13.50.10, Purpose and Policy, this chapter of the code provides for the regulation of all users of the municipal wastewater system or publicly owned treatment works. The chapter authorizes the issuance of individual or general wastewater discharge permits; provides for monitoring, compliance and enforcement activities; establishes administrative review procedures; requires user reporting, assumes that existing customers' capacity will not be preempted, and provides for the setting of fees for the equitable distribution of costs resulting from the program.

Storm Water Management Plan (SWMP)

The City of Benicia is required by the Environmental Protection Agency, under the provisions of the National Pollution Discharge Elimination System (NPDES) Phase II regulations and the State Water Resources Control Board Phase II General Permit requirements to develop and implement a Storm Water Management Plan (SWMP). The SWMP is intended to reduce pollutants that may be present in storm water runoff from streets and property within the city limits. The SWMP is a five-year program that implements the General Permit through a series of measures and practices that are designed to address storm water pollution before it is discharged into the receiving water. The plan includes six elements called Minimum Control Measures (MCMs) that identify a responsible department within the city designated to carry-out each measure, what Best Management Practices (BMPs) are to be implemented that are expected to achieve pollution reduction, what methods would be used to measure BMP effectiveness, and an implementation timetable. Benicia's first SWMP was approved in 2005.

Wastewater System Master Plan

The purpose of the City's Wastewater System Master Plan (WSMP) is to provide a foundation by which the City can base future decisions regarding the construction operation and maintenance of the collection and treatment facilities through the planning horizon of 2035. It includes development of a city-wide sanitary sewer collection system model, use of the model to identify and analyze required capacity improvements, and development of capital program recommendations based on the analysis results. Under this plan, the increase in projected flows between existing and buildout is not large due to the limited future growth in sewered land uses anticipated in the City. Peak wet weather flows are projected to increase from 18 million gallons per day (mgd) under existing conditions to 21.8 mgd at buildout, about a 20 percent increase (Benicia 2011).

Sewer System Master Plan

The goal of the City's Sewer System Management Plan (SSMP) is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system. This will help to reduce and prevent Sewer System Overflows (SSOs), as well as mitigate any SSOs that do occur. In accordance with State Water Resources Control Board, Order No. 2006-0003 entitled, "Statewide General Discharge Requirements for Sanitary Sewer Systems," all sanitary sewer systems over one mile in length are required to implement a Sanitary Sewer System Management Plan. The SSMP includes the applicable elements that provide proper and cost-effective management, operation, and maintenance of collection systems, while taking into consideration risk management and cost benefit analysis. The City has a maintenance crew of six and a supervisor for cleaning and repairing the sewer collection system. A staff of seven and a supervisor operate and maintain the 23 lift stations and 4.5 million gallons per day (mgd) wastewater treatment plant. Four laboratory technicians and a supervisor take water quality samples (Benicia 2020).

City of Benicia General Plan

The city of Benicia General Plan Chapter 2, Community Development and Sustainability, outlines wastewater policies.

- **Policy 2.1.6:** No urban development beyond the Urban Growth Boundary shall be served by City water and/or sewer services.
- **Policy 2.28.1:** Require that new development not reduce the levels of service in existing neighborhoods below City standards.
- **Policy 2.38.1:** Continue to require the use of feasible and practical Best Management Practices (BMP) to protect receiving waters from adverse effects of construction and urban runoff.
- **Policy 2.40.1:** Approve changes in land use designations for new development only if adequate wastewater treatment capacity is assured.
- **Policy 2.40.2:** Promote use of reclaimed wastewater where feasible.
- **Policy 2.40.3:** Encourage developments with projected high strength discharges to reduce pollutants directly to the City's wastewater system.

UTILITIES & SERVICE SYSTEMS

- **Policy 2.41.1:** Continue efforts to replace the gaseous chlorine system with a less hazardous chemical (such as a liquid chlorine system) that will address the potential safety impacts to the neighborhood surrounding the WWTP.

Existing Conditions

Wastewater Treatment Facilities

The City of Benicia owns and operates the facilities providing wastewater collection, treatment, and discharge for its service area, which is coterminous with the city limits. According to the 2017 Benicia Municipal Service Review, the City's wastewater system currently serves approximately 8,900 residential (single- and multiunit dwellings) and 609 commercial/industrial connections. The system includes the treatment plant, approximately 150 miles of pipeline, 23 pumping stations, and a 1,300-footlong deep-water outfall to the Carquinez Strait (Solano LAFCO 2017).

The Wastewater Treatment Plant (WWTP) is located on seven and a half acres of land in the southeast section of the City at 614 East Fifth Street. Discharges from the plant are regulated by the California Regional Water Quality Control Board, San Francisco Bay Region, through a NPDES permit.

The plant was originally built in 1958 and provided primary level (removal of grit and solids) treatment only. It was upgraded to include secondary (biological removal of most of the remaining pollutants) treatment in 1978. In 1998, the plant was again upgraded to address reliable capacity, odors, and noise. The most recent project (2003 Infiltration and Inflow Improvements Project) included installing a three-mile-long, main trunk relief sewer pipeline to convey intercepted wet weather flows from the far western side of the City to the plant. In addition, modifications were made to the WWTP to accommodate peak wet weather flows, including new screening structures, upgraded disinfection/dechlorination facilities, and larger effluent pumps. The main objective of this project was to minimize sanitary sewer overflow within the lower portions of the City. Repair and replacement of old sewer pipelines will continue to be scheduled on an annual basis to reduce infiltration and inflow from the system over time (Solano LACFO 2017).

The plant treats an average dry weather flow capacity of 4.5 mgd and has a sustained wet weather secondary treatment capacity of 11 mgd (Solano LAFCO 2017). The plant discharges an average dry weather flow of approximately 2.0 mgd (2015 data) (Solano LAFCO 2017). Plant capacity is a function of both flow (volume of water) and loading (pollutant concentration). Wastewater is transported to the plant via two main interceptors. A 36-inch interceptor enters the plant from the west. A 24-inch interceptor enters the plant from the east serving primarily commercial and industrial uses, including the Benicia Industrial Park, and Pine Lake area. The City's sanitary sewer pipelines have adequate capacity to convey wastewater collected from existing customers discharging to the system and for limited degrees of rainfall-dependent infiltration and inflow (Solano LAFCO 2017).

4.16.1.2 THRESHOLDS OF SIGNIFICANCE

The proposed project would result in significant utilities and service systems impacts if it would:

1. Require or result in the relocation or construction of new or expanded wastewater treatment, the construction or relocation of which could cause significant environmental effects.
2. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

4.16.1.3 PROPOSED HOUSING ELEMENT POLICIES

There are no policies applicable to stormwater drainage systems however the following program applies to the provision of wastewater services:

- **Program 1.04:** Work with the Public Works Department (City's water and sewer provider) to ensure the availability and adequate capacity of water and wastewater systems to accommodate the housing needs during the planning period. Priority shall be granted to proposed developments that include housing affordable to lower-income households. In addition, the City will provide a copy of the Housing Element and any future amendments to the Public Works Department immediately after adoption.

4.16.1.4 PROPOSED SAFETY ELEMENT POLICIES

There are no policies in the Safety Element Update applicable to Wastewater Treatment and Collection.

4.16.1.5 ENVIRONMENTAL IMPACTS

UTIL-1	The project would not require or result in the relocation or construction of new or expanded wastewater treatment facilities, the construction or relocation of which could cause significant environmental effects.
--------	--

Housing Element Update

The City owns and operates all aspects of the wastewater collection and treatment facilities serving Benicia residents. The City's WWTP has a permitted average dry weather design treatment capacity of 4.5 mgd, a sustained wet weather secondary treatment capacity of 11 mgd, a peak one-hour wet weather secondary treatment capacity of 18 mgd, and a short term maximum hydraulic capacity of 24 mgd. Current demand at the treatment plant is approximately 1.96 mgd, which is below the permitted capacity (Ochendusko 2021).

UTILITIES & SERVICE SYSTEMS

As described in Chapter 3, *Project Description*, a maximum total of 3,584 units would be allowed under the Housing Element Update. The Housing Element estimates that the “realistic” total of units under the Housing Element would be 2,277 units (see Chapter 3 for more details). As the Housing Element Update generally focuses on providing affordable housing through the means of increasing density on various sites across the City, it can be assumed that most development that will occur on the Housing Element Inventory Sites, will be multi-family development projects. However, to be conservative, it will be assumed that all housing units under the Housing Element will use the maximum unit flow rate presented in Table 4-2 of the WSMP. This flow rate is 350 gallons per day (gpd) per unit, calculated for single-family units. Using this flow rate, the development of all units under the proposed maximum allowable densities of the Housing Element sites would result in a flow of 1.25 mgd.¹ Development of all units under the “realistic units” scenario would generate a flow of 0.80 mgd.² The flows under both the “maximum units” and “realistic units” scenarios, when added to the current demand of the WWTP, would not exceed the dry weather treatment capacity, sustained wet weather secondary treatment capacity, peak one hour wet weather secondary treatment capacity, and short term maximum hydraulic capacity.³ As a result, the proposed project would not require relocation or construction of new or expanded wastewater facilities.

If improvements to the City’s sewer collection system are required, future sewer line upgrades and developments within the City would be funded via contributions from future development, as stated in Chapter 13.52, Sewer Rates and Charges, of the City’s Municipal Code. Sewer line upgrades would be aligned with the goals of the 2011 WSMP. Furthermore, Program 1.04 of the Housing Element Update directs the City to work with the Public Works Department (City’s water and sewer provider) to ensure the availability and adequate capacity of water and wastewater systems to accommodate the housing needs during the planning period. The program also states that priority shall be granted to proposed developments that include housing affordable to lower-income households. Policy 2.40.1 of the General Plan also requires that the City approve changes in land use designations for new development only if adequate wastewater treatment capacity is assured.

Furthermore, the Housing Element Update (Appendix 3-1) reports that the City has capacity in its current wastewater infrastructure sufficient enough to accommodate the 2023-2031 RHNA Housing Sites, which is confirmed in the analysis of the “realistic units” buildout. Impacts to wastewater treatment would be less than significant.

¹ 350 gallons per day (gpd) per unit multiplied by 3,584 units = 1,254,400 gpd = 1.25 mgd

² 350 gallons per day (gpd) per unit multiplied by 2,277 units = 796,950 gpd = 0.8 mgd

³ 1.25 mgd + 1.96 mgd = 3.21 < 4.5 mgd (average dry weather capacity), 11 mgd (sustained wet weather secondary treatment capacity) peak one hour wet weather secondary treatment capacity), 24 mgd (short term maximum hydraulic capacity) 0.80 mgd + 1.96 mgd = 2.76 mgd < 4.5 mgd, 11 mgd, 18 mgd, 24 mgd

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's wastewater treatment facilities. No impacts would occur.

Significance Without Mitigation: Less than significant.

UTIL-2	The project would result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
--------	---

Housing Element Update

The proposed project would increase existing wastewater flows in the proposed plan area to the existing sewer system. As discussed in Impact UTIL-1, the Housing Element has determined that the City's existing wastewater infrastructure will have sufficient capacity to meet the proposed project's demand for wastewater treatment, which was confirmed by calculations made for the Housing Element sites' daily flow rate. Additionally, future development projects under the Housing Element would be required to undergo environmental review when proposed. This process would ensure that impacts due to new development on the storm drainage system are considered, in accordance with General Plan Policy 2.40.1.

Furthermore, Program 1.04 of the Housing Element Update requires the City's Public Works Department (City's water and sewer provider) to ensure the availability and adequate capacity of water and wastewater systems to accommodate the housing needs during the planning period. It also states that priority shall be granted to proposed developments that include housing affordable to lower-income households. In addition, the City will provide a copy of the Housing Element and any future amendments to the Public Works Department immediately after adoption. As noted above, the City finds that the current infrastructure capacity, including that of the City's wastewater infrastructure is sufficient to accommodate the 2023-2031 RHNA Housing Sites. Therefore, the proposed project would result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments. Impacts would be less than significant.

UTILITIES & SERVICE SYSTEMS

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's wastewater treatment facilities. No impacts would occur.

Significance Without Mitigation: Less than significant.

4.16.2 WATER SUPPLY AND DISTRIBUTION SYSTEMS

4.16.2.1 ENVIRONMENTAL SETTING

Regulatory Framework

Federal Regulations

Clean Water Act (CWA)/ National Pollutant Discharge Elimination System (NPDES) Permits

The Clean Water Act (CWA) establishes regulations to control the discharge of pollutants into the waters of the United States and regulates water quality standards for surface waters. Under the CWA, the U.S. Environment Protection Agency (EPA) is authorized to set wastewater standards and runs the National Pollutant Discharge Elimination System (NPDES) permit program. Under the NPDES program, permits are required for all new developments that generate discharges that go directly into waters of the United States. The federal CWA, United States Code, Title 33, Sections 1251 et seq. requires wastewater treatment of all effluent before it is discharged into surface waters.

State Regulations

California Water Code

To assist with water suppliers, cities, and counties in integrating water and land use planning, the state passed Senate Bill (SB) 610, which is codified in the California Water Code Section 10910. The lead agency preparing a CEQA document shall identify any water system whose service area includes the project site and any water system adjacent to the project site that is, or may become, a public water system that may supply water for the project. If the lead agency is not able to identify any public water system that may supply water for the project, then the lead agency shall prepare a water assessment.

Urban Water Management Planning Act

In accordance with California Water Code, §10610-10656 and §10608 every urban water supplier that either provides over 3,000 acre-feet of water annually or serves more than 3,000 urban connections is required to submit an Urban Water Management Plan (UWMP). The plan is prepared by urban water suppliers every five years to support the suppliers' long term resource planning to ensure that adequate water supplies are available to meet existing and future water needs.

California Green Building Standards Code

Part 11 of the Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards Code (CALGreen Code). The CALGreen Code is intended to encourage more sustainable and environmentally friendly building practices, conserve natural resources, and promote the use of energy-efficient materials and equipment. Since 2011, the CALGreen Code has been mandatory for all new residential and non-residential buildings constructed in the state. Mandatory measures related to water conservation include water-conserving plumbing fixture and appliance requirements, including flow rate maximums, compliance with state and local water efficient landscape standards for outdoor potable water use in landscape areas, and recycled water systems, where available. The CALGreen Code was most recently updated in 2019 to include new mandatory measures for residential and non-residential uses; the 2019 amendments to the CALGreen Code became effective January 1, 2020. Updates include more stringent requirements for residential metering faucets, and a requirement that all residential and non-residential developments adhere to a local water efficient landscape ordinance or to the State of California's Model Water Efficient Landscape Ordinance, whichever is more stringent.

State Model Landscape Ordinance

The California Water Conservation in Landscaping Act, also known as the State Landscape Model Ordinance, was amended pursuant to Assembly Bill (AB) 2717 and AB 1881. AB 2717 required the Department of Water Resources (DWR) to adopt a model local water efficient landscape ordinance that each local agency may adopt and requires local agencies to adopt a water efficient landscape ordinance. AB 1881 required cities and counties to adopt landscape water conservation ordinances by January 31, 2010, or to adopt a different ordinance that was at least as effective in conserving water as the California Updated Model Water Efficient Landscape Ordinance (MWELO).

DWR updated the MWELO in 2015, consistent with the Governor's Executive Order B-29-15. The updated MWELO requires cities and counties to adopt landscape water conservation ordinances by February 1, 2016, or to adopt a different ordinance that is at least as effective in conserving water as the updated Model Ordinance. Residential, commercial, industrial, and institutional projects that include landscaped areas of 500 square feet or more must be MWELO-compliant. (23 Cal. Code Regs. §§ 490 *et seq.*)

UTILITIES & SERVICE SYSTEMS

Assembly Bill 1668 (AB 1668) and Senate Bill 606 (SB 606)

AB 1668 and SB 606 build on Governor Brown's ongoing efforts to make water conservation a way of life in California and create a new foundation for long-term improvements in water conservation and drought planning. SB 606 and AB 1668 establish guidelines for efficient water use and a framework for the implementation and oversight of the new standards, which must be in place by 2022. These two bills strengthen the state's water resiliency in the face of future droughts with provisions that include:

- Establishing water use objectives and long-term standards for efficient water use that apply to urban retail water suppliers; comprised of indoor residential water use, outdoor residential water use, commercial, industrial and institutional (CII) irrigation with dedicated meters, water loss, and other unique local uses.
- Providing incentives for water suppliers to recycle water.
- Identifying small water suppliers and rural communities that may be at risk of drought and water shortage vulnerability and provide recommendations for drought planning.
- Requiring both urban and agricultural water suppliers to set annual water budgets and prepare for drought.

Local Regulations

2020 Urban Water Management Plan

The City prepared an Urban Water Management Plan (UWMP) in 2020 to comply with the Urban Water Management Planning Act (UWMPA) requirements for urban water suppliers. The 2020 UWMP addresses the City's water management planning efforts to assure adequate water supplies to meet forecast demands over the next 25 years. As required by the UWMPA, the City's 2020 UWMP specifically assesses the availability of its supplies to meet forecast water uses during average, single-dry and five consecutive drought years. Legislature requires urban water suppliers serving over 3,000 customer or at least 3000-acre feet of water to annually prepare and adopt an urban management plan every five years. The 2020 Urban Water Management Plan provides an assessment of the present and future water supply sources and demands within the City's service area. It also provides drought risk assessment and water shortage contingency plan through 2045. Verification that future demands will not exceed supplies and assuring the availability of supplies in dry-year conditions are critical outcomes of this 2020 UWMP.

The 2020 UWMP is an update to the City's 2015 UWMP and presents new data and analysis as required by the California Department of Water Resources (DWR) and the California Water Code (CWC) since 2015. The 2020 UWMP is also a comprehensive water planning document that describes existing and future supply reliability, forecasts future water uses, presents demand management progress, and identifies local and regional cooperative efforts to meet projected water use.

Water System Master Plan

The city uses the 2012 Water System Master Plan to account for growth projected throughout the city, assess existing facilities to improve operational performance, maintain compliance with drinking water regulations, ensure reliable quantity and quality of water sources, and implement sustainability goals. The plan extends through the estimated ultimate (buildout) development of the City. Improvement projects have been outlined for the next ten years, with additional projects identified through 2032 (Benicia 2012).

City of Benicia Climate Action Plan

The Climate Action Plan (CAP) is the strategic roadmap for the City to reach greenhouse emission reduction targets adopted by the City Council in September 2008. The plan consists of eight focus areas; public education and outreach, energy production, transportation and land use, buildings, industry and commercial, water and wastewater, solid waste, parks and open space. The Water and Wastewater chapter of the CAP outlines the following objectives for water conservation:

- Objective WW-1: Reduce the Amount of Water Consumed 20% by 2020
- Objective WW-2: Reduce the Amount of Emissions Resulting from Pumps and Lift Stations

City of Benicia General Plan

The City of Benicia General Plan Chapter 2, Community Development and Sustainability, contains the following policies related to water supply:

- **Policy 2.1.6:** No urban development beyond the Urban Growth Boundary shall be served by City water and/or sewer services.
- **Policy 2.36.1:** Approve development plans only when dependable and adequate water supply to serve the development is assured.
- **Policy 2.38.1:** Continue to require the use of feasible and practical Best Management Practices (BMP) to protect receiving waters from adverse effects of construction and run off.

The following policy also relating to water supply is from Chapter 3, Community Identity, of the General Plan:

- **Policy 3.22.1:** Avoid development that will degrade existing lakes and streams.

City of Benicia Municipal Code

Chapter 13.08, Water Service

Section 13.08.010, Water Supply- Source and Specifications, states that the City's water served will be water from various sources including the municipal reservoir, the Putah South Canal of the Solano Project, and the North Bay Aqueduct of the State Water Project. Mineral quality of water will vary from time to time and place to place depending upon the source being used. Information on the average mineral

UTILITIES & SERVICE SYSTEMS

quality is available from the director. Water delivered from the potable water system will be water treated by facilities operated under permit from the California Department of Public Health. The ordinance requires that a person desiring service from the water system shall apply for it and that the City is not obligated to provide water service until the application is approved by the director.

Chapter 13.12, Water Rates and Charges

Section 13.12.010, General water service rates, states that the rates and charges for water furnished through water meters and any service charge therefor shall be established, and may be amended or revised, from time to time, by resolution of the city council. Such rates and charges shall constitute the charges for supplying water service to any customer and shall be collected by the finance department of the city. The chapter also describes a low-income discount for water rates and a drought penalty for water used in excess of that permitted by the conservation stage in effect, as described in Chapter 13.35, Emergency Water Conservation Plan below.

Chapter 13.28, Control of Backflow and Cross-Connection to City Water System

As stated in Section 13.28.010, Purpose, the purpose of this chapter is to protect the potable water supply of the city of Benicia from the possibility of backflow contamination, or pollution originating from within its customers' water system(s), as authorized under Section 116800 et seq. of the California Health and Safety Code. Section 13.28.040, Requirements, states that no water service connection to any premises shall be installed or maintained by the city unless the water supply is protected as required by state laws, the Uniform Plumbing Code, Chapter Six, et seq., published by the International Association of Plumbing and Mechanical Officials, and the provisions of this chapter.

Chapter 13.35, Emergency Water Conservation Plan

As stated in Section 13.35.010, Purpose, during periods of water shortages, the public health and welfare requires that the water resources available to the city be put to maximum beneficial use to the extent to which they are capable, and that the waste or unreasonable use, or unreasonable method of use of water be prevented, and the conservation of such water is to be extended with a view to the reasonable and beneficial use thereof in the interests of the people of the city and for the public welfare. Section 13.35.060, Emergency water shortages, states that no customer of the city shall knowingly make, cause, use, or permit the use of water from the city for residential, commercial, industrial, agricultural, governmental, or any other purpose in a manner contrary to any provision of this chapter, or in an amount in excess of that use permitted by the conservation stage in effect. The chapter proceeds by outlining the emergency water shortage stages and the allowed uses and reduction measures for each stage.

Chapter 15.37, Mandatory Construction Waste Reduction, Disposal and Water Efficient Landscaping

Chapter 15.37 of the City's Municipal Code adopts the State's Model Water Efficiency Ordinance. As stated in Section 15.37.090, Model Water Efficient Landscaping Ordinance (MWELo), property owners or their building or landscape designers, including anyone requiring a building or planning permit, plan check, or landscape design review from the jurisdiction, who are constructing a new (single-family, multifamily, public, institutional, or commercial) project with a landscape area greater than 500 square feet, or rehabilitating an existing landscape with a total landscape area greater than 2,500 square feet, shall comply with Sections 492.6(a)(3)(B), (C), (D), and (G) of the MWELo, including sections related to use of compost and mulch as delineated in this section.

Existing Conditions

Water Service System

The City's water service area contains its own surface drainage watersheds which drain runoff to creeks and water bodies in, and adjacent to, the City. The largest watershed is in the central part of the area and includes Sulphur Springs Creek and its main tributary, Paddy Creek. This watershed also includes Lake Herman, a key elements of the City's water delivery and management system. The Sulphur Springs watershed is approximately 18 square miles with six square miles in the higher elevation and northern part of the area outside the City's planning area and within the neighboring City of Vallejo's sphere of influence. Paddy Creek drains a 3 square mile are at the lower reach of Sulphur Springs Creek just below the Lake Herman outlet.

Benicia's water related responsibilities include a large residential population, commercial and retail connections and significant industrial and manufacturing customers, including the Benicia Valero Oil Refinery, a large petrochemical industrial facility. Benicia provides both water and wastewater services to its community. The water service area is about 14.15 square miles and is contiguous with City boundaries (Benicia 2021). The City provides water service to approximately 9,800 residential, commercial, irrigation, industrial and institutional/governmental service connections (Benicia 2021). Residential uses make up 90 percent of these connections (Benicia 2021).

The City operates a potable water system to provide water service to its customers. The existing City water treatment plant was constructed in 1971. The plant was originally designed for a capacity of 6 million gallons per day (mgd) (Benicia 2021). In 1989, the plant was expanded to 12 mgd, with additional reliability and redundancy improvements in 2006 (Benicia 2021). The distribution system consists of 3 pump stations, 8 pressure-reducing stations, and approximately 150 miles of pipelines (Benicia 2021). The storage system consists of 5 treated water reservoirs and Lake Herman with a capacity of 1,800 acre-feet of untreated water (Benicia 2021). Raw water is delivered to the City via the raw water transmission system, which consists of two pump stations and approximately 18 miles of pipeline (Benicia 2021). The primary raw water source for the City is the State Water Project (SWP). This water is delivered from Barker Slough on the Sacramento-San Joaquin River Delta via the North Bay Aqueduct (NBA). Additional water

UTILITIES & SERVICE SYSTEMS

comes through the Solano Project (SP) via the Putah South Canal (PSC) to the Terminal Reservoir. Water is then conveyed from either the NBA Cordelia Pumping Plant or the PSC Cordelia Pump Station to a diversion structure located at the City's water treatment plant. The flows more than daily demand are diverted to Lake Herman by gravity through a pipeline. The City also delivers raw water to the Valero refinery. The City can also convey raw water to Lake Herman for as an operational buffer and use the lake as a storage reservoir for up to 1,800 acre-feet (Benicia 2021).

Water Supply

The City's water supplies are derived from three general surface water sources: the Sacramento River watershed, Putah Creek and the Solano Project, and Sulphur Springs Creek watershed through Lake Herman. The City's Sacramento River watershed water supplies are derived from a variety of water rights and contracts. The water supplies are diverted from the Sacramento River watershed at the North Bay Aqueduct – a State Water Project (SWP) facility located in Barker Slough. The water supplies from the Sacramento River watershed that are conveyed through the North Bay Aqueduct (NBA) serves the majority of the City's needs in normal years (Benicia 2021). Under Benicia's Participating Agency Contract with the SWP, the City was allocated 5,160 acre-feet of water in 2020 (Benicia 2021). The City's share of the total SWP allocation to the Solano County Water Agency (SCWA) is 41 percent (Benicia 2021). However, due to a settlement agreement with the Department of Water Resources (DWR), the City has received the rights to 10,500 acre-feet of water each year since 2010 (Benicia 2021). In 2020, 1,028 acre-feet of this water was used.

The primary supply source for the Solano Project is Lake Berryessa. Lake Berryessa is in the Vaca Mountains in Napa County and formed by Monticello Dam. Lake Berryessa is a multi-purpose lake that, combined with the Putah Diversion Dam and other associated infrastructure, makes up the Solano Project – a federal water project operated by the United States Bureau of Reclamation. Solano Project water is transported to Benicia through the Putah South Canal and provides a varying percentage of the City's total consumption depending on the hydrological and regulatory conditions (Benicia 2021). Under the Solano Project, the City receives 3,100 acre-feet of water each year (Benicia 2021). 1,100 acre-feet of this water is derived from the Vallejo Agreement and 2,000 acre-feet is from the Solano Irrigation District Agreement (Benicia 2021).

Sulphur Springs Creek Watershed and Lake Herman water assets deliver supplies derived from the watershed into an artificial reservoir originally built at the time of the City's founding. The City diverts water to storage from the Sulphur Springs Creek Watershed and stores additional water in Lake Herman delivered through the Solano Project and North Bay Aqueduct as needed. Lake Herman is primarily used as a backup or peaking supply for Valero, an emergency water supply source, and to regulate raw water supplies coming into the City's system from alternative sources (Benicia 2021). 1,1235 acre-feet of water was diverted from Lake Herman in 2020, 562 acre-feet of which was used by the City.

UTILITIES & SERVICE SYSTEMS

The 2020 UWMP reports that, through all of its water agreements, the City has 28,645 acre feet of water available in a normal year; 21,208 acre-feet in a single dry-year; and 17,006 acre-feet in the last year of a five-year multi-year drought, as shown in Table 4.16-1, *UWMP Water Supply Summary in Acre-Feet* (see Table 3-36 on page 3-28 of the UWMP). Benicia defines a normal year condition as one that allows the agency to obtain water supplies from all sources under its Benicia water supply portfolio under normalized conditions. These conditions include normally anticipated regulatory constraints on its water rights and limited constrained conditions for its water supply contracts (Benicia 2021). Benicia defines a single dry year condition as one that constrains Benicia from obtaining some of its water supplies in its water supply portfolio due to hydrological, regulatory, and institutional constraints. These conditions include more restrictive regulatory constraints on its water rights and significantly constrained conditions for its numerous water supply contracts (Benicia 2021).

TABLE 4.16-1 UWMP WATER SUPPLY SUMMARY IN ACRE-FEET

		Yearly Water Supply ¹
Normal Year		28,645
Single Dry Year		21,208
		2021
		2022
Multi-Year Drought		2023
		2024
		2025

Source: Benicia 2021

¹ Includes all water sources; see Table 3-36 in the UWMP

Water Use

The City’s total potable water use in 2020 was 3,800 acre-feet (Benicia 2021). However, the UWMP plans estimates that approximately 380 acre-feet of water was lost through distribution system over the year, which makes the City’s gross water use 4,180 acre-feet or 1,362.008 million gallons of water. The Valero Refinery’s raw water use in 2020 was 5,203 acre-feet (Benicia 2021).

The 2020 UWMP calculated a single-family residential indoor per dwelling unit use factor of 0.15 acre-feet per year and a multi-family residential indoor per dwelling unit use factor of 0.12 acre-feet per year. The UWMP predicts that the City’s total water use will be 10,085 acre-feet per year in 2030 and 10,310 acre feet per year in 2040. Table 4.16-2, *UWMP Forecast Water Use in Acre-Feet*, shows the predicted amount of water use attributed to potable water use as well as the potable water use by new residential development.

UTILITIES & SERVICE SYSTEMS

TABLE 4.16-2 UWMP FORECAST WATER USE IN ACRE-FEET

	2025	2030	2035	2040	2045
Existing Total Use	3,808	3,808	3,808	3,808	3,808
New Residential Use ¹	5	40	104	169	290
Total Potable Customer Use ²	3,812	3,857	3,962	4,059	4,281
Total Use ³	10,035	10,085	10,202	10,310	10,556

Source: Benicia 2021

¹ Includes single-family and multi-family new water use

² Includes anticipated new non-residential water uses

³ Includes existing and new potable water use, distribution system water loss, and non-potable water use (Valero)

Water Reuse Project

The City of Benicia Water Reuse Project consists of producing and delivering approximately 2.0 million gallons per day (2,240 acre-feet-per-year) of recycled water to the Valero Benicia Refinery (Refinery) and other City customers for non-potable uses. The proposed project would consist of upgrades at the City of Benicia’s existing wastewater treatment plant (WWTP), approximately 16,300 linear feet of pipeline, and a storage tank with a capacity of up to 2 million gallons (Benicia 2016). The City initiated this project in order to ensure a long-term reliable water supply for the City’s water users. The City reports that during drought years, the City of Benicia’s water supply cannot reliably meet the demands of its customers over the long run. In a normal non-drought year the City’s average annual water demand is approximately 10,000 acre-feet, or 3.3 billion gallons, which is supplied primarily (75 percent to 85 percent) by the SWP, supplemented (15 percent to 25 percent) by the Federal Solano Project from Lake Berryessa (Benicia 2022a). Approximately half the demand is from residential customers (indoor and outdoor uses), municipal uses, and local businesses; the remaining half is from the Valero Refinery (Benicia 2022a). The City supplies the Refinery with untreated raw water for various industrial processes, including cooling tower make-up water (Benicia 2022a). Due to statewide water shortages, in early 2014, the City’s SWP allocation was reduced to 5 percent, resulting in a SWP water supply of only 860 acre-feet compared to a normal year SWP supply of 7,500 to 8,500 acre-feet (Benicia 2022a). When the SWP water delivery falls below 35 percent of its contractual allocation, the City needs to impose water conservation measures and draw on reserves of banked water (Benicia 2022a). The project started construction in 2018.

4.16.2.2 THRESHOLDS OF SIGNIFICANCE

The proposed project would result in significant utilities and service systems impacts if it would:

1. Require or result in the relocation or construction of new or expanded water facilities, the construction or relocation of which could cause significant environmental effects.
2. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.

4.16.2.3 PROPOSED HOUSING ELEMENT POLICIES

There are no policies applicable to stormwater drainage systems however the following programs apply to the provision of water services:

- **Program 1.04:** Work with the Public Works Department (City’s water and sewer provider) to ensure the availability and adequate capacity of water and wastewater systems to accommodate the housing needs during the planning period. Priority shall be granted to proposed developments that include housing affordable to lower-income households. In addition, the City will provide a copy of the Housing Element and any future amendments to the Public Works Department immediately after adoption.
- **Program 1.06:** Promote water conservation by continuing to partner with the Solano County Water Agency (SCWA) to provide rebates for the Turf Replacement Program. Continue to promote SCWA’s water-efficiency rebate programs.

4.16.2.4 PROPOSED SAFETY ELEMENT POLICIES

The following policies and programs from the proposed Safety Element apply to water supply and distribution:

- **Policy 3.1:** Work with regional water providers to implement water conservation measures and ensure sustainable water supplies in the face of future drought conditions.
- **Policy 3.2:** Explore opportunities to purchase additional water rights to help ensure sustainable water supplies in the face of future drought conditions.
- **Policy 3.3:** Promote water conservation measures in all public and private development.
- **Program 3.3.1:** Replace irrigated landscaping with drought-resistant vegetation to the extent feasible and consider use of graywater or rainwater harvesting for irrigation in City-owned facilities.
- **Program 3.3.2:** Amend the zoning ordinance, engineering design standards, and historic conservation plans to encourage the use of drought-tolerant green infrastructure and non-irrigated and drought-resistant landscaping throughout the city as part of water conservation efforts and cooling strategies in public and private spaces.
- **Program 3.3.3:** Provide information about native and drought-resistant species to community members and applicants who seek to install new or replacement landscaping

UTILITIES & SERVICE SYSTEMS

4.16.2.5 ENVIRONMENTAL IMPACTS

UTIL-4	The project would not require or result in the relocation or construction of new or expanded water facilities, the construction or relocation of which could cause significant environmental effects.
--------	---

Housing Element Update

As described in Chapter 3, *Project Description*, a maximum total of 3,584 units would be allowed under the Housing Element Update. However, the Housing Element estimates that the “realistic” total of units under the Housing Element would be 2,277 units (see Chapter 3 for more details). As the Housing Element Update generally focuses on providing affordable housing through the means of increasing density on various sites across the City, it can be assumed that most development that will occur on the Housing Element Inventory Sites, will be multi-family development projects. However, to be conservative, the higher residential indoor per dwelling unit use factor for single-family housing will be used for this analysis. Using the 2020 UWMP’s single-family residential indoor per dwelling unit use factor of 0.15 acre-feet per year, it is estimated the Housing Element Inventory sites would result in a demand of approximately 538⁴ total acre-feet of water per year (AFY) if all sites are developed to their maximum capacity, and would result in a demand of 342 AFY⁵ if all sites were developed to the capacity assumed in the Housing Element Update.

As reported in the 2012 Water System Master Plan, the Benicia water treatment plant (WTP) has a hydraulic capacity of 12 mgd. The WTP’s daily treatment capacity translates to an annual capacity of 13,442 AFY. The WTP currently treats and distributes approximately 4,000 AFY (Tarbox 2020). Therefore, there is considerable excess treatment capacity at the plant and total development of the Housing Element sites would not exceed available treatment capacity. While the construction of new or expanded individual water supply pipes could be required to provide water service to new development in the under the Housing Element, these site-specific improvements would be part of standard construction of new development but would not require the construction of new water mains.

Furthermore, Program 1.04 of the HEU directs the Public Works Department (City’s water and sewer provider) to ensure the availability and adequate capacity of water and wastewater systems to accommodate the housing needs during the planning period. Priority would be granted to proposed developments that include housing affordable to lower-income households. General Plan Policy 2.36.1 states that development plans will only be approved only when dependable and adequate water supply to serve the development is assured. Therefore, the proposed project would have a less than significant impact on water treatment capacity.

⁴ 0.15 AFY per dwelling unit multiplied by 3,584 dwelling units is 538 AFY

⁵ 0.15 AFY per dwelling unit multiplied by 2,288 dwelling units is 342 AFY

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's water supply or water treatment facilities. No impacts would occur.

Significance Without Mitigation: Less than significant.

UTIL-5	The project would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.
--------	---

Housing Element Update

As described in Impact UTIL-4, complete development of the 181 Housing Element Inventory sites would result in an estimated 538 AFY of water use under the "maximum units" scenario (development of the sites to 100 percent of their allowable residential capacity) using the 2020 UWMP's single-family residential indoor per dwelling unit use factor of 0.15 AFY. The "realistic units" scenario (see Section 4.12, Population and Housing, for more details) is estimated to result in the use of 342 AFY of water. The 2020 UWMP projects future demand based on the City's projected population growth. The model's projected water use is primarily driven by a combination of new development in the northeastern area of the City and infill development within the largely built-out central city. However, given the maximum growth expected under the Housing Element which would increase the City's housing stock by 33 percent (under the "maximum unit" scenario), the water use from development on the Housing Element sites exceeds the UWMP's projected water use from new development for all years that were modeled.

The 2020 UWMP reports that, through all of its water agreements, the City has 28,645 acre feet of water available in a normal year; 21,208 acre-feet in a single dry-year; and 17,006 acre-feet in the last year of a five-year multi-year drought, as shown in Table 4.16-1. When the maximum unit water use (538 AFY) is added to the City's total water use projected for 2030 shown in Table 4.16-2 (10,085 AFY), the resulting total water use for the City is 10,623 AFY⁶. This would not exceed the City's water supply at its most constrained level which is 17,006 AFY on the fifth year of a multi-year drought. Even at the furthest

⁶ 538 AFY from the Housing Element Inventory sites estimated water use + 10,085 from the City's projected total water use in 2030 = 10,623 AFY.

UTILITIES & SERVICE SYSTEMS

forecast year of 2045, the Housing Element sites' maximum water use (538 AFY), when added to the projected total water use for 2045 (10,556 AFY), would not exceed the City's 2045 water supply of 17,006 AFY.⁷

Pursuant to Water Code Section 10632.1, the City is required to conduct an annual water supply and demand assessment, to evaluate actual conditions at the time of the assessment to verify its supply and demand projections, adjusting as warranted. The City will continue to actively manage its water supply portfolio considering potentially changing conditions to ensure the City has a reliable water supply under all rainfall conditions through 2045. As required by Water Code Section 10632, Chapter 13.35 of the Benicia Municipal Code, and General Plan Program 2.36.B, the City has also prepared a Water Shortage Contingency Plan (WSCP) that identifies strategies for the City to accommodate water supply shortages of 10, 20, 30, 40, and 50 percent as well as a scenario with a shortage greater than 50 percent of normal supply. The WSCP identifies demand reduction measures that will be progressively triggered by each successive degree of water shortage. The shortage response actions provide the City with some flexibility to address dynamic water shortage conditions while protecting the City against extreme conditions where supplies are drastically reduced beyond 50 percent. This would help to ensure that all projects under the Housing Element have adequate water supply, even in drought conditions. The City will also update its UWMP every five years, as required by State law. General Plan Policy 2.36.1 also would ensure that no development plans are approved unless dependable and adequate water supply to serve the development is assured.

As discussed, water use from all units that could be developed under the Housing Element Update would not exceed the City's supply in a multi-year drought. Furthermore, the City is required to assess its water supply and plan for shortages, and as noted under Housing Element Program 1.04, the City would be required to ensure the availability of water supply to accommodate the housing needs during the planning period. Projects under the Housing Element would have sufficient water supplies to accommodate reasonably foreseeable future development during normal, dry, and multiple dry years. Therefore, impacts would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. Policies 3.1, 3.2, and 3.3 in addition to

⁷ 538 AFY from the Housing Element Inventory sites estimated water use + 10,556 from the City's projected total water use in 2045 = 11,094 AFY.

Programs 3.3.1, 3.3.2, and 3.3.3 in the proposed Safety Element address water use, conservation, and drought-planning which would further reduce the impacts of development of the Housing Element Inventory Sites on the City's water supply. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's water supply or water treatment facilities. No impacts would occur.

Significance Without Mitigation: Less than significant.

4.16.3 STORMWATER DRAINAGE SYSTEMS

4.16.3.1 ENVIRONMENTAL SETTING

Regulatory Framework

State Regulations

National Pollutant Discharge Elimination System

The SWRCB has adopted a statewide Construction General Permit (Order No. 2012-0006-DWQ) for stormwater discharges associated with construction activity. These regulations prohibit the discharge of stormwater from construction projects that include one acre or more of soil disturbance. Construction activities subject to this permit include clearing, grading, and other disturbance to the ground, such as stockpiling or excavation, that results in soil disturbance of at least one acre of total land area. Individual developers are required to submit Permit Registration Documents (PRD) to the SWRCB for coverage under the NPDES permit prior to the start of construction. The PRDs include a Notice of Intent, risk assessment, site map, Stormwater Pollution Prevention Plan (SWPPP), annual fee, and a signed certification statement. The PRDs are submitted electronically to the SWRCB via the Stormwater Multiple Application and Report Tracking System (SMARTS) website.

The NPDES Construction General Permit requires all dischargers to (1) develop and implement a SWPPP that specifies BMPs to be used during construction of the project; (2) eliminate or reduce non-storm water discharge to stormwater conveyance systems; and (3) develop and implement a monitoring program of all specified BMPs. The two major objectives of the SWPPP are to (1) help identify the sources of sediment and other pollutants that affect the water quality of stormwater discharges and (2) to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in stormwater as well as non-storm water discharges.

Local Regulations

Municipal Stormwater (MS4) Permit

The project area lies within the jurisdiction of San Francisco Bay RWQCB (Region 2) and is subject to the waste discharge requirements the Phase II Small Municipal Separate Storm Sewer System (MS4) permit

UTILITIES & SERVICE SYSTEMS

reissued by SWRCB in 2013 as part of the NPDES permit (Water Quality Order No. 2013-0001-DWQ, General Permit No. CAS000004). The NPDES MS4 permit is intended to regulate the discharge of urban runoff to the MS4. Under the NPDES MS4 permit, the City is responsible for the management of storm drain systems within its jurisdiction. Cities are required to implement management programs, monitoring programs, implementation plans, and all applicable BMPs.

Storm Water Management Plan (SWMP)

The City of Benicia is required by the Environmental Protection Agency, under the provisions of the National Pollution Discharge Elimination System (NPDES) Phase II regulations and the State Water Resources Control Board Phase II General Permit requirements to develop and implement a Storm Water Management Plan (SWMP). The SWMP is intended to reduce pollutants that may be present in storm water runoff from streets and property within the city limits. The SWMP is a five-year program that implements the General Permit through a series of measures and practices that are designed to address storm water pollution before it is discharged into the receiving water. The plan includes six elements called Minimum Control Measures (MCMs) that identify a responsible department within the city designated to carry-out each measure, what Best Management Practices (BMPs) are to be implemented that are expected to achieve pollution reduction, what methods would be used to measure BMP effectiveness, and an implementation timetable. Benicia's first SWMP was approved in 2005.

City of Benicia Municipal Code

Chapter 15.64, Stormwater Management and Discharge Control

Chapter 15.64, Stormwater Management and Discharge Control, of Municipal Code is intended to carry out the conditions in the city's Phase II small municipal separate storm sewer system (MS4) National Pollutant Discharge Elimination System (NPDES) permit, Water Quality Order No. 2013-0001-DWQ, General Permit No. CAS000004 (Phase II Storm Water Permit). Section 15.64.090, Best Management Practices and Standards, requires that any person engaged in activities that will or may result in pollutants entering the city storm drain system shall undertake all practicable measures to cease such activities, and/or eliminate or reduce such pollutants. These measures are outlined in this section and include but are not limited to, erosion-control BMPs, sediment control BMPs, and pollution prevention practices. Additionally, an Erosion and Sediment Control Plan is required for projects involving grading and a Storm Water Control Plan is required for projects that create or replace between 2,500 and 5,000 square feet of impervious area.

Chapter 13.52, Sewer Rates and Charges

This chapter of the code states that applicants for sewer service must pay the City's sewer capacity fee. Development that would be required to pay this fee include all new building construction, conversion to a new use, or additional use within an existing building that creates a need for additional sewer capacity.

City of Benicia General Plan

The city of Benicia General Plan Chapter 2, Community Development and Sustainability, outlines stormwater drainage policies.

- **Policy 2.1.6:** No urban development beyond the Urban Growth Boundary shall be served by City water and/or sewer services.
- **Policy 2.28.1:** Require that new development not reduce the levels of service in existing neighborhoods below City standards.
- **Policy 2.38.1:** Continue to require the use of feasible and practical Best Management Practices (BMP) to protect receiving waters from adverse effects of construction and urban runoff.

The following goals, policies, and programs in Chapter 4, Community Health and Safety, Section C, Responses to Hazards, are applicable to stormwater drainage:

- **Policy 4.12.1:** Regulate runoff from new development so that post-development site peak flow rates are no greater than pre-development levels.
- **Policy 4.12.2:** Upgrade existing drainage facilities as necessary to correct localized drainage problems.
- **Policy 4.12.3:** Ensure that new development pays its fair share cost of drainage system improvements.
- **Policy 4.12.4:** Where practicable, discourage the use of storm drain systems, and promote stormwater management strategies which maximize opportunities for absorption of rainfall, overland conveyance of runoff, non-reservoir surface storage, and other measures that reduce development-induced impacts on peak flow rates.

Existing Conditions

Storm Drainage

The Benicia Public Works Department is responsible for the design, construction, operation, and maintenance of storm drain facilities within the city limits. The facilities include drainage inlets, manhole structures, culverts, open ditches, pump stations, and portions of Sulphur Springs Creek, a large drainage channel. Concurrent with development, these facilities are installed, upgraded, or replaced as needed.

The City of Benicia is along the north shore of the Carquinez Strait, where the combined flows of the Sacramento and San Joaquin rivers have cut a deep gorge through the Coast Range. The Strait is a crucial link in northern California's inland waterway, connecting San Pablo Bay and San Francisco Bay to the west with the Sacramento and San Joaquin River deltas to the east. Through the Strait, ocean-going ships can reach the Port of Benicia or continue on to the Central Valley ports of Sacramento and Stockton. All the

UTILITIES & SERVICE SYSTEMS

City's stormwater is conveyed both by natural and man-made channels, and by drainage culverts to the Carquinez Strait (Solano LAFCO 2017).

The boundaries of the drainage watershed located within the City of Benicia are the Carquinez Strait (southerly), the Lake Herman/Sky Valley/Paddy Creek areas (northerly), the City of Vallejo (westerly), and Suisun Bay (easterly). The watershed also includes the sub-basins: Goodyear Slough/Industrial Park, Benicia Urban Areas, and Sulphur Springs Creek/Lake Herman.

4.16.3.2 THRESHOLDS OF SIGNIFICANCE

1. Require or result in the relocation or construction of new or expanded storm water drainage, the construction or relocation of which could cause significant environmental effects.

4.16.3.3 PROPOSED HOUSING ELEMENT POLICIES

There are no policies applicable to stormwater drainage systems however the following program applies to the provision of stormwater drainage service:

- **Program 1.04:** Work with the Public Works Department (City's water and sewer provider) to ensure the availability and adequate capacity of water and wastewater systems to accommodate the housing needs during the planning period. Priority shall be granted to proposed developments that include housing affordable to lower-income households. In addition, the City will provide a copy of the Housing Element and any future amendments to the Public Works Department immediately after adoption.

4.16.3.4 PROPOSED SAFETY ELEMENT POLICIES

There are no policies in the proposed Safety Element related to stormwater drainage.

4.16.3.5 ENVIRONMENTAL IMPACTS

UTIL-1	The project would not require or result in the relocation or construction of new or expanded storm water drainage facilities, the construction or relocation of which could cause significant environmental effects.
--------	--

Housing Element Update

The City of Benicia owns and maintains the storm water system in Benicia. As discussed above, future development projects would be required to undergo environmental review when proposed. This process would ensure that impacts due to new development on the storm drainage system are considered, in accordance with General Plan Policy 2.28.1, projects under the HEU would also be subject to Policy 4.12.1 which requires the City to regulate runoff from new development so that post-development site peak flow rates are no greater than pre-development levels. Policy 4.12.2 requires the City to upgrade existing

UTILITIES & SERVICE SYSTEMS

drainage facilities as necessary to correct localized drainage problems and Policy 4.12.3 ensures that new development pays its fair share cost of drainage system improvements. Furthermore, Policy 4.12.4 states: where practicable, discourage the use of storm drain systems, and promote stormwater management strategies which maximize opportunities for absorption of rainfall, overland conveyance of runoff, non-reservoir surface storage, and other measures that reduce development-induced impacts on peak flow rates.

In addition, the City requires a Stormwater Control Plan for all projects that create or replace 2,500 square feet or more of impervious surface to ensure that stormwater runoff is reduced and pollutants are minimized. The City requires a MS4 Permit to address stormwater pollution issues in development of private and public projects. This is regulated through the City's Stormwater Management Program, and requirements include implementation of best management practices (BMPs) during construction and the use of post-construction controls to reduce pollutants discharged from the project site. An Erosion and Sediment Control Plan or a Stormwater Pollution Prevention Plan must be prepared to address construction-related impacts. Adherence to these regulations would reduce impacts to the City's stormwater drainage facilities.

Furthermore, the Housing Element Update (Appendix 3-1) reports that the City has capacity in its current stormwater infrastructure sufficient to accommodate the Housing Element Inventory Sites. As such, the proposed project would not require the construction of new or expanded stormwater drainage facilities and impacts would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City's ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City's stormwater drainage facilities. No impacts would occur.

Significance Without Mitigation: Less than significant.

UTILITIES & SERVICE SYSTEMS

4.16.4 SOLID WASTE

4.16.4.1 ENVIRONMENTAL SETTING

Regulatory Framework

Federal Regulations

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA), an amendment to the Solid Waste Disposal Act of 1965, was enacted in 1976 to address the huge volumes of municipal and industrial solid waste generated nationwide. The RCRA gives the United States Environmental Protection Agency (EPA) the authority to control hazardous waste from “cradle to grave.” This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. The RCRA also sets forth a framework for the management of nonhazardous solid wastes.

The federal Hazardous and Solid Waste Amendments are the 1984 amendments to the RCRA that focused on waste minimization and phasing out land disposal of hazardous waste as well as corrective action for releases. Some of the other mandates of this law include increased enforcement authority for the EPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program. Amendments to the RCRA in 1986 enabled the EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances (EPA 2022).

State Regulations

California Integrated Waste Management Act

The California Integrated Waste Management Act of 1989 (Public Resources Code Sections 42900–42927) requires all California cities and counties to reduce the volume of waste deposited in landfills by 50 percent by the year 2000 and continue to remain at 50 percent or higher for each subsequent year. The purpose of this act is to reduce, recycle, and reuse solid waste generated in the state to the maximum extent feasible.

The act requires each California city and county to prepare, adopt, and submit to the California Department of Resources Recycling and Recovery (CalRecycle) a source reduction and recycling element (SRRE) that demonstrates how the jurisdiction will meet the act’s mandated diversion goals. Each jurisdiction’s SRRE must include specific components, as defined in Public Resources Code Sections 41003 and 41303. In addition, the SRRE must include a program for management of solid waste generated in the jurisdiction that is consistent with the following hierarchy: (1) source reduction, (2) recycling and composting, and (3) environmentally safe transformation and land disposal. Included in this hierarchy is the requirement to emphasize and maximize the use of all feasible source reduction, recycling, and

composting options to reduce the amount of solid waste that must be disposed of by transformation and land disposal.

California Solid Waste Reuse and Recycling Access Act of 1991

This act was passed by the state legislature and instructs the California Integrated Waste Management Board (now known as “CalRecycle”) to draft a “model ordinance” for the disposal of construction waste associated with development projects. This act also requires local agencies to ensure that development projects have adequate areas for the collection and loading of recyclable materials.

Global Warming Solutions Act of 2006, Scoping Plan

The California Global Warming Solutions Act of 2006 (also known as AB 32) Scoping Plan, which was adopted by the California Air Resources Board, included a Mandatory Commercial Recycling Measure, which focuses on diverting commercial waste as a means to reduce GHG emissions, with the goal of reducing GHG emissions by 5 million metric tons of carbon dioxide equivalents, consistent with the 2020 targets set by AB 32. To achieve the Measure’s objective, the commercial sector will need to recycle an additional 2 to 3 million tons of materials annually by 2020.

CalRecycle adopted the Mandatory Commercial Recycling Measure at its January 17, 2012 monthly public meeting. The regulation was approved by the Office of Administrative Law on May 7, 2012 and became effective immediately. On June 27, 2012, the Governor signed SB 1018, which included an amendment requiring businesses that generate 4 cubic yards or more of commercial solid waste per week and multi-family residences with 5 or more units to arrange for recycling services. This requirement became effective on July 1, 2012.

Senate Bill 1383 (Short-Lived Climate Pollutants)

SB 1383, enacted in 2016, requires statewide reductions in short-lived climate pollutants across various industry sectors. The climate pollutants covered under SB 1383 include methane, fluorinated gases, and black carbon—all GHGs with a much higher warming impact than CO₂ and with the potential to have detrimental effects on human health. SB 1383 requires CARB to adopt a strategy to reduce methane by 40 percent, hydrofluorocarbon gases by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030. The methane emissions reduction goals include a 75 percent reduction in the level of statewide disposal of organic waste from 2014 levels by 2025.

California Green Building Standards Code

As amended, the CALGreen Code (California Code of Regulations Title 24, Part 11) requires that readily accessible areas be provided for recycling by occupants of residential. The CALGreen Code also requires that residential building projects recycle and/or salvage for reuse a minimum of 65 percent of their non-hazardous construction and demolition waste, or comply with a local construction and demolition waste management ordinance, whichever is more stringent (Section 5.408.1). The 2016 version of the code increased the minimum diversion requirement for non-hazardous construction and demolition waste to

UTILITIES & SERVICE SYSTEMS

65 percent from 50 percent (in the 2013 and earlier versions) in response to AB 341, which declared the policy goal of the state that not less than 75 percent of solid waste generated would be source reduced, recycled, or composted by 2020.

Local Regulations

City of Benicia Climate Action Plan

The Climate Action Plan (CAP) is the strategic roadmap for the City to reach greenhouse emission reduction targets adopted by the City Council in September 2008. The plan consists of eight focus areas; public education and outreach, energy production, transportation and land use, buildings, industry and commercial, water and wastewater, solid waste, parks and open space. The Solid Waste chapter of the CAP outlines the following objectives for solid waste:

- Objective SW-1: Commit to a Waste Diversion Goal of 90% for City Government Operations
- Objective SW-2: Commit to a Waste Diversion Goal of 75% for the Community

City of Benicia Municipal Code

Chapter 8.24, Refuse Matter Disposal

As stated in Section 8.24.010, Purpose and findings, Chapter 8.24 of the Code implements the Assembly Bill 939 of 1989, the California Integrated Waste Management Act of 1989; Assembly Bill 341 of 2011, Assembly Bill 1826 of 2014; and SB 1383, the Short-Lived Climate Pollutant Reduction Act of 2016. As stated in Section 8.24.030, Collection- Provision, the city may provide for the collection and disposal of refuse, recyclables, and/or organics/green waste accumulated inside the city by granting to a qualified person the privilege of doing so. Section 8.24.250, Requirements for single-family generators, states that organic waste generators shall subscribe to a three-container collection service, which includes a blue container, green container and gray container, and shall comply with the following requirements including that generators may additionally manage their organic waste by preventing or reducing their organic waste, managing organic waste on site, and/or using a community composting site pursuant to 14 CCR Section 18984.9(c) and that generators shall place source separated green container organic waste, including food waste, in the green container; source separated recyclable materials in the blue container; and gray container waste in the gray container.

Chapter 15.37, Mandatory Construction Waste Reduction, Disposal and Water Efficient Landscaping

As stated in Section 15.37.010, Purpose, the purpose of this chapter of the Code is to appoint and designate the community development department as the enforcement authority to enforce the provisions of the California Integrated Waste Management Act of 1989. Section 15.37.070, Construction waste diversion requirement, 65 percent of nonhazardous construction and demolition debris and 100 percent of excavated soil and noninfectious land clearing debris generated from every applicable

construction, renovation, or demolition project shall be diverted from going to landfills by using recycling, reuse and diversion programs.

City of Benicia General Plan

The city of Benicia General Plan Chapter 2 Community Development and Sustainability outlines the City solid waste policy:

- **Policy 2.42.1:** Strive to accomplish the mandated objectives of the California Integrated Waste Management Act.

Existing Conditions

Non-Hazardous Solid Waste

Solid waste in Benicia is collected by Republic Services, which is the City's exclusive local franchise collector for residential recyclables, yard waste, garbage and commercial refuse. Republic also provides recycling services to businesses. The City's Collection Services Agreement indicates that Republic may dispose of non-recycled waste at Keller Canyon Landfill in Contra Costa County, or another appropriate facility designated for disposal. Keller Canyon Landfill, which is owned by Republic Services (formerly Allied Waste Industries, Inc.), has a daily permitted throughput of 3,500 tons/day and a total permitted capacity of 75.018 million cubic yards (CalRecycle 2022a). As of November 16, 2004, the landfill had 63,408,410 cubic yards of remaining capacity (CalRecycle 2022a). This is anticipated to provide disposal capacity until the end of 2050 (Calrecycle 2022a). Another potential landfill for the City's waste, Potrero Hills Landfill, is in Solano County, near Suisun City. This landfill has a daily permitted throughput of 4,330 tons/day and a total permitted capacity of 83.1 million cubic yards (CalRecycle 2022b). As of January 1, 2006, the landfill had 13,872,000 cubic yards of remaining capacity (CalRecycle 2022b). This is anticipated to provide disposal capacity until February 2048 (Calrecycle 2022b).

Hazardous Solid waste

The City's hazardous Solid waste are disposed at the Kettleman Hills Facility, which is operated by Chemical Waste Management, Inc. The Kettleman Hills Facility is in the San Joaquin Valley midway between San Francisco and Los Angeles. The facility is approved to manage hazardous material under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

4.16.4.2 THRESHOLDS OF SIGNIFICANCE

1. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.
2. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

UTILITIES & SERVICE SYSTEMS

4.16.4.3 PROPOSED HOUSING ELEMENT POLICIES

The following program from the proposed Housing Element Update applies to solid waste diversion:

- **Program 6.01:** The City will continue to implement the latest version of the California Green Building Standards Code (last adopted by reference in 2019 by City Council Ordinance 19-14). The City will evaluate opportunities for integrating additional green building standards into the Zoning Ordinance and Landscape Code.

4.16.4.4 PROPOSED SAFETY ELEMENT POLICIES

There are no policies in the proposed Safety Element applicable to solid waste service.

4.16.4.5 ENVIRONMENTAL IMPACTS

UTIL-7	The project would not generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.
--------	--

Housing Element Update

As described in Chapter 3, *Project Description*, a maximum total of 3,584 units would be allowed under the Housing Element Update. However, the Housing Element estimates that the “realistic” total of units under the Housing Element would be 2,277 units (see Chapter 3 for more details). As the Housing Element Update generally focuses on providing affordable housing through the means of increasing density on various sites across the City, it can be assumed that most development that will occur on the Housing Element Inventory Sites, will be multi-family development projects.

To be conservative, this analysis will use the highest residential generation rate of the California Department of Resources Recycling and Recovery’s (CalRecycle) sample solid waste generation rates, 12.23 pounds per household per day. Therefore, under the “maximum units” scenario, the units developed under the Housing Element Update would generate 43,832 pounds per day of solid waste.⁸ As noted above, the Keller Canyon Landfill has a daily permitted throughput of 3,500 tons per day. The total estimated daily waste generation of the Housing Element sites under the “maximum units” scenario would be 18.87 tons which would not exceed the Keller Canyon Landfill’s daily capacity, which represent approximately 0.54 percent of the maximum daily throughput. Additionally, the daily permitted throughput of Potrero Hills Landfill is 4,330 tons per day. The proposed project’s solid waste generation of 18.87 tons would represent approximately 0.44 percent of the maximum throughput and would not exceed the Potrero Hills Landfill’s daily capacity.

⁸ 3,584 units x 12.23 lb/unit/day = 43,832 lb/day

UTILITIES & SERVICE SYSTEMS

The proposed project would not impair the attainment of state-level or local waste reduction goals. The proposed project’s impact would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City’s ability to respond to natural and manmade disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not have any significant physical environmental effects related to the City’s solid waste facilities. No impacts would occur.

Significance Without Mitigation: Less than significant.

UTIL-8	The project would comply with federal, state, and local management and reduction statutes and regulations related to solid waste.
--------	---

Housing Element Update

The proposed project would comply with the solid waste requirements. During construction, future development projects would comply with CALGreen, which requires recycling and/or salvaging for reuse a minimum of 65 percent of nonhazardous construction and demolition waste generated during most “new construction” projects (CALGreen Sections 4.408 and 5.408). Chapter 15.37, Mandatory Construction Waste Reduction, Disposal and Water Efficient Landscaping, of the City’s Municipal Code implements these CALGreen requirements. During operations, future projects would comply with AB 341 and AB 1826 which require commercial and multifamily residential land uses to have recycling and organic waste recycling. Chapter 8.24, Refuse Matter Disposal, of the City’s Municipal Code which outlines the requirements of the City’s waste diversion program pursuant to SB 1383 for single-family generators. This ordinance also implements General Plan Program 2.42.C which directs the City to establish a curbside service that would pick up and compost yard waste and make it available to City residents for a reasonable cost. Construction activities would be required to comply with all federal, state, and local management and reduction statutes and regulations related to solid waste, impacts would be less than significant.

Safety Element Update

California Government Code Section 65302(g) requires all local jurisdiction to update their Safety Element upon revision of the Housing Element. The Safety Element Update (SEU) policies and implementing actions address change resiliency and adaptation mitigation as well as other topics such as fire risk, seismic risk, flood risk, site contamination, and the City’s ability to respond to natural and manmade

UTILITIES & SERVICE SYSTEMS

disasters. These policies and implementing actions aim to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. SEU policies and implementing actions aim to address and mitigate manmade and natural disasters. As this is a policy document, this SEU would not interfere with the implementation of federal, state, and local management and reduction statutes and regulations related to solid waste. No impacts would occur.

Significance Without Mitigation: Less than significant.

4.16.5 REFERENCES

- Benicia, City of (Benicia). 2022a, September 1 (Accessed). Water Reuse Project- Project Needs. https://beniciacarebuild.govoffice2.com/index.asp?SEC=C3FFA6AD-0946-43A8-981A-ED1DC0107806&DE=37AD9F82-7745-4476-B344-6CB28CAC2AF9&Type=B_BASIC&pri=0
- ____. 2022b, September 1 (Accessed). Marin Clean Energy (MCE) – Community Choice Aggregation (CCA). https://www.ci.benicia.ca.us/index.asp?SEC=4CB072CD-5B48-41EF-8DFE-D4ACA07BD2E4&Type=B_BASIC
- ____. 2021, May 18. 2020 Urban Water Management Plan. [https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/City_of_Benicia_2020_UWMP_-_Final_06.10.21\(1\).pdf](https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/City_of_Benicia_2020_UWMP_-_Final_06.10.21(1).pdf)
- ____. 2020, September. Sewer Management Plan. https://beniciacarebuild.govoffice2.com/index.asp?SEC=C093A405-81FC-4A74-A441-04402BD7F860&DE=205641B4-E47C-470C-B6EF-DF968FA17F4D&Type=B_BASIC&pri=0
- ____. 2016, November. City of Benicia- Benicia Water Reuse Project Final Initial Study and Mitigated Negative Declaration. [https://beniciacarebuild.govoffice2.com/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/Benicia_Water_Reuse_Project_Final_IS-MND_11-3-16\(1\).pdf](https://beniciacarebuild.govoffice2.com/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/Benicia_Water_Reuse_Project_Final_IS-MND_11-3-16(1).pdf)
- ____. 2012. Wastewater System Master Plan. https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/2012_Water_System_Master_Plan_-_FINAL.pdf
- ____. 2011, July. City of Benicia Wastewater System Master Plan. https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/Benicia_WW_System_Master_Plan_Final_Report_July_2011.pdf
- ____. 2009, September 21. Benicia Climate Action Plan. <https://www.ci.benicia.ca.us/index.asp?SEC=A9D0EFE9-0349-4D1C-BD45-FA5DDA4C94A9&DE=EA2BC0FB-21B5-4185-8C15-122F41127E2F>
- ____. 2004. City of Benicia Storm Water Management Plan. https://www.waterboards.ca.gov/water_issues/programs/stormwater/swmp/benicia_swmp.pdf
- ____. 1999, June 15. Benicia General Plan. <https://www.ci.benicia.ca.us/index.asp?SEC=0371539A-30D9-4885-B61F-B5038B415DD3&DE=F40DB441-1E06-45F8-82F8-6D632AB9EC85>.
- California Department of Resources Recycling and Recovery (CalRecycle). 2022a, September 1 (Accessed). Solid Waste Information System Facility/Site Database, Keller Canyon Landfill (07-AA-0032). <https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/4407?siteID=228>.

UTILITIES & SERVICE SYSTEMS

____. 2022b, September 1 (Accessed). Solid Waste Information System Facility/Site Database, Potrero Hills Landfill (48-AA-0075)
<https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/1194?siteID=3591>.

____. 2019b. Estimated Solid Waste Generation Rates.
<https://www2.calrecycle.ca.gov/WasteCharacterization/General/Rates>

Ochendusko, Kyle, Deputy Public Works Director, City of Benicia. 2021, May 4. Introduction to the Benicia Wastewater Utility [presentation to City Council].
https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A9735-86EA195E2C8D%7D/uploads/20210504_Intro_to_Benicia_Wastewater_Utility_Presentation.pdf

Solano County Local Area Formation Commission (Solano LAFCO). 2017, February 27. City of Benicia Municipal Services Review.
<https://www.solanolafco.com/Studies/MSR/Cities/Benicia%20MSR%20Final%20Feb%2027%202017.pdf>

Tarbox, William (Public Works Director, City of Benicia). 2020, April 21. 2020 Water and Wastewater Utilities Update [presentation to City Council].
https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/20200421_CC_Agenda_Item_14.A_Presentation-FINAL.pdf

5. Significant Unavoidable Adverse Impacts

Significant Unavoidable and Adverse Impacts

Section 15126.2 of the California Environmental Quality Act (CEQA) Guidelines requires that “direct and indirect significant effects of the project on the environment shall be clearly identified and described, giving due consideration to both the short- and long-term effects.”

Chapter 1, *Executive Summary*, contains Table 1-1, which summarizes the impacts, mitigation measures, and levels of significance before and after mitigation. While actions from the Project and mitigation measures, where feasible, would reduce the level of impact to less than significant, the following impacts would remain significant and unavoidable after mitigation measures are applied:

- **AIR-1:** The project could conflict with or obstruct implementation of the BAAQMD Clean Air Plan.
- **AIR-2:** Buildout of the project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under applicable federal or State ambient air quality standard.
- **GHG-1:** The project would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- **CULT-1:** The project would cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.
- **TRANS-2:** The project would conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).

Significant Irreversible Changes Due to the Proposed Project

Section 15126.2(c) of the CEQA Guidelines requires that an Environmental Impact Report (EIR) describe any significant irreversible environmental changes that would be caused by the proposed project should it be implemented. Specifically, the CEQA Guidelines state:

Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highways improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

The following are the significant irreversible changes that would be caused by the proposed project, should it be implemented:

- Implementation of the proposed project would include construction activities that would entail the commitment of nonrenewable and/or slowly renewable energy resources; human resources; and natural resources such as lumber and other forest products, sand and gravel, asphalt, steel, copper, lead, other metals, water, and fossil fuels. Operation of the proposed project would require the use of natural gas and electricity, petroleum-based fuels, fossil fuels, and water. The commitment of resources required for the construction and operation of the proposed project would limit the availability of such resources for future generations or for other uses during the life of the project.
- As increased commitment of social services and public maintenance services (e.g., police, fire, schools, libraries, and sewer and water services) would also be required. The energy and social services commitments would be long-term obligations in view of the low likelihood of returning the land to its original condition once it has been developed.
- The visual character of the Housing Element sites would be altered by the construction of the new structures. Landscaping, grading, and construction of project sites would also contribute to an altered visual character of the existing sites. This would result in a permanent change in the character of the sites and on- and off-site views in their vicinity.
- An increase in vehicle trips would accompany project-related population growth. Over the long term, emissions associated with such vehicle trips would continue to contribute to the South Coast Air Basin's nonattainment designation for ozone (O³) and particulate matter (PM_{2.5} and PM₁₀) under the California and National Ambient Air Quality Standards (AAQS), and nonattainment for nitrogen dioxide (NO₂) under the California AAQS.

Growth-Inducing Impacts of the Proposed Project

Pursuant to Sections 15126(d) and 15126.2(d) of the CEQA Guidelines, this section is provided to examine ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Also required is an assessment of other projects that would foster other activities which could affect the environment, individually or cumulatively. To address this issue, potential growth-inducing effects will be examined through analysis of the following questions:

- Would this project remove obstacles to growth, e.g., through the construction or extension of major infrastructure facilities that do not presently exist in the project area, or through changes in existing regulations pertaining to land development?
- Would this project result in the need to expand one or more public services to maintain desired levels of service?

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

- Would this project encourage or facilitate economic effects that could result in other activities that could significantly affect the environment?
- Would approval of this project involve some precedent-setting action that could encourage and facilitate other activities that could significantly affect the environment?

Please note that growth-inducing effects are not to be construed as necessarily beneficial, detrimental, or of little significance to the environment. This issue is presented to provide additional information on ways in which this project could contribute to significant changes in the environment, beyond the direct consequences of developing the land use concept examined in the preceding sections of this EIR.

Would this project remove obstacles to growth, e.g., through the construction or extension of major infrastructure facilities that do not presently exist in the project area, or through changes in existing regulations pertaining to land development?

The Housing Element Update's implementation would not remove obstacles to additional growth in this manner, as it would be undertaken in an area that currently is served by all utilities and services. As discussed in the Section 4.16, *Utilities and Service Systems*, the project would not require such additional public service facilities.

Section 4.12, *Population and Housing*, analyzes the project's overall effect on population and housing, including growth-inducing considerations. In terms of housing, implementation of the HEU would provide for development of between 3,598 maximum residential units. Under the "maximum units" scenario, the population of the City would increase by approximately 8,743 persons, as discussed in Section 4.12.

This planned population growth in the City has been projected and directed by the Association of Bay Area Governments (ABAG) and Solano County as part of the 6th Housing Element Cycle to meet the region's housing needs allocation. Implementation of the HEU would require an amendment to the City's General Plan and Zoning Code to accommodate the projected growth. Because general plans define the location, type, and intensity of growth within a given jurisdiction, they are the primary means of regulating development and growth in California. Since the Housing Element is a part of the City's General Plan, any updates to that element would provide a means to plan for and regulate development in the areas considered as part of the HEU. Additional new residential development that could derive from the HEU's implementation would therefore be consistent with the growth projections in the City's General Plan as well as applicable regional plans adopted by ABAG and other relevant entities and would help the region meet its regional housing allocation requirements. Consequently, implementation of the HEU would not induce substantial unplanned population growth that was not previously anticipated.

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Would this project result in the need to expand one or more public services to maintain desired levels of service?

The proposed project would increase residents in the City. The proposed project is expected to increase the demand for public services, which would contribute to the needs to expand facilities. However, as substantiated in Section 4.13, *Public Services*, of this DEIR, existing programs and policies would ensure that the increase in uses and impacts to public services, would be less than significant.

Would this project encourage or facilitate economic effects that could result in other activities that could significantly affect the environment?

During the construction of future projects, a number of design, engineering, and construction jobs would be created. This would last until construction of a project is completed. Construction employees would be absorbed from the regional labor force, and the construction of future projects are not anticipated to attract new workers to the region. The proposed project would result in an increase in residents (see Section 4.12, *Population and Housing*). Future residents of the proposed project would seek economic opportunities such as shopping, entertainment, home improvement, auto maintenance, and so forth, within City and surrounding area. This would create an increased demand for such economic goods and services and would, therefore, encourage the creation of new businesses and/or expansion of existing businesses that address these needs. Therefore, impacts would be less than significant.

Would approval of this project involve some precedent-setting action that could encourage and facilitate other activities that could significantly affect the environment?

As identified above, the proposed project would result in a zone change for housing sites listed in Table 3-3. Implementation of the proposed zone change could further induce non-residential zoned sites to be zoned for residential uses. Proposals may arise to change districts in the vicinity of future project sites. However, these would require full environmental analysis of the impacts of such actions. The proposed project does not propose changes to any of the City's building safety standards (i.e., building, grading, plumbing, mechanical, electrical, or fire codes) to implement this project. The proposed project would comply with all applicable City plans, policies, ordinances, etc. to ensure that there are no conflicts with adopted land development regulations and that any environmental impacts are minimized. Therefore, the proposed project would not result in precedent-setting actions. The impacts of subsequent similar actions would require environmental analysis and associated mitigation to ensure that such subsequent impacts would not significantly affect the environment.

6. *Alternatives to the Proposed Project*

6.1 INTRODUCTION

6.1.1 PURPOSE AND SCOPE

Section 15126.6(a) of the State CEQA Guidelines requires EIRs to describe “a range of reasonable alternatives to the project..., which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project and evaluate the comparative merits of the alternatives.”

An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. An EIR is not required to consider alternatives that are infeasible.

The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason. Section 15126.6(b) describes the purpose of the alternatives analysis as follows:

- Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which have the potential to avoid or substantially lessen any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives or would be more costly.

The State CEQA Guidelines suggest that alternatives should be compared to the proposed project’s environmental impacts, and that the “No Project” alternative be considered (State CEQA Guidelines Section 15126.6[e]). In defining “feasibility” (e.g., feasibly attain most of the basic objectives of the project”), State CEQA Guidelines Section 15126.6(f)(1) states, in part:

- Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives.

ALTERNATIVES TO THE PROPOSED PROJECT

6.1.2 DEVELOPMENT OF PROJECT ALTERNATIVES

The range of alternatives included for analysis in an EIR is governed by the “rule of reason.” The selection and discussion of alternatives fosters informed decision-making and informed public participation. This is accomplished by providing sufficient information to enable readers to reach conclusions themselves about such alternatives. This approach avoids assessing an unmanageable number of alternatives or analyzing alternatives that differ too little to provide additional meaningful insights about their environmental effects. The alternatives addressed in this DEIR were selected in consideration of one or more of the following factors:

- The extent to which the alternative would accomplish most of the basic objectives of the project.
- The extent to which the alternative would avoid or reduce any of the identified significant environmental effects of the project.
- The feasibility of the alternative, taking into account site suitability and parcel sizes, and consistency with applicable public plans, policies, and regulations.
- The appropriateness of the alternative in contributing to a reasonable range of alternatives necessary to permit a reasoned choice.

The alternatives analyzed in this EIR were ultimately chosen based on each alternative’s ability to feasibly attain the basic project objectives while avoiding or reducing one or more of the project’s significant effects. The analysis provides readers with adequate information to compare the effectiveness of identified mitigation or significant adverse impacts and to enable readers to make decisions about the project.

6.1.3 PROJECT OBJECTIVES

As described in Section 3.1, the following objectives have been established for the proposed project and will aid decision makers in their review of the project, the project alternatives, and associated environmental impacts.

1. Update the General Plan's Housing Element to comply with State-mandated housing requirements and to address the maintenance, preservation, improvement, and development of housing in the City between 2023 and 2031.
2. Include an adequate inventory of housing sites and rezone the sites as necessary to meet the required Regional Housing Needs Allocation and to provide an appropriate buffer.
3. Update the Safety Element to be consistent with the state requirements, as presented in Section 65302(g) of the California Government Code, and to address climate adaptation and resiliency.

ALTERNATIVES TO THE PROPOSED PROJECT

4. To affirmatively further fair housing (AFFH).
5. Incentivize the development of housing, particularly affordable housing, suited to special needs and all income levels.

6.1.4 SIGNIFICANT IMPACTS

The following lists the proposed project's significant and unavoidable impacts:

Air Quality

- **AIR-1:** The project could conflict with or obstruct implementation of the BAAQMD Clean Air Plan.
- **AIR-2:** Buildout of the project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under applicable federal or State ambient air quality standard.

Greenhouse Gas Emissions

- **GHG-1:** The project would generate greenhouse gas emissions (GHG), either directly or indirectly, that may have a significant impact on the environment.

Cultural Resources

- **CULT-1:** The project would cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.

Transportation

- **TRANS-2:** The project would conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).

6.1.5 ALTERNATIVES REJECTED FROM FURTHER CONSIDERATION

In accordance with CEQA Guidelines Section 15126.6, there were no alternatives suggested or rejected as infeasible during the Notice of Preparation (NOP) scoping process. However, the City nonetheless identified potential alternatives for consideration, yet ultimately eliminated these alternatives from further analysis in the EIR. Suitable alternatives are those which:

1. Can substantially reduce the proposed project's significant impact;
2. Can attain most of the basic project objectives;
3. Are potentially feasible; and
4. Are reasonable and realistic.

ALTERNATIVES TO THE PROPOSED PROJECT

Alternatives that do not meet each of these four criteria may be eliminated from further consideration in the EIR. The following alternatives have been considered by the City but rejected for their failure to meet the four criteria and, therefore, will not be analyzed further in this EIR.

6.1.6 ALTERNATIVES CONSIDERED AND REJECTED

The following is a discussion of project alternatives considered during the scoping and planning process and the reasons why they were not selected for detailed analysis in this EIR.

6.1.6.1 ALTERNATIVE LOCATION

The proposed Housing Element Update and Safety Element Update cover the entire City. Alternative locations are typically included in an environmental document to avoid, lessen, or eliminate the significant impacts of a project by considering the proposed development in an entirely different location. To be feasible, development of alternative locations must be able to fulfill the project purpose and meet most of the project's basic objectives. Given the nature of the proposed project (adoption of a Housing Element and Safety Element for the entire City), it is not possible to consider an offsite alternative because the City boundaries have been established through incorporation. Sites considered for rezoning as shown in Table 3-3, Opportunity Sites could be changed however their selection was made during preparation of the Draft Housing Element (Appendix 3-1) and must meet specific selection criteria established by the state of California. While different sites could be included as part of the Proposed Project additional sites that meet the criteria for selection were not discovered during development of the draft Housing Element. For this reason, considering alternative sites was considered infeasible pursuant to State CEQA Guidelines Section 15126.6(c) and was rejected as a feasible project alternative.

6.1.6.2 REDUCED DENSITY ALTERNATIVE

A reduced density alternative that would result in fewer residences, would theoretically reduce traffic and thereby reduce community impacts such as air quality, greenhouse gas (GHG) emissions, traffic, noise, and demand for utilities and public services. However, such an alternative would not achieve or would only partially achieve the project objectives of providing for growth in the City. Additionally, this alternative would not meet the income categories required as part of the City's RHNA allocation that equate affordability with higher density. The City's obligations to provide for additional housing are determined by State law, and are manifested through the RHNA, as promulgated by the State Department of Housing and Community Development (HCD) and the Association of Bay Area Governments (ABAG). As set forth in Table 3-1 in Chapter 3 – Project Description of the 750 units allocated to the City in the RHNA, 439 of those units fall into the low and very low-income household categories. In the Bay Area, housing for these income categories typically can be accommodated only through higher density development which reduces the per unit land and construction costs. In addition, by significantly restricting growth, the environmental impact of the projected growth would increase development pressure elsewhere in the

ALTERNATIVES TO THE PROPOSED PROJECT

region. A reduced development density conflicts with regional plans, would relocate impacts outside of the City, and would not meet the project objectives, this option was not evaluated in the EIR.

6.1.6.3 REDUCE AIR QUALITY AND GREENHOUSE GAS EMISSION IMPACTS

The Draft EIR determined that development of the housing sites would likely result in significant and unavoidable impacts in the categories identified in section 6.1.4. Developing an environmental alternative to reduce the determination to less than significant while keeping the amount of housing needed to satisfy the RHNA was considered. To reduce the Air Quality and Greenhouse Gas Emissions impacts the residential population in the City would need to increase without increasing daily trips per person so that the population growth outpaces Vehicle Miles Travelled (VMT). A robust transit system including high priority transit areas and sufficient transit infrastructure linking jobs with housing that is still in the planning process for Benicia would be required to accomplish this objective. While there is some transit serving the City, it is not sufficiently robust to be considered as a means of significantly reducing VMT. As shown in Figures 3-1a through 3-1e, the housing sites are distributed throughout the City. The distribution of sites is a requirement of the state policy that discourages placing most of the housing in allocation near high quality transit. For transit to make enough of a reduction in vehicle trips to reduce VMT and then by extension air quality and greenhouse gas emissions, it would need to be available throughout the City, and with sufficient frequency that it would encourage ridership. As this potential is well beyond the proposed project that is focused on increasing zoning for residential uses and involves a shift from personal car use to transit that is not currently possible, this alternative was not evaluated in the EIR.

6.1.7 ALTERNATIVES SELECTED FOR FURTHER ANALYSIS

Based on the criteria listed above, the following alternatives have been determined to represent a reasonable range of alternatives which have the potentially to feasibly attain most of the basic objectives of the project but may avoid or substantially lessen any of the significant effects of the project. These alternatives are analyzed in detail in this section:

- No Project/Existing Housing and Safety Elements
- Avoidance of Historical Resources
- Removal of All Opportunity Sites in a Historic District

ALTERNATIVES TO THE PROPOSED PROJECT

An EIR must identify an “environmental superior” alternative and if the No Project Alternative is identified as environmentally superior, the EIR is then required to identify as environmentally superior an alternative from among the others evaluated. Each alternative’s environmental impacts are compared to the proposed project and determined to be environmentally superior, neutral, or inferior.

6.2 NO PROJECT/EXISTING HOUSING AND SAFETY ELEMENTS ALTERNATIVE

In the No Project/Existing Housing and Safety Elements Alternative, the Housing Element and Safety Element Updates would not be implemented by the City. The current Housing and Safety Elements would remain in effect. Land use densities and zoning would remain unchanged under this Alternative, and development would be consistent with the existing Housing and Safety Elements.

6.2.1 AESTHETICS

Under this Alternative, the entire City would be developed under the current Housing and Safety Elements. The City’s Municipal Code and General Plan identify development standards to ensure quality development in the City, and any aesthetics-related policies in the existing Housing and Safety Elements would continue to be implemented. The aesthetic impacts would be similar to the proposed project and would be less than significant.

6.2.2 AIR QUALITY

Because this Alternative would not result in zone changes or increase the development density as with the proposed project, this Alternative would result in lesser levels of criteria air pollutant emissions and toxic air contaminants (TACs) compared to the proposed project. Although this Alternative would result in less impacts, impacts would also be significant and unavoidable, as with the proposed project, as this Alternative would result in an increase in pollutants.

6.2.3 BIOLOGICAL RESOURCES

This Alternative would not result in zone changes or increase development density, and therefore, impacts to biological resources would be less than the proposed project. Federal and state regulations require development projects to assess and mitigate potential biological resources within a project site. With the implementation of Mitigation Measures BIO-1 through BIO-4, impacts under both the proposed project and this Alternative would result in less significant impacts with mitigation incorporated, though this Alternative would result in slightly less impacts than the proposed project.

ALTERNATIVES TO THE PROPOSED PROJECT

6.2.4 CULTURAL RESOURCES

Cultural resource impacts are primarily associated with potential ground disturbance and development of previously undisturbed areas, or impacts to potential historic structure (building additions, demolition, etc.). Development under this Alternative would be less than the proposed project because the proposed project would result in zone changes and increase density. However, like the proposed project, this Alternative would have the potential to impact archaeological and historic resources as result of ground disturbance and redevelopment; as this Alternative would not result in zone changes and an increase in density, impacts would be less than the proposed project and would remain significant and unavoidable.

6.2.5 ENERGY

As discussed in Impact ENE-1, of Chapter 4.5, *Energy*, the proposed project would result in an overall decrease in energy consumption per capita, decrease in reliance on fossil fuels, and increase in renewable energy sources, the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources. The No Project/ Existing Housing and Safety Elements Alternative would result in less short-term energy use for construction but would likely result in similar if not increased net energy use per capita during operation. While the proposed project would allow more housing at greater densities when compared to this alternative, the replacement of older, less energy-efficient buildings with buildings that adhere to the stricter CALGreen standards and other applicable energy standards could reduce the net per-capita energy use. However, like the proposed project, impacts to energy under this alternative would remain less than significant.

6.2.6 GEOLOGY AND SOILS

As with the existing Housing Element, individual development projects under the No Project/ Existing Housing and Safety Elements Alternative would be required to prepare site-specific geotechnical investigations to evaluate seismic, liquefaction, ground settlement, paleontological resources, and/or soil expansion hazards. All development projects would be required to comply with existing federal, state, and local regulations, such as the California Building Code and statewide General Construction Permit. As this Alternative would not result in higher densities, impacts would be less than the proposed project and would be less than significant with mitigation incorporated.

6.2.7 GREENHOUSE GAS EMISSIONS

As the proposed project would result in zone changes and an increase in density, this Alternative would result in lesser levels of GHG emissions compared to the proposed project. Although this Alternative would result in less impacts, impacts would also be significant and unavoidable, as with the proposed project, as this Alternative would result in an increase in emissions.

ALTERNATIVES TO THE PROPOSED PROJECT

6.2.8 HAZARDS AND HAZARDOUS MATERIALS

Under both this Alternative and the proposed project, future development would be required to comply with existing federal, state, and local regulations governing the use, storage, transport, and disposal of hazardous materials and hazardous wastes. Structures built in potential landslide zones would be required to comply with building standards in the California Building Code. However, this Alternative would not implement the new safety policies proposed under the Safety Element Update. This Alternative would result in greater impacts than the proposed project, and impacts would be less than significant.

6.2.9 HYDROLOGY AND WATER QUALITY

Future project-specific water quality management plans (WQMPs), preliminary and/or final, will be prepared at the time of project application. Moreover, Low Impact Development (LID) and water quality treatment solutions prescribed in project specific WQMPs shall be designed to support or enhance the regional BMPs and efforts implemented by the City as part of its effort to improve water quality. During construction, project-specific Stormwater Pollution Prevention Plans (SWPPP) are required to be prepared in accordance with the site-specific sediment risk analyses based on the grading plans. The SWPPP must describe construction BMPs that address pollutant source reduction and provide measures/controls necessary to mitigate potential pollutant sources. As this Alternative would result not result in zone changes or an increase in density, impacts would be less than the proposed project and remain less than significant.

6.2.10 LAND USE AND PLANNING

This Alternative would not result in zone changes or an increase in density, as with the proposed project. As such, this Alternative would not be consistent with the City's RHNA allocation. Therefore, land use impacts under this Alternative would be greater than the proposed project and would remain less than significant.

6.2.11 NOISE

Construction and operational noise impacts would be less than the proposed project, as this Alternative would not result in zone changes or increase density. This Alternative would not introduce new sources of noise to the City. The proposed project would, however, result in an increase in noise levels primarily due to an increase in traffic noise and construction activities on Housing Element sites. Adherence to the City's Noise code and other applicable regulations in addition to the implementation of Mitigation Measure NOI-1 would reduce impacts of the proposed project to less than significant. Therefore, noise impacts of this Alternative would be less than the proposed project, and less than significant.

ALTERNATIVES TO THE PROPOSED PROJECT

6.2.12 POPULATION AND HOUSING

This Alternative would result in less residents and housing units compared to the proposed project and would not meet the City's RHNA allocation. Therefore, this Alternative is greater than the proposed project, and would be less than significant.

6.2.13 PUBLIC SERVICES AND RECREATION

This Alternative would result in less residents and housing units compared to the proposed project. However, the policies in the Safety Element Update would not be implemented under this Alternative. Overall, impacts on public services, including fire, police, school, library services, and parks and recreation services would be less than the proposed project and would be less than significant.

6.2.14 TRANSPORTATION

This Alternative would not result in an increase in residents or housing units, and therefore, would not increase trips, compared to the proposed project. This Alternative would not implement the policies in the Safety Element Update that would promote emergency access. Overall, this Alternative would result in lesser impacts compared to the proposed project and impacts would be significant and unavoidable.

6.2.15 TRIBAL CULTURAL RESOURCES

Impacts to tribal cultural resources would primarily be associated with potential ground disturbance and development of previously undisturbed areas. Development under this Alternative would not result in a zone change or increase in density compared to the proposed project. Both the proposed project and this Alternative would be required to comply with federal and state regulations pertaining to the protection and preservation of tribal cultural resources. Impacts under this Alternative would be less than the proposed project and would be less than significant with mitigation incorporated.

6.2.16 UTILITIES AND SERVICE SYSTEMS

This Alternative would not result in zone changes or an increase in density compared to the proposed project. Therefore, the impact on the City's infrastructure system would be less than the proposed project and less than significant.

6.2.17 CONCLUSION

Impacts of the No Project/Existing Housing and Safety Elements Alternative would result in similar impacts to Aesthetics; reduce the proposed project's impacts to Air Quality, Biological Resources, Cultural Resources, Energy, Geology and Soils, Greenhouse Gas Emissions, Hydrology and Water Quality, Noise, Public Services, Transportation, Tribal Cultural Resources, and Utilities and Service Systems; and increase impacts to Hazards and Hazardous Materials, Land Use and Planning, and Population and Housing.

ALTERNATIVES TO THE PROPOSED PROJECT

The No Project/Existing Housing and Safety Elements Alternative would not meet any of the project objectives identified in section 6.1.3. The No Project Alternative would not update the General Plan's Housing Element to comply with State-mandated housing requirements and to address the maintenance, preservation, improvement, and development of housing in the City between 2023 and 2031; would not include an adequate inventory of housing sites and rezone the sites as necessary to meet the required Regional Housing Needs Allocation and to provide an appropriate buffer. In addition, the No Project Alternatives would not update the Safety Element to be consistent with the state requirements, as presented in Section 65302(g) of the California Government Code, and to address climate adaptation and resiliency.

6.3 AVOIDANCE OF HISTORICAL RESOURCES ALTERNATIVE

Under this Alternative, APN 089-371-020 on 190 East F Street and APN 088-141-060 on 190 East L Street would be removed from the Housing Element sites inventory. These sites contain historic buildings present in the City's historic resources inventory. Under the Housing Element and its proposed zone changes, these sites would be rezoned to accommodate residential development or increased residential development.

- The resource on APN 089-371-020 is a T-plan building with a narrow, gabled front façade that may have originated as a Greek Revival cottage. It is listed as a “may warrant special consideration in local planning” site on the City's Landmark Sites map. These are historic resources that were determined to be ineligible for local listing or designation through local government review process but may warrant special consideration in local planning. The site is currently designated as Downtown Commercial and zoned as Neighborhood General. The site would be rezoned to Neighborhood General with Overlay Zone. A maximum of 13 units would be allowed under the proposed designation.
- The resource on APN 088-141-060 is a 1951 Modernist-institutional style building designed by George Sellon which serves a gymnasium for Benicia High School. This resource is listed as a “Contributor”. Contributing buildings are defined as buildings of an age and/or that are representative of common styles and building types in the District, but which are not outstanding enough to merit individual recognition. The site is currently designated as Public/Quasi-Public and zoned Public and Semi-Public. It is proposed to be rezoned as Public and Semi-Public with Overlay Zone which would allow a maximum of 14 units to be developed on the parcel.

By removing these sites from the Housing Element Sites Inventory, the sites would not be rezoned to allow residential development or increased residential development, which would decrease the likelihood of these sites being redeveloped with residential uses. This alternative would lessen the potential for these locally designated historic buildings to be demolished or irreversibly altered, but that potential already exists and would persist with this alternative.

ALTERNATIVES TO THE PROPOSED PROJECT

Removal of these two properties would reduce the housing potential in Table 3-2 by 17 realistic units and 27 maximum units resulting in a total of 2,271 realistic dwelling units and 3,571 maximum allowable units¹, respectively. This alternative would still allow the City to meet its RHNA.

6.3.1 AESTHETICS

Under this Alternative, impacts to aesthetic resources would remain similar to the proposed project. As discussed in Chapter 4.1, *Aesthetics*, there are approximately four opportunity sites that could potentially impact the scenic vistas along I-780. The sites that would be removed from the inventory under this alternative are not included among these sites. While this alternative would avoid impacts to two historic buildings in the City, these buildings are not in proximity to a state scenic highway and impacts to aesthetic resources would remain at the same level of impact discussed in Chapter 4.1. The City's design review process and performance standards would reduce impacts to aesthetic resources to less than significant.

6.3.2 AIR QUALITY

Under this Alternative, impacts to air quality would remain similar to the proposed project. As noted, Chapter 4.2, *Air Quality*, the proposed project would result in cumulatively considerable increases in several criteria pollutants. Mitigation Measure AIR-2a would ensure that impacts of fugitive dust emissions from construction are reduced to less than significant. Mitigation Measure AIR-1b would also reduce operation-related emissions to the extent feasible but impacts would remain significant and unavoidable due to the forecasted increase in VMT growth. The removal of the two sites from the Housing Element Sites Inventory would avoid the potential buildout of a maximum of approximately 27 units which could slightly reduce the total VMT generated when compared to the proposed project. However, these sites are in the Downtown area, have increased accessibility to alternative modes of transportation, and are in close proximity to a mix of uses, which indicates that their redevelopment with higher density residential use could reduce VMT when compared to the sites' current uses. Overall, impacts to air quality under this alternative would remain similar to the proposed project.

6.3.3 BIOLOGICAL RESOURCES

Under this Alternative, impacts to biological resources would remain similar to the proposed project. As discussed in Chapter 4.3, *Biological Resources*, sites in the Housing Element Sites Inventory are primarily located in infill areas surrounded by urban land uses. The sites that would be removed from the inventory under this alternative are also surrounded by urban land uses. Implementation of Mitigation Measures BIO-1 through BIO-4 would reduce impacts to biological resources to less than significant. Under this

¹ See Chapter 3, *Project Description*, for more information on the "realistic unit" and "maximum unit" scenarios.

ALTERNATIVES TO THE PROPOSED PROJECT

alternative, impacts would remain less than significant with mitigation incorporated, similar to the proposed project.

6.3.4 CULTURAL RESOURCES

Under this alternative, two sites containing two historic buildings would be removed from the Housing Element Sites Inventory and would not be rezoned to accommodate residential development or increased residential development. Under the project, the proposed land use changes on these sites could result in these sites being developed with residential uses leading to an irreversible and significant change in the historical context of the sites and the area surrounding the historical buildings. While this alternative would reduce impacts to historic resources, it would not reduce impacts to less than significant.

As discussed in Chapter 4.4, *Cultural Resources*, the proposed project includes 17 opportunity sites that are located within the boundaries of the City's two historic districts, the Downtown Historic District and the Arsenal Historic District. While the removal of the two sites from the Downtown Historic District would avoid direct impacts to the resources discussed above, the possible development and redevelopment of the 15 other sites in the Downtown and Arsenal Historic Districts following their rezoning could result in irreversible impacts to the historic contexts of these districts by introducing incompatible building forms. All 17 sites within the Downtown and Arsenal Historic Districts are proposed to include an overlay zone that would allow up to 30 units per acre to be developed on these sites. This increase in density could lead to development that alters the historic character of these districts. However, the City's design review process for sites within historic districts and additional provisions in the Chapter 17.54, Historic Overlay District (H), of the City's Municipal Code would be applied on a project-specific level. These Mitigation Measures and regulations would reduce impacts to historic resources, but without project-specific evaluation, impacts to historic resources cannot be completely mitigated to less than significant.

6.3.5 ENERGY

Under this Alternative, impacts to energy would be slightly decreased when compared to the proposed project. As discussed in Impact ENE-1, of Chapter 4.5, *Energy*, the proposed project would result in an overall decrease in energy consumption per capita, decrease in reliance on fossil fuels, and increase in renewable energy sources, the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources. This alternative would limit the potential for two sites in the Housing Element Sites Inventory to be redeveloped for residential uses. The sites' current uses consist of a single-family residential dwelling unit and public/semi-public buildings, recreational facilities, and parking. Therefore, this alternative may slightly decrease the energy use during the construction process by avoiding construction from redevelopment. Since the current uses of the sites would likely consume less energy during operation than the full buildout of the sites with higher density residential uses, this alternative would also result in a slight decrease in net energy consumption during operation.

ALTERNATIVES TO THE PROPOSED PROJECT

6.3.6 GEOLOGY AND SOILS

Under this Alternative, geological and soil impacts would remain similar to the proposed project. As discussed in Chapter 4.6, *Geology and Soils*, geology and soil impacts would be less than significant under the proposed project with the implementation of the proposed Safety Element and other state and local regulations. Removal of the two sites from the inventory result in no change to zones of these parcels. These sites are in a seismically vulnerable area along with the rest of the City, in addition to a moderate level of liquefaction and landslide hazards. However, since impacts have been determined to be less than significant for the proposed project, removal of these sites from the inventory under this alternative cause impacts to remain less than significant.

6.3.7 GREENHOUSE GAS EMISSIONS

Under this Alternative, impacts to greenhouse gas emissions would remain similar to the proposed project. As discussed in Chapter 4.7, *Greenhouse Gas Emissions*, the proposed project's impacts on greenhouse gas emissions would be significant and unavoidable due to the potential of projects under the proposed Housing Element to exceed net zero emissions on a project-by-project basis. Removal of two sites from the inventory would result in no change to the zone of these sites, which would likely result in no redevelopment of the sites. Since the majority of annual GHG emissions generated by development facilitated by the proposed project are the result of vehicle use, this alternative could result in slightly decreased overall emissions since redevelopment of these sites would definitively result in more residents and more trips to these sites. However, this alternative would not reduce greenhouse gas emissions impacts to less than significant since all other sites under the proposed project would still be rezoned. Therefore, impacts remain significant and unavoidable.

6.3.8 HAZARDS AND HAZARDOUS MATERIALS

Under this alternative, hazards and hazardous material impacts would remain similar to the proposed project. The sites that would be removed from the inventory under this alternative are not located in areas of identified hazard including fire hazard severity zones, an airport land use safety zone, or near a site that is on a list of hazardous material sites. Furthermore, under this alternative, these sites would not be rezoned as part of the proposed project and would likely continue to operate under their current uses which may reduce the impacts of hazards created during the construction process that would occur during the redevelopment of these sites. However, as impacts have been determined to be less than significant with mitigation incorporated for the proposed project, this alternative cause hazards and hazardous material impacts to remain less than significant with mitigation incorporated.

ALTERNATIVES TO THE PROPOSED PROJECT

6.3.9 HYDROLOGY AND WATER QUALITY

Under this alternative, impacts to hydrology and water quality would remain similar to the proposed project. As the sites that would be removed from the inventory under this alternative are developed, this alternative and would not generate any significant change to the level of impact that was evaluated in Chapter 4.9, *Hydrology and Water Quality*. Impacts under this alternative would remain less than significant.

6.3.10 LAND USE AND PLANNING

Under this alternative, impacts to land use would slightly increase when compared to the proposed project. As discussed in Chapter 4.10, *Land Use and Planning*, the proposed project would not physically divide an existing community and is consistent with applicable land use plans. However, removal of these sites from the inventory would result in the loss of 27 (maximum) potential units of housing for the City in the Downtown area. The Bay Area's Regional Transportation Plan and Sustainable Community Strategy, Plan Bay Area 2050, encourages the provision of affordable housing opportunities and use of infill sites for its member jurisdictions, and this alternative would provide less housing in infill locations than the proposed project. As a result, impacts under this alternative would slightly increase but remain at a less than significant level.

6.3.11 NOISE

Under this Alternative, impacts to noise would be slightly decreased when compared to the proposed project. While operational noise levels are expected to increase due to increased roadway traffic under the proposed project, projects would be required to comply with applicable standards in the City's Noise Ordinance. The proposed project may also result in increased short-term construction-related noise impacts, but implementation of Mitigation Measure NOI-1 would reduce impacts to less than significant. This alternative would avoid the potential redevelopment of two sites which could also result in slightly decreased noise levels during both the construction and operation phases of projects on these sites. Impacts to noise under this alternative would remain less than significant with mitigation incorporated.

6.3.12 POPULATION AND HOUSING

Under this alternative, impacts to population and housing would slightly decrease when compared to the proposed project. As concluded in Chapter 4.12, *Population and Housing*, the proposed project would generate a level of population and housing units that exceeds the projections made for City by the Association of Bay Area Governments (ABAG). However, due to the housing needs of that region and state and the adoption of the Housing Element as a housing plan, the proposed project would not result in substantial unplanned growth. This alternative would remove two sites from the inventory. These sites would generate 27 maximum units and approximately 66 new residents, and therefore their removal from

ALTERNATIVES TO THE PROPOSED PROJECT

the inventory would slightly reduce the total housing units and population generated from the proposed project. Impacts under this alternative would slightly decrease but remain at a less than significant level.

6.3.13 PUBLIC SERVICES

Under this alternative, impacts to public services would decrease when compared to the proposed project. The proposed project would result in less than significant impacts to public services and project-specific evaluations would ensure that public services are funded and provided for each development under the Housing Element Update. APN 088-141-060 is an approximately five-acre site which contains a historic-designated gymnasium building, the City's Post Office, City Hall, Police Department, and other public recreation facilities including bocce ball and tennis courts. The redevelopment of this site for residential uses would necessitate the relocation and possible construction of these facilities in other parts of the City which would in turn result in additional CEQA impacts. By removing this site from the inventory, APN 088-141-060 would not be rezoned for residential uses. Therefore, this alternative would reduce impacts to public services; impacts would remain less than significant.

6.3.14 TRANSPORTATION

Under this Alternative, impacts to transportation would remain similar to the proposed project. As described in Chapter 4.14, *Transportation*, the proposed project is not expected to result in increased VMT per capita due to the project's focus on infill and density. However, as noted in the discussion of Impact TRAN-2, VMT generated by individual projects under the Housing Element may exceed the current VMT levels on a project-by-project basis. Removal of these two sites from the Housing Element's sites inventory would maintain the current zoning designations. Development of these sites would potentially increase the City's residential population resulting in more VMT, however, the sites location in the amenity-rich downtown area could result in the replacement of some vehicle trips with alternative modes of transportation. Therefore, this alternative could result in higher or lower VMT impacts than the proposed project, dependent upon the specifics of proposed development as a result of the zone change. Such projects would be evaluated on a project-specific level for VMT impacts and be required to comply with all applicable regulations and policies to reduce other transportation impacts. Overall impacts to VMT remain uncertain for both the proposed project and this alternative. Therefore, impacts to VMT would remain significant and unavoidable under this alternative. In addition, this alternative would neither increase nor decrease impacts to any other transportation thresholds.

6.3.15 TRIBAL AND CULTURAL RESOURCES

Under this Alternative, impacts to tribal and cultural resources would remain similar to the proposed project. As discussed in Chapter 4.15, *Tribal and Cultural Resources*, the proposed project would result in less than significant impacts to tribal and cultural resources with mitigation incorporated. The sites that would be removed from the inventory as a result of this alternative, do not contain any known tribal-related resources and the potential of these sites to contain such resources has not been evaluated.

ALTERNATIVES TO THE PROPOSED PROJECT

6.3.16 UTILITIES AND SERVICE SYSTEMS

Under this Alternative, impacts to utilities and service systems would be remain similar when compared to the proposed project. As discussed in Chapter 4.16, *Utilities and Service Systems*, the proposed project would result in less than significant impacts to utilities and service systems. Project-specific evaluation would be required to determine whether the development/redevelopment of the two sites that would be removed from the inventory under this alternative would result in significant impacts to utilities and service systems. Impacts are expected to remain less than significant.

6.3.17 CONCLUSION

Impacts of the Avoidance of Historic Resources Alternative would result in similar impacts to Aesthetics, Air Quality, Biological Resources, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Transportation, Tribal and Cultural Resources, and Utilities and Service Systems; reduce the proposed project's impacts to Cultural Resources, Energy, Noise, Population and Housing, Public Services; and increase impacts to Land Use and Planning. Despite the removal of approximately 27 (maximum) total units including 8 low-income units from the Housing Element Sites Inventory, this alternative would meet all of the objectives of the proposed project. However, due to this loss of units, this alternative meets the project's objective to provide a list of potential housing sites to meet the RHNA to a lesser extent than that of the proposed project.

6.4 REMOVAL OF ALL OPPORTUNITY SITES IN HISTORIC DISTRICTS

There are 17 sites in the City's two designated historic districts, the Downtown Historic Conservation District and the Arsenal Historic Districts, as shown in Tables 4.4-1 and 4.4-2 in Chapter 4.4, *Cultural Resources*, that are included in the project sites inventory. Two sites in the inventory contain properties of historic interest in the Downtown Historic Conservation District. Removal of sites in these districts would result in removal of between 207 (realistic) and 321 (maximum)² units from the Housing Element Sites Inventory (Table 3-3 in Chapter 3, *Project Description*). Under this alternative, a total of 2,081 realistic units and 3,277 maximum units would remain in the inventory. While this alternative would not reduce the number of available units in the sites inventory to a level below the City's RHNA, it would result in the loss of sites that could accommodate 99 very low-income and low-income units.

This alternative would avoid potential impacts to historic resources that could occur from the rezoning of sites for development/redevelopment of opportunity sites in the historic districts, however this alternative would continue to include the 12 "suitably zoned" sites within the two historic districts (see

² See Chapter 3, *Project Description*, for more information on the "realistic unit" and "maximum unit" scenarios.

ALTERNATIVES TO THE PROPOSED PROJECT

Table 3-4 in Chapter 3). These “suitably zoned sites” would contribute to the City’s RHNA but do not require a zone change. These sites already allow residential uses and the change proposed by the proposed project would allow residential development on additional sites in a similar land use context to that of the suitably zoned sites. Additionally, both historic districts already allow residential development. One of the goals stated in the Downtown Mixed-Used Master Plan is to preserve the historic residential character of the Downtown. As described in Chapter 4.4 of this Draft EIR, the City’s existing policies regulate how development can occur in the historic districts. Unless otherwise provided by state law, development within the Historic Conservation Districts is subject to design review and approval by the City’s Historic Preservation Review Commission. See Alternative 6.3 for discussion of the two properties on designed historic sites in the City.

6.4.1 AESTHETICS

Under this Alternative, impacts to aesthetic resources would slightly decrease compared to the proposed project. As discussed in Chapter 4.1, *Aesthetics*, there are approximately four opportunity sites that could potentially impact the scenic vistas along I-780. Of those four sites, one APN 080-140-670, is located in the Arsenal Historic Conservation District along I-780. Removal of this site from the inventory could potentially reduce impacts to the scenic quality of this highway. In addition, this alternative would reduce the impacts of development that could alter the visual character of the two historic districts. While the City’s design review process and performance standards would ensure that new development and redevelopment in the historic districts maintains the visual quality and character of the district, this alternative would result in less development and less change in visual character in these districts when compared to the proposed project. Impacts to aesthetic resources will remain less than significant.

6.4.2 AIR QUALITY

Under this Alternative, impacts to air quality would remain similar the proposed project. As noted in Chapter 4.2, *Air Quality*, the proposed project would result in cumulatively considerable increases in several criteria pollutants. Mitigation Measure AIR-2a would ensure that impacts of fugitive dust emissions from construction are reduced to less than significant. Mitigation Measure AIR-1b would also reduce operation-related emissions to the extent feasible but impacts would remain significant and unavoidable due to the forecasted increase in VMT growth. The removal of the 17 sites from the Housing Element Sites Inventory would avoid the potential buildout of approximately maximum 321 units which could reduce the total VMT generated when compared to the proposed project. However, 13 of these sites are located in the Downtown area and therefore have increased accessibility to alternative modes of transportation and are in close proximity to a mix of uses, which indicates that their redevelopment with higher density residential use could reduce net VMT per capita when compared to the sites’ current uses. It cannot be determined at this time that this alternative would reduce impacts to air quality to less than significant and therefore impacts under this alternative remain significant and unavoidable.

ALTERNATIVES TO THE PROPOSED PROJECT

6.4.3 BIOLOGICAL RESOURCES

As discussed in Chapter 4.3, *Biological Resources*, sites in the Housing Element Sites Inventory are primarily located in infill areas surrounded by urban land uses. The sites that would be removed from the inventory under this alternative are also surrounded by urban land uses. Implementation of Mitigation Measures BIO-1 through BIO-4 would reduce impacts to biological resources to less than significant. Under this alternative, impacts would remain less than significant with mitigation incorporated, similar to the proposed project.

6.4.4 CULTURAL RESOURCES

Under this alternative, 17 sites in the City's Downtown and Arsenal Historic Conservation Districts would be removed from the Housing Element Sites Inventory and would not be redesignated or rezoned to accommodate residential development or increased residential development. Under the proposed project, the proposed land use changes on these parcels could trigger the redevelopment of these sites for residential uses at a density of up to 30 units per acre, which in turn could alter the historic context of the districts. By removing all sites in these districts, no land use changes would occur in these districts and the historic character/context of the districts would remain largely consistent with their current development pattern. This alternative would therefore reduce impacts to cultural resources to less than significant.

6.4.5 ENERGY

Under this Alternative, impacts to energy would be slightly decreased when compared to the proposed project. As discussed in Impact ENE-1, of Chapter 4.5, *Energy*, the proposed project would result in an overall decrease in energy consumption per capita, decrease in reliance on fossil fuels, and increase in renewable energy sources, the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources. This alternative would limit the potential for 17 sites in the Housing Element Sites Inventory to be developed or redeveloped for residential uses. While some sites contain development, others are vacant. By avoiding the construction associated with the potential development/redevelopment of these sites, this alternative may decrease the overall construction energy use associated with the full buildout of the Housing Element. However, it is unclear whether the redevelopment/development of these 17 sites would increase or decrease overall operational energy consumption. The redevelopment of sites containing existing residential, commercial, or public/semi-public development could replace the older, less energy-efficient buildings with newer buildings that adhere to the stricter CALGreen building code standards. Therefore, under the proposed project, energy use would be decreased. Under this alternative, where older buildings would not be replaced, energy use may remain the same or be slightly higher than the proposed project. However, under the assumption that the development of vacant sites in the historic districts would introduce new sources of energy consumption that are not fully net-zero, the proposed project would increase long-term energy use and

ALTERNATIVES TO THE PROPOSED PROJECT

this alternative would result in less energy use. Without project-specific evaluation, it can be assumed that energy impacts under this alternative would be slightly less than the proposed project and would remain less than significant.

6.4.6 GEOLOGY AND SOILS

Under this alternative, geological and soil impacts would slightly decrease when compared to the proposed project. As discussed in Chapter 4.6, *Geology and Soils*, geology and soil impacts would be less than significant under the proposed project with the implementation of the proposed Safety Element and other state and local regulations. Removal of the 17 sites from the inventory results in no change to the zoning of these parcels. These sites are located in a seismically vulnerable area along with the rest of the City, and most overlie areas of moderate to high liquefaction hazard. Most sites in the Downtown district also overlie areas of medium landslide hazard. As established in Chapter 4.6, impacts have been determined to be less than significant for the proposed project and under this alternative, impacts would remain less than significant.

6.4.7 GREENHOUSE GAS EMISSIONS

Under this alternative, greenhouse gas emissions impacts would be decreased when compared to the proposed project because fewer units would be constructed. As discussed in Chapter 4.7, *Greenhouse Gas Emissions*, the proposed project's impacts on greenhouse gas emissions would be significant and unavoidable due to the potential of projects under the proposed Housing Element to exceed net zero emissions on a project-by-project basis. Removal of 17 sites from the inventory would result in no change to the zoning of these sites, which would likely result in no redevelopment/development of the sites. Since the majority of annual GHG emissions anticipated as a result of the proposed project are the result of vehicle use, this alternative could result in slightly decreased overall emissions since redevelopment of these sites would definitively result in more residents and more trips to these sites. However, most sites that would be removed from the sites inventory under this alternative are in the Downtown Historic District, which has increased accessibility to alternative modes of transportation and goods and services within walking distance. When combined with higher residential density, these are factors that typically reduce VMT which indicates that the redevelopment of the Downtown district's 13 sites with higher density residential use could reduce net VMT when compared to the sites' current uses. However, it cannot be assumed development of the four Arsenal District sites would reduce vehicle use/VMT. Overall, under this alternative, the assumptions regarding greenhouse gas emissions impacts would remain similar to the proposed project. While this alternative would limit the development or redevelopment of 17 sites, all other sites in the inventory would still be rezoned and impacts would remain significant and unavoidable.

ALTERNATIVES TO THE PROPOSED PROJECT

6.4.8 HAZARDS AND HAZARDOUS MATERIALS

Under this alternative, hazards and hazardous material impacts would slightly decrease when compared to the proposed project. While no opportunity sites in the Arsenal District directly overlie sites on a list of hazardous material sites, this alternative would limit residential development in proximity to sites currently or formerly containing hazardous materials. Additionally, APN 089-052-290 on 163 East H Street in the Downtown Historic District is located on the site of a completed leaking underground storage tank (LUST) cleanup site.

The sites that would be removed from the inventory under this alternative are not located in fire hazard severity zones or an airport land use safety zone. Furthermore, under this alternative, these sites would not be redesignated or rezoned as part of the proposed project and would likely continue to operate under their current uses which may reduce the impacts of hazards created during the construction process that would occur during the development and redevelopment of these sites. Impacts have been determined to be less than significant with mitigation incorporated for the proposed project and this alternative would result in hazards and hazardous material impacts remaining less than significant with mitigation incorporated.

6.4.9 HYDROLOGY AND WATER QUALITY

Under this alternative, impacts to hydrology and water quality would slightly decrease when compared to the proposed project. All sites in the Downtown Historic Conservation District are primarily developed with urban land uses. While this alternative may result in a slight decrease to water quality impacts that could have been generated during the construction process, like all other development in the City, development in the Downtown would be required to comply with provisions of General Construction Permits and other applicable requirements in the Benicia Municipal Code related to water discharges. Development of the opportunity sites in the Arsenal District would likely increase the area of impervious surfaces to a greater extent than development in the Downtown district, since the four sites in the Arsenal district are relatively vacant and underdeveloped. However, development in the Arsenal would still result in less than significant impacts to water quality and hydrology through compliance with all applicable policies.

Two opportunity sites in the Downtown are located with a 100-year floodplain and this alternative would therefore reduce the number of allowable units in a flood hazard area. While impacts under this alternative would be less than the proposed project, they also remain less than significant.

ALTERNATIVES TO THE PROPOSED PROJECT

6.4.10 LAND USE AND PLANNING

Under this alternative, impacts to land use would increase when compared to the proposed project. As discussed in Chapter 4.10, *Land Use and Planning*, the proposed project would not physically divide an existing community and is consistent with applicable land use plans. However, removal of these sites from the inventory would result in the loss of 321 (maximum) potential units of housing for the City in the Downtown and Arsenal historic districts. The Bay Area's Regional Transportation Plan and Sustainable Community Strategy, Plan Bay Area 2050, encourages the provision of affordable housing opportunities and use of infill sites for its member jurisdictions, and this alternative would provide less housing in infill locations than the proposed project. As a result, impacts under this alternative would increase but remain at a less than significant level.

6.4.11 NOISE

Under this Alternative, impacts to noise would be decreased when compared to the proposed project. While operational noise levels are expected to increase due to increased roadway traffic under the proposed project, projects would be required to comply with applicable standards in the City's Noise Element to ensure that noise levels in proximity to sensitive receptors are not exceeded. The proposed project may also result in increased short-term construction-related noise impacts, but implementation of Mitigation Measure NOI-1 would reduce impacts to less than significant. This alternative would avoid the potential redevelopment of 17 sites which could also result in slightly decreased noise levels for sensitive receptors during both the construction and operation phases of projects on these sites. Impacts to noise under this alternative would remain less than significant with mitigation incorporated.

6.4.12 POPULATION AND HOUSING

Under this alternative, impacts to population and housing would decrease when compared to the proposed project. As concluded in Chapter 4.12, *Population and Housing*, the proposed project would generate a level of population and housing units that exceeds the projections made for City by the Association of Bay Area Governments (ABAG). However, due to the housing needs of that region and state and the adoption of the Housing Element as a housing plan, the proposed project would not result in a substantial unplanned growth. This alternative would remove 17 sites from the inventory. These sites would generate 321 maximum units and approximately 770 new residents and therefore their removal from the inventory would slightly reduce the total housing units and population generated from the proposed project. Impacts under this alternative would decrease but remain at a less than significant level.

ALTERNATIVES TO THE PROPOSED PROJECT

6.4.13 PUBLIC SERVICES

Under this alternative, impacts to public services would decrease when compared to the proposed project. The proposed project would result in less than significant impacts to public services and project-specific evaluations would ensure that public services are funded and provided for each development under the Housing Element Update. As discussed in the “Avoidance of Historical Resources Alternative,” APN 088-141-060 in the Downtown Historic District contains the City’s Post Office, City Hall, Police Department in addition to public recreation facilities. The redevelopment of this site for residential uses would necessitate the relocation and possible construction of these facilities in other parts of the City which would in turn result in additional CEQA impacts. This alternative would also reduce the overall use of public services and recreation facilities in the City by reducing the amount of potential housing units that can be built in the City, and therefore the number of potential new residents. As such, this alternative would reduce impacts to public services and impacts would remain less than significant.

6.4.14 TRANSPORTATION

Under this Alternative, impacts to transportation would be slightly decreased when compared to the proposed project. As described in Chapter 4.14, *Transportation*, the proposed project is not expected to result in increased VMT per capita due to the project’s focus on infill and density. However, as noted in the discussion of Impact TRAN-2, VMT generated by individual projects under the Housing Element may exceed the current VMT levels on a project-by-project basis. This alternative would remove all sites in the Downtown Historic District and Arsenal Historic District, resulting in no change to their current zoning. While the development of these sites under the proposed project would likely add more residents to the City resulting in more trips, the location of 13 of these sites in the amenity-rich downtown area could result in the replacement of some vehicle trips with alternative modes of transportation. Therefore, this alternative could result in higher or lower VMT impacts than the proposed project for the sites in the Downtown, dependent upon the specifics of the development that would be proposed for these sites as a result of the zoning change. Development of the sites in the Arsenal District would likely result in an increase in VMT, and therefore this alternative would result in less VMT when compared to the proposed project. Overall impacts to VMT remain uncertain under both the proposed project and this alternative. Therefore, impacts to VMT would remain significant and unavoidable under this alternative. This alternative would also neither increase nor decrease impacts to any other transportation thresholds.

6.4.15 TRIBAL AND CULTURAL RESOURCES

Under this Alternative, impacts to tribal and cultural resources would remain similar to the proposed project. As discussed in Chapter 4.15, *Tribal and Cultural Resources*, the proposed project would result in less than significant impacts to tribal and cultural resources with mitigation incorporated. The sites that would be removed from the inventory as a result of this alternative, do not contain any known tribal-related resources and the potential of these sites to contain such resources has not been evaluated.

ALTERNATIVES TO THE PROPOSED PROJECT

6.4.16 UTILITIES AND SERVICE SYSTEMS

Under this Alternative, impacts to utilities and service systems would be remain similar when compared to the proposed project. As discussed in Chapter 4.16, *Utilities and Service Systems*, the proposed project would result in less than significant impacts to utilities and service systems. Project-specific evaluation would be required to determine whether the development/redevelopment of the 17 sites that would be removed from the inventory under this alternative would result in significant impacts to utilities and service systems. Impacts are expected to remain less than significant.

6.4.17 CONCLUSION

Impacts of the Removal of Sites in a Historic District Alternative would result in similar impacts to Air Quality, Biological Resources, Tribal and Cultural Resources, and Utilities and Service Systems; reduce the proposed project's impacts to Aesthetics, Cultural Resources, Energy, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Population and Housing, Public Services, and Transportation; and greater impacts to Land Use and Planning. While this alternative would meet all the project's objectives, it would result in the loss of 321 maximum units and 207 realistic units from the Housing Element Sites Inventory. This includes 99 very low-income and low-income units. Therefore, this alternative would not meet proposed project's objective to provide a list of potential housing sites to meet the RHNA as fully and consistently as the proposed project.

6.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires a lead agency to identify the "environmentally superior alternative" and, in cases where the "No Project" Alternative is environmentally superior to the proposed project, the environmentally superior development alternative must be identified. While the No Project alternative would result in no impacts to the environment, the alternative does not meet any of the project objectives and is not possible given the state requirements for updating the Housing Element and increased residential zoning potential to meet the City's RHNA.

Based on the alternatives analysis, the environmentally superior alternative is 6.4, Removal of All Opportunity Sites in a Historic District Alternative. Because of the potential for development within the historic districts, the Draft EIR determined that impacts to historical resources would be significant and unavoidable. Alternative 6.4 would avoid all impacts to historic resources in the City's historic districts.

As shown in Table 6-1, *Comparison of Project Alternatives to the Proposed Project*, and discussed within Section 6.4, Alternative 6.4 would reduce the project's significant and unavoidable impacts to cultural resources to less than significant by ensuring that no opportunity sites located within the City's Downtown Historic Conservation District or Arsenal Historic Conservation District are rezoned to accommodate new or increased residential density. This alternative would also potentially result in lesser impacts to aesthetic

ALTERNATIVES TO THE PROPOSED PROJECT

resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, public services, population and housing, and transportation when compared to the proposed project if the unit potential did not result in rezoning elsewhere in the City. The Draft EIR determined that these environmental impacts are less than significant, or less than significant with mitigation incorporated, with the proposed project. This alternative would have similar impacts as discussed above.

TABLE 6-1 COMPARISON OF PROJECT ALTERNATIVES TO THE PROPOSED PROJECT

Environmental Topic	Project Environmental Determination	6.2 No Project Alternative	6.3 Avoidance of Historic Resources Alternative	6.4 Removal of All Opportunity Sites in a Historic District
Aesthetics	LS	= (LS)	= (LS)	- (LS)
Air Quality	SU	- (SU)	= (SU)	= (SU)
Biological Resources	LSM	= (LSM)	= (LSM)	= (LSM)
Cultural Resources	SU	= (SU)	- (SU)	- (LSM)
Energy	LS	- (LS)	= (LS)	- (LS)
Geology and Soils	LSM	- (LSM)	= (LSM)	- (LSM)
Greenhouse Gas Emissions	SU	- (SU)	= (SU)	- (SU)
Hazards & Hazardous Materials	LS	+ (LS)	= (LS)	- (LS)
Hydrology & Water Quality	LSM	- (LSM)	= (LSM)	- (LSM)
Land Use & Planning	LS	+ (LS)	+ (LS)	+ (LS)
Noise	LSM	- (LSM)	= (LSM)	- (LSM)
Population & Housing	LS	+ (LS)	- (LS)	- (LS)
Public Services & Recreation	LS	- (LS)	- (LS)	- (LS)
Transportation	LS	- (LS)	= (LS)	- (LS)
Tribal Cultural Resources	LSM	- (LSM)	= (LSM)	= (LSM)
Utilities & Service Systems	LS	- (LS)	= (LS)	= (LS)

The symbols in the table indicate the following: No Impact (NI), Less Than Significant (LS), Less Than Significant with Mitigation (LSM), Significant and Unavoidable (SU); Similar Impacts (=), Less Severe Impacts (-), More Severe Impacts (+)

As shown in Table 6-2, *Comparison of Alternatives to Project Objectives*, Alternative 6.4 would meet all the project objectives. While this Alternative would reduce the amount of developable housing units in the City’s Housing Element Sites Inventory by a maximum of 321 units, 99 of which are very low-income or low-income designated units, this subtraction would not reduce the amount of units in the City’s inventory to a level below either the total RHNA share of 750 units or the required number of low-income and very low-income units.

ALTERNATIVES TO THE PROPOSED PROJECT

TABLE 6-2 COMPARISON OF ALTERNATIVES TO PROJECT OBJECTIVES

Objectives	6.2 No Project Alternative	6.3 Avoidance of Historic Resources Alternative	6.4 Removal of Sites in a Historic District
Update the General Plan's Housing Element to comply with State-mandated housing requirements and to address the maintenance, preservation, improvement, and development of housing in the City between 2023 and 2031.	Unmet	Met	Met
Include an adequate inventory of housing sites and rezone the sites as necessary to meet the required Regional Housing Needs Allocation and to provide an appropriate buffer.	Unmet	Met	Met to Lesser Extent
Update the Safety Element to be consistent with the state requirements, as presented in Section 65302(g) of the California Government Code, and to address climate adaptation and resiliency.	Unmet	Met	Met
To affirmatively further fair housing (AFFH).	Unmet	Met	Met
Incentivize the development of housing, particularly affordable housing, suited to special needs and all income levels	Unmet	Met	Met

Alternative 6.4 does not meet the project’s objective to “Include an adequate inventory of housing sites and rezone the sites as necessary to meet the required Regional Housing Needs Allocation and to provide an appropriate buffer” to the same extent as the proposed project and would reduce the City’s buffer of available housing sites. The housing unit buffer is important because state law limits the ability of the City to approve non-residential projects on sites that allow housing if it cannot be demonstrated that adequate sites to meet RHNA exist.

Alternative 6.4 may make it more difficult to meet other local and state goals such as a reduction in VMT. Adding residential density to the Downtown Historic District would place residents within walking distance of existing goods and services that reduce VMT. Reducing VMT is a state priority to help with the reduction of greenhouse gas emissions associated with cars. In addition, ensuring that the Downtown Historic District maintains viability consistent with the historic land uses that have always contained a residential component is important to ensuring the Historic Districts endure. While the Arsenal District is less developed than the Downtown Historic District, and is surrounded by existing industrial uses, the District is close to major roadways and much of the area already includes residential land uses. Table 3-4 Suitable Zoned Sites includes 12 sites within the two historic districts where residential land use is currently permitted and would remain a development possibility with Alternative 6.4. For purposes of this Draft EIR, because Alternative 6.4 eliminates a significant and unavoidable impact to historic resources it is the environmentally superior alternative.

ALTERNATIVES TO THE PROPOSED PROJECT

This page intentionally left blank.

7. CEQA-Mandated Sections

This chapter provides an overview of the impacts of the proposed project based on the analyses presented in Chapters 4.1 through 4.16 of this Draft EIR. The topics covered in this chapter include impacts found not to be significant, growth-inducing impacts, and significant irreversible changes to the environment. A more detailed analysis of the effects that the proposed project would have on the environment, and proposed mitigation measures to minimize significant impacts, are provided in Chapter 4.

7.1 IMPACTS FOUND NOT TO BE SIGNIFICANT

CEQA Guidelines Section 15128, Effects Not Found to be Significant, allows environmental issues for which there is no likelihood of significant impact to be “scoped out” and not analyzed further in the EIR. This section explains the reasoning by which it was determined that the proposed project would have no impacts to agriculture and forestry resources, mineral resources, and wildfire.

7.1.1 AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state’s inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

- a) **Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?**

No Impact. The California Important Farmland Finder designates lands in the City as “Urban and Built-Up” and “Other Lands” (CDC 2016). Therefore, the proposed project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-farmland uses. No impacts would occur.

CEQA-MANDATED SECTIONS

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

No Impact. The proposed housing sites are not designated farmland, and therefore, there are not part of a Williamson Act contract. No impacts would occur.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

No Impact. The California Important Farmland Finder designates lands in the City as “Urban and Built-Up” and “Other Lands.” Therefore, no impacts to forestlands would occur.

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

No Impact. The proposed project does not list sites that are in forests, and as such the proposed project would not result in the loss of forest land or conversion of forest land to non-forest use. The City is designated “Urban and Built-Up” and “Other Lands,” according to the California Important Farmland Finder (CDC 2016). No impacts would occur.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

No Impact. The proposed project would not result in the conversion of farmland or forestland to non-agricultural or non-forest uses. The California Important Farmland Finder designates lands in the City as “Urban and Built-up” and “Other Lands.” No impacts would occur.

7.1.2 MINERAL RESOURCES

Would the project:

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

No Impact. According to the City’s General Plan, there are no mineral resource areas located within the City boundaries (Benicia 1999). Therefore, no impacts would occur.

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No Impact. No lands within the City’s boundaries are located within mineral resource areas, and therefore, implementation of the proposed project would not result in the loss of availability of a locally important mineral resource recovery site. No impacts would occur.

7.1.3 WILDFIRE

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

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

Less Than Significant Impact. The proposed project would not conflict with adopted emergency response or evacuation plans. The proposed Safety Element Update addresses change resiliency and adaptation mitigation, including during fire risk, and aims to reduce the risk to the community and ensure protection from foreseeable natural and human caused hazards. Future development would be required to provide adequate egress, which would be reviewed by the City during the plan check process. As such, impacts would be less than significant.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Less Than Significant Impact. There are three primary factors used in assessing wildfire hazards—topography, weather, and fuel. The City is relatively flat and predominantly urbanized. The proposed project would not impact weather or topography. The proposed housing sites would be located in urbanized areas of the City, and the proposed housing sites would consist of impervious and pervious surfaces upon development of future residential projects. Additionally, the City is not within a Very High Fire Hazard Severity Zone according to CAL FIRE (CAL FIRE 2022). Therefore, impacts of exposing future residents to pollutant concentrations from or exacerbating a wildfire would be less than significant.

c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Less Than Significant Impact. Future development under the proposed project may require utility connections and new infrastructure for electricity, natural gas, telecommunications, and cable service. The City is not within a Very High Fire Hazard Severity Zone, and the proposed project would not add infrastructure such as roads or overhead power lines in areas with wildland vegetation. Therefore, impacts to exacerbating fire risks to the environment would be less than significant.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Less Than Significant Impact. The City is generally flat; according to the City's General Plan, the majority of the City is within a potential landslide area (Benicia 1999). The City's General Plan indicates that flood hazards are susceptible at Benicia State Park, and on the eastern portion of the City; however, no housing sites are proposed in these areas. Project-specific analysis would be required to analyze impacts landslides

CEQA-MANDATED SECTIONS

to its residents, and would be required to implement safety measures and policies listed in the General Plan, Safety Element Update, as well as comply with state regulations, including the California Building Code. As the City is not within a Very High Fire Hazard Severity Zone, it is unlikely that proposed housing sites would be susceptible to downslope or downstream flooding or landslides as a result of post-fire slope instability. Therefore, impacts would be less than significant.

7.2 SIGNIFICANT IRREVERSIBLE CHANGES DUE TO THE PROPOSED PROJECT

Section 15126.2(c) of the CEQA Guidelines requires that an Environmental Impact Report (EIR) describe any significant irreversible environmental changes that would be caused by the proposed project should it be implemented. Specifically, the CEQA Guidelines state:

Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvements which provide access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

The following are the significant irreversible changes that would be caused by the proposed project, should it be implemented:

- Implementation of the proposed project would allow for the development of future residential projects. The construction activities of these future projects would entail the commitment of nonrenewable and/or slowly renewable energy resources; human resources; and natural resources such as lumber and other forest products, sand and gravel, asphalt, steel, copper, lead, other metals, water, and fossil fuels. Operation of these future projects would require the use of natural gas and electricity, petroleum-based fuels, fossil fuels, and water. The commitment of resources required for the construction and operation of future projects would limit the availability of such resources for future generations or for other uses during the life of future projects.
- As increased commitment of social services and public maintenance services (e.g., police, fire, schools, libraries, and sewer and water services) would also be required for future projects. The energy and social services commitments would be long-term obligations in view of the low likelihood of returning the land to its original condition once it has been developed.

CEQA-MANDATED SECTIONS

- An increase in vehicle trips would accompany project-related population growth. Over the long term, emissions associated with such vehicle trips would continue to contribute to air quality pollutants in the air basin.
- The visual character of future housing sites would be altered by the construction of new structures onsite. Landscaping, grading, and construction of a project site would also contribute to an altered visual character of existing sites. This would result in a permanent change in the character of a project site and on- and off-site views in a future project's vicinity.

Given the low likelihood that land at a future project site would be reverted to its original form, the proposed project would generally commit future generations to these environmental changes.

7.3 GROWTH-INDUCING IMPACTS OF THE PROPOSED PROJECT

Pursuant to Sections to 15126(d) and 15126.2(s) of the CEQA Guidelines, this section is provided to examine ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Also requires is an assessment of other projects that would foster other activities which could affect the environment, individually or cumulatively. To address this issue, potential growth-inducing effects will be examined through analysis of the following questions:

- Would this project remove obstacles to growth, e.g., through the construction or extension of major infrastructure facilities that do not presently exist in the project area, or through changes in existing regulations pertaining to land development?
- Would this project result in the need to expand one or more public services to maintain desired levels of service?
- Would this project encourage or facilitate economic effects that could result in other activities that could significantly affect the environment?
- Would approval of this project involve some precedent-setting action that could encourage and facilitate other activities that could significantly affect the environment?

Please note that growth-inducing effects are not to be construed as necessarily beneficial, detrimental, or of little significance to the environment. This issue is presented to provide additional information on ways in which this project could contribute to significant changes in the environment, beyond the direct consequences of developing the land use concept examined in the preceding sections of this EIR.

CEQA-MANDATED SECTIONS

Would this project remove obstacles to growth, e.g., through the construction or extension of major infrastructure facilities that do not presently exist in the project area, or through changes in existing regulations pertaining to land development?

The Housing Element Update's implementation would not remove obstacles to additional growth in this manner, as it would be undertaken in an area that currently is served by all utilities and services. As discussed in the Section 4.16, *Utilities and Service Systems*, the project would not require such additional public service facilities.

Section 4.12, *Population and Housing*, analyzes the project's overall effect on population and housing, including growth-inducing considerations. In terms of housing, implementation of the HEU would provide for development of between 3,598 maximum residential units. Under the "maximum units" scenario, the population of the City would increase by approximately 8,743 persons, as discussed in Section 4.12.

This planned population growth in the City has been projected and directed by the Association of Bay Area Governments (ABAG) and Solano County as part of the 6th Housing Element Cycle to meet the region's housing needs allocation. Implementation of the HEU would require an amendment to the City's General Plan and Zoning Code to accommodate the projected growth. Because general plans define the location, type, and intensity of growth within a given jurisdiction, they are the primary means of regulating development and growth in California. Since the Housing Element is a part of the City's General Plan, any updates to that element would provide a means to plan for and regulate development in the areas considered as part of the HEU. Additional new residential development that could derive from the HEU's implementation would therefore be consistent with the growth projections in the City's General Plan as well as applicable regional plans adopted by ABAG and other relevant entities and would help the region meet its regional housing allocation requirements. Consequently, implementation of the HEU would not induce substantial unplanned population growth that was not previously anticipated

Would this project result in the need to expand one or more public services to maintain desired levels of service?

The proposed project would increase residents in the City. The proposed project is expected to increase the demand for public services, which would contribute to the needs to expand facilities. However, as substantiated in Section 4.13, *Public Services*, of this DEIR, existing programs and policies would ensure that the increase in uses and impacts to public services, would be less than significant.

Would this project encourage or facilitate economic effects that could result in other activities that could significantly affect the environment?

During the construction of future projects, a number of design, engineering, and construction jobs would be created. This would last until construction of a project is completed. Construction employees would be absorbed from the regional labor force, and the construction of future projects are not anticipated to attract new workers to the region. The proposed project would result in an increase in residents (see

CEQA-MANDATED SECTIONS

Section 4.12, *Population and Housing*). Future residents of the proposed project would seek economic opportunities such as shopping, entertainment, home improvement, auto maintenance, and so forth, within City and surrounding area. This would create an increased demand for such economic goods and services and would, therefore, encourage the creation of new businesses and/or expansion of existing businesses that address these needs. Therefore, impacts would be less than significant.

Would approval of this project involve some precedent-setting action that could encourage and facilitate other activities that could significantly affect the environment?

As identified above, the proposed project would result in a zone change for housing sites listed in Table 3-2 and Table 3-3. Implementation of the proposed zone change could further induce non-residential zoned sites to be zoned for residential uses. Proposals may arise to change districts in the vicinity of future project sites. However, these would require full environmental analysis of the impacts of such actions. The proposed project does not propose changes to any of the City's building safety standards (i.e., building, grading, plumbing, mechanical, electrical, or fire codes) to implement this project. The proposed project would comply with all applicable City plans, policies, ordinances, etc. to ensure that there are no conflicts with adopted land development regulations and that any environmental impacts are minimized. Therefore, the proposed project would not result in precedent-setting actions. The impacts of subsequent similar actions would require environmental analysis and associated mitigation to ensure that such subsequent impacts would not significantly affect the environment.

CEQA-MANDATED SECTIONS

7.4 REFERENCES

Benicia, City of. 1999, June 15. Benicia General Plan.

<https://www.ci.benicia.ca.us/index.asp?SEC=0371539A-30D9-4885-B61F-B5038B415DD3&DE=F40DB441-1E06-45F8-82F8-6D632AB9EC85>.

_____. 2021, April 7. Press Release – City of Benicia Parks, Trails, and Open Space Master Plan Update Begins. https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/Press_Release_-_Benicia_Parks_Trails_and_Open_Space_Update_Begins.pdf

_____. 2022. Benicia Parks and Community Services. <https://www.ci.benicia.ca.us/pcs>

California Department of Conservation (CDC). 2016, California Important Farmland Finder. <https://maps.conservation.ca.gov/dlrp/ciff/>

California Department of Forestry and Fire Protection (CAL FIRE). 2022 (accessed). FHSZ Viewer. <https://egis.fire.ca.gov/FHSZ/>

8. *Organizations and Persons Consulted*

This Draft EIR was prepared by the following consultants and individuals:

CITY OF BENICIA

REPORT PREPARERS

PLACEWORKS

Mark Teague, AICP

Principal

Mike Watson, PG

Senior Geologist

Lance Park

Senior Associate

Jasmine A. Osman

Associate I

Jessica Mendoza

Planner

Lexie Zimny

Planner

ORGANIZATIONS & PERSONS CONSULTED

This page intentionally left blank.